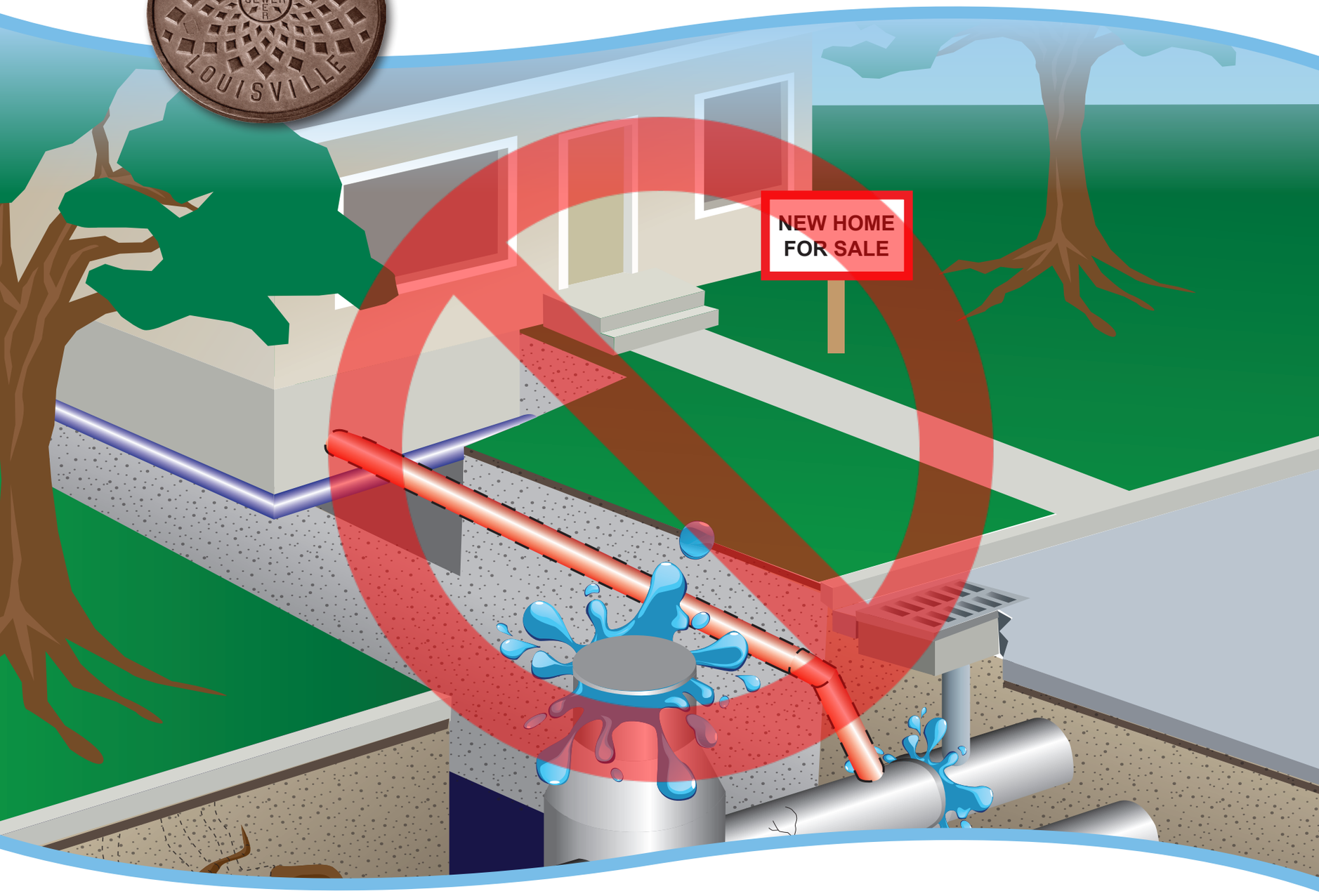
Louisville and Jefferson County
Metropolitan Sewer District

Sewer Capacity Assurance Plan (SCAP)

Completed: February 28, 2008 | Revised: November 2014



MSD
Metropolitan Sewer District

PROJECT WIN
Waterway Improvements Now

A publication of
MSD ProjectWIN

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF ENFORCEMENT
300 FAIR OAKS LANE
FRANKFORT KENTUCKY 40601
www.kentucky.gov

OFFICE OF THE
EXECUTIVE DIRECTOR

FEB 10 2015

February 5, 2015

CERTIFIED MAIL 7012 2920 0001 0746 6252
Return Receipt Requested

Mr. Greg Heitzman
Executive Director
Louisville and Jefferson County Metropolitan Sewer District
700 West Liberty Street
Louisville, Kentucky 40203

Re: Approval of MSD's Sewer Capacity Assurance Plan, November 2014 Revision
Amended Consent Decree, Civil Action No. 3:08-cv-00608-CRS
DOJ Case No. 90-5-1-1-08254

Dear Mr. Heitzman:

The Kentucky Department for Environmental Protection (KDEP) and the U.S. Environmental Protection Agency (EPA) have reviewed the Metropolitan Sewer District's revised Sewer Capacity Assurance Plan (SCAP), dated November 2014. This document is hereby approved and will supersede and replace the SCAP document dated February 28, 2008.

If there are any questions, you may contact Mr. Courtney Seitz of KDEP at (502) 564-3410 ext. 4914, or you may contact Mr. Dennis Sayre of EPA at (404) 562-9756.

Sincerely,

Jeff Cummins, Director
Division of Enforcement
KY Department for Environmental Protection

Denisse D. Diaz, Chief
NPDES Permitting and Enforcement Branch
Water Protection Division
USEPA, Region 4

MSD
Metropolitan Sewer District

Louisville and Jefferson County Metropolitan Sewer District
700 West Liberty Street
Louisville Kentucky 40203-1911
502-540-6000
www.msdlouky.org

December 9, 2014

Chief, Water Programs Enforcement Branch
Water Management Program
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington DC 20044-7611

Jeff Cummins, Director
Division of Enforcement
Department of Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Subject: System Capacity Assurance Plan (SCAP) Review and Re-Submittal
DOJ Case No. 90-5-1-1-08254

Attention Chief and Director:

MSD is providing this letter as certification of the re-submittal of the revised System Capacity Assurance Plan (SCAP), dated November 2014. This document was revised based on discussion and comments received on the May 2013 submittal.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have questions or need additional information, please contact Angela Akridge at (502) 540-6136.

Sincerely,

Angela Akridge, PE
Infrastructure Planning & Environmental Compliance Director

cc: Paula Purifoy
File

TABLE OF CONTENTS

LIST OF APPENDICES

Acronyms & Abbreviations

ADF	Average Daily Flow
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CMOM	Capacity, Management, Operations, and Maintenance
CS	Collection System
CSO	Combined Sewer Overflow
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
gpd	Gallons Per Day
I/I	Inflow and Infiltration
IMS	Information Management System
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
LOJIC	Louisville/Jefferson County Information Consortium
MGD	Million Gallons Per Day
MSD	Louisville and Jefferson County Metropolitan Sewer District
O&M	Operations and Maintenance
SCAP	System Capacity Assurance Plan
SOP	Standard Operating Procedure
SSES	Sanitary Sewer Evaluation Study
SSO	Sanitary Sewer Overflow
Project WIN	Waterway Improvements Now
WQTC	Water Quality Treatment Center
WWP	Wet Weather Plan

Definitions

Average Daily Flow (ADF) – This is the average daily flow at a water quality treatment center calculated using daily flow records from a 2-year window of water quality treatment center influent flow data.

Credit Catchment – Defined area of the sewer system where capacity assurance credits are tracked for the Credit Banking System.

InfoWorks Integrated Catchment Model (ICM) – hydraulic modeling software developed by Innovyze used by MSD for collection system modeling.

MSD Development Team – The department within MSD's Engineering Division responsible for reviewing and approving new development plans and requests for sewer system capacity.

Peak Wet Weather Flow – The anticipated, calculated, or monitored maximum flow within the sewer system during an actual or synthetic rainfall event.

Surcharge Condition – The condition within the sewer when the water surface level is less than two feet from the manhole rim elevation. If the sewer system is in a residential area with historical capacity-related backup complaints, then a surcharge condition is considered to be a water surface level within five feet of the manhole rim.

Modeling and Flow Monitoring Basins

BB—Buechel Branch
CC—Cedar Creek
FF—Floyds Fork
HC—Hite Creek
HP—Hikes Point
JT—Jeffersontown
MC—Mill Creek
MF—Middle Fork Beargrass Creek
ND—Northern Ditch
ORFM—Ohio River Force Main
PC—Pond Creek

Regional Water Quality Treatment Center (WQTC)

CCWQTC—Cedar Creek WQTC
FFWQTC—Floyds Fork WQTC
HCWQTC—Hite Creek WQTC
JTWQTC—Jeffersontown WQTC
MFWQTC—Morris Forman WQTC
DRGWQTC—Derek R Guthrie WQTC

BACKGROUND AND SUMMARY

In areas of Louisville Metro with separate sanitary sewers, sanitary sewer overflows (SSOs) occur because of aged pipes that leak when the system is overloaded from rainfall or due to illicit connections to the sanitary sewer system such as sump pumps, roof drains, and foundation drains. Although new connections do not contribute to the root causes identified for sanitary sewer overflows, they do contribute additional flow that utilizes available capacity in the system. Since system capacity deficiencies have been identified as the cause for a significant portion of wet weather overflows, it is important for Louisville and Jefferson County Metropolitan Sewer District (MSD) to have a program to ensure new connections do not cause or contribute to sanitary sewer overflows.

In accordance with U. S. Environmental Protection Agency (EPA) requirements, MSD developed a Capacity, Management, Operations and Maintenance (CMOM) program in May 2006. MSD's CMOM Self-Assessment was conducted in an approach that exceeds the requirements of Paragraph 24(c) of the Kentucky Division of Water (KDOW) and EPA Region 4 2009 Amended Consent Decree.

The overall goal of the CMOM Self-Assessment Report was to determine if there are MSD programs or activities that should be recommended for improvement to enhance service or compliance performance and to recommend specific actions and an implementation schedule to complete the recommended improvements. Paragraph 24(c) of the Amended Consent Decree listed nine areas to be scrutinized in the CMOM Self-Assessment (one of which being system capacity). CMOM states that the System Capacity Assurance Plan (SCAP) should be the basis for applying capacity decision criteria to support each watershed's community values. The process should include a programmatic approach for items such as: confirming available capacity of water quality treatment centers (WQTC), pump stations, and conveyance system; creating capacity credits through system improvement and rehabilitation; identifying hydraulic constrictions; and proposing capacity improvements that support interim and long-term performance objectives.

Required improvements to the sewer system to accommodate system capacity will take years to implement. While these improvements are being implemented, developers, individual homeowners, and other entities continue making requests for additional flows to the system.

The CMOM Self-assessment specifies that MSD must respond to these requests for new connections to the sewer system and subsequent increases in flow through this SCAP.

The objective of the SCAP is to enable MSD to authorize new sewer service connections or increases in flow from existing sewer service connections while making system improvements to reduce inflow and infiltration and increase conveyance capacity to ensure that wet overflow volumes do not increase within any credit catchment (see Figure 4.3). As detailed in the plan, MSD assesses the peak flow capacity of all major system components (collector sewers, interceptor sewers, pump stations and treatment centers) and reviews requests for increased flow to the collection system.

The SCAP is a document that is intended to change and evolve due to various components including modeling improvements, map updates, process improvements, reporting automation, capital improvement projects, capacity requests, and other CMOM and MSD programs.

The document outlines MSD's procedure for authorizing additional flows through capacity-limited areas by removing infiltration and inflow from the system and creating capacity credits. This capacity credit banking through system rehabilitation is similar to approaches used in other cities.

Organization of Report

This SCAP report is organized into four sections as listed below.

Section 1 provides an introduction to the SCAP describing Louisville Metro's sewer system, the SCAP purpose and goals, and an overview of MSD's information management system (IMS).

Section 2 provides a description and background of the existing capacity in the collection system using the hydraulic models and monitoring. Section 2 also establishes capacity assessment protocols for treatment facilities, pump stations, and collection lines. (Table 4.2: M-E-6 - Major Facility Capacity, and M-E-7 - Facility Capacity Protocol of the May 2006 CMOM Report.)

Section 3 details the current, committed, and requested flow methodology for system capacity as well as how LOJIC GIS and Hansen IMS will play a role in storing, tracking, and analyzing data related to system capacity. The main objective of Section 3 is to define the systematic process to determine current capacity limitations and the available capacity for the system to receive new flow. (Table 4.2 M-E-8 Current and Committed Capacity and M-E-9 Build-out Capacity of the May 2006 CMOM Report)

Section 4 documents the standard procedures for calculating and tracking flow credits. This section outlines procedures for estimating flow reduction from corrective actions, calculating credit, and entering and tracking credits in Hansen IMS. (Table 4.2: M-E-10 - Available Capacity Standard Operations Procedures (SOP) of the May 2006 CMOM Report)

SECTION 1 INTRODUCTION AND SYSTEM CAPACITY OVERVIEW

1.1 INTRODUCTION

Louisville Metro has over 3,200 miles of sewer, approximately 500 miles being over 100 years old. Currently, MSD serves 220,000 customer accounts and approximately 693,000 people. The system operated and maintained by MSD includes:

- 6 regional wastewater treatment facilities
- 9 small water quality treatment centers
- Approximately 280 pumping stations
- Ohio River Flood Protection System, including 16 flood pumping stations and 29 miles of floodwall

In areas of Louisville Metro with separate sanitary sewers, sanitary sewer overflows (SSO) occur because of aged pipes that leak when the system is overloaded from rainfall or due to illicit connections of sump pumps, roof drains, or foundation drains to the sanitary sewer system.

MSD initiated a Wet Weather Abatement Program in 1989. The first goal was to identify potential overflow points in the combined sewer system and in the fast growing sanitary sewer system. Both CSOs and SSOs occur most often during prolonged or intense rain storms. On the wettest days, millions of gallons of diluted sewage may discharge to local streams.

MSD's Integrated Overflow Abatement Plan (IOAP) includes these measures:

- Adding storage basins, conveyance capacity and treatment capacity to the sewer system
- Cleaning sewers of excess sand, gravel and mud to increase carrying capacity
- Removing unnecessary clean-water connections (downspouts and sump pumps)
- Repairing sewer leaks that allow groundwater into the sewer system

System capacity assurance is an important component of MSD’s Project WIN (Waterway Improvements Now) initiative. Project WIN was initiated to address the challenges of improving Louisville’s water quality. To meet these challenges, MSD has embarked on a comprehensive sewer improvement program that will eliminate major sources of water pollution throughout Louisville Metro. MSD has already completed more than $1.4 billion in capital expansion and upgrades to wastewater and stormwater facilities.

1.2 SCAP PURPOSE

The SCAP is the basis for coordinating capacity decision criteria for each sewershed within the separate sanitary system. Providing wastewater collection, conveyance, and treatment capacity that meet the expansion needs of MSD's customers, while protecting the environment and meeting regulatory requirements, are top priorities of MSD's facility improvement and sewer capacity review efforts.

Due to existing wet weather capacity limitations and the time it will take to implement a complete sewer overflow abatement plan, the SCAP has been developed to enable MSD to authorize new sewer service connections or increases in flow from existing sewer service connections while making system improvements. These improvements will increase available capacity by removing I/I in accordance with the May 2006 CMOM recommendations, which state:

"Develop a System Capacity Assurance Plan that implements the performance objectives that result from the Wet Weather Team and stakeholder group involvement in the development of the Wet Weather Plan [currently known as the IOAP as referenced in Section 1.1 above]. The System Capacity Assurance Plan will be the basis for coordinating capacity decision criteria for each watershed. The process should include a programmatic approach for items such as: confirming capacity of plants, pump stations, and conveyance system; identifying hydraulic constrictions; and proposing capacity improvements that support interim and WWP performance objectives. Review current connection protocols with the Metro Government and modify, if necessary, plumbing permit process or MSD capacity certification process, to ensure that capacity assurance is incorporated into permitting process. Implement capacity certification process through System Capacity Assurance Plan developed and updated under the supervision of a licensed professional engineer. Document and track using existing programs in Hansen."

The capacity assurance process applies to the separate sanitary sewer system. The program does not include the combined sewer areas. By design, the combined sewer system serves as the stormwater conveyance network as well as the sanitary waste collection and conveyance, and is meant to allow wet weather inflow into it. In addition, wet weather combined sewer overflow (CSO) discharges are permitted outfalls. As such, application of the SCAP process, which focuses on inflow and infiltration removal, is not appropriate within this area. However, MSD is currently implementing a Long Term Control Plan that will mitigate CSO typical year

discharge frequency and volume to a federally and state enforceable level of control. All development in the combined sewer area shall limit the 100 year post developed discharge to the 10 year pre-developed discharge. Connections to the combined sewer system shall be no less than 6 inches in diameter. If calculations show that a connection should be less than 6 inches, the difference of the two volumes must be compensated for in the pipe system. Development disturbing less than one half acre and without a storm drainage system shall be exempt from the pre 10 – post 100 requirement.

The SCAP process includes a programmatic approach for items such as confirming capacity of treatment centers, pump stations, and conveyance systems; generating sewer capacity credits; identifying hydraulic constrictions; and proposing capacity improvements to collection system components. The protocols and procedures for providing adequate average daily flow (ADF) capacity at WQTC are not covered within this plan.

1.3 CAPACITY ASSURANCE INFORMATION MANAGEMENT

The protocols and procedures described within the SCAP require a significant amount of data management. Tracking this data along with process automation and standardization is vital to the success of the capacity assurance program and will improve as the program evolves.

The capacity assurance program utilizes MSD's current information management system (IMS), housed within Hansen, and the Louisville/Jefferson County Information Consortium (LOJIC) Geographic Information System (GIS) to track data and automate the processes outlined within the SCAP. MSD currently uses these systems to track existing, committed, and proposed flows as well as facilities and assets, capital projects, corrective actions (work orders), overflows and system deficiencies, and various other data sets relevant to system capacity.

Hansen IMS is utilized to track system capacity for treatment centers and pump stations, as well as capacity credits. These tools are utilized for a credit banking system as described in Section 4 to track both earned capacity credits from specific rehabilitation and capital improvement projects, and credit expenditures from approved increases and new additions in wastewater flows. Data from the InfoWorks Integrated Catchment Model (ICM) are housed within the GIS displaying current sewer capacity and system deficiencies. The following is a list of the major datasets that are tracked and housed within the Hansen IMS. Staff will develop additional datasets as the SCAP is implemented in combination with the existing databases.

- Hydraulic modeling results – sewer surcharging and deficiencies
- Sewer system monitoring data
- Designed, measured, and calculated capacities for sanitary sewer system assets
- Approved, committed, and pending requests for capacity
- Certification and approval documentation
- Sewer rehabilitation projects
- Capacity credits accounting system

SECTION 2 SYSTEM CAPACITY PROTOCOL

Although new sewer connections do not contribute to the root causes identified for existing sanitary sewer overflows (SSO), they do contribute additional flow that utilizes available capacity within the system. If the sewers downstream of the capacity request have adequate design capacity, but display wet weather issues, MSD must remove I/I from the credit catchment to create capacity credits prior to the new flow actually being added to the system.

This section outlines the protocol for determining the current peak wet weather capacities for the wastewater collection system, pump stations, and the water quality treatment centers (WQTCs). These protocols, as well as associated data limitations, are discussed for each of the three system elements.

2.1 SYSTEM CAPACITY MODELING AND MONITORING

To analyze sewer system capacity, many complex factors must be evaluated for each type of facility or asset within a collection system under different scenarios. To accomplish this task, MSD has developed hydraulic models for its entire service area using InfoWorks ICM modeling software. The goal of this modeling is to provide a computer model that mimics the function of the actual sewer system, including sanitary flow and I/I sources (as well as stormwater in the combined sewer area). The sewer system models contain pump stations, hydraulic structures, interceptors, and collector sewers[1] within the MSD service area.

[1] For the separate sanitary sewer system all collector sewers 8-inch in diameter or larger were included in the hydraulic models. For the combined sewer system all sewers 18-inch and larger were included.

The hydraulic models were developed using LOJIC GIS data, historical hydraulic models, as-built record drawings, survey data, and field data. Model updates, calibration and validation is an ongoing and continuous activity. Changes to the models are based on projects, system needs and the best available data. The models were originally calibrated and validated using flow monitoring and rainfall data collected between January and June of 2007 and have been updated periodically. Within the flow monitoring period, dry weather periods were used to develop average daily user flows while wet weather events were used to analyze collection system response to wet weather and to determine the impacts of inflow and infiltration (I/I). Once calibrated to dry and wet weather data, the models are used to assess existing conditions, qualify and quantify deficiencies, and serve as a tool for future planning and capacity assurance reviews.

For the purposes of the SCAP and related to the IOAP, a 1.82-inch cloudburst[2] storm event was chosen as the minimum level of protection and applied to the Infoworks hydraulic models to analyze system capacity. These model runs serve as the basis for analyzing current sewer capacity, along with pump station testing, run time monitoring, and flow metering throughout the system. The following sections describe how modeling and monitoring data is used to evaluate capacity at MSD's water quality treatment centers, sanitary pump stations, and throughout MSD's sanitary sewer collection system.

2.2 WATER QUALITY TREATMENT CENTERS (WQTC) CAPACITY PROTOCOL

Certification of adequate treatment plant capacity is critical because it confirms that at the time the WQTC receives the proposed increased flow, the WQTC will be in compliance for quarterly reporting, and that the new or increased flow will not result in bypasses or diversions prohibited by the National Pollutant Discharge Elimination System (NPDES) permits. Current peak treatment capacities and average daily flow (ADF) limits for MSD's six regional WQTCs and 9 small WQTCs have been established. Wet weather capacity at each WQTC is determined using design and monitoring data. ADF limits are established within each WQTC's current NPDES permit. Appendix B lists the current WQTC capacities, which are reviewed and updated annually to evaluate capacity and report evaluation updates.

[2] A cloudburst event analysis for the Louisville area was developed using a statistical analysis of historical rainfall data using the methods explained in NOAA Atlas 14. This analysis also developed a typical storm distribution and duration (3 hours) for the Louisville area.

The existing wet weather flow at each WQTC is calculated using the hydraulic models with the peak design wet weather capacities coded into the model. For the purposes of the SCAP, a WQTC is determined to be at peak wet weather capacity when the hydraulic model shows a surcharge condition at the influent pump station or at manholes along the main interceptor leading to the treatment plant. A surcharge condition is defined as a water surface level less than two (2) feet from the top of the influent pump station wetwell or at a manhole (MH) rim along the main interceptor leading to the WQTC.

Current ADF is calculated using a 2-year window of WQTC influent flow data. This 2-year window of data is updated annually in Hansen. Between these updates, committed and requested capacity from new flow customers are tracked within a database using an estimated flow of 290 gpd per single-family equivalent (see Section 2.2.1 below for further discussion). A WQTC is considered to be at capacity when the monitored ADF plus the committed capacity (where capacity charges have been paid) equals or exceeds the permitted ADF. MSD uses the ADF data for future flow forecasting and planning of WQTC upgrades.

2.2.1 Average Daily Flow Evaluation

According to the MSD Design Manual, the design of new infrastructure (collector sewers and small pump stations) is based on 10 State Standards at an average daily design flow of 400 gpd per single-family equivalent (100 gpcd X 4 people/house). This figure is highly conservative in that it is based on average household population sizes during the 1960's and is intended to consider appropriate sizing for future development flows that could potentially enter the system as well as some degree of inflow and infiltration.

For offsetting flows from new capacity requests, MSD developed a flow calculation that more accurately represents single family household discharges using updated average household populations. In order to determine a more accurate average daily design flow per single-family equivalent, MSD researched U.S. Census data (Average household size = 2.4 persons, 2000 US Census data) and past studies (Saturation = 2.9 persons /dwelling, 2011 Floyds Fork Action Plan Study) for more accurate household numbers. Review of this data utilizing 2010 Census data demonstrates that average household saturation in Louisville is 2.7 persons per dwelling, calculated by dividing the total population by the number of active property service connections in the community. Additionally, MSD reviewed influent flows at its regional treatment centers to evaluate these flows compared to design flows calculated from the corresponding contributing service area population.

Based on these studies, utilizing the most conservative, an average daily design flow of 290 gpd (100 gpcd x 2.9 people/house) has been determined to represent a more accurate, yet still conservative, wastewater production per single-family equivalent. Therefore, to calculate the credits needed to offset new flows upstream of capacity-limited areas, this factor of 290 gpd is used to scale the new development flows. For apartment and condominiums of various sizes (1 and 2 bedroom units), the actual population per unit is typically lower than that of a single-family equivalent. However, to calculate credit needs conservatively, MSD has chosen to utilize 2.9 people per unit regardless of unit size. For commercial and industrial, actual water usage records are typically utilized to determine new flow impacts on the sewer system.

2.3 WASTEWATER COLLECTION CAPACITY PROTOCOL

Certification of adequate collection capacity is critical because it confirms that each gravity sewer through which the proposed additional flow will pass has adequate capacity to convey both the existing and proposed peak wet weather flows from all new or existing service connections, without causing a surcharge condition.

The existing wet weather peak flow of the collection system is calculated and evaluated using the 1.82-inch cloudburst storm simulation within the InfoWorks ICM hydraulic models. The models indicate areas of possible wet weather surcharging during the design storm simulation. For the purposes of the SCAP, a wet weather surcharge condition is defined as a water surface level within the sewer that is less than two (2) feet from the manhole rim elevation. If the sewer system is in a residential area with historical capacity-related backup complaints, then a

surcharge condition is considered to be a water surface level within five (5) feet of the manhole rim. However, if MSD has, pursuant to the SCAP, identified pipe segments or manholes designed to operate under a pressure condition (such as siphons), then the capacity of these pipe segments or manholes shall be evaluated based on their design criteria.

The current design capacity of the collection system is determined using the hydraulic models. Using design standard calculations per 10 State Standards as published by the Great Lakes – Upper Mississippi River Board, if adequate capacity to convey the proposed new peak flow is not available, the customer requesting capacity and MSD must coordinate and determine the measures needed to provide adequate capacity for the proposed new flow. If the sewers downstream of the capacity request have adequate design capacity, but display wet weather issues, MSD must remove I/I from the credit catchment to create capacity credits prior to the new flow actually being added to the system.

2.4 PUMP STATION AND FORCE MAIN CAPACITY PROTOCOL

Certification of adequate pump station and force main capacity is critical because it confirms that each pump station and associated force main has adequate capacity to transmit the existing peak wet weather flow plus the proposed peak wet weather flow without causing a surcharge condition at the pump station or within the collection system served by the pump station.

The existing peak wet weather flow at each pump station is calculated and evaluated using the 1.82-inch cloudburst storm simulation within the InfoWorks ICM hydraulic models along with records of high wet wells or documented overflows upstream of the stations. The hydraulic models contain information on all MSD operated pump stations and force mains, which are gathered through a combination of capacity measurements, pump run time analysis, and design data reviews. Using the hydraulic models to simulate pump station and force main capacity provides MSD with a tool to dynamically evaluate all the factors associated with a pump station's capacity, such as wet well and collection system storage, multiple pump configurations, and timing of peak wet weather flows. Combined with the field data collected through monitors and sewer overflow response teams, MSD is able to evaluate the ability of a station to receive additional flow from new capacity requests.

Because capacity measurements, also known as pump drawdown tests, are the most accurate

and up-to-date information that can be obtained for pump stations, MSD periodically performs capacity measurements at pump stations, where possible. The capacity measurement consists of measuring a pump's ability to drawdown, or drop, in the pump station wet-well volume and the corresponding time. After accounting for inflow during the test, the average pump discharge is determined. If there are several pumps, each is tested individually and then in combination with each other. The drawdown tests results are compared to design data to note pump stations that are not performing at designed capacity. See Appendix D for a pump station drawdown test form.

For the purposes of the SCAP, a wet weather surcharge condition at a pump station is defined as water surface level less than two (2) feet from the top of the pump station wetwell or at any manhole rim within the upstream collection system served by the pump station. If the collection system served by the pump station is in a residential area with historical capacity-related backup complaints, then a surcharge condition is considered a water surface level within five (5) feet of the top of the wetwell or at any manhole rim within the upstream collection system served by the pump station.

Adequate design capacity is determined by comparing the Peak User Flow against the pump station Firm Measured Capacity found in Hansen IMS (see Figure 2.1). If the Peak User Flow is less than the Firm Measured Capacity then the pump station has available capacity for additional proposed peaked flows. If adequate capacity is not available, the developer and MSD's Development Team must determine the measures needed to provide adequate capacity for the proposed peak flow.[3]

[3] For pump stations with unique designs, functions, or setups, such as combination flood and sanitary stations, specific capacity conditions may apply that fall outside of the pump station and force main capacity protocols outlined in this section. Capacity at these facilities will be determined based on factors most applicable to each unique situation.

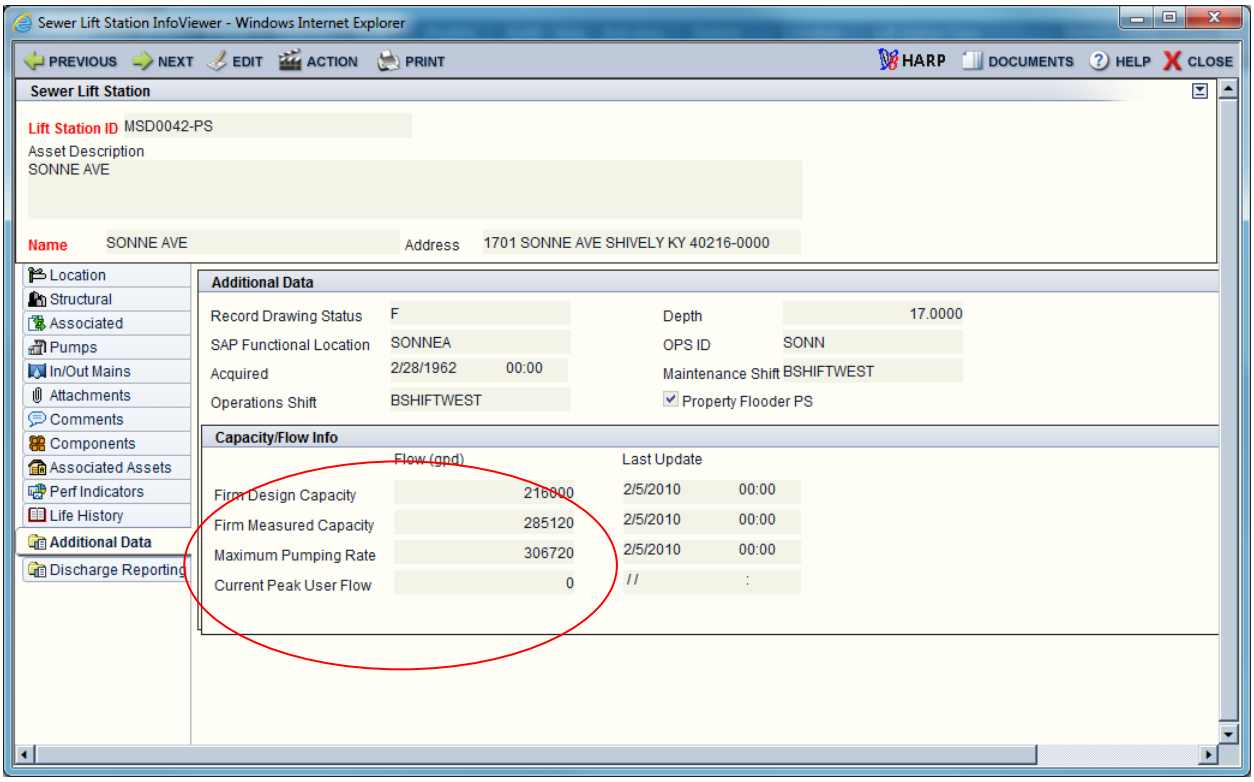


Figure 2.1 – Pump Station Capacity Information found in Hansen IMS

Additional design capacity reviews required for pump stations include reviewing the current Lateral Extension Report for each downstream pump station affected by the new flow. The total flow committed for requests with paid capacity charges plus the Maximum Pumping Rate should not exceed the Firm Design Capacity of the Pump Station. Figure 2.2 represents a Pump Station Report generated from Hansen IMS documenting the pump station design capacity, new customer information, and total requested flow upstream of that pump station.

CHENOWETH RUN **MSD0196-PS**

Firm Design Capacity: 828,000 Firm Measured Capacity: 515,520 Maximum Pumping Capacity: 552,960
Current Dry Weather Flow: 0

APNO	APNAME	WORKTYPE	NOTICE TO PROCEED	Response Letter	FLOW
180600	BOLLING BROOK SUBDIVISION	LEHIST	1/20/05		22,000.00
180581	CARRINGTON GREEN	LEHIST	7/20/05		20,400.00
178587	LORENZ - CHENOWETH RUN SUBD			11/13/2007	3,600.00
				Total	**46,000.00**

Figure 2.2 – Pump Station Report with LE request data

SECTION 3 CAPACITY CERTIFICATION DETERMINATION PROCEDURES

The objective of capacity certification is to ensure that system capacity is available starting at the new flow entry point, downstream through the collection system, and ending at the WQTC. Capacity availability must be verified using two different methods, summarized in Section 3.1 and 3.2.

3.1 PEAKED DRY WEATHER FLOW VERIFICATION

First, dry weather capacity for the new flow must be verified for the system downstream of the new capacity request utilizing the methodology for peak dry weather flow as outlined in MSD's Design Manual and the *10 States Standards*. In cases where the capacity request flows are large or the existing system is suspected to be close to capacity, MSD runs modeling simulations to assess the impact on the downstream system.

If the system can convey this peak flow with no adverse affects, MSD approves the capacity request with all necessary charges. However, if the new flow will cause new problems in the system including at the receiving WQTC, MSD and the developer must determine actions that will mitigate this impact to allow the new flow into the system upon which MSD will issue a conditional approval. If remedial action cannot be agreed upon, MSD will deny the capacity request.

3.2 WET WEATHER VERIFICATION

Once MSD verifies that peak dry weather capacity is available, MSD must then review the capacity request location to see if wet weather SSOs occur downstream of the new flow location. If a documented overflow exists downstream of the capacity request, MSD is then required to create capacity credits through system improvement and rehabilitation at a ratio of 3 credit gallons for every new gallon approved (3:1 ratio), assuming 290 gallons per single family equivalent.

3.2.1 Flow and Credit Tracking & Planning

MSD tracks credits and flows for two different purposes. One purpose is to demonstrate that actual flow added to the system from approved capacity requests have been offset at the correct 3:1 ratio through completed system and rehabilitation efforts. MSD's objective is to

never allow a negative balance develop between actual new flow in the system in relation to the capacity credit balance within each defined capacity credit catchment. Quarterly, MSD updates the actual build out of active developments and the construction completion percentage of MSD rehabilitation or system improvement projects and updates the flow to credit balance sheet for each credit catchment.

MSD's second purpose for flow tracking and credit planning is to project flow build out for approved capacity requests upstream of known overflows, and then facilitating the planning and implementation of capital projects that will generate capacity credits before the new flow is discharged into the system.

For residential, commercial and industrial capacity requests, MSD utilizes the sewer release date of the capacity request for flow contribution. Utilizing these projections, MSD can identify areas in which new rehabilitation or improvement projects must be completed to keep the 'actual' credit balance positive. Therefore, if the 'planned' flows exceed the 'planned' credits, MSD will initiate additional rehabilitation or improvement efforts in the appropriate credit catchments accordingly. In summary, MSD's process for tracking and creating credits must ensure that, prior to new flow from a capacity request actually entering the system, a sufficient number of credits have been created through completed rehabilitation or system upgrades to maintain a positive credit catchment balance.

3.2.2 Jeffersontown Water Quality Treatment Center

As stated in MSD's Amended Consent Decree signed April 2009, until the Composite Correction Plan for the Jeffersontown WQTC has been fully implemented and the Jeffersontown WQTC has either been eliminated or achieved full compliance with its KPDES permit, MSD will only certify new flow requests from existing sewer service connections upstream of the Jeffersontown WQTC in the following cases:

1) MSD may certify new flow requests for each of the five new flow customers listed in the Amended Consent Decree provided the new flow request certification process is consistent with MSD's SCAP procedures and is limited to the remaining gallons per day of sewer flow subject to approval as listed in the Amended Consent Decree.

2) MSD may certify a new flow request only if, as a direct result of the project involving the new flow request, an equal or greater amount of flow from an existing sewer service connection is eliminated prior to certification of the new request with the purpose being to not increase the total flow to the Jeffersontown WQTC. Additionally, the new flow requests certification process should be consistent with MSD's SCAP procedures.

3.2.3 Sanitary Sewers Located in the Combined Sewer System

As stated previously, combined sewers are not subject to SCAP requirements; however, separate sanitary sewers that flow into the combined system must adhere to SCAP requirements. The procedures for certification and credit banking in these areas will be reviewed and conducted on a case-by-case basis.

3.3 LOJIC GIS AND HANSEN IMS

The System Capacity Assurance Process requires utilization of the LOJIC GIS and the Hansen IMS system to store, track, and analyze data related to system capacity.

MSD has established LOJIC GIS layers and databases for analyzing system capacity that include:

- Documented SSOs
- Sanitary Sewer Collection lines
- Pump Station and Transmission Components
- Water Quality Treatment Centers
- System Monitoring Locations
- Sewershed Boundaries
- Hydraulic Modeling Results for Surcharging and Deficiencies

As MSD's Development and Capacity Review Team evaluates each new flow request, Hansen IMS is utilized to document the capacity assurance process and record the pertinent information from the review. In addition, databases within Hansen IMS will document the new flow customers' location, system capacity requirements, as well as the capacity of the WQTCs, pump stations, and the collection system downstream. When the system is incapable of conveying new flows, Hansen IMS will track these deficient areas and the actions necessary to approve future new flow requests.

3.4 SPECIAL CONDITIONS

3.4.1 Certification Exceptions

In some cases, MSD may authorize a request for additional flow to the system even if adequate capacity cannot be certified and credits are not available at the anticipated time of flow initiation. These cases include the following:

- The request eliminates illicit discharges of wastewater to the stormwater system.
- The request is made for an essential service facility. Essential services are defined as critical or essential facilities such as, healthcare facilities, public safety facilities, public schools, other government facilities, or in cases where a pollution or sanitary nuisance (as determined by the Louisville Metro Public Health and Wellness Department) will be eliminated in relation to on-site septic systems.
- A request or internal capital project that diverts existing flow from one sewershed provides an environmental benefit.

However, a subtraction shall be made from the credit bank in an amount equal to the average projected flow from the correction of the illicit wastewater discharge, essential service facility, or diversion of flow. Credits for these exceptions will be generated as quickly as possible.

3.4.2 Redevelopment of Existing Facilities

In some instances, a request will be received requesting flow for a new structure replacing an existing structure that previously contributed flow to the separate sanitary sewer system. In these cases, the previous flow will be subtracted from the projected flow and the residual flow will be assessed according to credit banking procedures.

SECTION 4 STANDARD PROCEDURES FOR CALCULATING & TRACKING FLOW CREDITS

The SCAP requires a standard operating procedure to revise and implement processes to determine if capacity is available in the system. The following sections explain how MSD will accumulate capacity credits through I/I removal projects and estimated flow reduction from these projects, how credits are calculated from I/I removal, and how credits are tracked and distributed to new flow requests within the Hansen IMS.

4.1 Sewer System Rehabilitation and I/I Removal

As described in Section 3, new capacity requests upstream of documented SSOs will generally require 3 capacity credits for every new gallon approved, assuming 290 gpd per single family equivalent. Commercial and industrial capacity requests typically utilize actual flows from water records of similar developments. The SCAP goal is to ensure new flows do not exacerbate existing system overflow volumes within each credit catchment; therefore, the tracking of I/I removal is very important. MSD continues to execute inspection and rehabilitation projects to remove I/I from the sanitary sewer system. A current list of known overflows and projects is submitted in each Consent Decree Quarterly Report beginning October 2014. An example of this list is included as Appendix F. MSD's Continuing Sanitary Sewer Assessment (CSSA) Program outlines the implementation process for the inspection, identification, prioritization, and rehabilitation of sewer line defects. Through this program and other CMOM efforts, capacity restoration projects and capital projects are ongoing and include sewer line replacement, pump station upgrades, main line repairs, and remediation of sewer lines, manholes, and service laterals. All of these projects increase peak wet weather capacity within the sanitary sewer system by removing I/I. With this in mind, the SCAP serves as the platform for tracking flow reduction credits and increasing peak flow conveyance capacity and tracking them against approved capacity requests, deducting credits at a 3:1 ratio within each credit catchment.[4]

[4] MSD has been performing rehabilitation and system improvements associated with the terms of the Consent Decree with KDOW and EPA. To capture the credits earned as a result of these improvements the effective retroactive date for credit claims is August 12, 2005, the date the Consent Decree went into effect.

As MSD continues to repair, replace, and remediate the sanitary sewer system, credits are accrued on a one capacity credit per one gallon of I/I removal basis. Calculations for estimating I/I removal from various types of repairs and remediation are explained in the following section.

4.2 Estimated Flow Reduction from System Rehabilitation

In order to calculate capacity credits for corrective actions, the flow reduction or added capacity from the corrective actions must be estimated. The following types of corrective actions are anticipated: mainline sewer rehabilitation; pump station rehabilitation and upgrades, storage basin construction, new sewer conveyance construction, manhole rehabilitation, downspout connection removals, foundation drain (sump pump) connection removals, area drain connection removals, and rehabilitation of private sewer service laterals. For sewer and manhole rehabilitation and illicit connection removal, the estimated flow reduction listed in this section is based on values presented in the SCAP by MSD of Greater Cincinnati. Any alternative methods for estimating flow reduction are subject to review by MSD's capacity review team. The calculation of estimated flow reduction, or capacity increase, from each type of corrective action is discussed below. As MSD continues to implement various system improvement projects and gathers I/I reduction data, the credit amounts listed below may be adjusted to reflect updated reduction projections. Such adjustments will include the appropriate technical documentation and will constitute a newly revised date for the SCAP document.

4.2.1 Manhole Rehabilitation

Primary repair mechanisms for manholes include chimney seals, frame and lid replacement, full lining, and mechanical or chemical treatment. The estimated peak flow reduction is determined by severity and number of defects identified during inspection, as well as the location of the manhole and its susceptibility to inundation by rainwater during wet weather as defined below.

Paved Areas - Manholes in paved areas that do not meet the "along a stream" definition.

Non-Paved Areas - Manholes in non-paved areas that do not meet the "along a stream" definition.

Along a Stream - Manholes will be considered to be "along a stream" when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.

(Source: American Society of Civil Engineers, Manual Practice No. 92)

Tables 4.1 through 4.3 provide the typical peak flow reduction for manhole rehabilitation in paved areas, non-paved areas, and along a stream.

Table 4.1 – Peak Flow Reduction for Manholes in Paved Areas

Manhole Section	Reduction Values in Gallons Per Day (gpd)			
	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	78	156	311	622
Chimney	78	156	311	622
Cone	78	156	311	622
Wall	39	78	156	311
Pipe Seal	39	78	156	311
Bench	39	78	156	311
Channel	39	78	156	311

Table 4.2 – Peak Flow Reduction for Manholes in Non-Paved Areas

Manhole Section	Reduction Values in Gallons Per Day (gpd)			
	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	328	656	1,313	2,626
Chimney	328	656	1,313	2,626
Cone	328	656	1,313	2,626
Wall	164	328	656	1,313
Pipe Seal	164	328	656	1,313
Bench	164	328	656	1,313
Channel	164	328	656	1,313

Table 4.3 – Peak Flow Reduction for Manholes Along a Stream

Manhole Section	Reduction Values in Gallons Per Day (gpd)			
	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	864	1,728	3,456	6,912
Chimney	864	1,728	3,456	6,912
Cone	864	1,728	3,456	6,912
Wall	432	864	1,728	3,456
Pipe Seal	432	864	1,728	3,456
Bench	432	864	1,728	3,456
Channel	432	864	1,728	3,456

4.2.2 Removal of Illicit Connections to the Sanitary Sewer System

Illicit connections to the sanitary sewer system are direct stormwater inflow sources. Disconnection of these sources can provide significant increases in capacity. The following are estimated peak flow reductions due to the removal of typical illicit connections.

Area Drain	6,000 gpd
Downspout	4,000 gpd
Foundation Drain	4,000 gpd
Sump Pump	4,000 gpd

4.2.3 Rehabilitation of Deteriorated Mainline Sewers and Sewer Service Lateral Corrections

The estimated peak flow reductions for mainline sewer rehabilitation or replacement (including service laterals) are as follows in gpd per inch diameter-mile (IDM) of pipe rehabilitated:

Stream Inundation / High Groundwater	34,000 gpd / IDM
Non- Inundation / Low Groundwater	60 gpd / IDM

4.2.4 Pump Station Rehabilitation and Upgrades

Credits for pump station rehabilitation and upgrades will be calculated by measuring the pre-

construction station capacity and post-construction station capacity. The credit amount will be equal to the difference of the two capacities.

4.2.5 New Sewer Conveyance and Storage

Credits for new sewer conveyance will be equal to the full pipe capacity of the new sewer line. Credits for new storage will be equal to the full storage basin capacity.

4.3 CREDIT CALCULATIONS

In order to accrue and track capacity credits for corrective actions, the estimated flow reduction or added capacity from the corrective actions must be calculated. Appendix F provides detailed instructions for calculating rehab credits for sewer lines and manholes.

Figure 4.1 shows an example Rehabilitation Credits Calculation sheet from an actual Interceptor Rehabilitation project. In this example, only rehabilitation of mainline sewers and manholes took place. The Project Total Credits summarized at the bottom of the sheet are the credits applied to the catchment(s) for the credit banking purposes.

System Capacity Assurance
Rehabilitation Credits Calculation Sheet

Project Name:	Sinking Fork Interceptor Rehabilitation
Budget ID:	H07294
Record No.:	15442
Anticipated Date:	12/23/2008
Completed Date:	12/23/08 & 3/30/09
Credit Catchment	Middle Fork
Calculated By:	Josh Dickerson
Checked By:	Tony Marconi

Removal of Illicit Connections to the Sanitary Sewer System

	Quantity		Credit		Total	
Downspouts	0	x	4,000	=	0	Gallons
Area Drains	0	x	6,000	=	0	Gallons
Foundation Drains	0	x	4,000	=	0	Gallons
Sump Pumps	0	x	4,000	=	0	Gallons

Rehabilitation of Mainline Sewers and Sewer Service Lines

Total from Line Credits Entry Sheet 352,152 Gallons

Manhole Rehabilitation

Total from Manhole Credits Entry Sheet 85,815 Gallons

Project Total Credits 437,967 Gallons

Figure 4.1 – Rehabilitation Credits Calculation Sheet

4.4 ENTERING AND TRACKING CREDITS IN HANSEN IMS

The Hansen IMS is used to enter credits from I/I removal or capacity restoration projects. As the rehabilitation projects are completed, the associated credits will be made available in the capacity credit ledger for each capacity credit basin. System rehabilitation performed by MSD will be reviewed on an annual basis and credits will be updated in catchment areas accordingly. Appendix G provides credit ledgers by catchment area.

Figure 4.2 represents an example SCAP credit form where estimated flow reduction is entered into Hansen IMS after an I/I removal project is completed.

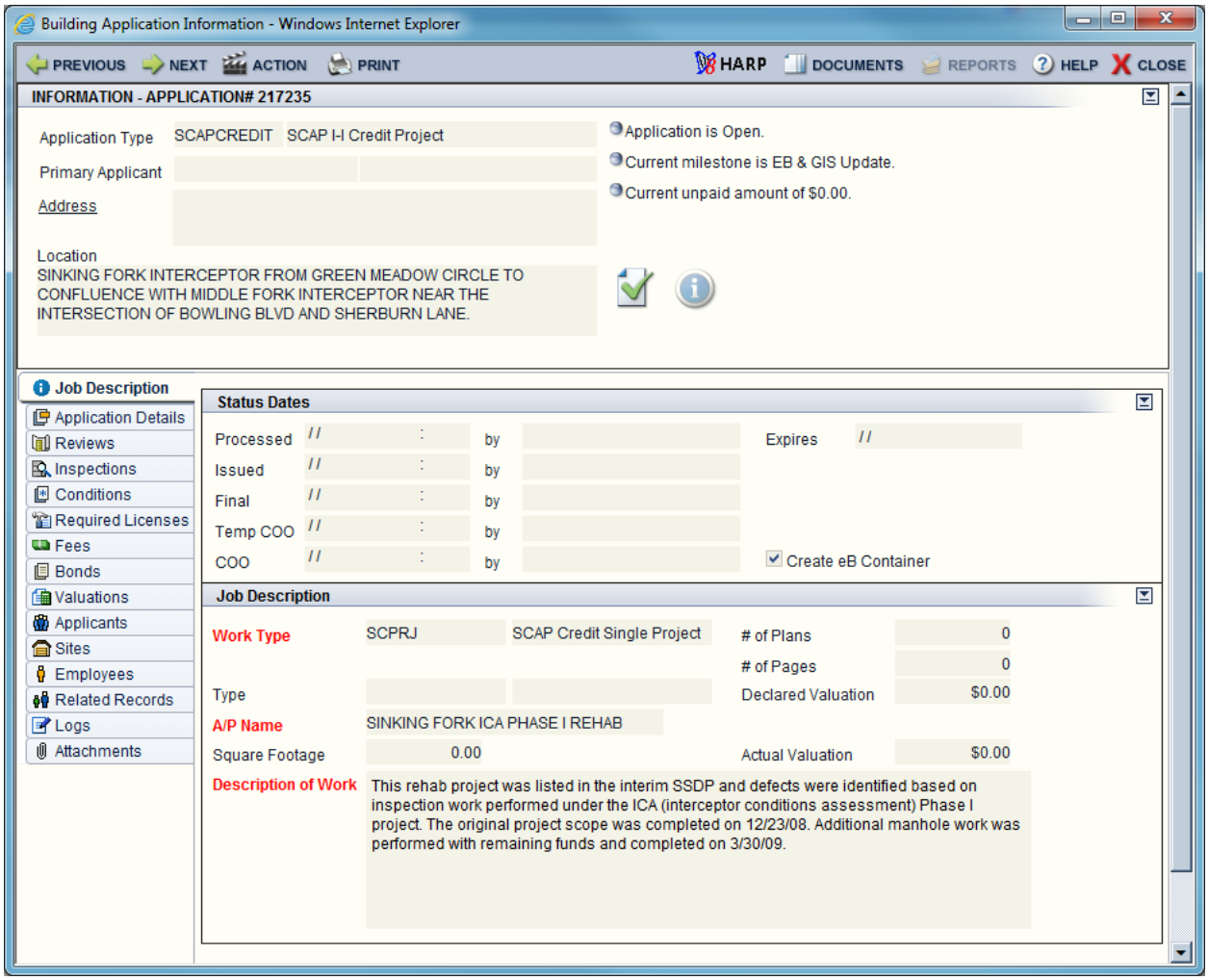


Figure 4.2 – Example SCAP Credit Form

The Hansen IMS is also used to track where each capacity credit is being used, and where the new flow request credits apply.

4.5 CAPACITY CREDIT CATCHMENTS & CREDIT REPORTING

MSD will track the balance of new flows coming into the sanitary collection system versus the number of capacity credits available. The credit balances will be tracked per capacity credit

basins as depicted in Figure 4.3. In each Consent Decree Quarterly Report, MSD will submit an updated capacity credit ledger per basin to demonstrate that sufficient credits were available as the new flows from approved capacity requests actually begin discharging into the collection system. Capacity ledgers are included in Appendix G as examples.

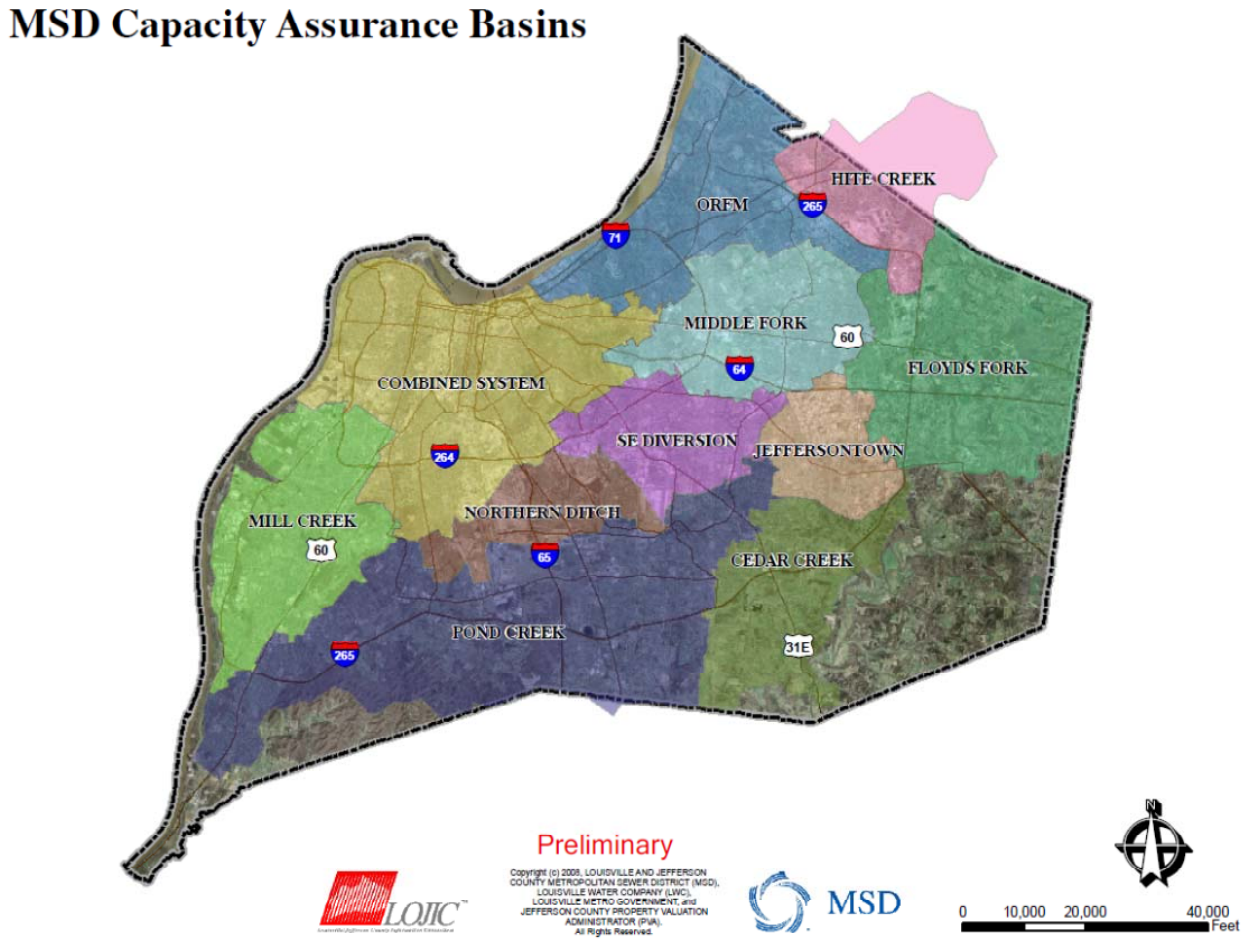


Figure 4.3 - Capacity Credit Basins

Appendix A – Lateral Extension Procedures, Forms, and Process

1. Lateral Extension Just In Time Submittals Process
2. Lateral Extension Procedures Description
3. Downstream Facilities Capacity Request Form
4. Hansen LE Request Data Entry Process

LATERAL EXTENSION JUST IN TIME SUBMITTALS

CUSTOMER

SUBMITTAL 1 CAPACITY

REQUEST FOR SANITARY SEWER CAPACITY FORM

SITE LOCATION MAP

SUBMITTAL 2 DESIGN

APPROVED REQUEST FOR SANITARY SEWER CAPACITY FORM

APPLICATION FOR APPROVAL OF CONSTRUCTION DOCUMENT PLANS

DIV OF WATER SEWERAGE APPLICATION WITH:
- APPLICATION FEE
- USGS QUAD MAP
- SERVICE AREA MAP

DESIGN PLANS

SUMMARY OF PROPERTY TYPE AND UNITS TO BE SERVED

COMPUTATION SHEET FOR SANITARY SEWER DESIGN

PROPOSED PROJECT PLAN

SPECIAL PROVISIONS

ROADWAY PLANS (if needed)

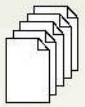
COPIES OF LETTERS TRANSMITTING PLANS TO VARIOUS UTILITIES (if needed)

PUMP STATION SERVICE
- AREA MAP WITH FLOWS
- CALCULATIONS
- SPECIFICATIONS

(if needed)

RESERVATION OF CAPACITY (if needed)

SUBMITTAL 3 MYLARS



MYLARS

PERMITS, CONTRACTS & PAYMENTS

SUBMITTAL 4

LETTER OF APPROVAL FROM METRO HEALTH

LETTER OF APPROVAL FROM THE DOW

SITE DISTURBANCE FORM

RAILROAD CROSSING PERMIT APPLICATION (if needed)

KTC ENCROACHMENT PERMIT APPLICATION (if needed)

LATERAL EXTENSION OF BOUNDARIES AGREEMENT WITH:
- PROPERTY DEED
- PERFORMANCE BOND WITH POWER OF ATTORNEY
- MAINTENANCE BOND WITH POWER OF ATTORNEY
- CERTIFICATE OF LIABILITY INSURANCE
- ACCEPTED BID PROPOSAL SIGNED WITH ENCROACHMENT DATA
- EASEMENT PLATS

OR

EXTENSION OF BOUNDARIES AGREEMENT WITH:
- PROPERTY DEED

SUBMITTAL 5

CAPACITY CHARGE PAYMENT (or LETTER OF CREDIT)

LETTER OF APPROVAL FROM FIRST CLASS CITY (if needed)

DOW STREAM CROSSING PERMIT (if needed)

CORPS OF ENGINEERS STREAM CROSSING PERMIT (if needed)

RECAPTURE CHARGE (if needed)

TELEMETRY PAYMENT (if needed)

METRO ENCROACHMENT PERMIT (if needed)

SUBMITTAL 6 CONSTRUCTION

SWORN STATEMENT OF FINAL PAYMENT – CONTRACTOR

SWORN STATEMENT OF FINAL PAYMENT – DEVELOPER

AS BUILT CERTIFICATION LETTER TO DOW

AS BUILT DRAWINGS

MSD

IDENTIFY AND DOCUMENT DOWNSTREAM SSOS, PUMP STATIONS, WQTCs

EVALUATE FIRM DESIGN CAPACITY OF COLLECTION SYSTEM FOR CONVEYING PROPOSED PEAK FLOW

EVALUATE FIRM DESIGN CAPACITY OF PUMP STATIONS FOR CONVEYING PROPOSED PEAK FLOW

EVALUATE THE CAPACITY OF THE RECEIVING WQTC

DETERMINE IF THE NEW FLOW IS UPSTREAM OF A DOCUMENTED OVERFLOW

CAPACITY APPROVAL

DESIGN APPROVAL

MYLARS APPROVAL

NOTICE TO PROCEED

SEWER RELEASE

LATERAL EXTENSION PROCEDURES

The construction of new sanitary facilities requires the approval of the following public agencies:

A. Jefferson County

1. Louisville & Jefferson County Metropolitan Sewer District (MSD)
2. Louisville Metro Health Department (HD)
3. Kentucky Division of Water (DOW)
4. Louisville Metro
5. Fourth Class Cities

B. Oldham County (for sewers that flow to MSD treatment plants)

1. Louisville & Jefferson County Metropolitan Sewer District (MSD)
2. Kentucky Division of Water (DOW)
3. City of Crestwood or Oldham County Environmental Authority depending on location

The purpose of this document is to provide developers, engineers, and others with a list of the items required in order to approve plans and special provisions for a Lateral Extension (LE) or a Private Sewer project. All lateral extensions (as defined by 401KAR5:005.8) which will become a part of MSD's system require the execution of a Wastewater Facilities Lateral Extension Contract or approval from MSD for the proposed project. Sanitary projects which connect to systems which are not owned by MSD are subject to the same review and approval procedures, but do not require the execution of a contract with MSD (in these cases, the owner of the system must certify that the system has the capacity to transport and treat the proposed flow). In general, sewers that serve a single property can be classified as private; however, MSD will determine how a lateral extension is classified

MSD has prepared a number of documents which are available to the engineer for wastewater projects. They include a Design Manual, Standard Drawings, Standard Specifications, Special Provisions, and a Pre-Approved Products List. Additionally, the engineer should refer to the "Just in time diagram for lateral extension" that can be found on the MSD web site. Engineers

not familiar with the MSD lateral extension approval process are encouraged to review the process with MSD personnel.

CAPACITY PHASE

The engineer should submit a downstream facilities capacity request form. The form and instructions for filling it out are available on the MSD web site. MSD will use the information provided to evaluate the wastewater system downstream of the proposed development to ensure that there is sufficient capacity to transport and treat the flows that will be generated.

If capacity is available, MSD will issue a capacity approval letter which ensures capacity for the project for 90 days. This approval may be contingent upon a number of factors such as the payment of applicable fees, construction of a pump station and/or downstream improvements. If capacity is not available, MSD and the engineer can discuss a strategy for providing service to the development.

PROJECT FEES

Most new development will be subject to one-time fees based on the volume of flow that will be generated. The applicable fees that can apply to the project are capacity charges, inflow and infiltration fees and recapture fees. A detailed description of the applicable fees can be found in MSD's current Wastewater Service Charges document.

PLANNING PHASE

Prior to, during or after the capacity phase of the project, the engineer and MSD should discuss the available alternatives for servicing the development. Issues that may need to be addressed are the location of MSD's existing facilities and access to those facilities, the need for a pump station, opportunities to eliminate a pump station and sizing of facilities to accommodate upstream of the development. For developments that require a pump station, an economic analysis of costs as laid out in MSD's design manual may be required.

DESIGN PHASE

Specific items which must be submitted to MSD as part of the design review submittal process are identified below. They must be submitted in the sequence and format detailed in

the "just in time diagram for lateral extension". Any submittal made to MSD with missing or incorrect information will be returned un-reviewed:

1. **Application For Approval Of Contract Documents for Sanitary Sewer Projects**. This provides basic information about the project, along with the terms and conditions of the approval. It should be noted that MSD's approval is only valid for a period of one year.

2. **Minimum Requirements Checklist for Sanitary Sewer Construction Plans**. This form provides the Applicant with a listing of items normally required for MSD to complete its review of the material.

3. **Construction Plans**. Plan drafting standards (required) and design criteria are covered in MSD's Design Manual. Example plan sheets, CAD files and templates are available on MSD's website. Final plans must be submitted on double-matte, 24" x 36" sheet mylar, with a minimum thickness of 3 mils. Review transmittal copies may be standard blue-line or black-line prints. Two (2) copies are required for each submission. The title sheet should include a location map, a sheet index, the name, address and telephone number of the engineer who prepared the plans, the name, address and telephone number of the developer, the name, address and telephone number of the owner, the surveyor's certification block with a Professional Surveyor's seal, signature and date, a legend, standard and special notes, the Professional Engineer's seal, signature and date, and an approval block for MSD. All sheets must include the project name, the developer's information, the owner's information, the engineer's information, sheet title, submittal date, Professional Engineer seal/signature/date, and Professional Land Surveyor seal/signature/date. The seals and signatures of the engineer and the surveyor (both of whom must be currently licensed in the Commonwealth of Kentucky) must be originals. The Professional Engineer's seal/signature/date is required on all sheets and the Professional Land Surveyor's seal/signature/date is required on all sheets with boundaries shown.

4. **Special Provisions.** Special provisions shall be submitted and shall be adjusted to address the specifics of the project. The engineer shall cross out sections of the provisions that do not apply. The special provisions shall not be modified without specific approval by MSD.

6. **Design Calculations.** The proposed development, along with all upstream or tributary areas must be shown on a topographic map at an appropriate scale. The expected saturation population, based on current zoning, should be used to size the proposed sewers. Population based on zoning can be found in Chapter 8 of MSD's Design Manual. It should be noted that MSD may require improvements to downstream facilities in order to accommodate the flow from proposed developments. This will be determined on a case-by-case basis. Reference should be made to Chapter 8 of the Design Manual for the required "Computations for Sanitary Sewer Design" format and instructions.

7. **Easement Plats (if required).** Plats must meet minimum standards for land surveying in Kentucky. They must be certified and sealed by a Professional Land Surveyor currently licensed in the Commonwealth of Kentucky. Two (2) copies are required for each submission, and the original plats must be included with the final submission of documents. MSD will be responsible for recording all easements for public sewers in Jefferson County. In Oldham County, MSD must be provided a copy of the recorded easement. See Chapter 7 of MSD's Design Manual for easement plat preparation guidelines.

8. **Record Plat.** A copy of the record plat (recorded or unrecorded) is acceptable. This must be submitted in order for MSD to determine whether or not additional sewer and drainage easements will be required. Before MSD will allow sanitary sewers to be accepted and put into service, all public sewers must be in public rights of way or in a public easement.

9. **Preliminary Subdivision Plans.** A copy of the approved preliminary subdivision plans should be submitted with the original submission if available.

10. **Roadway Plans (if applicable).** A copy of the roadway plans should be submitted in order for MSD to determine if sufficient cover will be available and to ensure that there are no conflicts with any other proposed facilities. Although MSD will attempt to identify conflicts during review, it is the design engineers responsibility to ensure all potential conflicts are addressed.

11. **Contacting Other Utilities.** Documentation must be provided showing that potential conflicts with existing utilities have been addressed to the satisfaction of the utility company. MSD must be copied on all letters and transmittals to and from the various utility companies.

12. **City/County/State Permits.** If proposed sewers will be located within, or crossing the right of way of existing roads, or if proposed sewers will be located outside of the pavement of proposed roads, but still within the right of way, an encroachment permit is needed from the appropriate agency. MSD will apply for state roadway encroachment permits. All other encroachment permits shall be obtained by the developer or contractor as required by the governing agency. The approved plans shall be used to obtain the necessary permits. The Design Drawings and Special Provisions provided by the Design Engineer must include the requirements set forth by the governing agency. It is assumed that the Design Engineer has been in contact with the Regulating Agency prior to submittal of the Encroachment Permit. If a state encroachment permit is required, seven (7) sets of plans are needed for the submittal. Original copies of any encroachment permits required must be provided to MSD.

13. **Small City Permits.** If the proposed facilities will be located within the corporate limits of any third or fourth class cities, completed permits showing MSD as the Applicant must be included. The developer/engineer is also responsible for complying with any additional ordinances (e.g. tree cutting) which may be required by third or fourth class cities. Approved permits must be included with the final submittal of plans to MSD. Fifth and sixth class cities will be notified of the proposed project by MSD. Any other requirements by the 5th and 6th class cities shall be handled on a case-by-case basis. MSD must be copied on all correspondence to and from the small city.

14. **Railroad Crossings.** If proposed sewers will be located within, or crossing, the right of way of existing railroads, executed easement plats must be included for each occurrence. Permits will not be acceptable. MSD must be copied on all correspondence to and from the governing railroad. Applicant is responsible for payment of all fees.

15. **Miscellaneous Permits.** If proposed sewers will be located within, or crossing, the right of way of any other existing facilities (e.g. Texas Gas), completed permits showing MSD as the Applicant must be included in the final submittal of plans to MSD. MSD must be copied on all correspondence to and from the agency.

16. **Proposed Project Plan.** An 8 1/2" x 14" drawing showing the proposed project must be submitted to MSD. In order to provide consistency in the appearance of project plans, a template is provided on the web site and in the design manual.

17. **Erosion/Sediment Control Plan.** The Engineer must submit a plan for erosion and sediment control meeting the requirements of the design manual. A Notice of Intent permit should be submitted to DOW 72 hours before construction starts.

18. **Wastewater Facilities Lateral Extension of Boundaries Agreement.** This document is the legal agreement between the developer and MSD regarding the construction of sanitary sewerage facilities. It conveys the sewerage facilities to MSD, upon completion and acceptance by MSD. The developer agrees to construct the project according to the plans, special provisions and specifications, to employ an engineer to be available during construction, to review shop drawing submittals and other services as the developer's representative, to commence the project within one year, and to furnish record information once the job is finished. MSD agrees to inspect the work, and to accept ownership of the facilities, along with operation and maintenance responsibilities once construction is completed. Please refer to the lateral extension of boundaries agreement preparation instructions to ensure that the agreement is prepared correctly. Incorrectly prepared agreements will be returned.

19. **Accepted Bid Proposal.** MSD requires that the lump sum cost for the construction of the sanitary sewers be submitted. The lump sum amount shown on the form shall be the same as the amount shown on the Performance Bond. The bid proposal shall be dated the same as the third paragraph of the bonds.

20. **Bonds.** MSD requires that a Performance Bond be posted covering the cost of sewer facilities construction cost.

    If the proposed sanitary facilities will be located under any pavement (roads, streets, parking lots, driveways of any material besides earth), MSD will also require that a Maintenance Bond be posted in the amount calculated by the engineer in accordance with the guidelines indicated in the Special Provisions ($5,000.00 minimum, $4 per LF under Pavement county Road, $50 per LF under State Maintained Road).

    After the project has been accepted by MSD, a two-year warranty period begins. If there are no problems with the facilities after one year, MSD will release the bonds.

21. **Pump Stations –** The following items must be submitted, for either a public or private pump station, before the review will take place.

Service Area Map - A topographic map showing the proposed development, along with all upstream or tributary areas shown. The expected saturation population, based on current zoning, should be shown in each area of the map. The service area map shall be shown on the construction plan.

Calculations - The calculations should be for both the initial and the ultimate conditions. All calculations shall be presented in a neat an orderly manner. A summary of the data shall be shown on the plans.

Specifications - MSD's standard specifications for both the grinder and the solid-passing pumps shall be used. The appropriate modifications and spaces need to be filled-in before submitting for review.

Construction Drawings – Construction drawings shall be drawn to scale.

EPANet Model

22. **Plan Review and Approval.** MSD will review the information submitted and usually return comments to the contact person as specified on the "Application for Approval of Contract Documents for Sanitary Sewer Projects," within ten (10) working days. If a meeting is in order, MSD and the project engineer will discuss the project in detail. After revisions have been made and returned along with all MSD "mark-ups", MSD will review the submittal and if everything is in order, issue a Design Approval letter. When MSD receives written approval from other governing agencies, the engineer submits the original mylars to MSD along with any corrected copies of all items, including the completed developer signed LE Contract, the appropriate bonds, and all other required documents. Note: If there are any revisions to the plans, prior to construction, new mylars must be submitted before the project will be released for construction.

CONSTRUCTION PHASE

After receiving the completed design documents, all required permits and easements, performance and maintenance bonds, drawings on mylar, special provisions and other agency approvals, MSD will issue a Notice-To-Proceed letter for construction and assign an inspector to the job (if applicable). This process will normally take five (5) working days. Construction

must commence within one year of the Notice-To-Proceed date. After completion of the sewer installation the following items must be completed prior to the release of the sewer for connection:

- An initial air and deflection test
- A second air and deflection test after all other utilities are installed
- Installation of chimney seals (after pavement placed)
- Vacuum testing
- Restoration of disturbed areas
- Payment of fees
- Preparation and approval of as-built drawings (see below)
- Preparation and approval of PSC inlet sheets
- Sworn Statements (Developer and Contractor)
- KDOW Certification Letter
- Available for Connections from Inspector

Physical connection to the sewers requires health department approval

Revisions During Construction. If minor changes to the project are necessary during construction, the developer's engineer should try to resolve the matter by discussing it with MSD's inspector. MSD's inspector will determine whether or not additional review is required. If additional review is required, the developer's engineer must submit a "red-line" drawing of the proposed changes to MSD who will make a decision on the matter as soon as possible and will notify the developer's engineer of the changes approval. The developer's engineer will then submit four (4) copies of the "red-line" drawings to MSD for distributing them to the field. "Significant" changes may require HD and DOW approval.

Record Drawings. Once construction is completed, the developer's engineer/surveyor must provide as-built mylars to accurately reflect the size, location, depth, etc. of the facilities, the location of property service connections and easement data. PSC information which must be shown on the drawings includes the location of the PSC in relation to the sewer along with the length and size of the PSC and any other information referenced in the special provisions under the "Stakes and Final Record Drawing" section. This information should also be shown on the "Property Service Connections Inlet Sheet".

MSD
Metropolitan Sewer District

FOR MSD USE ONLY

DOWNSTREAM FACILITIES CAPACITY REQUEST

Date: MM/DD/YYYY

Sewer Service Area:

Name of Development:

Address of Development:

Block & Lot of Development:

Owner/Developer:

Name:

Company:

Street:

City, State, Zip:

Telephone #:

E-Mail Address:

Design Firm/Contact:

Name:

Company:

Street:

City, State, Zip:

Telephone #:

E-Mail Address:

Closest Sewer Connection:

Record Number:

Manhole Number:

Wastewater Treatment Plant Service Area:

Attach Map with Site Labels & Manhole (**SUBMITTALS WITHOUT A MAP WILL BE REJECTED**)

Show Calculation:

Amount of Flow (Based on MSD Standards): GPD

Number of: **Homes**:

Apts.: One BDR: Two BDR: Three BDR:

Condos: One BDR: Two BDR: Three BDR:

Commercial (Describe):

Industrial (Describe):

Pump Station Needed: Yes ☐ No ☐ **Recapture Area**: **Yes** ☐ **No** ☐

ADDITIONAL COMMENTS:

For MSD Projects Only:

Budget ID # _____

Estimated Completion Date: _____

MSD
Metropolitan Sewer District

DOWNSTREAM FACILITIES CAPACITY REQUEST

FOR MSD USE ONLY

LE Record Number: _____

IOAP Project Area: ☐

Enterprise Zone: ☐

SCAP Basin: _____

Capacity Determination:

☐ **Approved**

☐ **Conditional Approval with downstream Inflow and Infiltration Fees**

☐ **Conditional Approval**:

_____

_____

Flow: _____

Until: _____

If you wish to reserve capacity beyond the 90-day reservation period, please call the Development Team Manager)

☐ **Not Approved**:

MSD: _____ **Date:** _____

Please retain this form to submit with Application for Approval of Sanitary Sewer Projects

Comments:

Downstream Facilities Capacity Request
Submittal Assistance Document

The Downstream Facilities Capacity Request (DFCR) is submitted for the purpose of determining if capacity exists for your Lateral Extension Project. Included with the submittal of the DFCR must be a Site Location Map with the parcel(s) to be served noted.

MSD seeks to provide a prompt definitive determination of capacity on your project. Diligent submittal of information on the DFCR and Site Location Map documents is essential. Submittals that include omissions and/or erroneous information can lead to delayed determination of capacity on your project. Anywhere there is information requested on the DFCR form, and that information does not apply to your project, at a minimum insert "NA". A short explanation of why information is not included on the DFCR maybe helpful in making a prompt capacity determination on your project.

Below is information that will help you provide the essential information needed to determine capacity for your project.

1. **Date** - is the date that the form is completed for submittal to MSD. (MSD will stamp the document with the received date upon reception of the submittal at MSD).

2. **Name of Development** - if the development does not currently have a name, or will not be named, reference the development by street name accompanied with the word which best describes the development type. For instance, East Broadway Commercial Development, Grandview Apartments, Bardstown Road Condos, etc.

3. **Address/Tax Block/ Lot of Development** – please provide both the property address, and Tax Block / Lot number. If a valid address does not exist, tax block and lot will suffice. If the project will exist on more than one address, please provide those addresses also.

4. **Owner/Developer's Name** –include an owner or developer contact name. Inclusion of the Owner/Developer name will assist MSD in communications that may eliminate delays.

5. **Owner/Developer's Address** – address where Owner/Developer contact name will receive mail.

6. **Owner/Developer's Tel. No**. – include the telephone number that will most likely lead to immediate contact of Owner/Developer Contact Name. Inclusion of more than one telephone number is welcomed.

7. **Closest Sewer Connection**:
   - Record Number
   - Manhole Number
   - Wastewater Treatment Plant Service Area

   This information is readily attainable in the MSD Sewer Atlas. For information on how to attain a MSD Sewer Atlas, call MSD Customer Relations at 587-0603. The Closest Sewer Connection information is also attainable by calling MSD Customer Relations at 587-0603 and speaking to a Customer Relations agent.

8. **Amount of Flow** – the MSD Design Manual, pages 8-18 through 8-20, include the information needed to calculate the amount of flow from the development to the MSD system. The Design Manual Information can be retrieved from MSD's website at http://www.msdlouky.org/insidemsd/pdfs/designmanual02/Chapt08-2000.pdf.

9. **Pump Station needed –** the designation of whether a pump station is needed is required to assess if your project can be developed.

10. **Recapture Area –** if you do not know whether your project resides in a recapture area**,** you may call MSD Customer Relations at 587-0603 to get the answer.

Downstream Facilities Capacity Request
Site Location Map

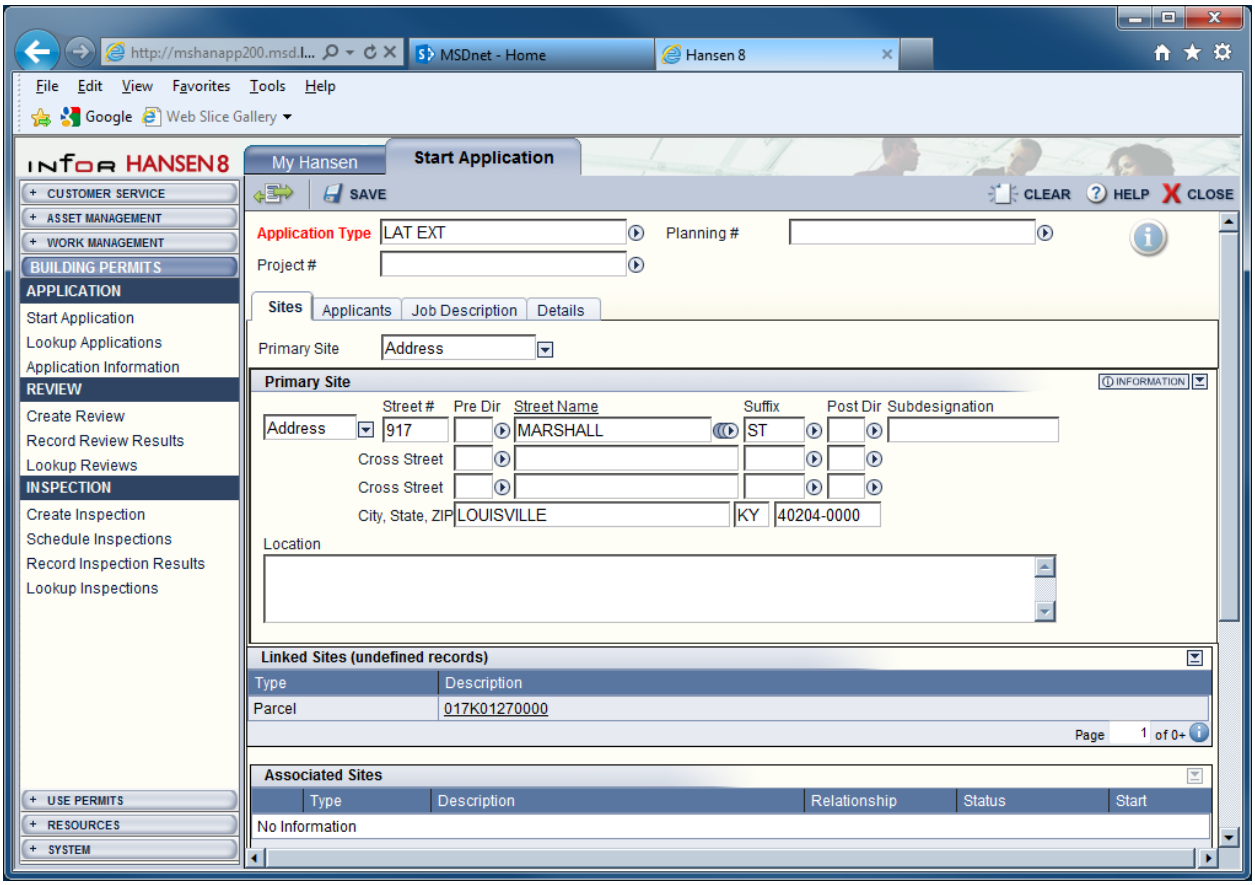
The Site Location Map (SLM) is used to determine the general location of the project for which sanitary sewer capacity is sought. The SLM may be a copy of a USGS map, Sewer Atlas map, Topographical map, MapsCo map, or any similar map which can easily depict the location of your project in MSD's service area.

The SLM must include a North arrow designation and drawn boundaries of the development site.

In the building applications tab, click start application

Set application type as LAT EXT

Enter Address



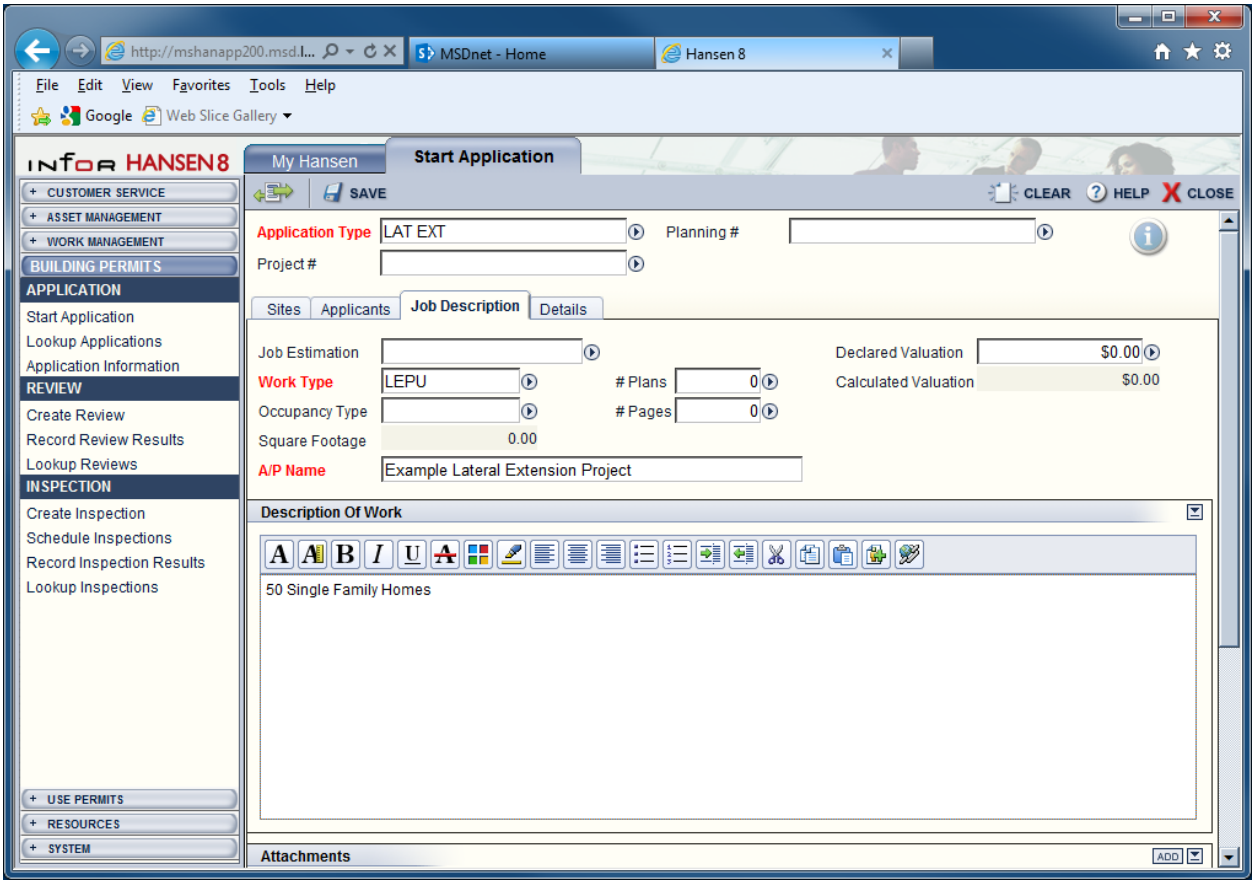
Go to the Job Description tab

Set work type as LEPR (Private Sewers), LEPU (Public Sewers), LECON (connection only)

Enter the AP Name

Add a Site Description

Save



Enter the newly created building application

In the application details tab click Lateral Extension

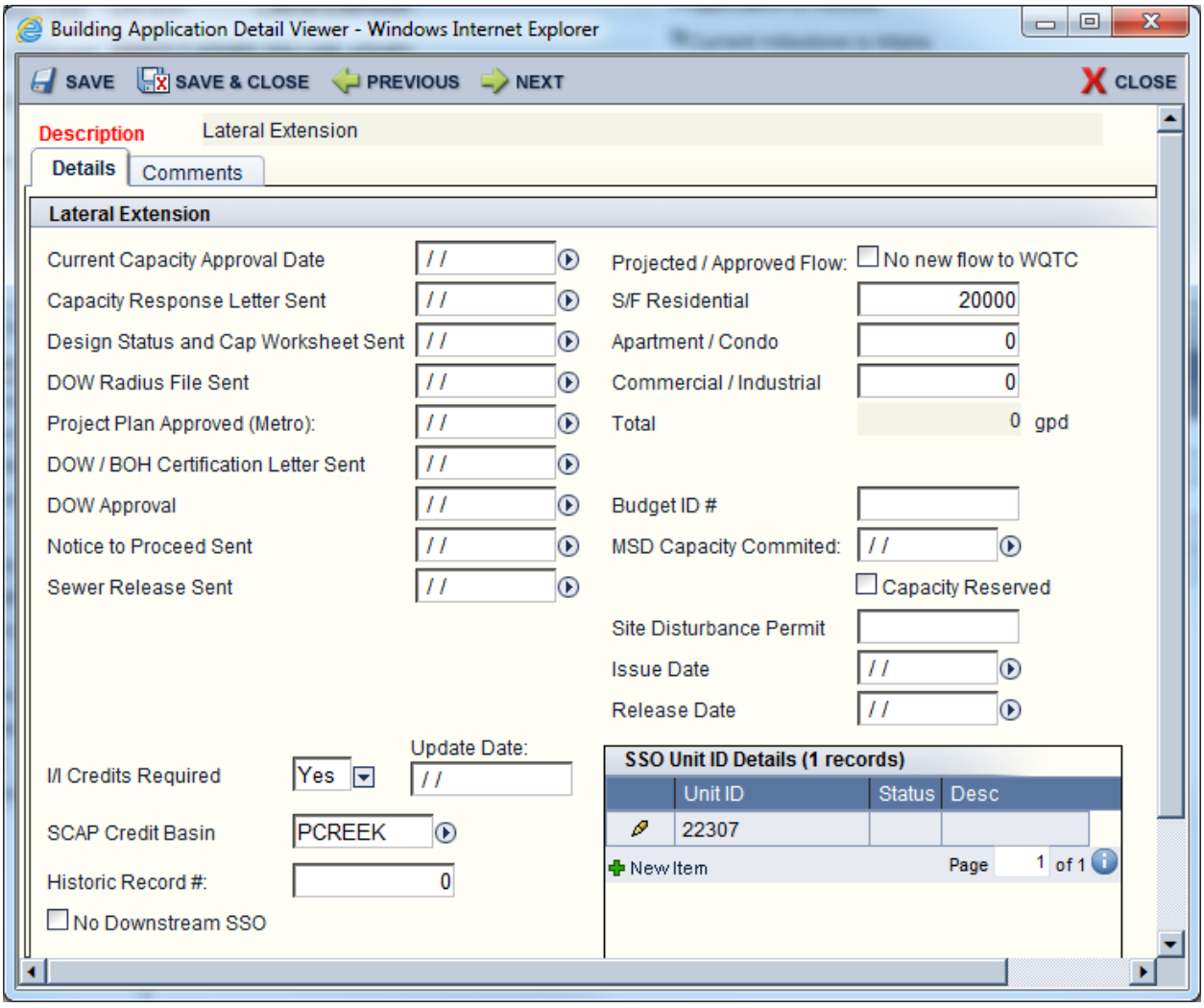
Enter the Flow

Select Yes/No for Credits Required

Select SCAP Basin

Enter SSO's

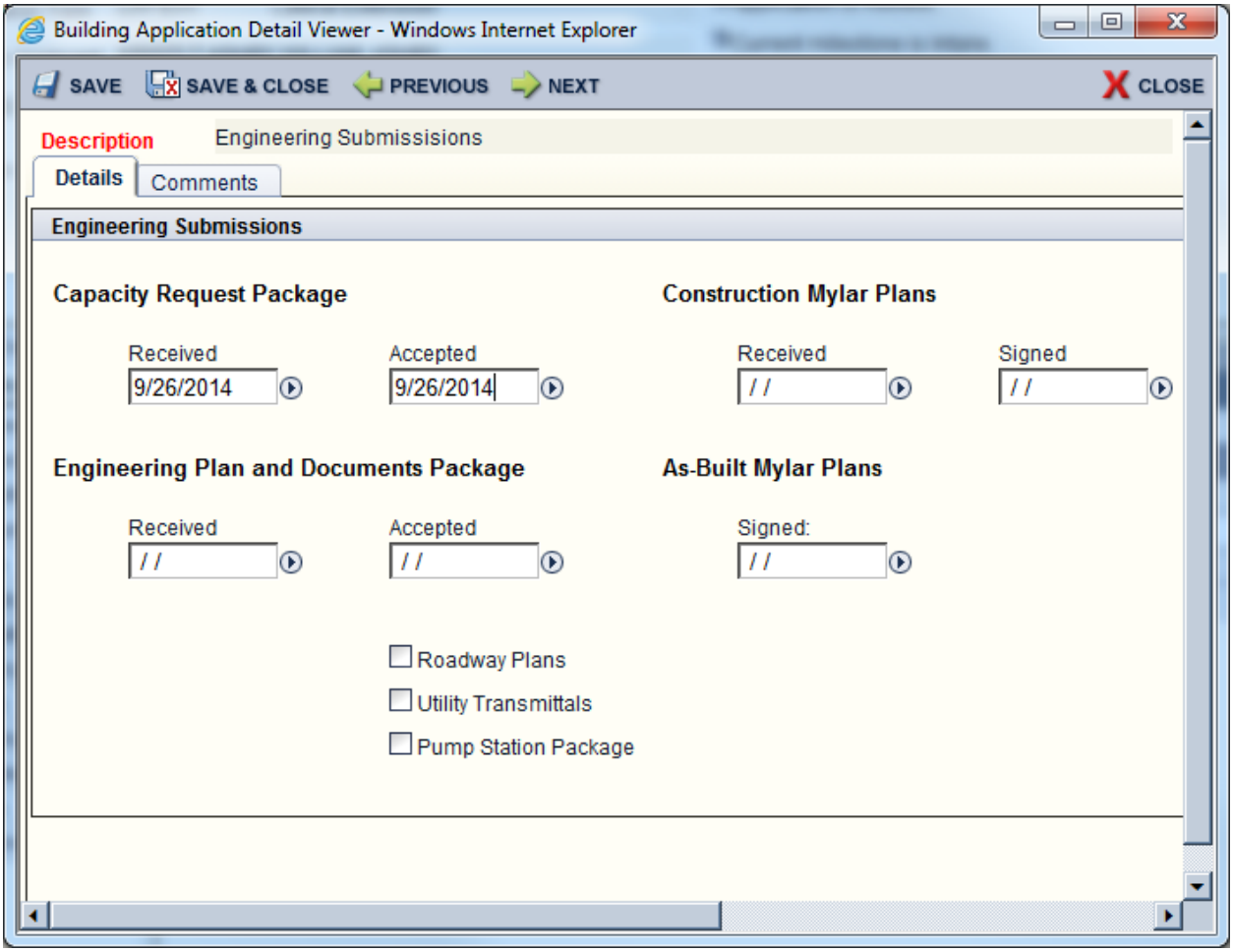
Save and Close



Click Engineering Submissions

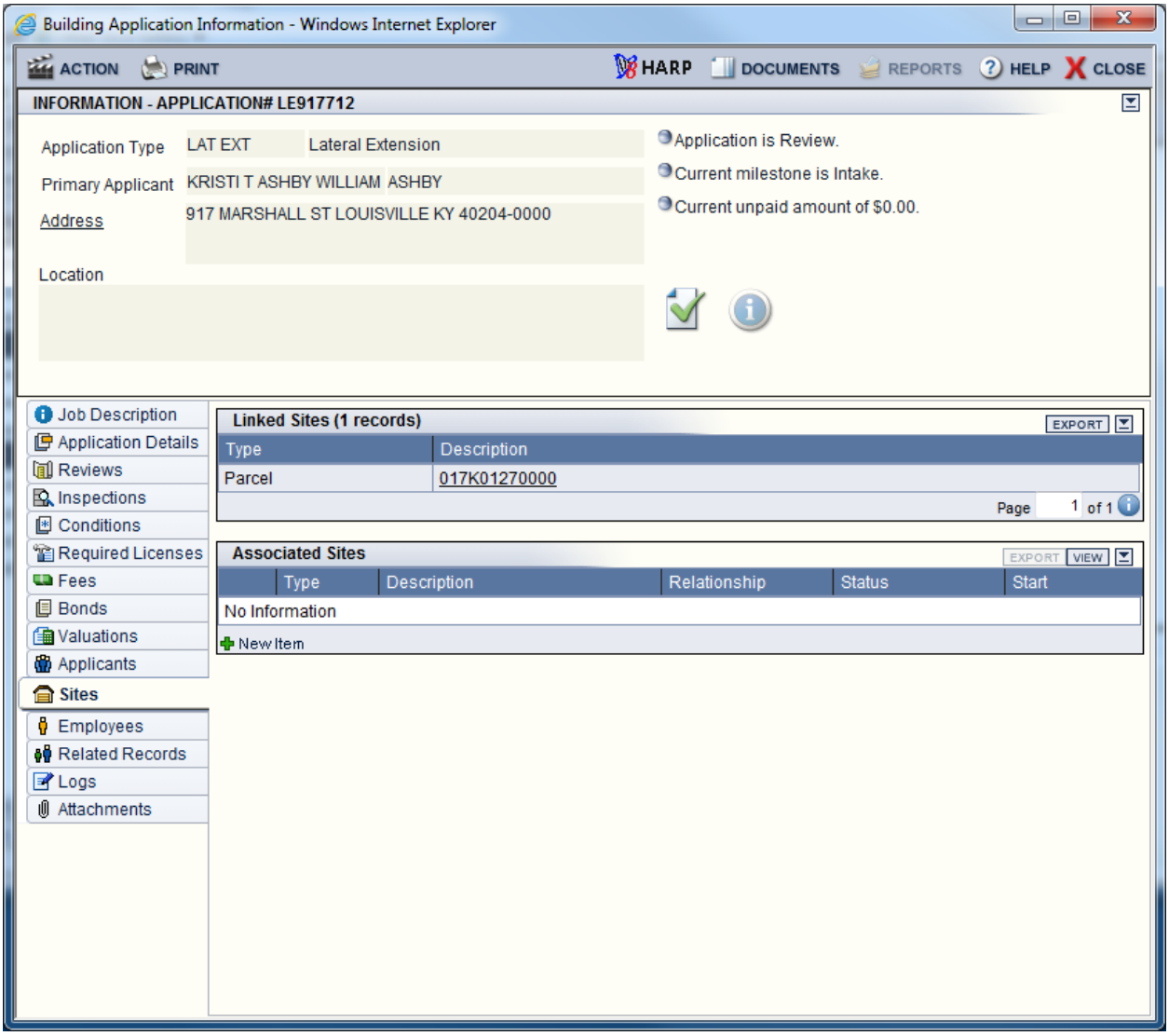
Enter Dates for Received and Accepted

Save and Close

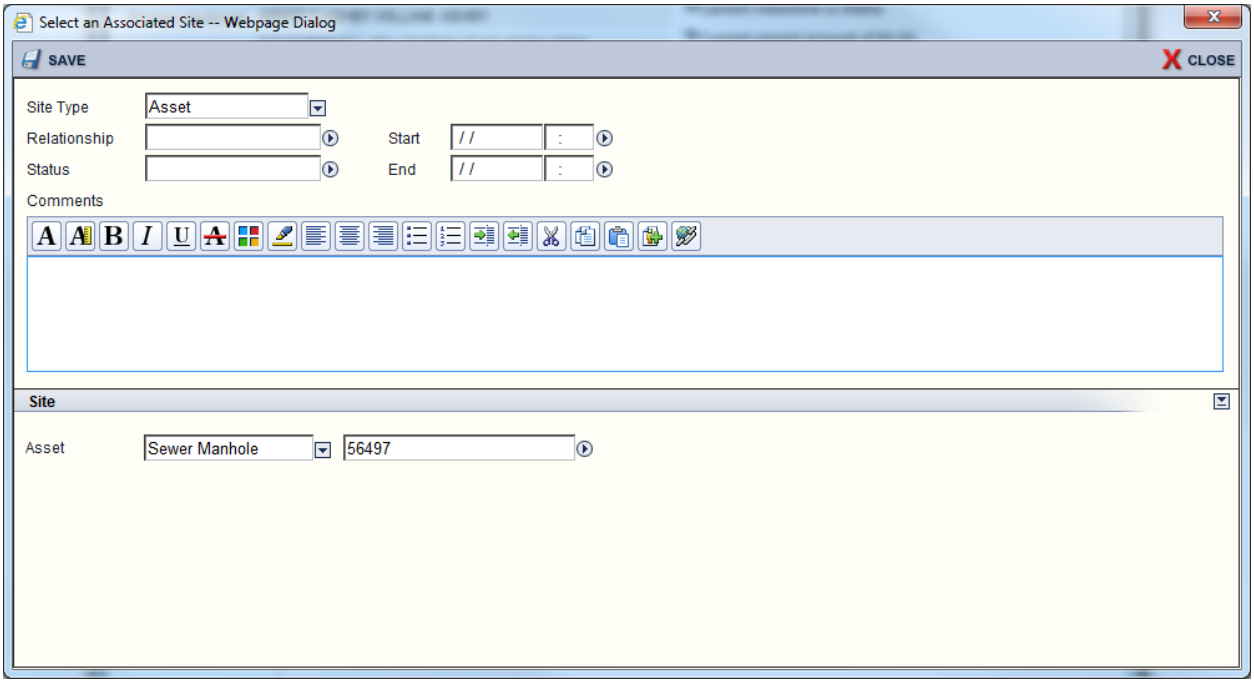


Enter Sites Tab

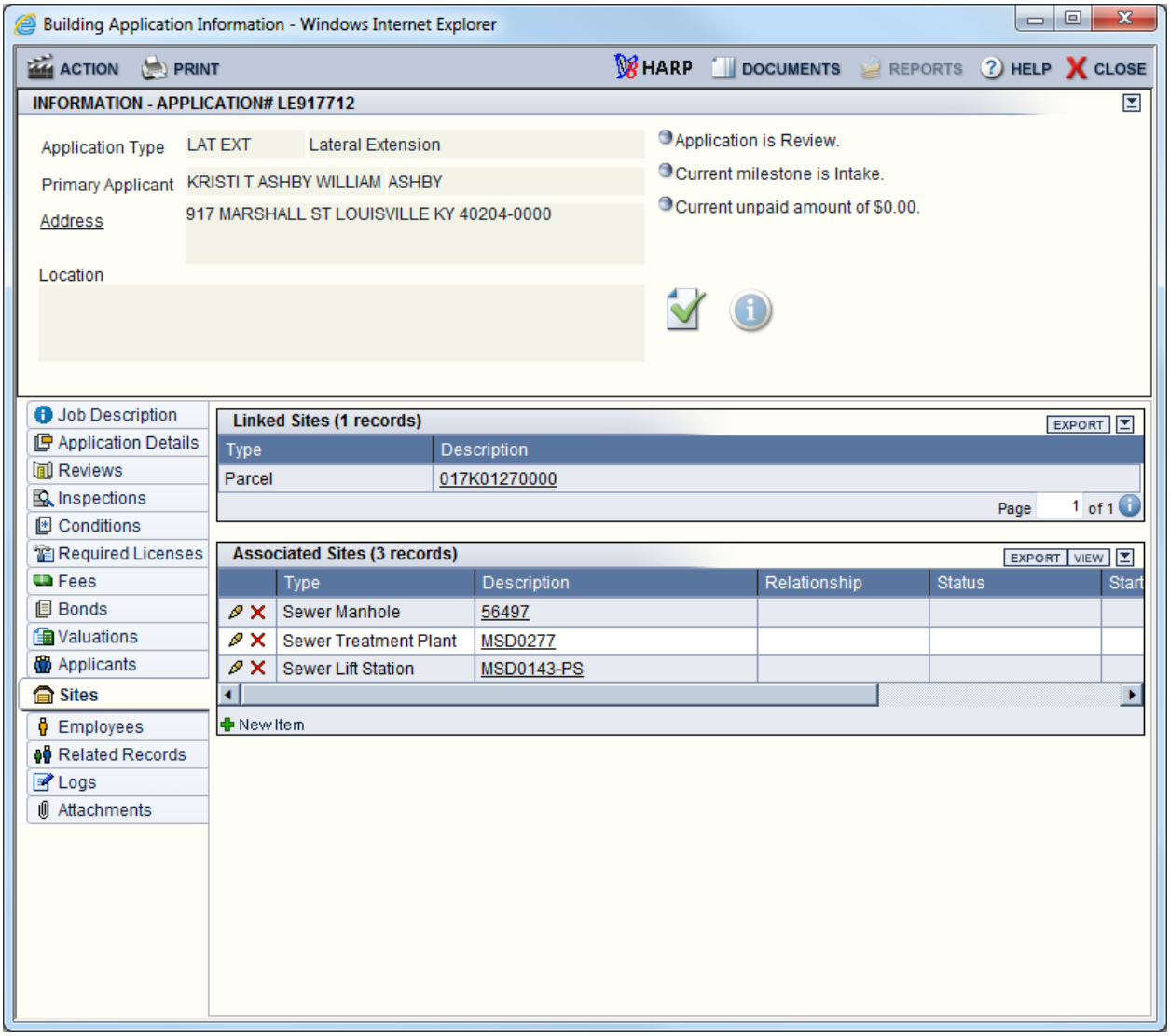
Under Associated Sites click new item



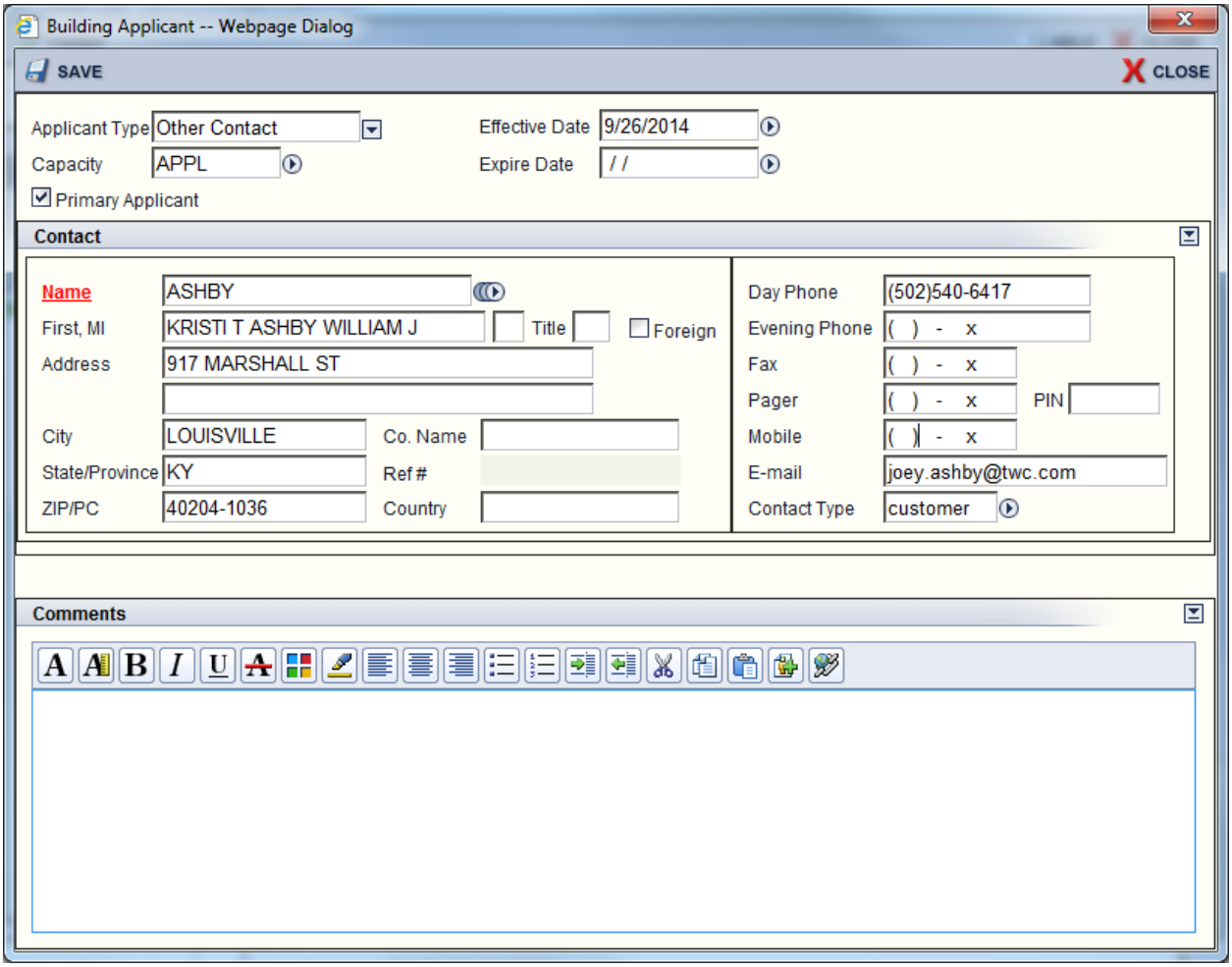
Add the receiving MH# as an asset – save



Repeat to Add the receiving Treatment Plant and Pump Stations (if applicable) – Save

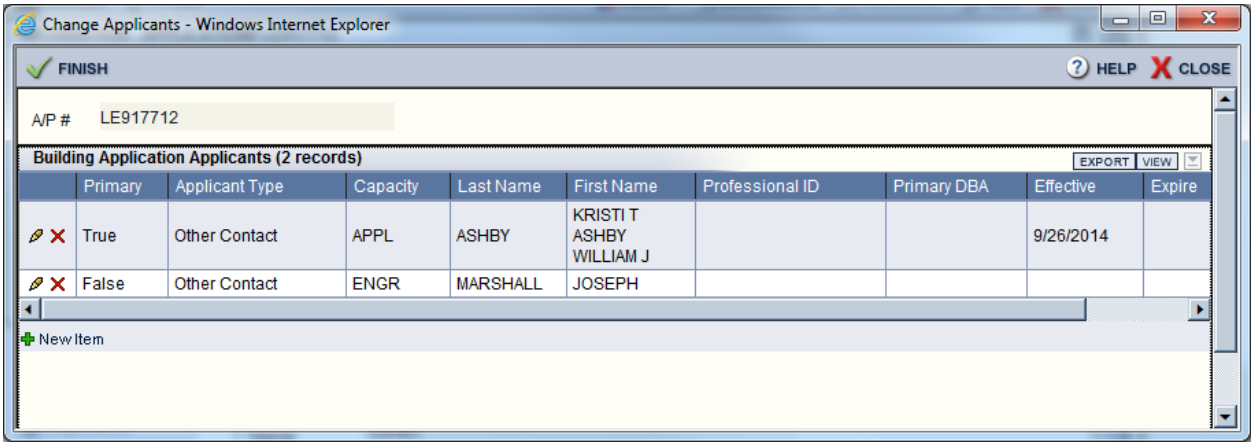


In the Applicants Tab
Click Action
In the drop down menu, choose Change Applicants
Edit Item (pencil icon)
Set applicant as Other
Change Capacity to APPL
Make sure primary applicant box is checked
Enter the contact info
Change Contact type to customer

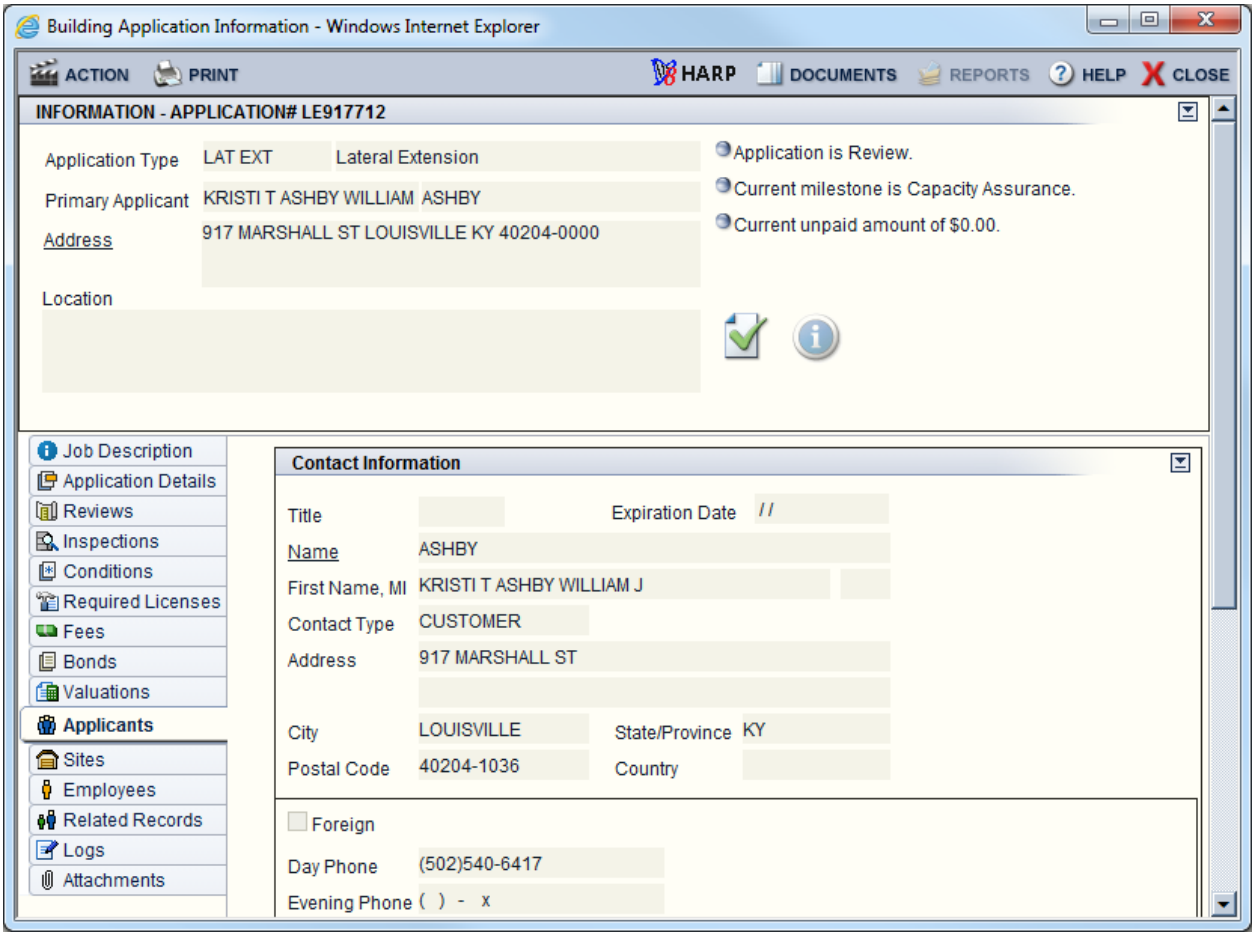


Enter engineer as other and set as customer

Finish



If the current milestone is Capacity Assurance, then data entry is complete. If not, check to make sure all data is entered correctly.



Appendix B – WQTC Permitted ADFs and Designed Peak Capacities

Appendix B – WQTC Permitted ADFs and Designed Peak Capacities

Current Regional WQTC Capacities

WTP	Rated Capacity (MGD)	Peak Design (MGD)
CEDAR CREEK	7.5	18.0
DEREK R. GUTHRIE	30.0	200.0
FLOYDS FORK	6.5	17.68
HITE CREEK	6.0	9.5
JEFFERSONTOWN	4.0	7.0
MORRIS FORMAN	120.0	325.0

**Current as of 9/26/2014*

Current Small WQTC Capacities

WTP	Rated Capacity (GPD)	Peak Hour Capacity (GPD)
Bancroft	80,000	183,000
Berrytown	75,000	275,000
Hunting Creek North	358,000	792,000
Hunting Creek South	251,000	630,000
Ken Carla	10,000	50,000
McNeely Lake	205,000	282,000
Shadow Wood	85,000	162,000
Starview	100,000	288,000
Timberlake	200,000	646,000

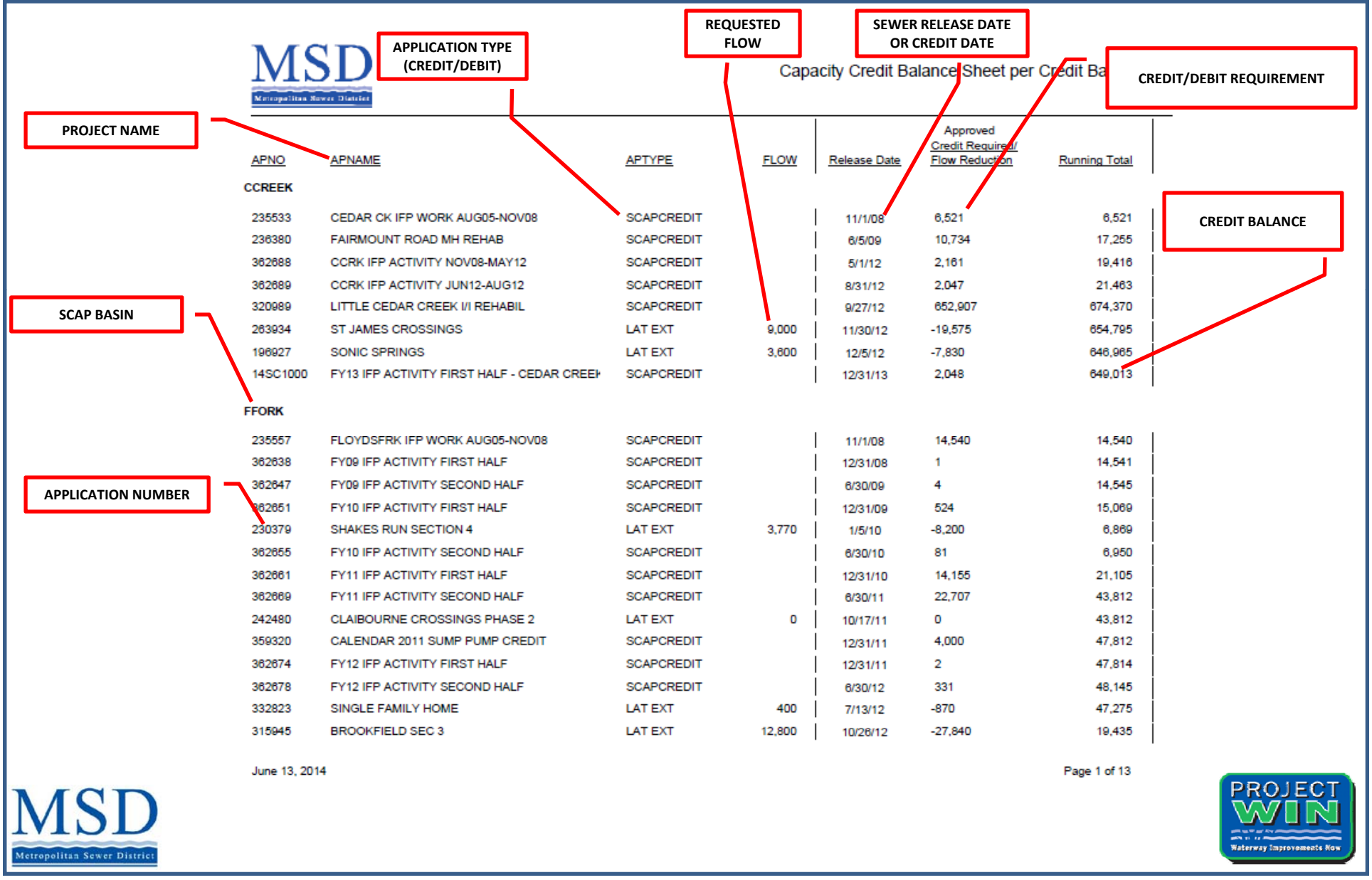
**Current as of 12/8/2014*

Appendix C – SCAP Credit Ledger Definitions

Capacity Credit Balance Sheet per Credit Basin

System Capacity Planning Projected Credit Needs

SCAP CREDIT LEDGER DEFINITIONS



MSD Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Ba

APPLICATION TYPE (CREDIT/DEBIT)

REQUESTED FLOW

SEWER RELEASE DATE OR CREDIT DATE

CREDIT/DEBIT REQUIREMENT

PROJECT NAME

CREDIT BALANCE

SCAP BASIN

APPLICATION NUMBER

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
CCREEK						
235533	CEDAR CK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	6,521	6,521
236380	FAIRMOUNT ROAD MH REHAB	SCAPCREDIT		6/5/09	10,734	17,255
362688	CCRK IFP ACTIVITY NOV08-MAY12	SCAPCREDIT		5/1/12	2,161	19,416
362689	CCRK IFP ACTIVITY JUN12-AUG12	SCAPCREDIT		8/31/12	2,047	21,463
320989	LITTLE CEDAR CREEK I/I REHABIL	SCAPCREDIT		9/27/12	652,907	674,370
263934	ST JAMES CROSSINGS	LAT EXT	9,000	11/30/12	-19,575	654,795
196927	SONIC SPRINGS	LAT EXT	3,600	12/5/12	-7,830	646,965
14SC1000	FY13 IFP ACTIVITY FIRST HALF - CEDAR CREEK	SCAPCREDIT		12/31/13	2,048	649,013
FFORK						
235557	FLOYDSFRK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	14,540	14,540
362638	FY09 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/08	1	14,541
362647	FY09 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/09	4	14,545
362651	FY10 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/09	524	15,069
230379	SHAKES RUN SECTION 4	LAT EXT	3,770	1/5/10	-8,200	6,869
362655	FY10 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/10	81	6,950
362661	FY11 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/10	14,155	21,105
362669	FY11 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/11	22,707	43,812
242480	CLAIBOURNE CROSSINGS PHASE 2	LAT EXT	0	10/17/11	0	43,812
359320	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	4,000	47,812
362674	FY12 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/11	2	47,814
362678	FY12 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/12	331	48,145
332823	SINGLE FAMILY HOME	LAT EXT	400	7/13/12	-870	47,275
315945	BROOKFIELD SEC 3	LAT EXT	12,800	10/26/12	-27,840	19,435

June 13, 2014

Page 1 of 13

MSD Metropolitan Sewer District

PROJECT WIN Waterway Improvements Now

SCAP CREDIT LEDGER DEFINITIONS

- PROJECT NAME – The name of the development or SCAP credit project as entered into MSD's tracking database.
- SCAP BASIN – Basin where the debit or credit will be applied.
- APPLICATION NUMBER – Unique application number given by MSD's database.
- APPLICATION TYPE (CREDIT/DEBIT) – Indicates the type of project. SCAPCREDIT will be a credit in the ledger as generated by system rehabilitation, LAT EXT will be a debit in the ledger as related to new flow to be added to the system.
- REQUESTED FLOW – Flow required based on 10 State Standards 400 gpcd.
- SEWER RELEASE DATE OR CREDIT DATE – Lateral Extension capacity release date or credit project completion date.
- CREDIT/DEBIT REQUIREMENT – Total credits generated by capital improvements or debits based on requested flow (based on calculations defined in SCAP Documentation).
- CREDIT BALANCE – Balance based on credits generated by capital improvements or debits based on requested flow (based on calculations defined in SCAP Documentation).

MSD
Metropolitan Sewer District

PROJECT WIN
Waterway Improvements Now

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
CCREEK						
235533	CEDAR CK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	6,521	6,521
236380	FAIRMOUNT ROAD MH REHAB	SCAPCREDIT		6/5/09	10,734	17,255
362688	CCRK IFP ACTIVITY NOV08-MAY12	SCAPCREDIT		5/1/12	2,161	19,416
362689	CCRK IFP ACTIVITY JUN12-AUG12	SCAPCREDIT		8/31/12	2,047	21,463
320989	LITTLE CEDAR CREEK I/I REHABIL	SCAPCREDIT		9/27/12	652,907	674,370
263934	ST JAMES CROSSINGS	LAT EXT	9,000	11/30/12	-19,575	654,795
196927	SONIC SPRINGS	LAT EXT	3,600	12/5/12	-7,830	646,965
14SC1000	FY13 IFP ACTIVITY FIRST HALF - CEDAR CREEK	SCAPCREDIT		12/31/13	2,048	649,013
FFORK						
235557	FLOYDSFRK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	14,540	14,540
362638	FY09 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/08	1	14,541
362647	FY09 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/09	4	14,545
362651	FY10 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/09	524	15,069
230379	SHAKES RUN SECTION 4	LAT EXT	3,770	1/5/10	-8,200	6,869
362655	FY10 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/10	81	6,950
362661	FY11 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/10	14,155	21,105
362669	FY11 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/11	22,707	43,812
242480	CLAIBOURNE CROSSINGS PHASE 2	LAT EXT	0	10/17/11	0	43,812
359320	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	4,000	47,812
362674	FY12 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/11	2	47,814
362678	FY12 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/12	331	48,145
332823	SINGLE FAMILY HOME	LAT EXT	400	7/13/12	-870	47,275
315945	BROOKFIELD SEC 3	LAT EXT	12,800	10/26/12	-27,840	19,435

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
361689	LAKE FOREST REHAB PH1	SCAPCREDIT		12/18/12	174,769	194,204
362683	FY13 IFP ACTIVITY FIRST HALF - FFORK	SCAPCREDIT		12/31/12	3	194,207
331397	BROOKFIELD SEC 2A	LAT EXT	14,400	5/8/13	-31,320	162,887
HCREEK						
235561	HITE CK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	6,404	6,404
362641	FY09 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/08	2	6,406
362648	FY09 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/09	8	6,414
362652	FY10 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/09	8	6,422
362657	FY10 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/10	329	6,751
295322	FLOYDSBURG RD I/I INVEST/REHAB	SCAPCREDIT		12/17/10	28,437	35,188
320906	FLOYDSBURG ROAD I/I REHABILITA	SCAPCREDIT		12/17/10	28,437	63,625
362662	FY11 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/10	3	63,628
362670	FY11 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/11	5	63,633
246638	CHAPMAN COURT S/S	LAT EXT	800	9/28/11	-1,740	61,893
362675	FY12 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/11	332	62,225
362679	FY12 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/12	5,002	67,227
290181	CAMDEN WOOD APARTMENTS	LAT EXT	12,400	8/31/12	-26,970	40,257
304536	MAGNOLIA SPRINGS EAST PRIV P/S	LAT EXT	9,500	12/1/12	-20,663	19,595
335610	ROCK SPRINGS FARM SEC 4B	LAT EXT	6,400	12/7/12	-13,920	5,675
362684	FY13 IFP ACTIVITY FIRST HALF - HCREEK	SCAPCREDIT		12/31/12	3	5,678
JTOWN						
235563	J-TOWN IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	6,203	6,203
359323	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	10,203
254871	LAKESIDE BAPT CHURCH PRIV PS	LAT EXT	2,500	8/10/10	-5,438	4,766

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
340213	JEFFERSONTOWN ENG REHAB	SCAPCREDIT		8/11/11	997,448	1,002,214
359324	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	4,000	1,006,214
337261	SINGLE FAMILY 2909 PELHAM CT	LAT EXT	400	5/28/13	-870	1,005,344
13LE1010	SWOPE HR & TRAINING BLDG	LAT EXT	400	6/28/13	-870	1,004,474
13LE1092	BALE EQUIPMENT	LAT EXT	450	10/25/13	-979	1,003,495
14SC1002	FY13 IFP ACTIVITY FIRST HALF - JEFFERSONTC	SCAPCREDIT		12/31/13	3,458	1,006,953
13LE1098	UNIPAK	LAT EXT	720	2/27/14	-1,566	1,005,387
13LE1067	PARK COMMUNITY	LAT EXT	2,220	12/31/14	-4,829	1,000,558
MCREEK						
359380	CALENDAR 2005 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/05	12,000	12,000
359381	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	24,000	36,000
235568	MILL CK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	51,530	87,530
359382	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	16,000	103,530
362642	FY09 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/08	93	103,623
362649	FY09 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/09	1,507	105,130
236614	DEVEROES	LAT EXT	960	9/9/09	-2,088	103,042
362653	FY10 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/09	25,272	128,314
359383	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	32,000	160,314
253586	KINGSFORD RETAIL CENTER	LAT EXT	480	1/6/10	-1,044	159,270
238421	6840 DIXIE HWY OUTLOT	LAT EXT	2,100	4/28/10	-4,568	154,703
362658	FY10 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/10	6,213	160,916
259408	FAMILY DOLLAR 5105 DIXIE	LAT EXT	1,200	7/2/10	-2,610	158,306
264294	SAINT PETER THE APOSTLE CATHOL	LAT EXT	2,000	7/23/10	-4,350	153,956
276215	FAMILY DOLLAR - KRISTIN WAY	LAT EXT	400	10/12/10	-870	153,086
362664	FY11 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/10	22,740	175,826

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
359384	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	4,000	179,826
359325	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	8,000	187,826
320916	SONNE AVE PS REHABILITATION -	SCAPCREDIT		6/30/11	120,800	308,626
362671	FY11 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/11	11,615	320,241
299399	FAMILY DOLLAR - GREENWOOD RD	LAT EXT	800	10/4/11	-1,740	318,501
309018	PRP PERFORMING ARTS ADDITION	LAT EXT	1,134	11/9/11	-2,466	316,034
359385	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	12,000	328,034
362676	FY12 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/11	3,245	331,279
359326	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	12,000	343,279
318096	CRACKER BARREL OLD COUNTRY	LAT EXT	6,000	1/19/12	-13,050	330,229
262545	DIXIE MANOR SHOPPING CENTER	LAT EXT	965	5/21/12	-2,099	328,130
300374	FORT KNOX FEDERAL CREDIT UNION	LAT EXT	400	6/26/12	-870	327,260
362680	FY12 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/12	2,807	330,067
361693	FY12 MILL CREEK REHAB	SCAPCREDIT		6/30/12	81,675	411,742
231800	PIONEER MOBILE HOME PARK	LAT EXT	11,200	7/24/12	-24,360	387,382
237457	WAVERLY HILLS	LAT EXT	400	9/18/12	-870	386,512
341883	NHK SPRING PRECISION	LAT EXT	17,800	10/19/12	-38,715	347,797
334997	BEECHLAND BAPTIST CHURCH	LAT EXT	2,715	12/5/12	-5,905	341,892
359327	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	148,000	489,892
362685	FY13 IFP ACTIVITY FIRST HALF - MCREEK	SCAPCREDIT		12/31/12	3,458	493,350
359386	CALENDAR 2012 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/12	4,000	497,350
343763	SOUTHEAST CHRISTIAN CHURCH SW	LAT EXT	6,000	1/18/13	-13,050	484,300
224875	ASHBY GREEN APARTMENT HOMES	LAT EXT	36,400	3/20/13	-79,170	405,130
265944	RIVERPORT PHASE 4A - MICHELIN	LAT EXT	400	6/6/13	-870	404,260
314887	DAYTON FREIGHT	LAT EXT	1,200	9/10/13	-2,610	401,650
13LE1014	LOUISVILLE FREE PUBLIC LIBRARY SOUTHWES	LAT EXT	8,200	9/26/13	-17,835	383,815

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
357140	FAMILY DOLLAR CANE RUN ROAD	LAT EXT	832	10/3/13	-1,810	382,005
13LE1171	SINGLE FAMILY HOME 3700 ROMANIA DR	LAT EXT	400	1/29/14	-870	381,135
MFORK						
359400	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	84,000	84,000
359328	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	20,000	104,000
235566	MID FORK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	43,779	147,779
359329	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	8,000	155,779
236517	ANCHOR ESTATES MH REHAB	SCAPCREDIT		1/16/09	15,552	171,331
217235	SINKING FORK ICA PHASE I REHAB	SCAPCREDIT		3/30/09	437,967	609,298
235376	MIDDLE FORK INT REHAB PH1	SCAPCREDIT		5/15/09	487,744	1,097,042
179246	SHADY GLEN OF LYNDON PERSONAL	LAT EXT	-500	5/26/09	1,088	1,098,130
250572	1316 WITAWANGA AVE	LAT EXT	400	11/4/09	-870	1,097,260
359331	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	24,000	1,121,260
359401	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	4,000	1,125,260
197432	ALMOST HOME KENNELS - ALL PET	LAT EXT	3,700	3/16/10	-8,048	1,117,212
260064	OXMOOR GOLF FRONT 9	LAT EXT	400	4/15/10	-870	1,116,342
260065	OXMOOR GOLF BACK 9	LAT EXT	400	4/15/10	-870	1,115,472
229834	THE BROOK HOS- DUPONT ADDITION	LAT EXT	1,763	4/27/10	-3,835	1,111,637
265723	Z-XPRESS CAR WASH	LAT EXT	5,449	7/2/10	-11,852	1,099,786
255793	HERR LANE APARTMENTS - 4 PLEX	LAT EXT	1,200	7/14/10	-2,610	1,097,176
255792	HERR LANE APARTMENTS - 8 PLEX	LAT EXT	2,400	7/14/10	-5,220	1,091,956
274303	FARM CREDIT SERVICES	LAT EXT	525	9/9/10	-1,142	1,090,814
278015	METROPOLITAN UROLOGY	LAT EXT	400	12/15/10	-870	1,089,944
359402	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	8,000	1,097,944
359333	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	12,000	1,109,944

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
285637	SHELBYHURST OFFICE BUILDING 1	LAT EXT	6,600	1/20/11	-14,355	1,095,589
313465	DORSEY POINTE/CODOMINIUMS 8-13	LAT EXT	2,400	1/27/11	-5,220	1,090,369
291263	BROWNS LANE BUILDING	LAT EXT	400	4/14/11	-870	1,089,499
293400	FOUR PLEX APARTMENTS	LAT EXT	1,200	6/14/11	-2,610	1,086,889
330019	FY11 ANCHOR ESTATES REHAB	SCAPCREDIT		8/11/11	1,359	1,088,248
310046	EL NAPEL - MCMAHAN CENTER	LAT EXT	3,100	10/31/11	-6,743	1,081,506
314591	CHOCOLATE MARTINI BAR/REST	LAT EXT	3,275	11/29/11	-7,123	1,074,382
320983	HURSTBOURNE I/I INVESTIGATION	SCAPCREDIT		12/27/11	1,408,279	2,482,661
359335	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	16,000	2,498,661
321228	SINGLE FAMILY UNIT	LAT EXT	400	2/15/12	-870	2,497,791
321647	SINGLE FAMILY	LAT EXT	400	3/27/12	-870	2,496,921
328074	SINGLE FAMILY-703 FOUNTAIN AVE	LAT EXT	400	6/22/12	-870	2,496,051
193195	CEDAR LAKE LODGE WASHBURN	LAT EXT	1,900	8/20/12	-4,133	2,491,919
320923	ST MATTHEWS I/I REHABILITATION	SCAPCREDIT		8/23/12	20,841	2,512,760
337796	CHAMPPS	LAT EXT	635	9/5/12	-1,381	2,511,379
347126	ADVANCE PRODUCTION SYSTEMS	LAT EXT	400	12/28/12	-870	2,510,509
359336	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	92,000	2,602,509
339367	BAPTIST RADIATION ONCOLOGY	LAT EXT	1,500	1/4/13	-3,263	2,599,246
340778	PANDA RESTAURANT	LAT EXT	1,725	1/16/13	-3,752	2,595,494
349044	BLAIRWOOD POOL ADDITION	LAT EXT	400	1/29/13	-870	2,594,624
328659	SINGLE FAMILY HOME - 6911 AMBR	LAT EXT	400	2/4/13	-870	2,593,754
352805	POOL HOUSE 9213 REIGATE COURT	LAT EXT	200	2/20/13	-435	2,593,319
14LE1001	MIRANDA LAGRANGE RD	LAT EXT	400	3/19/13	-870	2,592,449
350246	SINGLE FAMILY - 218 BLISS AVE	LAT EXT	400	3/20/13	-870	2,591,579
349974	SINGLE FAMILY 205 N WATTERSON	LAT EXT	400	3/26/13	-870	2,590,709
342433	SHELBYHURST 700 OFFICE BLDG	LAT EXT	7,500	4/15/13	-16,313	2,574,397

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
350340	JARED THE GALLERY OF JEWELRY	LAT EXT	770	4/16/13	-1,675	2,572,722
13LE1009	Single family 11716 Wetherby Ave	LAT EXT	400	6/7/13	-870	2,571,852
13SC1000	FY14 STARVIEW REHABILITATION	SCAPCREDIT		6/30/13	14,183	2,586,035
13LE1001	Single Family 835 Fountain Ave	LAT EXT	400	8/28/13	-870	2,585,165
355162	PROPOSED RESTAURANT	LAT EXT	7,540	9/10/13	-16,400	2,568,766
13LE1045	SINGLE FAMILY 8325 WHIPPS MILL RD	LAT EXT	400	9/30/13	-870	2,567,896
319292	WATERMARK ON HURSTBOURNE	LAT EXT	71,600	10/22/13	-155,730	2,412,166
331542	DENTAL/MEDICAL OFFICE BLDG	LAT EXT	400	10/28/13	-870	2,411,296
13LE1128	SINGLE FAMILY HOME 1327 ETAWAH AVE	LAT EXT	400	11/5/13	-870	2,410,426
13LE1144	SINGLE FAMILY 1329 ETAWAH AVE	LAT EXT	400	11/5/13	-870	2,409,556
13LE1165	SINGLE FAMILY 8504 LORE LANE	LAT EXT	400	11/25/13	-870	2,408,686
13LE1146	CITY OF ST MATTHEWS COMMUNITY CTR PARI	LAT EXT	1,500	11/26/13	-3,263	2,405,423
13LE1099	NICKLIES - ST MATTHEWS	LAT EXT	1,920	12/11/13	-4,176	2,401,247
353963	DORSEY COMMONS TRACTS 1.2.3	LAT EXT	4,335	12/18/13	-9,429	2,391,819
14SC1003	FY13 IFP ACTIVITY FIRST HALF - MIDDLE FORK	SCAPCREDIT		12/31/13	3,230	2,395,049
352026	MCMAHAN PLAZA PHASE II BLDG B	LAT EXT	766	12/31/13	-1,666	2,393,382
13LE1117	THE VININGS	LAT EXT	850	4/10/14	-1,849	2,391,534
14LE1128	WALDORF SCHOOL OF LOUISVILLE	LAT EXT	400	6/30/14	-870	2,390,664
NDITCH						
359404	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	28,000	28,000
235569	N.DITCH IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	11,147	39,147
236363	NORTHERN DITCH INT REHAB PH1	SCAPCREDIT		11/25/08	108,760	147,907
359339	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	4,000	151,907
234678	THE LIGHTHOUSE PROMISE COMPLEX	LAT EXT	2,825	3/5/10	-6,144	145,763
284728	SUBWAY - NEW CUT RD	LAT EXT	1,314	12/21/10	-2,858	142,905

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
359340	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	4,000	146,905
320908	PARKVIEW ESTATES REHABILITATIO	SCAPCREDIT		6/28/11	36	146,941
312810	WILLOW PLACE APT COMMUNITY CEN	LAT EXT	400	11/11/11	-870	146,071
359341	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	24,000	170,071
359405	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	12,000	182,071
315723	JCPS EARLY CHILDHOOD DEVELOP	LAT EXT	6,000	1/26/12	-13,050	169,021
312057	DOLLAR GENERAL - MEDALLION CT	LAT EXT	400	3/21/12	-870	168,151
312659	KROGER L-350 FUEL STATION	LAT EXT	400	8/20/12	-870	167,281
359343	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	24,000	191,281
13LE1147	CARLON ROOFING	LAT EXT	992	12/5/13	-2,158	189,123
13LE1126	JENNINGS CROSSING TRACT 3	LAT EXT	2,100	12/12/13	-4,568	184,556
14SC1004	FY13 IFP ACTIVITY FIRST HALF - NORTHERN DI	SCAPCREDIT		12/31/13	329	184,885
ORFM						
359433	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	56,000	56,000
359344	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	4,000	60,000
235572	ORFM IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	19,826	79,826
362643	FY09 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/08	2	79,828
362650	FY09 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/09	3,836	83,664
362654	FY10 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/09	7,322	90,986
263548	SINGLE FAMILY CONNECTION	LAT EXT	400	5/18/10	-870	90,116
213488	NORTHEAST CHRISTIAN CHURCH	LAT EXT	10,000	6/28/10	-21,750	68,366
362660	FY10 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/10	6,630	74,996
362665	FY11 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/10	165	75,161
362672	FY11 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/11	4,124	79,285
280837	SPRINGHURST TOWNE CTR LOT C	LAT EXT	400	9/20/11	-870	78,415

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
320920	SHADOW WOOD I/I REHABILITATION	SCAPCREDIT		9/30/11	14,279	92,694
311412	SPRINGHURST CHEVROLET	LAT EXT	855	10/14/11	-1,860	90,834
359345	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	16,000	106,834
359434	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	16,000	122,834
362677	FY12 IFP ACTIVITY FIRST HALF	SCAPCREDIT		12/31/11	7,258	130,092
320921	DERINGTON COURT I/I REHABILITA	SCAPCREDIT		3/1/12	56,208	186,300
187028	GLENVIEW PARK SUBD SECTION 1	LAT EXT	4,400	3/5/12	-9,570	176,730
213450	GLENVIEW PARK SUB. SEC 2	LAT EXT	5,600	3/5/12	-12,180	164,550
322455	FIRST LADY NAILS	LAT EXT	400	3/12/12	-870	163,680
362681	FY12 IFP ACTIVITY SECOND HALF	SCAPCREDIT		6/30/12	18,220	181,900
292239	SPRINGHURST RESTAURANT/ RETAIL	LAT EXT	3,440	7/5/12	-7,482	174,418
323821	TIRE DISCOUNTERS WESTPORT RD	LAT EXT	400	12/11/12	-870	173,548
363238	FY13 PROSPECT MANHOLE REHAB	SCAPCREDIT		12/18/12	72,703	246,251
341319	RAISING CANES RETAIL CENTER	LAT EXT	1,225	12/18/12	-2,664	243,587
359346	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	24,000	267,587
363235	FY13 MUDDY FORK MH REHAB	SCAPCREDIT		12/31/12	41,653	309,240
362686	FY13 IFP ACTIVITY FIRST HALF - ORFM	SCAPCREDIT		12/31/12	1,148	310,388
360262	SINGLE FAMILY 3419 HILLVALE RD	LAT EXT	400	5/13/13	-870	309,518
343729	RETAIL & RESTAURANT	LAT EXT	3,500	6/21/13	-7,613	301,906
334154	GLENVIEW PARK SUBD SEC 4	LAT EXT	3,600	11/7/13	-7,830	294,076
352634	BAUER PROPERTY	LAT EXT	2,920	11/21/13	-6,351	287,725
13LE1024	Overlook at Beech Spring Farm Sec 4	LAT EXT	5,600	12/31/13	-12,180	275,545
199896	SPRINGDALE OFFICE BUILDING	LAT EXT	4,210	3/11/14	-9,157	266,388
225863	SPRING FARM LAKES SEC 1	LAT EXT	4,800	5/16/14	-10,440	255,948
177756	SUMMIT GARDENS PHASE 1	LAT EXT	32,000	9/22/14	-69,600	186,348

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
PCREEK						
235574	POND CRK IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	71,782	71,782
359347	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	75,782
359438	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	4,000	79,782
359439	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	12,000	91,782
359348	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	4,000	95,782
192513	BANNON CROSSINGS SECTION 3A-1	LAT EXT	800	2/17/10	-1,740	94,042
261115	EMERGENCY RESTORATION	LAT EXT	400	4/27/10	-870	93,172
276977	DADISMAN BUILDERS-POPLAR TREE	LAT EXT	400	10/13/10	-870	92,302
266833	THORNTONS @ PRESTON HWY	LAT EXT	400	12/1/10	-870	91,432
280751	NOTTINGTON HILLS SEC 1	LAT EXT	4,400	12/29/10	-9,570	81,862
359350	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	12,000	93,862
187739	GLENGARRY INDUSTRIAL PARK	LAT EXT	4,300	1/13/11	-9,353	84,510
277777	TIRE DISCOUNTERS - BOERSTE WAY	LAT EXT	2,960	3/21/11	-6,438	78,072
304408	UPS SUPPLY CHAIN SOLUTIONS #7	LAT EXT	2,250	9/14/11	-4,894	73,178
320918	EDSEL I/I REHABILITATION - FY1	SCAPCREDIT		9/27/11	106,700	179,878
313444	PLANET FITNESS - JEFF BLVD	LAT EXT	1,600	11/4/11	-3,480	176,398
312391	LONGHORN STEAKHOUSE RESTAURANT	LAT EXT	4,840	11/29/11	-10,527	165,871
320919	LANTANA I/I REHABILITATION - F	SCAPCREDIT		12/29/11	5,000	170,871
359351	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	20,000	190,871
310845	ZAXBY'S RESTAURANT	LAT EXT	3,750	2/28/12	-8,156	182,715
255044	ISA-RECYCLING CENTER	LAT EXT	400	3/13/12	-870	181,845
312814	MILLER TRANSPORTATION	LAT EXT	1,800	3/19/12	-3,915	177,930
324554	NORTONS TEMPORARY OFFICE	LAT EXT	900	4/16/12	-1,958	175,972
234102	ETHOS AT VALLEY FARM SR LIVING	LAT EXT	7,050	6/19/12	-15,334	160,638
322367	SHEPHERDS CARE MEMORY HOME	LAT EXT	2,000	6/21/12	-4,350	156,288

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
307332	LOUISVILLE INDUSTRIAL BLDG B	LAT EXT	2,520	8/6/12	-5,481	150,807
279860	BANNON CROSSINGS SEC 3B-2	LAT EXT	9,600	8/10/12	-20,880	129,927
312053	DOLLAR GENERAL - CLEARWATER FA	LAT EXT	400	8/13/12	-870	129,057
343455	SINGLE FAMILY 1812 GREYLING DR	LAT EXT	400	10/12/12	-870	128,187
243109	OVERBROOK APARTMENTS	LAT EXT	41,200	11/9/12	-89,610	38,577
359354	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	56,000	94,577
329624	COPART	LAT EXT	400	2/20/13	-870	93,707
346082	ZAXBYS	LAT EXT	2,065	5/2/13	-4,491	89,216
320924	LEA ANN WAY INTERCEPTOR I&I RE	SCAPCREDIT		6/30/13	1,017,423	1,106,639
335385	HARRISON LOW PRESSURE S/S	LAT EXT	1,600	7/2/13	-3,480	1,103,159
320940	4 RESIDENCE SFU 7821 MANSLICK	LAT EXT	400	8/16/13	-870	1,102,289
361336	RENAISSANCE SOUTH BUSINESS	LAT EXT	540	9/6/13	-1,175	1,101,114
324886	PNC BANK	LAT EXT	400	9/6/13	-870	1,100,244
13LE1083	SINGLE FAMILY HOME 5402 (H) E MANSLICK RD	LAT EXT	400	9/26/13	-870	1,099,374
353125	PEGASUS TRANSPORTATION	LAT EXT	250	12/9/13	-544	1,098,831
341439	PRESTON GARDENS APTS	LAT EXT	22,200	12/10/13	-48,285	1,050,546
308206	APPLEGATE FARMS	LAT EXT	57,200	12/10/13	-124,410	926,136
14SC1005	FY13 IFP ACTIVITY FIRST HALF - POND CREEK	SCAPCREDIT		12/31/13	21,344	947,480
13LE1179	TIMBERBEND SUBDIVISION SEC 5B	LAT EXT	6,400	2/14/14	-13,920	933,560
13LE1035	RENAISSANCE SOUTH BUSINESS PARK TRACT	LAT EXT	5,415	4/10/14	-11,778	921,782
348014	ASHTON PARK TOWN HOMES	LAT EXT	9,000	4/24/14	-19,575	902,207
280180	LOUISVILLE INDUSTRIAL CTR F	LAT EXT	2,480	5/16/14	-5,394	896,813
14LE1085	Williams Properties - Self Storage Facility	LAT EXT	400	5/28/14	-870	895,943
13LE1034	6300 GEIL LANE WAREHOUSE	LAT EXT	720	6/9/14	-1,566	894,377
284215	HURSTBOURNE POINTE APTS	LAT EXT	9,600	7/7/14	-20,880	873,497
344230	AUSTIN PARK APARTMENTS PH6	LAT EXT	27,600	8/25/14	-60,030	813,467

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
SEDIV						
359355	CALENDAR 2007 SUMP PUMP CREDIT	SCAPCREDIT		12/31/07	8,000	8,000
359440	CALENDAR 2007 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/07	128,000	136,000
235575	SE DIV IFP WORK AUG05-NOV08	SCAPCREDIT		11/1/08	71,472	207,472
236214	GOLDSMITH BUECHB ICA PHI REHAB	SCAPCREDIT		12/22/08	314,808	522,280
236296	BEARGRASS INT REHAB PH1 SEDIV	SCAPCREDIT		12/22/08	122,688	644,968
359441	CALENDAR 2008 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/08	16,000	660,968
359356	CALENDAR 2008 SUMP PUMP CREDIT	SCAPCREDIT		12/31/08	4,000	664,968
229854	TINY HANDS DAYCARE	LAT EXT	1,225	10/20/09	-2,664	662,304
359357	CALENDAR 2009 SUMP PUMP CREDIT	SCAPCREDIT		12/31/09	12,000	674,304
359443	CALENDAR 2009 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/09	8,000	682,304
235291	SULLIVAN COLLEGE OF TECHNOLOGY	LAT EXT	900	2/11/10	-1,958	680,346
238328	LOUISVILLE COLLEGIATE SPORTS	LAT EXT	400	3/1/10	-870	679,476
241759	FRISCHS BIG BOY RESTAURANT	LAT EXT	2,400	3/5/10	-5,220	674,256
257275	LOUISVILLE JUNIOR ACADEMY	LAT EXT	520	4/16/10	-1,131	673,125
320993	BEARGRASS CREEK PHASE II - FY1	SCAPCREDIT		12/14/10	10,368	683,493
359358	CALENDAR 2010 SUMP PUMP CREDIT	SCAPCREDIT		12/31/10	4,000	687,493
359444	CALENDAR 2010 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/10	24,000	711,493
286513	GARDINER POINT RESIDENCE HALL	LAT EXT	10,800	2/16/11	-23,490	688,003
276378	TIRE DISCOUNTERS - BARDSTOWN	LAT EXT	1,500	5/6/11	-3,263	684,741
287888	BEVERAGE WAREHOUSE	LAT EXT	1,180	5/30/11	-2,567	682,174
296295	KEN TOWERY -3800 S HURSTBOURNE	LAT EXT	400	7/1/11	-870	681,304
359445	CALENDAR 2011 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/11	8,000	689,304
359359	CALENDAR 2011 SUMP PUMP CREDIT	SCAPCREDIT		12/31/11	64,000	753,304
307018	HOOK PROPERTY FAMILY DOLLAR	LAT EXT	400	8/10/12	-870	752,434

MSD
Metropolitan Sewer District

Capacity Credit Balance Sheet per Credit Basin

APNO	APNAME	APTYPE	FLOW	Release Date	Approved Credit Required/ Flow Reduction	Running Total
359361	CALENDAR 2012 SUMP PUMP CREDIT	SCAPCREDIT		12/31/12	68,000	820,434
359446	CALENDAR 2012 DOWNSPOUT CREDIT	SCAPCREDIT		12/31/12	4,000	824,434
187741	BROOKSTONE SENIOR APARTMENTS	LAT EXT	16,800	3/11/13	-36,540	787,894
232601	RAINTREE/MARIAN CT P/S ELIM	LAT EXT	105,800	6/14/13	-230,115	557,779
330437	COLLEGIATE ATHLETIC FIELD	LAT EXT	800	11/26/13	-1,740	556,039
14SC1006	FY13 IFP ACTIVITY FIRST HALF - SE DIVERSION	SCAPCREDIT		12/31/13	20,623	576,662

System Capacity Planning
Projected Credit Needs

Credit Basin	Projected Credit Need
CCREEK	**50,460**
FFORK	**7,439**
HCREEK	**40,890**
JTOWN	**5,970**
MCREEK	**1,631**
MFORK	**28,928**
ORFM	**31,755**
PCREEK	**392,881**
SEDIV	**26,785**
	586,739

Appendix D – Pump Station Drawdown Test Form

Drawdown Test Form

Field Data Sheet

PUMP STATION NAME: Terrier Lane **DATE** 10/17/2007

ADDRESS

MSD FACILITY NUMBER: 0013

PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 1 of 2

I. BASE INFORMATION

PUMP MANUFACTURER	Davco by Gorman Rupp	LEAD LEVEL	48 in.	FFE
MODEL	6BA	LAG LEVEL		(Finish Floor Elev.)
SERIAL NUMBER	297700	LAG LEVEL		
HP		HIGH ALARM		
IMPELLER SIZE		PUMP OFF	30	

PUMP DESIGN 750 GPM TDH (Ft)

	DIAMETER OR LENGTH (FEET)	WIDTH (FEET)	AREA SQ FEET	GALLON PER VERT FT
WET WELL DIAMETER (LENGTH x WIDTH)	10.50	10.50	110	825

AREA OF WET WELL (0.785 x Diameter ^2) OR L X W

II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)

A. DETERMINE AVERAGE INFLOWS

(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START		48	0.0	0.0		48	0.0	0.0			0.0	0.0
END		31	23	43		30	22	47				
TOTAL	1.42 FEET		23.72 MINUTES		1.50 FEET		22.78 MINUTES		0.00 FEET		0.00 MINUTES	

49 GPM INFLOW RATE (HEIGHT /TIME)

54 GPM INFLOW RATE (HEIGHT /TIME)

GPM INFLOW RATE (HEIGHT /TIME)

52 **GPM AVERAGE INFLOW RATE**

B. DETERMINE AVERAGE PUMP DOWN FLOWS

(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START (High Level Alarm)		28.8	0.0	0.0		30	0.0	0.0			0.0	0.0
END		48	4	11		48	3	58				
TOTAL	1.60 FEET		4.18 MINUTES		1.50 FEET		3.97 MINUTES		0.00 FEET		0.00 MINUTES	

365 (HEIGHT /TIME+GPM AVE INFLOW RATE)

361 (HEIGHT /TIME+GPM AVE INFLOW RATE)

(HEIGHT /TIME+GPM AVE INFLOW RATE)

363 **GPM AVERAGE PUMP RATE**

Note: Pump 1 pushes back through pump 2, no check valve.

CELLS THAT SHOW UP IN RED ARE FORMULAS

Drawdown Test Form

Field Data Sheet

PUMP STATION NAME: Terrier Lane **DATE** 10/17/2007

ADDRESS

MSD FACILITY NUMBER: 0013
PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 2 of 2

I. BASE INFORMATION

PUMP MANUFACTURER	Davco by Gorman Rupp	LEAD LEVEL		FFE
MODEL	6BA	LAG LEVEL		(Finish Floor Elev.)
SERIAL NUMBER	265003	LAG LEVEL		
HP		HIGH ALARM		
IMPELLER SIZE		PUMP OFF		

PUMP DESIGN 750 GPM TDH (Ft)

	DIAMETER OR LENGTH (FEET)	WIDTH (FEET)	AREA SQ FEET	GALLON PER VERT FT
WET WELL DIAMETER (LENGTH x WIDTH)	10.50	10.50	110	825

AREA OF WET WELL (0.785 x Diameter ^2) OR L X W

II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)

A. DETERMINE AVERAGE INFLOWS
(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START		48	0.0	0.0			0.0	0.0			0.0	0.0
END		30.8	20	2								
TOTAL	1.43 FEET		20.03 MINUTES		0.00 FEET		0.00 MINUTES		0.00 FEET		0.00 MINUTES	

59 GPM INFLOW RATE (HEIGHT /TIME) | GPM INFLOW RATE (HEIGHT /TIME) | GPM INFLOW RATE (HEIGHT /TIME)

59 **GPM AVERAGE INFLOW RATE**

B. DETERMINE AVERAGE PUMP DOWN FLOWS
(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START (High Level Alarm)		30	0.0	0.0			0.0	0.0			0.0	0.0
END		48	1	39								
TOTAL	1.50 FEET		1.65 MINUTES		0.00 FEET		0.00 MINUTES		0.00 FEET		0.00 MINUTES	

809 (HEIGHT /TIME+GPM AVE INFLOW RATE) | (HEIGHT /TIME+GPM AVE INFLOW RATE) | (HEIGHT /TIME+GPM AVE INFLOW RATE)

809 **GPM AVERAGE PUMP RATE**

Note:

CELLS THAT SHOW UP IN RED ARE FORMULAS

Drawdown Test Form

Field Data Sheet

PUMP STATION NAME: Terrier Lane **DATE** 10/17/2007

ADDRESS

MSD FACILITY NUMBER: 0013
PUMP(s) Tested (eg. 1 of 2; 1 and 2 of 3) 1&2 of 2

I. BASE INFORMATION

PUMP MANUFACTURER		LEAD LEVEL		FFE
MODEL		LAG LEVEL		(Finish Floor Elev.)
SERIAL NUMBER		LAG LEVEL		
HP		HIGH ALARM		
IMPELLER SIZE		PUMP OFF		

PUMP DESIGN 2@750 GPM TDH (Ft)

	DIAMETER OR LENGTH (FEET)	WIDTH (FEET)	AREA SQ FEET	GALLON PER VERT FT
WET WELL DIAMETER (LENGTH x WIDTH)	10.50	10.50	110	825

AREA OF WET WELL (0.785 x Diameter ^2) OR L X W

II. DRAW DOWN TEST (2 PARTS-A. DETERMINE AVERAGE INFLOW THEN DO B. DETERMINE AVERAGE PUMP DOWN FLOWS. DO ALL OF TEST 1 A&B, THEN TEST 2, A & B THEN TEST 3, A & B)

A. DETERMINE AVERAGE INFLOWS
(MEASURE TIME IT TAKES WET WELL TO FILL THE MINIMUM DISTANCE IN FEET FROM TABLE 1)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START		48	0.0	0.0		48	0.0	0.0			0.0	0.0
END		30	16	10		30	13	44				
TOTAL	1.50 FEET		16.17 MINUTES		1.50 FEET		13.73 MINUTES		0.00 FEET		0.00 MINUTES	

77 GPM INFLOW RATE (HEIGHT /TIME)

90 GPM INFLOW RATE (HEIGHT /TIME)

GPM INFLOW RATE (HEIGHT /TIME)

83 **GPM AVERAGE INFLOW RATE**

B. DETERMINE AVERAGE PUMP DOWN FLOWS
(MEASURE TIME IT TAKES WET WELL TO PUMP DOWN FROM HIGH LEVEL ALARM TO LOW LEVEL AUTO OFF)

	TEST 1				TEST 2				TEST 3			
	HEIGHT		TIME		HEIGHT		TIME		HEIGHT		TIME	
	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS	FEET	INCHES	MINUTES	SECONDS
START (High Level Alarm)		30	0.0	0.0		30	0.0	0.0			0.0	0.0
END		48	1	2		48	1	2				
TOTAL	1.50 FEET		1.03 MINUTES		1.50 FEET		1.03 MINUTES		0.00 FEET		0.00 MINUTES	

1274 (HEIGHT /TIME+GPM AVE INFLOW RATE)

1274 (HEIGHT /TIME+GPM AVE INFLOW RATE)

(HEIGHT /TIME+GPM AVE INFLOW RATE)

1274 **GPM AVERAGE PUMP RATE**

Note:

CELLS THAT SHOW UP IN RED ARE FORMULAS

Appendix E – IOAP Project Crosswalk

IOAP Project Crosswalk

	PROGRAM	ASSET ID	PROJECT ID
Avanti PS Elimination	IOAP	21229-W	S_PO_WC_PC07_M_01_A
Sinking Fork Relief Sewer	ISSDP	21103	SFRS
Sinking Fork Relief Sewer	ISSDP	63319	SFRS
Sinking Fork Relief Sewer	ISSDP	25012	SFRS
Beargrass Interceptor Rehab Ph. 2	IOAP	51594	S_SD_MF_NB06_S_13_C
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	108958	S_HC_HC_MSD1086_M_07_C_A
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	108956	S_HC_HC_MSD1086_M_07_C_A
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	MSD1086-PS	S_HC_HC_MSD1086_M_07_C_A
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	90776	S_HC_HC_MSD1086_M_07_C_A
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	108957	S_HC_HC_MSD1086_M_07_C_A
Floydsburg Rd. I/I Investigation & Rehabilitation	IOAP	108953	S_HC_HC_MSD1086_M_07_C_A
Running Fox PS Elimination	IOAP	MSD1080-LS	S_CC_CC_MSD1080_S_01_C
Beechwood Village Sanitary Sewer Replacement	ISSDP	21153	BVSSR
Beechwood Village Sanitary Sewer Replacement	ISSDP	21101	BVSSR
Beechwood Village Sanitary Sewer Replacement	ISSDP	21156	BVSSR
Beechwood Village Sanitary Sewer Replacement	ISSDP	21061	BVSSR
Hazelwood PS I/I Investigation & Rehabilitation	IOAP	55667	S_MC_MF_55665_S_07_C
Hazelwood PS I/I Investigation & Rehabilitation	IOAP	55665	S_MC_MF_55665_S_07_C
Parkview Estates I/I Investigation & Rehabilitation	IOAP	47250	S_SD_MF_NB03_S_07_C
Sonne PS I/I Investigation & Rehabilitation	IOAP	MSD0042-PS	S_OR_MF_42007_S_07_C
Woodland Hills PS Diversion	IOAP	33003	S_FF_FF_NB01_S_01_C_A
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	0057-W	S_MI_MF_NB06_M_01_A_A - 1
Northern Ditch Diversion Interceptor	ISSDP	MSD0271	NDDI
Edsel PS I/I Investigation & Rehabilitation	IOAP	MSD1048-PS	S_PO_WC_PC11_M_07_C
Edsel PS I/I Investigation & Rehabilitation	IOAP	94009	S_PO_WC_PC11_M_07_C
Edsel PS I/I Investigation & Rehabilitation	IOAP	92098	S_PO_WC_PC11_M_07_C
Edsel PS I/I Investigation & Rehabilitation	IOAP	92099	S_PO_WC_PC11_M_07_C
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	13946	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	44396	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	66349	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	51301	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	36763	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	8717	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	44397	S_SF_MF_30917_M_09_A

	PROGRAM	ASSET ID	PROJECT ID
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	13931	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	99259	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	104223	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	13943	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements 3 - Sewer Replacement & Sewer Rehabilitation	IOAP	104231	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	44397	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	104223	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	104231	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	13946	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	13931	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	66349	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	51301	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	99259	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	36763	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	13943	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	44396	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 1 - SSES	IOAP	8717	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	13943	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	13931	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	66349	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	8717	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	13946	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	99259	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	51301	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	36763	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	104223	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	104231	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	44397	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 2 - Sewer Replacement and Rehabilitation	IOAP	44396	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	44397	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	51301	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	99259	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	13943	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	8717	S_SF_MF_30917_M_09_A

	PROGRAM	ASSET ID	PROJECT ID
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	13946	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	13931	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	44396	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	104223	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	36763	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	66349	S_SF_MF_30917_M_09_A
Camp Taylor System Improvements Phase 4 - Storage Basin and Sewer Upsize	IOAP	104231	S_SF_MF_30917_M_09_A
Hurstbourne I/I Investigation & Rehabilitation	IOAP	67535	S_MI_MF_NB07_S_07_C
Hurstbourne I/I Investigation & Rehabilitation	IOAP	47650	S_MI_MF_NB07_S_07_C
Hurstbourne I/I Investigation & Rehabilitation	IOAP	47656	S_MI_MF_NB07_S_07_C
Hurstbourne I/I Investigation & Rehabilitation	IOAP	1793	S_MI_MF_NB07_S_07_C
Lantana PS #1 I/I Investigation and Rehabilitation	IOAP	25484	S_PO_WC_PC05_M_07_C
Lantana PS #1 I/I Investigation and Rehabilitation	IOAP	MSD0101-PS	S_PO_WC_PC05_M_07_C
Lantana PS #1 I/I Investigation and Rehabilitation	IOAP	93719	S_PO_WC_PC05_M_07_C
Derington Ct. PS I/I Investigation & Rehabilitation	IOAP	MSD0095-PS	S_OR_MF_NB03_S_07_C
Derington Ct. PS I/I Investigation & Rehabilitation	IOAP	20155	S_OR_MF_NB03_S_07_C
Southeastern Diversion Structure and Interceptor	ISSDP	72571-X	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	30704	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	30702	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	63779	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	8426	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	8427	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	8431	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	49647	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	8430	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	18654	SDSI
Southeastern Diversion Structure and Interceptor	ISSDP	30701	SDSI
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	MSD0277	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	32688	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	59169	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	22307	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	22385	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	22370	DRGWQTC
Derek R. Guthrie WQTC Wet Weather Facility	ISSDP	32682	DRGWQTC

	PROGRAM	ASSET ID	PROJECT ID
Hikes Lane Interceptor and Highgate Springs	ISSDP	18370	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18434	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	30681	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	MSD0012-PS	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	49673	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	49236	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18483	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	49224	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18134	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18471	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18318-W	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18505	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18595	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	73111	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	49672	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	17571	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18302	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18297	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	18299	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	30680	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	48886	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	48888	HLIHSPS
Hikes Lane Interceptor and Highgate Springs	ISSDP	48885	HLIHSPS
Lake Forest PS SSO Investigation	IOAP	MSD1169-LS	S_FF_LF_NB01_S_13_C_A
Meadow Stream Pump Station & Force Main Upgrade	IOAP	MSD1082-PS	S_HC_HC_MSD1082_S_09A_C
Meadow Stream Pump Station & Force Main Upgrade	IOAP	91087	S_HC_HC_MSD1082_S_09A_C
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	41374	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	MSD0007-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	MSD0024-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	26752	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	MSD0023-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	MSD0010-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	24472	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	MSD0006-PS	S_OR_MF_NB01_M_01_B

	PROGRAM	ASSET ID	PROJECT ID
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	IOAP	24152-W	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	MSD0007-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	24472	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	41374	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	26752	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	MSD0023-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	MSD0024-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	24152-W	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	MSD0010-PS	S_OR_MF_NB01_M_01_B
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	IOAP	MSD0006-PS	S_OR_MF_NB01_M_01_B
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	MSD0057-LS	S_MI_MF_NB06_M_01_A_A - 2
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	00056-W	S_MI_MF_NB06_M_01_A_A - 2
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	817	S_MI_MF_NB06_M_01_A_A - 2
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	0057-W	S_MI_MF_NB06_M_01_A_A - 2
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	746	S_MI_MF_NB06_M_01_A_A - 2
Anchor Estates PS Elimination 1 - Vannah PS Elimination	IOAP	1106	S_MI_MF_NB06_M_01_A_A - 2
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47583	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47604	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47603	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	2933	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	2935	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	8537	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	72289	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	30376	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	45796	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	115183	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	84155	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	23211	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	40559	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	51160	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	51180	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47582	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47034	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	72288	S_MISF_MF_NB01_M_01_C_A1

	PROGRAM	ASSET ID	PROJECT ID
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	115184	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	115185	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	08935-SM	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	45835	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	51161	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	IS021A-SI	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	23212	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	47593	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	27005	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	15194	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	2932	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	27007	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 1- Buechel Basin	IOAP	90700	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47583	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	115184	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	45796	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47582	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	72289	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	40559	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	23211	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	27007	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	08935-SM	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	15194	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	IS021A-SI	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	51180	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	2933	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	51161	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	51160	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47604	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	115185	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	23212	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47603	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	27005	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	2935	S_MISF_MF_NB01_M_01_C_A1

	PROGRAM	ASSET ID	PROJECT ID
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	8537	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	90700	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	2932	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47034	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	72288	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	47593	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	30376	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	84155	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	115183	S_MISF_MF_NB01_M_01_C_A1
Middle Fork Relief Interceptor, Wet Weather Storage, and UMFLS Diversion 2 - PS Diversion and	IOAP	45835	S_MISF_MF_NB01_M_01_C_A1
Fairway View PS Improvements	IOAP	MSD1065-PS	S_HC_HS_NB01_S_03_C_A
Riding Ridge PS Improvements	IOAP	MSD1060-LS	S_HC_HN_NB01_S_03_C_A
Shively Interceptor	IOAP	MSD0047-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	4498	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0049-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	4542	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	81814-W	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0016-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0044-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0048-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0050-PS	S_MC_WC_NB01_M_01_A
Shively Interceptor	IOAP	MSD0043-PS	S_MC_WC_NB01_M_01_A
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	92061	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	86052	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	MSD0263	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	MSD1043-PS	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	MSD0196-PS	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	64096	S_JT_JT_NB01A_M_03_C
Chenoweth Hills WQTC Elimination & PS Improvements	IOAP	MSD0263A-PS	S_JT_JT_NB01A_M_03_C
Fairmount Road Pump Station Off-Line Storage	IOAP	81316	S_FF_CC_81316_M_03_C_A
Fairmount Road Pump Station Off-Line Storage	IOAP	97362	S_FF_CC_81316_M_03_C_A
Jeffersontown WQTC Elimination	IOAP	28391	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	64505	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	28392	S_JT_JT_NB01_M_01_C_A

	PROGRAM	ASSET ID	PROJECT ID
Jeffersontown WQTC Elimination	IOAP	28395	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	IS028-SI	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	31733	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	28551	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	MSD0255	S_JT_JT_NB01_M_01_C_A
Jeffersontown WQTC Elimination	IOAP	28173	S_JT_JT_NB01_M_01_C_A
Klondike Interceptor	IOAP	26651	S_SD_MF_NB04_S_01_B_A
Klondike Interceptor	IOAP	26650	S_SD_MF_NB04_S_01_B_A
Klondike Interceptor	IOAP	20644	S_SD_MF_NB04_S_01_B_A
Klondike Interceptor	IOAP	66232	S_SD_MF_NB04_S_01_B_A
Klondike Interceptor	IOAP	49513	S_SD_MF_NB04_S_01_B_A
Klondike Interceptor	IOAP	25676	S_SD_MF_NB04_S_01_B_A
Lea Ann Way System Improvements	IOAP	MSD1200-PS	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	29933	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	31074	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	31073	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	57874	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	29948	S_PO_WC_PC08_M_01_C
Lea Ann Way System Improvements	IOAP	MSD1010-PS	S_PO_WC_PC08_M_01_C
Prospect #1 - WQTC Eliminations	IOAP	MSD0192-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD1063-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD0123-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD0193-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	40870	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD1044-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD0183-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	22436	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	40872	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	40871	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	65635	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	42680	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	89791	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	89646	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	40879	S_OR_MF_NB04_M_03_B_B

	PROGRAM	ASSET ID	PROJECT ID
Prospect #1 - WQTC Eliminations	IOAP	42675	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	40880	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	MSD0186-PS	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	65633	S_OR_MF_NB04_M_03_B_B
Prospect #1 - WQTC Eliminations	IOAP	65623	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	40870	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	89791	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	65623	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD0123-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD1044-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	89646	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	40879	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	40880	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD0186-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD1063-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD0192-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD0183-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	65633	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	22436	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	42675	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	40872	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	65635	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	MSD0193-PS	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	40871	S_OR_MF_NB04_M_03_B_B
Prospect #2 - Harrods Creek PS and FM	IOAP	42680	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	40871	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	65635	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	22436	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	89646	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	40879	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	40880	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD0193-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD0183-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD1063-PS	S_OR_MF_NB04_M_03_B_B

	PROGRAM	ASSET ID	PROJECT ID
Prospect #3 - ORFM System Improvemetns	IOAP	MSD0192-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	42675	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	40872	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	65633	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD1044-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD0186-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	MSD0123-PS	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	40870	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	65623	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	42680	S_OR_MF_NB04_M_03_B_B
Prospect #3 - ORFM System Improvemetns	IOAP	89791	S_OR_MF_NB04_M_03_B_B
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	IOAP	1106	S_MI_MF_NB06_M_01_A_A - 1
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	IOAP	MSD0057-LS	S_MI_MF_NB06_M_01_A_A - 1
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	IOAP	817	S_MI_MF_NB06_M_01_A_A - 1
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	IOAP	00056-W	S_MI_MF_NB06_M_01_A_A - 1
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	IOAP	746	S_MI_MF_NB06_M_01_A_A - 1
Caven Ave Pump Station Elimination	IOAP	70212	S_PO_WC_PC09_M_09B_C
Caven Ave Pump Station Elimination	IOAP	61667	S_PO_WC_PC09_M_09B_C
Caven Ave Pump Station Elimination	IOAP	MSD0133-PS	S_PO_WC_PC09_M_09B_C
Caven Ave Pump Station Elimination	IOAP	17724	S_PO_WC_PC09_M_09B_C
Caven Ave Pump Station Elimination	IOAP	61687	S_PO_WC_PC09_M_09B_C
Caven Ave Pump Station Elimination	IOAP	27116	S_PO_WC_PC09_M_09B_C
Ashburton PS Improvements & Diversion	IOAP	MSD0165-PS	S_FF_FF_NB03_M_01_C_A
Bardstown Rd. PS Improvements	IOAP	88545	S_CC_CC_MSD1025_S_03_B
East Rockford PS Relocation	IOAP	04699-W	S_MC_WC_NB02_S_03_C
Fox Harbor Inline Storage	IOAP	62769	S_HC_HN_NB03_S_09A_A_A
Gunpowder PS Inline Storage	IOAP	MSD1055-LS	S_HC_HN_NB02_S_09A_C_B
Lucas Lane PS Inline Storage	IOAP	MSD0199-LS	S_FF_BT_NB01_S_09A_C_A
Raintree and Marian Ct 1 - PS Elimination	IOAP	28395A	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 1 - PS Elimination	IOAP	28719	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 1 - PS Elimination	IOAP	28729-W	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 1 - PS Elimination	IOAP	MSD0149-PS	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 2 - Pipe Upgrades	IOAP	MSD0149-PS	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 2 - Pipe Upgrades	IOAP	28395A	S_JT_JT_NB03_M_01_C

	PROGRAM	ASSET ID	PROJECT ID
Raintree and Marian Ct 2 - Pipe Upgrades	IOAP	28719	S_JT_JT_NB03_M_01_C
Raintree and Marian Ct 2 - Pipe Upgrades	IOAP	28729-W	S_JT_JT_NB03_M_01_C
St. Rene Rd. PS Inline Storage	IOAP	94187	S_FF_CH_NB01_S_09A_C_A
Charleswood Interceptor Extension	IOAP	25480	S_PO_WC_PC03_M_01_C
Charleswood Interceptor Extension	IOAP	25479	S_PO_WC_PC03_M_01_C
Charleswood Interceptor Extension	IOAP	25477	S_PO_WC_PC03_M_01_C
Charleswood Interceptor Extension	IOAP	MSD0130-PS	S_PO_WC_PC03_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28415	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	98564	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28250	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	99649	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28416	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28340	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	104289	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28414	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28417	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28413	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28249	S_JT_JT_NB02_M_01_C
Dell Rd and Charlane Pkwy Interceptor Improvements	IOAP	28336	S_JT_JT_NB02_M_01_C
Leven PS Elimination	IOAP	36419	S_PO_WC_PC10_M_01_C
Monticello PS Elimination	IOAP	27969	S_JT_JT_NB04_M_01_A
Monticello PS Elimination	IOAP	MSD0151-PS	S_JT_JT_NB04_M_01_A
Cinderella PS Elimination	IOAP	MSD1013-PS	S_PO_WC_PC04_M_01_C
Cinderella PS Elimination	IOAP	60679	S_PO_WC_PC04_M_01_C
Cinderella PS Elimination	IOAP	35309	S_PO_WC_PC04_M_01_C
Idlewood Inline Storage	IOAP	63094	S_CC_CC_70158_M_09A_C
Idlewood Inline Storage	IOAP	63095	S_CC_CC_70158_M_09A_C
Idlewood Inline Storage	IOAP	70158	S_CC_CC_70158_M_09A_C
Idlewood Inline Storage	IOAP	28984	S_CC_CC_70158_M_09A_C
Idlewood Inline Storage	IOAP	28998	S_CC_CC_70158_M_09A_C
Sutherland Interceptor	IOAP	16649	S_SD_MF_NB05_M_01_A
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	43472	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	MSD1024-PS	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	105936	S_MI_MF_NB04_M_03_B

	PROGRAM	ASSET ID	PROJECT ID
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	62418	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	62420	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	21628-W	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	91630	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	46891	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale Wet Weather Storage	IOAP	91629	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	62420	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	91629	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	46891	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	MSD1024-PS	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	62418	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	43472	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	91630	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	105936	S_MI_MF_NB04_M_03_B
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	IOAP	21628-W	S_MI_MF_NB04_M_03_B
Government Center PS Elimination	IOAP	94541	S_PO_WC_PC06_M_01_C
Government Center PS Elimination	IOAP	MSD0180-PS	S_PO_WC_PC06_M_01_C
Government Center PS Elimination	IOAP	94542	S_PO_WC_PC06_M_01_C
Kavanaugh Rd. PS Improvements	IOAP	MSD1085-PS	S_HC_HC_MSD1085_S_03_A
Little Cedar Creek Interceptor Improvements	IOAP	67997	S_CC_CC_67997_M_01_C
Little Cedar Creek Interceptor Improvements	IOAP	89197	S_CC_CC_67997_M_01_C
Little Cedar Creek Interceptor Improvements	IOAP	89196	S_CC_CC_67997_M_01_C
Little Cedar Creek Interceptor Improvements	IOAP	86423	S_CC_CC_67997_M_01_C
Little Cedar Creek Interceptor Improvements	IOAP	89195	S_CC_CC_67997_M_01_C
Little Cedar Creek Interceptor Improvements	IOAP	86424	S_CC_CC_67997_M_01_C
Eden Care PS SSO Investigation	IOAP	MSD1105-PS	S_FF_FF_NB02_S_13_C
Leland Road SSO Investigation	IOAP	96020	S_OR_MF_NB02_S_13_C

Appendix F – I/I Removal Capacity Credit Calculation Instructions and Examples

Instructions for Rehab Credits Excel Sheet

1. Open the blank EXCEL sheet called "Rehab Credits Calc Sheet" in the folder W:\DATA\Consent Decree\CMOM\CapacityAssurance\Credits. Save-As this sheet under a new name so that the original is not changed.

2. Once opened the first sheet is labeled "Credits Calc Sheet", seen below. Column B Rows 4-9 need to be filled out; which is the Project Name, Budget ID, Record No., Anticipated Date, Completed Date, and Credit Catchment. The number of Illicit Connections to a sanitary sewer that were removed need to be reported under "Quantity", Column B Rows 14-17. All other boxes will automatically be updated on this sheet.

	A	B	C	D	E	F	G	H	I
1	**System Capacity Assurance**								
2	**Rehabilitation Credits Calculation Sheet**								
3									
4	Project Name:								
5	Budget ID:								
6	Record No.:								
7	Anticipated Date:								
8	Completed Date:								
9	Credit Catchment:								
10									
11	**Removal of Illicit Connections to the Sanitary Sewer System**								
12									
13		Quantity		Credit		Total			
14	Downspouts	0	x	4,000	=	0	Gallons		
15	Area Drains	0	x	6,000	=	0	Gallons		
16	Foundation Drains	0	x	4,000	=	0	Gallons		
17	Sump Pumps	0	x	4,000	=	0	Gallons		
18									
19	**Rehabilitation of Mainline Sewers and Sewer Service Lines**								
20									
21	Total from Line Credits Entry Sheet					0	Gallons		
22									
23									
24	**Manhole Rehabilitation**								
25									
26	Total from Manhole Credits Entry Sheet					0	Gallons		
27									
28									

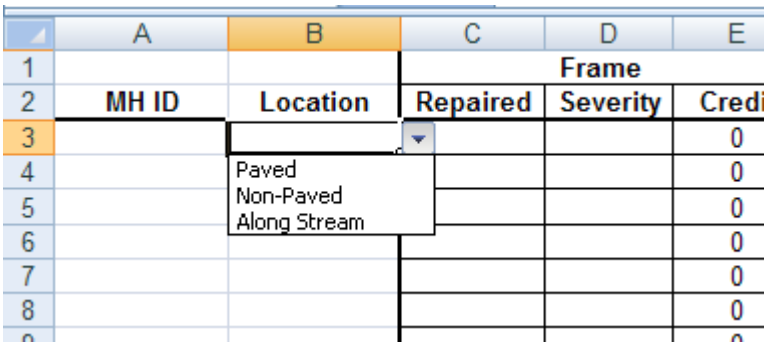
Credits Calc Sheet

3. For the "Manhole Credits Entry" page, list all manholes that have been rehabbed under "MH ID", column A. The next step is to fill in the "Location" column; this box will have a drop down menu with three choices to choose from (Paved, Non- Paved, & Along Stream). The definitions for each category are on the "Manhole Defs" page.

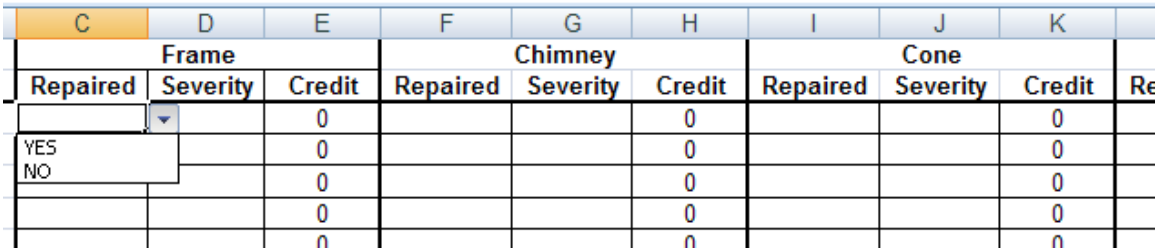
Along Stream: Manholes will be considered to be along a stream when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.

Non-Paved: Manholes in non-paved areas that do not meet the "along a stream" definition.

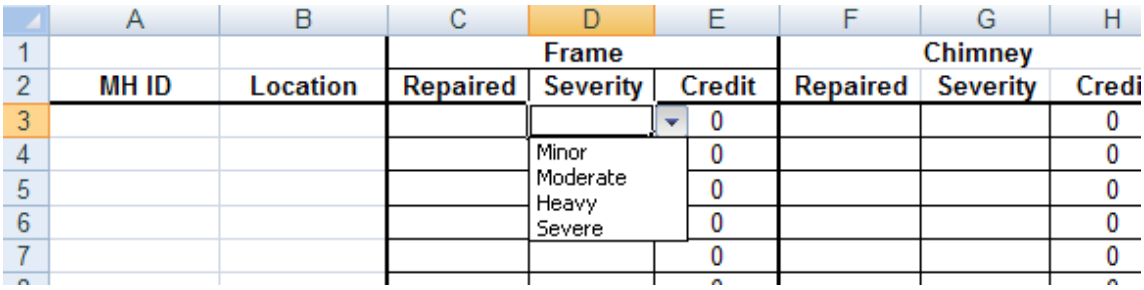
Paved: Manholes in paved areas that do not meet the "along a stream" definition.



4. After filing in the first two columns (MH ID, Location), you need to look and find out what work was done to the manhole. If any work was done on one of the sections labeled at the top (Frame, Chimney, Cone, Wall, ect…) the Repaired column needs to be filled in. The Repaired column as a drop down box giving you two choices, YES or NO. If no work was done to this section of the manhole fill in NO.



5. The next step is to fill in the Severity of the I/I in each section. This information should come from a report or field inspection. The Severity column also has a drop down box with 4 chooses (Minor, Moderate, Heavy, & Severe). The definitions for each category are on the "Manhole Defs" page. All other boxes on this sheet update automatically.



SCAP	Hansen - I/I Quantity	PACP Infiltration (I)	
Minor	D - Evidence I/I	Weeper	Refers to slow ingress of water through a defect. No visible drips.
Moderate	A - Light I/I seen occurring	Dripper	Refers to water dripping through a defect. Not a continuous flow.
Heavy	B - Medium I/I seen occurring	Runner	Refers to water running through a defect. A continuous flow will be visible.
Severe	C - Heavy I/I seen occurring	Gusher	Refers to water entering the pipe "under pressure" through a defect.

6. Moving on to the "Line Credits Entry" sheet. Column A is the "SEG_ID" or segment id of the sewer line, this is given by two numbers with a hyphen in between them. The first number is from the upstream manhole or node and the second is from the downstream manhole or node.

7. Next the "Length" and the "Length Repaired" needs to be labeled. The "Length" is the length of each individual pipe segment and the "Length Repaired" is just simply the length of the pipe segment that is being or has been repaired.

8. The 4th column "D" is "Diameter." This need to be filled in for each segment and is merely the Diameter of the segment of pipe.

9. The last thing to fill in is the "Along Stream" column. This is filled in the same way as the Along Stream on the "manhole Credits Entry" sheet. And also has a drop down box in which you can choose "Yes" or "No".

	A	B	C	D	E	F	G	H
1	SEG_ID	Length	Length Repaired	Diameter	IDM Repaired	Along Stream	Credit	
2	16105-16106	357	357	10	0.676	No	41	
3					0.000	Yes / No	0	
4					0.000		0	

10. The final total of credits will be given on the 1st sheet "Credits Calc Sheet" under "Project Total Credits." Check boxes that were filled in to make sure the total credits are accurate.

EXAMPLE CALCULATION
System Capacity Assurance
Rehabilitation Credits Calculation Sheet

Project Name:	Sinking Fork Interceptor Rehabilitation
Budget ID:	H07294
Record No.:	15442
Anticipated Date:	12/23/2008
Completed Date:	12/23/08 & 3/30/09
Credit Catchment	Middle Fork
Calculated By:	Josh Dickerson
Checked By:	Tony Marconi

Removal of Illicit Connections to the Sanitary Sewer System

	Quantity		Credit		Total	
Downspouts	0	x	4,000	=	0	Gallons
Area Drains	0	x	6,000	=	0	Gallons
Foundation Drains	0	x	4,000	=	0	Gallons
Sump Pumps	0	x	4,000	=	0	Gallons

Rehabilitation of Mainline Sewers and Sewer Service Lines

Total from Line Credits Entry Sheet 0 Gallons

Manhole Rehabilitation

Total from Manhole Credits Entry Sheet 171,630 Gallons

Project Total Credits 171,630 Gallons

Lines Credit Entry

SEG_ID	Length	Length Repaired	Diameter	IDM Repaired	Along Stream	Credit	
63323_63322	83	83	18	0.283	Yes	9,620	x
46717_63340	400	400	8	0.606	Yes	20,606	x
63340_63326	110	110	8	0.167	Yes	5,667	x
63326_63341	238	238	10	0.451	Yes	15,326	x
63341_63328	347	347	8	0.526	Yes	17,876	x
24638_63327	222	222	8	0.336	Yes	11,436	x
63327_63323	220	220	10	0.417	Yes	14,167	x
25012_63321	174	174	18	0.593	Yes	20,168	x
47035_47034	281	281	24	1.277	Yes	43,427	x
45440_45441	407	407	27	2.081	Yes	70,763	x
45442_45443	345	345	27	1.764	Yes	59,983	x
45443_45444	363	363	27	1.856	Yes	63,113	x
				0.000		0	

TOTAL LINE CREDITS
352,152

Manhole Credits Entry

		Frame			Chimney			Cone			Wall			Pipe Seal			Bench			Channel			Total	
MH ID	Location	Repaired	Severity	Credit	Repaired	Severity	Credit	Repaired	Severity	Credit	Repaired	Severity	Credit	Repaired	Severity	Credit	Repaired	Severity	Credit	Repaired	Severity	Credit	Credits	Comments
63340	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	None	0	YES	None	0	YES	Moderate	864	NO		0	3456	Dog house manhole
63329	Along Stream	YES	Minor	864	YES	None	0	YES	None	0	YES	Moderate	864	YES	None	0	YES	None	0	NO		0	1728	
63326	Along Stream	YES	Moderate	1728	YES	None	0	YES	None	0	YES	None	0	YES	None	0	YES	Moderate	864	NO		0	2592	Dog house manhole
63325	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	Minor	864	YES	None	0	YES	Moderate	864	YES	None	0	NO		0	4320	
63341	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	None	0	YES	None	0	YES	Moderate	864	NO		0	3456	Dog house manhole
63324	Along Stream	YES	Minor	864	YES	None	0	YES	Minor	864	YES	Minor	432	YES	Moderate	864	YES	None	0	NO		0	3024	
63328	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	None	0	YES	None	0	YES	Moderate	864	NO		0	3456	Dog house manhole
63323	Along Stream	YES	Minor	864	YES	Minor	864	YES	Minor	864	YES	None	0	YES	None	0	YES	None	0	NO		0	2592	
63322	Non-Paved	YES	Minor	328	YES	None	0	YES	Minor	328	YES	Minor	164	YES	None	0	YES	None	0	NO		0	820	
25009	Non-Paved	YES	Minor	328	YES	None	0	YES	Minor	328	YES	Moderate	328	YES	None	0	YES	None	0	NO		0	984	
25008	Paved	NO	None	0	YES	Minor	78	Yes	None	0	YES	Moderate	78	YES	Minor	39	YES	None	0	NO		0	195	
25012	Along Stream	NO	Minor	0	YES	Minor	864	YES	None	0	YES	None	0	YES	None	0	YES	None	0	NO		0	864	
63321	Along Stream	YES	None	0	YES	Minor	864	YES	None	0	YES	Moderate	864	YES	None	0	YES	None	0	NO		0	1728	
63320	Non-Paved	YES	Moderate	656	YES	Moderate	656	NO		0	YES	Moderate	328	NO		0	NO		0	NO		0	1640	Severity based off field visit
63319	Along Stream	YES	Heavy	3456	YES	None	0	YES	None	0	YES	Minor	432	YES	None	0	YES	None	0	NO		0	3888	Severity based off TVI notes
96957	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	Minor	864	YES	Moderate	864	YES	None	0	YES	None	0	NO		0	4320	
63318	Non-Paved	YES	Minor	328	YES	Minor	328	YES	None	0	YES	Minor	164	YES	Minor	164	YES	None	0	NO		0	984	Severity based off field visit
63317	Non-Paved	YES	Minor	328	YES	Minor	328	NO		0	NO		0	NO		0	NO		0	NO		0	656	Severity based off field visit
63316	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	Minor	432	YES	None	0	YES	None	0	NO		0	3024	
63315	Non-Paved	YES	Minor	328	YES	Minor	328	NO	None	0	NO	None	0	NO	None	0	NO	None	0	NO		0	656	
21171	Non-Paved	NO	Moderate	0	NO	Minor	0	NO	Moderate	0	NO	Severe	0	NO	None	0	NO		0	NO		0	0	
47034	Paved	NO	Moderate	0	YES	Moderate	156	NO		0	NO		0	NO		0	NO		0	NO		0	156	
21156	Non-Paved	NO	Minor	0	NO	None	0	NO	None	0	NO	Minor	0	NO	None	0	NO	None	0	NO		0	0	
45438	Paved	NO	Moderate	0	YES	Moderate	156	NO		0	NO		0	NO		0	NO		0	NO		0	156	
45439	Paved	YES	Minor	78	NO	Moderate	0	NO		0	NO		0	NO		0	NO		0	NO		0	78	
45440	Paved	NO	Minor	0	YES	Moderate	156	NO		0	NO		0	NO		0	NO		0	NO		0	156	
45441	Paved	NO	Minor	0	YES	Minor	78	NO		0	NO		0	NO		0	NO		0	NO		0	78	
45442	Non-Paved	YES	Moderate	656	NO	Moderate	0	NO		0	YES	Moderate	328	NO		0	NO		0	NO		0	984	
45443	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	Moderate	864	YES	None	0	YES	None	0	NO		0	3456	
45444	Along Stream	YES	Moderate	1728	YES	Minor	864	YES	None	0	YES	Minor	432	YES	None	0	YES	None	0	NO		0	3024	
45445	Paved	NO	Minor	0	NO	Minor	0	NO		0	NO	Moderate	0	NO		0	NO		0	NO		0	0	
45425	Along Stream	YES	Heavy	3456	NO		0	NO		0	NO		0	NO		0	NO		0	NO		0	3456	Severity based off field visit
45426	Along Stream	YES	Heavy	3456	YES	Moderate	1728	NO		0	NO		0	NO		0	NO		0	NO		0	5184	Severity based off field visit
63342	Along Stream			0	YES	Moderate	1728			0			0			0			0			0	1728	Severity based off field visit
24638	Along Stream			0	YES	Moderate	1728			0			0			0			0			0	1728	Severity based off field visit
63339	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
46718	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
24645	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
24637	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
21478	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21479	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21480	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
63335	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
24641	Along Stream	YES	Moderate	1728	YES	Moderate	1728			0			0			0			0			0	3456	Severity based off field visit
63332	Along Stream			0	YES	Moderate	1728			0			0			0			0			0	1728	Severity based off field visit
21484	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
24631	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
24635	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
21476	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21477	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21481	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21482	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
21483	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
63338	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
24632	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
24630	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit
63334	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
24643	Along Stream			0	YES	Moderate	1728			0			0			0			0			0	1728	Severity based off field visit
24640	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
32050	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
63337	Non-Paved	YES	Moderate	656	YES	Moderate	656			0			0			0			0			0	1312	Severity based off field visit
24644	Non-Paved			0	YES	Moderate	656			0			0			0			0			0	656	Severity based off field visit
31988A	Paved			0	YES	Moderate	156			0			0			0			0			0	156	Severity based off field visit

TOTAL MH CREDITS
85815

Manhole Credits Definitions

Item #1 - Location of Manhole

Along a Stream: Manholes will be considered to be along a stream when they are located within 50-feet of a blue-line stream or within the floodway of a FEMA designated 1%-annual-chance (100-year) floodplain. If a 2-year floodplain boundary has been developed for a stream then manholes within the 2-year floodplain are also considered to be along a stream.
Non-Paved Areas: Manholes in non-paved areas that do not meet the along a stream definition.
Paved Areas: Manholes in paved areas that do not meet the along a stream definition.

Item #2 - Defect Severity

SCAP	Hansen - I/I Quantitiy	PACP Infiltration (I)	
Minor	D - Evidence I/I	IW - Weaper	Refers to slow ingress of water through a defect. No visible drips.
Moderate	A - Light I/I seen occuring	ID - Dripper	Refers to water dripping through a defect. Not a continuous flow.
Heavy	B - Medium I/I seen occuring	IR - Runner	Refers to water running through a defect. A continuous flow will be visable.
Severe	C - Heavy I/I seen occuring	IG - Gusher	Referes to water entering the pipe "under pressure" through a defect.

Item #3 - Credit Value

Table 5.1 – Peak Flow Reduction for Manholes in Paved Areas

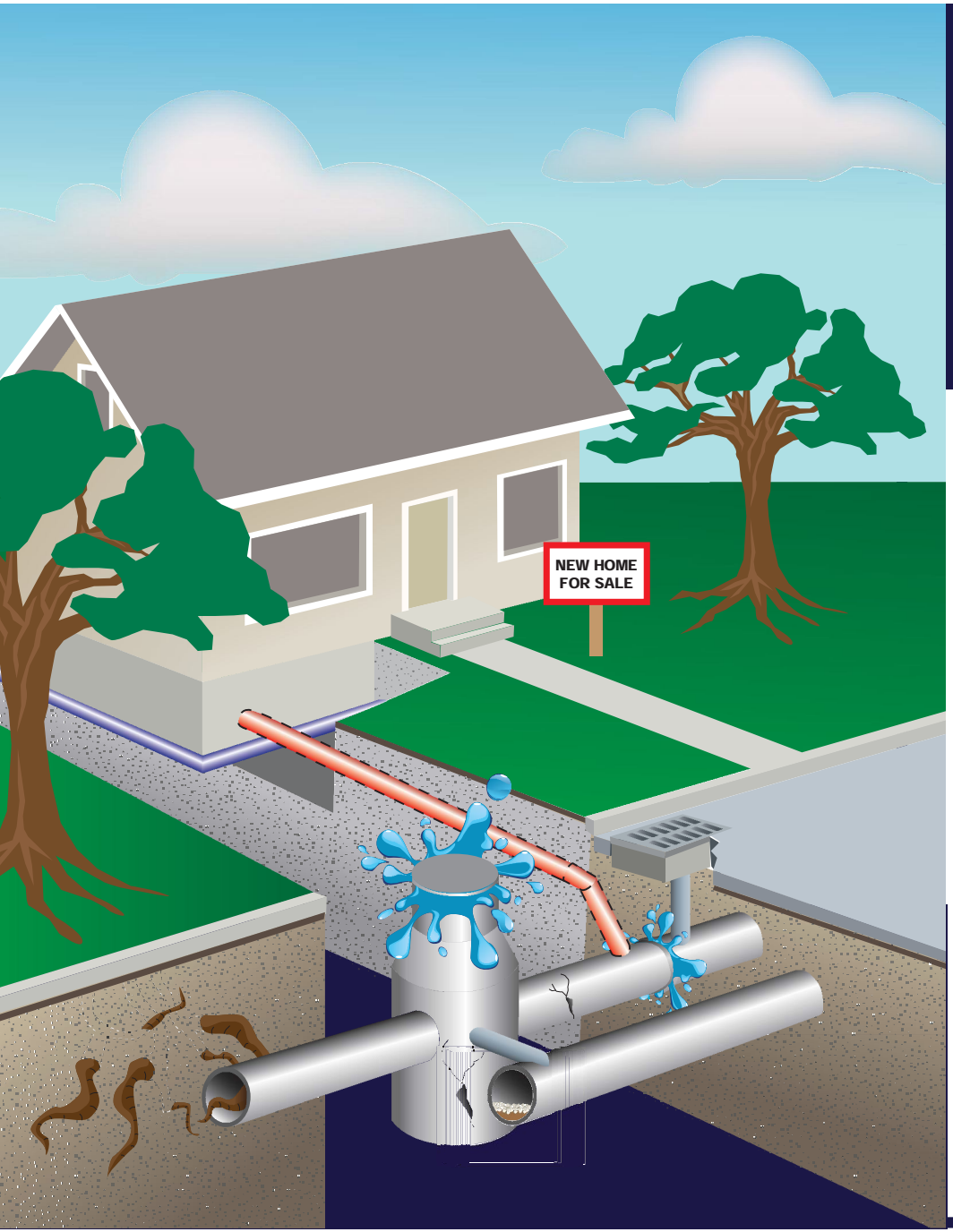
	Reduction Values in Gallons Per Day (GPD)			
Manhole Section	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	78	156	311	622
Chimney	78	156	311	622
Cone	78	156	311	622
Wall	39	78	156	311
Pipe Seal	39	78	156	311
Bench	39	78	156	311
Channel	39	78	156	311

Table 5.2 – Peak Flow Reduction for Manholes in Non-Paved Areas

	Reduction Values in Gallons Per Day (GPD)			
Manhole Section	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	328	656	1,313	2,626
Chimney	328	656	1,313	2,626
Cone	328	656	1,313	2,626
Wall	164	328	656	1,313
Pipe Seal	164	328	656	1,313
Bench	164	328	656	1,313
Channel	164	328	656	1,313

Table 5.3 – Peak Flow Reduction for Manholes Along a Stream

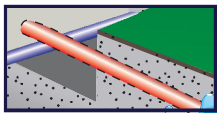
	Reduction Values in Gallons Per Day (GPD)			
Manhole Section	Minor I/I	Moderate I/I	Heavy I/I	Severe I/I
Frame Seal	864	1,728	3,456	6,912
Chimney	864	1,728	3,456	6,912
Cone	864	1,728	3,456	6,912
Wall	432	864	1,728	3,456
Pipe Seal	432	864	1,728	3,456
Bench	432	864	1,728	3,456
Channel	432	864	1,728	3,456



SCAP

Sewer Capacity Assurance Plan

The Sewer Capacity Assurance Plan (SCAP) works on a 3:1 ratio, meaning for every (1) gallon of flow added from a proposed sewer connection, a minimum of (3) gallons of flow must be removed to create more capacity and reduce overflows. Gallons of flow can be removed by rehabilitating pipes and manholes or removing illicit stormwater connections.

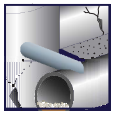


PROPOSED LATERAL SEWER EXTENSION

SEWER DEFECTS & ILLICIT CONNECTIONS

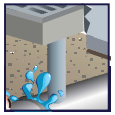
Leaky Manhole, Chimney or Cone

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	78	156	312	622
Non-Paved Area	328	656	1,312	2,626
Along Stream	432	1,728	3,456	6,912



Illegal Storm Cross-Connection

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	6,000 or Calculated Flow			
Non-Paved Area				
Along Stream				

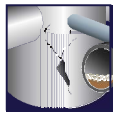


Downspouts, Foundation Drains & Sump Pumps

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	4,000 Each			
Non-Paved Area				
Along Stream				

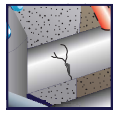
Root Intrusion Into Sewer Line

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	No Capacity Credits. Removal is a CMOM Requirement			
Non-Paved Area				
Along Stream				



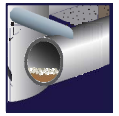
Deteriorated Manhole Wall, Pipe Seal, Bench & Channel

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	39	78	156	311
Non-Paved Area	164	328	656	1313
Along Stream	432	864	1728	3456



Deteriorated Pipe With I/I

Range of I/I Removed (GPD)	
Non-Inundation / Low Ground Water	60 GPD / IDM*
Stream Inundation / High Ground Water	34,000 GPD / IDM*



Sedimentation Build-Up

Range of I/I Removed (GPD)				
	Minor	Moderate	Heavy	Severe
Paved Area	No Capacity Credits. Removal is a CMOM Requirement			
Non-Paved Area				
Along Stream				

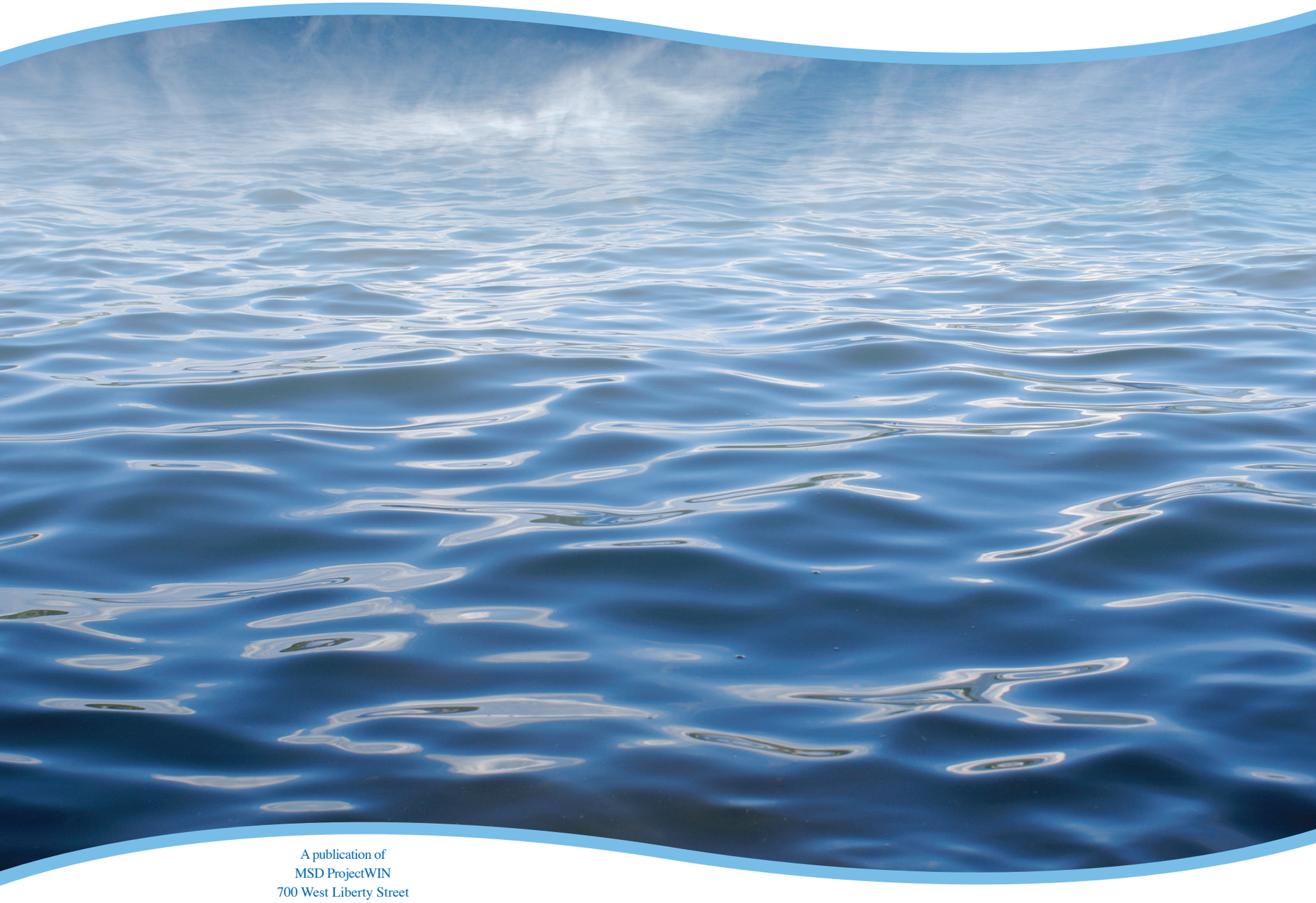
Leaky Sewer Lateral Connection

Range of I/I Removed (GPD)	
Non-Inundation / Low Ground Water	60 GPD / IDM*
Stream Inundation / High Ground Water	34,000 GPD / IDM*

* (GPD / IDM) Gallons Per Day per Inch Diameter-Mile: The unit value of flow used in capacity calculations for a sewer with sources of I/I.

MSD
Metropolitan Sewer District

Achieving Clean, Safe Waterways
for a Healthy and Vibrant Community



A publication of
MSD ProjectWIN
700 West Liberty Street
Louisville, KY 40203-1911

MSDprojectWIN.org | LouisvilleMSD.org

24/7 Customer Relations
502-587-0603

PROJECT WIN
Waterway Improvements Now