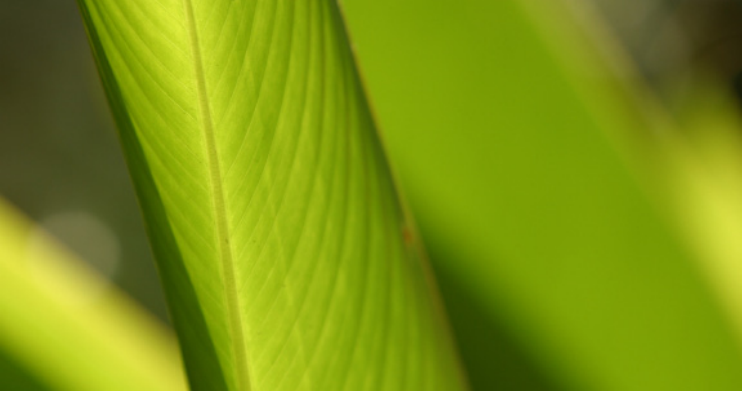
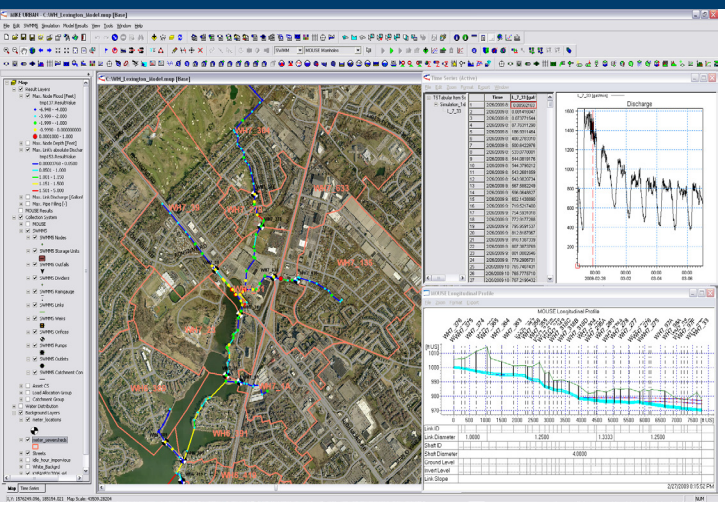
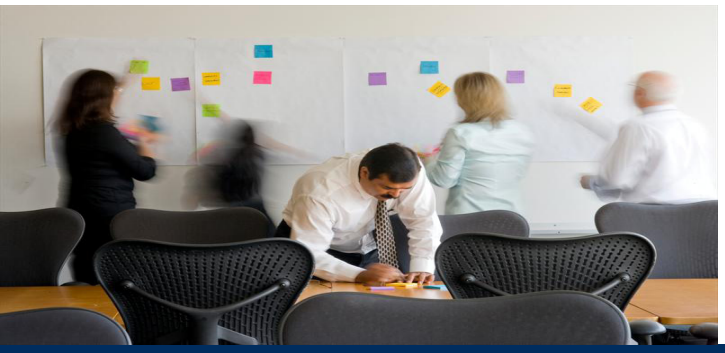


Request for Proposal #6-2012

Lexington-Fayette Urban County Government

Engineering Services for the Sanitary Sewer System Capacity Assurance Program for Consent Decree





Stantec Consulting Services Inc.
1409 North Forbes Road
Lexington, Kentucky 40511

March 19, 2012

Request for Proposal
Engineering Services for the Sanitary Sewer System Capacity Assurance Program for Consent Decree
Stantec Consulting Services Inc.

Executive Summary

The Lexington-Fayette Urban County Government (LFUCG) Division of Water Quality (DWQ) is soliciting proposals from consulting engineering firms to develop and implement their Capacity Assurance Program (CAP). The CAP is mandated by a Consent Decree with the U.S. Environmental Protection Agency (EPA) and Commonwealth of Kentucky and places requirements/restrictions on new connections or flow increases to LFUCG sewer system.

LFUCG has performed a hydraulic capacity assessment and developed a long-term capital improvement plan, as required by Consent Decree, which will support the development and implementation of the CAP. These efforts are documented in the Sanitary Sewer Assessment (SSA) and Remedial Measures Plan (RMP) reports. A hydraulic model (MIKE URBAN) was developed to support these efforts and provides information on sewer capacity and surcharging for existing and future year (2035) conditions. The model was recently recalibrated as part of the RMP effort and additional recalibrations are only necessary on an annual basis, to meet the requirements in the Consent Decree.

The scope of services for CAP Consultant includes: development of CAP methodology/work flow processes for certifying capacity and a credits banking system; coordination with a Task Force comprised of LFUCG and community stakeholders; development of an Information Management System (IMS) for managing and tracking capacity determinations; hydraulic model maintenance/recalibration; preparation of a CAP Plan report for submission to the EPA; and implementation of the CAP. The CAP Plan report shall be submitted by January 3, 2013 and implementation shall begin no later than 30 days following EPA approval.

Stantec's two Lexington offices employ approximately 180 professionals, making us the largest civil engineering consulting firm in Lexington.

Successful development and implementation of LFUCG's CAP will be contingent upon the selected Consultant's ability to:

- Understand CAP objectives and requirements;
- Quickly and fairly negotiate task orders and execute them in a fiscally responsible manner;
- Dedicate the time and attention necessary to develop a well-thought out and implementable CAP, tailored to LFUCG's specific needs;
- Demonstrate continued vigilance in keeping program implementation/administration requirements within LFUCG's staffing and resource expectations;
- Have a strong understanding of local issues to promote a fully implementable CAP program that not only meets the specific requirements of the Consent Decree, but also the needs of existing customers and growth of the community.

The Stantec Team's CAP experience includes Louisville, Kentucky and Cincinnati and Columbus, Ohio.

For LFUCG, we led the SSAs and development of the Remedial Measure Plan for the Group 2 sewersheds.

Stantec Consulting Services Inc. (Stantec) is pleased to present our proposal and qualifications for this project. Stantec is multi-disciplinary firm with a proven track record providing quality wastewater services on LFUCG's Sanitary Sewer Assessment and Remedial Measures projects. Nationally, Stantec employs approximately 11,000 professional in over 170 offices. Locally, Stantec employs approximately 180 professionals in two Lexington offices. Seventy percent of our proposed project team are residents of Lexington and have a vested interest in LFUCG's success. The Forbes Road office is located less than 0.5 miles from DWQ's offices on Lisle Industrial Avenue. Similarly, Stantec's downtown office is located a short walk from the Government Center on Main Street. Stantec has led several of LFUCG's Consent Decree projects and understands the importance of anticipating potential pitfalls and adopting a "no excuses" approach.

Joining the Stantec Team are two Lexington firms with established relationships with local leaders, thorough understanding of land development practices in Fayette County, and specialized experience in public policy related to growth management and economic development.

Stantec personnel assigned to your project have negotiated, developed and implemented the CAP for Cincinnati MSD and provided hydraulic modeling support for Louisville MSD's Capacity Assessment. Our Lexington-based programmers specialize in Information Management System and web-based portals, recently developing the Virtual PM portal used on the SSAs and statewide web portals for the Kentucky Division of Water and Indiana Department of Natural Resources. Recently, our Project Manager and Project Engineers led the development of effective data collection and QAQC protocols for LFUCG's largest sanitary sewer investigation to date. These protocols are being used as a guide for developing SOPs for LFUCG's CMOM Program. We'll leverage our CAP experience, institutional knowledge, leadership skills, strong local presence, and proven commitment to focus on getting results.

Joining the Stantec Team are Blue Heron Engineering Services, LLC (BHES), Integrated Engineering, LLC (IE), and ERI International, LLC (ERI). BHES is a women-owned business enterprise (WBE) with CAP implementation experience and was responsible for preparing your CMOM Self-Assessment. IE is a local, minority-owned business enterprise (MBE) with a solid track record of community involvement, established relationships with local leaders, and a thorough understanding of land development practices in Fayette County. ERI is a Lexington-based firm specializing in public-private partnering and public policy related to growth management and economic development. IE and ERI will be primarily responsible for facilitating Task Force meetings. BHES will assist Stantec in developing CAP protocols/policies.

Why Choose the Stantec Team?

Stantec understands the importance of demonstrating fiscal responsibility on our projects and developing a CAP that fits within LFUCG's program administration and resource expectations.

- **Stantec has demonstrated Fiscal Responsibility on your projects.** Stantec successfully completed the Sanitary Sewer Assessment (SSA) on the Group 1 sewersheds. This $5.2M project was completed within the required Consent Decree schedule and $114,000 under budget. No change order was ever submitted on the project. Similarly, in our role on the Remedial Measures Team, Stantec has repeatedly completed our work assignments under the budget provided in the task orders. Stantec's commitment to fiscal responsibility allows both Stantec and DWQ to focus our energies on CAP development/implementation.

- **Stantec has relevant CAP experience on other Consent Decree programs in the region.** The Stantec Team was involved in negotiating, developing and implementing the CAP program for Cincinnati MSD. In the City of Columbus, Stantec Team members managed their I/I program efforts to support their CAP and Stantec is also part of their overall Consent Decree Program Management Team. In Louisville, Stantec performed hydraulic modeling to support their Capacity Assurance determinations. This experience provides us with detailed knowledge of necessary program elements, effective protocols, and an understanding of EPA expectations.

- **Stantec has proven expertise developing Information Management Systems (IMS).** Programming specialists assigned to this project are based in Lexington and developed the web-based IMS (Virtual PM) for managing LFUCG's SSA contractors. Additionally, they recently developed web-based IMS solutions for the Kentucky EPPC and Indiana Department of Natural Resources (IDNR) to help them manage their statewide floodplain programs. Our approach of pairing our programmers with the engineers ensures that IMS solutions will match your needs.

- Stantec has extensive institutional knowledge of your sewer system and hands-on experience implementing effective work protocols for LFUCG. Stantec professionals assigned to this project include the same Project Manager and Project Engineers who successfully executed your Sanitary Sewer Assessments. These individuals bring an unmatched understanding of your sewer system and proven track record for developing and implementing effective work processes/protocols. We'll rely on these skills to understand earned credit potential in credit-poor areas and develop a well-conceived, implementable CAP.

- Stantec has a proven track record for meeting your Consent Decree schedules. Stantec was responsible for tracking field activities for the largest sanitary sewer data collection effort LFUCG has ever contracted. The work was performed to meet rigid Consent Decree deadlines and included stipulated penalties for late delivery. During the course of both SSAs, DWQ had a front-row seat to observe Stantec's ability to actively track project progress and effectively implement corrective action plans to successfully meet project schedules.

- We have the Capacity to devote to your project. The Project Manager and Project Engineers assigned to this project recently completed LFUCG's SSAs. The SSAs required a significant time commitment. These individuals have not been given substantial new assignments and have over 80 percent availability to devote to your project. Stantec has also reviewed workload projections from other Team members and all have sufficient capacity to complete their assigned role.

- We'll sign your contract. Stantec has signed the enhanced contract LFUCG has developed for Consent Decree projects on two prior projects. We have reviewed the example contract provided in the RFP and will agree to its terms without modification.

- Meaningful use of MBE/WBE participation that exceeds your procurement goals. Stantec has partnered with BHES and IE and has committed to a minimum of 15% of WBE/MBE participation. BHES and IE bring specialized CAP experience and a thorough understanding of Lexington land development policies that are directly relevant to your scope of work. Their roles lie directly in the "sweet spot" of their respective firm's expertise and service offerings.

Stantec is not simply a local firm; we are Lexington residents who pay local taxes, have an inherent understanding of community needs and a vested interest in the success of our CAP.

- A strong Local investment. A project of this significance requires a thorough understanding of local issues that can only be achieved from a meaningful local presence. Stantec boasts two Lexington offices and a local staff count of 180 professionals. More importantly, our Project Manager and over 70% of the persons identified in the organizational chart work and live in Lexington. We have a vested interest in the success of the project and developing an affordable program that meets both regulatory requirements and the needs of the community.

Specialized Experience

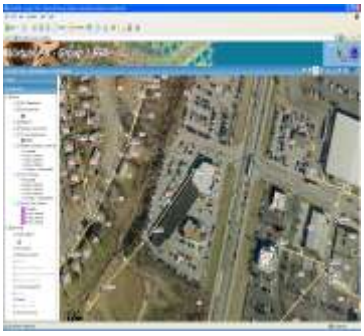
The Stantec Team has demonstrated performance in a number of successful projects with LFUCG and other municipal clients on similar projects. Many of these projects were support to Capacity Assurance Programs (CAP) or other Consent Decree efforts. The following paragraphs outline some of our Team's specialized experience. For a complete listing of LFUCG projects completed by the Stantec Team, please see the table listed on Page 4-1.

LFUCG Projects

Stantec was selected by LFUCG to lead Sanitary Sewer Assessment (SSA) field activities and perform an engineering assessment in the Group 1 sewersheds.

Group 1 Sanitary Sewer Assessments (LFUCG). Stantec was selected by LFUCG to lead Sanitary Sewer Assessment (SSA) field activities and perform an engineering assessment on the three Group 1 sewersheds identified in the Consent Decree (i.e. East Hickman, West Hickman, and Wolf Run.) Stantec served as the prime Engineering Consultant responsible for overall project management, coordination, data management, and QA/QC of all SSA field activities. As part of this effort, Stantec prepared a comprehensive database of sewer condition information and developed custom tools to quickly organize and prioritize sewer defects. Sewer information collected during the SSAs is being used to prioritize LFUCG's programmatic inflow/infiltration removal and rehabilitation efforts and will be utilized by LFUCG to generate credits to offset new connections/flow additions under the terms of the CAP.

To manage SSA efforts and promote transparency with LFUCG and the project team, Stantec developed Virtual PM, a web-based Information Management System (IMS). The Virtual PM website was GIS-based and provided up-to-date information on project status and collected defect information.



To manage the SSA efforts, Stantec developed a Virtual PM, a web-based Information Management System

During the course of the SSA for Group 1 sewersheds, a software error occurred resulting in the loss of several thousand manhole inspections. Additionally, a major subcontractor was removed from the project. Despite these setbacks, a corrective action plan was developed and successfully implemented. The project was completed on time and over $100K under budget.

Group 2 & 3 Sanitary Sewer Assessments (LFUCG). Based on our success in completing the SSA for the Group 1 sewersheds, Stantec was selected by LFUCG to lead similar efforts in the Group 2 & 3 sewersheds (i.e. Cane Run, Town Branch, North Elkhorn, and South Elkhorn.) On the SSA in these sewersheds, Stantec's served as LFUCG's Engineering

Representative. In this role, Stantec was responsible for providing field oversight, coordination, data management, tracking progress, and QA/QC for LFUCG's SSA Contractors responsible for performing field inspections/testing.

During the course of the Group 2 SSA, DWQ terminated their contractor responsible for the majority of the data collection efforts nearly a year into a two-year project schedule. Stantec assisted DWQ in interviewing a replacement contractor and aggressively tracked project progress and schedule. Stantec self-initiated a corrective action plan to compress our engineering assessment and reporting process to ensure that timely submission of DWQ's deliverable to the EPA would not be compromised.

Similar to the SSA for Group 1 sewersheds, sewer condition and defect information will be used by LFUCG to determine potential credit-producing activities to offset new connections and flow additions in the Group 2 and Group sewersheds.

Because of our depth of knowledge and success on the SSAs, Stantec was selected as part of a three-firm consultant team to develop the LFUCG's Remedial Measures Plan.

Remedial Measures Plan Development (LFUCG). Stantec is a subconsultant on a three firm consultant team to develop a LFUCG's Remedial Measures Plan. This Plan outlines LFUCG's wastewater capital improvement program for the next 10–13 years and will position them to successfully achieve their federal Consent Decree obligations. Stantec's role on the Remedial Measures Team has primarily been focused on prioritizing areas within the collection system for inflow/infiltration removal and rehabilitation, and directing modeling efforts to develop the RMP for Group 2. As part of this effort, Stantec developed a custom tool that integrates bid information in LFUCG Unit Price Contract to develop rehabilitation recommendations and cost estimates for collection system I/I removal projects. The tool includes a sophisticated system of rehabilitation rules and has been tailored to DWQ's current rehabilitation preferences/practices. The preferences are "soft-wired" into the programming to allow for sensitivity analysis or to accommodate changes in rehabilitation practices. Stantec's custom rehabilitation tool provides LFUCG with a ready-made solution for identifying credit potential in areas upstream of requested flow additions to meet the objectives of their CAP.

CMOM Self-Assessment (LFUCG). Blue Heron Engineering Services, LLC (BHES), a partner on the Stantec Team, recently completed the preparation of LFUCG's CMOM Self-Assessment Report. BHES performed the work with the assistance of the owner of Gerken Swafford Engineering Solutions, LLC (GSES), also a partner on the Stantec Team. The project involved performing a gap analysis of LFUCG's current CMOM practices, which includes the Capacity Assurance Program, and preparing a program summary based on upon the EPA guidance documents. The goals of the project were to determine the sufficiency of DWQ's current CMOM program

strategy, identify and establish priorities for individual program elements, and develop a two-year implementation plan. The report was prepared in June 2011 and is the "road map" for LFUCG's CMOM program implementation strategy.

Private Property Task Force (LFUCG). Stantec participated in LFUCG's Task Force to investigate how to address private property inflow and infiltration sources. As part of our advisory role, Stantec provided technical background information on various private property program alternatives adopted in other communities. Stantec staff at the time (now the owner of BHES) has a leadership role in maintaining the Water Environment Federation's (WEF) Private Property Virtual Library and were able to provide valuable "lessons learned" and successful strategies employed by other communities in developing and implementing their private property programs.

Stantec developed the SWMM model for Cane Run that was the basis of the capacity assessment model.

Cane Run Sewershed Trunk Study (LFUCG). As part of LFUCG's Trunk Study in the Cane Run sewershed, Stantec developed an XP-SWMM model of the approximately 40,000 linear feet trunk sewer system. The Trunk Studies, completed in 2001, were the predecessor projects to the SSA and Capacity Assessment projects outlined in LFUCG's Consent Decree. The hydraulic models developed during LFUCG's Capacity Assessment were based on the hydraulic modeling developed during the earlier Trunk Studies and updated to reflect current flow conditions and physical sewer improvements. Hydraulic models developed during the Trunk Studies were used to develop a long-term capital improvement plan to eliminate sanitary sewer overflows (SSOs) occurring in the trunk sewers.

Relevant Projects in Other Communities

Stantec's Project Manager, Joe Herman, was instrumental in the development of the MSDGC Credits Program.

Capacity Assurance/Sewer Credits Program, Metropolitan Sewer District of Greater Cincinnati (MSDGC), Cincinnati, Ohio. Stantec, under a Master Service Agreement with Cincinnati MSD, provided on-site staff support to conduct an audit of their Sewer Credits Program and perform a needs assessment of their in-house *Information Management System* software used to implement the program. The Sewer Credits Program is a requirement of MSD's Capacity Assurance Program (CAP) and, as a result subject to regulatory scrutiny by the EPA under the terms of their Consent Decree. Stantec's audit consisted of reviewing their sewer availability determination process, verifying proper accounting procedures, and harvesting earned credits from recently completed capital projects and credit-producing collection system rehabilitation efforts.

In addition to performing the audit, Stantec's scope of work included reviewing the existing Information Management System used to track/manage their Sewer Availability and Credits program. The software needs assessment involved performing a gap analysis on current software

features/capabilities and identifying functional deficiencies, "fatal flaws", and opportunities for efficiencies/improvements. On-site staff support was provided on a full-time basis for a period of three months during the audit and needs assessment.

Modeling for two MSDGC sewer basins was performed using the Mike SWMM module within the MIKE URBAN software.

Capacity Assurance Program Modeling, Metropolitan Sewer District of Greater Cincinnati (MSDGC), Cincinnati, Ohio. Stantec was responsible for application of MSDGC's System Wide Hydraulic Model for two urban sewer basins in MSD's wastewater system (Sycamore and Little Miami). The overall scope of the project included hydraulic modeling to evaluate the effectiveness of capital improvements necessary to eliminate sewer overflows for a 10-year level of control. Modeling was performed using the Mike SWMM module within the MIKE URBAN software. Stantec also performed the county-wide flow monitoring and subsequent data analysis (i.e. determination of RTK parameters) to support initial development for all sewer basins within MSDGC's System Wide Model. Development of the System Wide Model and capital improvement plan was performed in accordance with MSDGC's Consent Decree with the USEPA and state of Ohio.

Stantec developed a hydraulic model for over 530 miles of sewer for Louisville MSD.

Capacity Assurance Program Modeling, Metropolitan Sewer District (MSD) of Louisville and Jefferson County, Louisville, Kentucky. Stantec developed, calibrated, and validated hydraulic modeling for three major sewer basins (Cedar Creek, Floyds Fork, and Hite Creek) and adjacent areas in MSD's separate wastewater sewer system. Modeling was performed using InfoWorks CS, a commercial version of the popular EPA SWMM program, and included all pipes 8-inch diameter and greater, totaling over 2.8 million feet (530 miles) of sewer pipes and approximately 15,000 manholes. After successful model calibration/validation, Stantec utilized the models to determine existing sewer capacities, identify hydraulic bottlenecks, sewers experiencing surcharged conditions, and identify predicted overflows.

The models were also used by Stantec to assist MSD in developing and evaluating optimized solutions that were later integrated into their Integrated Overflow Abatement Plan (IOAP). MSD's IOAP was prepared by MSD in response to its Consent Decree with the USEPA and the Kentucky Environmental and Public Protection Cabinet and is their long-term plan to control combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) in the community. Stantec's work was completed within the rigid Consent Decree schedule and project budget. As a result of our strong performance, Stantec continued to support MSD in the maintenance and updating of the InfoWorks CS models as completion of capital improvements and additional development within the service area occurred.

MSDGC's System Wide Model was developed in MIKE Urban. Modeling for this project is being performed in PCSWMM (which utilizes the same hydraulic engine as MIKE Urban) and, as a result, has been seamlessly integrated into MSD's System Wide Model without incident or additional expense/effort.

System Wide Model Update for CSO 419, Metropolitan Sewer District of Greater Cincinnati (MSDGC), Cincinnati, Ohio. Stantec was selected by MSDGC to develop a Green Infrastructure Master Plan for the sewer system upstream of a chronic overflow in their combined sewer system (CSO 419). The master plan consists of separating the combined sewer and incorporating green infrastructure elements into the design. As part of this effort, Stantec is updating MSDGC's System Wide Model to reflect the proposed sewer improvements and evaluating its impact on restoring downstream sewer capacity. MSDGC's System Wide Model was developed in MIKE Urban. Modeling for this project is being performed in PCSWMM (which utilizes the same hydraulic engine as MIKE Urban) and, as a result, has been seamlessly integrated into MSD's System Wide Model without incident or additional expense/effort.

Stantec developed a continuous simulation model to evaluate prior assumptions which led to $60 million in planned savings for the City of Columbus.

Early Ditch Hydraulic Modeling, Division of Sewerage and Drainage, Columbus, Ohio. The City of Columbus undertook a study to reduce inflow and infiltration (I/I) into the Early Ditch basin on the west side of the City. Prior hydraulic modeling efforts by the City were based on a "design storm approach" and were generally considered to be conservative, yielding recommendations for large equalization tanks and costly trunk sewer replacements. As part of this project, Stantec performed hydraulic modeling of the Early Ditch area using a "continuous simulation approach" to evaluate the level of conservatism in the previously adopted "design storm approach" and its impact on reducing proposed sewer improvements. The "continuous simulation approach" consisted of calibrating the model to multiple storm events over the course of the year so that antecedent moisture conditions were accurately represented. Two sets of RTK coefficients were developed, one for the summer/fall season and another for the winter/spring season. Calibration of the model with the two sets of RTK coefficients and more realistic antecedent soil saturation conditions had a profound impact on peak flow responses in the system and resulted in significant reduction (over $60M) in the capital improvements necessary to meet the capacity requirements in the City's Consent Decree with the USEPA and state of Ohio. Modeling was performed using the EPA's SWMM5 program, which is the underlying hydraulic model for many commercial modeling software programs such as MIKE URBAN, PCSWMM, XP-SWMM, and others.

Consent Decree Program Management, Columbus, Ohio (Division of Sewerage and Drainage). Stantec is part of the Program Management Team developing and implementing the $500M Wet Weather Management Plan (WWMP) for the City of Columbus DOSD. Key responsibilities include ensuring Consent Decree deadlines are met for program deliverables. A partial list of services provided includes:

- Development of Program priorities, responsibility matrices; and information management system;
- Program construction phasing/sequencing and plan implementation;

- Preliminary designs on all Program projects and budget development;
- Development of a Program master schedule that incorporates design, bidding, construction milestones, and regulatory approvals;
- Procurement management;
- Project quality assurance and quality control;
- Construction management; and
- Regulatory compliance/permitting.

Sewer Rehabilitation Project Set Designer, Metropolitan Government of Nashville and Davidson County, Nashville, Tennessee. Stantec was recently selected by Nashville Metro to assist them in the design of Sewer Rehabilitation Projects identified in their Overflow Abatement Program (OAP). Development and implementation of the OAP is a requirement in Nashville Metro's Consent Decree with USEPA to eliminate sanitary sewer overflows (SSOs). Fourteen general rehabilitation areas have been identified in the OAP, each with an inflow/infiltration (I/I) removal goal of 50%. Stantec's scope will include evaluation of sewer/manhole condition and flow monitoring information collected during field investigations, development of rehabilitation plan, detailed design, preparation of bid documents, permit and easement assistance, design support during construction, and preparation of record drawings.

Cranbrook Wastewater Master Plan, City of Cranbrook, Cranbrook, British Columbia. Stantec was retained by the City of Cranbrook in 2008 to complete a Master Plan for the City's wastewater collection and treatment systems in support of a city-wide growth management plan.

Aerial photo of Cranbrook with wastewater collection system.

Stantec developed a fully dynamic computer model of the wastewater collection system. The model was used to complete a detailed assessment of the existing system capacity and identify deficiencies. The model was expanded to reflect the City's growth projections and future land use scenarios, and used to predict growth impacts on the existing infrastructure. Stantec provided improvement and servicing recommendations, including cost estimates, for the existing system and growth areas.

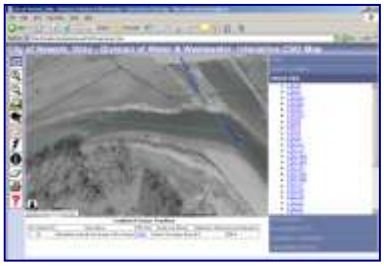
A flow monitoring program was implemented to measure flows in the collection system. The data collected allow existing flow quantification, identification of inflow and infiltration, and derivation of wastewater generation rates for dry and wet weather flow. The data were then used to calibrate the computer model. An evaluation of the existing condition and long term needs of the wastewater collection and treatment systems was completed. Stantec provided software training to City staff and recommendations on continued data collection to ensure the

sustainability and continued viability of the computer model. The resulting Master Plan and hydraulic model are being used by the City to guide growth and is the basis for the Capacity Assurance Plan.

City of St. Albert Utilities Master Plan, City of St. Albert, St. Albert, Alberta. Stantec developed a Utilities Master Plan as a strategic step in the understanding, effective operations, management, and sustainability of the City's wastewater and stormwater drainage systems. The City's existing hydraulic model (MIKE URBAN) was updated, calibrated, and integrated into a GIS framework to develop the Master Plan. The updated model was used as critical system planning tool to allow the City to meet the short and long-term service needs for future development areas within their service area. Results were integrated into GIS to permit a better understanding of existing hydraulic deficiencies, identify appropriate remedial measures, and develop future growth servicing strategies.

South and Central Reno Sanitary Sewer Capacity Analysis, City of Reno, Reno, Nevada. Upon the completion of this project, we will have modeled Stantec was responsible for developing hydraulic models for all of the City's major wastewater interceptors. Based on our successful performance completing the North Virginia Street/Reno-Sparks Interceptor Master Plan and Mill Street Capacity Analysis, Stantec was retained by the City of Reno to complete the capacity analysis of the City's remaining major sanitary sewer system. This involved the analysis of 15 sewer systems to handle tributary wastewater flows for existing and future development in Reno and an evaluation of the current and future carrying capacity in the interceptors.

McKenzie and Nose Creek Sanitary District Studies, City of Calgary Water Resources, Calgary, Alberta. The City of Calgary Water Resources retained Stantec to develop wastewater Master Plans for the McKenzie and Nose Creek Sanitary Districts. The McKenzie and Nose Creek Sanitary District Studies comprise upwards of 60% of the City of Calgary. As part of this effort Stantec developed a MIKE URBAN model of the City's existing collection and transmission systems. Stantec's in-house professionals, performed the flow monitoring needed to calibrate the model. The hydraulic model was used to evaluate dry and wet weather flow conditions for existing and future growth conditions. Future growth was evaluated at 5-year intervals up to the year 2039. Upon completion of the model calibration, Stantec utilized the model to develop a capital improvement plan. The Plan included preliminary designs, cost estimates, and a prioritization schedule.



The City of Newark's CSO Mapping Interactive Website

Information Management System (IMS) Development and Implementation, City of Newark, Ohio. Since 1999, the City of Newark has proactively managed and maintained its infrastructure utilizing asset

management and GIS software. The Division of Water and Wastewater initiated the conversion of infrastructure information from paper documents to a digital information management system in order to comply with EPA regulations and CMOM requirements.

Stantec worked with the City of Newark to create an Enterprise Utility Management System that links their existing asset management software (gbaMS) and billing software (EDEN) with ArcGIS Server technology. The system serves multiple departments, and was deployed over the City's Intranet and includes the following web-enabled functionality:

The City of Newark's enterprise utility management system was created using ArcGIS Server Technology and gbaMS.

- Ability to create workorders from an XY location or a selected set of assets;
- Ability to create a service request from an XY location or a selected set of assets;
- Ability to display infrastructure information from gbaMS based on an asset selection from the map;
- Ability to display workorder information from gbaMS based on an asset selection from the map;
- Ability to jump from the gbaMS screen to the map by selecting an asset or workorder;
- Ability to access customer billing records by selecting parcels from the map; and
- Ability to create custom letter-sized map prints.

Information Management Systems Portals, Kentucky and Indiana State Agencies. Stantec developed Indiana's public facing Flood Information Portal. Stantec worked with the Division of Water (DOW) staff to design and layout the site and user interface using HTML5, CSS, and JavaScript techniques. Tools were also constructed to allow public users to discover flood information that is most relevant to their geographic location and to submit a web-based form to the DOW staff for review and approval. This web-based review process greatly improved the DOW's response time, speeding it up to a four day from a four week turnaround. Stantec also created and produced Commonwealth Hazard And Mitigation Planning System (CHAMPS). Responsibilities included site architecture and design, code base documentation, database design, as well as being the primary client contact with Kentucky Emergency Management (KyEM). CHAMPS consists of several modules, each of which complement each other to help KyEM better route specific dollars to mitigation projects, as well as helping to bridge the gap between project management and local community outreach. CHAMPS links, tracks, and stores all project elements from the time a disaster occurs all the way through the successful completion of a mitigation project.

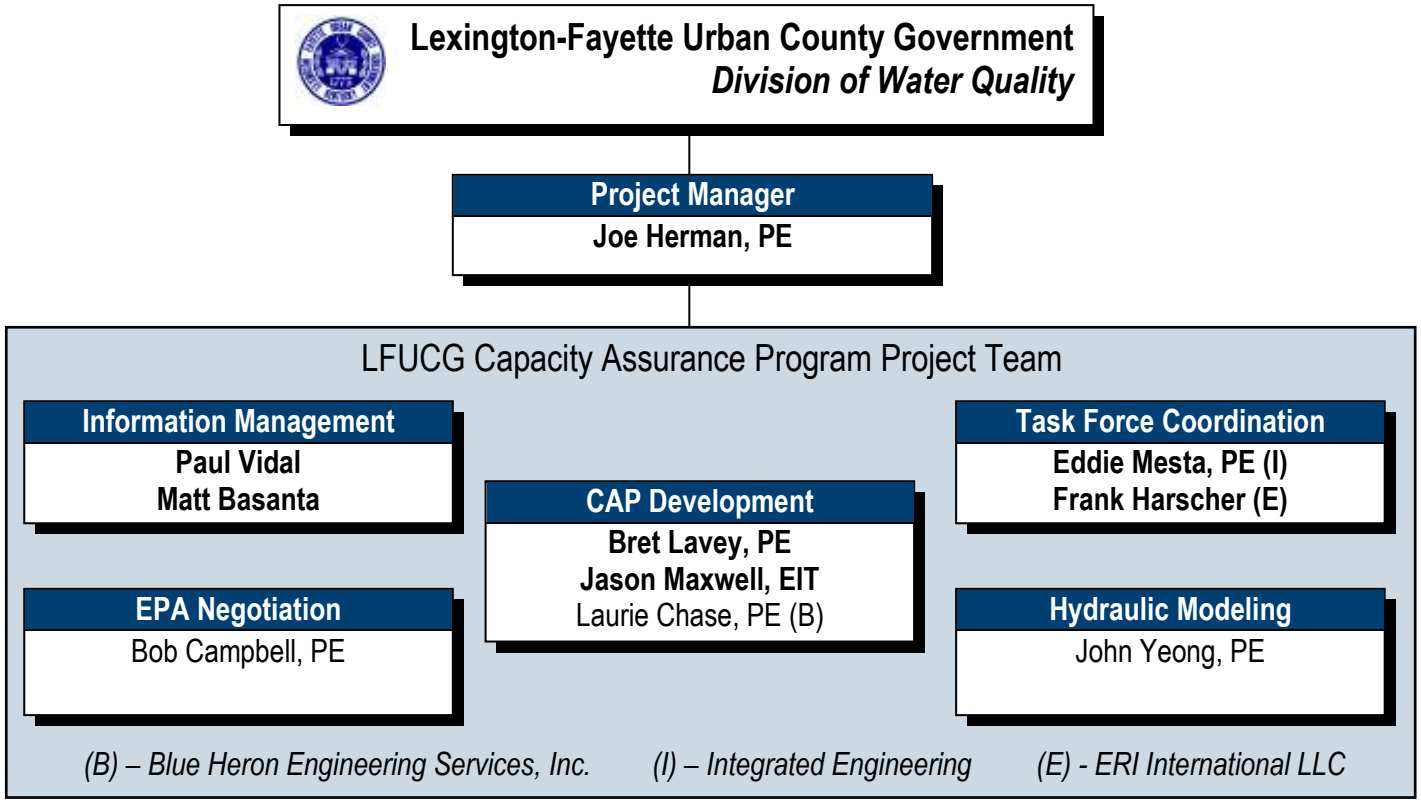
Technical Competence

Stantec's Project Manager, Joe Herman, lives and works in Lexington.

Stantec provides LFUCG with the comprehensive experience and depth of technical knowledge necessary to complete the project referenced in your Request for Proposal. The following paragraphs highlight the credentials of the project management and engineering staff identified in the organizational chart. These individuals have been assigned to this project and will play key roles in project execution. A review of the resume highlights that follow demonstrate that Stantec provides best value to LFUCG with respect to our professional ability and qualifications.

Organizational Chart

Engineering Services for the Sanitary Sewer System Capacity Assurance Program for Consent Decree



*The Stantec Team members identified in **bold** live and work in Lexington, and represent **70% of our project team**. All of our team members have a vested interest in the success of this project.*

Resumes for the Stantec Team are included for your review in Appendix A.

Project Management – Joe Herman, PE

- *MS, Civil Engineering, University of Kentucky, 1995*
- *Professional Engineer, Kentucky #21254*
- ***Office Location: Lexington, Kentucky***

CAP Development – Bret Lavey, PE

- *BS, Civil Engineering, University of Kentucky, 2005*
- *Professional Engineer, Kentucky #27348*
- ***Office Location: Lexington, Kentucky***

Jason Maxwell, EIT

- *MS, Civil Engineering, University of Kentucky, 2008*
- ***Office Location: Lexington, Kentucky***

Laurie Chase, PE

- *MS, Civil Engineering, Ohio State University, 1998*
- *Professional Engineer, Kentucky #25385*
- *Provided I/I expertise for City of Columbus' CAP development*

Joe Herman, PE will serve as your Project Manager. Mr. Herman is a Project Manager in Stantec's Lexington office. Mr. Herman was specifically selected for this project because of his hands-on project management approach and prior experience managing the SSAs and involvement on the Remedial Measures Plan team for LFUCG. Mr. Herman has a proven track record of successfully managing Consent Decree projects and schedules, and has demonstrated fiscal responsibility on these jobs, completing work assignments at or below budgeted amounts.

Mr. Herman has been involved in assisting other municipal clients in implementing/refining their internal CAP processes/programs. For Cincinnati MSD, Mr. Herman performed an audit of Cincinnati MSD's Sewer Credits Program/Capacity Assurance Program (CAP). The work included performing a needs assessment and providing recommendations for improvement of the software program MSD used to track credit transactions. Mr. Herman also led an effort to incorporate MSD's sewer lateral information into their GIS system. The effort was performed to increase efficiency and reduce staff time associated with MSD's sanitary sewer tap desk.

Mr. Herman's work on the SSAs will be completed in April and will have nearly 100 percent availability to develop and implement LFUCG's Capacity Assurance Program.

Stantec has assigned a qualified team of professionals to match the technical expertise and experience necessary to successfully develop and implement your CAP. Team members bring a solid understanding of LFUCG's prior SSA and RMP efforts, depth of experience implementing CAPs in other communities, and a first-hand understanding of local issues and community expectations.

Bret Lavey, PE and Jason Maxwell, EIT are Project Engineers in Stantec's Lexington office with detailed experience and knowledge in sanitary sewer assessments and field methods. Both played significant roles in the execution of the SSAs for LFUCG. Mr. Lavey has strong GIS and database skills and programmed the custom tool that produces planning level estimates for collection system rehabilitation that was used during LFUCG's Remedial Measures Plan development. Mr. Maxwell provides a thorough understanding of sewer condition information collected during the SSAs. Both individuals are wrapping up the Group 3 SSA and will have significant capacity to assist DWQ in CAP development and implementation.

Laurie Chase, PE has over 24 years' experience in the water and wastewater industry in regulatory, municipal, and consulting and construction roles. Ms. Chase is the owner of **Blue Heron Engineering**

Information Management – Paul Vidal

- *ESRI Certified Web Application Developer Analyst, 2010*
- ***Office Location: Lexington, Kentucky***

Matt Basanta

- *BA, Geography, University of Kentucky, 2008*
- ***Office Location: Lexington, Kentucky***

Task Force Coordination – Eddie Mesta, PE

- *BS, Civil Engineering, University of Kentucky, 1995*
- *Professional Engineer, Kentucky #22048*
- ***Office Location: Lexington, Kentucky***

Task Force Coordination – Frank Harscher

- *Extensive public policy experience related to growth management and economic development*
- ***Office Location: Lexington, Kentucky***

Services, LLC (BHES), a certified woman-owned business enterprise (WBE). Ms. Chase provided inflow and infiltration (I/I) expertise for the system evaluation and capacity assurance planning effort required by the City of Columbus. Ms. Chase also led LFUCG's CMOM Self-Assessment and is leading the Water Environment Federation's (WEF) Private Property Virtual Library initiative.

Paul Vidal and Matt Basanta are GIS/Information Management Specialists with focus in the areas of Information Management System development. Ranging in scope from focused file sharing portals to nationwide program effectiveness applications, their Information Management projects focus on custom application development, data standardization through database development, GIS integration, online collaboration, and dynamic database reporting. Mr. Vidal and Mr. Basanta were both responsible for the development and maintenance of the Virtual PM used during LFUCG's SSAs.

Eddie Mesta, PE is heavily involved in the Lexington community and has established relationships with local leaders that will play an integral role in support of the Task Force for this project. Mr. Mesta recently served alongside other community leaders as the 6th District Representative for LFUCG's re-districting committee where he helped determine LFUCG's new council district boundaries to be in accordance with the local ordinance and 2010 census data. Mr. Mesta's other public involvement projects include the Tates Creek Sidewalk project for LFUCG, where he is responsible for managing residents, businesses and churches involvement for the project.

Frank Harscher is President of ERI International, a 32-year firm specializing in natural and environmental resources analysis, public-private partnering, and public policy related to growth management and economic development. During this period, he has held several important public and private positions including Secretary of Natural Resources and Environment Protection, as Commissioner of Environmental Quality, and as Executive Director of the Office of Toll Facilities/Turnpike Authority of Kentucky. In most all program and project initiatives, Mr. Harscher has fulfilled high-level leadership and liaison positions with public and private sector leaders and stakeholders focused toward acceptable project planning and implementation, with specific emphasis on working with governmental agencies and nonprofit groups, headed by prominent private sector and public officials. Mr. Harscher's primary role will be to assist in facilitating Task Force meetings with Lexington stakeholders.

EPA Negotiation – Bob Campbell, PE

- *MS, Civil Engineering, University of Missouri-Rolla, 1983*
- *Professional Engineer, Missouri and Ohio*
- *Oversaw Metropolitan Sewer District of Greater Cincinnati's development of a $2 billion Wet Weather Improvement Plan, including their Capacity Assurance Program Plan (CAP)*

Hydraulic Modeling – John Yeong, PE

- *Professional Engineer*
- *Capacity Assessment and Capacity Assurance evaluation experience*
- *Proficient in MIKE Urban modeling software*

Mr. Campbell was the Executive Director for the Metropolitan Sewer District of Greater Cincinnati. Mr. Campbell also served as Director of Planning for the St. Louis Metropolitan Sewer District. He has managed a staff of over 600 individuals with an operating budget in excess of $150 million and an annual capital program in excess of $132 million. Mr. Campbell provided strategic direction to and participated in the negotiation of MSDGC's CSO and SSO Consent Decrees, including their CAP Program elements. As Director, he was involved in establishing and implementing the CAP work flow protocols used by Cincinnati MSD to administer their CAP. His collective knowledge gained on the public side will provide an "owner's perspective" to the project and provide LFUCG with valuable input on lesson learned from other communities.

John Yeong, PE is a hydraulic modeler with specialized experience in Capacity Assessment and Capacity Assurance evaluations. Mr. Yeong's modeling experience includes hydraulic evaluations of existing sewer systems, model maintenance and recalibration/updates, evaluation of capital improvement alternatives, level of service evaluations, and master planning. Mr. Yeong is proficient in a number of wastewater modeling programs, including MIKE Urban, MOUSE, XP-SWMM, PCSWMM, EPA SWMM, and WaterCAD.

Capacity

LFUCG is seeking an experienced and technically qualified consulting Team with localized knowledge and the capacity to accomplish this work in a cost effective manner. The Stantec Team's capability to perform your work in a timely manner is tied to the professional qualifications, past performance, knowledge, experience, and the absolute commitment of our staff:

- Stantec's Project Manager has a proven track record of successfully managing and executing projects for LFUCG including the **SSAs for the Group 1 and Group 2 and 3 Sewersheds**. He knows how to plan, organize, manage and execute your work to meet your deadlines and will take a hands-on approach to this project.
- The Project Manager and Project Engineers work on the SSAs will be completed in April and will have nearly 100 percent availability to develop and implement LFUCG's Capacity Assurance Program.
- Stantec's Lexington office is located less than a half of a mile from DWQ's main offices. The close proximity to you ensures that Stantec Team personnel will be able to quickly respond to your requests.
- You have a personal commitment from our Team that our technical resources are committed to completing your project assignments and meeting Consent Decree milestones and any additional project assignments.

Stantec's Project Manager has demonstrated his commitment to managing and executing your work to meet project budgets and deadlines on prior Consent Decree projects. He will be permanently assigned to the CAP Program development/ implementation.

Stantec selected the individuals and subconsultants on our team to bring LFUCG a focused team that avoids inefficiencies associated with too many firms or excessive division of work.

Stantec's team is nearly all local, in turn minimizing communication breakdowns, the need for costly travel for client and internal meetings, and allows us to quickly respond to LFUCG's needs. Team members located outside of Lexington are involved in work elements that do not involve the bulk of the work.

Stantec has strategically recruited, hired, and teamed with best-in-class firms with engineers and technical support staff to promote our efforts in municipal infrastructure engineering and planning projects. Our commitment to providing quality services, on time and within budget, has been rewarded with exciting and technically challenging project assignments similar to the requirements outlined in your Capacity Assurance Program RFP.

We have existing capacity and are "right-staffed" to support your project needs. Of particular importance is the current availability of the project team members. At project kickoff, your team outlined in Section 1, have more than sufficient availability to meet your project needs.

An important consideration in assigning individuals to projects is to make sure that too many people/firms haven't been assigned. Stantec selected the individuals and subconsultants on our Team with this in mind. This allows us to bring you a focused team that avoids the inefficiencies associated with too many firms or excessive division of the work. Similarly, individuals selected for the Team are nearly all local. This minimizes

communication breakdowns, the need for costly travel for client and internal meetings, and allows our Team to quickly respond to your requests. Individuals on our Team located outside Lexington are all involved in work elements that do not involve the bulk of the effort.

Capacity is more than having adequate staff and equipment. It is about having staff with the right technical qualifications, experience, and knowledge of LFUCG's sanitary sewer system and personnel. Table 2.1 demonstrates the Stantec Team's strength and redundancy in the staff required for this contract. Not only are the Project Engineers, Bret Lavey and Jason Maxwell, available to meet any scheduling requirement of LFUCG, Stantec's Project Manager, Joe Herman, has the authority to assign staff and resources needed to meet and support all challenges during the course of the project.

Table 2.1. Stantec Team's Strength and Redundancy

Discipline	Staff Available for LFUCG Projects	Stantec's Lexington Office Staff
Project Manager	1	21
Principal Project Engineer	2	19
Technical Advisors (as needed)	6	0
GIS Support	3	6
Other Staff	As Needed	131
Total Staff	**12+**	**178**

Character, Integrity, Reputation, Judgment, Experience and Efficiency

A key element of Stantec's project management process is our Quality Assurance/Quality Control Program. For over 45 years, even before quality programs and TQM business practices were fashionable, Stantec has maintained a serious commitment to these principles.

Stantec is one of the most respected and most reliable engineering firms in Lexington. We have an established track record with LFUCG for providing quality engineering and consulting services in a timely and efficient manner. Examples of our high level of performance include **LFUCG's Groups 1, 2, and 3 Sanitary Sewer Assessments (SSAs) and participation on the Remedial Measures Team**. With over 44 years of experience in Lexington, we take pride in the service we can provide to the community and are committed to meeting the deadlines established in the Consent Decree.

Stantec successfully completed the Sanitary Sewer Assessment (SSA) on the Group 1 sewersheds. This $5.2 million project was completed within the required Consent Decree schedule and $114,000 under budget. No change order was ever submitted on the project. Similarly, in our role on the Remedial Measures Team, Stantec has repeatedly completed our work assignments under the budget provided in the task orders.

A critical indicator of Stantec's success is the quantity and quality of repeat business the firm enjoys and the reputation of the firm in the communities we serve. Over 95% of Stantec's clients are repeat customers. We have a reputation for providing high-quality and value-oriented technical services. Stantec's commitment to quality is a significant contributor to the firm's growth and to the reputation we enjoy with our clients. A key element of Stantec's project management process is our structured Quality Assurance/Quality Control (QA/QC) Program. For over 45 years, even before quality programs and TQM business practices were fashionable, Stantec has maintained a serious commitment to these principles.

In addition, Stantec employs a number of industry accepted best management practices and technology tools to assist in project management, particularly with regards to schedule and budget adherence. These practices include the use of earned value tracking to monitor project costs and application of project scheduling software to prepare Gantt charts for key milestones and resource tracking. Project status is addressed at bi-weekly Project Manager staff meetings and more frequently with project team members. Project status will be continuously communicated to LFUCG. Stantec has an outstanding reputation for providing not only quality services but also timely and efficient project management

Past Record and Performance

Lexington-Fayette Urban County Government. Stantec's past record of performance on LFUCG projects not only demonstrates the quality services that Stantec provides, but also gives an indication of our expertise in managing wastewater and stormwater projects. The table below lists some of the most recent and relevant projects that Stantec has undertaken for LFUCG with a quick glance view of adherence to budget, quality expectations, and schedule commitment.

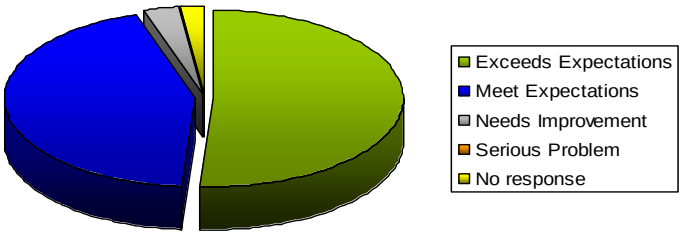
Stantec has a long-standing record of providing quality engineering and planning services on LFUCG projects.

Stantec prides ourselves in being good stewards of the Lexington community. Throughout the SSAs for Groups 1, 2, and 3, not a single consultant-initiated change order was submitted.

Name	Within Budget?	Quality Expectations Met?	On Schedule?	Project Complete
Remedial Measures Plan (Subconsultant)	✓	✓	✓	
Group 2 and 3 Sanitary Sewer Assessment (SSA)	✓	✓	✓	April 2012
Group 1 Sanitary Sewer Assessment (SSA)	✓	✓	✓	✓
Cane Run Sewer Trunk Rehabilitation	✓	✓	✓	✓
CMOM Self Assessment	✓	✓	✓	✓
South Elkhorn Watershed Modeling	✓	✓	✓	✓
Forster Avenue Drainage Improvements	✓	✓	✓	✓
Heatherwood Townhomes Detention Basin Repair	✓	✓	✓	✓
SWARM Application	✓	✓	✓	✓
Lake Shore Drive Storm Sewer Replacement	✓	✓	✓	✓
Roanoke and The Lane Properties Restoration Plan	✓	✓	✓	✓
Skycrest Drainage Project	✓	✓	✓	✓
Furlong Buyout Properties	✓	✓	✓	✓
LFUCG FEMA Map Activity Statement	✓	✓	✓	✓
LFUCG FEMA Flood Map Update	✓	✓	✓	✓
Elkhorn Park Neighborhood Trunk Sewer Replacement	✓	✓	✓	✓
Winburn Estates Pump Station SSO Elimination	✓	✓	✓	✓
Bowman Mill and Cave Hill Tributaries Flood Study	✓	✓	✓	✓
Stone Road Detention Basin	✓	✓	✓	✓
Montavesta Detention Basin	✓	✓	✓	✓
Woodfield Detention Basin	✓	✓	✓	✓
Trafton Street Drainage Study	✓	✓	✓	✓
Trafton Street Stormwater Design	✓	✓	✓	✓
Trafton Street Pump Station Feasibility Study	✓	✓	✓	✓

Stantec's Past Performance in Other Consent Decree Programs. Stantec is nationally recognized as an expert in municipal infrastructure and wastewater analysis, design, and planning. Stantec has assisted numerous municipal collection system owners on their Consent Decree driven programs including: Cincinnati MSD, Louisville MSD, City of Columbus, Nashville Metro, St. Louis MSD, Allegheny County Sanitation District, and most recently the City of Seattle, Washington. Stantec understands the commitment that must be provided on these projects to ensure that the obligations and requirements of the Consent Decree are successfully achieved.

Stantec has completed numerous Consent Decree driven projects that successfully met the federal requirements and schedules established by federal regulators.



Stantec's year end annual client survey indicates a high level of satisfaction with almost 97% of all responses indicating we meet or exceed measured performance metrics.

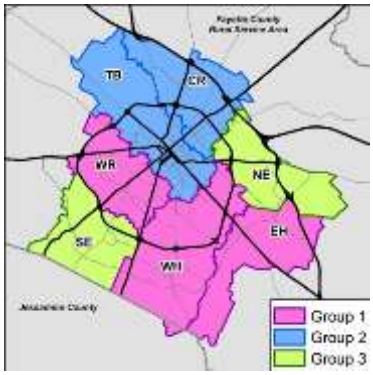
Familiarity with Project Details

The Lexington-Fayette Urban County Government (LFUCG) entered into a federal Consent Decree with the U.S. Environmental Protection Agency (EPA) and Commonwealth of Kentucky Environmental and Public Protection Cabinet (EPPC). The Consent Decree was lodged on March 14, 2008 and became effective on January 3, 2011.

Section VII.16B of the Consent Decree obligates LFUCG to develop and implement a System Capacity Assurance Program (CAP) as a component of their overall Capacity, Management, Operations, and Maintenance (CMOM) Program. The CAP authorizes new sewer service connections, or increases in flow to existing connections, provided that adequate treatment, transmission, and collection system capacity can be certified. In the absence of this certification, flow additions to the sewer system may also be authorized by use of a "credit banking system".

Section VII.16B of the Consent Decree obligates LFUCG to submit a System Capacity Assurance Program (CAP) to EPA and Kentucky EPPC by January 3, 2013.

Under the terms outlined in the Consent Decree, LFUCG must submit the CAP within 2 years of the effective date of the Consent Decree and shall begin implementation of the CAP no later than 30 days following EPA approval. Based on the effective date of LFUCG Consent Decree, the CAP must be submitted to EPA by January 3, 2013.



Prior Consent Decree deliverables were staggered based on the sewershed Groups shown above. A single CAP Plan report is required to be submitted that includes all Groups.

LFUCG's Capacity Assessment (CA) was completed and incorporated into the Sanitary Sewer Assessment (SSA) reports submitted to the EPA in April 2011 (Group 1), October 2011 (Group 2), and April 2012 (Group 3). To support preparation of the CA, a hydraulic model was developed using the MIKE URBAN software, a commercially available version of the popular EPA Storm Water Management Model (SWMM). The hydraulic model was used to evaluate collection system and transmission system capacity under existing and future (2035) growth for dry weather and wet weather (2-year, 24-hour level of control) flow conditions.

LFUCG's Remedial Measures Plan (RMP) documents sewer system capacity and identifies capital improvements that will eliminate sanitary sewer overflows (SSOs) and unpermitted bypasses in accordance with the Consent Decree. Proposed RMP projects will be constructed over an 11 to 13 year period. In the interim, the CAP will be used as the basis for authorizing requests for new connections and other increases in flow to the sewer system.

During preparation of the RMP, the hydraulic model was recalibrated using additional flow monitoring data collected in 2010 and resulted in significant changes in sewer capacity in portions of the trunk sewer system. Revised sewer capacity maps, identifying predicted SSOs and sewer surcharged

areas, were subsequently prepared and supersede the capacity assessment results reported in the SSA reports. The updated models and maps will be used by the Division of Water Quality (DWQ) to aid in the determination of adequate capacity in the collection and transmission system as required by the CAP.

Sewer defect information collected during the SSA field investigations led by Stantec will be used by DWQ in developing I/I removal projects and understanding the credit-earning potential from sewer rehabilitation upstream of developable/growth areas.

SSA field investigation activities were performed between 2009 and 2012 in the three Sewershed Groups to understand sewer condition and identify collection system areas with excessive inflow/infiltration (I/I) that are causing or contributing to SSOs and wet-weather related bypasses. Stantec led LFUCG's SSA field investigations and performed an engineering assessment of collected sewer information. Sewer defect information collected during SSA field investigations will be used by DWQ in developing rehabilitation projects and understanding the credit-earning potential from sewer rehabilitation upstream of developable/growth areas.

In July 2011, DWQ transitioned to an Information Management System (IMS) to store, manage, and track sewer information and operation and maintenance activities (work orders). The IMS software was developed in Accela and currently does not include functionality suitable for the on-going management and tracking of a credits banking system. To avoid potential delays in implementing the CAP associated with expanding the functionality of the Accela IMS, DWQ has requested that a separate IMS be developed for credits tracking/management. The credits IMS should be developed to allow for future integration into the Accela IMS.

Implementation of a CAP will necessitate changes in the current sewer connection and land development process in Lexington to ensure Consent Decree requirements are satisfied. Additionally, CAP development and implementation provides an opportunity for improvement to current business practices for managing the sewer connection/permitting process reduced costs for existing programs. These improvements could include: transition to web-based permitting, integration of sewer tap connections/laterals into the City's GIS, creation of a sewer availability determination fee, and other enhancements.

DWQ has recognized the need to involve the Fayette County Neighborhood Council, Commerce Lexington, and various other community stakeholders and LFUCG Divisions in the process. A Task Force is currently forming comprised of representatives from these organizations to participate and provide feedback on CAP development. Involvement of the Task Force will aid in ensuring a fully-implementable CAP that meets both the needs of the regulator and LFUCG's service expectations to its existing customers and the community.

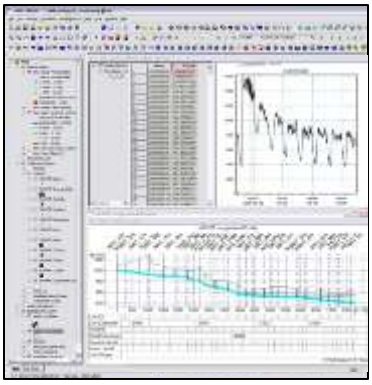
Lexington's CAP Requirements

Specific rules and required elements for Lexington's Capacity Assurance Program are identified in Section VII.16B of the Consent Decree. Highlights include:

- Areas of the collection system, transmission system, and treatment plant that have insufficient capacity for the One Hour Peak Flow, or average conditions, or both, shall be identified. (The initial determination was performed as part of the CA and RMP efforts, but will need to be periodically updated as rehabilitation efforts and RMP improvements are completed.)
- New connections, or increases in flow from existing service connections, will require certification (by a professional engineer) that there is adequate collection system, transmission, and wastewater treatment capacity. Certifications are required prior to the new connection/flow increase.
- If there is not sufficient capacity, which is anticipated for many areas within the sewer system until RMP improvements are completed, LFUCG may authorize new connections/flow additions by means of a "credit banking system".
- An Information Management System (IMS) shall be used to track credits earned from completion of capacity enhancing projects, I/I removal, and removal of connections. The IMS shall also be used to track the expenditure of credits from new connections and flow increases from existing connections.
- Adequate capacity determinations shall consider flows from all existing service connections (current capacity), combined with the flow from all authorized connections (committed capacity) that are not currently connected to the system and the proposed flow addition (requested capacity).
- Collection capacity shall not be adequate if the gravity sewer will operate under a surcharged condition. The surcharged condition is defined as when flow in the gravity sewer will result in the surface of wastewater in manholes to rise greater than 24 inches above the top of pipe or within 3 feet of the manhole rim and is under pressure or head, rather than atmospheric pressure. (An exception is made for sewers designed to operate in that condition.)
- Individual capacity certifications for minor sewer connections may be authorized on a quarterly basis if the sewershed has adequate capacity to carry existing flows and the sum of approved minor connections. Minor connections are defined as flow additions that do

not exceed 2,500 gallons per day. A single family dwelling would be considered a minor connection.

- New sewer connections may be authorized if there is not adequate capacity, but adequate capacity will exist (through capacity enhancing project, I/I removal, or removal of existing connections) prior to the time proposed for the additional flow from the authorized connection.
- Capacity enhancing projects, I/I removal, off-line storage, and removal of connections can be used to offset the capacity lost from new connections and flow additions from existing connections. However, specific trade ratios must be observed such that more flow is removed than is added. Trade ratios are based on the type of project (capacity enhancing, off-line storage, etc.) and the sewershed they occur in. Trade ratios specified in the Consent Decree are summarized in Figures 5.1. – 5.3.
- LFUCG must perform a review of specific capacity enhancing projects and I/I removal projects to determine if actual added capacity is in agreement what was estimated for those projects.
- Capacity enhancement and I/I removal projects may be "banked", provided they were completed after the effective date of the Consent Decree. (It may be possible to negotiate an earlier date with the EPA, as there is precedence in the CAPs for other cities in the region.)
- Capacity exceptions are allowed for sewer connections associated with essential facilities (hospitals, schools, etc.), septic conversions, and illicit connections created after the entry date of the Consent Decree. A subtraction from the credit bank is required, but adequate capacity or available credits (i.e. a positive balance) are not required. Reconnection from temporary disconnections (such as associated with lateral replacement) is not considered a new connection or addition of flow.
- Capacity certifications/analyses shall be submitted to the Kentucky Environmental and Public Protection Cabinet (EPPC) with sanitary sewer line extension permits.
- CAP Plan to be submitted to EPA by January 3, 2013 with implementation to begin no later than 30 days after EPA approval.



LFUCG's Consent Decree requirements include practical methods that do not require extensive model simulations or continuous recalibrations to authorize new connections/flow additions. This reduces the hydraulic modeling effort, keeping the capacity certification process manageable and affordable.

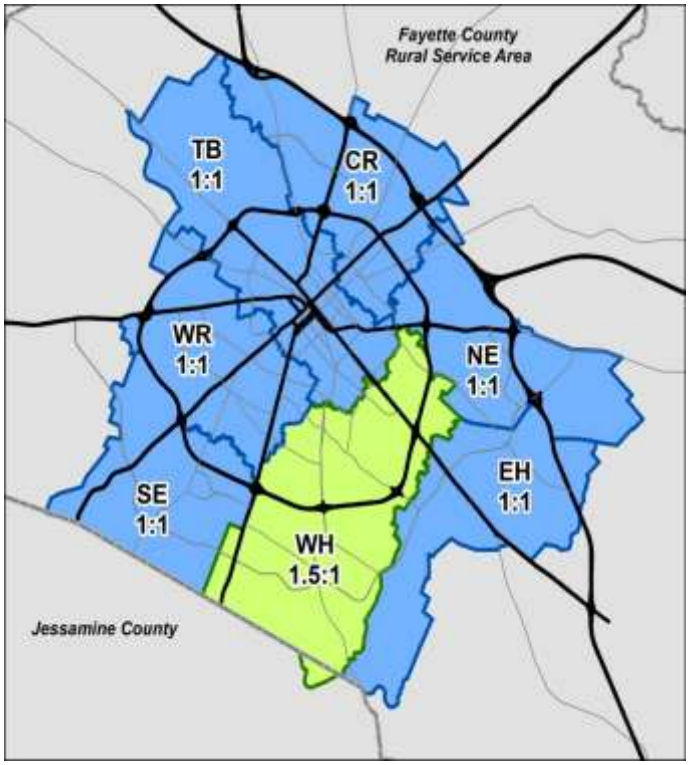


Figure 5.1. Trade ratios for off-line storage and/or removal of connections

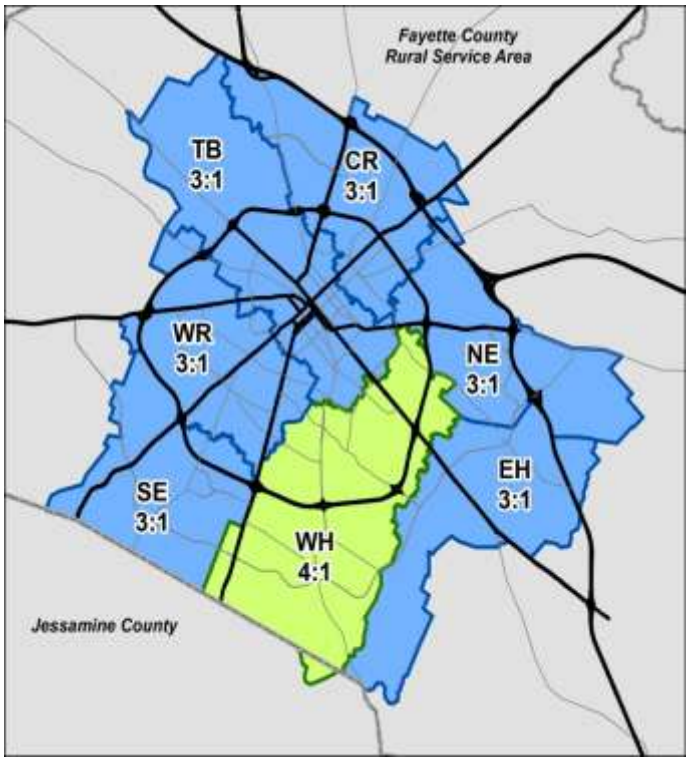


Figure 5.2. Trade ratios for capacity enhancing and I/I removal projects related to a recurring SSO

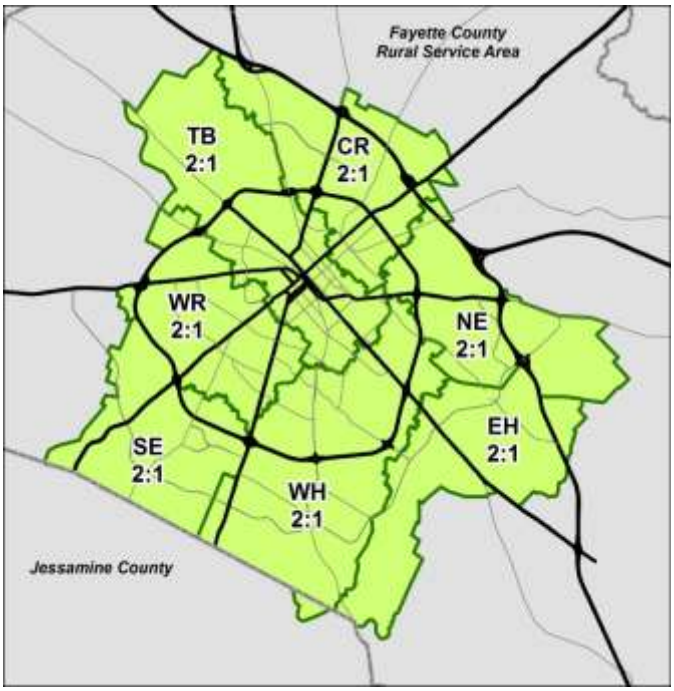


Figure 5.3. Trade ratios for capacity enhancing and I/I removal projects not related to a recurring SSO

Capacity Assurance Programs 101

Other community and sewer agencies in the region have implemented similar Capacity Assurance Programs and are summarized in Table 5.1.

They can be used to guide development of LFUCG's program. However, careful consideration should be exercised to ensure program elements are consistent with LFUCG business practices and acceptable to Lexington's customers, development community and other stakeholders.

Capacity Assurance Programs have been incorporated into numerous Consent Decrees for other communities and sewer agencies within the region. Figure 5.4. illustrates several major communities in the region with federally mandated CAPs. A summary of their programs is presented in Table 5.1. on the next page.

Figure 5.4. Stantec CAP experience in the Region

Table 5.1. Capacity Assurance Program Summary

	Knoxville Utilities Board (KUB)	Metropolitan Sewer District of Greater Cincinnati (MSDGC)	Metropolitan Sewer District of Lousville and Jefferson County (MSD)	Columbus, Ohio ~ Dept. of Public Utilities	Metro Water Services (Nashville)	Lexington-Fayette Urban County Government (LFUCG)
EPA Region	Region 4	Region 5	Region 4	Region 5	Region 4	Region 4
Consent Decree Date	Feb. 11, 2005	Feb. 15, 2002	August 12, 2005 (amended in 2008)	August 1, 2002	April 30, 2007 (but filed on 3/12/2009)	January 3, 2011
CAP Implementation Date	Feb. 8, 2006	Feb. 15, 2002	December 31, 2008	None Specified in SECAP Consent Order	March 20, 2009 (Date Consent Decree Entered)	30 days after approval of CAP Plan (due Jan. 3, 2013)
Sewer Availability Application Fee?	Yes; regardless if capacity available, $300/application	No	No	Yes; Sewer Permit Fee = $85 and Front Footage Charges = $45/LF	Yes; if adequate capacity is available, then $500/application request	TBD
Sewer Reservation Deposit Required?	Yes; (varies based on development type/size)	No	Yes	Yes; Capacity Charges are based upon Domestic Tap Size: 3/4-inch to 16-inch = $3,044 to $484,194	Yes; Tap Privilege Charges based upon Domestic Tap Size: 6-inch to 15-inch = $860 to $6,900; Capacity Fees = $750 per unit of flow (350 gpd)	TBD
Approval in Lieu of Certification (Credits Banking) Program?	Yes	Yes	Yes	No	No	Yes
Trade Ratio (Credits to Connection)	1:1 - Addition of off-line storage 4:1 - Conveyance improvement or I/I removal at chronic SSO location 3:1 - Conveyance improvement or I/I removal at non-chronic SSO location	5:1	3:1	N/A	N/A	Storage or Removal of Connections 1.5:1 - West Hickman 1:1 - All other Sewersheds Other Capacity Enhancing Projects related to Recurring SSO 4:1 - West Hickman 3:1 - All other Sewersheds Other Capacity Enhancing Projects not related to Recurring SSO 2:1 - All Sewersheds
Information Management System for Program Implementation:	Visual Basic and ESRI's ArcObjects/ArcEngine software	Custom (web-based) - Credits tracking; Accela (PermitsPlus) - Permit tracking; Arcview (GEN7) - Geographic Info System	HANSEN - Credits/Sewer Capacity tracking; LOJIC/ESRI - Geographic Info System	Custom built Oracle-based Asset Management and work order system. Uses ESRI/ArcGIS. Also utilizes an Accela permitting center system.	HANSEN is used for supporting Computer Maintenance Management System (CMMS) - used to track work orders; ESRI/ArcGIS used to display all spatial data for water, wastewater, and storm; Engineering Project tracking System used for status of Construction Projects	TBD (Ultimately, will be integrated into existing Accela IMS)
Hydraulic Model:	EPA SWMM	MIKE URBAN/SWMM	InfoWorks CS	SWMM; (Macro-level Model)	EPA SWMM (2005) converted to MIKE URBAN (2007)	MIKE URBAN
CAP Design Storm	2-year, 24-hour		2-year, 3-hour (1.82 inches)	10-year for collection system and 1.4-year for treatment plant bypasses	2-year, 24-hour (peak intensity = 0.97 inches per hour, 24-hour vol. = 3.15 in.)	2-year, 24-hour
Definition of Surcharged Condition			Within 2 feet of MH rim (Areas of no complaints); Within 5 feet of MH rim (Areas of backup complaints)			Greater than 24-inches above the crown of the pipe or within 3-feet of the MH rim
Credits Banked at:	Individual pipes/manholes. Sufficient credits must be available upstream of proposed new connection (unless sufficient credits available downstream and collection system can be upgraded between connection and needed credits).	First downstream SSO	Catchment Areas	N/A (No Credit Program)	N/A (No Credit Program)	TBD
Qualifying Exemptions/Credit Neutrals	Removal of existing illicit connections or connections associated with essential services (schools, gov't facilties, etc.) Subtraction from credit bank still occurs. Reconnection of temporarily suspended service (such as from lateral replacement). No credits expended for reconnections.	Septic conversions, Use of Record, Section 515, Grandfathered Permit to Installs (PTIs), In-Kind Replacements	Removal of existing illicit connections and septic conversions, or connections associated with essential services (schools, gov't facilties, hospitals, etc.) Subtraction from credit bank still occurs. Additionally, capital projects that divert flows between sewersheds and replacements of existing facilities.	N/A	N/A	Essential services (health care facilities, public safety facilities, public schools, etc.), septic conversions, and illicit connections created after CD entry may be authorized but credit subtraction must still be made. Service reconnections or illicit connections made before CD entry do not require subtraction from credit bank.
Value of Equivalent Residential Connection (ERC)	167 gpd	400 gpd	290 gpd	N/A	N/A	TBD
Credit Producing Activities [1]						
Mainline Sewer Rehabilitation (Riparian Areas)	34,000 gpd/inch-mile	17 ERCs per inch-mile	34,000 gpd/inch-dia-mile	N/A	N/A	TBD
Mainline Sewer Rehabilitiation (Non-Riparian Areas)	60 gpd/inch-mile	0.03 ERCs per inch-mile	60 gpd/inch-dia-mile	N/A	N/A	TBD
Replacement of Vented Manhole Lids (or Dish Insert) [2]						
Riparian Zone (1-inch inundation assumed)	40,000 gpd	20 ERC	N/A	N/A	N/A	TBD
Paved Area (1/8-inch inundation assumed)	8,000 gpd	4 ERC	N/A	N/A	N/A	TBD
Other ("Splash" conditions assumed)	2,000 gpd	1 ERC	N/A	N/A	N/A	TBD
Non-Paved, Non-Riparian	N/A	Case-by-case	N/A	N/A	N/A	TBD
Downspout Removal	4,000 gpd per downspout	2 ERCs per downspout	4,000 gpd per downspout	N/A	N/A	TBD
Driveway/Area Drain Removal	6,000 gpd per driveway drain	3 ERCs per driveway drain	6,000 gpd per drain	N/A	N/A	TBD
Manhole Rehabilitation [3]						TBD
Riparian Areas [4]						
Minor I/I	432 - 864 gpd	0.2 - 1.2 ERCs	432 - 864 gpd	N/A	N/A	TBD
Moderate I/I	864 - 1,728 gpd	0.4 - 0.9 ERCs	864 - 1,728 gpd	N/A	N/A	TBD
Heavy I/I	1,728 - 3,456 gpd	0.9 - 1.7 ERCs	1,728 - 3,456 gpd	N/A	N/A	TBD
Severe I/I	3,456 - 6,912 gpd	1.7 - 3.5 ERCs	3,456 - 6,912 gpd	N/A	N/A	TBD
Non-Riparian Areas						
Minor I/I	164 - 328 gpd	0.1 - 0.2 ERCs	164 - 328 gpd	N/A	N/A	TBD
Moderate I/I	328 - 656 gpd	0.2 - 0.3 ERCs	328 - 656 gpd	N/A	N/A	TBD
Heavy I/I	656 - 1,313 gpd	0.3 - 0.7 ERCs	656 - 1,313 gpd	N/A	N/A	TBD
Severe I/I	1,313 - 2,626 gpd	0.7 - 1.3 ERCs	1,313 - 2,626 gpd	N/A	N/A	TBD
Paved Areas						
Minor I/I	39 - 78 gpd	0 ERCs	39 - 78 gpd	N/A	N/A	TBD
Moderate I/I	78 - 156 gpd	0.0 - 0.1 ERCs	78 - 156 gpd	N/A	N/A	TBD
Heavy I/I	156 - 311 gpd	0.1 - 0.2 ERCs	156 - 311 gpd	N/A	N/A	TBD
Severe I/I	311 - 622 gpd	0.2 - 0.3 ERCs	311 - 622 gpd	N/A	N/A	TBD
Foundation Drain Sump Pump Removal	4,000 gpd per sump pump	2 ERCs per sump pump	4,000 gpd per each	N/A	N/A	TBD
Credit Expiration Period	1 year	1 year (with 1 year extension permitted)	2 years	N/A	N/A	TBD
Developer Earned Credits Program?	No	Yes (3-year Expiration Period)	No	N/A	N/A	TBD
Effective Retroactive Date for Earned Credits	January 17, 2003	Jan. 1, 2000	None identified	N/A	N/A	January 3, 2011 (per Consent Decree) March 13, 2008 (per RFP) Credit Harvesting Date To Be Negotiated

[1] For KUB and Louisville MSD, credits are measured in gallons removed and are not converted to ERCs.

[2] For MSDGC, replacement of vented manhole lid credits only allowed for manholes installed prior to September 29, 1982. Maximum of 200 credits from vented lid replacement per year thru the year 2003.

[3] Earned credits for Manhole Rehabilitation are dependent on location of I/I within the manhole (i.e. bench, chimney, etc.) and flow values provided to quantify severity of I/I (e.g. minor, moderate, heavy, or severe). I/I severity based on ASCE Manual of Engineering Practice No. 92.

[4] KUB defines riparian as manhole rim within 2 vertical feet of stream bank edge and within 50 horizontal feet. For MSDGC, riparian is defined as 2.5 times the width between the stream banks during normal flow. Louisville MSD defines riparian as within 50-feet of blue-line stream or within the 2-year FEMA floodplain or 100-year floodway.

While they exhibit similarities, the CAPs in these other communities are based on the specific requirements outlined in their Consent Decrees. The trade ratios, effective dates for credit harvesting, and required CAP implementation dates in those programs are different for Lexington's CAP. However, other program elements in these communities do provide a good framework for LFUCG to consider when formulating a CAP implementation strategy.

One key decision that LFUCG must determine is the location where credits will be "banked". For example, MSDGC (Cincinnati) banks credits from capacity enhancing and I/I removal projects at the first occurring downstream SSO. Credits may be withdrawn from the bank if the requested flow increase is located upstream of the SSO. Consequently, their IMS software must manage individual "bank accounts" at each SSO location.

The CAPs for other communities in the Region, each have their own methodology for how credits are banked.

Knoxville Utilities Board (KUB) banks credits from capacity enhancement and I/I removal projects to the sewer assets themselves (i.e. pipes and manholes). New connections can be authorized if the sum of the credits assigned to all upstream sewer pipes and manholes exceeds the requested flow addition (plus the appropriate trade ratio). If insufficient credits exist upstream there are provisions for utilizing downstream credits, assuming adequate capacity can be certified between the requested connection and the available credits. Regardless where credits are obtained, their IMS software manages separate "bank accounts" for each sewer pipe and manhole and includes functionality to summarize them to determine the available credit balance.

The Metropolitan Sewer District of Louisville and Jefferson County (MSD) adopted a more simplified banking system. MSD defined Catchment Areas that coincide with their major drainage basins. Credits are banked at the Catchment Area. Consequently, credits earned from rehabilitation activities or expended from new connections simply must occur within the same drainage area, or Catchment Area. MSD's incorporated credit tracking functionality into their existing IMS (Hansen).

The CAPs for the Metropolitan Government of Nashville and Davidson County (Metro) and City of Columbus do not presently include provisions for a credit banking system.

Table 5.1. also summarizes qualifying credit-producing activities and their associated values for each communities' program. Credit values were generally based on prior engineering studies, manuals of practice, and industry standards. They provide a good basis for what can reasonably be anticipated to be approved by the EPA.

The information in Table 5.1. provides a solid knowledge base from which LFUCG can formulate their program. However, careful consideration should be exercised during development of CAP protocols/methodologies to ensure program elements not only meet regulatory requirements, but also are consistent with LFUCG's expectations and will be acceptable to existing sewer customers, the development community, and other affected stakeholders. You do not want to submit a CAP that is overly burdensome to administer or is unfair to stakeholders.

The Stantec Team has assisted several other communities in the region in developing, negotiating, and implementing their CAPs.

The Stantec Team has assisted several of the programs identified in Figure 5.4. and Table 5.1. in implementing their CAPs, including the Metropolitan Sewer District of Greater Cincinnati (MSDGC), Metropolitan Sewer District of Louisville and Jefferson County, and City of Columbus (Ohio). This assistance has ranged from developing CAP Plans, negotiating with the EPA, refining implementation protocols, critically evaluating credits tracking IMS software, performing hydraulic modeling and capacity assessments, and guiding/prioritizing programmatic I/I removal activities to match credit needs/development pressures.

Based on our prior CAP experience in other communities in the region, coupled with our institutional knowledge gained from successfully completing your SSA and ongoing RMP work, our familiarity with the requirements outlined in the Consent Decree, and understanding of community issues and local perspective, Stantec has developed an effective Technical Approach to aid LFUCG in developing their Capacity Assurance Program. Our Approach is outlined in the next section.

Technical Approach

Stantec has developed a Technical Approach based on our:

- *Prior CAP experience;*
- *Institutional knowledge gained from our SSA and RMP involvement;*
- *Familiarity with your Consent Decree; and*
- *Understanding of community issues and local perspective.*

Your Scope of Work consists of six general tasks necessary for development of an implementable CAP by January 3, 2013. These five tasks are summarized below and form the general outline for our Technical Approach.

1. **Methodology/Work Flow Process.** Develop a methodology and work flow process for determining sewer capacity, and in the absence of adequate capacity, credit banking and tracking protocols. Methods/protocols must be verifiable, reproducible, and must fit within DWQ's resource and program administration goals.
2. **Task Force Coordination.** Lead/facilitate monthly meetings with Task Force comprised of LFUCG and community stakeholders. CAP Consultant's role is to educate Task Force on Consent Decree requirements, provide technical guidance/leadership, document discussions, and incorporate Task Force recommendations.
3. **Information Management System (IMS).** Develop an IMS that can be used to make and document capacity determinations and credit banking transactions for requested sewer connections and flow increases.
4. **Hydraulic Modeling.** Utilize sewer capacity results from LFUCG's existing hydraulic model for capacity determinations and incorporate into the IMS. Hydraulic modeling to be recalibrated as RMP projects or other conveyance enhancing and I/I removal projects are complete.
5. **CAP Plan Report.** Prepare CAP Plan report for submission to EPA and Kentucky EPPC. CAP Plan will be a summary of LFUCG's program and fully document the methodology/protocols that will be employed when authorizing/denying sewer connections and flow additions.
6. **Program Implementation.** The CAP Consultant will be responsible for implementing the program within 30 days of EPA approval of the CAP Plan. Implementation will require harvesting prior earned credits, preparation of program education materials for developers/public, training of LFUCG staff, quarterly reporting, incorporation of the credit tracking IMS to Accela, and transitioning program to be fully administered by LFUCG without the assistance of the CAP Consultant.

Methodology/Work Flow Process

Figures 5.5. thru 5.10. provide a "real" example of how the capacity certification and credit banking process would work in the Idle Hour neighborhood.

The "golden rule" when developing any new work flow process, software system, or program is begin with the end in mind. This is not a new concept, but one that too often goes ignored, inevitably leading to less than ideal results or costly corrective actions later. Stantec routinely employs this golden rule to our projects and has developed our technical approach with this same philosophy in mind.

The "end", in this case, is a fully implementable CAP program that meets the specific requirements of your Consent Decree and the needs of existing customers and growth of the community. A key word in our objective being "implementable".

To better understand your CAP needs, let's evaluate a "real world" example in the Idle Hour Neighborhood.

Figure 5.5. is a map of the Richmond Road area near New Circle Road in the upper portion of the West Hickman sewershed. The two parcels highlighted in yellow identify areas with near-term potential for new connections/flow increases to Lexington's sewer system. One parcel is the former site of the Lexington Mall and is currently being redeveloped by Southland Christian Church. The second area is a vacant 20-acre apartment complex (formerly Pennington Place.) During SSA field activities, excessive I/I was identified from the private sewers on the Pennington Place property and they were subsequently disconnected from LFUCG's sewer system.

Figure 5.5. Development potential in Idle Hour neighborhood

Under a CAP, capacity would need to be certified by LFUCG for any increase of flow from the church property in excess of that from the mall. (Most CAPs allow for "use of record" credits regardless if the property was previously vacant/abandoned.) Future development of the Pennington Place parcel would be considered a new connection, since there is no existing connection to the sewer system.

Both parcels shown in Figure 5.5 are located in the West Hickman sewershed. West Hickman has the majority of the SSOs in Lexington's sewer system and much of the trunk sewer system lacks adequate hydraulic capacity. This is evidenced by the higher trade ratio specified in the Consent Decree for West Hickman. Figure 5.6 illustrates the sanitary sewers and SSOs for the area. The SSO cluster located south of the church property (near the reservoir) represents one of LFUCG's most chronic overflow area. Another SSO is located on the trunk sewer immediately downstream of the Pennington Place parcel. The addition of new flow to the sewer system would exacerbate existing overflow problems. Note that there is also an SSO cluster located upstream of the church property, but both developments are located downstream and would not contribute to an increased overflow volume.

Figure 5.6. Sanitary sewers and SSOs in Idle Hour neighborhood

Figure 5.7. illustrates the most recent hydraulic modeling results for the trunk sewers in the area performed during the RMP development. (Recall, the original hydraulic model developed for the Capacity Assessment was recalibrated during RMP development.) The orange-highlighted sewers indicate where the sewer is under a surcharged condition as defined in the Consent Decree (i.e. greater than 24-inches above pipe crown). Based on the results shown in Figure 5.7, adequate capacity could not be certified for development of either property.

Based on the lack of adequate capacity, authorization for sewer connection will require either the completion of the RMP project(s) that restore adequate capacity or use of banked credits.

Figure 5.7. Sewer surcharging and SSOs predicted by the hydraulic model

Figure 5.8. illustrates LFUCG's RMP projects in the area. Completion of these projects will eliminate SSOs and sewer surcharging in the Idle Hour area. Capital projects identified in the RMP must be completed within the next 11 to 13 years. Preliminary schedules for the RMP projects shown in Figure 5.8 have been developed and are included in the Group 1 RMP report.

If the new connection is planned before the completion of the RMP project(s) needed to restore hydraulic capacity in this area, then sewer connection authorization will require the use of banked credits.

Figure 5.8. Planned RMP projects in the Idle Hour neighborhood

Figure 5.9 illustrates prior rehabilitation (highlighted in blue) of the sewer system by DWQ upstream of the two properties since March 13, 2008. (This date was identified in the RFP as the assumed "harvest date" for claiming credits for prior rehabilitation efforts.) Credits can be calculated for these rehabilitation efforts and banked for use by future connections and flow increases.

If these banked credits do not completely offset the proposed flow additions (including the required trade ratio) or have been already used/reserved by a prior request, then sewer service for the two parcels could not be authorized

and they would be placed on a waiting list. Long-term sewer unavailability will impede economic redevelopment and vacant parcels generally detract from community aesthetics.

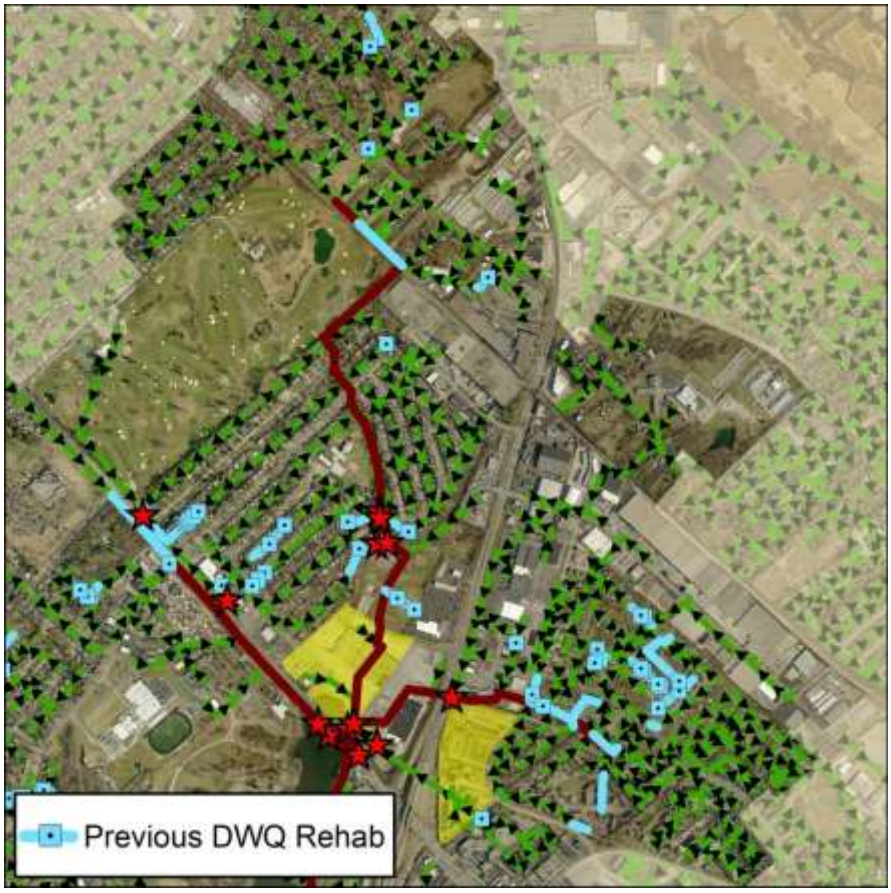


Figure 5.9. DWQ rehabilitation efforts since March 2008

Sewer defect information collected by Stantec during the SSAs is illustrated in Figure 5.10. Defect information identifies areas where sewer rehabilitation could be performed to generate the credits necessary to offset proposed flow additions from the church and Pennington Place parcels. Sewer defect information can be used to estimate earned credit potential upstream of developable areas. Stantec's experience in other CAP communities is that credit availability and development potential become another consideration when prioritizing their collection system rehabilitation programs. Additionally, some CAP communities have established programs to permit developers to perform/finance the upstream sewer repairs so they can expedite receipt of the needed credits.

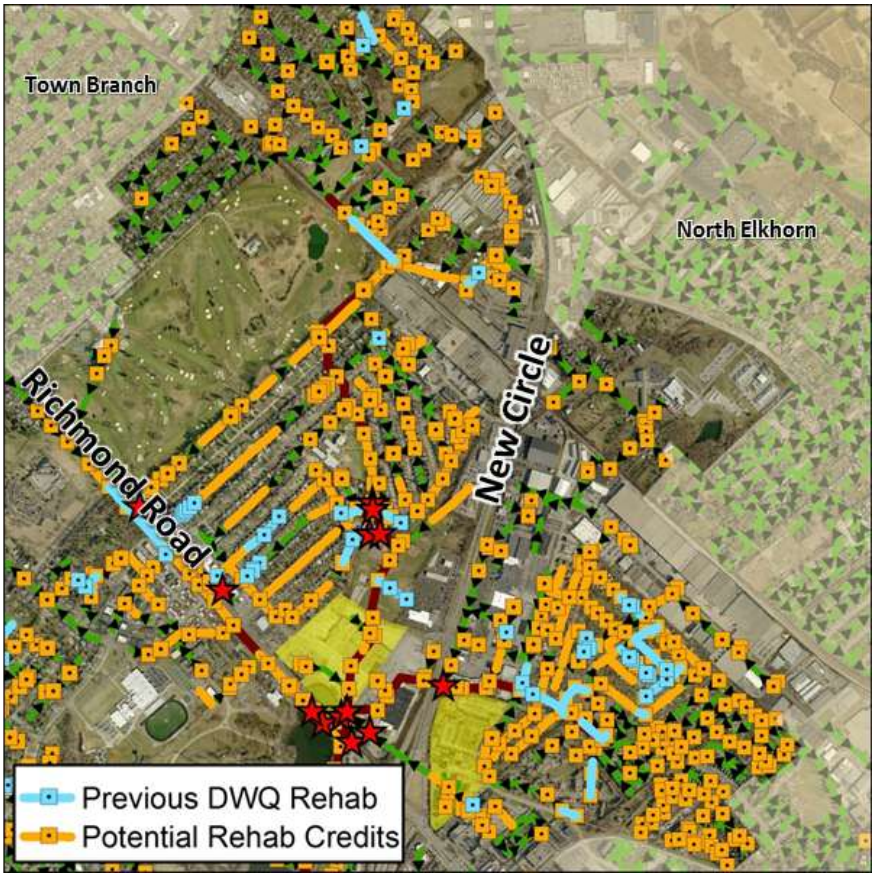


Figure 5.10. Earned credit potential in Idle Hour neighborhood

Now consider that the Pennington Place parcel preceded the church and that they reserved all the credits available in the bank. The church would be required to wait until upstream rehabilitation could be completed to earn the flow credits needed by the church. However, what if funding for the Pennington property fell thru and the development was delayed? The church's sewer request occurred after the Pennington parcel, but it hardly seems fair for the Pennington parcel to retain the credit reservation indefinitely. How long would LFUCG allow the credit reservation before they expire?

It is important to recognize that hydraulic modeling (or frequent recalibration) is not needed to evaluate individual sewer requests.

Stantec's approach capitalizes on this recognition and limits hydraulic modeling to the defined milestones in the Consent Decree.

Lastly, consider the following outcomes. What if the church wanted to meet their original schedule (i.e. did not want to be placed on a waiting list) and offered to purchase previously reserved credits directly from the Pennington developer. Would this be permitted? How would third-party deals be regulated and documented so that LFUCG could update their credit ledger? What would prevent an entrepreneur from snatching up all available credits and establishing a monopoly, thereby controlling development in an area(s) or prohibiting it altogether (i.e. by not selling their credits)? For reference, most (if not all) CAP communities prohibit the sale or transfer of reserved credits to avoid these undesirable outcomes.

As evidenced in the Idle Hour neighborhood example, the following key components are necessary for an implementable and effective CAP.

- A sewer request application form that identifies the parcel/location and requested flow. (Needed to initiate the process and provide the information needed to make the determination.)
- GIS-based access to basic mapping features (parcels, sewers, etc.) hydraulic capacity modeling results, prior rehabilitation efforts/banked credits, and defect information (earned credit potential).
- An accounting-based ledger for documenting credit transactions so that prior reservations are recognized, double-counting is avoided, and expired credits can be identified and returned to the bank.
- Updated hydraulic modeling results at key milestones, such as after completion of RMP projects or sewer rehabilitations. (The Consent Decree requires hydraulic model to be updated on annual basis to verify capacity.) It is important to recognize that hydraulic modeling is not needed to evaluate each sewer request and that static model results can be used. This will greatly expedite the sewer authorization process and reduce program administration costs.

Hydraulic modeling is not needed to evaluate each sewer request and static model results can be used. This will greatly expedite the sewer authorization process and reduce program administration costs.

- A means to identify and harvest earned credits from ongoing DWQ rehabilitation and repair efforts. (A one-time credit harvest of prior rehabilitation projects is also needed to establish initial balances for credit bank accounts.)
- Access to RMP project locations and notification when projects are substantially complete.
- A waiting list for sewer requests that could not be met.
- Rules for determining credit uses, expiration dates, sale/transfers, and developer initiated/funded rehabilitation.
- Ability to interface with SSA sewer defect data to determine earned credit potential upstream of proposed flow additions. This functionality will improve LFUCG's ability to manage the waiting list.

Stantec's approach for developing work flow processes relies on carefully prepared, focused meetings to ensure that meetings are productive and that decisions are carefully evaluated and documented.

As outlined in the RFP, Stantec will meet with DWQ every two weeks to discuss the program aspects/outcomes outlined above and develop effective work flow processes. The meetings will be concentrated, focusing on only one or two program elements or work flow processes per meeting. This will avoid trying to "eat the elephant all at once" and ensure that meetings are productive. Stantec will carefully plan out each meeting beforehand, performing the necessary research and preparing any required exhibits. Minutes for each meeting will be prepared and document discussion highlights and key decisions.

It is anticipated that at first meeting of the month, Stantec will briefly introduce the topic, identify available options/alternatives, indicate what other communities have adopted, discuss advantages/disadvantages, and identify the impact on program administration and resource needs. It is expected that after the first meeting, DWQ will review and digest the information before the second meeting of the month. The second meeting will provide opportunities for additional discussion/questions and for Stantec to present any additional information/research that may have been requested during the first meeting. It is anticipated that a decision will be reached at the second monthly meeting. Progress from the two monthly meetings can then be shared, as appropriate, at the next Task Force meeting.

Detailed flow charts for individual work processes and step-by-step instructions will be prepared to facilitate training and transfer of program administration to LFUCG staff.

Figures 5.11. and 5.12. are flow charts illustrating the sewer capacity determination process for Knoxville's and Louisville's programs. Figure 5.13 illustrates an early draft flow chart developed for Cincinnati MSD that outlines the entire life span of a banked credit from creation (rehabilitation activity) to reservation (flow request) to expenditure (physical addition of flow to system). Stantec developed the flow chart in 2007 when we assisted MSD in refining the protocols for implementing their CAP and evaluated their credits tracking Information Management System (IMS).

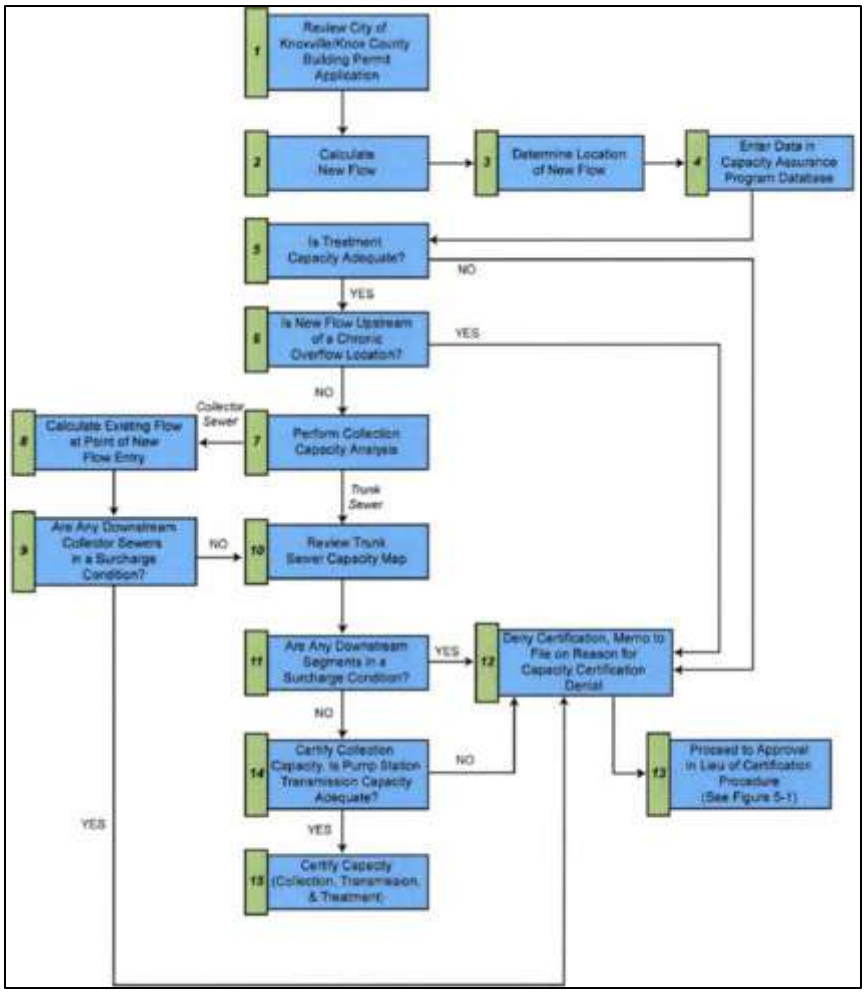


Figure 5.11. Knoxville Utilities Board capacity certification procedures

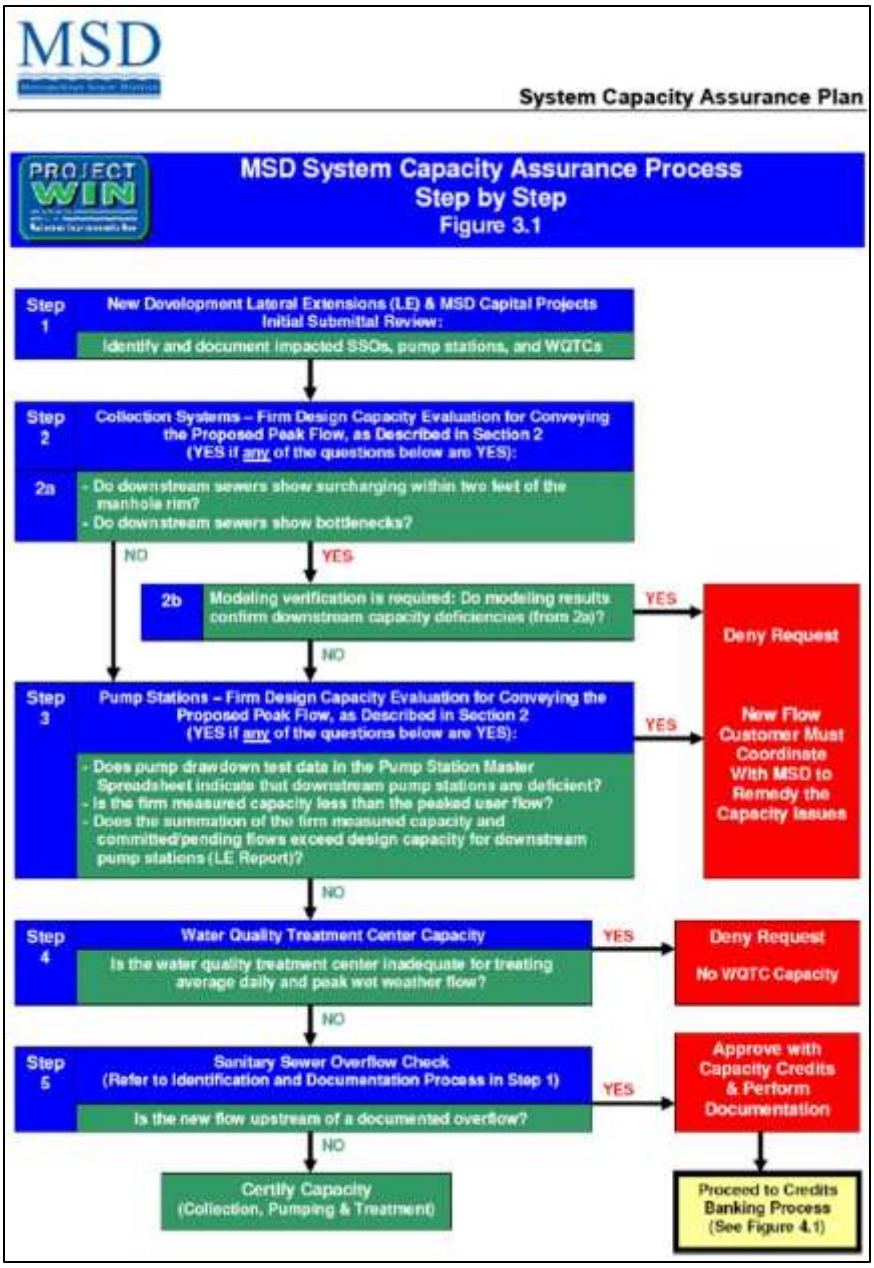


Figure 5.12. Louisville MSD Capacity Assurance process

The process flow charts in the figures provide the general overview of the decision tree used for reviewing requests for new sewer connections or flow additions. A flow chart similar to these will be developed to clearly outline the work flow process for LFUCG's CAP. Additionally, tailored flow charts and detailed instructions will be developed for each individual work task to clearly document established protocols and provide detailed guidance/instruction for program implementation. These protocols will greatly facilitate training of DWQ staff and ease the transition to the new business practices. A training manual will be prepared that fully documents the entire program with

individual, stand-alone modules that can be pulled out and used to train individuals who are only responsible for administering a portion of the program.

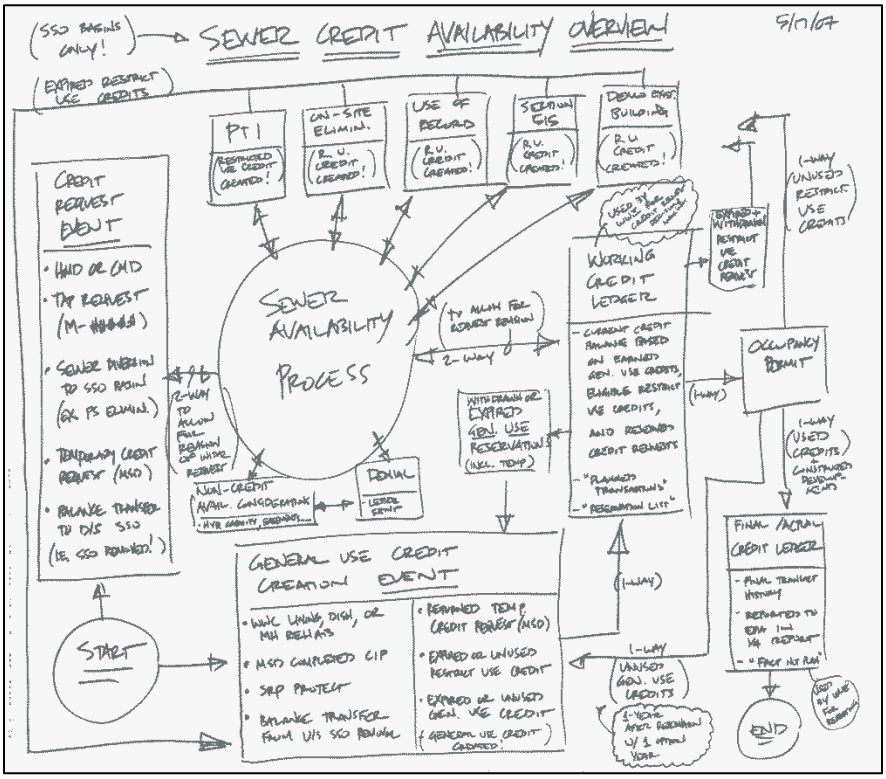


Figure 5.13. Early flow chart developed by Stantec for Cincinnati MSD's CAP

Stantec has proven experience developing work flow processes/protocols for Cincinnati MSD's Capacity Assurance Program (CAP).

Additionally, Stantec successfully partnered with DWQ to develop effective protocols for the SSAs. These protocols are being used to guide the development of SOPs for LFUCG's CMOM program.

Stantec has a proven track record for assisting our clients in developing and refining their wet weather and capacity assurance programs. Stantec's Project Manager assigned to this project assisted Cincinnati MSD in refining the credit tracking work flow processes for their CAP. Additionally, Bob Campbell was the former Director of Cincinnati MSD during their CAP negotiation and initial implementation. Mr. Herman and Mr. Campbell will apply the lessons learned from this experience to ensure that well-thought out, implementable protocols are developed for your Program.

Similarly, Stantec Team members have a proven track record assisting LFUCG in developing effective work protocols. Stantec recently assisted DWQ in developing inspection, QAQC, and notification protocols for SSA field activities. The SSA represented the largest single field investigation effort completed by LFUCG and it was critical that proper protocols were developed/implemented so that data was usable for developing the RMP, Consent Decree schedules could be met, and there was minimal inconvenience/nuisance to LFUCG customers. Stantec and DWQ successfully partnered to develop these protocols and are being used to guide Standard Operation Procedures (SOPs) for LFUCG's CMOM program.

Task Force Coordination

A critical element to the success of Lexington's Capacity Assurance Program is the involvement of the Task Force. The Task Force will bring a diverse perspective to the CAP. Task Force members from the other LFUCG Departments/Divisions will identify potential conflicts with proposed CAP policies that will avoid hiccups during start-up. Additionally, they will aid in identifying potential opportunities for streamlining the land development and permitting process to reduce LFUCG administrative costs. Involvement of non-government stakeholders like the Fayette County Neighborhood Council will provide a perspective from the existing sewer rate payer, allowing their concerns to be understood. Finally, civic and professional organizations such as Commerce Lexington and the Lexington Homebuilders Association will offer insight into the impacts of proposed policies on economic development and growth.

Integrated Engineering has established positive relationships with local leaders and possesses a thorough understanding of existing LFUCG sanitary sewer connection and land development policies.

Balancing the concerns and expectations of the diverse Task Force perspectives will be challenging. It is likely that some proposed policies will be strongly endorsed by one faction and vehemently opposed by others within the Task Force. However, it is important to understand everyone's perspective so that all concerns are known and can, to the extent practical, be addressed.

To aid in this challenge, Stantec has recruited two firms, Integrated Engineering (IE) and ERI International (ERI). IE is heavily involved in the Lexington community and has established positive relationships with local leaders. ERI specializes in public-private partnering and public policy related to growth management and economic development. Both firms are Lexington-based and have a thorough understanding of local issues and a history working with community stakeholders.

ERI International specializes in public-private partnering and public policy related to growth management and economic development.

Stantec will work with IE and ERI to balance the needs of the CAP with those of LFUCG and the Task Force. With two offices in Lexington that includes a staff of approximately 180 persons, Stantec has a strong local investment and thorough understanding of existing LFUCG policies and practices.

Stantec, along with IE and ERI, will lead/facilitate monthly meetings with the Task Force. Each meeting, similar to those with DWQ, will be limited to one or two topics to ensure the meetings stay focused and productive. Initial meetings will be largely informational, while Stantec presents a general overview of Lexington's Consent Decree requirements, required program elements, and benchmark information on CAPs in other communities (such as those presented in Table 5.1. earlier in this section.)

Later meetings are anticipated to be comprised into two halves. The first half will feature a presentation on DWQ's proposed CAP policies and will be based on decisions/discussions from the two progress meetings with DWQ

the month prior. The presentation will be informative and intended to educate Task Force members of the who, what, when, where and why. The second half of the meeting will be dedicated to open discussion and questions by Task Force members. Members will be encouraged to offer their perspective on the proposed policy and advise of any perceived hardships or concerns.

Stantec's approach will utilize a Meeting Facilitator for Task Force meetings. The Facilitator will be responsible for making sure meetings remain focused, finish on time, and that all Task Force members are given an equal opportunity to provide input.

Early emphasis will be placed on clearly identifying the Task Force's mission. A summary of Lexington's current sanitary sewer extension policies and tap-on permit issuance processes will be featured. In addition to providing feedback on proposed CAP policies, Task Force members will also be asked to identify opportunities to improve and/or streamline existing policies.

Stantec's approach to Task Force meetings will utilize an assigned Meeting Facilitator. The Facilitator's role will not be to provide content, offer opinion, or steer the discussion to a particular outcome. Rather, the Facilitator role is to manage the meeting, ensuring that the meeting stays on topic and is completed within allotted time. The Facilitator will be responsible for making sure that all Task Force members are given equal opportunity to contribute to the discussion. The Facilitator will begin each meeting by identifying the topic/objective for the meeting and the allotted time frame and format for the discussion. At the conclusion of each meeting, the Facilitator will provide a concise summary of the salient discussion points and any decisions or consensus that were achieved.

Meeting minutes will be prepared for Task Force meetings to document discussion highlights and key decisions. Minutes will clearly identify attendees at the meeting and include the date/time and location for next month's meeting.

Stantec Team members assigned to the Task Force Coordination have facilitated similar stakeholder groups. Mr. Mesta served alongside community leaders as the 6th District Representative for LFUCG's re-districting committee and also assisted in LFUCG's Tates Creek Sidewalk project with public residents. Mr. Harscher is assisting LFUCG and Stantec on the Downtown Lexington Traffic Movement and Revitalization Study. This project will involve close coordination and input from Lexington leaders to ensure traffic flow patterns support planned redevelopment of the Distillery District and the reimagined Rupp Arena and new downtown arts and entertainment district. Stantec Team members will bring our same proven commitment and leadership to the CAP Task Force.

Information Management System (IMS)

The CAP will require the development of an Information Management Systems (IMS) tailored to LFUCG's work flow processes and data.

Unfortunately, there is no ready-made, commercially-available capacity certification software that LFUCG can simply purchase to manage the CAP. Similarly, LFUCG cannot simply adopt the custom software developed for other programs, such as Knoxville, Cincinnati, or Louisville. The software developed for these programs was specifically tailored to their CAP work flow processes and hard-wired to their database formats/preferences. The software was designed to enhance their specific sewer extension and permitting programs and would require extensive modification and debugging to adapt to LFUCG's program.

It is <u>not</u> recommended that LFUCG adapt IMS applications developed for other CAP communities, as the software platform may be outdated (Knoxville Utilities) or could require costly software purchase (Louisville MSD).

Moreover, LFUCG may not want to adopt the IMS solutions from other communities. For example, the IMS used by Knoxville Utilities Board (KUB) was developed in 2007 and is based on ESRI's ArcObjects technology that is no longer widely used in the industry. Louisville MSD's IMS resides within their work order/asset management software and would require LFUCG to purchase the Hansen software. (LFUCG evaluated Hansen and other work order/asset management software in 2010 and determined Accela best met their needs.)

Stantec proposes to develop a GIS-based IMS solution to facilitate capacity certifications and credit banking transactions. The IMS will be customized to LFUCG's specific work processes/protocols. Stantec will utilize our in-house (and Lexington-based) programming staff to develop the IMS. During preparation of this proposal, our programmers developed the prototype of the main user interface screen (or dashboard) shown in Figures 5.14. and 5.15.

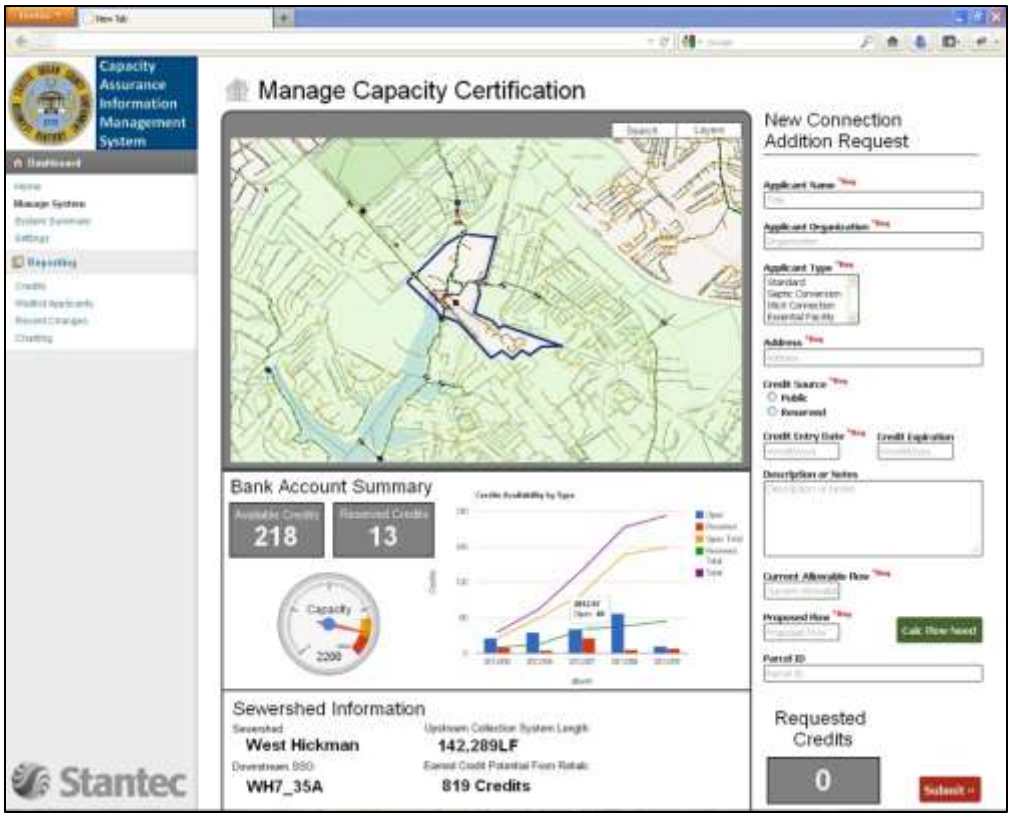


Figure 5.14. Capacity certification and credits tracking IMS prototype

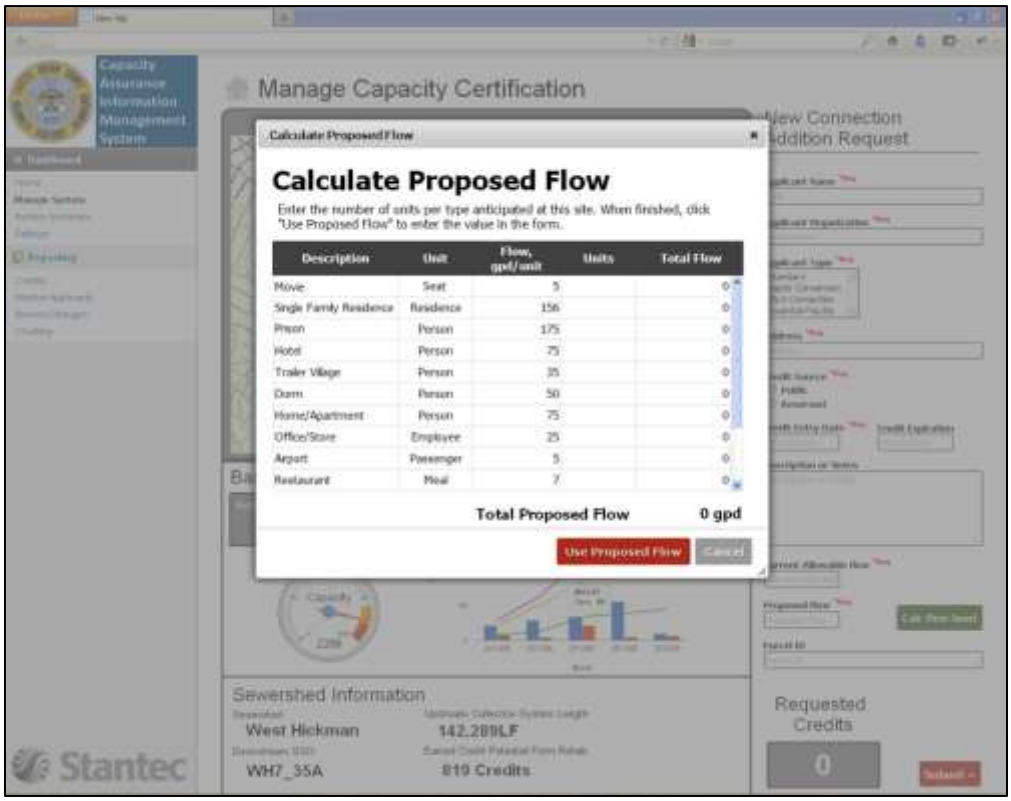


Figure 5.15. Example flow calculation wizard available within the IMS

The IMS will be web-based, eliminating the need for installation on individual computers or the need to purchase/manage multiple software licenses. Users can simply log in to the application and will require only a web browser and internet service.

LFUCG's IMS solution will be designed to support the following functionality:

- GIS-based, allowing LFUCG the ability to spatially identify the location of proposed flow additions, hydraulic modeling results, and credit balances.
- Ability to input/store/report connection requests, credit transactions and capacity certifications.
- Ability to capture earned credits from DWQ's ongoing repair and rehabilitation activities, private property initiatives, and other qualifying activities.
- Ability to export a Capacity Certification and Credit Ledger that can be used to support quarterly reporting to the EPA and Kentucky EPPC.
- A flow calculation "wizard" that includes industry standard (or negotiated) flow contributions from common land uses so that requested flow requests are consistent and reproducible. The flow calculation wizard will allow DWQ to quickly validate the accuracy of requested flow additions.
- Ability to integrate hydraulic modeling results and accommodate periodic updates.
- Ability to identify RMP project limits and completion schedules.
- Ability to manage prior capacity commitments for those credits that have been reserved by others but that have not been expended (i.e. connection to the sewer has not yet occurred).
- Ability to store and manage a waiting list for sewer connection requests for which capacity cannot be certified and needed credits are not immediately available.
- Include a set of standard letter templates that will be populated with applicant information. The proper letter template will be selected based on the results of the capacity certification or credit determination.

The IMS will include standard letter templates that can be exported with applicant information to identify the results of the capacity determination, credit reservation, or placement on the waiting list.

The ability to automatically generate capacity determination letters will aid in reducing program administration costs.

The IMS will likely also include provisions to accommodate one or more of the following (depending on LFUCG's methodology/work flow decisions):

- **Grandfathered connections.** Developments that have an approved Sewer Line Extension Permit or paid their tap fee but have not physically connected to the sewer by the onset date of CAP implementation. These are often allowed so that previously approved developments are not "caught in the middle".
- **Expired credits.** Most communities assign an expiration date to credits. If the property owner/developer does not add the requested flow addition to the system by the expiration date, then the credit is returned to the bank and re-application is necessary. The credit expiration is necessary to avoid "gaming" of the process.
- **Use of record.** Flows/credits are usually allocated to existing land uses. Redevelopment of the property is only required for the increase in flow above its existing use. For example, if a property with an existing office building is redeveloped into a car wash, then capacity/credits needed for the car wash would be the difference between the flow usage for a car wash and the flow usage for an office building.
- **Septic conversions, essential facilities, and illicit connection removals**. An exemption for these facilities is provided in the Consent Decree. Approval is guaranteed regardless whether sufficient capacity or credits are available. However, credit subtraction is necessary (except illicit connections created before the CD entry date).
- **Reconnections**. Capacity/credits are not required for reconnections to the sewer system associated replacement of same structures, such as from lateral replacements.
- **Balance transfers**. Cincinnati MSD "banks" credits at each SSO location. When the SSO is eliminated by a capital project, the bank balance is transferred to the next downstream SSO. If LFUCG elects to bank credits at SSO locations, then provisions to transfer credits between accounts will be necessary.
- **Unused credits/returns**. Developments often change between conception to construction. Applicants may not end up using all the credits that were assigned to them. Unused credits will return to the bank either after the expiration date or after the development is complete.
- **Reserved credits**. LFUCG may elect to support a developer-financed rehabilitation program for applicants who are unwilling to wait for credits/capacity to become available. These credits are usually reserved to that developer. They typically return to the public

The IMS will need to accommodate non-standard transactions, such as septic conversions, expired credits, unused credit, use of record, and reconnections.

pool/bank if they are not completely expended or after the expiration date.

- **Flow diversions**. Not common, but opportunities sometimes arise to divert a portion of their service area to another portion of the sewer system. This is common in pump station elimination projects. Two examples in LFUCG's system is the planned elimination of the Johnson Property pump station and the Sharon Village pump station. Based on recommendations in the Remedial Measures Plan, both improvements would alter the discharge locations from these areas, resulting in flow changes in the original/proposed receiving trunk sewers.

Stantec excels at developing custom software solutions for our clients. Our approach to developing custom software is based on pairing the subject matter expert with the programmer. This approach ensures that software matches the needs of the user. The programming staff assigned to your project are conveniently located in our Lexington office. This will maximize our efficiency and ability to expedite IMS development. The staff assigned in the organization chart (Section 1) specialize in IMS and web-portal development. They recently developed web-based IMS solutions for the Kentucky EPPC and Indiana Department of Natural Resources (IDNR) to help them manage their statewide floodplain programs. Additionally, Stantec also completed a web and GIS-based IMS for the City of Newark (Ohio) to help them manage their water and wastewater infrastructure. Details of these projects were included in Section 1.

Hydraulic Modeling

Stantec employs a restrained approach to hydraulic modeling that meets Consent Decree requirements but avoids over-analysis and unnecessary recalibrations that can significantly escalate overall program costs and reliance on Consultant expertise.

LFUCG's existing hydraulic modeling utilizes the MIKE URBAN software, a commercial version of the popular EPA Storm Water Management Model (SWMM). Stantec has extensive experience using MIKE URBAN and its underlying hydraulic computational engine (SWMM). Stantec has performed hydraulic modeling to support both Louisville and Cincinnati MSD's Capacity Assessment/Assurance Programs in accordance with their Consent Decree requirements. Additionally, Stantec developed LFUCG's original SWMM model for the Cane Run sewershed that was used as the basis for the current MIKE URBAN model.

Stantec employs a restrained approach to modeling on our projects. If not used judiciously, hydraulic modeling can result in over-analysis and unnecessary recalibrations that increase project/program costs with little added real benefit or value. Fortunately, the CAP requirements in your Consent Decree include provisions that allow for capacity certifications and credit banking that do not require frequent model simulations or analysis.

The existing and future year (2035) capacity of LFUCG's treatment, transmission, and collection system was determined during the Capacity

Static capacity and surcharging results from the hydraulic model will be exported annually and integrated into the IMS for use in making capacity determinations.

Assessment and later refined during Remedial Measures Plan development. Consequently, LFUCG has already completed all hydraulic modeling necessary to begin CAP implementation and additional investment is not required.

According to the terms of the Consent Decree (VII.16B(iii)(g)), LFUCG shall perform a review of completed capacity enhancing and I/I removal projects to determine their impact on sewer capacity and system surcharging. This determination is required on an annual basis (and once within the first CAP year) and will require modification to the hydraulic model.

Capacity enhancing projects are identified in the RMPs and hydraulic modeling has been previously developed. Consequently, hydraulic model updates for these projects will simply require "turning the project on" in the model.

I/I removal projects will require post-rehabilitation flow monitoring data to verify their effectiveness. Revised RTK coefficients will be developed from the new flow data and input into the model to determine the impact on system capacity/surcharging.

Consequently, hydraulic modeling is straight-forward and limited to model "maintenance". Model calibration more frequent than annually is not required, is unnecessary, and will increase program costs.

During preparation of this proposal, Stantec recreated a MIKE URBAN hydraulic model for the trunk sewers upstream of the SSO cluster on Richmond Road near the Idle Hour Neighborhood. The model was recreated from physical sewer information and flow data collected during the SSAs. Figure 5.16. illustrates the MIKE URBAN model developed by Stantec. This exercise was performed to fully vet model compatibility with our proposed approach and minimize the potential for unforeseen complications.

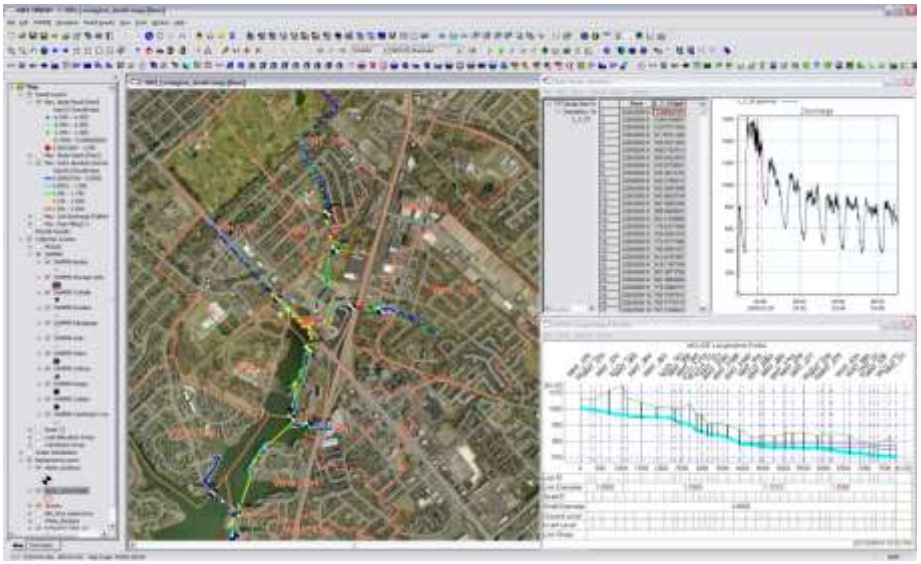


Figure 5.16. MIKE Urban hydraulic model near the Richmond Road SSO Cluster

Stantec's CAP approach will consist of exporting hydraulic model capacity and surcharge results into a geodatabase. The geodatabase will be organized by pipe/manhole asset and will be utilized the CAP IMS for making capacity determinations. The static model results provide a clear understanding of sewer capacity and surcharging and form the basis of other CAP programs in the region.

CAP Plan Report

A CAP Plan Report is required to be submitted to the EPA no later than January 3, 2013. The Plan will provide a summary of LFUCG's CAP and will fully document the methodology/protocols that will be employed when authorizing/denying sewer connections and flow additions. The Plan will be a direct outcome of the decisions and products arising from the methodology/work flow process development, IMS, hydraulic modeling, and Task Force coordination efforts. Specific content requirements for the CAP Plan Report are outlined in the Consent Decree (VII.B.(i)) and will be strictly followed.

Stantec will prepare the draft CAP Plan Report and present to LFUCG for review no later than 30 days prior to the EPA submission deadline. Upon successful incorporation of LFUCG review comments, five (5) hard copies and an electronic copy of the Plan will be prepared for submission to the EPA and posting on LFUCG's web site.

We are committed to preserving LFUCG's perfect record of timely Consent Decree deliverable submissions!

Stantec has assisted LFUCG and other communities in the preparation of their Consent Decree deliverables. We are familiar with the requirements and understand that deliverables must be submitted on time, no exceptions. We are committed to preserving LFUCG's perfect record of timely Consent Decree deliverable submissions!

Program Implementation

The CAP Consultant will be responsible for implementing the program within 30 days of EPA approval of the CAP Plan. Implementation will likely include:

Stantec has the in-house expertise to fully implement your CAP and has in-house tools to reduce the data reduction/analysis costs needed for model recalibration.

- "Harvesting" earned credits from prior rehabilitation activities. These earned credits will serve as the beginning balances for banked credits.
- Preparation of program education materials for developers/public. It is strongly recommended that an information brochure or letter be developed that clearly outlines the new business practices. It is our experience that this reduces headaches and expedites acceptance of the program by the development community.
- Performing capacity determinations until program administration is transitioned to LFUCG staff.

- Quarterly reporting. The IMS will be used to export credit ledgers that provide a summary of capacity determinations and credit transactions. CAP implementation activities will be summarized and submitted to the EPA, as appropriate, to support LFUGCG's quarterly reporting.
- Annual model recalibration and reassessment of system capacity.
- Integration of the capacity certification and credit tracking into Accela. DWQ has indicated their long-term goal is to eventually incorporate the algorithms and databases from the IMS into Accela.
- Training of DWQ staff for eventual transition of the program administration away from the CAP Consultant.

Flow Monitoring

The Stantec Team has the in-house capabilities to perform all services needed for CAP implementation, including the flow monitoring expertise necessary to support the annual model recalibration.

Stantec has in-house flow monitoring expertise and has provided these services for other large Consent Decree programs.

Stantec has provided collection system flow monitoring services to support capacity assessments and hydraulic modeling on many of the major Consent Decree programs in the U.S., including: Sanitation District No. 1 and Louisville MSD (Kentucky), Cincinnati MSD and City of Columbus (Ohio), Seattle Public Utilities (Washington), and the Allegheny County Sanitation Authority (Pennsylvania).

Moreover, Stantec has developed custom software for efficiently and accurately calculating RTK parameters from collected flow data. The software (SFM) gives Stantec a distinct advantage over our competitors by reducing the level of effort to complete the analysis and allows us to pass this savings on to our clients. The SFM is provided freely to our municipal clients and, in addition to the convenient data reduction and analysis tools, provides a convenient mechanism for viewing and archiving collected flow monitoring.

I/I Program Prioritization and Support

Stantec has an unmatched understanding of Lexington's sewer system, established relationships with community leaders, strong local presence and thorough understanding of land development in Fayette County.

Based on the overall lack of current hydraulic capacity in LFUCG's collection system, it anticipated that most new connections/flow addition requests will require the use of banked credits. Stantec's experience in other CAP communities is that there can be a tremendous amount of pressure on community officials when there is insufficiently banked credits and development is not permitted to occur. To alleviate this pressure and still maintain regulatory compliance, credit availability becomes another consideration in prioritizing their I/I removal programs.

The Stantec Team is tailor-made to assist LFUCG in staying ahead of development pressures by prioritizing I/I removal efforts. Our Team features:

Stantec has been assisting DWQ with prioritizing their collection system rehabilitation efforts and will bring this expertise to include a focus on credit-poor areas.

- A strong local presence and individuals with established relationships with community leaders and understanding of land development in Fayette County;
- An unmatched understanding of LFUCG's sewer system garnered through first-hand experience collecting, reviewing, and assessing the sewer condition information amassed during the SSAs;
- Micro-monitoring technology that allows us to cost-effectively isolate I/I sources and measure rehabilitation effectiveness within the collection system where conventional flow monitoring equipment yields unreliable results;
- Team members with private property I/I removal program experience;
- The only Team that has been assisting LFUCG with knowledgeable I/I program prioritization recommendations through our roles on the Remedial Measures Team and prior SSA efforts.

Degree of Local Employment

Stantec has provided professional engineering services in the Lexington community since 1966 and continues to serve LFUCG from our Lexington office located less than 0.5 mile from DWQ's offices on Lisle Industrial Avenue. With the October 2011 acquisition of ENTRAN, Stantec now has a second office located on Vine Street in downtown Lexington. As a consequence of our local presence and experience, Stantec provides you with an assurance that implementation of your CAP program will be executed by engineers and professionals who are familiar with the community and who have a vested interest in the success of your program.

Stantec has nearly 180 employees in two Lexington offices and has been providing engineering services to the community since 1966.

Stantec is not simply a local firm; we are Lexington residents who pay local taxes, have an inherent understanding of community needs and a vested interest in the success of our CAP.

Stantec is the largest consulting engineering firm in Lexington, employing nearly 180 professionals, which include: municipal infrastructure engineers, civil/structural engineers, geotechnical engineers, geologists, transportation engineers, environmental scientists, GIS specialists, professional divers, engineering technicians, and professional land surveyors.

As a benefit of our local presence and experience, Stantec provides LFUCG with an assurance that implementation of this project will be executed by engineers and professionals who are familiar with the community and who have a vested interest in the success of your program. Stantec's Project Manager and Project Engineers identified in the Organizational Chart (Section 1) all reside in Lexington. Stantec's Project Manager assigned to this project is local, as well as nearly all of the individuals assigned in the organizational chart presented in Section 1. Individuals on our Team located outside Lexington are all involved in work elements that do not involve the bulk of the effort. They were assigned to the Team because of their specialized experience in developing/implementing CAPs in other communities.

Stantec's Project Manager assigned to this project is local, as well as nearly all of the individuals assigned in the organizational chart presented in Section 1.

Stantec recognizes LFUCG's commitment to utilizing disadvantaged business enterprises (DBE), where appropriate, on engineering projects. To support this goal, Stantec has partnered with **Blue Heron Engineering Services, LLC (BHES)** and **Integrated Engineering** on this project. BHES is a certified woman-owned business enterprise (WBE) with specialized experience in capacity assurance programs and wastewater engineering. Integrated Engineering is a minority-owned business enterprise (MBE) based in Lexington that is well-known in the Lexington community for its public involvement initiatives. Selection of BHES and Integrated Engineering will allow Stantec to exceed your DBE procurement goals for this project. Stantec has committed that a minimum of 5% of the work/fees on this project will be assigned to BHES and 10% work/fees on this project will be assigned to Integrated Engineering.

Stantec has committed that a minimum of 15% of the work on this project will be assigned to BHES and Integrated Engineering.

Statement of Hourly Rates

The lump sum fees for the CAP tasks outlined in your RFP are presented in Table 7.1. As requested, these fees do not include program implementation services. However, it should be noted that nearly all Stantec individuals assigned to your project are Lexington-based. This is by design and eliminates the need for travel, thereby reducing CAP Consultant fees during program implementation. Additionally, it ensures that the Stantec Team is conveniently accessible and can be responsive to your requests.

The majority of the Stantec Team is Lexington-based and will reduce CAP implementation fees by avoiding travel and per diem expenses.

Table 7.1. Lump Sum CAP Cost Tabulation

TASK	DESCRIPTION	LUMP SUM FEE
II.A	Existing document review necessary to provide superior project management in subsequent tasks through the EPA/EEC approval of the CAP.	$0
II.B	Coordination and overall management of ten (10) Task Force meetings concluding by January 2013.	$50,430
II.C	Develop a functional and calibrated CAP Information Management System (IMS) utilizing Mike Urban software as the hydraulic capacity determination system and present the calibrated CAP IMS to LFUCG. (Presentation - 2 hour introductory demo to LFUCG staff. Functional - defined as approved by LFUCG.)	$41,950
II.D	Development and LFUCG approval of written LFUCG methodologies for tracking potential system capacity credits.	$53,250
II.E	Development and LFUCG approval of written LFUCG methodologies for allocating sanitary sewer capacity, allocation of credits, expiration dates for unused credits and the return, resale or trading of credits.	$56,000
II.F	Final Analysis and Delivery of written CAP to LFUCG. CAP Consultant will be responsible for delivering USEPA submission ready CAP and related documents to a different LFUCG consultant for final delivery, by the deadlines described in the scope.	$68,640
V.D	CAP Plan presentation to the Urban County Planning Commission. Presentation attendance by the CAP Consultant is limited to three (3) CAP Consultant employees.	$6,400
V.E	CAP Plan presentation to the Urban County Council. Presentation attendance by the CAP Consultant is limited to three (3) CAP Consultant employees.	$2,640
V.F	Final report of Task Force recommendations as described in the scope of work.	$21,180
V.G	Bound copies of meeting Task Force meeting agendas and summaries, as described in the scope of work.	$700
	TOTAL:	**$301,190**

Table 7.2 summarizes the hourly rate schedule for each of the individuals identified in the Organizational Chart in Section 1. These rates will be in effect for the entire 5-year duration of the contract.

Table 7.2. Statement of Hourly Rates

NAME [1]	PROJECT ROLE	HOURLY RATE
Joe Herman, PE	Project Manager	$150.00 / hour
Bret Lavey, PE	CAP Development	$120.00 / hour
Jason Maxwell, EIT	CAP Development	$120.00 / hour
Laurie Chase, PE	CAP Development	$125.00 / hour
Paul Vidal	Information Management System (IMS)	$93.00 / hour
Matt Basanta	Information Management System (IMS)	$73.00 / hour
Eddie Mesta, PE	Task Force Coordination	$130.00 / hour
Frank Harscher	Task Force Coordination	$157.00 / hour
Bob Campbell, PE	EPA Negotiation	$190.00 / hour
John Yeong, PE	Hydraulic Modeling	$120.00 / hour
Project Engineer	As Needed	$100.00 / hour
GIS Specialist	As Needed	$80.00 / hour
Clerical	As Needed	$60.00 / hour

[1] Individuals in **bold** are located in Lexington.

Stantec has a proven track record of fiscal responsibility of LFUCG projects, successfully completing the $5.2M Group 1 SSA more than $110K under budget and consistently completing our RMP task order assignments below the allocated amount.

It is understood that work on this project will be procured on a task order basis using the lump sum fees and rates provided in Tables 7.1 and 7.2. Stantec is accustomed to working on a task order basis for our other municipal, state, and federal clients. Detailed spreadsheet breakdowns of project tasks and person-hour estimates will be provided to LFUCG for each task order to aid in negotiation of task order amounts. Invoicing will be based on actual hours expended, not estimated hours.

Lastly, Stantec has a proven track record of fiscal responsibility on LFUCG Consent Decree projects. The Group 1 SSA was successfully completed approximately $114K under budget. Additionally, we have repeatedly completed work assignments on the Remedial Measures project (a similarly task order based contract) below our allocated budget. This demonstrated experience provides LFUCG with assurance that task orders will be negotiated fairly and priced competitively.

Joe J. Herman PE

Project Manager

Mr. Herman is a Project Manager with detailed experience in the design, management, and implementation of water resource projects. His project experience includes municipal infrastructure analysis, planning, and design; sanitary engineering, stormwater management, watershed and floodplain studies, evaluation and design of dam spillway and flood control works, and lake sedimentation analyses. He has experience in a variety of commercial hydrologic and hydraulic models and is proficient in the application of Geographic Information Systems (GIS) to aid in engineering analysis.

EDUCATION

MS, Civil Engineering, University of Kentucky, Lexington, Kentucky, 1995

BS, Civil Engineering, University of Kentucky, Lexington, Kentucky, 1994

Pipe Assessment Certification Program, National Association of Sewer Service Companies, Lexington, Kentucky, 2009

Manhole Assessment Certification Program, National Association of Sewer Service Companies, Lexington, Kentucky, 2009

REGISTRATIONS

Professional Engineer #21254, Commonwealth of Kentucky

PROJECT EXPERIENCE

Remedial Measures Plan Consultant, Lexington, Kentucky (Project Manager)

Mr. Herman is the Project Manager for the development of a $500 million capital wastewater improvement program to eliminate Sanitary Sewer Overflows in Lexington, Kentucky. The project is mandated by Consent Decree and the Plan must be fully implemented (including construction of improvements) within 13 years. Stantec is part of a three consultant firm team tasked with completing the work within the aggressive schedule established by the EPA.

East Hickman, West Hickman, and Wolf Run Sewersheds Sanitary Sewer Assessments (SSA), Lexington, Kentucky (Project Manager)

Mr. Herman is the Project Manager for a $5 million+ sanitary sewer assessment in Lexington, Kentucky. The project involves performing field data collection activities and completing an engineering assessment of the City's sanitary sewer system to identify the cause of recurring SSOs. The project is mandated by Consent Decree and the assessment will be used to develop the City's Remedial Measures Plan and guide their Capital Improvement Program for the next 10 - 13 years.

Cane Run, Town Branch, North and South Elkhorn Sewersheds Sanitary Sewer Assessments (SSA), Lexington, Kentucky (Project Manager)

Mr. Herman is the Project Manager for a Sanitary Sewer Assessment in four of the seven major sewersheds in Lexington, Kentucky. The project is mandated by federal Consent Decree. Stantec is responsible for: directing field activities of LFUCG's other SSES contractors, performing QA/QC on collected data, and providing an engineering assessment of the structural condition and identifying inflow and infiltration sources within the collection system.

Sewer Development Credits Program, Cincinnati, Ohio (Lead Engineer)

Mr. Herman assisted MSD in performing an audit of their Sewer Development Credits Program. The program is mandated by a Consent Decree from the Ohio EPA and places restrictions on new sewer taps in Hamilton County. Concurrent with the audit, Mr. Herman reviewed recently completed MSD capital improvement projects to identify any unaccounted for earned credits. As part of the project, Mr. Herman was also responsible for learning MSD's GIS and computer permitting systems. During the three-month project, Mr. Herman relocated to MSD's office to facilitate interaction with MSD staff and have access to the hard copy files. As a follow-up to the auditing efforts, Mr. Herman was asked to return to MSD to perform a gap analysis/needs assessment on their existing software used to manage the credits program and make recommendations for improvement.

** denotes projects completed with other firms*

Bret Lavey PE

Program CAP Development

Mr. Lavey is a Senior Project Engineer with detailed experience and knowledge in the design and analysis of water resource and civil engineering projects and Geographic Information Systems (GIS) and database applications. His project experience primarily includes watershed and floodplain studies, engineering design, Sanitary Sewer Evaluation Survey (SSES), and sewer rehabilitation. He has experience in a variety of commercial hydrologic and hydraulic models and programming language.

EDUCATION

BS, Civil Engineering, University of Kentucky, Lexington, Kentucky, 2005

Pipe Assessment Certification Program, National Association of Sewer Service Companies, Lexington, Kentucky, 2009

Manhole Assessment Certification Program, National Association of Sewer Service Companies, Lexington, Kentucky, 2009

REGISTRATIONS

Professional Engineer #27348, Commonwealth of Kentucky

PROJECT EXPERIENCE

LFUCG Groups 1, 2, and 3 Sanitary Sewer Assessments (SSA), Lexington, Kentucky (Lead Engineer/Assistant Project Manager)

As an Engineer and Assistant Project Manager on the project, Mr. Lavey was responsible for field oversight and coordination for CCTV inspection, smoke testing, manhole inspections, and other field activities, QA/QC of inspection products, development of GIS compatible assessment tools and reporting functions, tracking deliverables, managing databases, and assisting in the evaluation of the sanitary sewer collector system (approximately 7 million linear feet).

Sanitary Sewer System Assessment Reports and Remedial Measures Plans, Lexington, Kentucky (Senior Project Engineer)

As an Engineer on the project, Mr. Lavey was responsible for assisting in the preparation of the SSSA reports to the EPA and developing remedial measures plans to prevent Sanitary Sewer Overflows (SSOs) for each sewershed group. Mr. Lavey also generated customized assessment and rehabilitation recommendation software to support the remedial measures plan efforts.

Camp Taylor Sanitary Sewer Evaluation Surveys (SSES), Louisville, Kentucky (Senior Project Engineer)

As an Engineer assisting on the project, Mr. Lavey was responsible for direction and oversight of field efforts, development of GIS compatible assessment and reporting tools, and assisting in the development of sanitary sewer evaluations and remediation recommendations.

Inflow/Infiltration (I/I) Removal Study, Clayton County, Georgia (Senior Project Engineer)

Mr. Lavey is a Senior Project Engineer on a sanitary sewer evaluation study (SSES) to identify sources of I/I in the Clayton County Water Authority's (CCWA's) separate wastewater collection system. The CCWA is exploring I/I removal to determine its effectiveness to postpone wastewater treatment upgrades. Mr. Lavey was responsible for identifying and developing tools and reporting software to support the required deliverables for manhole inspections and smoke testing efforts. Mr. Lavey is also responsible for developing assessment and rehabilitation recommendations, database management, and QAQC of field activity deliverables.

Jason Maxwell EIT

Program CAP Development

Mr. Maxwell is a Water Resources Project Engineer with specific project experience in sanitary sewer evaluation studies (SSES), hydrologic and hydraulic modeling, rehabilitation and inflow/infiltration studies, and engineering design for municipal stormwater and sanitary sewer systems. Mr. Maxwell is proficient in the application of Geographic Information Systems (GIS) and has detailed experience in implementing hydrologic and hydraulic data into advanced modeling software applications such as HEC-HMS, HEC-RAS, and XP-SWMM. Mr. Maxwell has received Manhole Assessment certification Protocol (MACP), and Pipeline Assessment Protocol (PACP) training.

EDUCATION

MS, Bioenvironmental Engineering, University of Kentucky, Lexington, Kentucky, 2008

BS, Bioenvironmental Engineering, University of Kentucky, Lexington, Kentucky, 2006

Pipe Assessment Certification Program (PACP), National Association of Sewer Service Companies (NASSCO), Lexington, Kentucky, 2009

Manhole Assessment Certification Program (MACP), National Association of Sewer Service Companies (NASSCO), Lexington, Kentucky, 2009

REGISTRATIONS

Engineer-In-Training #12909, Commonwealth of Kentucky

PROJECT EXPERIENCE

Sanitary Sewer Assessment (SSA) & Remedial Measures Planning, Lexington, Kentucky (Project Engineer)

Mr. Maxwell is a Project Engineer currently working on the sanitary sewer assessment project that involves performing field data collection and completion of an engineering assessment of the City's sanitary sewer system to identify the cause of recurring SSOs. Mr. Maxwell is responsible for field oversight and management of CCTV, manhole inspection, smoke testing, night-flow isolation, and dye testing field crews. Mr. Maxwell is also responsible for the QA/QC of 1M+ linear feet of CCTV, 24,200+ manhole inspections, 5M+ linear feet of smoke testing, and over 220 flow monitor field data. In addition to the QA/QC duties, Mr. Maxwell is also responsible for tracking the data deliverables to the client. Mr. Maxwell has also assisted in the preparation of the SSSA reports and preliminary general solutions for remedial measures planning.

Camp Taylor Sanitary Sewer Evaluation Study (SSES), Louisville, Kentucky (Project Engineer)

Mr. Maxwell is a Project Engineer working on the SSES in approximately 145,000 linear feet of collection system in which parts of the collection system predates the World War I era. Mr. Maxwell is tasked with the QA/QC of the CCTV, manhole inspections, and smoke testing field data and reports in accordance with MSD's standards. Mr. Maxwell was also tasked with identification of rehabilitation cost calculations and recommendations for the sanitary sewer collection system based upon field defect data.

Inflow/Infiltration (I/I) Removal Study, Clayton County, Georgia (Project Engineer)

As the lead Project Engineer on a sanitary sewer evaluation study (SSES) intended to identify sources of I/I in Clayton County Water Authority's separate wastewater collection system. Mr. Maxwell is responsible with the oversight and management of the CCTV, manhole inspection, and smoke testing field crews. Mr. Maxwell is also responsible for the QA/QC of CCTV, manhole inspections, and smoke testing field data and reports.

Hawkins Steel Basin Stream Improvements – Phase 1 Elizabethtown, Kentucky (Project Manager)

Mr. Maxwell is the Project Manager for a stream improvement and sanitary sewer design project located in Elizabethtown Kentucky. The scope of this project is to assess the current conditions of the stream using field information and hydrologic and hydraulic modeling, submit 401/404 Permit and Stream Construction Permits for all design stream improvements. The stream improvements are intended to reduce flooding issues that exist for area residences and commercial properties and the redesign of the sanitary sewer in proposes any conflict with the stream improvements. Mr. Maxwell is responsible for the design of 3,000+ linear feet of stream improvements and the redesign of 900+ linear feet of sanitary sewer collection system.

Ms. Chase has more than 25 years of experience in the water and wastewater industry in regulatory, municipal, consulting and construction roles. Laurie brings a unique perspective to planning, design and construction services with the ability to communicate effectively with all parties in all phases of project-related work. Laurie is leading the Water Environment Federation's Private Property Virtual Library initiative to gather case studies from successful wastewater utility private property-related programs and make valuable resources available online at wef.org/privateproperty.

EDUCATION

MS in Civil Engineering, The Ohio State University, Columbus, Ohio, 1988

BS in Civil Engineering, The Ohio State University, Columbus, Ohio, 1986

NASSCO's Pipeline Assessment and Certification Program, Columbus, Ohio, 2010

REGISTRATIONS

Professional Engineer #25385, Commonwealth of Kentucky

PROFESSIONAL ASSOCIATIONS

Water Environment Federation (WEF) Collection Systems Committee, Steering Committee Member, Strategic Planning, Private Property Virtual Library Project Lead; Program Committee Collection Systems Symposia Chair; active member 1995 - present

SOFTWARE EXPERIENCE

ESRI ArcGIS, EPA SWMM 4.h,

PROJECT EXPERIENCE

Sewer System Capacity, Management, Operations and Maintenance (CMOM)

Lexington-Fayette Urban County Government CMOM Program Assessment Project, Lexington, Kentucky
Ms. Chase reviewed operation and performance records, interviewed key utility staff and evaluated the utility's management approach, capital improvements and O&M programs to prepare (2008) and update (2011) CMOM Program documents submitted to U.S. EPA.

City of Columbus DOSD CMOM Program Development Project, Ohio
Ms. Chase provided inflow and infiltration (I/I) expertise for the system evaluation and capacity assurance planning effort required by the City's Sanitary Sewer Overflow (SSO) and Combined Sewer Overflow (CSO) Consent Orders.

She assisted in developing Consent Order deliverables, including Annual SSO and Water-in-Basement (WIB) Reports, CMOM Program Management Summary, Readiness Review Assessment, and the System Evaluation and Capacity Assurance Plan. In addition, Ms. Chase served as Information Manager for the CMOM Project Team, coordinating information transfer and web-based document library for the readiness review and gap closure efforts.

Early Ditch Area Sewer System I/I Remediation Project, City of Columbus, Ohio
Ms. Chase was the technical lead for the public and private I/I source investigations, hydraulic modeling and alternatives analysis for this $6.7 million basin-wide project. Recommendations were developed to address structural deficiencies, capacity restrictions, essential maintenance requirements and other measures to reduce SSOs and WIB incidents.

Private Property Inflow and Infiltration Program Guidance, Xenia, Ohio
Ms. Chase provided guidance on ways to address challenges associated with private property I/I sources as part of a citywide I/I Study conducted to address sanitary sewer system capacity issues.

Lexington-Fayette Urban County Government Private Property Task Force, Lexington, Kentucky
Ms. Chase provided guidance and resources for the task force that developed recommendations for incorporating preventive and reactive programs, policies and procedures to address sanitary sewer-related private property issues.

Paul Vidal

Information Management

Mr. Vidal specializes in the areas of Information Management Application Development and Geographic Information Systems (GIS). Ranging in scope from focused file sharing portals to nationwide program effectiveness applications, his Information Management projects focus on custom application development, data standardization through database development, online collaboration, and dynamic database reporting. Mr. Vidal's GIS project experience includes numerous flood study and digital conversion projects. Mr. Vidal's responsibilities include data mining, spatial analysis, image analysis, geocoding, cartographic interpretation, map production and other facets of high-level geographic research.

EDUCATION

BA, Miami University / Zoology-Environmental Science, Oxford, Ohio, 2004

Certificate, ESRI / ArcGIS Server Implementation, Lexington, Kentucky, 2007

CERTIFICATIONS

Zend Certified Engineer, PHP5, 2009

ESRI Certified Web Application Developer Analyst, 2010

PROJECT EXPERIENCE

LFUCG Sanitary Sewer Assessment (SSA), Lexington, Kentucky (Application Developer)
Mr. Vidal is responsible for maintaining an interactive, GIS-based project website (Virtual PM) for a $5M+ sanitary sewer assessment in Lexington, Kentucky. The website is being utilized on the project to report project progress and illustrate areas of planned field activities. The website is updated weekly, does not require the user to have GIS software or training, and is available to LFUCG and their other Consent Decree Consultants.

LFUCG Manhole Inspection Application, Lexington, Kentucky (Application Developer)
To assist with data collection in the field, Mr. Vidal created tablet-based application for the purpose of data collection and standardized reporting called the Manhole Inventory Logging Application (MILA). MILA captured data required by standards identified in the Pipeline Assessment Certification Program (PACP).

Kentucky Emergency Management Agency, Commonwealth Hazard And Mitigation Planning System (CHAMPS), Statewide, Kentucky (Application Developer)
Mr. Vidal served as the lead developer role in the creation and production for CHAMPS. His responsibilities included site architecture and design, code base documentation, database design, as well as being the primary client contact with Kentucky Emergency Management (KyEM). CHAMPS consists of several modules, each of which complement each other to help KyEM better route specific dollars to mitigation projects, as well as helping to bridge the gap between project management and local community outreach. CHAMPS links, tracks, and stores all project elements from the time a disaster occurs all the way through the successful completion of a mitigation project.

Indiana Flood Information Portal (InFIP), Statewide, Indiana (Application Developer)
Mr. Vidal served as the lead developer of Indiana's public facing Flood Information Portal. In this role, he worked with the Division of Water (DOW) staff to design and layout the site and user interface using HTML5, CSS, and JavaScript techniques. Mr. Vidal also constructed tools that allow public users to discover flood information that is most relevant to their geographic location and to submit a web-based form to the DOW staff for review and approval. This web-based review process greatly improved the DOW's response time, speeding it up to a four day from a four week turnaround.

FEMA Mitigation Action Tracker, Nationwide (Application Developer)
Mr. Vidal served as the lead developer for the Mitigation Action Tracker developed for FEMA. The web application serves as a nationwide system to record and track hazard mitigation actions planned and/or performed at the community level. From the collected data, the Mitigation Action Tracker reports to FEMA live metrics about program status and effectiveness throughout the nation. Within a compressed timeframe (<2 months), Mr. Vidal lead the development team in identifying project requirements, developing prototypes, implementing database schema, programming application elements, and incorporated user testing.

** denotes projects completed with other firms*

Matthew Basanta

Information Management

Mr. Basanta specializes in the areas of custom application development and Geographic Information Systems (GIS) analysis. His project experience includes design and development of numerous custom web and desktop based applications. In addition to these projects his responsibilities include data mining, spatial analysis, image analysis, geocoding, cartographic interpretation, map production and other facets of high-level geographic research. Mr. Basanta is proficient in numerous GIS applications and has development experience in multiple development environments.

EDUCATION

BA, Geography, University of Kentucky, Lexington, Kentucky, 2008

Certificate (Verification # TVE14Q122MBQC320), ESRI / ArcGIS Desktop Associate 10, 2010, Lexington, Kentucky, 2010

PROJECT EXPERIENCE

LFUCG Virtual Project Manager, Lexington, Kentucky (GIS Analyst/Application Developer)

Mr. Basanta worked on the development team responsible for creating and maintaining an interactive, GIS-based project website (Virtual PM) for a $5M+ sanitary sewer assessment in Lexington, Kentucky. The website is being utilized on the project to report project progress and illustrate areas of planned field activities. The website is updated weekly, does not require the user to have GIS software or training, and is available to LFUCG and their other Consent Decree Consultants.

Commonwealth Hazard and Mitigation Planning System (CHAMPS), Statewide, Kentucky (Application Developer)

Mr. Basanta served as the assistant lead developer in the creation and production for CHAMPS. This custom web portal consists of several modules, each of which complement one another to help KyEM better route specific dollars to mitigation projects, as well as helping to bridge the gap between project management and local community outreach. CHAMPS links, tracks, and stores all project elements from the time a disaster occurs through the successful completion of a mitigation project. Mr. Basanta's responsibilities included web layout and database infrastructure design in addition to development programing for both the frontend and backend development.

FEMA Mitigation Action Tracker web portal (Application Developer)

Mr. Basanta served as the assistant lead developer for the Mitigation Action Tracker developed for FEMA. This custom web portal is a nationwide system utilized to record and track hazard mitigation at the community level. In turn, live metrics about program status and effectiveness are reported to FEMA. This project had an extremely short timeline (<2 months) and based on user feedback and refinements to the reporting process by FEMA, Mr. Basanta quickly incorporated changes to ensure the team met the development deadline.

Plains Pipeline, Team Portal, Long Beach, California (Application Developer)

Mr. Basanta worked on the development team to create an online portal that served to manage the consent decree efforts by Plains Pipeline. The portal collected information about areas of concern and investigation, relevant reports and documents, and displayed geospatial information online. The application focused on making the large amounts of client data quickly available through searches and visual reports. Developed with ASP.Net and SQL Server and utilizing HTML5 and AJAX techniques, the portal was used to by multiple groups for various purposes, including fiscal year budgeting, contracting change management, and mobile field surveys and support. Mr. Basanta's responsibilities included programming for both frontend and backend development.

USACE Levee Periodic Inspections, Various Locations (GIS Analyst/Application Developer)

Mr. Basanta served as GIS lead on multiple levee inspection teams collecting and reviewing data collection efforts for three different USACE districts, equating to approximately 500 miles of levee. Teams collected deficiencies using a tablet PC and ESRI ArcGIS, while walking each levee system. Mr. Basanta developed customized software to improve the data collection efforts and ensure data collected accurately reflected ground conditions. In addition, he served in an advisory role for all levee inspection activities within the company. He trained and advised eight levee inspection teams and performed QA\QC on resulting data. Mr. Basanta also reviewed deliverables for multiple inspections to ensure accurate products were submitted.

** denotes projects completed with other firms*

INTEGRATED ENGINEERING

Eddie Mesta, P.E.

Eddie provides a wide array of experience for both public and private sector clients. Eddie is responsible for the coordination and design involving wastewater collection, storm water drainage, transportation, site development, and water supply for private and public entities. Past experience includes preparation of plans and contract documents, utility coordination, bidding, construction administration, easement acquisition, public involvement, and presentations. Experience also includes preparation of reports for regional facilities planning, marketing endeavors, and providing solutions to engineering and management problems.

EDUCATION

- University of Kentucky, B.S. Civil Engineering (1995)

EXPERIENCE – 17 YEARS

PROFESSIONAL REGISTRATIONS

- PE – KY 22048
- PE – IN 10200289
- PE – TN 00107842

PROFESSIONAL AFFILIATIONS

- Kentucky Society of Professional Engineers (KSPE) & Leadership P.E. *(Current State President-Elect)*
- American Society of Civil Engineers (ASCE)
- American Public Works Association (APWA)
- Kentucky Stormwater Association (KSA)

SPECIALIZED TRAINING

- Sewer Collection System Rehabilitation Seminar - 2011
- KYTC Partnering Conference 2010
- KSPE Annual Conference 2011
- Water Professionals Conference 2011
- Detention Ponds and Urban Hydrology Training Featuring PondPack Design Software (2000)
- Hydraulic Modeling Training Featureing HEC-RAS Design Software (1999)

WASTEWATER / STORMWATER EXPERIENCE

Lexington Mall Sanitary Sewer Relocation Project (LFUCG), *Lexington, KY.* Project Manager for the relocation of over 1,500 linear feet of sanitary sewer trunk line associated with the redevelopment of the Lexington Mall property. The project involved upsizing the existing 15" diameter trunk line to 24" to provide additional capacity in this SSO prone area. Coordination with adjacent commercial property owners has taken place to insure uninterrupted sanitary sewer service during construction. Other coordination has involved the creation of an easement plat and temporary construction easement documents.

Plainview/Patchen Village Storm Water Study (LFUCG), *Lexington, KY.* Project Manager for the 53 acre watershed to investigate existing infrastructure condition, capacity, and behavior of the system. A continuous hydraulic simulation utilizing SWMM modeling was created and calibrated against real world data to ensure the validity of the model.

PUBLIC INVOLVEMENT

Lexington-Fayette Urban County Government (LFUCG) Redistricting Committee (2011), *Lexington, KY* – Volunteered as one of twelve district representatives for LFUCG's Redistricting Committee. Responsibilities included attending bi-weekly meetings throughout the four month process to redistrict the twelve (12) council districts in accordance with the rules and provisions established in with LFUCG and KRS ordinances. 2010 census data and future planning and growth projections were the primary sources of data for the determination of the council districts that were established for the next 10 years.

Tates Creek Road Sidewalk Project (LFUCG), *Lexington, KY* **–** Project Manager currently coordinating the planning, civil engineering, surveying and streetscape layout for the design of over 16,000 linear feet sidewalks for both sides of Tates Creek Road from inside of Alumni Drive outbound to the Lansdowne Shoppes area. Five existing signalized and twelve existing non-signalized intersections will be modified to accommodate pedestrian access. Significant public involvement has taken place on this project with area residents, business owners, and churches. The final design follows current state and federal Local Public Agency (LPA) guidelines. Significant coordination has been made with utility companies to determine any potential construction comments. Coordination with LEXTRAN has also been made to determine optimal bus shelter locations.

Frank Harscher

Task Force

ERI International

Frank Harscher is President of ERI International, a 32-year firm specializing in natural and environmental resources analysis, public-private partnering, and public policy related to growth management and economic development. During this period, he has held several important public and private positions including Secretary of Natural Resources and Environment Protection, as Commissioner of Environmental Quality, and as Executive Director of the Office of Toll Facilities/Turnpike Authority of Kentucky. In most all program and project initiatives, Mr. Harscher has fulfilled high-level leadership and liaison positions with public and private sector leaders and stakeholders focused on acceptable project planning and implementation, with specific emphasis on working with governmental agencies and nonprofit groups, headed by prominent private sector and public officials.

EDUCATION

M.A., International Economics, University of Kentucky, Lexington, Kentucky, 1995

B.A., Management Science/Economics, University of Georgia, Athens, Georgia, 1967

Duke University, Durham, North Carolina, 1962-1964

PROJECT EXPERIENCE

E.R.I. International, Ltd., International Marketing and Business Development Consultants (President)

Williams Environmental Management Group, Environmental Services, Engineering and Remediation Group (National Marketing & Sales Manager)

Howard Needles Tammen & Bergendoff (HNTB), Architects, Engineers & Planners, Eneco Resources, Inc., (Associate and President)

Department for Natural Resources & Environmental Protection, Commonwealth of Kentucky (Secretary & Deputy)

Governor's Office for Intergovernmental Affairs, Energy and Environment, Commonwealth of Kentucky (Special Assistant to the Governor)

Bureau for Environmental Quality, Department for Natural Resources and Environmental Protection, Commonwealth of Kentucky (Commissioner)

Commissioner of Transportation, Department of Transportation and Georgia State Tollway Finance Authority (Executive Assistant (to) & Director)

Office of Toll Facilities, Department of Highways and Kentucky Turnpike Authority, Commonwealth of Kentucky (Executive Director)

Internal Business Machines Corporation and First Security Bank & Trust Company (Management Trainee)

OWNERSHIPS AND PARTICIPATIONS

Black Mountain Management Corporation, Property Leasing and General Management (President and Treasurer)

Kenthar International Ltd., International Exporting Resource Management and Project Development (President and Treasurer)

F.H. Development Corporation, Asset and Investment Management (President and Treasurer)

Hinkle, Meyer & Harscher, LLC, Management Board Member, (Part Owner and Managing Director)

** denotes projects completed with other firms*

Frank Harscher

Task Force

SPECIAL ASSIGNMENTS

Office of Surface Mining (A Presidential Appointment, U.S. Department of the Interior
Served as a consultant for the Secretary of the Interior and as Deputy Director

ENECO Resources
While head of ENECO Resources, served as Director of Planning and Development for Advanced Coal management Corporation, which was implementing new Dutch mining technology in conjunction with a major U.S./Dutch joint venture, Rotterdam, The Netherlands.

SHV, The Hague, Netherlands
Served as a consultant to another major Dutch multi-national firm SHV. Developed strategic and logistical plans as well as marketing, contracting and trans-shipment techniques regarding U.S. coal exports for international markets, particularly to Europe.

Jack Guthrie and Associates of Louisville and Lexington, Kentucky
Served as special environmental and governmental relations consultant to Jack Guthrie and Associates of Louisville and Lexington, Kentucky, involving such clients such as Toyota Motor Manufacturing, B.F. Goodrich; GAF Chemicals Cooper Industries, Browning-Ferris Industries and Southwire, Inc.

PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

Kentucky Environmental Quality Commission (Commissioner)

Staff Advisory Council, Committee on Natural Resources, Environmental Management and Energy, National Governors Association (Chairman)

American Planning Association and Kentucky Chapter of A.P.A. (Member)

Executive Committee, Southern Environmental Resources Council (Vice Chairman)

Ohio River Valley Water Sanitation Commission (ORSANCO) (Commissioner)

ORSANCO Task Force on Energy Facility Siting and Task Force on Louisville Metropolitan Sewer District (MSD) (Co-Chairman)

Board of Directors and Charter Member, Kentucky Conservation Committee (KCC) (Member)

Kentucky Energy Research Board (Member)

Advisory Task Force on Coal, Federal Regulatory Council (Member)

Appalachian Regional Commission, Energy Advisory Council (Chairman)

Executive Committee and Board of Directors, Kentucky Citizens Task Force on Water and Chairman of Finance Subcommittee (Member)

Federal/State Task Force on creation of Federal Office of Surface Mining, U.S. Department of the Interior (Co-Chairman)

Finance Committee of the International Bridge, Tunnel and Turnpike Association (Chairman)

Board of Directors, International Bridge, Tunnel and Turnpike Association (Chairman)

International, Bridge, Tunnel and Turnpike Association (Vice President and Member of Executive Committee)

** denotes projects completed with other firms*

Bob Campbell PE

EPA Negotiation

Mr. Campbell has over 35 years of experience in managing water resources projects. Prior to joining Stantec, Mr. Campbell served as the Executive Director for the Metropolitan Sewer District of Greater Cincinnati. Mr. Campbell has also served as Executive Director of the Little Blue Valley Sewer District in Jackson County, Missouri, He has managed a staff of over 600 individuals with an operating budget in excess of $150 million and an annual capital program in excess of $132 million. Mr. Campbell was responsible for all aspects of a major sewer utility in Hamilton County, Ohio and a stormwater program within the City of Cincinnati. Mr. Campbell provided strategic direction to and participated in the negotiation of MSDGC's CSO and SSO Consent Decrees with Ohio EPA, EPA Region 5, US EPA, the Department of Justice, and ORSANC, as well as overseeing the development of and continued negotiation of deliverables required by the consent decrees. He was responsible for Capitol Improvement Programming of Asset Management Projects as well as Consent Decree projects in Cincinnati, Ohio and Jackson County and St. Louis, Missouri.

EDUCATION

MS, Civil Engineering, University of Missouri - Rolla, Rolla, Missouri, 1983

BS, Civil Engineering, University of Missouri - Rolla, Rolla, Missouri, 1971

REGISTRATIONS

Professional Engineer #64167, State of Ohio

Professional Engineer #018197, State of Missouri

PROJECT EXPERIENCE

Metropolitan Sewer District of Greater Cincinnati, Consent Decree Negotiating Team*, Cincinnati, Ohio

Negotiated with Ohio EPA, EPA Region V, EPA Headquarters, Department of Justice, and the Ohio River Sanitation Commission (OSANCO) two consent decrees, one addressing Sanitary Sewer Overflows and a second addressing Combined Sewer overflows, Treatment Facility Issues, and Basement Backup Issues. Provided strategic direction to staff and attorneys.

Metropolitan Sewer District of Greater Cincinnati, Wet Weather Improvement Plan Development*, Cincinnati, Ohio

Oversaw the development of a $2 billion Wet Weather Improvement Plan to address sanitary sewer overflows (Capacity Assurance Program Plan), combined sewer overflows (Long Term Control Plan), treatment plant capacity, basement backups, public notification and affordability issues.

Capacity Assurance Program Plan: *Analyze system response to 6 month, 1 year, 2 year, 5 year and 10 year storms. Provide planning level cost estimates to address system response to each storm.*

Long Term Control Plan Update: Analyze system response and select projects to achieve 85%, 90%, 95%, and 99% level of control. Develop stream monitoring program and provide water quality model to gauge water quality improvement.

Treatment Plant Capacity: Review of modeled flows to determine most appropriate combination of plant capacity improvements versus the installation of High Rate Treatment, Wet Weather Treatment Capacity.

Water In Basement Program: Developed award winning program to isolate private property from capacity related sewer backups. Provided 4 hour response to complaints, basement cleanup services, damaged property removal and claims payment. Developed program to install backflow prevention or isolation by use of sump pumps.

Public Notification: Developed public notification program for combined sewer overflow notification, water in basement program, and award winning public education program.

Affordability Issues: Reviewed program costs in accordance with USEPA guidance. Analyzed demographics and local economic criteria to formulate strategy to fund major improvements.

** denotes projects completed with other firms*

John Yeong PE

Modeling

Mr. Yeong is a water resource engineer with six years of experience in system modeling. His recent experience included hydraulic assessment of the existing sewer system subject to high-density infill and redevelopments in the City of Edmonton downtown area and to provide relief options to address the increased inflows. He has also dedicated himself to the development of sewer system models to assess the level of services and to provide relief options for more than eight neighborhoods in the City of Edmonton. He is also involved in extending the drainage system models for the City of St. Albert Utilities Mater Plan Project. Other modeling experience includes development of a 13,000-pipe combined lateral sewer system model for the City of Edmonton using the MIKE Urban program and all system modeling required for the South Central Area Flooding Investigation and South Central Conceptual Design Studies. In his work over the past years at Stantec, John has used a number of software programs such as MOUSE, MIKE Urban, XP-SWMM, EPA SWMM, WaterCAD, EPANET and ArcView.

EDUCATION

M.Eng., Civil Engineering & Applied Mechanics, McGill University, Montreal, Quebec, 2000

B.Eng., Civil Engineering & Applied Mechanics, McGill University, Montreal, Quebec, 1997

PROJECT EXPERIENCE

Interconnection Control Strategy Rectification Assessment Phase II, Edmonton, AB (Systems Modeling)

Responsible for combined and storm sewer system modeling to identify solutions to eliminate or mitigate untreated combined sewer overflow to the environment at 46 I/C sites. Tasks include data collection (on-site I/C study, servicing records, basement elevation survey, roof leader disconnection survey, on-site catch basin count), hydrological and hydraulic (MIKE Urban) model setups including calibration to match three rain events, and assessment of various relief options to eliminate the overflow.

Combined Lateral Sewer Upgrading Strategy Study, Edmonton, AB (Systems Modeling)

Responsible for combined sewer system modeling and analysis to develop a rating system for hydraulic performance of each combined lateral sewer pipe. Tasks include set up and analyze four MIKE Urban models covering the entire combined sewer area of the City and including about 30,000 combined and storm sewer pipes.

St. Albert Utilities Master Plan, St. Albert, AB (Systems Modeling)

Modified the current model to reflect the most up-to-date condition of the storm sewer system in the entire City and developed a storm sewer master plan for the future annexation area.

Opportunistic Sewer Separation Program Development Study, Edmonton, AB (Systems Modeling)

Responsible for storm sewer system modeling and analysis to assess spare capacity for potential separation of the combined sewer system.

2009 Priority Sewer Rehabilitation Neighborhoods, Edmonton, AB (Systems Modeling)

Carried out hydrologic and hydraulic assessments of four neighborhoods. Determined levels of service and provided upgrade options to address sewer system deficiencies.

Sewer and Drainage Servicing Upgrading Plan for Infill Development in Downtown Edmonton, Alberta (System Modeling)

Assessed the hydraulic performance of the existing sewer systems in downtown subject to two future infill development stages. Upgrading options were identified to accommodate the increased inflows. Future developments with on-site storage option were evaluated.

** denotes projects completed with other firms*