



# ***2008 ANNUAL REPORT***

*Prepared For The*

***City of Bedford***



**ROBERT C. KLAIBER, JR., P.E., P.S.**  
**CUYAHOGA COUNTY SANITARY ENGINEER**

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March 27, 2009

The Honorable Daniel S. Pocek  
City of Bedford  
65 Columbus Road  
Bedford, Ohio 44146

Dear Mayor Pocek:

I present to you the 2008 City of Bedford Annual Report for the Cuyahoga County Sanitary Engineer's Office. This past year proved to be a significant year for the office. We became responsible for the maintenance and improvement of the sanitary & storm sewers for the City of Parma, however, we diligently continue to maintain and improve upon the sanitary and/or storm sewers of 30 additional municipalities.

This report contains a detailed overview of the office, information on work completed within your municipality and operating expenses for the past year. As in our past annual reports, we have included maps displaying the following: the cleaning & inspection of system mainlines; locations of construction activity; inflow/infiltration study areas; house visits; the cleaning & inspection of house lateral connections.

I am appreciative for the opportunity to serve as your County Sanitary Engineer. I will continue to work hard to meet the varying needs and concerns of your community.



Very truly yours,

Handwritten signature of Robert C. Klaiber, Jr., P.E., P.S.

Robert C. Klaiber, Jr., P.E., P.S.  
Cuyahoga County Sanitary Engineer

cc: Joseph Ciuni, P.E., P.S.  
Clint Bellar

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## Mission Statement

***"Our mission is to protect, preserve and promote the public health and welfare of Cuyahoga County residents by managing, maintaining and operating wastewater infrastructure."***

**Robert C. Klaiber, Jr., P.E., P.S.**

### OVERVIEW

The Cuyahoga County Sanitary Engineering Division (CCSE) was established in 1919 to administer the authority vested in the Board of County Commissioners in matters of wastewater, storm water and water supply management. State law extends to the Board of County Commissioners the authority to create and maintain a Sanitary Engineering Division under the supervision of a registered professional engineer. In April 2004, the County Commissioners appointed the County Engineer, Robert C. Klaiber, Jr., P.E., P.S., to assume the additional duties of County Sanitary Engineer.

Mr. Klaiber's focus on needs assessment, engineering feasibility studies, maintenance and repair of aging sewer lines, as well as other infrastructure-related issues, has a direct impact on commercial and residential development, job creation and expanded tax base in the communities served by the Sanitary Engineer.

The Sanitary Engineering Division is a major source of information and guidance that mayors, municipal engineers and service directors rely on when making infrastructure decisions within their community. The Division has considerable experience in the maintenance of sanitary and storm sewer lines, many of which are old and have performed beyond their design life. Moreover, the Division has much expertise with respect to wastewater treatment plants and pump stations.

Engineer Klaiber directs an operation which encompasses 31 communities and maintains nearly 1,050 miles of sanitary sewers; treats approximately 164 million gallons of wastewater per year; and operates 45 sewage-pumping stations, as well as 3 wastewater treatment plants throughout Cuyahoga County. The Division also has agreements with municipal corporations for the establishment, operation and maintenance of sanitary sewers and facilities. In addition, standards for any system connected to or served by a County owned improvement are established and enforced.

Working in cooperation with the Ohio Environmental Protection Agency (Ohio EPA), the Northeast Ohio Regional Sewer District (NEORS), the City of Cleveland Division of Water and the Cuyahoga County Board of Health, the Division manages a Capital Improvement Program (CIP) used for upgrading or replacing the existing infrastructure and for expanding sewers to unsewered areas. The CIP includes

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information about project type, location, funding, preliminary engineering and final plan development.

All operating funds for the Division are created through fees and assessments. The Division does not receive a subsidy through the County General Fund. It does, however, use the General Fund's bonding capacity.



## GOALS

The goals of the Sanitary Engineering Division are to:

- Reduce the number of flooded basements by decreasing mainline blockage, minimize the infiltration and inflow of storm water in the sanitary system and evaluate structural integrity of the entire sewer system;
- Operate wastewater treatment plants in compliance of National Pollution Discharge Elimination System (NPDES) permit parameters;
- Provide guidelines for new construction through use of *Uniform Standards for Sewerage Improvements*;
- Review and approve new improvement plans; and
- Provide infrastructure needs assessment for communities.

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## **SERVICES PROVIDED**

The Sanitary Engineering Division provides a variety of services that benefit the Greater Cleveland community. The important functions include:

- Engineering
- Capital improvement planning
- Production of maps
- Pump station operation & maintenance
- Sanitary sewer cleaning & maintenance
- Collection of storm sewer maintenance fund
- Laboratory testing
- Construction inspection
- Inspection & permits
- Record keeping (As built plans & test tee locations)
- Geographic information systems (GIS)
- Wastewater treatment plant operation & maintenance

The Division also provides support services in the areas of finance, data processing and record keeping.

## **SERVICE DELIVERY SYSTEM**

The CCSE provides a variety of sewerage system maintenance options to local communities. Whereas the Northeast Ohio Regional Sewer District maintains the major trunk sewers and wastewater treatment plants, the Division offers services designed to meet and develop community needs. The design and structure of the CCSE allows flexibility in the delivery of services to each community. A service delivery package can range from full-service to partial-service, depending upon the need of the municipality. Available services include:

## **ENGINEERING SERVICES**

- Capital improvement planning
- Plan review and approval of all new sewer improvements within the County sewer districts
- Construction management
- Geographic information systems (GIS)
- Project design
- Engineering analysis (required for operation of facilities and the collection system)
- Operational checks (EPA permit compliance)

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## FACILITIES OPERATION AND INSPECTION

- Operation and maintenance of wastewater treatment plants and pump stations
- Inspection of new wastewater collection and transportation systems within County sewer districts
- Issuance of connection permits
- Issuance of sewer builders' licenses
- Development, implementation and monitoring of safety guidelines
- Laboratory testing of wastewater to determine extent of pollutants and necessary treatment process adjustments

## SEWER MAINTENANCE

- Sanitary sewer maintenance
- Cleaning of mainline sewers in each district
- Videotape inspection of sewers to determine condition of lines
- Smoke & dye testing of systems to identify potential problems and cross-connections
- In-house completion of minor repairs on system as needed
- Cleaning of sewer laterals (from inspection tee to mainline)

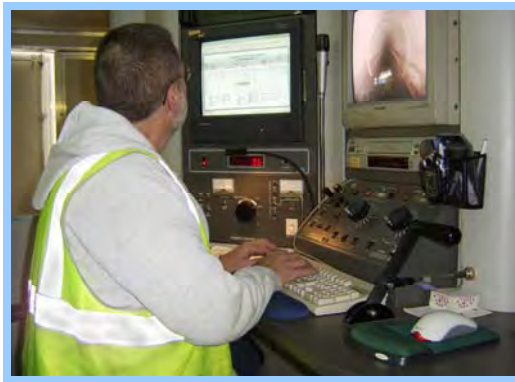


\* Inspection Camera

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## **ADMINISTRATIVE SUPPORT SERVICES**

- Data management/mapping program
  - Geographical and non-geographical information systems (development and implementation)
  - Maps and spatial analysis for design and service management
- Finance management
  - Fiscal oversight of annual operating budget in excess of \$11 million
  - Fiscal oversight of annual capital improvement budget of \$4 million
  - Manage automated cost accounting systems for monitoring and tracking revenues and expenditures
  - Determination and assessment of user fees for 135,000 plus parcels



## **SUMMARY OF SERVICE DELIVERY**

Services provided to full-service communities include engineering, inspection, maintenance and operation of wastewater collection system. In partial service communities, services are provided to the area's tributary to County owned facilities upon request. The Division has met its commitment to users in the following areas:

- Develop financing plan and manage capital construction projects
- Obtain alternate funding grants to offset costs of construction
- Review construction plans in thirty communities
- Develop computerized mapping program to identify the location of sewer systems and structures
- Process an average yearly flow of 164,000,000 gallons of wastewater
- Laboratory support for wastewater treatment plant parameters; perform approximately 10,072 tests annually
- Maintain approximately 820 miles of sanitary sewers; clean approximately 4,785 house connections annually
- Operate and maintain 45 wastewater pump stations, throughout the County



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## INTERNAL STRUCTURE OF THE DIVISION

### ENGINEERING SECTION

The Engineering Section provides technical services to its customers, including capital project planning, grant and loan administration, design engineering, construction management and inspection of wastewater treatment and conveyance facilities.

This section oversees capital construction projects that include monies in the form of grants obtained from the State of Ohio. Monies for the lining of sewers and repairing, replacing or rehabilitating existing sanitary and storm sewers are also expended. The Division invested funds on repairing, enhancing and/or eliminating wastewater treatment plants and pumping station facilities.

The Engineering Section reviews design plans for approximately eighty-five construction projects per year on behalf of thirty-one communities. It also coordinates and analyzes the results of field testing and flow monitoring in order to detect and eliminate storm water inflow/infiltration into the sanitary sewer system.

In addition, the Engineering Section coordinates and processes legislation, maintains files and legal libraries of pertinent federal, state and local laws and renders technical assistance to other sections regarding changes in laws or regulations. Working in cooperation with the Commissioners' legislative representative, it reviews and comments on legislation proposed in the Ohio General Assembly.

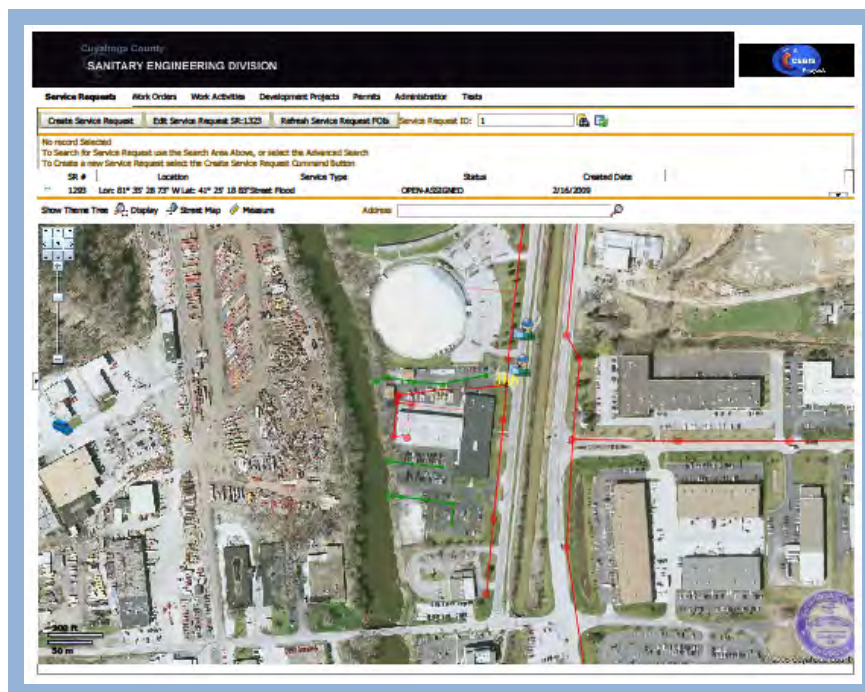


## INFORMATION TECHNOLOGY

The Information Technology (IT) Section provides computer and analytical support to internal end users and communities within the CCSE. It is responsible for the design, implementation and maintenance of geographical map-based and other relational database systems, as well as guiding data acquisition tasks throughout the Division. In addition, the computerized mapping program catalogues the location of sewer systems and performs analysis on spatial data. This ability supports the planning, designing and maintenance of sewer systems, as well as ensuring user fees are appropriately assessed and collected. Furthermore, the mapping program now features attached permits and engineering drawings.

In 2008 the IT Section continued to convert databases to enterprise level DBMS in anticipation of providing web-based information through Cuyahoga County's CEGIS Enterprise GIS. The County has hired the consulting firm of Woolpert, Inc. to create a custom work order management system (See screen shot below) to track activities and expenses for the Sewer Maintenance, Engineering, Permits & Inspection and Environmental Services Sections. Also in 2008, the IT Section spearheaded the project of bringing the City of Parma into our customer service area for 2009. Activities involved in this project include: the scanning of all engineering drawings delivered by the City of Parma, the collection of information from various sources in order to prepare sewer maintenance assessments, and the linking of this information to the GIS.

During the past year a new fiber optic circuit was installed between Sanitary Engineering and the Cuyahoga County Information Services Center (CCISC). The new circuit will provide greater bandwidth for a soon to be implemented Voice over IP (VoIP) telephone system owned by the County. Video conferencing equipment was also purchased in 2008 to conduct meetings from one or more locations in order to increase productivity, share information, make decisions more quickly, and to reduce travel expenses.



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## WASTEWATER TREATMENT PLANTS

The County operates 3 wastewater treatment package plants. These facilities treat 170,000,000 gallons of wastewater per year. The standards are set for each facility by the Ohio EPA through the National Pollution Discharge Elimination System (NPDES) permit. Permits are renewed with new guidelines set every five years. The support staff consists of wastewater operators licensed by the Ohio EPA who monitor the conditions of the plants and make necessary process adjustments to meet the NPDES permit. The Water Quality Control Laboratory provides the required analytical data for process control and for the monthly operating reports as enforced by the Ohio EPA. The operators have the ability to address minor repairs with a maintenance mechanic staff that handle major repairs. Following the guidelines of its NPDES permit, the County has installed a 50,000 gallon equalization tank towards the elimination of the Echo Hills Treatment Plant in Brecksville. In 2008, a pump station was built to replace the Echo Hills WWTP as mandated by NPDES permit.

## PUMP STATIONS

The County operates 45 pumping stations throughout the county. A Supervisory Control and Data Acquisition (SCADA) system monitors 34 of the stations. The system provides alarms and operational status through a central computer that can be accessed from a remote computer. It is our goal to upgrade all County operated pump stations and to expand the SCADA system to all new projects. With the recent addition of the City of Parma, the county has acquired two more pump stations with future plans to acquire four additional stations.



\* Valley Ranch Pump Station

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## **OPERATIONS MAINTENANCE**

The Operations Maintenance area has developed a preventative maintenance program to reduce costs by performing maintenance on and repair/rebuild jobs in-house. The preventative maintenance program has substantially reduced facility downtime by eliminating time-consuming solicitation for outside contractor services. As a result, many potential violations of the NPDES permits have been avoided.

## **CAPACITY MANAGEMENT, OPERATION AND MAINTENANCE PROGRAM**

In December of 2005, Cuyahoga County submitted the self-audit to the U.S. Environmental Protection Agency (U.S. EPA), Region 5 in Chicago. The latest findings as of December of 2006 found 12 of the 30 communities have had their system approved by the U.S. EPA with the only stipulation that any sanitary sewer overflows be reported to the Ohio EPA. In response our agency has enhanced its sanitary sewer overflow procedures and notifications.

## **WATER QUALITY CONTROL LABORATORY**

The Laboratory has expanded over the past fourteen years from its initial wastewater analysis of treatment plants owned and operated by the County. Analysis is also conducted from samples brought to us from the Cuyahoga County Board of Health. These samples range from beaches, lakes, streams and septic systems throughout the County to Phase II Storm Water samples, as mandated by the EPA. The Laboratory also collaborates with the Cuyahoga County Soil and Water Conservation District to analyze soil samples. This analysis of lawn and garden soils helps to determine the quantity of fertilizer necessary, thereby reducing the discharge of excess chemicals and nutrients into our waterways. The Laboratory worked for the Ohio Department of Health analyzing the beach samples from Ashtabula to Lorain Counties.

## **INSPECTION/PERMITS**

The Inspection and Permit section operates in 30 suburban municipalities. This section's three major functions are: the licensing of contractors and issuance of permits to construct mainline sanitary/storm sewers, appurtenances and special projects, including wastewater treatment plants and pumping stations; performs inspection and testing of the sewerage construction projects and approve completed projects; maintain the permanent records for sewerage construction projects and provide information for County departments, engineering consulting firms, contractors and the public.

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## SEWER MAINTENANCE

The Sewer Maintenance section provides a full-service program to clean, evaluate, maintain structural integrity, videotape and perform construction on the sanitary and storm sewers. The general program consists of cleaning all sanitary sewers every three years and televising all sanitary sewers every six years. This is well within the NEORSD's "best management practices" guidelines. The Division cleaned 4,790 house connections this past year. The goal is to reduce basement flooding through inflow/infiltration reduction, reduce blocked mains, clean service connections and maximize sewer capacity.

The Sanitary Engineering Division has an ongoing sewer flow-metering program. The in-sewer meters are primarily used to compare normal dry day flows to wet weather flows in sanitary main lines. The meters are also used to measure wastewater flows coming into treatment plants and water flows in storm sewers. Through the use of the flow meters, the Division can isolate areas affected by excessive volumes of clean runoff into the sanitary sewer system. Meters can detect extraneous water from illegal downspout connections or from rainwater infiltrating through the ground and into sanitary sewers through bad pipe joints and cracked or broken pipe.



\* Jet Truck

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## **FINANCE SECTION**

The Finance Section provides support services to various units within the Sanitary Engineering Division. Automated cost accounting programs and systems ensure accurate tracking and monitoring of expenditures, revenues, rate structures and other data that provide planning for capital projects and operational budgets. All systems and programs are operated under generally accepted accounting principles.

The Finance Section oversees an annual operating budget in excess of \$11 million and an annual capital improvement budget of \$4 million. The capital improvement plan is administered by this section and revenues, as well as expenditures, are approved and monitored for each individual improvement. This section is responsible for accounts receivable, accounts payable, cost accounting, inventory control, vehicle inventory management, capital project financing, purchase of supplies and equipment and determination and assessment of users fees.

## **CONCLUSION**

In addition to providing a broad range of services, the Cuyahoga County Sanitary Engineer, Robert C. Klaiber, Jr., P.E., P.S., has implemented projects designed to improve effectiveness and service efficiency. The CCSE emphasizes its commitment to its mission to serve the communities of Cuyahoga County. Goals and projects have been carried out in line with this mission. The purchase of more efficient equipment, better preventative maintenance practices, along with staff training and development, have resulted in greater productivity. The implementation of improved accounting methods assures that current and future costs and receipts will be financially accountable to the communities. It is the CCSE's continued commitment to provide the most effective level of water pollution control, within the limits of available resources, to the municipalities and townships of Cuyahoga County.

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## **APPENDIX DESCRIPTION\***

The following appendices contain a variety of reports representing the services provided to communities in 2008.

The CCSE follows a manhole-to-manhole, sewer segment-based accounting method for Jet Cleaning and TV Inspection maintenance services. The first two reports contain listings of the collection system, (sanitary and combination sewers) cleaned and inspected for the year by street.

The following report discloses the more significant projects submitted and reviewed by the Permit and Engineering sections during the year for your community. Smaller review services such as house connections or ongoing, intermittent review of large multi-phase projects spanning several years of development are not shown on this report.

The final appendices are from the Finance and Billing section. These reports provide a breakdown of operating expenses, capital project costs contracted for the community, as well as additional services including house visits, inflow/infiltration studies and construction activity.

A hardcopy map is enclosed showing areas where collection system mainlines were Jet cleaned and TV inspected, construction crew activity locations, house visits and if house lateral connections needed to be cleaned or inspected. The CD provided contains a PDF file of the map, which can be copied for distribution. Adobe Corporation's free reader software is required and can be downloaded from [www.adobe.com](http://www.adobe.com).

\* Please note: These appendix reports are provided only to communities for which the specific service is provided by CCSE. For example, if regularly scheduled mainline cleaning service is not provided for your community, a map was not produced. Similarly, if project review or capital project management services are not provided to your community, then there is no corresponding report. Certain communities are provided limited maintenance on county improvement mainlines and/or facilities only.



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# Section A-1

## Community Streets Jet Cleaned\*

\* No service provided if section is blank

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# Section A-2

## Community Streets TV Inspected\*

\* No service provided if section is blank

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# Section A-3

## Projects Status\*

\* No service provided if section is blank

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# Section A-4

## **Service Program\***

\* No service provided if section is blank

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City of Bedford

<u>Type</u>	<u>Community Total</u>
Sanitary Sewers	964 Feet
Manholes	6 (Approximately)

2008 Service Program

<u>Program</u>	<u>2008 Activity</u>
1) High Pressure Cleaning*	0 Feet
2) House Service	0 Calls
3) Television Inspection*	0 Feet
4) Construction Activities	0 Jobs
5) Smoke and Dye Testing	0 Tests
6) Construction Permits Issued	
(Commercial)	0
(Residential)	0
7) Plan Review	0 Plan(s)
8) Capital Projects	0 Feet (New Sewer Lines Inspected)

\*Information includes footages for sanitary (collection system) and storm sewers.

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# Section A-5

## **Community Operating Expenses**

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City of Bedford

2008 Operating Expenses

<u>Activity</u>	<u>Cost</u>
1. Maintenance of Sanitary Sewerage Systems	\$ .00
2. Pump Station Operation and Maintenance	\$ .00
3. Waste Water Treatment Plant Maintenance	\$ .00
4. Engineering and/or Inspection	\$ .00
5. Capital Expenses (See Section A-6 if any)	\$ .00
6. Sanitary Overhead	\$4,867.00
 <b>Total Expenses:</b>	 <b>\$4,867.00</b>

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# Section A-6

## Community Capital Expenses

\* No service provided if section is blank

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## Contact Information

<u>Address</u>	<u>Web Address</u>
Cuyahoga County Sanitary Engineering 6100 West Canal Road Valley View, Ohio 44125	<a href="http://www.sanitaryeng.cuyahogacounty.us/">www.sanitaryeng.cuyahogacounty.us/</a>
<b><u>Phone Numbers</u></b>	
<b>Administration</b> (216) 443-8215	<b>Dispatch</b> (216) 443-8201
<b>Sanitary Engineer</b> Robert C. Klaiber, Jr., P.E., P.S.	
<b>Chief of Staff</b> Thomas Roche	
<b>Deputy to the Sanitary Engineer</b> Michael W. Dever, MPA	
<b>Fiscal Officer</b> Michael W. Chambers, CPA	
<b>Chief Engineer</b> William Schneider, P.E. (216) 443-8205	<b>Sewer Maintenance</b> John Neff (216) 443-8219
<b>Environmental Services</b> Ann McCready-Gliha (216) 443-8203	<b>Construction</b> Gary Green (216) 443-8225
<b>Fiscal</b> Edward Premen (216) 443-8237	<b>Inflow &amp; Infiltration</b> Jimmy Moore (216) 443-8229
<b>Laboratory Services</b> Suzanne Britt (216) 443-8278	<b>Inspection</b> James Johnson (216) 443-8208
<b>Facility Manager &amp; Safety</b> Thomas Regas (216) 443-8234	<b>House</b> James Swedyk (216)443-8227
<b>Information Technology</b> Leon Ozebek (216) 443-8238	<b>Sewer Jetting</b> Guy Swindell (216) 443-8226
<b>Treatment Plant Operations</b> Robert Martz (216) 443-8222	<b>Televised Inspection</b> Richard Apanaites (216) 443-8224



Robert C. Klaiber, Jr., P.E., P.S.  
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Engineering .....216 443-8214  
Environmental Services ..... 216 443-8203  
Finance .....216 443-8237  
Inspection/Permits .....216 443-8209  
Laboratory .....216 443-8278  
Sewer Maintenance .....216 443-8277  
Safety & Security .....216 443-8218