



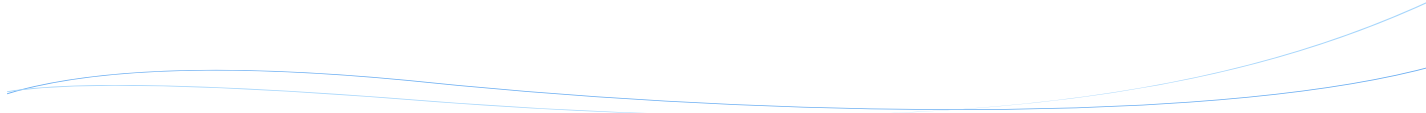
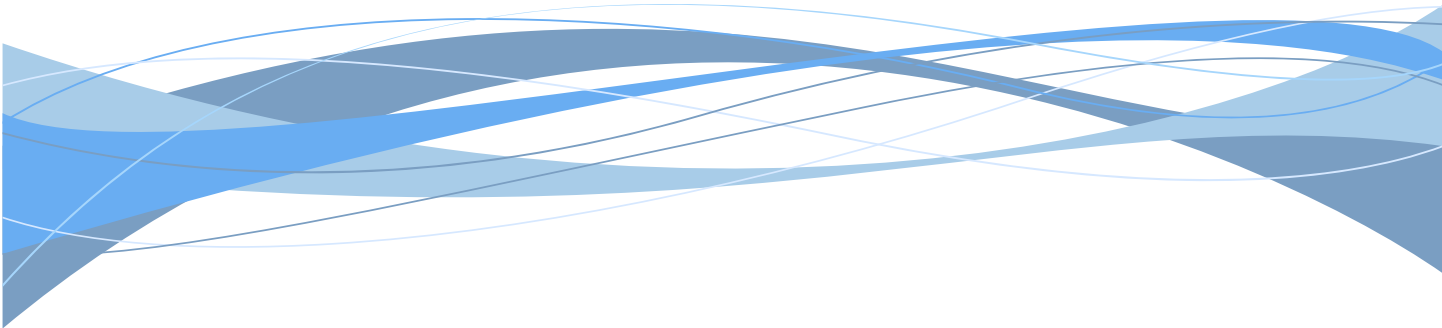
2015 ANNUAL REPORT

Prepared For The:

City of Shaker Heights



By the DEPARTMENT OF PUBLIC WORKS





OVERVIEW

Established in 1919, the office of the Cuyahoga County Sanitary Engineer was created to provide administrative authority in matters of wastewater, storm water, and water supply management. In 2012, the Sanitary Engineering Division (formerly CCSE) became a part of the Cuyahoga County Department of Public Works, and now operates under County Executive Armond Budish.

Our focus on maintenance and repair of aging sewer lines, needs assessment, engineering feasibility studies, 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 Department of Public Works.

This 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, repair, and rehabilitation of sanitary and storm sewer lines. Moreover, the Division has much expertise with respect to the operation and maintenance of pump stations.

The Sanitary Engineering Division currently operates in 36 communities. It maintains more than 1,200 miles of sanitary sewers, operates 56 sewage-pumping stations, and maintains two wastewater treatment plants. The Division performs these services on county-owned facilities and through community agreements. In a number of communities storm sewer maintenance is also provided.

Working in cooperation with the Ohio Environmental Protection Agency (Ohio EPA), the Northeast Ohio Regional Sewer District (NEORS), various communities, and the Cuyahoga County Board of Health; the Division works to maintain water quality through the identification and investigation of illicit discharges as well as the construction of new sanitary sewers.

All operating funds for the Division are generated through fees and assessments. The Division does not receive a subsidy from the county's general fund.

The Sanitary Engineering Division of the Department of Public Works has been in the forefront of regionalism efforts. With services provided to more than half of the county's 59 communities, the Division continues to maintain reasonable rates and improve infrastructure throughout the area.

GOALS

The Sanitary Division has three (3) major goals.

1. Operate and maintain the sanitary sewerage systems within the communities to meet the goals and objectives of the EPA Capacity Management Operation and Maintenance (CMOM) guidelines.
2. Provide guidelines for the design and construction through the “*Uniform Standards for Sewerage Improvements*” and the “*Rules and Regulations.*”
3. Issue sewer connection permits and provide construction inspection for new sanitary sewers and new connections to existing sanitary sewers.
- 4.

The goals of the Division are attained through the activities of our three (3) main groups working together: Maintenance Services; Engineering and Construction Services; and, Administrative Services.

MAINTENANCE SERVICES

- Reduce the number of flooded basements by decreasing mainline blockage, minimize the inflow/infiltration of storm water in the sanitary system, and evaluate the structural integrity of the sewerage system;
- Increase efficiency to reduce operating cost and produce more available funding for capital improvement projects;
- Operate wastewater treatment plants in compliance of National Pollution Discharge Elimination System (NPDES) permit parameters;
- Maintain and inspect the existing collection system to meet EPA CMOM maintenance goals;
- Operate and maintain pumping stations; and operational checks (EPA permit compliance).



ENGINEERING AND CONSTRUCTION SERVICES

- Task Order preparation for repairs and rehabilitation;
- Plan review and approval of all new sewer improvements within the county service area;
- Engineering analysis (required for operation of facilities and the collection system);
- Capital improvement planning;
- Construction management;
- Provide guidelines for new construction through use of *Uniform Standards for Sewerage Improvements*;
- Provide infrastructure needs assessment for communities;
- Project design;
- Construction inspection of new wastewater collection systems within the county service area; and,
- Record keeping, as-built plans and test tee location.



ADMINISTRATIVE SERVICES

- Issuance of connection permits;
- Issuance of sewer builders' licenses;
- Mapping and spatial analysis for design and service management;
- Geographical Information Systems (GIS) for development and implementation;
- Fiscal oversight of annual operating budget and capital improvement budget;
- Grant and loan administration; and,
- Licensing and permitting of more than 200 contractors

SUMMARY OF MAINTENANCE SERVICES

▪ SEWERS

- High-pressure jetting of sewers in the right-of-way, approximately 320 miles of sewers;
- Point repairs of sewers, force mains, and structures;
- Cleaning of service laterals, more than 9,000 houses annually;
- Inflow and Infiltration testing;
- Televising of lines to identify possible failures or deficiencies, approximately 280 miles of sewers;
- Licensed operators to monitor the condition of the treatment plants and pumping stations, as well as implement upgrades and preventative maintenance; and,
- Emergency maintenance and 24-hour on-call team for resident issues.



The Sewer Maintenance section provides a full-service program to clean, evaluate, maintain structural integrity, and perform construction on sanitary and storm sewers. The objective of the program is the cleaning of all sanitary sewers every three years and performing video inspection every six years which is well within the NEORS'D's "Best Management Practices" guidelines.

The Division cleans more than 9,000 house connections annually. The goal is to alleviate sewer back-ups by clearing blocked mains and cleaning service connections to restore sewer capacity.

The Department of Public Works has an Inflow and Infiltration (I&I) section within the Lateral Service Department. This section uses flow meters to monitor sanitary mainlines during both dry and wet weather conditions to quantify wastewater flow in the system. Smoke and dye testing is used to identify sources of clean water into the sanitary sewer system. When used in unison, the flow quantification and source identification can identify sewers in need of rehabilitation or capacity enhancement.



▪ **PUMPING STATIONS**

The County operates 56 pumping stations throughout the 36 service communities. A Supervisory Control and Data Acquisition (SCADA) system monitors the stations. The system provides alarms and operational status through a central computer that is accessed from a remote computer providing 24-hour monitoring. New pump stations are added to the SCADA as they come on-line. Our maintenance staff consists of experienced mechanics and electricians enabling us to repair most problems in-house, therefore keeping costs down. Their preventive maintenance program and dedication to the job has reduced emergency call-outs and overflows.



▪ **WASTEWATER TREATMENT PLANTS**

The County operates two package wastewater treatment plants. The standards are set for each facility by the Ohio EPA through the National Pollution Discharge Elimination System (NPDES) permit. 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.

▪ **CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE PROGRAM (CMOM)**

The CMOM Program is a set of “best management practices” that have been developed by the industry and are applied over the life cycle of the collection system. It is these general practices that are taken into consideration when a system is being reviewed by a federal or state agency. Improvement and recommendations are provided by such agencies based on deficiencies identified in the sanitary sewer system.

We continue to work with the NEORS D through their community discharge program and the Ohio EPA to ensure that our department’s best practices meet the CMOM goals.

SUMMARY OF ENGINEERING AND CONSTRUCTION SERVICES

This section provides technical services to its customers including capital project planning, grant and loan administration, design engineering, construction management, and inspection of sanitary and storm sewers, pump stations, and wastewater treatment facilities.

A sewer repair and rehabilitation program is managed through in-house personnel supplemented with two outside contractors. Task orders for repair and rehabilitation are issued based on video inspection information and requests from the communities.

A specific Engineer is assigned to each community to provide an individual contact for collection system related issues.

Design plans are reviewed for more than 50 construction projects per year on behalf of member communities. Engineering also coordinates and analyzes the results of field testing and flow monitoring in order to detect and eliminate storm water inflow/infiltration from the sanitary sewer system and illicit discharges to the storm sewer system. Record drawings are prepared, then scanned and filed for record keeping. Information on the new sewers and service connections are provided to our IT personnel for incorporation in the GIS.

These departments also oversee capital construction projects and develop financial packages in the form of grants and loans obtained from the state of Ohio. These funds are utilized for lining, repairing, replacing, and rehabilitating existing sanitary and storm sewerage systems.

The construction staff provides inspection for all new sanitary sewers and service laterals connecting to existing sewers. The Inspectors ensure that projects are constructed in conformance to design plans and specifications and the *"Uniform Standards."*





SUMMARY OF ADMINISTRATIVE SERVICES

▪ **PERMITS**

This department operates in 36 member communities and its major functions include the licensing, bonding, and permitting of more than 200 contractors. They also maintain the permanent records for sewer construction projects and provide information to all county departments, engineering consulting firms, contractors, and the public.

▪ **FINANCE**

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

The Department of Public Works oversees an annual storm and sanitary sewer operating budget in excess of \$16 million. Finance is responsible for accounts receivable, accounts payable, cost accounting, audit, inventory control, capital project financing, purchasing, and sewer assessment revenue management for member communities.

▪ **INFORMATION TECHNOLOGY**

Information Technology (IT) provides computer and analytical support to internal end-users and communities within the department. 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. The computerized mapping program catalogues the location of sewer systems and performs analysis on spatial data. This ability supports the planning, design, and maintenance of sewer systems, and ensures user fees are appropriately assessed and collected. Furthermore, the mapping program now features attached permits and engineering drawings.

Our Geographical Information System (GIS) is continually being expanded to include information on repair and rehabilitation activities as well as system maintenance and inspection activities. Information is shared between the county, member communities, and the NEORS to better identify areas of responsibility.

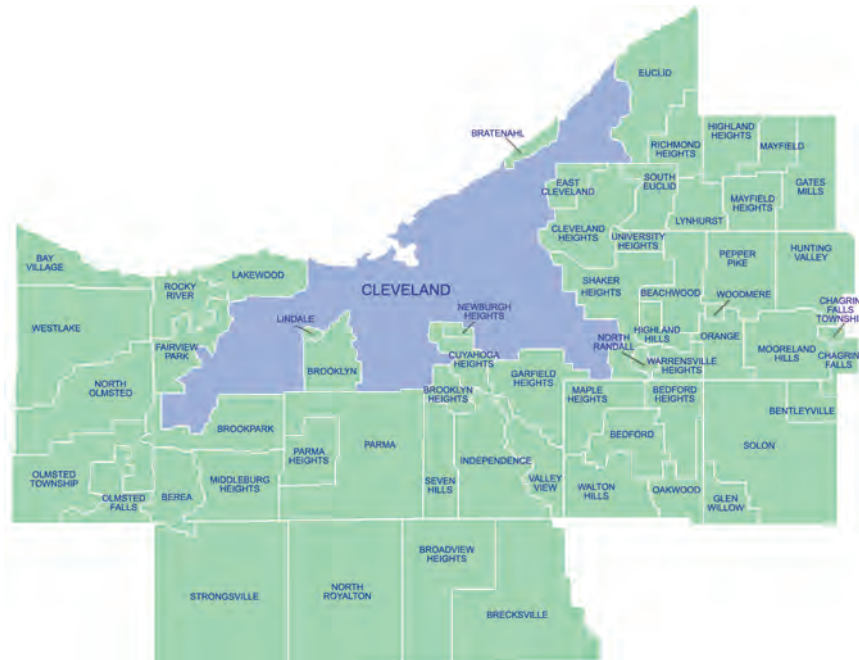


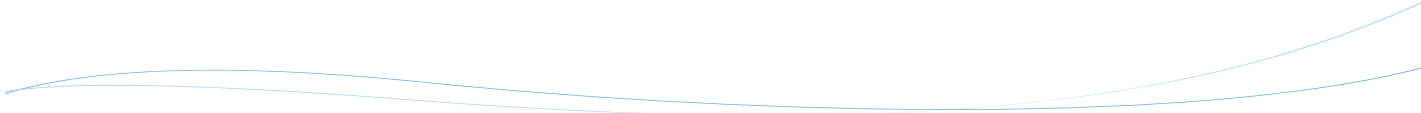
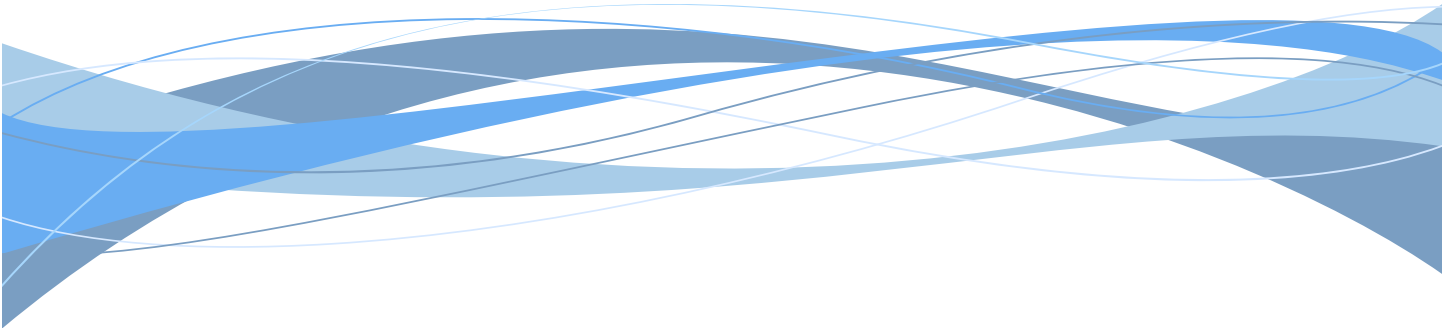
APPENDIX DESCRIPTION*

The following appendices contain a variety of reports representing the services provided to communities in 2015. The Public Works Department follows a manhole-to-manhole, sewer segment-based accounting method for jet cleaning and TV (video) inspection maintenance services. The first two reports contain listings of the collection system cleaned and inspected for the year by street. The following report discloses the more significant projects submitted and reviewed by the Permit and Engineering and Construction Departments 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 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 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 DVD 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.

* **Please note:** These appendix reports are provided only to communities for which the specific service is provided by the Department of Public Works. 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.





Section A-1

Community Streets Cleaned*

* No service provided if section is blank

Collection System Jet Cleaning - 2015

SHAKER HEIGHTS

STREET	NUMBER OF SEGMENTS	JET FT
AVALON ROAD	1	312
CHESHIRE ROAD	2	676
DORCHESTER ROAD	1	267
DREXMORE ROAD	6	1,293
FARNSLEIGH ROAD	2	680
FERNWAY ROAD	1	305
GRENWAY ROAD	2	677
KENDALL ROAD	2	630
KENMORE ROAD	1	320
NORTHWOOD ROAD	2	584
NORWOOD ROAD	3	984
ONAWAY ROAD	1	280
PALMERSTON ROAD	1	249
SCOTTSDALE BOULEVARD	13	3,168
SOUTH WOODLAND ROAD	2	700
VAN AKEN BOULEVARD	1	35
WARRENSVILLE CENTER ROAD	2	412
WEST BELVOIR OVAL	1	237
WINSLOW ROAD	5	1,428
Grand Total:	49	13,237

Section A-2

Community Streets Inspected*

* No service provided if section is blank

Collection System TV Inspection - 2015

SHAKER HEIGHTS

STREET	NUMBER OF SEGMENTS	TV FT
ALDERSYDE DRIVE	3	1,064
ALDERSYDE EASEMENT	1	150
AVALON ROAD	3	530
CHAGRIN BOULEVARD	2	105
CHESHIRE ROAD	4	1,374
DALEFORD ROAD	1	0
DORCHESTER ROAD	1	245
DOUGLAS ROAD	8	1,457
DREXMORE ROAD	2	523
FARNSLEIGH ROAD	4	683
FERNWAY ROAD	7	1,515
GRENWAY ROAD	1	350
HAZELMERE ROAD	2	705
KENDALL ROAD	3	451
KENMORE ROAD	3	439
LEE ROAD	3	151
MENLO	1	398
NORTHFIELD ROAD	1	29
NORTHWOOD ROAD	4	592
NORWOOD ROAD	1	34
ONAWAY ROAD	2	465
RYE ROAD	3	614
SCOTTSDALE BOULEVARD	26	4,032
SOUTH PARK BOULEVARD	4	516
WEST BELVOIR OVAL	3	268
WESTCHESTER DRIVE	1	200
WRENFORD ROAD	2	486
Grand Total:	96	17,376

Section A-3

Projects Status*

* No service provided if section is blank

Section A-4

Service Program*

* No service provided if section is blank

City of Shaker Heights

<u>Type</u>	<u>Community Total</u>
Sanitary Sewers	590,860 Feet
Manholes	2,348 (Approximately)

2015 Service Program

<u>Program</u>	<u>2015 Activity</u>
1) High Pressure Cleaning*	13,237 Feet
2) House Service	606 Calls
3) Television Inspection*	17,376 Feet
4) Construction Activities	69 Job(s)
5) Smoke and Dye Testing	0 Test(s)
6) Construction Permits Issued	
(Commercial)	0
(Residential)	0
7) Plan Review	0 Plan(s)
8) Construction Inspection	
a) Main Lines Inspected	0 Feet
b) Service Laterals Inspected	0 Feet

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

Section A-5

Community Operating Expenses

City of Shaker Heights

2015 Operating Expenses

<u>Activity</u>	<u>Cost</u>
1. Maintenance of Sanitary Sewerage Systems	\$384,169
2. Pump Station Operation and Maintenance	\$ 0
3. Waste Water Treatment Plant Maintenance	\$ 0
4. Engineering and/or Inspection	\$20,563
5. Capital Expenses (See Section A-6 if any)	\$ 0
Total Operating Expenses:	\$404,732

Section A-6

Community Capital Expenses

* No service provided if section is blank

CONTACT INFORMATION

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ConstructionMitch Holt, Supervisor(216) 443-8229
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