

**2017**  
**Milwaukee County**  
**CMAR REPORT**

**Intro:**

The Environmental Protection Agency, EPA, estimates that more than 24 billion gallons of combined untreated sewage and stormwater are dumped into the Great Lakes each year.

The sewage causes a wide array of human and animal health hazards. Also impacts water quality and can cause beaches to close.

In 1994, MMSD implemented the Deep Tunnel project here in Milwaukee, which helps, but doesn't eliminate overflows completely.



Nobody wants this

**What does CMAR mean?** Compliance Maintenance Annual Report.

**Policy:** Milwaukee County is required to file a CMAR for its wastewater collection system.

On March 1<sup>st</sup>, 2006. Milwaukee County entered into a stipulated agreement with DNR and State Attorney General. The agreement is an enforcement action that was brought to 28 defendants (Milwaukee County, MMSD, and Municipalities ).

**Some of the Main Requirements of the stipulated agreement:**

- File a Compliance Maintenance Annual Report (CMAR) for its Wastewater Collection system(s).
- Complete repairs on deficiencies found during inspections in timely manner.
- Minimize the occurrence of preventable overflows.
- Manage inflow and infiltration of clear water into sewers.
- Reduce threats to human health.
- Improve or maintain system reliability

**Benefits:**

- Reducing inflow & infiltration ensures maximum sewer system capacity. Limits overflows and basement backups.
- Reduces cost for sewage treatment (not treating clean water).

## Brief History of past CMAR related efforts

Faced with an aging system, data was needed to get a handle on the overall condition of our sewer system. As a condition of the stipulated agreement, consultants were hired in 2007 to complete a SSES or Sewer System Evaluation Survey which provided detailed information on the condition of sewer structures and pipes. The effort included the inspections of manholes and sewer pipe televising. The data was used to build GIS mapping and to bid rehabilitation construction contracts.

The SSES process found:

- Buried Manholes
- Broken pipes
- Cross connections (illegal)
- Sewer running through a lagoon.



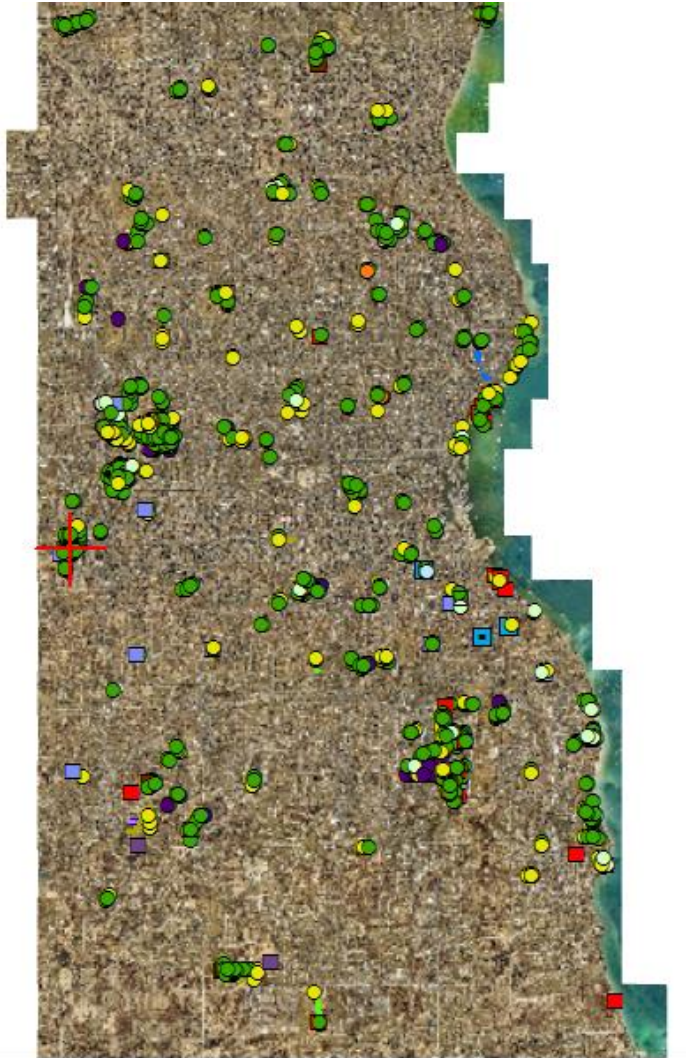
GMIA pipe broken inadvertently by directional drilling & found by televising pipe.



Digging up buried Manhole at Parks



**Milwaukee County** owns sanitary sewers at Parks, Grounds, Airports, Zoo, Transit, and Correctional Facilities. Currently ownership includes over 1,000 manhole structures and 43 miles of pipe. The sanitary sewer system plan is maintained in GIS (Geographic Information System) which allows data to be assigned to the manholes and pipe segments.

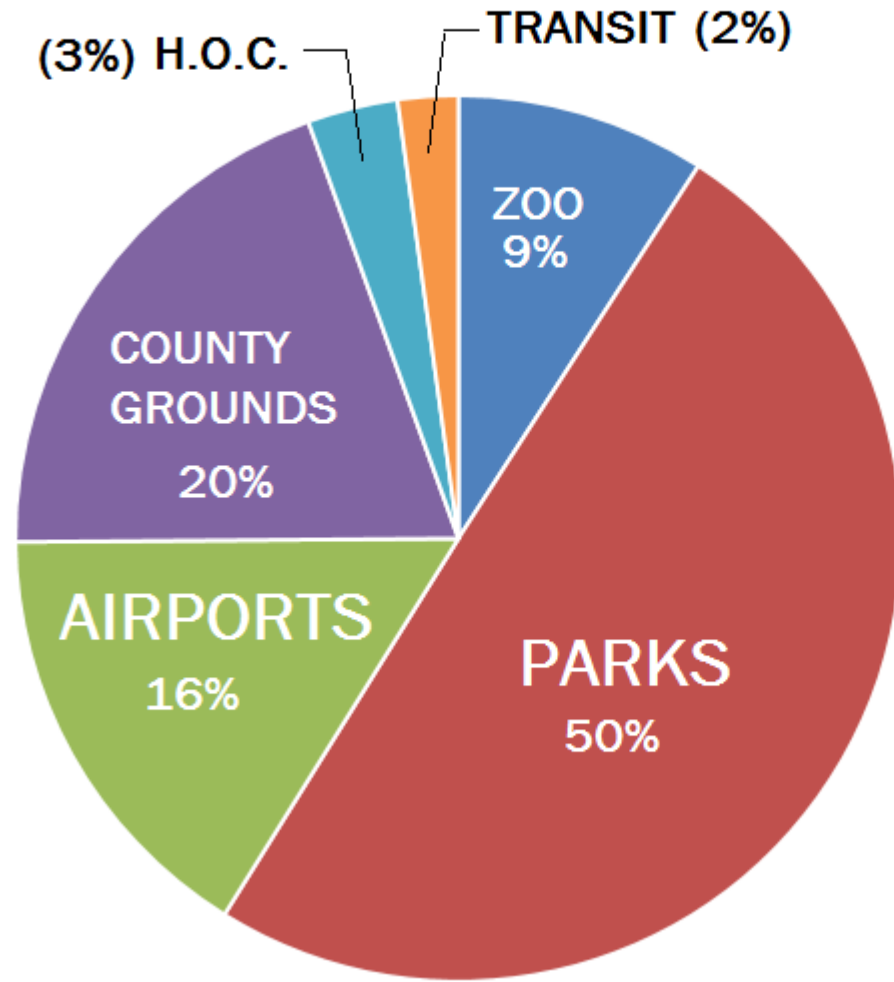


Sewers mapped in GIS for County



Sewers mapped in GIS at Brown Deer Park

## Sewer Ownership by Department





## Maintaining the Sewer System:

### Types of Repairs for Sewer Pipes

- Root foaming (kills roots)
- CIPP or Cured-in-place pipe (new pipe inside existing)
- Ream and Grout (stops leaks at pipe joints)
- Spot Repairs (dig ups)

### Types of Repairs for Sewer Manholes

- Top Rehabilitation
  - New watertight lids
  - Install Chimney seals
  - Bring Manhole to Grade
- Manhole Replacement
- Manhole Grouting
- Manhole Lining
- Manhole Root foaming

Defects are identified through department feedback & annual manhole inspections. Also by pipe dye-testing, smoking, and televising.



Installing CIPP pipe Liner in Brown Deer Park



## Repair activities to date:

Milwaukee County - Sanitary Sewer Manhole Inventory & Improvements - Completed Work														
	Sanitary Features	Top Inspection	Full Inspection	Remove and Replace Lid	Remove and Reset Manhole Frame	Paved Dig-Ups	Turf Dig-Ups	Remove Masonry Chimney (In Inches)	Install Precast Concrete Chimney (In Inches)	Install Internal Chimney Seal	Install External Chimney Seal	Abandon MH	MH's which had some type of Chimney work done	Sanitary Features (after abndmnts)
Zoo	99	94	94	76	44	21	22	159	262	40	42	5	35	94
Parks - North*	271	265	265	168	71	13	58	134	266	106	69	33	41	238
Parks - South	313	301	301	186	90	27	63	299	472	121	88	40	53	273
GMIA - Airport	158	153	153	123	41	16	25	186	180	48	33	12	20	146
LJT - Airport	18	18	18	17	9	3	6	36	35	9	8	0	3	18
Grounds	237	251	251	125	99	33	47	278	354	84	75	35	62	202
H.O.C.	34	34	34	24	19	6	13	88	126	11	12	0	11	34
TRANSIT	24	21	21	9	9	8	1	37	43	9	9	1	7	23
Total	1,154	1,137	1,137	728	382	127	235	1,217	1,738	428	336	126	232	1,028
								Inches	Inches					
Percent Complete		99%	99%											

\* includes 2007 and 2008 work (and 2006 Madison Park work)

## Milwaukee County - Sanitary Sewer Pipe Cleaning and Rehab (Completed Work)

TOTALS (2006-2017)										
	CCTV Clean and Flush Completed	CIPP Liner Installed	Ream & Grout	Root Cut	Root Foam	Length of Abandoned Pipes	Clean and Flush ONLY Completed	Smoke Testing Completed	Dye Testing Completed	Cleaned TOTALS
Zoo	10,861	683	748	259	0	339	6,722	0	0	17,583
Parks - North	36,373	6,592	560	367	0	300	24,808	13,415	1,750	61,181
Parks - South	44,389	5,182	4,890	1,000	2,484	0	28,471	5,921	1,750	72,860
GMIA - Airport	21,591	1,118	1,123	0	0	0	11,877	20,793	866	33,468
LJT - Airport	2,845	0	0	0	0	0	1,149	1,051	0	3,994
GROUNDS	33,705	2,012	0	0	0	5,596	21,544	490	100	55,249
H.O.C.	4,678	325	0	0	0	0	4,450	0	0	9,128
TRANSIT	703	0	0	0	0	19	0	0	0	703
Totals:	155,145	15,912	7,321	1,626	2,484	6,254	99,021	41,670	4,466	254,166



## Ongoing CMAR Compliance:

- Manhole inspections, 20% of system every year.
- Pipe inspections via televising, approximate 10% of system every year.
- Bidding Rehabilitation contracts
- Lift station replacements
- Annual CMAR reporting



Pipe televising truck



Manhole Inspections

## Annual approval of the CMAR Resolution:

The stipulated agreement requires that the “governing body” of the County acknowledge their review of the report and indicate specific actions being taken to bring the County’s sanitary sewer collection into compliance with state statutes.