

MSDGC

**2016 Capital Improvement
Program Budget Report**

DRAFT

**Metropolitan Sewer District
of Greater Cincinnati**

08/14/2015

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DRAFT

EXECUTIVE SUMMARY

The 2016 CIP remains draft and is under review and discussion with the County monitor team. The draft CIP includes a total of 90 projects that will provide the following benefits:

- Stormwater Treatment Improvements at Werk & Westbourne EHRT
- Replacement of 5,200 feet of aging/deteriorated sanitary sewer
- Replacement of 5,000 feet of aging/deteriorated combined sewer
- Lining of 1,100 feet of aging/deteriorated sewers
- Construction of 35,600 feet of new sanitary sewers
- Construction of 8,100 feet new combined sewers
- Construction of 30,100 feet of new storm sewers
- Elimination of 144 home sewage treatment systems

The 2016 CIP funding request totals nearly \$331 million. The current rate model supports this level of CIP over the next five year period.

- 62 percent of 2016 funds are for wet weather projects
- 59 percent of 2016 funds were also requested in the 2015 CIP
- 90 percent of 2016 funds are for construction projects

To-date MSD has completed 81 of 109 Consent Decree milestones. The Phase 1 Wet Weather Program remains on schedule and on budget in accordance with the Final WWIP. At this point in the Program, deferring wet weather projects increases the risk of non-compliance with Consent Decree requirements.

PROJECTS TO REMAIN IN 2015 CIP

The 2016 CIP is premised on the assumption the following capital projects will be legislated for construction during 2015. These projects have not been included in the 2016 CIP.

Remaining 2015 Design Legislations

- 10171740 CSO 551 Sewer Separation
- 10240590 Mill Creek WWTP Main Substation Improvements

Remaining 2015 Construction Legislations

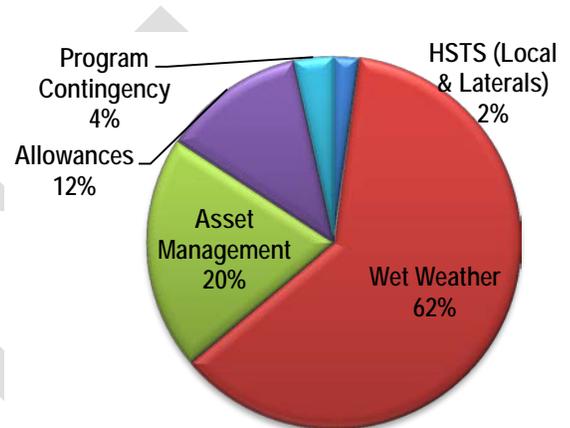
- 10131220 Glenview Pump Station Elimination
- 10143220 CSO 179 Sewer Separation
- 10240144 Millbrook #2 Pump Station Upgrade
- 10240335 3568 Bogart Avenue Sewer Replacement
- 10240480 Mill Creek WWTP Dewatering Polymer System Replacement
- 10240505 Mt Pleasant Ave Sewer Replacement
- 10240520 Freeman Avenue Sewer Replacement - Klotter to McMicken
- 10240565 Overflow Parking Lot for MSDGC Engineering & Administration Buildings
- 10240580 Quebec Heights Sewer Rehabilitation
- 10240581 Queen City and Cora Ave Sewer Rehabilitation
- 10241325 Montana Avenue Sewer Replacement – Ferncroft to Mustang Drive
- 10241820 SSO 700 Facility Improvements
- 10270125 Portsmouth Avenue Sewer Replacement
- 10270135 Airport & Robb Sewer Replacement
- 10320075 Old Blue Rock Road Local Sewer
- 10330015 Werk Road Local Sewer (HNs 5544-5686)
- 10420015 Boomer Road Sewer Lateral Assessment (HN 4230)
- 10430030 Werk Road Sewer Lateral Assessment (HN 6052)
- 10420015 Boomer Road Sewer Lateral Assessment (HN 4230) Watershed
- 10440055 E. Galbraith Road Sewer Lateral Assessment (HN 4454)
- 10440060 Pottinger Road Sewer Lateral Assessment (HN 10444)
- 10440065 Poole Road Sewer Lateral Assessment HN 3759
- 10450015 Enyart Road Sewer Lateral (HN 11258 & 11262)
- 10450016 Enyart Road Sewer Lateral Assessment (HN 11328)
- 10450025 E. Kemper Road Sewer Assessment (HN 269)
- 10460000 Drake Road Sewer Lateral Assessment (HN 7315)
- 11040190 West Fork Creek Riparian Floodplain Restoration
- 11240030 Wyoming & Minion Avenues Sewer Separation
- 11240150 Queen City & Cora Avenues R/W Sewer Separation
- 11240170 Quebec Heights Sewer Separation
- 11242842 CSO 12 Sewer Separation Phase A.3 - West MLK
- 11530001 Upper Muddy Creek Interceptor Replacement Contract A
- 12270110 Mayland, Woodlark, and Lusanne Terrace Sewer Improvements

2016 CAPITAL IMPROVEMENT PROGRAM

MSD's proposed 2016 CIP includes a total of **90 projects totaling \$331 million**. As was expected at this point in the Phase 1 Program, 62% of the requested funding during 2016 is for Wet Weather Improvement Program (WWIP) Projects listed in the Consent Decree Final WWIP. A breakdown of the 2016 by Program is provided below.

Table 1 – 2016 CIP Breakdown by Program

Program	Number of Projects	2016 CIP
Local & Lateral Sewer Assessment	9	\$7,095,700
Wet Weather Improvement Program	23	\$204,297,400
Asset Management Program	44	\$67,268,400
Allowances	13	\$40,875,000
Program Contingency	1	\$11,500,000
Total for Projects for 2016 CIP	90	\$331,036,500
Projects also in 2015 CIP	16	\$195,887,000
Projects New in 2016 CIP	68	\$135,149,500



It is important to note that 16 of the projects included in the 2016 CIP **totaling more than \$195 million were also listed in the 2015 CIP** for construction funding. These projects were not funded in 2015 for a variety of reasons including procurement policy issues, right-of-way acquisition, and on-going discussions with the Consent Decree Regulators. A list of 2015 projects that are included in the 2016 CIP is provided in the following table.

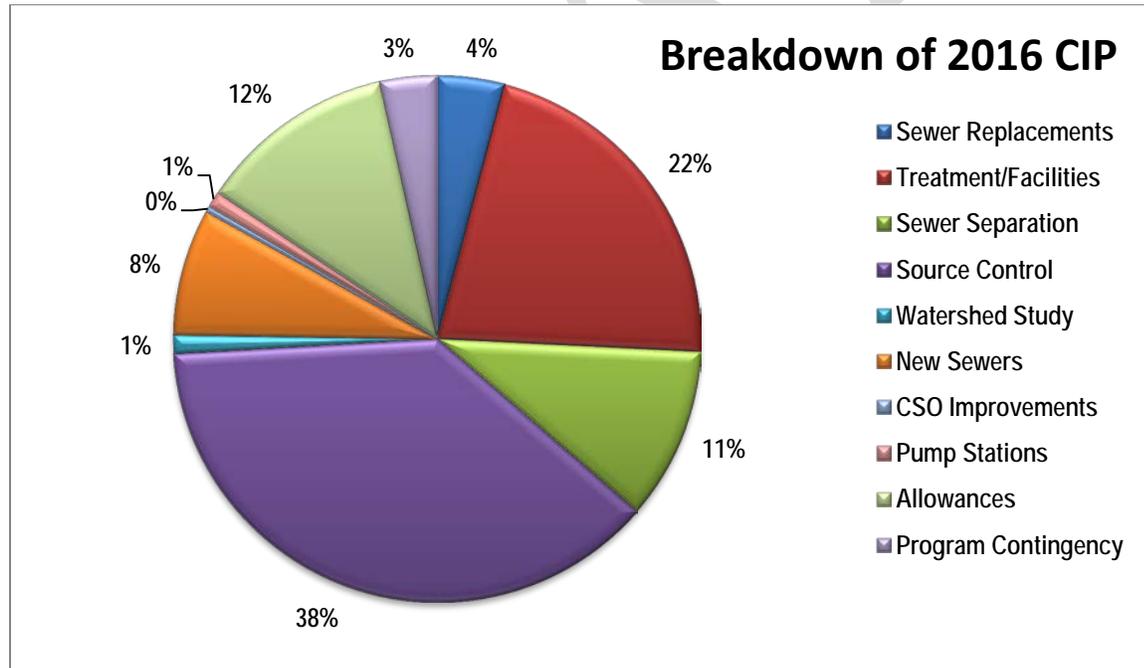
Table 2 – 2016 CIP Projects Included in Approved 2015 CIP

ID	Project	Activity	2015 CIP	Reason Deferred
10130740	Werk & Westbourne EHRT	Construction	\$59,142,000	Regulatory Discussions
11124000	Lick Run VCS	Construction	\$98,793,900	CDOTE Funding
11240001	Lick Run Property Demolitions	Construction	\$1,297,700	Property Acquisition
10170176	Stanley Avenue Lateral Relocations	Construction	\$148,700	Regulatory Discussions
10240027	Cora Avenue Sewer Replacement	Construction	\$547,100	Easement Acquisition
10240029	German Cemetery Sewer Replacement	Construction	\$695,000	Easement Acquisition
10240291	Mill Creek WWTP Phase 1 Solids	Construction	\$12,159,200	County Coordination
10240320	Wilder Avenue Sewer Replacement	Construction	\$342,900	Easement Acquisition
10240380	CSO 005 Water Connection	Construction	\$71,000	Construction Coordination
10240430	Berkley Avenue Sewer Replacement	Construction	\$583,300	Easement Acquisition
10240435	Pleasant Run Force Main Repairs	Construction	\$1,068,000	Easement Acquisition
10240590	Mill Creek WWTP Main Substation	Design	\$496,700	Facility Planning
10270007	Dry Run Sewers Phase 2 Contract RB	Construction	\$7,181,100	Easement Acquisition
10430020	Foley Road Sewer Laterals	Construction	\$31,400	Design Coordination
11240130	Queen City Ave Separation Phase 2	Construction	\$9,558,600	Utility Coordination
11243140	CSO 217/483 Source Control Phase A	Construction	\$3,772,400	County Coordination
			\$195,889,000	

The projects listed in the 2016 CIP cover the full range of utility needs. A breakdown of the projects by type is provided in the following table. Approximately 38% of the 2016 funding is being requested for projects associated with source control projects including the Lick Run Valley Conveyance System.

Table 3 – 2016 CIP Projects Breakdown by Type

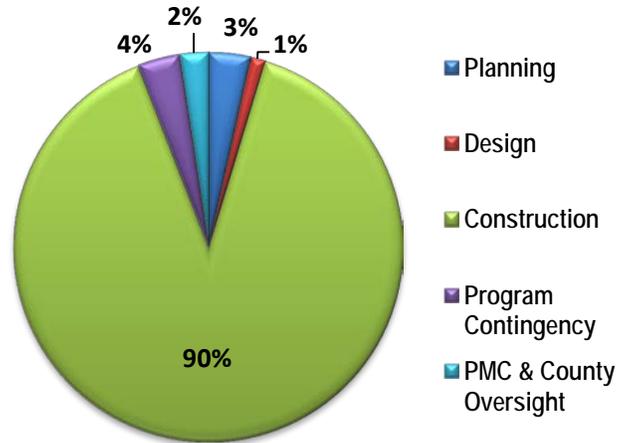
Project Type	Number of Projects in 2016 CIP	2016 CIP	2015 CIP	% of 2016 CIP included in 2015 CIP
Sewer Replacements	21	\$13,613,900	\$3,385,000	25%
Treatment/Facilities	16	\$71,749,900	\$71,797,900	100%
Sewer Separation	12	\$34,991,300	\$9,558,600	27%
Source Control	5	\$124,979,500	\$103,864,000	83%
Watershed Study	3	\$3,750,000	\$0	0%
New Sewers	12	\$25,750,800	\$7,212,500	28%
CSO Improvements	5	\$1,220,100	\$71,000	6%
Pump Stations	5	\$3,206,000	\$0	0%
Allowances	11	\$40,275,000	\$0	0%
Program Contingency	1	\$11,500,000	N/A	0%
Totals	90	\$331,036,500	\$195,889,000	59%



A breakdown of the 2016 CIP projects by funding Activity is provided in the following table. Approximately 90% of the 2016 funding is being requested for construction activities.

Table 4 – 2016 CIP Projects Breakdown by Activity

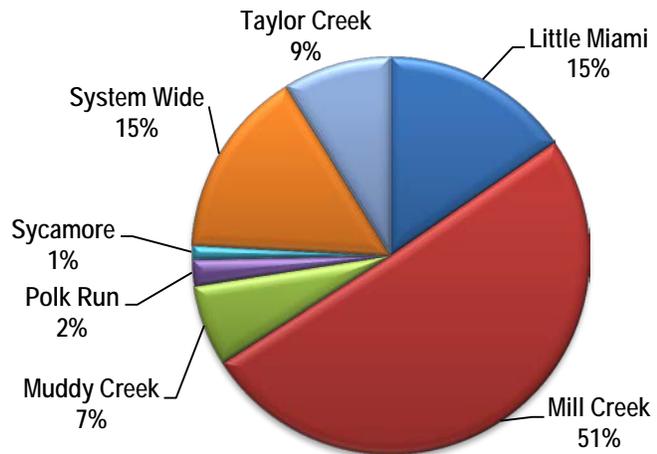
Activity	Number of Projects	2016 CIP
Planning	9	\$11,340,500
Design	14	\$4,101,000
Construction	64	\$296,095,000
Program Contingency	1	\$11,500,000
PMC & County Oversight	2	\$8,000,000
Totals	90	\$331,036,500



A breakdown of the 2016 CIP projects by Watershed is provided in the following table. Projects listed as District-Wide represent allowances that will be used to improve infrastructure throughout all watersheds.

Table 5 – 2016 Projects Breakdown by Watershed

Watershed	Number of Projects	2016 CIP
Taylor Creek	8	\$10,486,200
Muddy Creek	6	\$43,824,700
Mill Creek	45	\$201,369,800
Polk Run	2	\$1,765,000
Sycamore	1	\$444,000
Little Miami	14	\$20,771,800
District-Wide	14	\$52,375,000
Totals	90	\$331,036,500



2016 FORECAST OF ACTIVITIES

The draft 2016 CIP forecasts 64 projects for which construction legislation requests will be submitted to the County by MSDGC. An estimated 7 projects will require Public Hearings by the Board of County Commissioners.

Table 6 – Forecast of 2016 Legislation Activities

ID	Project	Activity	Month
10470025	Woodruff Road Sewer Lateral (HN 8237-8227)	Construction	January 2016
10220061	Whitewater Township SR 128 Sewer Extension	Construction	January 2016
10240275	SSO 603 & 704 Improvements	Construction	January 2016
10130740	Werk & Westbourne EHRT Facility	Construction	January 2016
10240380	CSO 005 Water Connection	Construction	January 2016
10241325	Montana Ave Sewer Replacement	Construction	January 2016
10450025	E. Kemper Road Sewer Lateral Assessment (HN 269)	Construction	January 2016
10240635	Mill Creek WWTP Plant Influent and Gravity Thickeners Odor Control Improvements	Construction	February 2016
10143920	CSO 194 High Point Sewer Separation	Construction	February 2016
10143923	CSO 194 High Point Sewer Separation Contract 3	Construction	February 2016
10143962	CSO 525 Sewer Separation Contract 3	Construction	February 2016
10270026	Camargo Canyon Pump Station Elimination	Construction	February 2016
10430030	Werk Road Sewer Lateral Assessment (HN 6052)	Construction	February 2016
10143940	CSO 195 Westwood Northern Sewer Separation	Construction	February 2016
10240665	Mill Creek WWTP Septage Receiving Station Odor Control Improvements	Construction	February 2016
10240615	MCWWTP Primary Settling and Primary Skimmings Thickening Building Odor Control Improvements	Construction	February 2016
10320065	Reemelin Road Local Sewer (HNs 3489-3860)	Public Hearing	March 2016
10270145	Columbia Parkway at Delta Sewer Replacement	Construction	March 2016
10230041	Westport Village PS Elimination	Construction	March 2016
10240245	MCWWTP Service Water (NPW) Reliability Upgrades	Construction	March 2016
10240027	Cora Avenue Sewer Replacement	Construction	March 2016
10240320	Wilder Ave Sewer Replacement	Construction	March 2016
10240430	Berkley Avenue Sewer Replacement	Construction	March 2016
10240375	Carpenters Run Pump Station Upgrade	Construction	March 2016
10240435	Pleasant Run Central Force Main Repairs	Construction	March 2016
10240350	McKeone Avenue Sewer Replacement	Construction	March 2016
10320070	Crestnoll Lane Local Sewer (HN 3491-3609)	Public Hearing	March 2016
10240450	Vinton Street - Beekman to Liddell Street Sewer Replacement	Construction	April 2016
10220054	Bruestle Ave. PS Elimination	Construction	April 2016
10270110	Linwood Avenue Sewer Replacement	Construction	April 2016
10240540	Spring Grove Av, Township St. Sewer Improvements	Construction	April 2016
10270007	Dry Run Area Sewers Contract Round Bottom	Construction	April 2016

ID	Project	Activity	Month
10240455	Spring Grove Avenue Sewer Replacement & Rehabilitation	Construction	May 2016
10170176	Stanley Avenue Lateral Relocation	Construction	May 2016
10370032	Coldstream Drive & Asbury Road Local Sewer	Public Hearing	May 2016
11243140	CSO 217/483 Source Control Phase A	Construction	June 2016
10230031	CSO 404,405,410,411 Outfall Reconstruction	Construction	June 2016
11240110	Quebec Rd Sewer Separation	Construction	June 2016
10320065	Reemelin Road Local Sewer (HNs 3489-3860)	Construction	June 2016
10320070	Crestnoll Lane Local Sewer (HN 3491-3609)	Construction	June 2016
10320060	Mapleknoll Drive Local Sewer (HNs 9420-9562)	Public Hearing	July 2016
10240029	German Cemetery Sewer Replacement	Construction	July 2016
10270008	Dry Run Sewers - Contract 8M	Construction	July 2016
10430020	Foley Road Sewer Laterals (HNS 5583-5599)	Construction	July 2016
10240595	MCWWTP Power Bldg Medium Voltage Switchgear	Construction	July 2016
10240645	WWC Maintenance Shop Improvements	Construction	July 2016
10330037	Upper Road Local Sewer (HNs 6340-6434)	Public Hearing	August 2016
10320058	Kern Drive & Springdale Road Local Sewer	Public Hearing	August 2016
10320012	Parrakeet Drive Local Sewer (HNs 6002 - 6068)	Public Hearing	August 2016
10370032	Coldstream Drive & Asbury Road Local Sewer	Construction	August 2016
11243142	CSO 217/483 Source Control Phase A2	Construction	August 2016
11240000	Lick Run Valley Conveyance System	Construction	August 2016
10230130	Dry Weather Channel For Sewer 937	Construction	September 2016
10141080	Ludlow & Lafayette Parallel Sewer	Construction	September 2016
11240130	Queen City Ave Sewer Separation Phase 2	Construction	October 2016
10240365	Quebec Road Sewer Replacement	Construction	October 2016
10320060	Mapleknoll Drive Local Sewer (HNs 9420-9562)	Construction	October 2016
10330037	Upper Road Local Sewer (HNs 6340-6434)	Construction	October 2016
10270175	East Hill Ave Sewer Replacement	Construction	October 2016
10171580	CSO 54 Improvements	Construction	November 2016
10320058	Kern Drive & Springdale Road Local Sewer	Construction	November 2016
10320012	Parrakeet Drive Local Sewer (HNs 6002 - 6068)	Construction	November 2016
10250030	Polk Run UV System/Post Aeration Improvements	Construction	November 2016
10250035	Polk Run NPW Upgrades	Construction	November 2016
10240382	CSO 5 (Lick Run RTC)	Construction	November 2016
12240530	Hilltop Concrete Lateral Relocation	Construction	November 2016
10270150	3981 Watterson Road Sewer Replacement	Construction	December 2016
10240600	MCWWTP Electrical Arc Flash Protection	Construction	December 2016

The following de-legislation activities are forecasted to occur in 2016 in conjunction with the District's Capital Program.

- 54 project de-legislations at Notice of Commencement
- 48 project de-legislations at closeout
- 12 allowance annual de-legislations

MSDGC is required to de-legislate unused planning, design, pre-construction, and right-of-way funds when a Notice of Commencement (NOC) is issued to a selected contractor. Additionally at the time of the NOC, MSDGC is required to de-legislate the difference between the value of the construction contract and the funding legislated under the construction line item activity by the Board of County Commissioners.

When projects reach the closeout phase, any remaining unencumbered funds are de-legislated. Allowances are de-legislated once per year for funds not encumbered during the prior calendar year.

Table 7 – Forecast of 2016 De-Legislation Activities

ID	Project	Activity	Month
<i>Project de-legislation occurs at construction contract Notice of Commencement and upon closeout. Allowance de-legislation occurs annually in June.</i>			
11040100	Beekman Early Success Project	NOC	January 2016
10240505	Mt Pleasant Ave Sewer Replacement	NOC	January 2016
10320075	Old Blue Rock Road Local Sewer	NOC	January 2016
10240520	Freeman Ave - Klotter to McMicken Sewer Replacement	NOC	February 2016
10270120	Catholic Calvary Cemetery Sewer Replacement	NOC	February 2016
10440060	Pottinger Road Sewer Lateral Assessment (HN 10444)	NOC	February 2016
10240291	Mill Creek WWTP Solids Handling Improvements Phase 1	NOC	February 2016
10143220	CSO 179 Sewer Separation	NOC	February 2016
10270135	Airport & Robb Sewer Replacement	NOC	February 2016
11242842	CSO 12 Sewer Separation Phase A.3 - West MLK	NOC	March 2016
10450016	Enyart Road Sewer Lateral Assessment (HN 11328)	NOC	March 2016
10460000	Drake Road Sewer Lateral Assessment (HN 7315)	NOC	March 2016
10440065	Poole Road Sewer Lateral Assessment HN 3759	NOC	March 2016
10420015	Boomer Road Sewer Lateral Assessment (HN 4230) Watershed	NOC	March 2016
10240335	3568 Bogart Avenue Sewer Replacement	NOC	April 2016
11240150	Queen City & Cora Avenues R/W Sewer Separation	NOC	April 2016
10240581	Queen City and Cora Ave Sewer Rehabilitation	NOC	April 2016
10440055	E. Galbraith Road Sewer Lateral Assessment (HN 4454)	NOC	April 2016
11240030	Wyoming & Minion Avenues Sewer Separation	NOC	April 2016
10143923	CSO 194 High Point Sewer Separation Contract 3	NOC	April 2016
10143962	CSO 525 Sewer Separation Contract 3	NOC	April 2016
10143920	CSO 194 High Point Sewer Separation Contract 2	NOC	April 2016
10240635	Mill Creek WWTP Plant Influent and Gravity Thickeners Odor Control Improvements	NOC	April 2016

10143940	CSO 195 Westwood Northern Sewer Separation Contract 2	NOC	April 2016
10220061	Whitewater Township SR 128 Sewer Extension	NOC	April 2016
10240275	SSO 603 & 704 Improvements	NOC	April 2016
10241325	Montana Ave Sewer - Ferncroft to Mustang Dr.	NOC	April 2016
10450025	E.Kemper Road Sewer Lateral Assessment (HN 269)	NOC	April 2016
11142810	North Fairmount Strategic Sewer Separation Phase A	Closeout	April 2016
11240051	Harrison Avenue Sewer Separation - Phase B	Closeout	May 2016
10440040	Crest Road Sewer Lateral Assessment (HN 2769)	Closeout	May 2016
10240380	CSO 005 Water Connection	NOC	May 2016
10240400	Hunsford Street Sewer Replacement	Closeout	May 2016
10270007	Dry Run Area Sewers Contract Round Bottom	NOC	May 2016
10130740	Werk & Westbourne EHRT Facility	NOC	May 2016
10241820	SSO 700 Facility Improvements	NOC	May 2016
10180115	Sewer Relining Trenchless Technology Program 2015	Allowance	June 2016
10180216	Manhole Rehabilitation Trenchless Technology Program 2015	Allowance	June 2016
10180900	MSD Sustainable Infrastructure Program (Green)	Allowance	June 2016
10190315	Home Sewer Treatment Systems Extensions 2015	Allowance	June 2016
10199015	Wet Weather Program Management & Support Services 2015	Allowance	June 2016
10199115	County Oversight and Coordination 2015	Allowance	June 2016
10280124	CIP Project Planning	Allowance	June 2016
10280185	WWT System Asset Renewal 2015	Allowance	June 2016
10280235	Hydraulic Model 2015	Allowance	June 2016
10280315	Emergency Sewer Repairs 2015	Allowance	June 2016
10280515	High Risk System Asset Renewal 2015	Allowance	June 2016
10280615	Water Quality Modeling 2015	Allowance	June 2016
10240245	MCWWTP Service Water (NPW) Reliability & Service Upgrades	NOC	June 2016
10240027	Cora Avenue Sewer Replacement	NOC	June 2016
10240375	Carpenters Run Pump Station Upgrade	NOC	June 2016
10430030	Werk Road Sewer Lateral Assessment (HN 6052)	NOC	June 2016
10270026	Camargo Canyon Pump Station Elimination	NOC	June 2016
10240665	Mill Creek WWTP Septage Receiving Station Odor Control Improvements	NOC	June 2016
10240615	MCWWTP Primary Settling and Primary Skimmings Thickening Building Odor Control Improvements	NOC	June 2016
12230095	3520 Darwin Avenue	NOC	June 2016
10240350	McKeone Avenue Sewer Replacement	NOC	June 2016
10230041	Westport Village PS Elimination	NOC	June 2016
10240430	Berkley Avenue Sewer Replacement	NOC	June 2016
10270145	Columbia Parkway at Delta Sewer Replacement	NOC	June 2016
10240320	Wilder Ave Sewer Replacement	NOC	June 2016
10241320	Greenpine Acres PS Elimination	Closeout	June 2016
10240435	Pleasant Run Central Force Main Repairs	NOC	July 2016
10440045	Pippin Road Sewer Lateral Assessment (HN 9254)	Closeout	July 2016
10320075	Old Blue Rock Road Local Sewer	Closeout	July 2016

10330015	Werk Road Local Sewer (HNs 5544-5686)	Closeout	July 2016
10240450	Vinton Street - Beekman to Liddell Street Sewer Replacement	NOC	July 2016
10240540	Spring Grove Av, Township St. Sewer Improvements	NOC	July 2016
10170176	Stanley Avenue Lateral Relocation	NOC	July 2016
10340024	North Bend Road Local Sewer (HNs 504-565)	Closeout	July 2016
10220054	1 Bruestle Ave. PS Elimination	NOC	July 2016
10270110	Linwood Avenue Sewer Replacement	NOC	July 2016
10270023	Ault Park Sewer Separation	Closeout	August 2016
10270022	Beverly Hill Drive Sewer Replacement	Closeout	August 2016
10230620	Country Club Estates PS Elimination	Closeout	August 2016
10230070	Muddy Creek WWTP-Primary Skimming/Sludge Removal System Replacement	Closeout	August 2016
10270000	Dry Run Area Sewers	Closeout	August 2016
10144880	Mill Creek WWTP Grit Removal	Closeout	August 2016
10240390	MCWWTP Electrical Power Renovation Planning	Closeout	August 2016
10420010	West Fork Road Sewer Lateral Assessment (HN5481)	Closeout	August 2016
11042800	Urban Water Grant, North Fairmont (Denham/Carll Ravine ESP)	Closeout	August 2016
10240455	Spring Grove Avenue Sewer Replacement & Rehabilitation	NOC	August 2016
10240190	E. Mitchell Avenue Sewer Replacement	Closeout	August 2016
10221223	Wesselman Road Sewer Phase 2A Contract 2	Closeout	August 2016
10220053	White Oak Terrace PS Elimination	Closeout	August 2016
11240270	Queen City Ave Sewer Separation Phase 1	Closeout	August 2016
11242841	CSO 12 Sewer Separation Phase A.2	Closeout	August 2016
10240280	Winton Woods Aerial Sewer Replacement	Closeout	August 2016
11242910	Thru the Valley I-75 Reconstruction Coordination	Closeout	September 2016
10320065	Reemelin Road Local Sewer (HNs 3489-3860)	NOC	September 2016
10320070	Crestnoll Lane Local Sewer (HN 3491-3609)	NOC	September 2016
10240490	Colerain & Gordon Sewer Replacement	Closeout	September 2016
10310006	Bridgetown Road Local Sewer (HNs 8768-8783)	Closeout	September 2016
10240395	Winton Woods Diversion Gate Replacement	Closeout	September 2016
10221221	Westchase Park Pump Station Elimination	Closeout	September 2016
10430025	Kildare Drive Sewer Lateral Assessments (HN 6726-6750)	Closeout	October 2016
10142240	Blue Rock Rd. Sewer Separation	Closeout	October 2016
10240029	German Cemetery Sewer Replacement	NOC	October 2016
10240565	Overflow Parking Lot for MSDGC Engineering & Administration	Closeout	October 2016
10230031	CSO 404,405,410,411 Outfall Reconstruction	NOC	October 2016
10240385	WWTP Reliability and Service Upgrade	Closeout	October 2016
10430020	Foley Road Sewer Laterals (HNS 5583-5599)	NOC	November 2016
10240595	MCWWTP Power Bldg Medium Voltage Switchgear	NOC	November 2016
10171840	CSO 471 Grandin Rd. Reg. Improvements	Closeout	November 2016
10240415	Carr Street Access Rehab	Closeout	November 2016
10230065	Muddy WWTP Electrical Upgrades	Closeout	November 2016
10171862	CSO 470 Eastern Ave. Sewer Separation Ph. 3	Closeout	November 2016

10240645	WWC Maintenance Shop Improvements	NOC	November 2016
11243840	CSO 127 & 128 Stream Separations	Closeout	November 2016
10270008	Dry Run Sewers - Contract 8M	NOC	November 2016
10240052	Mill Creek WWTP Blower Energy Efficiency Upgrade	Closeout	November 2016
10270180	Little Miami WWTP Storm Water Realignment	Closeout	November 2016
11243140	CSO 217/483 Source Control Phase A	NOC	November 2016
10270026	Camargo Canyon Pump Station Elimination	Closeout	November 2016
11540001	Benson Street Sewer Replacement Phase 2	Closeout	November 2016
11040140	Roselawn Park Early Success Project	Closeout	November 2016
10141080	Ludlow & Lafayette Parallel Sewer	NOC	December 2016
10370032	Coldstream Drive & Asbury Road Local Sewer	NOC	December 2016
10171863	CSO 470 Eastern Ave. Sewer Separation Ph. 4	Closeout	December 2016
11242843	CSO 12 Sewer Separation Phase A.4a - I-75 to Colerain Ave	Closeout	December 2016
10330030	South Road Local Sewer (HNs 2431-2549)	Closeout	December 2016
10240345	Myrtle Avenue Sewer Replacement	Closeout	December 2016
11243142	CSO 217/483 Source Control Phase A2	NOC	December 2016
10370045	Mt. Carmel/Vicarb/Appleblossom Local Sewer	Closeout	December 2016
10240054	DIW Office & Laboratory Improvements Phase 2	Closeout	December 2016

During 2016 five Consent Decree (WWIP) projects and 33 Asset Management projects are forecasted to achieve construction Substantial Completion.

Table 8 – Forecast of 2016 Construction Substantial Completions

ID	Project	Activity	Month
10240575	MCWWTP Enhanced Incinerator Emissions	Operational Ready	March 2016
10270125	Portsmouth Avenue Sewer Replacement	Operational Ready	March 2016
10280114	SCADA System Installations & Upgrades	Operational Ready	March 2016
11240001	Lick Run Property Demolitions	WWIP Substantial Completion	April 2016
10240580	Quebec Heights Sewer Rehabilitation	Operational Ready	April 2016
10450016	Enyart Road Sewer Lateral Assessment	Operational Ready	April 2016
10142020	Daly Road Sewer Replacement	WWIP Substantial Completion	April 2016
10131240	Muddy Creek WWTP Grit Replacement	WWIP Substantial Completion	April 2016
11040190	West Fork Creek Riparian Floodplain	Operational Ready	May 2016
11530001	Upper Muddy Creek Interceptor Contract A	Operational Ready	May 2016
10240505	Mt Pleasant Ave Sewer Replacement	Operational Ready	May 2016
10240520	Freeman Avenue Sewer Replacement	Operational Ready	June 2016
10270140	Grove Avenue Sewer Replacement	Operational Ready	June 2016
10440060	Pottinger Road Sewer Lateral Assessment	Operational Ready	June 2016
10270135	Airport & Robb Sewer Replacement	Operational Ready	June 2016
10270120	Catholic Calvary Cemetery Sewer Replacement	Operational Ready	July 2016
10230070	Muddy Creek WWTP-Primary Skimming	Operational Ready	July 2016
10460000	Drake Road Sewer Lateral Assessment	Operational Ready	July 2016

ID	Project	Activity	Month
10440065	Poole Road Sewer Lateral Assessment HN 3759	Operational Ready	July 2016
10440055	E. Galbraith Road Sewer Lateral Assessment	Operational Ready	August 2016
10230060	Muddy Creek WWTP Sludge Odor Control	Operational Ready	September 2016
10240350	McKeone Avenue Sewer Replacement	Operational Ready	September 2016
10240581	Queen City and Cora Ave Sewer Rehabilitation	Operational Ready	September 2016
10170176	Stanley Avenue Lateral Relocation	Operational Ready	October 2016
10270026	Camargo Canyon Pump Station Elimination	Operational Ready	October 2016
11240010	Sunset Avenue Sewer Separation	WWIP Substantial Completion	October 2016
10210010	Indian Creek WWTP Reliability Upgrades	Operational Ready	November 2016
10240335	3568 Bogart Avenue Sewer Replacement	Operational Ready	November 2016
11240090	White Street Sewer Separation	WWIP Substantial Completion	November 2016
10240167	Fairmount Ave. Sewer Replacement	Operational Ready	November 2016
10240430	Berkley Avenue Sewer Replacement	Operational Ready	November 2016
10240635	Mill Creek WWTP Plant Influent and Gravity Thickeners Odor Control Improvements	Operational Ready	November 2016
10241325	Montana Ave Sewer Replacement	Operational Ready	November 2016
10270145	Columbia Parkway at Delta Sewer Replacement	Operational Ready	December 2016
10240665	Mill Creek WWTP Septage Receiving Station Odor Control Improvements	Operational Ready	December 2016
10240615	MCWWTP Primary Settling and Primary Skimmings Thickening Building Odor Control Improvements	Operational Ready	December 2016
10240027	Cora Avenue Sewer Replacement	Operational Ready	December 2016
10240450	Vinton Street - Sewer Replacement	Operational Ready	December 2016
11040100	Beekman Early Success Project	Operational Ready	December 2016

MSDGC continues to coordinate review of project information with the County monitor team. During 2016 an estimated 34 projects will submit permit applications to Ohio EPA and 11 projects will have design work orders issued to vendors.

Table 9 – Forecast of 2016 Activities for County Review

ID	Project	Activity	Month
10240330	Otte Avenue Sewer Replacement	PTI Submittal	January 2016
10320060	Mapleknoll Drive Local Sewer (HNs 9420-9562)	PTI Submittal	February 2016
10240455	Spring Grove Avenue Sewer Replacement	PTI Submittal	February 2016
11240020	CSO 181 Real Time Control	PTI Submittal	February 2016
10230135	Lower Muddy Creek Interceptor SSO Remediation	PTI Submittal	February 2016
10320058	Kern Drive & Springdale Road Local Sewer	PTI Submittal	February 2016
10320012	Parrakeet Drive Local Sewer (HNs 6002 - 6068)	PTI Submittal	March 2016
10240595	MCWWTP Power Bldg Medium Voltage	PTI Submittal	March 2016
10240595	MCWWTP Power Bldg Medium Voltage	Design Work Order	April 2016
10170100	SSO 228 Elimination	PTI Submittal	April 2016

ID	Project	Activity	Month
10240018	CSO 125 Stream Separation	PTI Submittal	April 2016
10171580	CSO 54 Improvements	PTI Submittal	April 2016
10240645	WWC Maintenance Shop Improvements	PTI Submittal	May 2016
10320056	Ramblingridge Dr & Twinwillow Lane Local Sewer	PTI Submittal	May 2016
10141080	Ludlow & Lafayette Parallel Sewer	PTI Submittal	May 2016
10260025	South Clippinger Pump Station	PTI Submittal	May 2016
10240365	Quebec Road Sewer Replacement	PTI Submittal	June 2016
11242846	CSO 12 Sewer Separation Phase A.4b -	PTI Submittal	June 2016
10230150	Addyston Creek and Sewer Rehab	PTI Submittal	June 2016
10240360	Timbers Pump Station Elimination	PTI Submittal	June 2016
11243140	CSO 217/483 Source Control Phase A	PTI Submittal	June 2016
10240021	CSO 217/483 Sewer Separation - Phase C	PTI Submittal	June 2016
11240130	Queen City Ave Sewer Separation Phase 2	PTI Submittal	June 2016
10240545	Central Parkway Sewer Replacement (HN 2402)	Design Work Order	July 2016
10230130	Dry Weather Channel For Sewer 937	PTI Submittal	July 2016
12240530	Hilltop Concrete Lateral Relocation	PTI Submittal	July 2016
10320080	Russell Heights Drive Local Sewer	PTI Submittal	July 2016
12240520	CSO 226- I-75 Coordination	PTI Submittal	July 2016
10240600	MCWWTP Electrical Arc Flash Protection	Design Work Order	July 2016
10240590	MCWWTP Main Substation Improvements	Design Work Order	August 2016
10270175	East Hill Ave Sewer Replacement	PTI Submittal	August 2016
10240600	M3CWWTP Electrical Arc Flash Protection	PTI Submittal	August 2016
11243141	CSO 217/483 Source Control Phase B	PTI Submittal	August 2016
10270150	3981 Watterson Road Sewer Replacement	PTI Submittal	August 2016
10240560	Schulte Drive Sewer Replacement	Design Work Order	September 2016
10250030	Polk Run UV System/Post Aeration	PTI Submittal	September 2016
10250035	Polk Run NPW Upgrades	PTI Submittal	September 2016
10320085	Brierly Creek Road Local Sewer (HNs 6040-6100)	PTI Submittal	September 2016
12240530	Hilltop Concrete Lateral Relocation	Design Work Order	September 2016
12240505	Banning Alley Sewer Replacement	Design Work Order	September 2016
12240505	Banning Alley Sewer Replacement	Design Work Order	September 2016
11243141	CSO 217/483 Source Control Phase B	401/404 Permit	October 2016
12270095	Paxton Ave at Linwood Ave Sewer Replacement	Design Work Order	October 2016
10270170	CSO 80 and 472 Operational Optimization	Design Work Order	November 2016
10270155	Paxton Avenue Sewer Rehabilitation	Design Work Order	December 2016

WET WEATHER IMPROVEMENT PROGRAM

Total Phase 1 WWIP Program costs remain in alignment with the original projected \$1.14 B estimated costs (2006\$). MSD includes a report-out of the Phase 1 projects in its monthly Enterprise Management report to provide the Board with a higher confidence that program costs remain under control and within "budget".

Consent Decree Status

MSD has completed 81 of the required 109 milestones defined in Attachment 1A of the Final WWIP. MSD has constructed 95 of the defined projects listed in Attachment 1B of the Final WWIP. The remaining projects are on schedule to be submitted in accordance with Consent Decree milestone dates. Several projects have reached critical levels of remaining float to select Consent Decree milestones.

Excluding the Lower Mill Creek Partial Remedy suite of projects, MSD has 18 Phase 1 Wet Weather Improvement Program projects that have a combined total of 27 remaining Consent Decree milestones. These projects and their milestones are listed in the following table.

The LMCPR accounts for three of the 109 milestones (PTI Submittal December 31, 2016, Start Construction December 31, 2017, and Finish Construction December 31, 2018). The status of each LMCPR project and their associated milestones are listed in table below.

Through July 31, 2015, MSD has completed 88% of the 25 PTI Application milestones; 81% of the 33 Start Construction milestones; and 63% of the 51 Finish Construction milestones.

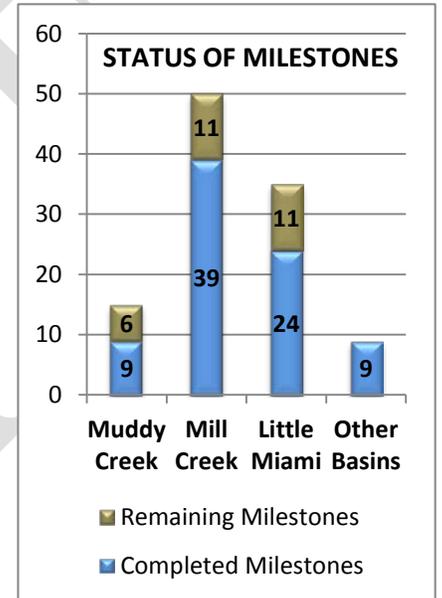


Table 10 – Remaining Phase 1 Projects with Consent Decree Milestones

ID	Projects with Remaining Milestones	PTI Application Milestone	Start Construction Milestone	Finish Construction Milestone	Status	Construction Legislation CIP Year
10130740	Werk & Westbourne EHRT	done	9/01/2015	12/31/2017	Design	2016
10131180	Muddy Creek WWTP Ad New Belt Filter Press	done	done	12/31/2015	Bid & Award	2015
10131220	Glenview Pump Station Upgrade	done	12/31/2017	12/31/2018	Design	2015
10131240	Muddy Creek WWTP Grit Replacement	done	done	12/31/2015	Construction	2014
10141080	Ludlow and Lafayette Parallel Sewer	12/31/2016	12/31/2017	12/31/2018	Design	2016
10142020	Daly Road Sewer Replacement	done	done	12/31/2016	Construction	2014
10142240	Blue Rock Road Sewer Separation	done	done	12/31/2015	Construction	2014
10143220	CSO 194 High Point Sewer Separation	done	done	6/30/2017	Design	2015
10143920	CSO 179 Sewer Separation	done	12/31/2017	12/31/2018	Design	2016
10143940	CSO 195 Westwood Northern Sewer Separation	done	done	12/31/2018	Design	2016
10143960	CSO 525 Mt. Airy Separation	done	done	12/31/2018	Design	2016
10170080	SSO 1000 Elimination	12/31/2016	12/31/2017	12/31/2018	Design	2017
10170100	SSO 228 Elimination	12/31/2016	12/31/2017	12/31/2018	Design	2017
10171580	CSO 54 Improvements	done	done	12/31/2018	Design	2016
10171740	CSO 551 Improvements	done	done	12/31/2018	Design	2017
10171840	CSO 471 Grandin Rd. Regulator (Phase 3)	done	done	12/31/2015	Construction	2014
10171860	CSO 470 Eastern Ave. Separation (Phase 3)	done	done	12/31/2015	Construction	2014
10171900	Eastern & Delta Sewer Separation Phase 3	done	done	12/31/2015	Construction	2014

Table 11 – LMCP Projects & Consent Decree Milestones

ID	Projects with Remaining Milestones	PTI Application Milestone	Start Construction Milestone	Finish Construction Milestone	Status	Construction Legislation CIP Year
10240018	CSO 125 Stream Separations	12/31/2016	12/31/2017	12/31/2018	Design	2017
11243840	CSO 127 & 128 Stream Separations	done	done	12/31/2018	Construction	2014
11240020	CSO 181 Real Time Control	12/31/2016	12/31/2017	12/31/2018	Design	2017
11243140	CSO 217/483 Source Control Phase A	12/31/2016	12/31/2017	12/31/2018	Design	2016
11243141	CSO 217/483 Source Control Phase B	12/31/2016	12/31/2017	12/31/2018	Design	2017
10240021	CSO 217/483 Source Control Phase C	12/31/2016	12/31/2017	12/31/2018	Design	2017
11240001	Lick Run Property Demolitions (final phase)	N/A	done	12/31/2018	Construction	2016
11240000	Lick Run Valley Conveyance System	done	12/31/2017	12/31/2018	Design	2016
11240170	Quebec Heights Sewer Separation	done	12/31/2017	12/31/2018	Design	2015
11240110	Quebec Road Sewer Separation	12/31/2016	12/31/2017	12/31/2018	Design	2016
11240150	Queen City & Cora Sewer Separation	done	12/31/2017	12/31/2018	Design	2015
11240130	Queen City Sewer Separation Phase 2	12/31/2016	12/31/2017	12/31/2018	Design	2016
11240010	Sunset Avenue Sewer Separation	N/A	done	12/31/2018	Construction	2014
11240090	White Street Sewer Separation	done	12/31/2017	12/31/2018	Bid & Award	2015
11240030	Wyoming & Minion Sewer Separation	done	12/31/2017	12/31/2018	Design	2015

Four of the projects listed above are included in the 2016 CIP for construction legislation: 1124000 Lick Run Valley Conveyance System; 11240001 Lick Run Property Demolitions; 11240110 Quebec Road Sewer Separation; 11240130 Queen City Avenue Sewer Separation Phase 2; and 11243140 CSO 217/483 Source Control Phase A.

WWIP Projects

The 2016 CIP includes several Phase 1 WWIP projects identified in Attachment 1B of the Final WWIP that must be fully constructed no later than December 31, 2018. Some projects must be completed prior to 2018 as noted in the previous table. The Phase 1 projects with funding requests in 2016 are listed in the following table.

Table 12 – Phase 1 WWIP Projects Proposed for 2016 CIP

ID	Phase 1 Projects (Attachment 1B Final WWIP)	2016	Activity Legislated
10130740	Werk & Westbourne EHRT	\$38,823,900	Construction
10141080	Ludlow & Lafayette Parallel Sewer	\$3,161,000	Construction
10143920	CSO 194 Sewer Separation	\$593,200	Construction
10143923	CSO 194 Sewer Separation Contract 3	\$2,982,000	Construction
10143940	CSO 195 Westwood Sewer Separation	\$2,083,100	Construction
10143962	CSO 525 Separation Contract 3	\$1,711,000	Construction
10240021	CSO 217/483 Source Control Phase C	\$193,500	Design
11240001	Lick Run Property Demolitions	\$1,297,700	Construction
11240000	Lick Run Valley Conveyance System	\$117,515,100	Construction
11240110	Quebec Road Sewer Separation	\$6,991,800	Construction
11240130	Queen City Sewer Separation Phase 2	\$9,866,500	Construction
11243140	CSO 217/483 Source Control Phase A	\$4,326,300	Construction
11243141	CSO 217/483 Source Control Phase B	\$415,500	Design
11243142	CSO 217/483 Source Control Phase A2	\$5,557,700	Construction
	Total	\$195,518,300	

The 2016 CIP includes several WWIP projects identified in Attachment 2 of the Final WWIP that have a need to be accelerated to Phase 1. These projects are listed in the following table.

Table 13 - Phase 2 WWIP Projects in 2016 CIP

ID	Phase 2 Projects (Attachment 2 Final WWIP)	2016	Activity	Why Project Accelerated
10170812	LMWWTP Electrical & Disinfection	\$1,575,900	Design	Early Phase 2 Construction
10170816	LMWWTP Main Outfall Improvements	\$87,700	Design	Early Phase 2 Construction
10171580	CSO 54 Improvements	\$228,200	Design	Early Phase 2 Construction
11143260	CSO 21 I-75 Reconstruction	\$2,988,600	Construction	Construction Coordination
		\$4,880,400		

LOCAL SEWER AND LATERAL ASSESSMENT PROGRAM

The 2016 CIP projects will facilitate elimination of 144 existing home sewage treatment systems (HSTS).

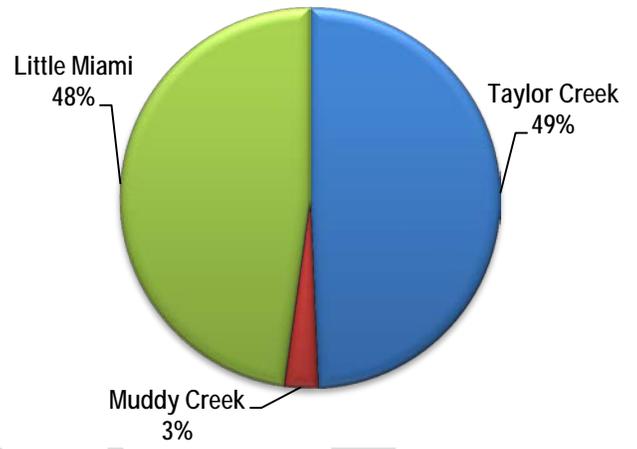
Table 14 – Local Sewer Assessment Projects in 2016 CIP for Construction Legislation

ID	2016 CIP	Basin	HSTS Eliminations	Public Hearing Legislation
10320012	Parrakeet Drive Local Sewer (HN 6002-6068)	Taylor Creek	9	August 2016
10320058	Kern Drive & Springdale Road Local Sewer	Taylor Creek	23	August 2016
10320060	Mapleknoll Drive Local Sewer (HNs 9420-9562)	Taylor Creek	10	July 2016
10320065	Reemelin Road Local Sewer (HNs 3489-3860)	Taylor Creek	30	March 2016
10320070	Crestnoll Lane Local Sewer	Taylor Creek	25	March 2016
10330027	Upper Road Local Sewer (HNs 6340-6434)	Muddy Creek	4	August 2016
10370032	Coldstream Drive & Asbury Road Local Sewer	Little Miami	33	May 2016
10430020	Foley Road Sewer Laterals	Muddy Creek	7	Not Required
10470025	Woodruff Road Sewer Assessment	Little Miami	3	Not Required

The 2016 CIP Local Sewer and Lateral Assessment projects are broken down by watershed in the following table.

Table 15 – 2016 CIP Local Sewer Projects by Watershed

Watershed	Number of Projects	2016 CIP
Muddy Creek	2	\$202,400
Mill Creek	0	\$0
Taylor Creek	5	\$3,501,400
Little Miami	2	\$3,391,900
Polk Run	0	\$0
Sycamore	0	\$0
Totals	9	\$7,095,700



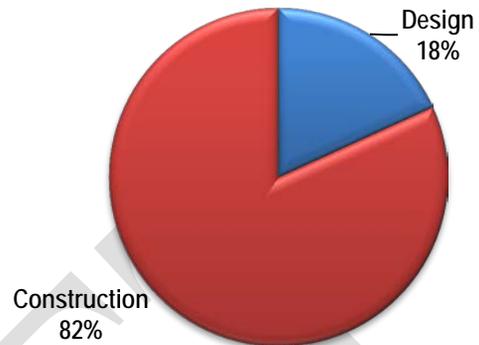
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ASSET MANAGEMENT PROGRAM

The 2016 CIP includes a total of **44 Asset Management Projects totaling \$67 million**. A breakdown of the 2016 CIP Asset Management projects by activity is provided in the following table. Allowances are not included and are discussed in a later section of this report.

Table 16 – 2016 CIP Asset Management Projects by Activity

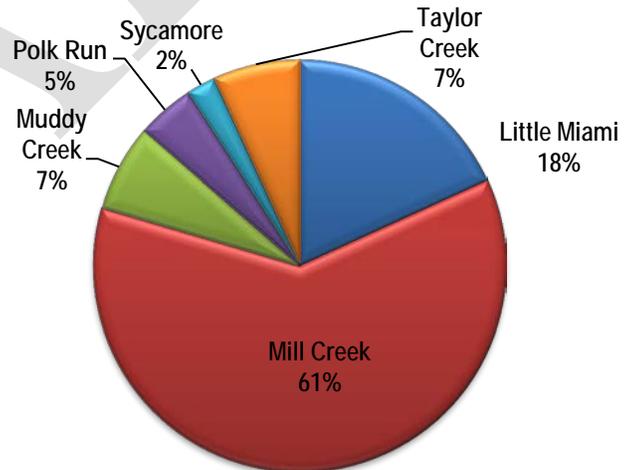
Activity	Number of Projects	2016 CIP
Planning	0	\$0
Design	8	\$1,843,900
Construction	36	\$65,424,500
Totals	44	\$67,268,400



The 2016 CIP Asset Management projects are broken down by watershed in the following table.

Table 17 – 2016 CIP Asset Management Projects by Watershed

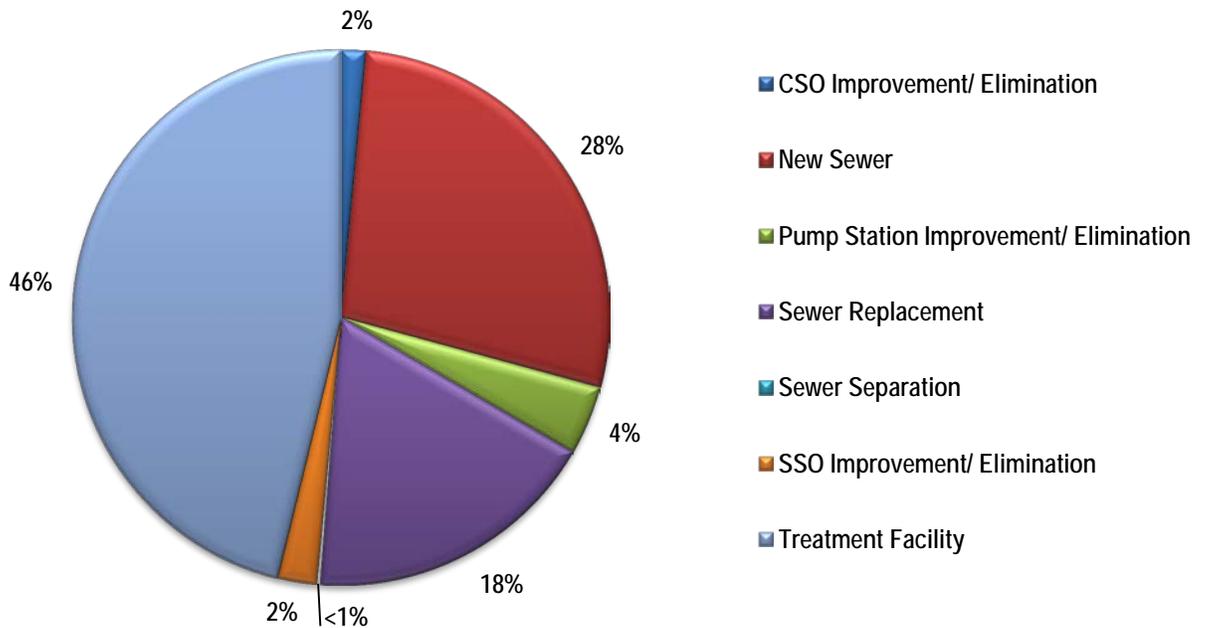
Watershed	Number of Projects	2016 CIP
Little Miami	8	\$15,339,400
Mill Creek	27	\$37,936,795
Muddy Creek	3	\$4,798,400
Polk Run	2	\$1,765,000
Sycamore	1	\$444,000
Taylor Creek	3	\$6,984,800
Totals	44	\$67,268,395



The 44 Asset Management Projects included in the 2016 CIP represent six types of works as presented in the following table.

Table 18 – 2016 CIP Asset Management Projects by Type

Project Type	Number of Projects	2016 CIP
CSO Improvement/ Elimination	3	\$991,900
New Sewer	3	\$18,655,100
Pump Station Improvement/ Elimination	4	\$2,806,000
Sewer Replacement	20	\$12,020,300
Sewer Separation	1	\$139,100
SSO Improvement/ Elimination	1	\$1,593,600
Treatment Facility	12	\$31,062,395
Totals	44	\$67,268,395



Sewer Replacement Projects

Much of MSD's wastewater collection system has reached the end of its useful life. Many pipeline segments are more than 50 or 100 years old. MSD prepares a detailed Business Case Evaluation (BCE) for sewer replacement projects to determine the most cost effective site specific solution. The first step in the BCE process is to assess the condition of the sewer. The condition rating for the projects included in the 2016 CIP is presented in the following table.

- **High Criticality** = sewers determined with failure eminent, extreme deterioration, extensive cracking and/or fracturing, public health concerns, sewer under building, and/or sewer surcharges for less than or equal to a 6-month storm event.
- **Poor Condition** = sewers in which all segments are not eminent failure, sewers with significant cracking, poor condition potentially leading to collapse of pipe, and/or capacity issues.

The sewer replacement projects listed in the following table will provide the following infrastructure benefits:

- Replacement of 5,214 feet of sanitary sewer
- Replacement of 4,972 feet of combined sewer
- Lining of 1,095 feet of sanitary sewer

Table 19 – 2016 CIP Sewer Replacement Projects

ID	Sewer Replacement Projects	2016 CIP	Activity	Age	Condition Rating	Overflows	Additional Comments
10240027	Cora Avenue Sewer Replacement	\$647,100	Construction	1924	Poor	Potential	Potential source of backup if failure occurs
10240029	German Cemetery Sewer Replacement	\$677,000	Construction	1914	Poor	Potential	Provides drainage from Cemetery
10240320	Wilder Avenue Sewer Replacement	\$342,900	Construction				
10240350	McKeone Avenue Sewer Replacement	\$103,000	Construction	1929	Poor	Potential	Potential source of backup if failure occurs
10240365	Quebec Road Sewer Replacement	\$427,400	Construction	1930	Poor		Upstream of Lick Run
10240430	Berkley Avenue Sewer Replacement	\$583,300	Construction	1926	Poor	Potential	Potential source of backup if failure occurs
10240435	Pleasant Run Central Force Main Repairs	\$1,162,200	Construction	1973	Poor	Potential	Collapse anticipated in 12 – 17 years
10240450	Vinton Street – Beekman to Liddell Street Sewer Replacement	\$204,200	Construction	1905	Poor	Potential	Capacity is also of concern. Potential source of SBU.
10240455	Spring Grove Avenue Sewer Replacement & Rehabilitation	\$540,900	Construction	1900	Poor	Potential	Capacity is also of concern. Surcharging during 2-year storms.
10240465	Hosea Street Sewer Replacement	\$397,900	Design/ROW	1941	Flat	SSO Elimination	Flat segments creating excessive maintenance cost. Source of backups ³ for 25 years.
10240495	Wahl Terrace Sewer Replacement	\$251,200	Design/ROW	1916	Poor	Potential	Potential source of SBU.
10240540	Spring Grove Av, Township St. Sewer Improvements	\$695,200	Construction	1893	Poor		Capacity is also of concern.
10240650	Hackberry Street Sewer Replacement	\$280,900	Design/ROW	<1920		Potential	Stone Arch standing sewage
10240680	Banning Alley Sewer Replacement	\$85,100	ROW	1891	Poor		Recommendation from Walnut Hills Basin Study
10260025	South Clippinger Force Main Replacement	\$444,000	Design/ROW		Poor		Severe Deterioration

10270145	Columbia Parkway at Delta Sewer Replacement	\$299,000	Construction	1915	Poor	Yes	
10270150	3981 Watterson Rd Sewer Separation	\$184,400	Construction	1918	Poor		
10270175	East Hill Ave Sewer Replacement	\$1,465,500	Construction	1915	Poor	Potential	Corrects serious hydraulic issue
10270185	Paxton Ave at Linwood Ave Sewer Replacement	\$118,700	Design/ROW	1907	Poor	Potential	Shapeloss from 3 to 15%, Potential property damage and SBU
		\$8,909,900					

Pleasant Run Force Main Repairs

This project is the District's high risk asset. A condition assessment was conducted of this force main and it was reported to have only three years of remaining useful life (in 2012). Two sections of the force main are severely deteriorated due to high levels of hydrogen sulfide. If this particular force main were to fail the District would be facing a catastrophe. There is not redundancy in place for this line and a failure would result with large quantities of sewage being discharged into the environment. After the recommended repairs are completed to this force main under capital project 10240435 the deteriorated sections of the sewer will have an estimated life of 80 years. The remaining sections of the force main not addressed by this focused capital project will have an expected remaining life of 24-43 years according to the 2013 condition assessment report.

Annual Sewer Renewal Allowance Budgets

In addition to these defined sewer replacement projects, the 2016 CIP includes the following allowances to support rehabilitation and/or replacement of high risk or emergency sewers. Details regarding the funding levels requested in 2016 are presented later in this report.

- 10180116 Main Sewer Renewal Program 2016
- 10180216 Manhole Renewal Program 2016
- 10280316 Prioritized Wastewater Collection System Improvements 2016
- 10280516 Building Sewer Renewal Program 2016

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WASTEWATER TREATMENT PLANT PROJECTS

The draft 2016 CIP proposes design funding for 8 projects and construction funding for 10 projects. The projects are located at four of the District's wastewater treatment plants as well as a new demonstration enhanced high rate treatment facility. These **14 projects** have 2016 capital funding requests totaling **more than \$73 million**.

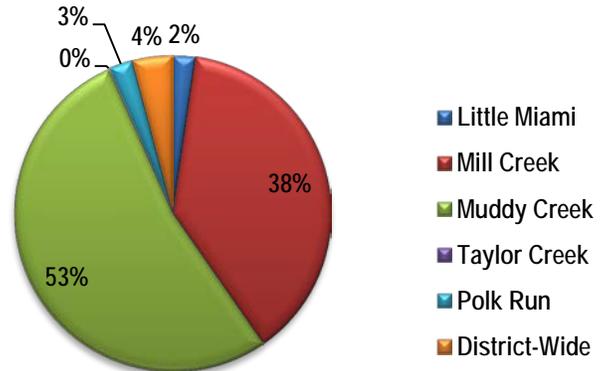
Table 20 –Treatment Plant Projects in 2016 CIP

ID	Wastewater Treatment Plant Projects	2016	Activity	Project Driver	Use for Dry/Wet Weather Capacity
10130740	Werk & Westbourne EHRT Facility	\$38,823,900	Construction	WWIP Compliance	Wet Weather
10221245	Taylor Creek WWTP Disinfection Improvements	\$127,000	Design	Regulatory Compliance	Dry/Wet Weather
10240245	Mill Creek WWTP Service Water Upgrade (NPW)	\$4,592,300	Construction	End of Useful Life	Dry/Wet Weather
10240291	Mill Creek WWTP Solids Handling Improvements Phase 1	\$12,159,200	Construction	End of Useful Life	Dry/Wet Weather
10240590	Mill Creek WWTP Main Substation Improvements	\$5,083,000	Design, Construction	End of Useful Life	Dry/Wet Weather
10240615	Mill Creek WWTP Primary Settling and Primary Skimmings Thickening Building	\$2,973,700	Design, Construction	Community Odor Complaints	Dry/Wet Weather
10240635	Mill Creek WWTP Influent & Headworks Odor Control	\$973,500	Design, Construction	Community Odor Complaints	Dry/Wet Weather
10240660	Mill Creek WWTP Gravity Thickener Odor Control	\$926,800	Design, Construction	Community Odor Complaints	Dry/Wet Weather
10240665	Mill Creek WWTP Septage Receiving Station Odor Control	\$1,193,400	Design, Construction	Community Odor Complaints	Dry/Wet Weather
10250030	Polk Run WWTP UV/Post Aeration Improvements	\$1,510,000	Construction	Regulatory Compliance	Dry Weather
10250035	Polk Run WWTP Non-Potable Water Upgrades	\$255,000	Construction	Regulatory Compliance	Dry Weather
10170812	Little Miami WWTP Electrical & Disinfection Improvements	\$1,575,900	Design	WWIP Compliance	Wet Weather
10171816	Little Miami WWTP Main Outfall Improvements	\$87,700	Design	Regulatory Compliance	Dry/Wet Weather
10280186	WWT Asset System Renewal 2016	\$3,000,000	Construction	End of Useful Life	Dry/Wet Weather
	Totals	\$73,281,400			

A breakdown of the projects by location is presented in the following table.

Table 21 – Breakdown of 2016 CIP WWTP Projects by Watershed

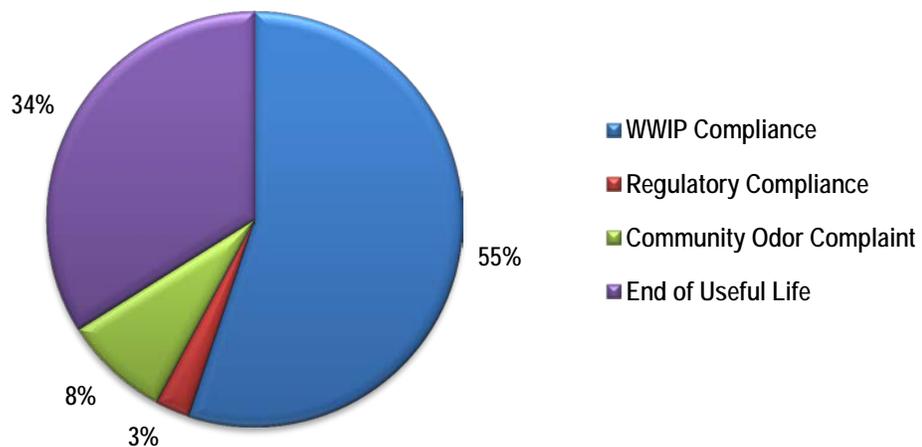
Watershed	Number of Projects	2016 CIP
Little Miami	2	\$1,663,600
Mill Creek	7	\$27,901,900
Muddy Creek	1	\$38,823,900
Taylor Creek	1	\$127,000
Polk Run	2	\$1,765,000
District-Wide	1	\$3,000,000
Totals	14	\$73,281,400



A breakdown of the projects by primary driver for the project is presented in the following table. Approximately one-third of the treatment plant projects are required to replace equipment that has reached or exceeded in most cases the end of its useful life.

Table 22 – Breakdown of 2016 CIP WWTP Projects by Primary Driver

Watershed	Number of Projects	2016 CIP
WWIP Compliance	2	\$40,399,800
Regulatory Compliance	4	\$1,979,700
Community Odor Complaint	4	\$6,067,400
End of Useful Life	4	\$24,834,500
Totals	14	\$73,281,400



PUMP STATION PROJECTS

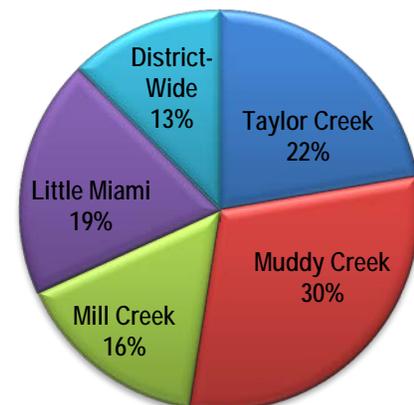
MSD's proposed 2016-2020 CIP addresses pump stations with a high or medium risk or failure and/or poor or medium structural condition. These high priority stations are listed in the following table. Stations not included in the Priority 1 category and listed herein will be revisited after 2020.

Table 23 – High Priority Pump Station Projects

ID	Pump Station	Risk Score	Structural Condition	CIP Status	Estimated Project Cost
10240405	Ponderosa Woods	High	Very Poor	2016 Construction	\$513,000
10240470	Bahama Gardens	High	Very Poor	2016 Construction	\$930,000
10270160	Prospect Woods	Medium	Very Poor	2017 Construction	\$1,122,000
10130280	Addyston	Low	Very Poor	2020 Construction	\$483,200
10260025	South Clippenger	Medium	Good	2016 Construction	\$500,000
10230090	Barrington Hills Stations	Medium	Very Poor	2017 Construction	\$9,424,000
10230125	East Branch Muddy Creek	Medium	Poor	2017 Construction	\$2,082,000
10220054	Bruestle Avenue	Medium	Poor	2016 Construction	\$1,002,000
10240555	Kemper Mill Village	Medium	Medium	2017 Construction	\$1,038,000
10240360	Timbers	Low	Poor	2017 Construction	\$923,000
10260030	Kugler Mill (force main issue)	Low	Good	2020 Construction	\$914,000
10270026	Camargo Canyon	Low	Medium	2016 Construction	\$853,000
10240375	Carpenters Run	Low	Medium	2016 Construction	\$766,000
10250025	Huntington	Low	Medium	2016 Construction	\$318,000
10240325	Glen Landing	Low	Medium	2018 Construction	\$246,000
10130160	Muddy Creek	Medium	Good	2017 Construction	\$5,051,000
Total					\$26,165,200

Table 24 – Pump Station Projects in the 2016 CIP by Watershed

Watershed	Number of Projects	2016 CIP
Taylor Creek	1	\$715,300
Muddy Creek	1	\$967,100
Mill Creek	1	\$503,500
Little Miami	1	\$620,100
District-Wide	1	\$400,000
Totals	5	\$3,206,000



FACILITY IMPROVEMENT PROJECTS

The following projects are included in the 2016 CIP for general facility improvements. These projects are needed to support operations of the Utility.

Table 25 – Facility Projects in the 2016 CIP

ID	Facility Projects	2016 CIP	Activity
10240645	WWC Maintenance Shop Improvements	\$1,018,490	Construction
10240685	DIW Building Roof Replacement	\$250,000	Construction
10280510	Centralized Grit Handling Facility	\$200,000	Planning
		\$1,468,490	

Centralized Grit Handling Facility

This project has not yet been presented to the County for consideration. MSDGC is prepared to meet with the County to discuss the need for this project. The District requests planning funding to evaluate options for a developing centralized approach to grit handling operations. The District's operating divisions currently process grit-based materials via dewatering and mixing with bulking agents prior to landfill disposal. The District is in need of a cost effective means for grit handling processes. Current methods are costly and generator odors impacting local residents.

The Wastewater Treatment Division has a need to address scum, skimmings, and floatable materials that are transported to the Mill Creek WWTP for processing prior to landfill disposal. The Wastewater Collection Division has a need to address sewer cleaning debris and hydro-excavating slurry that are transported to the Galbraith Road Facility for processing prior to landfill disposal. This planning project will evaluate the alternatives associated with constructing a centralized grit handling facility.

Division of Industrial Waste (DIW) Roof Replacement

This project has not yet been presented to the County for consideration. MSDGC is prepared to meet with the County to discuss the need for this project. MSD has not yet completed the comprehensive WWTP roof assessment and facility plan due to a large number of staff resignations from the Facility Planning Division in 2014 and 2015. However current knowledge of the criticality and condition of the DIW roof makes it the candidate for funding and replacement in 2016. The funding request is based upon being able to restore the existing roof in lieu of a full roof replacement.

NEW SEWER PROJECTS

The 2016 CIP includes a total of 13 projects related to 84,850 feet or **16 miles of new sewers**. An estimated 46,600 feet of new sanitary sewers, 8,100 feet new combined sewers, and 30,100 feet of new storm sewers will be constructed by these projects at an estimated total cost of \$149,403,700.

Table 26 – Projects in 2016 Installing New Sewers

ID	New Sewer Project	2016 CIP	Activity	Sewer Type	Length (feet)
10220061	Whitewater Township SR 128 Sewer Extension	\$6,142,500	Construction	Sanitary	11,000
10270008	Dry Run Sewers - Contract 8M	\$5,331,500	Construction	Sanitary	2,824
10270007	Dry Run Area Sewers Phase 2 Contract RB	\$7,181,100	Construction	Sanitary	5,985
10320065	Reemelin Road Local Sewer (HNs 3489-3860)	\$1,116,100	Construction	Sanitary	4,309
10320070	Crestnoll Lane Local Sewer (HN 3491-3609)	\$907,800	Construction	Sanitary	1,698
10370032	Coldstream Drive & Asbury Road Local Sewer	\$3,316,900	Construction	Sanitary	5,468
10330037	Upper Road Local Sewer (HNs 6340-6434)	\$171,000	Construction	Sanitary	715
10320058	Kern Drive & Springdale Road Local Sewer	\$907,200	Construction	Sanitary	1,918
10320012	Parrakeet Drive Local Sewer (HNs 6002 - 6068)	\$266,100	Construction	Sanitary	976
11240000	Lick Run Valley Conveyance System	\$104,664,600	Construction	Storm Sanitary	17,534 7,194
11240130	Queen City Avenue Sewer Separation Phase 2	\$10,099,100	Construction	Storm Combined Sanitary	5,853 914 74
11243140	CSO 217/483 Source Control Phase A1	\$3,742,100	Construction	Storm Sanitary	1,019 4,470
11243142	CSO 217/483 Source Control Phase A2	\$5,557,700	Construction	Storm Combined	5,700 7,200
	Total	\$149,403,700			84,850

CONSTRUCTION COORDINATION

The 2016 CIP includes one project for ODOT construction coordination for the I-75 Reconstruction Program. In 2008, MSD and the Ohio Department of Transportation (ODOT) began collaborating on infrastructure improvements related to the planned reconstruction of the I-75 corridor and MSD's concurrent mandate to mitigate CSOs to the Mill Creek. ODOT's planned reconstruction of I-75 extends from Kemper Road south to the Ohio River, encompassing an alignment of over 17 miles that crosses through 10 Mill Creek sub-watersheds and numerous municipalities and City of Cincinnati neighborhoods.

Table 27 – ODOT I-75 Reconstruction Projects

ID	Project	2016 CIP	2017 CIP	2018 CIP	2019 CIP	2020 CIP
11143260	CSO 21 I-75 Reconstruction Coordination	\$2,988,600	\$0	\$0	\$0	\$0
11142741	CSO 488/490 I-75 Reconstruction	\$0	\$0	\$0	\$1,613,000	\$0
11143160	CSO 28 Source Control	\$0	\$0	\$0	\$0	\$700,000
11242846	CSO 12, Phase A.4b – Colerain Avenue to Spring Grove Avenue	\$0	\$0	\$7,085,100	\$0	\$0
	Totals	\$2,988,600	\$0	\$7,085,100	\$1,613,000	\$700,000

ALLOWANCES

The information requested under MSD Rule 2405-12 is provided regarding capital allowances herein. The following information is noted. Detailed descriptions of each proposed allowance and the basis for the 2016 funding request is provided herein.

- If total project costs, excluding Capitalized Interest, during the lifecycle of a project exceeds \$3,500,000, the project will be assumed to be nominated for WPCLF loans. Projects assumed to be included in the WPCLF loan program will continue to have Interest/Finance amount calculated as per the Financial Analysis Manual.
- Allowances receive new Project IDs annually to ensure legislated funds are managed and reported according to MSD Rules & Regulations. The only exception is CIP Planning, which will not receive a new Project ID each year because of the tracking of time and labor through the Cincinnati Human Resource Information System (CHRIS).
- For projects initiated under the CIP Planning Allowance 10280124 that are not advanced to design, spending during planning becomes an impaired asset on the financial statement.
- Allowances will be utilized in accordance with MSDGC's Capitalization Guidance Document dated May 6, 2015 and included with this report as Appendix G.

Table 28 – Allowance Projects in 2016 CIP

ID	Allowance Projects	2016 CIP Request	Activity
10180116	Main Sewer Renewal Program 2016	\$6,000,000	Construction
10180216	Manhole Renewal Program 2016	\$1,300,000	Construction
10190316	Home Sewer Treatment System Extensions 2016	\$200,000	Planning
10199016	Wet Weather Program Management & Support	\$5,300,000	All Project Phases
10199116	Hamilton County Utility Oversight & Coordination	\$2,700,000	All Project Phases
10280124	CIP Project Planning	\$2,500,000	Planning
10280186	WWT System Asset Renewal 2016	\$3,000,000	Construction
10280316	Prioritized WWC System Improvements 2016	\$10,000,000	Construction
10280516	Building Sewer Renewal Program 2016	\$5,000,000	Construction
10280616	Water Quality Program 2016	\$3,275,000	Planning
10280236	Hydraulic Modeling 2016	\$1,000,000	Planning
	Sub-Total	\$40,275,000	

Main Sewer Renewal Program 2016

This allowance was identified in the Consent Decree as the Trenchless Sewer Technology Program. Section IX.B.1. of the Global Consent Decree dated June 9, 2004 identifies sewer relining and manhole rehabilitation capital measures as part of the Long Term Control Plan to reduce infiltration and inflow. Section C.6.b of the Final WWIP states the Sewer Relining (Trenchless Technology) Program *“conducts internal lining of sewers and external lining of aerial sewers as a cost effective method of rehabilitating structurally deteriorated sewers. This program will include, but not limit itself to, spiral wound pipe, pipe bursting, directional drilling, carbon filament wrapping, and jack and boring. These projects are identified through investigations of the sewer lines and are prioritized based on standardized condition assessment procedure.”*

Table 29 – Historical Trenchless Sewer Allowance Spending

Year	MSD Labor	Certification	Total Commitments
2011	\$167,012	\$5,222,105	\$5,389,117
2012	\$223,052	\$732,411	\$955,463
2013	\$406,761	\$8,718,960	\$9,125,721
2014	\$368,658	\$4,521,537	\$4,890,195
TOTAL	\$1,165,483	\$19,195,013	\$20,360,496
<i>Average</i>	<i>\$291,371</i>	<i>\$4,798,753</i>	<i>\$5,090,124</i>

Basis for 2016 funding request \$6,000,000

MSD has historically used the Trenchless Technology Sewer Allowance for work associated with all sewer rehabilitation work not requiring a traditional excavation trench. Work performed on existing main sewer and building sewer assets included, but was not limited to installation of cured in-place lining, point liners, spiral-wound lining, spin-cast, slip-lining, etc. The allowance was used for work performed by MSD employees and contractors.

In order to provide a full accounting of services provided related to main sewers, MSD proposes the Main Sewer Renewal Program include all work associated with improving main sewers throughout the wastewater collection system. This allowance would no longer be utilized for work associated with privately owned building sewers. A separate allowance is proposed for the Building Sewer Renewal Program.

MSD has continued to refine the Asset Management system, InfoMaster, and has made great progress with the gravity main sewer risk model. This model is an effective tool for prioritizing sewer segments to be improved using capital allowance funds. The model output provides a 1) grouping of main sewer segments that are in need of condition assessments to determine the risk and consequences of potential failure and 2) a prioritize listing of main sewer segments by repair activity (lining, point repair, etc.).

MSD emphasizes a prioritized list can be generated from the InfoMaster system in real time, any time the information is queried. However, as more main sewer segment baseline condition assessments are completed, the prioritized list of assets to be improved will be automatically updated to reflect the latest information.

As of July 31, 2015 approximately **45,400 sewer segments still need a baseline condition assessment** to be performed as shown in the following figures. This represents about half of the total publicly owned sewer segments. The baseline condition assessments are proposed to be funded within the Wastewater Collection (WWC) 2016 Operating Budget.

For the 45,400 sewer segments for which a baseline condition assessment is not yet performed, a preliminary structural condition was assigned based upon CCTV data (if available) or desktop analysis. This information was used to create the current prioritized ranking of sewer segment needs as determined by the risk model. The results as of July 31, 2015 are presented in the following figures.

Benefits resulting from work performed under this allowance

- Extended useful life of sewer segments;
- Reduction in Infiltration & Inflow in sanitary areas
- Risk mitigation for fractured, cracked, and failing pipes
- Elimination of surcharging during small storm events
- Ability to address newly discovered circumstances in an expeditious manner.

Priorities for 2016 CIP (based on July 31, 2015 data sets)

MSD met with the County monitor team on August 11th to discuss the prioritization process for identifying work to be forecasted under this allowance (and the Prioritized Wastewater Collection System Improvement Allowance). The sewer segments throughout the District are considered holistically using the InfoMaster asset management software system. One of the outputs from InfoMaster is a risk ranking based upon structural condition and the likelihood and consequence of segment failure. InfoMaster creates structural bins that are categorized from 1 through 25, with category 25 representing the highest risk segments.

Structural Risk Bin #						
Criticality	5	16	20	21	24	25
	4	14	15	19	22	23
	3	9	10	13	17	18
	2	4	5	7	8	12
	1	1	2	3	6	11
		1	2	3	4	5
Probability						

Structural Bin #	Full Lining	Point Repair
	Segment Count	Segment Count
9	19	314
10	194	52
13	507	25
14	14	303
15	98	40
16	10	98
17	415	10
18	170	38
19	291	14
20	43	7
21	71	8
22	202	22
23	74	23
24	53	6
25	28	18
Grand Total	2,189	978

Table 30 – Sewer Segments Needing Baseline Condition Assessment

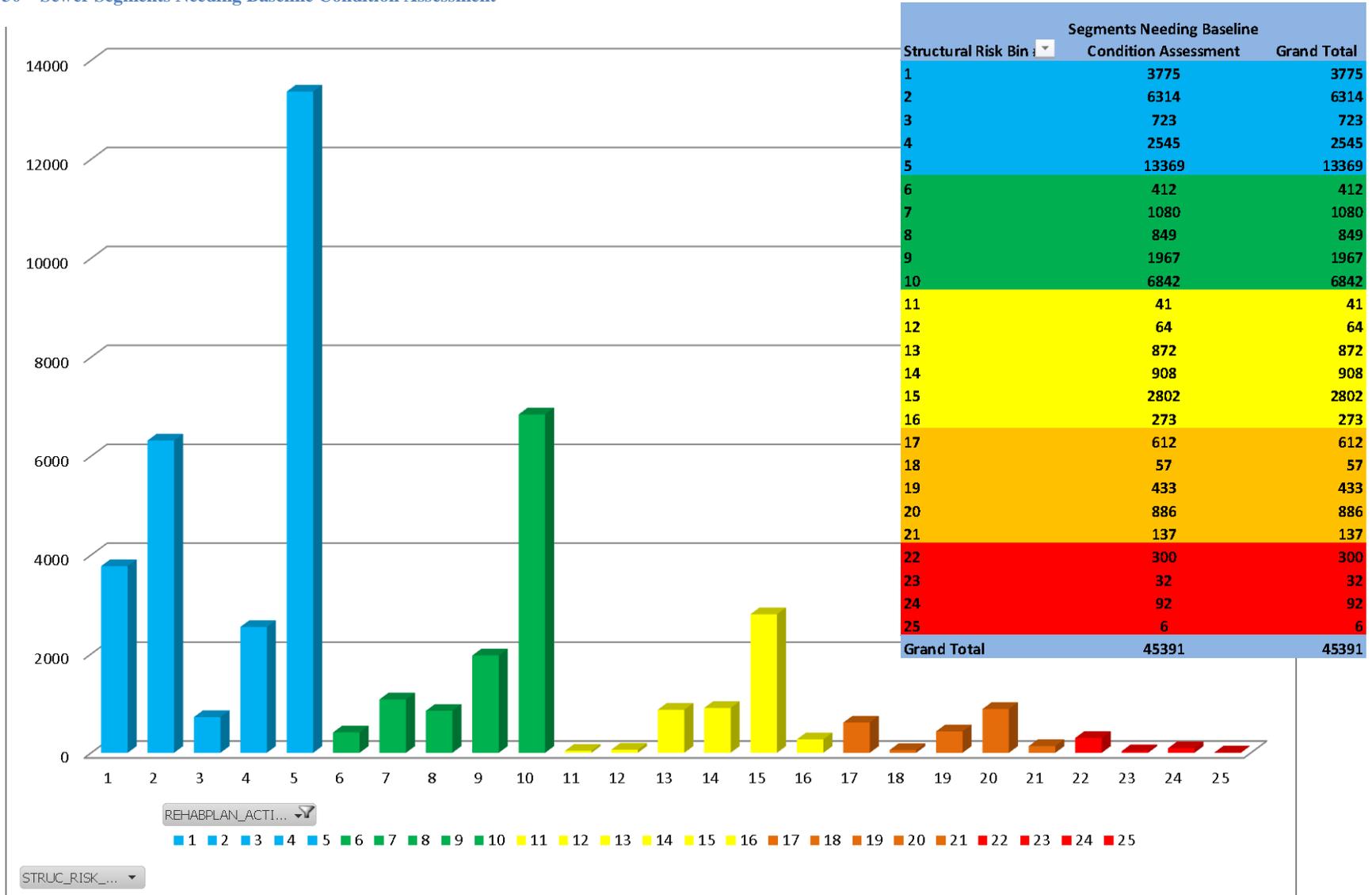
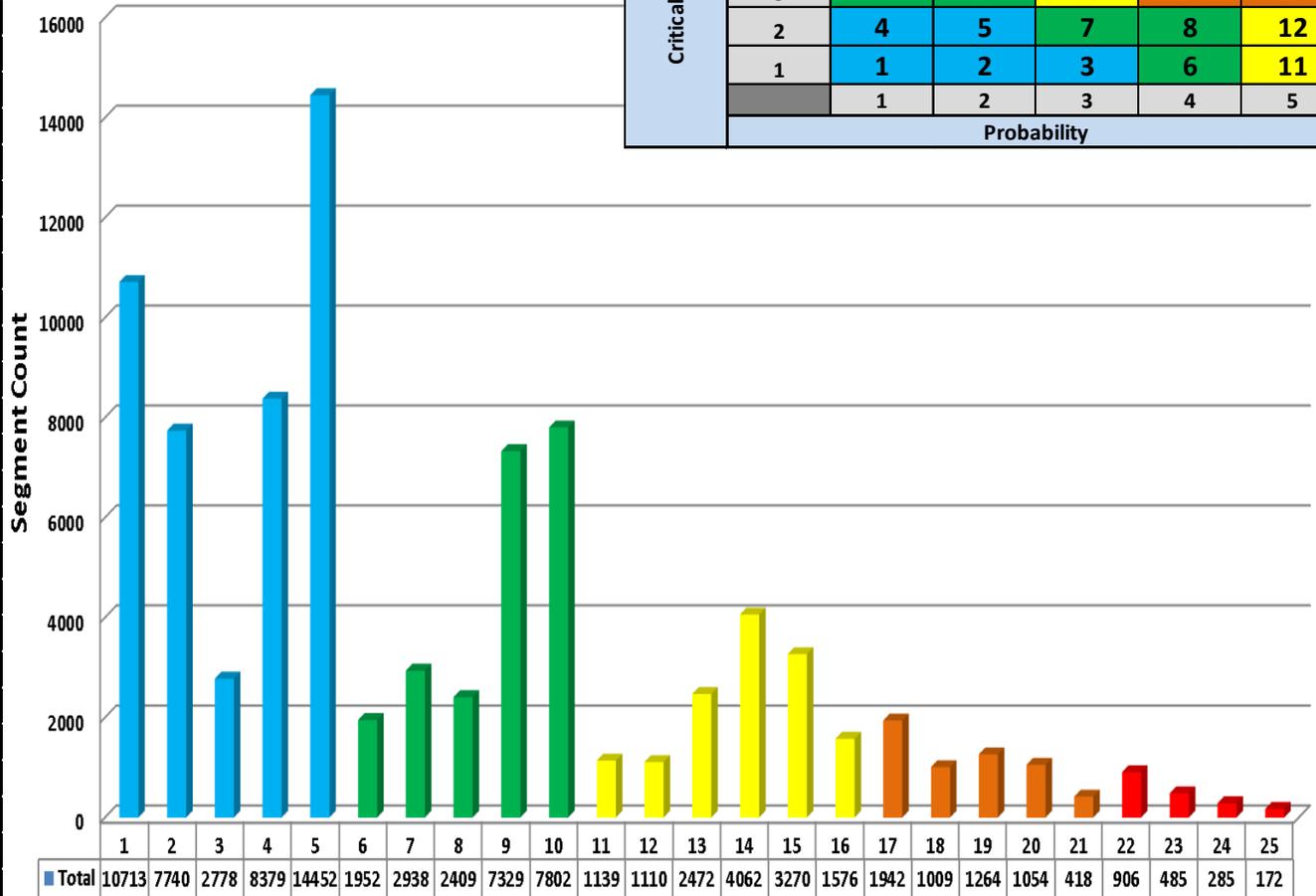


Table 31 – Total Gravity Sewer Segments by Risk Bin Category

BIN #	Total Segments/BIN
1	10713
2	7740
3	2778
4	8379
5	14452
6	1952
7	2938
8	2409
9	7329
10	7802
11	1139
12	1110
13	2472
14	4062
15	3270
16	1576
17	1942
18	1009
19	1264
20	1054
21	418
22	906
23	485
24	285
25	172
Grand Total	87656



Structural Risk Bin #						
Criticality	5	16	20	21	24	25
	4	14	15	19	22	23
	3	9	10	13	17	18
	2	4	5	7	8	12
	1	1	2	3	6	11
		1	2	3	4	5
Probability						

The following table identifies work activities to be performed for implementation of this Allowance.

Table 32 – Work Activities for Main Sewer Renewal Allowance

Work activities to be performed under this Allowance	Work activities NOT to be performed under this Allowance
<ul style="list-style-type: none"> • Prioritized repairs associated with lining of existing publicly-owned main sewers • cured in-place lining • spiral-wound lining • spin-cast lining • slip-lining • point liners repairs 	<ul style="list-style-type: none"> • All emergency and planned (prioritized) repairs to privately-owned building sewers • All work associated with inspection port installation (Vac-a-Tees or open-cut) • Rehabilitations or lining of building Sewers • Work associated with new sewers or manholes

DRAFT

Manhole Renewal Program 2016

This allowance was identified in the Consent Decree as the Trenchless Technology Manhole Rehabilitation Allowance. Section IX.B.1. of the Global Consent Decree dated June 9, 2004 identifies sewer relining and manhole rehabilitation capital measures as part of the Long Term Control Plan to reduce infiltration and inflow. Section C.6.c of the Final WWIP states the Manhole Rehabilitation (Trenchless Technology) Program *“provides a cost effective method of rehabilitating structurally deteriorated manholes. Like the Sewer Lining Trenchless Technology Program, manhole rehabilitation projects are identified through investigations and are prioritized based on a standardized condition assessment procedure.”*

Table 33 – Historical Trenchless Manhole Allowance Spending

Year	MSD Labor	Certification	Total Commitments
2011		\$1,679,647	\$1,679,647
2012	\$6,824	\$781,552	\$788,376
2013	\$1,667	\$437,396	\$439,063
2014	\$0	\$564,267	\$564,267
TOTAL	\$8,491	\$3,462,862	\$3,471,353
<i>Average</i>	<i>\$2,830</i>	<i>\$865,716</i>	<i>\$867,838</i>

Basis for 2016 funding request \$1,300,000

MSD has historically used the Trenchless Technology Manhole Allowance for work associated with all rehabilitation of existing manholes. Work performed included, but was not limited to installation of cured in-place lining, spin-casting, epoxy coating, etc. The allowance was used for work performed by MSD employees and contractors.

MSD has a need to address work that was historically not included in this Allowance such as manhole repair, replacement manholes, new installations, adjustments and chimney repairs performed in conjunction with paving projects. Historically such work activities were charged to the High Risk Asset Renewal Allowance. In order to provide a full accounting of services provided related to manholes, MSD proposed the Manhole Renewal Program include all work associated with improving manholes throughout the wastewater collection system.

Benefits resulting from work performed under this allowance

- Extended useful life of manhole
- Reduction in Infiltration & Inflow in sanitary areas
- Elimination of flooded manholes

Home Sewer Treatment System Extensions 2016

This allowance was identified in the Consent Decree. Section C.6.c of the Final WWIP states the Home Sewage Treatment System (HSTS) Program “conducts the design, property acquisition and construction of new sanitary sewers to connect properties in built up areas of the MSD service area to eliminate home sewage treatment systems (HSTS).” These projects improve the water quality of watershed by replacing failing or inadequate home systems. These projects are identified and prioritized based on the public health risk. HSTS construction projects undergo public review and evaluation as part of proposed legislation and approval by the Board of County Commissioners. This program supports the overall HSTS Elimination program by funding planning and petition services for various local sewer projects and sewer lateral projects in all watersheds.

Table 34 – Historical HSTS Allowance Spending

Year	MSD Labor	Certification	Total Commitments
2011	\$157,745	\$30,000	\$187,745
2012	\$163,076	\$93,389	\$256,465
2013	\$155,528	-\$708	\$154,820
2014			
TOTAL	\$476,349	\$122,681	\$599,030
<i>Average</i>	<i>\$158,783</i>	<i>\$40,894</i>	<i>\$199,677</i>

Basis for 2016 funding request \$200,000

This allowance is used for planning and petition services for HSTS Elimination Program including the following activities.

- Work under this allowance is performed on an as-needed basis dependent upon petition requests received from property owners or neighborhoods. The current funding request aligns well with historical commitments.
- Communicate/coordinate/educate/respond to miscellaneous inquiries with/from property owners, Hamilton County staff, Hamilton County Public Health and other stakeholders regarding assessment sewer policy, projects and progress.
- Develop petitions for assessment sewers and sewer lateral assessments.
 - Prepare preliminary plan for assessment sewers and laterals (site visit, concept plan, research sewer availability, review past petition efforts, determine assessment district boundaries, develop property owner data, review local zoning constraints).
 - Prepare citizen petitions for assessment sewers.
 - Prepare petition, statement and waivers for sewer lateral assessments.

- Manage citizen petitions (provide petition and flyer to petitioner, respond to property owner questions, tabulate petition vote results, prepare and mail polling ballots, tabulate and document polling results, prepare documentation of petition/polling results for submittal to Board, manage petition meetings with stakeholders).
- Prepare preliminary plans/specs/estimate of costs for sewer lateral assessments.
- Prepare legislative requests for design authorization for assessment sewers and sewer lateral assessments (develop design proposal, prepare initial estimate of costs, compose project description and respond to MSD and Hamilton County questions regarding legislative requests).
- Prepare final assessment data and legislation.

Benefits resulting from work performed under this allowance

- Convert home sewage treatment systems to sewer service thereby reducing the discharge of pollutants to watersheds. Failing or improperly functioning HSTS are a source of pollutants that has been linked to dry weather bacterial exceedances. This allowance will facilitate actions required to ultimately improve localized water quality.
- Resolving problems identified by the Hamilton County Health Department for high priority areas.

Wet Weather Program Management & Support Services 2016

MSD's continued use of Program Management Services is crucial for maintaining the current momentum required to complete Phase 1 of the Wet Weather Improvement Program, streamline the Asset Management Program, and develop an optimized and affordable schedule for Phase 2 (and future phases) of the Wet Weather Improvement Program. This project funds the Enterprise Management and Program Controls services necessary to carry out the Capital Program. The activities performed under this project include regulatory coordination, compliance reporting, project and program scheduling, project estimating, project controls, risk management efforts, and program communications.

Table 35 – Historical Program Management & Support Services Allowance Spending

Year	MSD Labor	Certification	Total Commitments
2011	\$5,860	\$11,975,174	\$11,981,034
2012	\$1,321,816	\$13,457,218	\$14,779,034
2013	\$1,581,394	\$6,401,094	\$7,982,488
2014	\$13,160	\$9,516,234	\$9,529,394
TOTAL	\$2,992,230	\$41,349,720	\$44,271,950
<i>Average</i>	<i>\$730,558</i>	<i>\$10,337,430</i>	<i>\$11,067,988</i>

In 2014, \$1,422,310 of MSD labor charges were subsequently moved to the operating budget.

Basis for 2016 funding request \$5,300,000

MSD uses a mix of employee staff and supplemental outside professional consultants to manage and report on the multiple projects in planning, design, and construction phases. MSD continues to integrate some of the supplemental staff positions with MSD personnel. Due to the size and complexity of the capital program, supplemental staffing provided by external consultants will continue to be utilized for the next several years to ensure all Final WWIP milestones are fully satisfied. A breakdown of the activities funded under this allowance is presented in the following table and described herein.

- **Staff Expertise:** Enterprise Management includes MSD staff members. Staff members are serving the following roles: Project Controls Manager, Change Management Coordinator, and Permit Coordinator. MSD staff from across the District provide as-needed services and support to the Enterprise Management Division for addressing Consent Decree questions, County coordination, stakeholder education, and a variety of other technical issues associated with MSDGC's Capital Improvement Program.
- **Enterprise Management:** The Enterprise Management Team is comprised of a Capital Program Manager, Capital Program Administrator, Administrative Support staff, and specialized expert technical support on an as-needed basis. This is a critical function of the Enterprise Management Division that is responsible and accountable for all aspects of the District's capital program.

Any capital program as diverse and complex as MSDGC's Wet Weather, Sustainable Infrastructure, Asset Management, and Local Sewer & Lateral Assessment Program has need of

industry leading expertise from time-to-time to address challenges, confirm industry standards, develop cost-effective solutions, and provide out-of-the-box concepts. The 2016 PMC budget includes funding for as-needed expertise from people such as, but not including or limited to, Tom Lyon, Marty Umberg, Sam Shamsi, University of Cincinnati Professors, and other utility professionals.

- **Program Controls:** The Program Controls Team is responsible for the day-to-day oversight, coordination, and reporting of the Capital Program performance and implementation including individual projects' schedule, budget, cash flow, change management activities, and estimating. This group is responsible for administering and updating as necessary MSDGC's Financial Analysis Manual (FAM). Comprehensive monthly, quarterly, and annual reporting is completed by the Program Controls Team.
- **Document Control:** The 2016 PMC budget includes funding for supplemental staff to assist the City with administering and implementing the document control system for all capital projects. In 2014 the City began managing the document control function and provided the majority of administrative specialists. MSDGC will continue to transition all document control positions to the City as more staff become fully trained and vacancies are filled.

Table 36 – Program Management Support

Potential 2016 CIP Program Management Support Services Activity	Very Rough Estimated Cost
MSDGC Labor	
Staff Expertise	\$700,000
Enterprise Management	
Management Team	\$1,000,000
Legal Assistance	\$350,000
Expert Technical Services	\$150,000
Reporting	\$150,000
Affordability Analysis	\$200,000
Small Business Enterprise	
Program Support	\$500,000
Inclusion	\$200,000
Program Controls	
Basin Control Specialists	\$1,000,000
Estimating	\$300,000
Expert Services for Controls	\$100,000
Financial Analysis	\$300,000
Document Control	
Support Services	\$350,000
TOTAL	\$5,300,000

CIP Project Planning

This allowance provides the funding necessary for pipeline, source control, and wastewater facility planning for effective prioritization of capital resources and development of comprehensive business case evaluations.

Table 37 – Historical CIP Project Planning Allowance Spending

Year	MSD Labor	Non Labor	Total Expenditures
2011	\$498,983.11	\$2,055,576.24	\$2,554,559.35
2012	\$454,990.59	\$1,435,345.26	\$1,890,335.85
2013	\$571,995.09	\$2,132,871.77	\$2,704,866.86
2014	\$607,084.26	\$839,627.10	\$1,446,711.36
TOTAL	\$2,133,053	\$6,463,420	\$8,596,473
Average	\$533,263	\$1,615,855	\$2,149,118

Basis for 2016 funding request \$2,500,000

MSD uses a mix of employee staff and supplemental outside professional consultants for preparation of Business Case Evaluations (BCEs) for project nominations received from the Watershed Operations, Wastewater Collection, and Wastewater Treatment Divisions.

The planning activities presented in the following table and described herein provide a representative sampling of needed work. It is not likely that all projects will be initiated in 2016 due to coordination and staffing limitations. However, at this time MSD does not know which projects will be dropped from the list. This list of potential planning projects is tentative and subject to change. Planning activities will be performed using a combination of staff and consultant resources. MSD will not exceed the authorized planning allowance budget approved in the 2016 CIP.

Table 38 - Potential Projects for CIP Planning Allowance in 2016

Potential 2016 CIP Planning Activity	Very Rough Estimated Cost
Treatment Plant & Facility Planning Activities	
Mill Creek WWTP Solids Handling Improvements Phases 2 & 3	\$150,000
Document Control Storage Enhancements	\$20,000
Little Miami Non-Potable Water System Upgrades	\$30,000
Taylor Creek WWTP Disinfection Improvements	\$50,000
Effort to link Facility Plans with Maximo Records	\$50,000
2017 Roof Replacement Evaluation	\$75,000
WWT/Watershed Operations Central Monitoring Center	\$50,000
MSDGC High Rate Treatment Development	\$25,000
MSDGC Backup Power Analysis	\$40,000
Mill Creek WWTP Primary Settling Re-chaining	\$40,000
Muddy Creek Pump Station Re-Evaluation	\$75,000

Potential 2016 CIP Planning Activity	Very Rough Estimated Cost
Facility Plan Refinements	\$100,000
Pump Station Planning Activities	
Pump Station Telemetry System Upgrades	\$75,000
Bold Face Pump Station Reliability & Service Upgrades	\$50,000
High Point Pump Station Improvements	\$25,000
Wastewater Collection Planning Activities	
Preliminary Planning for new ODOT projects (CSO 226, Thru the Valley)	\$45,000
HW/DW Improvements	\$75,000
Schulte & Paxton Additional Planning	\$50,000
BCEs for WWC projects in planning backlog	\$150,000
Daly Road CSO Treatment Facility	\$25,000
Rapid Run Park Pond Discharge Disconnection	\$25,000
Stonebridge Apartments Sewer Repair	\$25,000
3520 Darwin Avenue Sewer Repair	\$25,000
Stout & Penderly Avenue Sewer Capacity Evaluation	\$25,000
East Westwood Detention Basin	\$25,000
CSO 005 Flood Control Protection	\$25,000
CSO 449 Sewer Separation	\$25,000
CSO/SSO Relocation and Access Drive Improvements	\$25,000
Muddy Creek CSO HW/DW Protection	\$25,000
Elm Court Sewer Replacement	\$5,000
5053 Ridge Ave Sewer Replacement	\$25,000
Morrison Avenue Sewer Replacement	\$25,000
3731 Glenmore Avenue Sewer Evaluation	\$25,000
Ledgewood Ave Sewer Replacement	\$25,000
911 McPherson Avenue Sewer Replacement	\$25,000
Davey Avenue Sewer Replacement	\$25,000
Harvey Ave-Hickman Ave Sewer Replacement	\$25,000
Wasson Ravine Sewer Replacement - Additional Planning	\$25,000
Aux Mill Creek Interceptor and Channel Repair	\$25,000
Mandarin Court Sewer Replacement	\$25,000
Mill Creek Interceptor Condition Evaluation	\$25,000
Depot Street Sewer Evaluation	\$25,000
Mill Creek Interceptor Crossover Automation	\$50,000
CSO 226 I-75 Relocation	\$25,000
Watershed Planning Activities	
Flow Monitoring Procurement for Capital Projects	\$200,000
High Rate Treatment Performance Refinements	\$70,000
Dynamic Under Flow Control Projects	\$150,000
Real Time Control Telemetry Upgrades	\$200,000
TOTAL	\$2,500,000

Benefits resulting from work performed under this allowance

- Prioritization of infrastructure capital needs; identification of opportunities for integrated planning and construction coordination (paving, utility construction, transportation, etc.).
- Linking of planning projects with operations data and decision making tools.
- Evaluation of historical records of maintenance and repair.
- Estimation of remaining useful life of an asset.
- Determination of asset criticality and risk assessment.
- Proximity to other projects, including WWIP, I/I removal and SBUs.
- Project contribution to key level of service measurements.
- Project priority ranking based upon increased asset value from a return on investment, increased capacity, and quantified operation & maintenance savings.

WWT System Asset Renewal 2016

The purpose of this allowance is to provide MSD's Wastewater Treatment (WWT) Division a means of addressing emergency situations and necessary equipment replacements. Capital for emergency situations will be utilized under this allowance in the same manner as the Emergency Sewer Allowance in that each contract \geq \$25,000 will be submitted to the Board. Capital needed for equipment replacements and upgrades will be legislated for each occurrence. MSD has developed a "min-BCE" process that will be implemented in tandem with the Legislation Dry Run (LDR) process to request funding approval from the County. This allowance serves as an annual "budget" from which legislations will be requested by MSD.

2016 CIP Allowance Request = \$3,000,000

- \$3,000,000 for Equipment Repairs & Replacements – funding authorized via individual project legislations against this allowance.

Basis for 2016 funding request

The types of emergency situations and equipment repairs/replacements anticipated to be addressed under this allowance include:

- Pumping System Repairs
- Rotating Equipment Repairs
- Electrical Repairs
- Bypass Pumping Services
- Security System Repairs
- On-Site Buried Infrastructure Repairs
- HVAC System Repairs
- Process Equipment Repairs
- Repair of Roof Collapses or Breaches
- Repair of Sinkholes or Roadway Blockages for Delivery Vehicular Access
- Emergency Situation Professional Services

Benefits resulting from work performed under this allowance

- This allowance will facilitate timely replacement or wastewater treatment infrastructure and continue to improve the reliability of equipment and processes and extend remaining useful life. Recommendations from preventative maintenance and condition assessment activities can be addressed prior to failure.
- This allowance will provide an immediate funding mechanism to address emergency situations and equipment failures.

Work Anticipated to be Performed Under 2016 WWT Asset Renewal Allowance

Table 39 – Potential Work to be Performed under 2016 WWT Asset Renewal Program

Project Description	Very Rough Estimated Cost
Little Miami WWTP	
Sludge Handling Grinders Replacement	\$40,000
Secondary 480V Breaker Refurbishment	\$55,000
Secondary Seal Water System Replacement	\$15,000
Diversion Chamber Concrete Structure & Gate Rehab	\$30,000
Filter Press Feed Pump Replacement	\$60,000
Chemical Tank Refurbishment	\$100,000
Various As-Needed Construction Coordination Items	\$150,000
Mill Creek WWTP	
Effluent Flood Gate Control Panel	\$45,000
Headworks Day Tank Chemical Auto-Shutoff Upgrade	\$30,000
RAS VFD Room Redundant HVAC Installation	\$125,000
Skimmings Building/Unloading Upgrade	\$80,000
Odor Control No Loss Stack Head Installation	\$20,000
Odor Control Interim Upgrades	\$100,000
Bar Screens Compactor Replacement	\$30,000
Aeration Influent Channel Mixer Replacement	\$120,000
RSPS Manual Pump Control Upgrade	\$40,000
Bulk Fuel Oil Unloading Spill Containment	\$25,000
Sludge Holding Tank Level Sensors	\$30,000
WAS Metering & Low Flow Pumping Modification	\$50,000
Various As-Needed Construction Coordination Improvements	\$50,000
Muddy Creek WWTP	
Drainage Pump Building Roof Repair	\$60,000
Skimmings Unloading Upgrade	\$25,000
Various As-Needed Construction Coordination Improvements	\$50,000
Polk Run WWTP	
Screening Cold Weather Protection	\$45,000
Crane Access Improvement	\$25,000
Various As-Needed Construction Coordination Improvements	\$25,000
Sycamore WWTP	
Tertiary Pump Station Upgrade	\$60,000
Various As-Needed Coordination Improvements	\$25,000
District-Wide	
Electric Account Metering/SCADA Upgrade	\$20,000
Generator Repairs	\$100,000
As-Needed Instrumentation & Electrical Upgrades	\$200,000
As-Needed Pumping System Upgrades	\$300,000
As-Needed Rotating Equipment Replacement	\$120,000
Development of a Comprehensive Risk Tool	\$500,000
Totals	\$3,000,000

Prioritized Wastewater Collection System Improvements 2016

This program represents a consolidation of the former “Emergency Sewer” and “High Risk Asset Renewal” Asset Management allowances. Since it is often challenging to differentiate between the nature of work to be performed under these allowances, they have been consolidated. This program will allow the District to respond to sudden, unexpected sewer system failures as well as planned improvements to high risk utility-owned asset classes.

This program is necessary to cost effectively extend asset life while protecting and preserving public health and the environment. This program allows MSD to quickly and efficiently restore and maintain interrupted service while mitigating the risk of additional damages or losses. The scope of work for the program will include resolving conditions that warrant emergency sewer repairs such as cave-ins, structurally failed sewers, sewer overflows that may violate permits and regulations, and imminent danger to structures or real property. The scope of this project will also include resolving defective assets, or defective portions of assets that may impair the system's ability to meet defined levels of service are identified, prioritized based upon a comprehensive risk, and renewed using the most cost effective methodology to extend the asset's useful life.

Table 40 – Historical High Risk Asset Renewal Allowance Spending (inclusive of building sewers)

Year	MSD Labor	Certification	Total Commitments
2011		\$2,889,237	\$2,889,237
2012	\$681,505	\$4,459,515	\$5,141,019
2013	\$241,006	\$5,532,775	\$5,773,781
2014	\$143	\$2,352,422	\$2,352,565
TOTAL	\$922,654	\$15,233,949	\$16,156,602
<i>Average</i>	<i>\$307,55</i>	<i>\$3,808,487</i>	<i>\$4,039,151</i>

Table 41 – Historical Emergency Sewer Allowance Spending (inclusive of building sewers)

Year	MSD Labor	Certification	Total Commitments
2011	\$149,836	\$8,000,000	\$8,149,836
2012	\$422,508	\$8,042,001	\$8,484,509
2013	\$387,010	\$7,412,665	\$7,799,675
2014	\$276,466	\$8,038,966	\$8,315,432
TOTAL	\$1,235,820	\$31,493,632	\$32,749,452
<i>Average</i>	<i>\$308,955</i>	<i>\$7,873,408</i>	<i>\$8,187,363</i>

Basis for 2016 funding request \$10,000,000

- Work under this allowance is performed on an as-needed basis dependent upon existing conditions of sewer segments. Work during 20156 will continue to focus on sewers having a high risk of failure; poor structural condition; and/or less than 10 years of remaining useful life.
- The current funding request aligns well with historical commitments.

Benefits resulting from work performed under this allowance

- An improved level of service for customers and reduction in WIBs during typical wet weather storm events along high risk sewer segments.

The following table identifies work activities to be performed for implementation of this Allowance.

Table 42 – Work Activities for Prioritized Wastewater Collection Improvements Allowance

Work activities to be performed under this Allowance	Work activities NOT to be performed under this Allowance
<ul style="list-style-type: none">• All emergency and planned (prioritized) repairs to the various utility-owned asset classes• Installation of new assets (manholes) to enable proper condition assessment and asset improvement• Work to be planned, budgeted, assigned, tracked, and reported by primary asset class and work type	<ul style="list-style-type: none">• All emergency and planned (prioritized) repairs to privately-owned building sewers• All work associated with inspection port installation (Vac-a-Tees or open-cut)• Rehabilitations or lining of building sewers

Building Sewer Renewal Program 2016

This program is a new allowance dedicated to addressing issues with privately owned building sewers located within the public right-of-way. The District's Rules and Regulations require MSDGC to take responsibility for the structural condition of private building sewers located within the public right-of-way. The program will allow the District to respond to sudden, unexpected building sewer failures as well as planned improvements to private building sewers.

This program is necessary to cost effectively extend asset life while protecting and preserving public health and the environment. This program allows MSD to quickly and efficiently restore and maintain interrupted service while mitigating the risk of additional damages or losses. The scope of work for the program will include resolving emergency sewer repairs such as cave-ins, structurally failed sewers, sewer overflows that may violate permits and regulations, and imminent danger to structures or real property. The scope of this project will also include all work associated with inspection port installations and rehabilitation of privately-owned building sewers within the public right-of-way.

Historically work associated with building sewers was addressed using either the Emergency Sewer Allowance or the High Risk Asset Renewal Allowance – depending upon the urgency of the situation. But as previously noted, the County and MSDGC would like to track expenditures associated with building sewers in order to determine if policy changes are warranted for consideration by the Board of County Commissioners.

Basis for 2016 funding request \$5,000,000

- Like many older sewer systems across the country, the MSD system includes components that are more than 100 years old. This makes MSD's vigilance about consistently investing in repairs of the aging system all the more critical to ensure public health and safety, environmental compliance, and stewardship of ratepayer funds.
- Work under this allowance is performed on an as-needed basis dependent upon actual infrastructure condition. The current funding request aligns well with historical commitments.

Benefits resulting from work performed under this allowance

- Ability to quickly and efficiently restore and maintain interrupted service while mitigating the risk of additional damages or losses.
- Protection of public health and the environment immediately following sewer pipeline breaks.

The following table identifies work activities to be performed for implementation of this Allowance.

Table 43 – Work Activities for Building Sewer Renewal Program

Work activities to be performed under this Allowance	Work activities NOT to be performed under this Allowance
<ul style="list-style-type: none"> • All emergency and planned (prioritized) repairs to privately-owned building sewers • All work associated with inspection port installation (Vac-a-Tees or open-cut) • Rehabilitation privately-owned building sewers located within a public right-of-way 	<ul style="list-style-type: none"> • Everything else • Work associated with gravity main sewers or manholes • Work associated with publicly owned sewer assets

Water Quality Program 2016

The purpose of this allowance is to facilitate implementation of a comprehensive water quality program for MSDGC. Several concurrent planning activities are envisioned to be performed with the funds approved under this allowance. These activities are intended determine the current water quality conditions in streams, creeks, and rivers; identify potential sources for pollutants of concern; identify how pollutants are transported to water bodies; and continue refining the assumptions used for design of stormwater best management practices (BMPs).

Basis for 2016 funding request \$3,275,000

- **Bioassessments.** MSDGC’s current draft NPDES permit references continued four-year rotation of collecting and analyzing water quality samples throughout the District. In 2016, the Mill Creek is scheduled for sampling with the required reporting to Ohio EPA to follow in 2017.
- **Water Quality Model Updates.** Many utilities around the country are faced with combined overflows (CSOs) and sanitary overflows (SSOs) issues and they often require multi-billion dollar programs to address these wet weather pollution sources. Prioritization on capital improvement projects are often challenging because many sources contribute to the water quality pollution in a given watershed. An important part of MSDGC’s Water Quality Program is refining and upgrading existing water quality models to include additional upstream coverage and resolution. The upgraded models will be able to simulate the fate and transport of a suite of pollutants of concerns including E.coli, species of nitrogen and phosphorus, algae, and dissolved oxygen.
- **Stormwater Best Management Practices (BMPs) Modeling.** There are many tools/software that model green infrastructure systems to be incorporated in stormwater projects to control both volume and improve water quality. The available models vary greatly in their application and intent. Some of the largest differences include spatial scale (catchment vs. river basin), temporal scale (storm event vs. continuous), cost (free vs. proprietary), and intent (planning level vs. engineering design support). The level of effort required to use each model is directly related to the complexity of the model. Three detailed models which can support evaluation of stormwater controls are

HSPF, SWMM, and MOUSE. This allowance will be used to further evaluate these models and compare their results with field verified data collected from MSD's BMP projects.

- **Post Construction Monitoring Program.** MSDGC submitted a Post Construction Monitoring Plan to the Consent Decree Regulators on August 10, 2015 in accordance with the requirements of the Consent Decree. This plan outlines an approach for verifying the Phase 1 projects satisfy the design criteria, performance criteria, and eliminate specified SSOs. Under the Water Quality Program, MSDGC proposes to implement, facilitate, and report on progress regarding the Post Construction Monitoring requirements.
- **Phase 2 Wet Weather Program Information.** All the information collected under the various water quality program initiatives and activities will be crucial for informing the Phase 2 WWIP. As the Defendants (County and City) prepare to submit a schedule to the Consent Decree Regulators for the early Phase 2 projects in June 2017, identifying opportunities for lower cost remedies is a top priority for MSDGC. The Water Quality Program will provide confidence on decision making to develop cost effective strategies and individual projects associated with the affordability of the wet weather improvement program. This approach will result with MSDGC having a transparent and defensible plan for recommending wet weather improvement projects for future phases of the Consent Decrees.
- **Integrated Watershed Action Plans.** The purpose of watershed planning is to identify measures to meet the SSO and CSO volume reduction requirements of the Final WWIP, as part of Hamilton County's and the City of Cincinnati's Consent Decree, through an Integrated Planning approach, while selecting holistic projects that will also provide the best water quality improvements possible and maximize the benefits of the investment for the rate payers. MSDGC proposes to fund each IWAP under separate project IDs. The 2016 CIP includes additional funding for the SSO 700 IWAP and work in the Little Miami Watershed.

Benefits resulting from work performed under this allowance

- Collection of pertinent data and local field conditions for use in development of a comprehensive water quality model applicable that can be calibrated and verified to facilitate simulation of various alternatives for capital improvement projects.
- Progress toward linking capital expenditures with CSO reduction and water quality benefits.
- Establishing an internal clearinghouse for all data, information, regulatory requirements, rule changes, etc. related to local water quality and the National Clean Water Act.

An overview of how the Water Quality Program budget was assembled is presented in the following table.

Table 44 – Overview of Water Quality Program Budget Request

Potential 2016 CIP Water Quality Program Activity	Notations	2016 CIP	2017 CIP	2018 CIP	2019 CIP	2020 CIP
District-Wide Activities						
Nine-Minimum Controls		\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Integrated Priority System Tool Refinement		\$75,000	\$25,000	\$25,000	\$25,000	\$25,000
Program Management & Reporting		\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
Little Miami Watershed Activities						
Phase 1 CSO Eliminations Monitoring	PCMP locations	\$50,000	\$0	\$0	\$0	\$5,000
Phase 1 SSO Eliminations Monitoring	PMCP locations	\$50,000	\$0	\$0	\$0	\$10,000
Phase 1 CSO Reductions Monitoring	PCMP locations	\$50,000	\$0	\$0	\$0	\$10,000
Real-Time Flow & Water Quality Sensors	20 sites per year	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Water Quality & Bioassessments		\$0	\$400,000	\$0	\$0	\$0
Satellite Study for HSTS Impacts						
Water Quality Modeling		\$250,000	\$0	\$325,000	\$0	\$0
Satellite Study for Nutrients		\$75,000	\$0	\$0	\$0	\$0
Microbial Source Tracking Studies w/USEPA		\$75,000	\$0	\$0	\$0	\$0
Post Construction Monitoring Deliverables		\$0	\$0	\$0	\$500,000	\$0
Muddy Creek Watershed Activities						
Phase 1 CSO Eliminations Monitoring	PCMP locations	\$0	\$0	\$0	\$0	\$0
Phase 1 SSO Eliminations Monitoring	PMCP locations	\$0	\$0	\$0	\$10,000	\$0
Phase 1 CSO Reductions Monitoring	PCMP locations	\$0	\$0	\$0	\$50,000	\$0
Real-Time Flow & Water Quality Sensors	10 sites per year	\$0	\$50,000	\$50,000	\$50,000	\$50,000
Water Quality & Bioassessments		\$0	\$0	\$0	\$500,000	\$0
Satellite Study for HSTS Impacts		\$0	\$150,000	\$0	\$0	\$0
Water Quality Modeling		\$0	\$0	\$200,000	\$100,000	\$0
Satellite Study for Nutrients		\$0	\$0	\$0	\$0	\$0
Microbial Source Tracking Studies w/USEPA		\$0	\$75,000	\$100,000	\$100,000	\$100,000
Post Construction Monitoring Deliverables		\$0	\$0	\$0	\$0	\$500,000

Potential 2016 CIP Water Quality Program Activity	Notations	2016 CIP	2017 CIP	2018 CIP	2019 CIP	2020 CIP
Mill Creek Watershed Activities						
Phase 1 CSO Eliminations Monitoring	PCMP locations	\$0	\$0	\$0	\$0	\$0
Phase 1 SSO Eliminations Monitoring	PMCP locations	\$0	\$0	\$0	\$0	\$0
Phase 1 CSO Reductions Monitoring	PCMP locations	\$0	\$0	\$0	\$0	\$0
Real-Time Flow & Water Quality Sensors	100, 50 sites/year	\$500,000	\$500,000	\$250,000	\$250,000	\$300,000
Water Quality & Bioassessments		\$400,000	\$0	\$0	\$0	\$650,000
Satellite Study for HSTS Impacts		\$100,000	\$150,000	\$0	\$0	\$0
Water Quality Modeling		\$100,000	\$200,000	\$500,000	\$65,000	\$0
Satellite Study for Nutrients		\$100,000	\$0	\$0	\$0	\$0
Microbial Source Tracking Studies w/USEPA		\$100,000	\$100,000	\$200,000	\$0	\$0
Post Construction Monitoring Deliverables		\$0	\$0	\$0	\$0	\$0
TOTALS		\$3,275,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000

Hydraulic Modeling 2016

This project will provide hydraulic, hydrologic, and treatment process modeling services to be used to support MSD's long-range planning needs, and to meet MSD's SSO and CSO monitoring requirements. Sewer modeling is used to assist in the planning and design process and is required as part of the Global Consent Decree and MSD's CSO NPDES permit. MSD is committed to ensuring its system-wide model meets the latest standards and provides the best available tool for assessing, planning, and designing MSD's infrastructure.

Basis for 2016 funding request \$1,000,000

- Perform updates for the wastewater treatment plant process & hydraulic models to account for improvements completed under the capital improvement program. Review and verify process changes for proposed capital projects nominated for Business Case Evaluations. Coordination with WWC and WWT regarding infrastructure improvements made using in-house resources or approved allowance funds. Obtain operational information such as changes to WWTP operations, RTC control modifications, etc.
- Work completed for specific projects will be charged to project IDs. This allowance is anticipated to be used to incorporate project specific model changes into the System-Wide Model for each of MSD's seven sewersheds. Document changes to the System-Wide Model including installed projects and adjustments to calibration.
- Perform work associated with developing and coordinating updated modeling guidance criteria including evaluation of modeling software modules and determination of their applicability to MSD's hydraulic and hydrologic models.
- Update the baseline System-Wide Model if flow or other data is available for areas not previously calibrated. Run the updated System-Wide Model for the 1970 Typical Year and document changes in overflows on an outfall-by-outfall basis.

The following modeling activities provide a representative sampling of needed work. It is not likely that all projects will be initiated in 2016 due to coordination and staffing limitations. However, at this time MSD does not know which projects will be dropped from the list. This list of potential modeling efforts is tentative and subject to change. Modeling activities will be performed using a combination of staff and consultant resources. More detailed descriptions of each task are provided following the table.

Table 45 – Potential Activities for 2016 Hydraulic Modeling Allowance

Potential 2016 CIP Modeling Allowance Activity	Very Rough Estimated Cost
Hydraulic Modeling Activities	
Muddy Creek Watershed Recalibration & Dashboard Development	\$50,000
Taylor Creek Watershed Recalibration & Dashboard Development	\$50,000
Indian Creek Watershed Recalibration & Dashboard Development	\$50,000
Polk Run Watershed Recalibration & Dashboard Development	\$50,000
Sycamore Watershed Recalibration & Dashboard Development	\$50,000
System-Wide Model Refinements	\$450,000
Phase 1 System-Wide Model Refinements	\$200,000
Treatment Plant Modeling Activities	
Mill Creek WWTP Process & Hydraulic Models	\$100,000
TOTAL	\$1,000,000

The cumulative amount of potential modeling activities will not exceed the authorized Hydraulic Modeling allowance budget.

The following activities are proposed by MSD to be completed using 2016 Hydraulic Modeling Allowance.

- Muddy Creek Watershed Recalibration: This watershed was scheduled for recalibration in 2014-2015. Flow monitoring data continues to be collected and analyzed. This activity will involve a combination of MSD modeling staff and external consultant(s) to recalibrate the current model and prepare a detailed report documenting this work including any changes made to the model resulting from the recalibration effort. MSD will meet with the County monitor team to discuss the draft report. Comments will be incorporated into the document before the final report is issued.
- System-Wide Model Refinements: MSD is in the process of preparing processes and procedures related to real-time updates to the system-wide model. It is not uncommon for Utilities to contract with consultants for model maintenance contracts. MSD has staff with the skill sets necessary to perform this work on a long-term basis. A task order is envisioned to train MSD's staff and expedite incorporation of information into the model to assimilate information related to as-built drawings through 2015, work performed by Operating Divisions, mini-model updates, developer projects, and watershed planning efforts.
- Phase 1 System-Wide Model: MSD is in need of a model simulation that is inclusive of all Phase 1 WWIP projects. This simulation has not yet been created. Now that the vast majority of the Phase 1 projects have a defined scope of work, sufficient information is available to create this simulation.

This information will be helpful for prioritizing capital projects in areas having greater modeled sewer overflows.

- Coordination with Other Efforts: The very nature of allowance projects is to provide the District with flexibility in performing work that is needed but not necessarily known to a specific degree when the annual budget is set. This allowance will be used to perform work related to MSD's models on an as-needed basis. Mill Creek WWTP Process and Hydraulic Models: MSD have been working with a consultant to update the models used at the Mill Creek WWTP. It is envisioned this effort will continue during 2016. The County monitor team will be invited to attend briefing meeting related to the treatment plant models. MSD also envisions revising/creating a MPMP section related to these models to clarify the intent, protocols, and expected usage for these models.

MSD staff will coordinate the system-wide model with on-going activities including but not limited to Watershed Operations' use of the system-wide model and the developing Water Quality Program. At the end of the year, if these efforts are not attributable to future capital projects, the cost will be expensed.

MSDGC agrees to utilize this allowance subject to the following criteria

- Work performed will be properly documented with the Annual Capital Reconciliation Report that is issued in draft form to the County every March 30th for the prior year.
- The allowance will be used for expenditures in 2016 only.
- The allowance will not be used for specific capital project work.
- The work performed under this allowance are to be capital expenditures consistent with MSDGC's capitalization guidance document included in Appendix G of this report.

2017 – 2020 CIP FORECAST

The following table present an overview of the CIPs forecasted from 2017 through 2020.

Table 46 – CIP Overview for 2017 – 2020

Total CIP (in \$millions)	2016	2017	2018	2019	2020
Totals	\$331.3 M	\$138.3 M	\$83.3M	\$154.1M	\$169.4M

A potential funding plan for the 2016 -2020 CIP is presented below. Assessment project are funding through special assessment bonds issued by Hamilton County. Since the assessment program is driven by public need, no projects are anticipated beyond the current slate. Other obligations have been lower interest loans through the WPCLF program. Construction projects with a value higher than \$3M are typically nominated for the program. Out years are anticipated to be \$25M due to the uncertain future of this program.

Table 47 – Potential Funding Plan for 2016 – 2020 CIP

	Assessments	Revenue Bonds/Cash	Other Obligations	Total
2016	\$ 7,000,000	\$ 280,000,000	\$ 44,000,000	\$ 331,000,000
2017	5,000,000	83,300,000	50,000,000	138,300,000
2018	2,000,000	56,300,000	25,000,000	83,300,000
2019		129,100,000	25,000,000	154,100,000
2020		144,400,000	25,000,000	169,400,000
Totals	\$ 14,000,000	\$ 693,100,000	\$ 169,000,000	\$ 876,100,000

The 2016 – 2018 CIP forecast is **within 3%** of the last information provided in the Public Official Statement of the 2014A and 2015A Issue.

Table 48 – Comparison of CIP to POS

(in \$millions)	2014*	2015*	2016**	2017**	2018**	Total	%Variance
2014 Official Statement	\$211	\$366	\$127	\$69	\$46	\$819	3%
2016 Draft CIP	\$161	\$131	\$331	\$138	\$83	\$844	

*Reflects the reconciled CIP values from 2014 and 2015 for actual project funding legislations

**Reflects the forecast in the 2016 – 2020 for project legislations

13090000 - Programmatic Contingency

The 2016 CIP programmatic contingency was calculated per August 8, 2014 Adopted Rules and Regulations Section 2405-2(A)(7).

- 15% of planning and design cash flow
- 6% of construction cash flow
- 4% of major equipment purchase

On January 8, 2014, the BOCC passed a resolution that instituted Programmatic Contingency within the MSD CIP and made it part of the MSD Rules and Regulations, Section 2405. This was viewed as “trial” to determine if the cash flow-based calculations were appropriate and if the process was workable. The Programmatic Contingency was supposed to give broader flexibility and limit the number of legislations that were necessary, particularly when non-construction activities needed additional funding. Additionally, the same resolution instituted line item transfers to provide additional funding when needed. These two actions are creating workflow issues and delays. It is recommended that discussions begin to eliminate Programmatic Contingency and legislate Contingency at the project level for the final 2016 CIP.

Questions regarding the content of this document should be submitted to the Interim MSDGC Director of Sewers (Gerald.Checco@cincinnati-oh.gov).

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