



**Madison Water Utility - 2017 Capital Budget
2016-2030 Capital Improvement Budget**

Updated: **April 21, 2016**

4th DRAFT

	2016 Total	29,155,000	2017 Total	23,192,000						
Budget Goal w/ Inflation				20,600,000	20,600,000	20,600,000	21,000,000	21,630,000	22,280,000	

Annual Totals \$ 8,167,000 \$ 20,988,000 \$ 2,726,500 \$ 20,465,500 \$ 19,338,100 \$ 20,614,120 \$ 21,008,200 \$ 20,973,520 \$ 21,840,260

Line	Project	Description/Purpose	Primary Construction Year	Tasks	2016 Reauthorization	2016	2017 Reauthorization	2017	2018	2019	2020	2021	2022
1	Cannonball Pipeline to BPS 118		Multiple										
2		Booster Pump Station 118 was constructed and put into service in 2012. The last phase, Phase 6, of the Cannonball Pipeline is budgeted to be constructed in 2017 in conjunction with bike path work.		Cannonball Pipeline	642,000		642,000						
3				Project Total	642,000	-	642,000	-	-	-	-	-	-
4													
5	BPS #106 Area Hydraulic Improvements		Multiple										
6		The upgrade of Booster Pump Station 106 was finished in 2014. To fully benefit from the pump station upgrade, hydraulic capacity improvements to the distribution system have been budgeted and planned.		Pipeline Improvements		981,000			818,000				
7				Project Total	-	981,000	-	-	-	818,000	-	-	-
8													
9	Well 7 Area Hydraulic Improvements		Multiple										
11		Well 7 was totally rebuilt in 2015. To fully benefit from the well upgrade, hydraulic capacity improvements to the distribution system have been budgeted and planned.		Pipeline Improvements							842,000		
12				Project Total	-	-	-	-	-	-	842,000	-	-
13													
14	Paterson Street Building Remodel and Upgrade		2015					VSB Const					
15		Rebuilding the Utility's Operations Center at Paterson Street started construction in the fall of 2015 and is scheduled to be finished and in service in October 2016. Construction is currently about 50% complete. This project corrects a long standing deficiency in the fleet maintenance facilities, the well maintenance facilities, and field crew staging areas. The new facility will provide an improved work area and a safer work environment.		Public Engagement	5,000	5,000		5,000					
16				Architectural Services	189,000	290,000	25,000	80,000					
17				Vehicle Storage Building				1,750,000	400,000				
18				Furnishings and Equipment				400,000	200,000				
19		Pase 2 of the project includes the construction of a materials handling building that will free up space in the vehicle storage building and improve efficiency during winter operations.		Fleet Maintenance and Office Building Construction	4,250,000	1,500,000	392,500						
20				Project Total	4,444,000	1,795,000	417,500	2,235,000	600,000	-	-	-	-
21													
22	Lake View Reservoir and BPS Reconstruction (Res 113)		2015										
23		Construction of the Lake View Reservoir started in 2015. <i>Reconstructing the Lake View Reservoir</i> will replace an aging storage tank for Pressure Zone 5 and provide much needed additional gravity fed water storage in Zone 6E on the north side of the City. The reservoir is being developed as a two zone facility to optimize the use of the site. Reservoir construction will be complete in the fall of 2016. The pump station feeding the reservoir will be upgraded in 2020 and the piping grid to and from the tank will be improved over the next several years.		Public Engagement	5,000	5,000		5,000			5,000		
24				Engineering Services	75,000	125,000	25,000	25,000		60,000	64,800		
25				Construct 2-Zone Reservoir	2,000,000	1,250,000	230,000						
26				System Hydraulic Improvements				72,000			650,000		
27				Upgrade Pumps @ BPS 213						1,040,000			
28				Water Main Imp. To BPS 213				756,000					
29				Project Total	2,080,000	1,380,000	255,000	858,000	-	60,000	1,759,800	-	-
30													
36	Well 31 Design and Construction		2015					Filter Const					
37		Construction on the Unit Well 31 project started in 2015 with the construction of the site ground reservoir. The well house, filter, and booster pump station will be constructed in 2017 and be fully operational by the spring of 2018. The <i>Well 31</i> project will correct a significant system deficiency identified by the Water Master Plan in the southeast corner of the system. Due to significant expansion of the system over the years to the south and east, the hydraulics of the system will not adequately serve this area for fire flow supply or system reliability and redundancy. Adding a second source of supply to the area will improve fire flow capacity and bring the water system level of service for the area up to Utility standards.		Public Engagement									
38				Drill Production Well									
39				Engineering Services		70,000	25,000	212,500	50,000				
40				Construction	250,000			4,000,000	1,250,000				
41				Hydraulic Improvement Pipelines						271,000	697,000		
42				Project Total	250,000	70,000	25,000	4,212,500	1,300,000	271,000	697,000	-	-



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Line	Project	Description/Purpose	Primary Construction Year	Tasks	2016 Reauthorization	2016	2017 Reauthorization	2017	2018	2019	2020	2021	2022
43													
44	Unit Well 12 Conversion to a Two Zone Well		2018						Start Const				
45		The Water Master Plan recommended that Well 12 be converted to a two zone well. This conversion will provide operational flexibility and reliability to the west side supply system. Pumps and a pressure reducing valve will be added to the Well 12 facility to move water from Pressure Zone 7 to Pressure Zone 8 or from Pressure Zone 8 to Pressure Zone 7.		Engineering Services		250,000	75,000		91,280	39,120			
46				Well House Construction	631,000				2,282,000	978,000			
47				Water Main Improvements		669,000	669,000	102,000					
48				Project Total	631,000	919,000	744,000	102,000	2,373,280	1,017,120	-	-	-
49													
56	Water Treatment System at Well 19		2018						Start Const				
57		Construction of an Iron and Manganese Filter at Well 19 will address elevated levels of iron and manganese. The Well 19 iron and manganese levels exceed Madison Water Utility water quality goals which results in colored water issues in the University of Wisconsin service area. A filter will remove these metals from the water and minimize the risk of accumulation of solids in the distribution system. This will minimize the risk of colored water reaching customers.		Public Engagement		15,000	15,000		10,000				
58				Engineering Services	100,000	368,000	100,000		168,800	124,400			
59				Filter Construction		102,000			250,000	3,110,000			
60				Project Total	100,000	485,000	115,000	-	428,800	3,234,400	-	-	-
61													
62	Blackhawk Elevated Reservoir (Zone 10)		2017						Start Const				
63		A Far West Side 1.0 MG elevated reservoir is needed to accommodate additional growth on the west side. The tower will combine Pressure Zones 10 and 11 and supplement the storage at High Point Road. The Far West Side Elevated Reservoir project will provide additional gravity fed water storage capacity within Pressure Zone 10 and will add needed storage capacity to current Zone 11. The 250,000 gallon High Point Road reservoir is reaching its functional capacity and does not provide sufficient emergency reserve capacity. Providing minimum fire flow requirements to this area of the distribution system is necessary to meet minimum Utility standards.		Public Engagement		15,000	5,000		5,000				
64				Engineering Services		269,000	50,000	82,000	25,000				
65				Construct 1 MG reservoir				2,650,000	650,000				
66				Reservoir piping improvements					210,000				
67				Water Main Improvements					389,000			1,309,000	
68				Project Total	-	284,000	55,000	2,732,000	1,279,000	-	-	1,309,000	-
69													
70	New Well - Zone 7 & 8		2024										
71		The 2006 Water Master Plan recommends an additional well to serve both Pressure Zones 7 and 8 to improve operational flexibility and system reliability. This recommendation was verified in 2009 in an analysis of the water demand in Zone 7. Adding a well to the area with the ability to pump water to either Zones 7 or 8 will provide additional water supply capacity to the west side and improve system reliability and redundancy. This facility will provide significant operational flexibility to the Utility within this portion of the system and ultimately benefit 5 different pressure zones across the entire west side. Projected development and growth on the west side and the Utility stated policy of limiting average well pumping to 50% of capacity for long term groundwater management make this an important water supply project.		Public Engagement							15,000	10,000	
72				Site Selection and Property Purchase								331,000	
73				Drill test well								139,000	
74				Drill production Well									1,109,000
75				Well Siting Eng Services						50,000		75,000	25,000
76				Unit Well Engineering Services									
77				Construct Facility									
78				Pipeline Improvements									
79				Project Total	-	-	-	-	-	-	65,000	555,000	1,134,000
80													
81	Unit Well No. 8 - Re-Construction		2026										
82		Unit Well No. 8 Re-Construction will totally upgrade and replace the reservoir and pumping station at Well 8. The project will install a filter for iron and manganese to address current water quality issues at Well 8. Due to the colored water resulting from the iron and manganese, well operation is currently limited to summer only and a total production of less than 100 million gallons per year. The need for this project was verified by the East Side Water Supply project and a public engagement process has started. Due to concerns about the nearby KIP Corporation contamination and neighborhood concerns about the facility in the park, the project has been delayed. The Utility will continue to study the KIP contamination and monitor groundwater quality and flow patterns. Installation of an iron and manganese filter would allow the well to be operational all year long. Space will be included in the project for the future addition of an air stripper if VOC contamination from the KIP site were to reach the well.		Public Engagement	20,000				10,000				
83				Groundwater Study		50,000	25,000	50,000					
84				Sentinel Wells					100,000				
85				Engineering Services									
86				Property Acquisition and Permitting									
87				Well 8 Re-Construction									
88				Hydraulic Improvement Pipelines									
89				Project Total	20,000	50,000	25,000	50,000	110,000	-	-	-	-
90													



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Line	Project	Description/Purpose	Primary Construction Year	Tasks	2016 Reauthorization	2016	2017 Reauthorization	2017	2018	2019	2020	2021	2022
91	Well 28 Iron and Manganese Filter		2021									Start Const	
92		Iron and manganese concentrations at Well 28 exceed Utility water quality standards and guidelines.		Public Engagement							5,000	5,000	5,000
93		Construction of an Iron and Manganese Filter at Well 28 will address the water quality issues and risk of colored water events and customer complaints on the far west side. A filter will also reduce the need for flushing and will allow Well 28 to become a year around well if necessary due to increasing demands.		Engineering Services							102,660	205,320	102,660
94				Filter Construction								2,422,000	1,000,000
95				Project Total	-	-	-	-	-	-	107,660	2,632,320	1,107,660
96													
97	Well 18 VOC Air Stripper		2023										
98		Recent Water Quality monitoring at the well has indicated an upward trend in the VOC levels. Construction of a VOC Air Stripper at Well 18 will address the pending water quality and regulatory issues due to these increasing VOC levels at the well. Well 18 provides an excellent source of water to the south side of Madison within Pressure Zone 6W and it is in the Utility's best interests to maintain the well.		Public Engagement								5,000	5,000
99				Engineering Services									250,000
100				VOC Treatment Construction									
101				Project Total	-	-	-	-	-	-	-	5,000	255,000
102													
103	Well 30 Iron and Manganese Filter		2022										Start Const
104		Iron and manganese concentrations at Well 30 exceed Utility water quality standards and guidelines.		Public Engagement								5,000	5,000
105		Construction of an Iron and Manganese Filter at Well 30 will address the water quality issues and risk of colored water events and customer complaints in the Well 30 service area. A filter would improve finished water quality and reduce the need for annual flushing in the Well 30 service area.		Engineering Services								325,000	195,000
106				Filter Construction									2,000,000
107				Project Total	-	-	-	-	-	-	-	330,000	2,200,000
108													
109	BPS 129 Reconstruction		2020									Start Const	
110		Construction of a new and upgraded booster pump station 129 is needed to increase water transfer capacity from Zone 6E to Zone 3. This project will replace the temporary pump station constructed on the Well 29 site in 1990. Pump Station 129 will continue to transfer water from Zone 6E to Zone 3 and back again through a PRV. This operation will provide supply and fire flow capability to the far east side of the system. It will benefit customers through gained reliability and flexibility of operations.		Public Engagement						6,000			
111				Engineering Services						125,000	109,840		
112				Water Main Improvements							418,000	574,000	
113				Construct BPS 129							1,957,000		
114				Project Total	-	-	-	-	-	131,000	2,484,840	574,000	-
115													
116	Booster Pump Station 109 (Spanem Ave)		2018									Start Const	
117		With the addition of Well 31 on Tradewinds, Pressure Zone 4 will have additional supply capacity. This additional capacity can benefit the SE corner of Zone 6E through the proposed booster pumping station. Booster Pump Station 109 provides the east side operational functionality and improves reliability to the water supply system. The pump station will move water from Pressure Zone 4 to Pressure Zone 6E and a pressure reducing valve station will allow water to move from Pressure Zone 6 E to Pressure Zone 4. This project was identified in the Water Master Plan.		Public Engagement				6,000					
118				Engineering Services				75,000	69,720				
119				Construct BPS 109					1,206,000				
120				Water Main Improvements						617,000			
121				Project Total	-	-	-	81,000	1,275,720	617,000	-	-	-
122													
213				Pipe Replacement Reinvestment Budget Goal							14,020,000		
214	Pipeline Replacement/Rehab/Improvements		Ongoing	Total Pipe Rehab Budget		11,719,000		8,500,000	10,000,000	10,730,000	11,522,000	12,129,000	12,776,000
215		Madison Water Utility has a planned piping system replacement and upgrade program that provides for annual main replacement and rehabilitation. Assessment of an aging infrastructure indicates the Utility needs to replace or rehabilitate over 400 miles of pipe in the next 40 years to renew and maintain the system. Due to budget constraints, the proposed budget for 2017 has been reduced.		Reconstruction Pipe Projects		5,200,000		4,000,000	4,500,000	4,680,000	4,867,000	5,062,000	5,264,000
216				Resurfacing Pipe Projects		4,660,000		3,500,000	4,000,000	4,400,000	4,840,000	5,034,000	5,235,000
217				Pipe Lining Projects		1,474,000		1,000,000	1,500,000	1,650,000	1,815,000	2,033,000	2,277,000
218						385,000							
219													
220		Madison Water Utility will continue to develop and expand the pipe lining program that was started in 2011. Lining pipe instead of replacing it saves money and extends the useful life of existing assets.		New Pipeline Projects		1,350,000		1,000,000	1,100,000	1,210,000	1,331,000	1,464,000	1,610,000
221		The Utility's Water Master Plan also recommends hydraulic improvements to the system. This will be accomplished by new pipeline projects and upgrades to existing pipes.		Master Plan Hydraulic Improvement Pipe Projects						714,000	736,000	758,000	781,000
222				Project Total	-	13,069,000	-	9,500,000	11,100,000	12,654,000	13,589,000	14,351,000	15,167,000
223											Pipe Hydraulic Upgrade Investment Budget Goal	3,890,000	
224											Pipe Hydraulic Upgrade Investment Actual	2,067,000	



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Line	Project	Description/Purpose	Primary Construction Year	Tasks	2016 Reauthorization	2016	2017 Reauthorization	2017	2018	2019	2020	2021	2022
225	Facility Improvement Projects		Ongoing										
226	The Water Utility has identified various minor improvement and upgrade projects that are necessary to sustain system facilities to meet the established level of service. For budgeting purposes, these projects are itemized under a single heading. Pressure Reducing stations will be constructed throughout the system as needed to reduce areas of excessive pressure and improve operational flexibility.			PRV Station Gammon Rd									
227				Chemical Feed Room Mods		-				500,000			550,000
228				PRV Projects 2 per year		-			60,000		64,000		68,000
229				Misc. Projects		400,000	100,000	150,000	150,000	500,000	525,000	551,000	579,000
230				Engineering Services		48,000	48,000	18,000	25,000	120,000	71,000	66,000	144,000
231				Project Total		448,000	148,000	168,000	235,000	1,120,000	660,000	617,000	1,341,000
232													
233	System Wide Upgrade and Repair Projects		Ongoing										
234	Several system wide tasks are included in the Capital Budget that cover a variety of repair, rehabilitation, and upgrade projects. The Utility's Infrastructure Management Plan recommends a reinvestment of \$2.5 (2005 dollars) in system facilities to sustain their viability for the long term. This would include Unit Well, pump station, and reservoir improvements and renewal. For budgeting purposes, these projects are itemized under a single heading.			SCADA Maintenance and 6 Year Upgrade		100,000		50,000	51,300	52,600	53,900	55,200	56,600
235				Video System Upgrades		50,000		51,000	52,000	53,000	54,000	55,000	56,000
236				Flow Meter and VFD Retrofit		50,000		100,000	150,000	155,000	160,000		
237				Meter and fixed network Program		208,000		-	-	-	-	-	-
238				Private Well Connection Program									
239				Safety Additions to the Plant		72,000		76,000	80,000	84,000	88,000	92,000	97,000
240				Olin Admin Office Maintenance		-		30,000	32,000	34,000	112,000	39,000	42,000
241				Unit Well/PS/Reservoir Rehab/Maintenance		750,000	200,000	200,000	250,000	269,000	289,000	311,000	334,000
242				Paterson Vehicle Storage Bldg Maintenance		58,000		20,000	21,000	22,000	23,000	24,000	25,000
243				Paterson Office and Shop Maintenance		19,000			-	22,000	23,000	24,000	25,000
244				CMMS		200,000	100,000						
245				Project Total		1,507,000	300,000	527,000	636,300	691,600	802,900	600,200	635,600
246													
247				Total Estimated Annual Costs	8,167,000	20,988,000	2,726,500	20,465,500	19,338,100	20,614,120	21,008,200	20,973,520	21,840,260
248				Facility Reinvestment and Renewal Goal				3.56	3.67	3.78	3.89	4.01	4.13
249				Facility Reinvestment and Renewal Actual				0.33	0.38	0.43	0.54	0.49	0.52