DES MOINES WATER WORKS
Board of Water Works Trustees

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MEMORANDUM

DATE: April 8, 2021

TO: Ted Corrigan, P.E., CEO and General Manager

FROM: Amy Kahler, Chief Financial Officer
Michael J. McCurnin, Director of Engineering Services

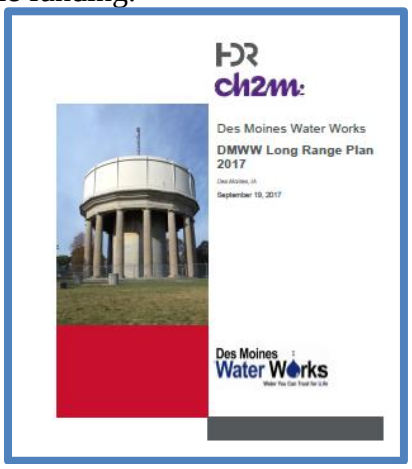
SUBJECT: 2022-2026 Five-Year Capital Improvement Plan

Background

Capital improvement planning was first introduced to our budgeting process in 2015 with the development of a 3-year Capital Improvement Plan (CIP). Over the course of the last several years, the planning has been expanded to a 5-year window. Previous CIPs have included the current approved capital budget as the beginning year. After the 2018-2022 effort, a conscious decision was made to not include an approved budget year in subsequent 5-Year CIP efforts The 2022-2026 Five-Year CIP is presented via this memorandum and identifies near $260M in viable overall capital spending (near $165M in DMWW spending). Projects include treatment system expansion, water quality projects, and other reinvestments in the broad system. Funding requests from others are in excess of $90M.

The CIP is typically presented to the Board in the first quarter of each year. A comprehensive list of projects (mostly from long range planning efforts and special studies or investigations) is identified. Staff then trims this initial list and positions the costs for projects across the five-year time window. The annual budgeting process is closely linked to this effort and follows in the second and third quarters of the year. The budgeting process includes a further narrowing of the CIP list for the next budget year and is aligned with available funding.

Throughout its history, Des Moines Water Works (DMWW) has completed a variety of long-range planning documents to provide guidance for treatment, distribution, and other utility needs. Most recently, DMWW consulted with consultants CH2M and HDR to complete the DMWW Long Range Plan 2017. The DMWW Long Range Plan 2017 stands to serve as a guidepost for the next several years.



The work for this planning document was broad and intensive. It included:

- Population and water demands until 2040 for the metro area (wholesale customers participated in this effort)
- Standards of service for the entire system
- Hydraulic modeling of both Des Moines and regional distribution systems
- More than $625M in project costs (2016 dollars) for source, treatment, pumping, storage, and transmission improvements until 2040
- A water main replacement model with main break targets (breaks per 100 miles of pipe) through 2040 for the Des Moines water distribution systems

All departments participate in the CIP process by identifying the capital needs within their respective areas. The components of the CIP completed by the Engineering Services Department is more comprehensive because projects range from the "unsafe to consume" source water all the way through the process of delivering "safe to consume" finished water at customers' taps.

Key 2021-Q1 Efforts Impacting 2022-2026 CIP

DMWW again consulted with HDR in the first quarter of 2021 to complete a DMWW Long Range Plan Update and Progress Report. A key element of this effort was to determine if the timing of key projects included in the original plan could be delayed by evaluating recent average-day and peak-day customer demands. HDR collected five more years of operational data from metro area water producers and included new water demands that were unknown at the time of the original long range plan. Based upon the data and related analysis, the report concluded that key projects should not be delayed, and in fact, consideration should be given to expediting or altering the order of key "expansion" projects.

An existing agreement with the United States Geological Service (USGS) was modified via amendment to allow greater hydrogeologic investigations to be conducted along the Des Moines River between Saylorville Reservoir and Prospect Park. This broader investigation sets the table for projects that will allow greater water withdrawal from the Des Moines River alluvium, improving water quality at the Fleur Drive Water Treatment Plant (FDWTP) and providing additional raw water for the 10 million gallons per day (MGD) expansion of the Saylorville Water Treatment Plant (SWTP).

2022-2026 CIP

The 2022-2026 CIP continues to embrace many of the themes presented in the most recent 5-Year CIP, but there are also a few adjustments. A summary of this CIP is as follows:

- A number of previously-identified projects (storage tank aeration, etc.) to counter disinfection byproduct (DBP) issues have been left out.
- A number of previously-identified projects (park wetland, ion exchange system expansion, etc.) to counter nitrate concentration issues have been left out.
- In place of the DBP and nitrate projects, staff feels strongly that garnering more source water from the Des Moines River alluvium is most beneficial. Water from this source is not only beneficial for nitrate and DBP issues, but also provides benefits in regard to ammonia, cyanobacteria, and cyanotoxin issues which have created significant operational challenges in recent years. Blending of source waters remains one of the most powerful pre-treatment options at our disposal. This CIP includes refined estimates that would call for nearly 25 MGD of Des Moines River alluvium water to be directed to the FDWTP. Significant investments of near $30M will be required.

- The window of this CIP recommends completing all elements of a 10 MGD expansion of SWTP. This involves both source and treatment projects, but also a few key transmission projects. Significant investments near $70M will be required.
- With a clearer focus on both the Des Moines River alluvium and the expansion at SWTP projects, this CIP will not recommend some previously included water quality and capacity projects at McMullen Water Treatment Plant (MWTP). It is now recommended that an additional collector well and an effort to bring permanence to the Crystal Lake facilities now be deferred.
- The integration of DMWW ASR #4 (Joint Eastside Booster) is included to assist with addressing peak-day demands. Outside of this document and planning, Waukee is progressing with the integration of an ASR within their system. Each of these ASR units will play a key role in providing production volumes to aid in meeting peak-day demands.
- This CIP continues to recommend aggressive reinvestment in water main replacement. Efforts by HDR communicate that DMWW needs to nearly triple its historical reinvestment levels to maintain or slightly improve main break statistics. Escalations beyond that level are also recommended to allow for a target annual break rate of 20 main breaks per 100 miles of piping by 2040. DMWW, within the past few years, has begun to invest more in main replacement to move toward the report recommendations. This CIP reaffirms the importance of remaining vigilant with our distribution system reinvestment.

A quick comparison of the CIP efforts is as follows (includes only DMWW financial commitments, not project funding by wholesale customers):

	Year 1	Year 2	Year 3	Year 4	Year 5	Totals
2015-2017	$12.0M	$19.0M	$21.4M			$52.4M
2016-2020	$10.8M	$48.1M	$57.0M	$49.6M	$18.2M	$183.7M
2017-2021	$18.9M	$55.7M	$38.2M	$33.9M	$31.5M	$178.2M
2018-2022	$17.3M	$39.5M	$41.6M	$31.4M	$56.5M	$186.3M
2020-2024	$43.3M	$43.4M	$35.0M	$53.8M	$70.6M	$246.1M
2021-2025	$31.2M	$52.8M	$54.6M	$46.0M	$37.3M	$221.9M
2022-2026	$28.2M	$30.5M	$31.4M	$40.1M	$34.6M	$164.8M

The 2022-2026 CIP seems to indicate a significant reduction in scope and cost relative to the 2021-2025 CIP. This is the case, as efforts on this most recent CIP were targeted and focused to identify the most important projects for DMWW to consider over the next five years. Funding will be discussed later in this memorandum, but significant financial commitments will be needed to accomplish the key elements (SWTP expansion, Des Moines River Alluvium, and ASR #4) of this leaner CIP.

A number of details about the CIP have been summarized in the following attachments:

- 2022-2026 5-Year CIP Condensed
- 2022-2026 5-Year CIP Engineering Component (Comprehensive List)

Even with a leaner CIP, the figures reaffirm that it is critical we continue to grow our available capital funding.

Funding

DMWW has several funding options for the utility's CIP commitments:

Rate Revenue

Our first source for funding capital improvements is our annual revenue. In the approved 2021 budget, $23.5M of capital spending was funded by revenue. Assuming an annual increase in this amount from annual rate increases, we might expect revenue funding for capital to total approximately $120M over the 2022-2026 CIP. This leaves a funding gap of approximately $50M, and it will be necessary to look to other funding sources.

Sell Purchased Capacity

For the construction of expansion projects in recent history, such as the McMullen Water Treatment Plant and Saylorville Water Treatment Plant, DMWW has relied on the sale of purchased capacity to fund project costs. The $70M related to construction of 10 MGD of additional source, treatment capacity, and transmission at SWTP could be funded through the sale of purchased capacity. Several wholesale customers have indicated in recent years they are interested in purchasing more capacity in DMWW's system. Selling purchased capacity is an attractive option in that it would help protect the interests of Des Moines customers; in purchasing capacity, participating wholesale customers would be signaling their intent to continue being served by DMWW which helps ensure Des Moines customers are not later saddled with the burdensome costs of a stranded treatment expansion.

Debt

Historically, DMWW has been conservative in issuing debt. DMWW sets water rates at a level that enables us to fund capital expenditures on a "pay as you go" basis. That works well for smaller projects and single-year projects, but not for large-scale projects, such as treatment expansion and broad alluvial well field expansions, that require a large amount of cash available up front. Borrowing is the best way to accommodate the necessary cash flow. The downside of borrowing is that, even with favorable bond interest rates, debt results in higher project costs because the utility pays back much more than we borrow.

DMWW has the debt capacity to issue approximately $110M of water revenue bonds. After establishing a bond reserve fund and paying issuance costs, net proceeds available to spend will be around $100M. Total debt service payments over 20 years will be approximately $145M or $7.25M annually. The combination of $120M of funding from revenue and $100M of bond proceeds provides more than sufficient capital funds available to meet this CIP.

The uncertainty of whether regionalization will move forward, and in what timeframe, makes issuing debt complicated. While DMWW will continue to exist after regionalization, it will change the nature of our business significantly. The uncertainties related to regionalization could impact the utility's bond rating and ultimately the pool of prospective buyers of our bonds. More importantly, bond covenants normally contain a clause that pledges all assets of the issuer and prohibits the sale or transfer of those assets. Issuing bonds would prohibit DMWW from transferring assets to a regional entity while the bonds remain outstanding. Although bonds contain call provisions that allow them to be paid off early, it is usually prohibited in the first five years, the period when a regional utility would be expected to form. Accessing State Revolving Fund (SRF) loans through the Iowa Finance Authority is an alternative borrowing option that may

make the eventual transition to a regional entity more manageable in terms of structuring a flexible solution for any existing debt.

Conclusion

Staff believes the 2022 – 2026 CIP is a realistic and necessary plan that allows the utility to continue to provide a high level of service to customers and enables the utility to meet growing demand by wholesale customers.

Staff will begin work on the 2022 operating and capital budgets in June, which the Board will approve in the fall. The CIP will provide the basis for the 2022 capital budget, with further refinement of the numbers and a more detailed funding plan to occur as we progress through the budget development process.

Des Moines Water Works
5 Year CIP
2022-2026

	2022	2023	2024	2025	2026	5 Year
Customer Service - Meters, MTUs	$ 1,376,947	$ 1,418,508	$ 1,489,433	$ 1,563,905	$ 1,642,100	$ 7,490,894
Information Technology						
Normal Replacement	573,000	778,000	463,000	528,000	428,000	2,770,000
PeopleSoft Replacement	2,375,000	1,775,000	-	-	-	4,150,000
Water Distribution	1,442,989	1,486,281	1,530,883	1,576,817	1,624,121	7,661,091
Water Production						
Vehicle & Equipment Replacement	800,000	800,000	500,000	500,000	500,000	3,100,000
Normal WP Replacement	1,000,000	1,030,000	1,060,900	1,092,727	1,125,509	5,309,136
DEPARTMENTS w/o Engineering	**$ 7,567,937**	**$ 7,287,788**	**$ 5,044,216**	**$ 5,261,449**	**$ 5,319,730**	**$ 30,481,120**
Engineering						
Plant/Raw Water Capacity	$ 3,356,773	$ 13,392,282	$ 20,655,290	$ 21,378,225	$ 18,513,691	$ 77,296,261
Transmission Capacity	499,743	4,913,081	2,403,025	-	-	7,815,849
Water Quality	3,273,124	2,468,526	9,580,968	9,916,302	10,263,372	35,502,292
Water Main Replacement	10,746,531	11,282,463	11,511,953	12,129,527	12,331,891	58,002,365
Core Network	5,646,979	5,790,547	4,084,615	5,736,309	5,193,499	26,451,950
DMWW Capital	1,835,071	4,149,339	1,311,059	9,799,021	1,600,177	18,694,667
Work for Other Entities	-	-	3,326,154	-	-	3,326,154
	-	-	-	-	-	-
TOTAL ENGINEERING	**$ 25,358,221**	**$ 41,996,237**	**$ 52,873,063**	**$ 58,959,384**	**$ 47,902,631**	**$ 227,089,537**
TOTAL UTILITY	**$ 32,926,158**	**$ 49,284,026**	**$ 57,917,280**	**$ 64,220,833**	**$ 53,222,361**	**$ 257,570,657**
Total Funding by Other Entities	***$ 4,713,147***	***$ 18,820,619***	***$ 26,467,585***	***$ 24,087,185***	***$ 18,602,729***	***$ 92,691,266***
CIP FUNDED BY DMWW	**$ 28,213,010**	**$ 30,463,406**	**$ 31,449,694**	**$ 40,133,648**	**$ 34,619,632**	**$ 164,879,391**

ENGINEERING CIP
2022-2026

4/8/2021

			TOTAL PROJECT COST (does not include funding by other entities)					
Category	**Work Plan**	**Project**	**2022**	**2023**	**2024**	**2025**	**2026**	**2022-2026**
Plant/Raw Water Capacity	**Raw Water Maffitt**	Flynn Property Purchase	162,564	168,253	174,142	180,237	186,545	871,742
		New Radial Collector Well	-	-	3,372,560	3,490,600	-	6,863,160
	SWTP	Expansion of Raw Water	1,530,917	6,337,998	8,199,785	8,486,778	8,783,815	33,339,294
		Expansion to 20 MGD	1,243,480	5,148,009	6,660,236	6,893,344	7,134,611	27,079,680
	New ASR Wells	ASR Well - Joint East Side DMWW #4 (Joint Eastside Booster)	419,812	1,738,022	2,248,565	2,327,265	2,408,720	9,142,384
Plant/Raw Water Capacity Total			**3,356,773**	**13,392,282**	**20,655,290**	**21,378,225**	**18,513,691**	**77,296,261**
Transmission Capacity	**Core Network Feeder**	SWTP - West Feeder Main Ph 3 Const	499,743	4,655,107	-	-	-	5,154,850
		Tenny to LP Moon Feeder Connection	-	257,974	2,403,025	-	-	2,660,999
Transmission Capacity Total			**499,743**	**4,913,081**	**2,403,025**	**-**	**-**	**7,815,849**
Water Quality	**FDTP**	CO2 Feed	2,192,290	-	-	-	-	2,192,290
		DM River Well Field	596,262	2,468,526	9,580,968	9,916,302	10,263,372	32,825,430
		West Low Lift Pump Install	484,571	-	-	-	-	484,571
Water Quality Total			**3,273,124**	**2,468,526**	**9,580,968**	**9,916,302**	**10,263,372**	**35,502,292**
Water Main Replacement	**Core Network Feeder**	Polk County to Alleman/SEP Connection (Move to Joint NW Collection)	-	-	-	214,656	-	214,656
	WMR - DM	PVC to DI Replace	-	159,803	-	-	-	159,803
		WMR - Des Moines	8,030,974	8,312,058	8,602,980	8,904,084	9,215,727	43,065,823
	WMR - Pleasant Hill	PHill CIP TBD WMR	257,094	266,092	275,406	285,045	295,021	1,378,658
	WMR - Polk County	WMR - Polk County	2,020,866	2,091,596	2,164,802	2,240,570	2,318,990	10,836,825
	WMR - Windsor Heights	WMR - Windsor Heights	437,597	452,913	468,765	485,172	502,153	2,346,599
Water Main Replacement Total			**10,746,531**	**11,282,463**	**11,511,953**	**12,129,527**	**12,331,891**	**58,002,365**
Core Network	**Core Network Feeder**	Army Post - Maffitt - FD Remote Valve FUNDED	715,227	-	-	-	-	715,227
	FDTP	5kv Switch Gear Controls Upgrade	227,700	-	-	-	-	227,700
		Backwash Return	-	260,770	-	-	-	260,770
		Diesel Pump Fuel Containment	-	307,977	-	-	-	307,977
		East Low - East High Flood Protection	312,476	-	-	-	-	312,476
		FDWTP Bulk Sodium Hypochlorite Storage/Feed Bldg	-	-	-	2,044,346	2,115,898	4,160,244
		FDWTP Raw Water Metering Improvements	-	826,982	-	-	-	826,982
		Filter Media Replacement (4)	736,640	762,422	789,107	816,726	-	3,104,896
		Fleur Filter Control Valves	83,318	86,234	89,252	92,376	-	351,179
		Gallery - Valves (ongoing)	341,460	-	-	-	-	341,460
		Lime Slaker Replacement	-	-	-	659,051	-	659,051
		Lime Slurry Waste Junction	-	-	237,607	-	-	237,607
		SCADA Network Improve	680,548	704,368	-	-	-	1,384,916
		Treatment Basin Rechain (ongoing)	376,000	389,160	402,781	416,878	431,469	2,016,287
		VFD High Lift Pumps	534,726	-	-	-	-	534,726
		WHL Discharge Header Paint	172,665	-	-	-	-	172,665
	MWTP	Clear Well Drainage	149,762	-	-	-	-	149,762
		Ferric Chloride Expansion	188,060	-	-	-	-	188,060
		HSP Room HVAC Upgrades	148,781	-	-	-	-	148,781
		Splitter Box TOC Sample Line	102,457	-	-	-	-	102,457
	Raw Water Maffitt	MWTP Raw Water Metering Improvements	-	-	329,202	-	-	329,202
		Rehab Collector Wells	-	783,758	-	839,581	-	1,623,340
		Well #6 Lateral Installation	310,500	-	-	-	-	310,500

Category	Work Plan	Project	2022	2023	2024	2025	2026	2022-2026
Core Network	**Raw Water Maffitt**	Well Isolation Valves	-	107,279	-	-	-	107,279
	SWTP	Chemical Storage Improvements	-	-	623,535	-	-	623,535
		Floor and Drain Repairs	89,269	-	-	-	-	89,269
		Rehab Collector Wells	-	-	735,861	-	-	735,861
		RO CIP Redundancy	-	-	-	-	273,168	273,168
		RO Membrane Replacement (ongoing)	210,213	217,570	225,185	233,066	241,224	1,127,257
		SWTP Raw Water Metering Improvements	-	-	-	-	119,901	119,901
		UF CIP Redundancy	-	-	-	263,930	-	263,930
		UF Membrane Replacement	-	-	-	-	521,693	521,693
	WMR - DM	Air Valve Replacement	267,179	276,530	286,208	296,226	306,594	1,432,736
	Facility Management	DM River Isolation Valve/Parco System	-	-	365,877	-	-	365,877
		Riverbank Protection	-	1,067,497	-	-	1,183,553	2,251,050
		Wilchinski Comm Bldg	-	-	-	74,129	-	74,129
Core Network Total			**5,646,979**	**5,790,547**	**4,084,615**	**5,736,309**	**5,193,499**	**26,451,950**
DMWW Capital	**Core Network Feeder**	Alleman/SEP Booster Station (Move to Joint NW Collection)	-	-	-	1,216,386	-	1,216,386
		Purchase Remaining Capacity in Polk City Feeder	-	143,449	-	-	-	143,449
		Unincorporated Polk County Pressure Reducing Stations (Optional)	-	-	-	-	606,557	606,557
	Development Plan Review	Development Plan Review	258,636	267,688	277,058	286,755	296,791	1,386,928
	Joint NW Storage, PS, Feeder	Convey SEP Alleman	-	-	-	1,922,230	-	1,922,230
		NW - Storage Tank	159,533	-	-	5,719,017	-	5,878,550
	Facility Management	FDT - HVAC	-	-	532,271	-	-	532,271
		FDTP - Building Improvements	-	339,678	-	363,872	-	703,550
		FDTP - North Parking Lot Repl	127,195	-	-	-	-	127,195
		FDTP Chemical Bldg Stairwell	42,686	-	-	-	-	42,686
		FDTP Safety Showers & Tempering	-	150,612	155,884	-	-	306,496
		Fleur Drive Access Gates	-	-	64,919	-	-	64,919
		Fluoride Room Improvements	-	56,573	-	-	-	56,573
		Hazen Int/Ext Paint	-	967,923	-	-	-	967,923
		Lab Waterproofing	-	64,221	-	-	-	64,221
		LP Moon Sewer Lift Station Rehabilitation	297,563	-	-	-	-	297,563
		Main Office Building Improvements	289,962	-	-	-	-	289,962
		MWTP Safety Showers & Tempering	-	-	155,884	161,340	-	317,224
		Roof Replace & Repairs	-	386,716	-	-	428,759	815,475
		Safety Compliance	56,424	58,399	60,442	62,558	64,748	302,570
		Security Cameras	-	81,399	-	-	90,248	171,647
		SEP/Bondurant PS Corrosion System	-	90,800	-	-	-	90,800
		SEP/Bondurant PS Hypo& Ammonia Storage	-	530,558	-	-	-	530,558
		Standpipe Foundation (2)	-	159,724	-	-	-	159,724
		Tenny Standpipe Int/Ext Paint	-	749,612	-	-	-	749,612
		Trimble GPS Equipment	-	39,568	-	-	43,869	83,437
	WMR - Pleasant Hill	PHill CIP TBD DMWW Capital	603,073	62,418	64,603	66,864	69,204	866,161
DMWW Capital Total			**1,835,071**	**4,149,339**	**1,311,059**	**9,799,021**	**1,600,177**	**18,694,667**
Work for Other Entities	**Xenia Booster Station Upgrade**	Xenia Booster Station Purchase and Upgrade	-	-	3,326,154	-	-	3,326,154
Work for Other Entities Total			**-**	**-**	**3,326,154**	**-**	**-**	**3,326,154**
Grand Total			**25,358,221**	**41,996,237**	**52,873,063**	**58,959,384**	**47,902,631**	**227,089,537**