2019

OPERATING BUDGET & CAPITAL IMPROVEMENTS PLAN

ADOPTED
Oct. 25, 2018

Madison Metropolitan Sewerage District

Front cover: Network Technician Michael Bowman checks server connections that are essential to the district's operations.

GFOA AWARD

The Government Finance Officers Association of the United States and Canada (GFOA) presented a Distinguished Budget Presentation Award to Madison Metropolitan Sewerage District for its annual budget for the fiscal year beginning Jan. 1, 2018. In order to receive this award, a governmental unit must publish a budget document that meets program criteria as a policy document, as an operations guide, as a financial plan and as a communications device. This award is valid for one year only. We believe our current budget continues to conform to program requirements and we are submitting it to GFOA to determine its eligibility for another award.

MADISON METROPOLITAN SEWERAGE DISTRICT COMMISSION

Madison Metropolitan Sewerage District is governed by nine commissioners serving staggered terms. For 2019, the commission includes Thomas Hovel, president; Ezra Meyer, vice president; Angela James, secretary; Kenneth Clark; Sara Eskrich; James Martin; Brad Murphy; Mary Swanson; and Thomas Wilson.

President
Thomas Hovel

Vice President
Ezra Meyer

Secretary
Angela James

Commissioner
Kenneth Clark

Commissioner
Sara Eskrich

Commissioner
James Martin

Commissioner
Brad Murphy

Commissioner
Mary Swanson

Commissioner
Thomas Wilson

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SECTION ONE

INTRODUCTION TO THE DISTRICT BUDGET

The Nine Springs Wastewater Treatment Plant reclaims nutrients and recycles water for safe return to rivers and streams.

INTRODUCTION TO THE DISTRICT BUDGET

BUDGET MESSAGE

2019 BUDGET ADVANCES COMMUNITIES, ENVIRONMENT AND ECONOMY

Guided by priorities of the Madison Metropolitan Sewerage District Commission, the 2019 Operating Budget and Capital Improvements Plan advances public health, the environment and the economy in the 26 communities served by the regional sanitary sewer system.

On a strategic level, the plan dedicates funds to achieve district goals in five key areas related to the environment; community; employees; organizational effectiveness and infrastructure. At the same time, the 2019 spending and fund allocation decisions reflect the impact of national trends and organizational challenges including the need to plan for long-term regulatory compliance; secure the district's financial sustainability; and strengthen critical systems and relationships.

To carry out its mission, Madison Metropolitan Sewerage District manages three major categories of revenues and expenditures through an operating budget; a capital projects budget; and a debt service budget. For 2019, total revenue is projected at $40.7 million, up from a budgeted $37 million in 2018. Total expenditures are also budgeted at $40.7 million, up from a budgeted $37 million in 2018. The 2019 operating budget revenues and expenditures include a $1.2 million transfer from a general reserve fund to increase fund balances in the equipment replacement fund and capital projects fund for future needs beyond 2019.

The district does not charge or receive revenue directly from end users; instead its costs are passed through its 26 customer communities. In turn, these customer communities bill households directly using locally established cost recovery methods.

The impact of expenditures on households receives careful scrutiny and the district works in partnership with customer communities to provide for equitable allocation of costs while maintaining affordability. For 2019, the district's planned revenues and expenditures are projected to result in average household service charges of $195, up 6 percent from $184 in 2018. The increase amounts to 92 cents per month for an average residential customer in the City of Madison. The projected impact on households is slightly below the total budgeted increase in service charges of 6.3 percent.

Over the next seven years, upward pressure on general service charges will be reduced by a commission decision to more fully recover the costs of providing service to new developments through a change in the connection charges rate structure.

Among the strategic actions supported by the 2019 operating budget:

- Development of an energy policy and management plan.
- The launch of several initiatives related to information systems and technology including initial steps to replace the district's computerized maintenance management system.
- Continued investment in the district workforce including a market wage increase, inclusion and diversity training and development of a campus security plan.
- Initiatives to improve water quality by reducing phosphorus and chloride loading while finding new markets for nutrients reclaimed from the wastewater treatment process.
- Efforts to engage the Madison Metropolitan Sewerage District Commission and stakeholders on district policies and "One Water" outcomes.

Among the infrastructure priorities addressed through the 2019 capital budget:

- Treatment plant improvements related to the 2016 liquid processing facilities plan including the addition of hydraulic capacity to the plant, rehabilitation of a 54 inch influent line and construction of a new unit substation building;
- Replacement of potable and hot water piping in the solids handling tunnels at the treatment plant;
- Replacement of a portion of the Southwest Interceptor on Haywood Drive in the City of Madison between Wingra Drive and West Shore Drive.
- Installation of a new relief sewer for the Northeast Interceptor between Pumping Station 13 and Lien Road in the City of Madison.

The 2019 budget supports district efforts to collect and treat wastewater in a manner that is consistently safe, reliable, efficient, environmentally responsible and innovative. Through the support and engagement of the commission, district staff, customer communities and stakeholders, the 2019 budget provides for continued progress as the district works to enrich life through clean water and resource recovery.

Michael Mucha, P.E., ENV-SP
Chief Engineer and Director | Madison Metropolitan Sewerage District

OVERVIEW AND STRATEGIC PLANNING

To improve the lives of community members through clean water and resource recovery, Madison Metropolitan Sewerage District develops an annual budget that reflects strategic goals; short-term organizational factors; and issue-driven challenges likely to shape district priorities in the months and years ahead.

Delivering regional wastewater services that advance public health, the environment and the economy requires forward thinking leadership and vigilant fiscal management. While the district's method of collecting, transporting and treating wastewater has proven reliable for more than 80 years, changing public expectations and increasingly stringent permit requirements point to the need for new management approaches and budget initiatives that extend beyond the traditional focus on infrastructure.

At the same time, challenges related to the district's aging physical assets and complex information system needs threaten to compound community concerns over affordability given the long-term decline in federal grant funds.

2019 Budget Highlights

The 2019 budget identifies:

- Strategic goals and related spending including a comprehensive program to evaluate district assets and plans for replacing aging information technology systems to support strategic decision making;
- Short-term organizational factors such as rising preventive maintenance needs and repair costs; and
- Issue-driven priorities including an energy management policy to establish infrastructure investment priorities, improve resiliency and expand use of renewable energy sources.

Figure 1 highlights the way in which strategic factors, short-term organizational factors and issue-driven priorities influence budget initiatives that combine to achieve desired economic, social and environmental outcomes needed for sustainability.

Strategic Goals: Influencing Factors, Initiatives And Outcomes

The principal federal program to aid municipal wastewater treatment plant construction was authorized as a grant program through the Clean Water Act in 1972. It was amended in 1987 to function as a state revolving fund.[1] During the program's early years, Congress provided wastewater grant funding directly to municipalities at a federal cost share rate of 55 percent while state and local governments were responsible for the remaining 45 percent. As a result of the 1987 change, responsibility for 100 percent of project costs shifted to local communities and sewerage districts because the revolving fund loans must be repaid to the states.[2]

Even as federal aid has diminished, federal and state regulatory requirements have increased.[3] Meanwhile, the infrastructure originally put in place with the federal grant money is now aging and in need of replacement or rehabilitation at greater cost to local ratepayers. Public expectations for effective management and community engagement are also on the rise.[4]

The district's 2019 budget addresses these high-level influencing factors through several strategic initiatives designed to achieve organization-wide goals. On a strategic level:

- To advance the district's financial sustainability, the 2019 budget contains a provision to transfer $1.2 million from the district's operating fund to the capital fund. The $1.2 million includes $300,000 of anticipated continuing annual transfers and $900,000 in one-time, exceptional service charge revenues. Over time, similar continued transfers will reduce reliance on debt funding resulting from diminished federal grant aid and improve the district's financial structure. The district also is developing a long-term financial strategy to address affordability concerns and move to more cash financing of capital expenses.
- To further advance financial sustainability and prioritize major infrastructure replacement and rehabilitation projects, the district is implementing a comprehensive asset management program. This includes a plant asset management plan and reliability-centered maintenance practices.

FIGURE 1 | 2019 Budget Strategic Issues, Investments and Outcomes

Influencing factors

Strategic factors	Short-term organizational factors	Issue-driven priorities
Aging infrastructure, reduced federal grants	Strong economy, greater competition for workers	Better manage energy use, production
More data and analytical tools needed to support strategic decisions	Need to integrate more diverse workforce	Public concern over regional water quality
Rising community expectations	Increased repair and preventive maintenance costs	Need to develop additional markets for biosolids

Budget initiatives

Strategic factors	Short-term organizational factors	Issue-driven priorities
$1.2 million transfer from operating fund to capital fund	Increases for wages, benefits, contracts	Develop energy policy and management plan
Technology and information system plans, implementation	Inclusion and diversity initiative	Develop chloride and phosphorus management strategies
Increased community outreach	Increasing repair and maintenance budget	Metrogro budget increase

Desired outcomes

Strategic factors	Short-term organizational factors	Issue-driven priorities
Improved financial flexibility	Continued economically efficient operations	Sustainable energy management and use
Improved planning and strategic decision making	More successful work teams	Improved water quality through plan implementation
Greater public confidence	Continued reliable performance	Enhanced resource recovery and beneficial reuse

- Existing and new funds also will be directed to updating and enhancing the district's information systems and technology. Specific projects include the launch of a multi-year effort to identify and implement a suitable replacement for the district's computerized maintenance management system; and improve the security and usability of a variety of district database tools and implement Office 365.
- The 2019 budget also contains initiatives to strengthen the Madison Metropolitan Sewerage District Commission's policies and advance collaborative processes with district customers, stakeholders and the general public.

Outcomes of these investments will include enhanced economic resiliency for the district; long-term environmental gains based on more strategic infrastructure investment and management; and greater social sustainability as a result of increased public confidence in the district's management.

Short-Term Factors: Influencing Factors, Initiatives and Outcomes

During the past year, Wisconsin has set a number of economic performance records including maintaining a seasonally adjusted unemployment rate of less than 3 percent for six months.[5] The state ranks second in the nation in terms of manufacturing job growth for the past year[6] while in recent months, unemployment in the Madison metropolitan area has hovered at 2.4 percent.[7]

On a national level, employers report increased pressure to raise wages due to the increased competition for employees.[8] At the local level, the strong economy at times also creates challenges in obtaining sufficient competitive bids for some projects due to competing contractor commitments. As a result, district managers must evaluate project workload against projected expenses to determine whether district employees or contract firms offer the most cost-effective means to accomplish tasks.

An additional short-term organizational factor involves rising maintenance costs. While the 2019 budget supports a strategic pathway to systematically address major infrastructure needs, it also supports the very real short-term challenges associated with rising costs for replacement parts and equipment to complete repairs and perform preventive maintenance.

The district's 2019 budget addresses these short-term factors through several initiatives that aim to improve or maintain the level of service experienced by area communities while limiting upward pressure on rates. Among the efforts:

- To advance the district's economic sustainability including its competitive ability to hire and retain a skilled workforce, the 2019 budget contains a scheduled market adjustment of 2 percent and additional contract funds.
- To enhance collaboration and team success while welcoming a broader talent pool and building internal leadership skills, the district is implementing inclusion and diversity programs.
- In recognition of the rise in equipment repair and preventive maintenance costs, the budget contains a $300,000 increase that reflects recent expenditures in this area.

Outcomes of this spending include continued cost-effective operations by a balance of skilled employees and contract workers; a more successful and inclusive workforce and a higher level of performance with respect to equipment and infrastructure repair and replacement.

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[1] L.M. Pollock, "Financing Under the Clean Water Act: The Move From Federal Grants to State Loans," Journal of Contemporary Water Research and Education, 1991. http://opensiuc.lib.siu.edu/jcwre/vol84/iss1/4/.

[2] Jonathan L. Ramseur and Mary Tiemann, "Water Infrastructure Financing: History of EPA Appropriations," Congressional Research Service, Aug. 1, 2018; Summary. https://fas.org/sgp/crs/misc/96-647.pdf

[3] Wisconsin Administrative Code, NR105.06. https://docs.legis.wisconsin.gov/code/admin_code/nr/100/105/06.

[4] Nathan Brewer. "Four Forces Disrupting and Shaping the Future of Government," GCN, Technology Tools and Tactics for Public Sector IT, May 16, 2017. https://gcn.com/pages/about.aspx

Priority Issues: Influencing Factors, Initiatives and Outcomes

Providing wastewater services to citizens requires significant amounts of energy, leaving utilities vulnerable to rising costs, infrastructure investment challenges and operational difficulties as the desirability of different energy sources changes over time.[9] During 2017, the district used energy valued at an average of $294,370 per month at the plant, up nearly 12 percent from $263,464 in 2016.[10] Development of an energy policy represents a priority issue for the district.

For 2019, other issue-driven priorities include attention to chloride and phosphorus issues and the need for biosolids management options that go beyond the district's longstanding practice of injecting the valuable fertilizer into area farm fields. Over the past year, phosphorus issues in the region have come more sharply into focus, driving heated dialogue about water quality among elected officials and citizens.[11]

The district's 2019 budget addresses these issue-oriented priorities through policy and management actions that seek to avoid additional regulations and legislative-driven remedies. Among the 2019 efforts:

- An initiative to develop an energy policy and management plan that will improve resiliency and identify a preferred energy mix that accounts for the necessary replacement of the district's current energy production system.
- Funds to develop and implement a phosphorus management strategy for Badger Mill Creek that addresses social and regulatory concerns about water quality in the Sugar River Watershed beyond the district's ability to control phosphorus in its own outfall. A strategy to encourage chloride reduction also is being put in place.
- An increase of $82,900 is included for the Metrogro operation to purchase equipment and fund an environmentally beneficial effort to explore new markets for the district's biosolids, including further development of Class A products.

Outcomes of these initiatives are expected to include an energy use matrix that targets investments, improves resiliency and reduces pollution; robust community partnerships that identify new opportunities for chloride reduction and water quality improvement in the Sugar River Watershed; and expanded markets for the valuable fertilizer reclaimed through the district's wastewater treatment process.

STRATEGIC PLANNING

Mission, Vision and Work

The district's mission is to protect public health and the environment. This is an enduring mission. It started with the founding of the district in 1930 and will extend as long as the region generates wastewater. The district's vision brings focus on the twin elements of wastewater: cleaning water and recovering resources.

The district's mission and vision are at the top of the strategic plan diagram in Figure 2. These concepts are supported by five pillars of district work:

1. Environment. Increase recovery of resources and meet permit requirements.
2. Community. Deepen relationships with customer communities and the public.
3. Employees. Develop and invest in our co-workers.
4. Effectiveness. Increase organizational efficiency and excellence.
5. Infrastructure. Improve our facilities and information technology infrastructure.

Each area contains select objectives, projects or activities, the items within this budget. For example, the environment area includes work on chloride reduction, the biosolids market and energy management. The employee area includes wage and benefit increases and inclusion and diversity work.

Most of the district's day-to-day work is aimed at maintaining the performance of the district's collection system and the Nine Springs wastewater treatment plant. The district's mission to protect public health and the environment requires consistent performance and continued investment in the network of pipes and pumps running beneath its 184 square mile service area. This work keeps performance high, limits risk and meets permit requirements.

FIGURE 2 | Strategic Plan

FIVE PILLARS				
ENVIRONMENT	COMMUNITY	EMPLOYEES	EFFECTIVENESS	INFRASTRUCTURE
INITIATIVES				
Energy management project Phosphorus and chloride initiatives Metrogro investment	Affordability initiative Overall communication efforts Stakeholder and customer community engagement	Wage and benefit increases Campus security initiative Inclusion and diversity effort	Financial initiatives Outcomes policies Strategic planning	Plant and collection system operations and maintenance Information systems and technology implementation plans

Five Pillars of District Work

The district's mission is to protect public health and the environment. A variety of objectives, projects and activities support that mission. Strategic planning helps the district make smart choices on what to work on.

To help explain our work, the district organizes it into five pillars:

1. **Environment.** Increase recovery of resources and meet permit requirements.
2. **Community.** Deepen relationships with customer communities and the public.
3. **Employees.** Develop and invest in our co-workers.
4. **Effectiveness.** Increase organizational efficiency and excellence.
5. **Infrastructure.** Improve our facilities and information technology infrastructure.

However, many of the items highlighted in this budget are meant to be transformative. They are aimed at changing the district to meet new circumstances, improve performance or achieve new possibilities. Many of the items highlighted are related to the chief engineer and director's duties and are of special interest to the commission.

Strategic Planning

The district exists to address wastewater needs extending many decades into the future. Much of our physical infrastructure is designed and built to last on the order of 20 to 50 years. With maintenance, many assets should give service for centuries. Regular repair and replacement of parts extends the useful life of the district's infrastructure.

This long view requires planning further into the future than most governments, businesses and nonprofits do. To be effective, planning must be strategic. Strategic planning is not prediction. Strategic planners do not try to foresee the future — an impossible task. They try instead to shape it. Strategic planners ask what opportunities are possible in the future, consider which are most desirable and find pathways to achieve them.

Strategic planning is woven throughout the district. The strategic planning tool with the longest history in the district is facility planning. Facility plans are prepared for larger projects. Most recently, the district prepared a liquid process facility plan. The next such plan will address the collection system. A facility plan will be needed for plant energy projects in the near future. Facility plans are detailed documents, developed over several years of work. A facility plan identifies long-term pressures and opportunities. These include expected permit requirements; anticipated growth in connections and flow; and trends in technology, economics, and culture. Facility plans are prepared within the framework of the 50 year master plan, written in 2009.

On a shorter time scale, the district plans capital projects on a rolling six year schedule. The annual capital improvements plan identifies projects that are underway or will begin within the planning window. The projects are selected by a leadership team. Information to evaluate the costs and benefits of proposals come from relevant facilities plans and staff analysis. The capital improvements plan informs the annual capital budget, contained within this document.

The district is adding a new and more analytical source of information to guide capital project selection: comprehensive asset management. When fully implemented, asset management will identify assets in need of repair or replacement, based on objective risk criteria. An early approach to risk criteria has been applied to collection system projects within the capital improvements plan.

This budget includes $250,000 in additional spending related to the district's computerized maintenance management system. Funding will support a new system coordinator position to provide oversight and direction for the system. That work is needed to ensure the success of the district's new comprehensive asset management program, currently under development. Funding also will cover contract services to begin the transition to a new system. Future budgets will include greater funding for the full transition. Future amounts are unknown at this time but are expected to be in the millions of dollars.

The district is also improving its strategic planning of information technology. IT systems have a shorter lifespan than physical infrastructure, but strategic planning is equally important for IT. The district is following a strategic technology plan, developed in 2016. The plan calls for investments in key applications, strengthening of technology infrastructure, and enhanced user support. The strategic technology plan includes a governance component. This established teams that represent user needs; identify problems and opportunities; and raise certain issues to the executive level for evaluation from a district-wide and strategic perspective.

District project engineer Jen Hurlebaus leads a tour of Pumping Station 15 along with Middleton Mayor Gurdip Brar.

Summary

The district has a long and successful history of planning. The last section of the district's first annual report after its founding in 1930 was entitled "Plans for the Future." It addressed the pressing, but then long-term, problem of eliminating all effluent into the Madison lakes. Strategic planning remains woven throughout the district's work, from construction, through information technology and pollution prevention, to asset management and long-term capital plans.

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[5] Department of Workforce Development, July 2018 Unemployment Rates, Aug. 22, 2018. https://dwd.wisconsin.gov/dwd/newsreleases/2018/unemployment/180822_july_local.pdf

[6] Ibid.

[7] State of Wisconsin Department of Workforce Development, Wisconsin LMI Data Access. https://www.jobcenterofwisconsin.com/wisconomy/query

[8] Akin Oyedele, "Companies Across America Say They're Under Intense Pressure to Pay Workers More," Business Insider, March 9, 2018. https://www.businessinsider.com/companies-confirm-wage-growth-in-earnings-calls-2018-3

[9] "Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities," U.S. Environmental Protection Agency, 2008. https://www3.epa.gov/npdes/pubs/pretreatment_ensuring_sustainable_future.pdf

[10] Madison Metropolitan Sewerage District 2017 Annual Report. Energy Use Summary.

[11] Steve Verburg, "Many Help Clean and Study the Lakes but Progress is Elusive," Wisconsin State Journal, Aug. 5, 2018. https://madison.com/wsj/news/local/environment/many-help-clean-and-study-the-lakes-but-progress-is/article_f58a525e-d1d4-5ae9-9f92-6c29ad9510cb.html

BUDGET PROCESS

The purpose of the annual budgeting process is to ensure that the district has adequate resources to deliver its planned services during the upcoming year and in future years. As part of this process, the following questions need to be answered:

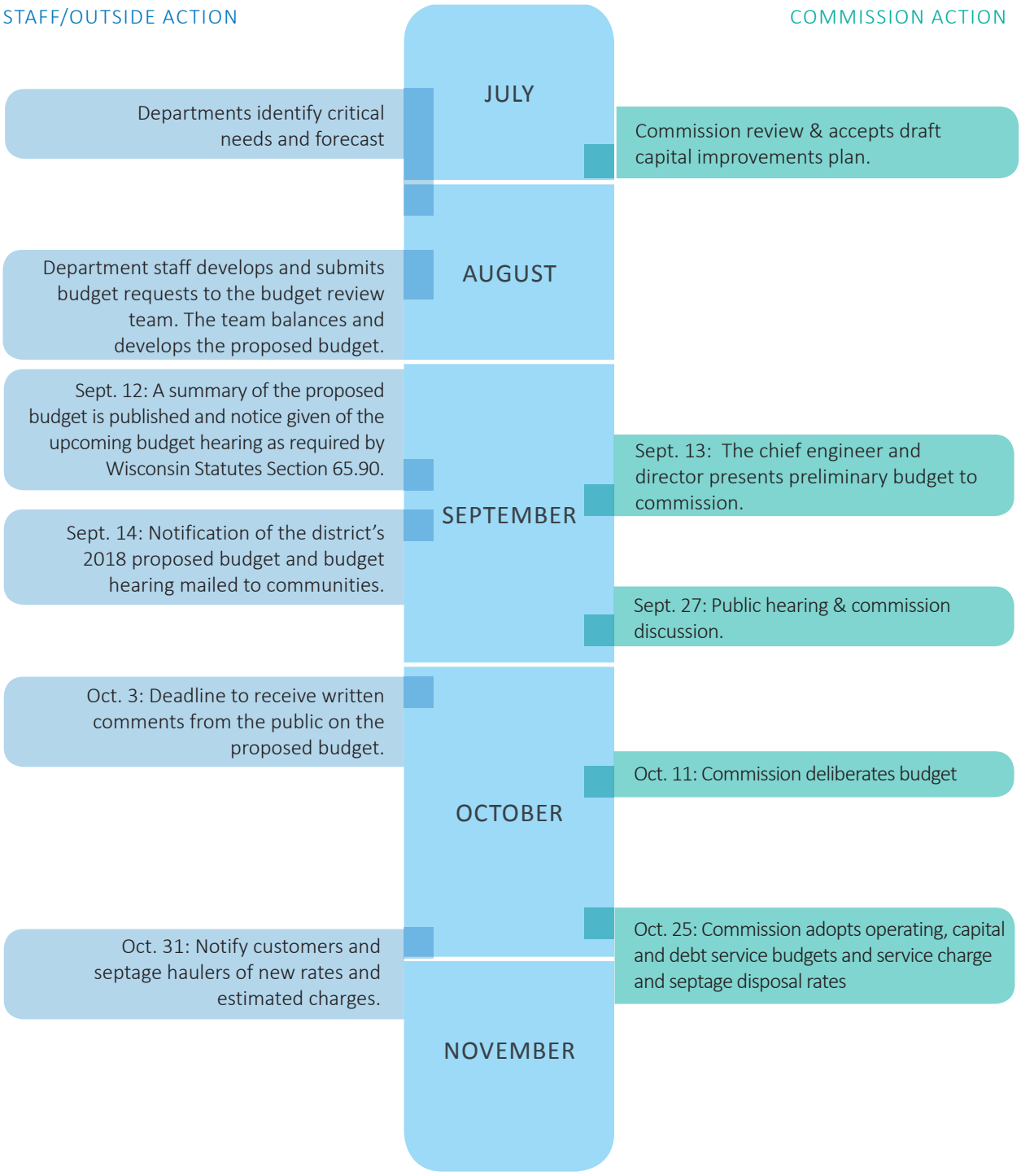
1. What are the estimated expenses for operating the district's facilities and programs next year?
2 What are the estimated costs for construction of new or replacement facilities over the next six years?
3. How much money can the district expect from the various revenue sources next year, and how much money will the district need to recover through service charges?
4. How much money will the district need to borrow to finance construction work?
5. How much money does the district need in the bank to ensure adequate cash flow, to fulfill promises made when borrowing money and to address unforeseen emergencies?

The annual budget process addresses the upcoming year's financial management plan in three areas:

1. The operating fund budget addresses the operation of facilities and includes recovery of future years' debt service costs to comply with promises made at the time the district borrows money to finance construction projects. Service charge revenue is the primary source of funds used to pay for the operation of facilities.
2. The capital projects fund budget addresses construction of new or replacement facilities. Larger projects are typically funded with proceeds from a Clean Water Fund loan. These loans are administered by the State of Wisconsin. The district uses its taxing authority as collateral for these loans; however, the intent is to repay these loans with revenues generated through service charges. Smaller construction projects are funded from reserves, including interest earned on the fund's investments.

Madison Metropolitan Sewerage District Commissioner Ezra Meyer, center, is joined by Commissioner Tom Wilson, left, and others at a meeting.

FIGURE 3 | 2019 Budget Calendar



3. The **debt service fund budget** addresses debt service, the annual principal and interest payments due on borrowed funds. When the district borrows money from the state in the form of a Clean Water Fund loan, the district promises to place the amount of the next year's debt service payments on the tax roll unless the debt service fund has a balance by Oct. 1 sufficient to make those payments. Since the district intends to repay its debt through service charges, each year's operating fund budget includes sufficient amounts of principal and interest in its operating expenses to fulfill this requirement. This money is transferred from the operating fund to the debt service fund prior to Oct. 1 each year to ensure that no debt service payments need to be placed on the tax roll.

Each year, the chief engineer and director submits proposed operating, capital projects and debt service budgets. These proposed budgets are typically submitted at the first commission meeting in September. After a public hearing and further consideration by the commission, the commission commonly approves the operating, capital projects and debt service budgets in late October (see **Figure 3**).

BUDGET AMENDMENT PROCEDURES

Amendments to the proposed operating, capital projects and debt service budgets, or to the approved budgets, can be initiated by either the commission or staff. Once the commission approves the budgets for the succeeding calendar year, amendments to the budgets must be approved by the commission as shown in **Table 1**.

BUDGET POLICIES AND PRACTICES

Several overarching policies and practices combine to form the district's approach to budgeting for the services provided by the district:

1. Users pay charges based on the cost of the service.
2. Operating costs are funded on a "pay-as-you-go" basis. Annual costs for operating the district's facilities are recovered from current users through the payment of service charges that reflect the customer's use of the service and the current costs of providing that service. The district does not use borrowed money to pay for current operating costs.
3. Construction of new facilities is financed primarily with debt. New facilities are built to last 20 years or more, and designed with sufficient capacity to handle increasing loads caused by expected growth over their useful lives. Debt for new facilities is generally paid back over a 20-year period. This spreads the upfront construction costs over those users that actually use the facility during its service life.
4. Detailed long-range planning helps to ensure stable rates and charges. The district's capital projects fund budget includes a six-year projection of construction-related expenses and revenues. The financial plan that evaluates the impacts of long-term borrowing on future budgets uses a 10-year projection.

TABLE 1 | Amendment Procedures

BUDGET	REQUIREMENTS FOR BUDGET AMENDMENTS
OPERATING	Any increase in the total authorized expenditures.
CAPITAL PROJECTS	Any increase in the budget total for the year. The addition of a new project not previously included in the adopted budget. Any increase to a previously approved total project cost.
DEBT SERVICE	Any change to the approved amount to be transferred from the operating fund to the debt service fund.

Maintenance worker Karen Bennett checks a hose connection in the tunnels running beneath the plant.

BUDGET POLICY GUIDANCE

A number of policies guide the preparation of the annual budget for each of the three district funds.

The operating fund budget policies:

1. Maintain a minimum fund balance equal to 180 days of the annual operating costs (does not include debt service), to ensure adequate cash flow capabilities.
2. Balance the budget by calculating the required service charge revenues so that total revenues equal total expenditures. Service charge rates are reviewed and set annually so projected flows and loadings will provide the required service charge revenue.

The capital projects fund budget policies:

1. Maintain a minimum fund balance of $3 million to fund any unforeseen project that may arise during the year.
2. Utilize reserve funds, interest earnings and connection charge revenues to pay project costs before borrowing additional funds, unless the estimated project cost significantly exceeds the sum of these sources. In such cases, money is borrowed to finance the project. Since the early 1990s, the Clean Water Fund program has been the lowest cost source of debt financing for the district. All district loans since 1992 have been through the Clean Water Fund program.

The debt service fund budget policies:

1. Maintain a minimum balance in the debt service fund to ensure that no debt service payments need to be placed on the tax roll.

DEFINITIONS

Fiscal year: The fiscal year for Madison Metropolitan Sewerage District begins on Jan. 1 of each year and ends on Dec. 31 of that year. The fiscal year is the accounting and budget year.

Enterprise fund: The district prepares its financial statements on an enterprise fund basis. Generally accepted accounting principles require state and local governments to use the enterprise fund to account for "business-type activities"– activities similar to those found in the private sector. Business type activities include services primarily funded through service charges.

Balanced budget: Madison Metropolitan Sewerage District is required to adopt a balanced budget each year. A balanced budget is one in which anticipated district revenues equal anticipated district expenditures for the fiscal year. The district

achieves this with the operating budget by offsetting expenditures with service charge billings, other operating income and fund reserves. The district's capital projects budget is balanced by offsetting total project expenditures with Clean Water Fund loans, connection charge revenues, fund reserves and all other capital projects fund income. The district's debt service budget achieves balance by offsetting total debt service expenses with funds transferred from the operating fund, debt service reserves and interest income.

Fund balance: Fund balance is the difference between the assets and liabilities of a fund. It is a measure of the amount available to budget or spend in the future.

Figure 4 summarizes the fund structure for the operating, capital projects and debt service budgets. The connection between the operating budget and the debt service budget is the transfer of service charge revenues to the debt service fund. The connection between the debt service budget and the capital projects budget is an indirect one. Loan proceeds are used to fund projects budgeted in the capital projects budget.

On the following page, Table 2 provides a combined summary of revenues and expenditures for 2017 through 2019.

FIGURE 4 | Fund Structure for Budgets

**Net operating expenses do not include transfers to the capital projects fund or the debt service fund.*

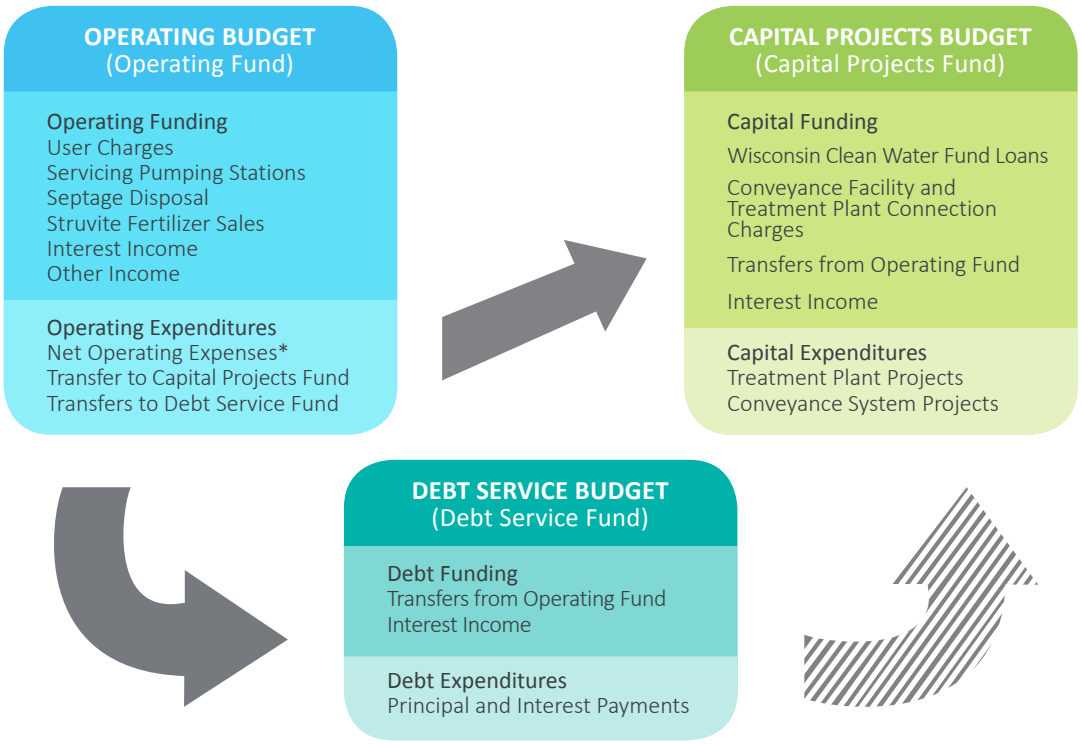


TABLE 2 | Combined Summary of Revenues & Expenditures

	2017 Actual	2018 Estimated	2018 Budget	Proposed 2019 Budget	Change from 2018 Adopted Budget	% Change
REVENUE CATEGORY						
OPERATIONS AND MAINTENANCE						
Sewer Service Charges	$33,368,000	$36,630,000	$35,432,000	$37,674,000	$2,242,000	6.33%
Septage Disposal Revenue	556,000	650,000	540,000	630,000	90,000	16.67%
Servicing Pumping Stations	399,000	338,000	344,000	429,000	85,000	24.71%
Struvite Fertilizer Sales	206,000	225,000	160,000	240,000	80,000	50.00%
All Other Operating Income	336,000	461,000	255,000	492,000	237,000	92.94%
Cash Reserves	-	-	300,000	1,200,000	900,000	300.00%
TOTAL OPERATIONS AND MAINTENANCE REVENUES	$34,865,000	$38,304,000	$37,031,000	$40,665,000	$3,634,000	9.81%
CAPITAL PROJECTS						
Clean Water Fund Loans	$4,495,451	$3,065,652	$1,857,000	$18,445,000	$16,588,000	893.27%
Interceptor and Treatment Plant Connection Charges	2,765,972	1,050,000	1,575,000	1,825,000	250,000	15.87%
Interest on Investments	56,984	95,000	32,000	100,000	68,000	212.50%
Contribution from Operating Fund	172,000	-	-	1,200,000	1,200,000	NMF
TOTAL CAPITAL PROJECTS REVENUES	$7,490,407	$4,210,652	$3,464,000	$21,570,000	$18,106,000	522.69%
DEBT SERVICE						
Transfer from Operating Fund	$13,684,000	$14,505,000	$14,505,000	$15,158,000	$653,000	4.50%
Interest on Investments	105,543	173,000	34,000	228,000	194,000	570.59%
TOTAL DEBT SERVICE REVENUES	$13,789,543	$14,678,000	$14,539,000	$15,386,000	$847,000	5.83%
TOTAL REVENUES *(net of transfers and reserves)*	**$42,288,950**	**$42,687,652**	**$40,229,000**	**$60,063,000**	**$19,834,000**	**49.30%**
EXPENSE CATEGORY						
OPERATIONS AND MAINTENANCE						
Administration, Engineering & Planning	$4,317,000	$5,320,000	$5,407,000	$5,788,000	$381,000	7.05%
User Charge & PreTreatment Program	548,000	627,000	710,000	639,000	(71,000)	-10.00%
Wastewater Collection	2,662,000	2,524,000	2,534,000	2,604,000	70,000	2.76%
Wastewater Treatment	10,722,000	11,361,000	11,464,000	12,221,000	757,000	6.60%
Effluent Division	68,000	100,000	117,000	122,000	5,000	4.27%
Metrogro Biosolids Reuse Program	1,597,000	1,621,000	1,606,000	1,687,000	81,000	5.04%
Capital Outlay	277,000	453,000	219,000	367,000	148,000	67.58%
Servicing Pumping Stations Owned by Others	399,000	338,000	344,000	429,000	85,000	24.71%
Contribution to Capitol Projects Fund	172,000	-	-	1,200,000	1,200,000	NMF
Contribution to Equipment Replacement Fund	100,000	125,000	125,000	450,000	325,000	260.00%
Transfer to Debt Service Fund	13,684,000	14,505,000	14,505,000	15,158,000	653,000	4.50%
TOTAL OPERATIONS AND MAINTENANCE EXPENDITURES	$34,546,000	$36,974,000	$37,031,000	$40,665,000	$3,634,000	9.81%
CAPITAL PROJECTS						
Nine Springs Wastewater Treatment Plant Projects	$669,331	$1,321,701	$1,479,000	$9,479,000	$8,000,000	540.91%
Interceptors	2,459,179	3,977,952	3,797,000	8,942,000	5,145,000	135.50%
Pumping Stations and Force Mains	2,906,638	2,011,894	2,035,000	4,469,000	2,434,000	119.61%
Capital Budget Expenses	551,085	484,000	618,000	494,000	(124,000)	-20.06%
TOTAL CAPITAL PROJECTS EXPENDITURES	$6,586,232	$7,795,547	$7,929,000	$23,384,000	$15,455,000	194.92%
DEBT SERVICE						
Principal Payments	$9,226,901	$9,506,000	$9,619,000	$9,868,000	$249,000	2.59%
Interest Payments	3,483,129	$3,307,000	3,400,000	3,216,000	(184,000)	-5.41%
TOTAL DEBT SERVICE EXPENDITURES	$12,710,030	$12,813,000	$13,019,000	$13,084,000	$65,000	0.50%
TOTAL EXPENDITURES *(net of transfers and reserves)*	**$39,886,262**	**$42,952,547**	**$43,349,000**	**$60,325,000**	**$16,976,000**	**39.16%**

NMF= No Meaningful Figure

TABLE 3 | Operating and Capital Projects Budgets Combined

	OPERATING	CAPITAL PROJECTS
SOURCES OF FUNDS	Service charges, servicing pump stations, struvite fertilizer sales, reserve funds, interest and other income	Wisconsin Clean Water Fund loans, conveyance facility and treatment plant connection charges, operating fund transfers, reserve funds and interest
USE OF FUNDS	Operating and maintenance expenses, debt service, capital outlay, transfers to capital projects fund	Project expenses and all other capital expenses
BUDGETARY BASIS OF ACCOUNTING	Actual revenues and expenses are recorded on a full accrual basis in accordance with generally accepted accounting principles. Revenues and expenses are budgeted on a full accrual basis, except capital outlays. These are budgeted as expense in the year incurred, but capitalized and depreciated for financial reporting purposes. Depreciation is not budgeted.	For financial reporting, actual revenues and expenses are recorded on a full accrual basis in accordance with generally accepted accounting principles. Revenues are budgeted on a cash basis. Because the capital budget serves as a financing plan, it is important to plan when revenues are received rather than when they are earned. Expenses are budgeted according to what is projected to be completed for that particular year.
BASIS FOR EXPENSE	Costs of operating and maintaining the sewerage system. Costs also include asset repair and replacement that is necessary to maintain the capacity and performance to meet the needs of the communities we serve, our regulatory requirements, and to protect the environment.	Costs of acquiring, purchasing, planning, designing, construction, extending and improving all or any part of the sewerage system.

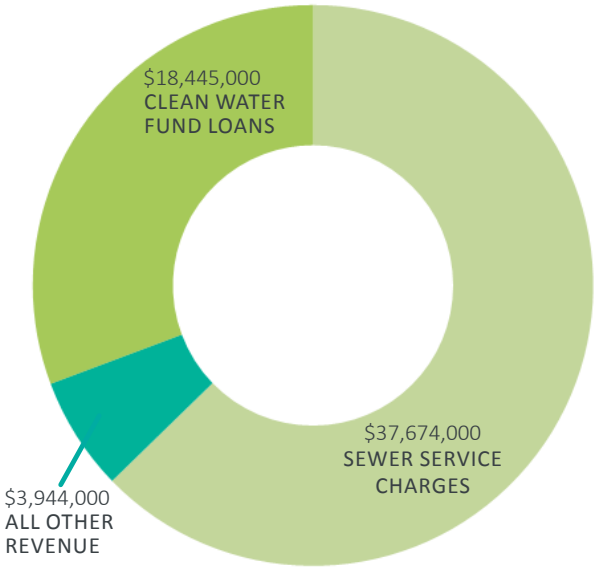
2019 COMBINED SUMMARY OF OPERATING, CAPITAL PROJECTS AND DEBT SERVICE

The district prepares its financial statements and budgets on an enterprise fund basis. The district's operating expenses are funded within the operating budget, the capital expenditures are funded within the capital projects budget and the debt service budget is funded by transfers from the operating fund. The operating fund is the main fund. The operating budget authorizes use of the operating fund. The capital projects budget authorizes use of the capital projects fund. The debt service budget authorizes use of the debt service fund.

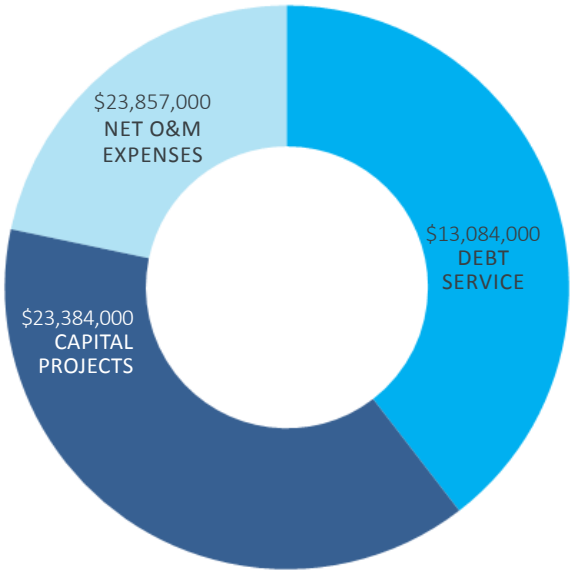
Table 3 provides details on the sources of funds, use of funds, basis of accounting and basis for accounting and expense in the operating and capital projects budgets

FIGURE 5 | 2019 Combined Summary of Revenues & Expenditures

2019 COMBINED SUMMARY OF REVENUE



2019 COMBINED SUMMARY OF EXPENDITURES



2019 COMBINED SUMMARY OF REVENUES AND EXPENDITURES

The district's 2019 combined budget totals approximately $60.1 million in revenue and $60.3 million in expenditures. Reserves from the operating fund and the capital projects fund will be used to balance the budgets. As seen in Figure 5, the primary sources of revenue in the 2019 combined budgets are sewer service charges, 62.7 percent, and Clean Water Fund loans, 30.8 percent. On the expenditure side, the capital budget comprises 38.8 percent of the 2019 combined budget while operations and maintenance of the district facilities net of debt service totals 39.5 percent. Debt service is 21.7 percent of the 2019 expenditures.

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SECTION TWO

2019 OPERATING BUDGET

OPERATING BUDGET OVERVIEW AND SUMMARY

The operating budget is the annual financing plan for the district's operating fund expenditures. The operating fund is the general fund of the district and accounts for revenues and expenses used to support daily operations and maintenance of all district facilities.

Table 4 summarizes the district's operating budget including expenditures, revenues and operating reserves for the years 2017 through 2019.

Figure 6 summarizes the revenues and expenditure categories for the proposed 2019 budget.

The proposed 2019 operating budget includes revenue of $40,665,000, up $3.6 million or 9.8 percent from a budgeted $37,031,000 for 2018. Operating revenues for 2019 include a $1.2 million use of reserves accumulated because of exceptional service charge revenues received in 2018. Operating expenses are also budgeted at $40,665,000, up $3.6 million or 9.8 percent from budgeted expenses of 37,031,000 in 2018. Revenue from sewer service charges, the largest single category of revenue, is expected to total $37,674,000, up $2.2 million or 6.3 percent from $35,432,000 budgeted in 2018.

For 2018, actual revenues are projected to total $38,304,000, up $1,573,000 from budget, while 2018 actual expenses are projected to total $36,974,000, $57,000 less than budgeted. The 2018 operating fund balance is projected to increase by $1,455,000 to $18,084,000 in 2018.

2018 Revenue Review

For 2018, revenues will be approximately $1,573,000 or 4.2 percent more than budgeted after accounting for the budgeted use of reserves. Projections were for estimated revenues from service charges to exceed budgeted totals by $1,198,000 largely because of high flows due to the late August and early September wet weather; revenues from interest to exceed budget by $169,000; septage disposal fees to exceed budget by $110,000; struvite fertilizer sales to exceed budget by $65,000 and miscellaneous income to total $45,000 more than budgeted.

Interest on investments was estimated to be $169,000 more than budgeted because of higher than expected interest rates. Septage revenues were anticipated to be $110,000 more than budgeted due primarily to higher than expected volumes of special hauled wastes. Struvite fertilizer sales were estimated to be $65,000 higher than budgeted due to greater than expected production of struvite. Miscellaneous income was estimated to be $45,000 more than budgeted primarily due to a larger than expected insurance dividend and the sale of a small piece of land. Annexation and plan review fees were estimated to be $31,000 below budget because of lower than expected development activity. Rent revenue was estimated to be $20,000 more than budgeted because a lessee was found for a property sooner than expected.

2018 Expenditure Review

The district anticipated expenditures for 2018 of $36,974,000, $57,000 or 0.15 percent less than the $37,031,000 budgeted. During the year, wastewater treatment expenditures were running under budget by $103,000, administration, engineering and planning under by $87,000, user charge and pretreatment under by $83,000, effluent diversion under by $17,000, wastewater collection under by $10,000 and servicing pumping stations owned by others under by $6,000. Items anticipated to run over budget included capital outlays, by $234,000 and the Metrogro program, by $15,000. The expenses for servicing pumping stations owned by others are offset by the revenue collected for that service.

2019 Revenues

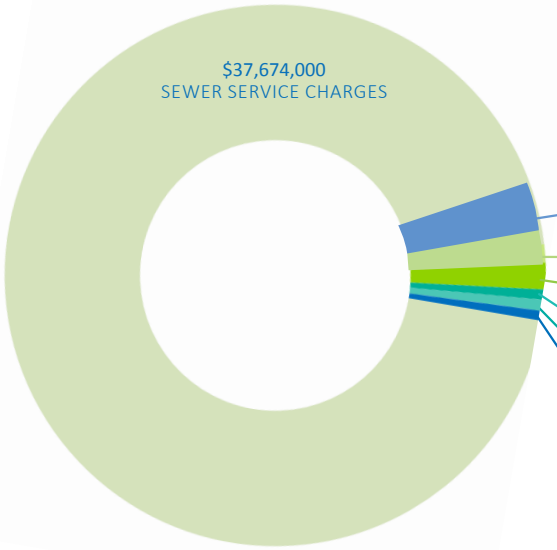
The budgeted revenues for 2019 of $ 40,665,000 million are 9.8 percent greater than budgeted revenues for 2018 of $37,031,000 million and 6.2 percent more than the estimated 2018 revenues of $38,304,000. For 2019, required service charge revenues will increase $2.2 million or 6.3 percent over the 2018 budgeted amount and $2.2 million over the estimated 2018 service charge revenues. The budgeted revenue increase includes the use of $1,200,000 of reserve funds realized from exceptional one-time 2018 revenues. Revenues from septage disposal are budgeted to increase by $90,000 to better match recent experience with these revenues. Revenues from servicing

TABLE 4 | 2019 Operating Budget

	2017 Actual	2018 Thru June	2018 Estimated Total	2018 Budget	2019 Budget	% Change
REVENUE CATEGORY						
Sewer Service Charges	$33,368,000	$17,814,000	$36,630,000	35,432,000	37,674,000	6.33%
Servicing Pumping Stations	399,000	153,000	338,000	344,000	429,000	24.71%
Rent	71,000	45,000	69,000	49,000	83,000	69.39%
Interest	52,000	75,000	188,000	19,000	230,000	1110.53%
Annexation and Plan Review Fees	66,000	48,000	68,000	99,000	60,000	-39.39%
Miscellaneous Income	123,000	75,000	111,000	66,000	93,000	40.91%
Septage Disposal Revenue	556,000	281,000	650,000	540,000	630,000	16.67%
Pretreatment Monitoring	24,000	-	25,000	22,000	26,000	18.18%
Struvite Fertilizer Sales	206,000	106,000	225,000	160,000	240,000	50.00%
Cash Reserves	-			300,000	1,200,000	300.00%
TOTAL REVENUES	$34,865,000	$18,597,000	$38,304,000	$37,031,000	40,665,000	9.81%
EXPENSE CATEGORY						
Administration, Engineering, and Planning	$4,317,000	$2,551,000	5,320,000	5,407,000	5,788,000	7.05%
User Charge & PreTreatment Program	548,000	249,000	627,000	710,000	639,000	-10.00%
Wastewater Collection	2,662,000	975,000	2,524,000	2,534,000	2,604,000	2.76%
Wastewater Treatment	10,722,000	5,608,000	11,361,000	11,464,000	12,221,000	6.60%
Effluent Diversion	68,000	42,000	100,000	117,000	122,000	4.27%
Metrogro Biosolids Reuse Program	1,597,000	556,000	1,621,000	1,606,000	1,687,000	5.04%
Capital Outlay	277,000	61,000	453,000	219,000	367,000	67.58%
Servicing Pumping Stations Owned by Others	399,000	153,000	338,000	344,000	429,000	24.71%
Contribution to Capital Projects Fund	172,000		-		1,200,000	NMF
Contribution to Equipment Replacement Fund	100,000		125,000	125,000	450,000	260.00%
Transfer to Debt Service Fund	13,684,000	-	14,505,000	14,505,000	15,158,000	4.50%
TOTAL EXPENDITURES	$34,546,000	$10,195,000	36,974,000	$37,031,000	40,665,000	9.81%
OPERATING FUND BALANCE						
BEGINNING BALANCE	$16,210,000	$16,629,000	$16,629,000	$16,244,000	$18,084,000	11.33%
TOTAL REVENUES LESS CASH RESERVES USED	34,865,000	18,597,000	38,304,000	36,731,000	39,465,000	7.44%
TOTAL EXPENDITURES LESS CONTRIBUTIONS TO ERF	34,446,000	10,195,000	36,849,000	36,906,000	40,215,000	8.97%
ENDING BALANCE	**$16,629,000**	**$25,031,000**	**$18,084,000**	**$16,069,000**	**$17,334,000**	**7.87%**

NMF = No Meaningful Figure

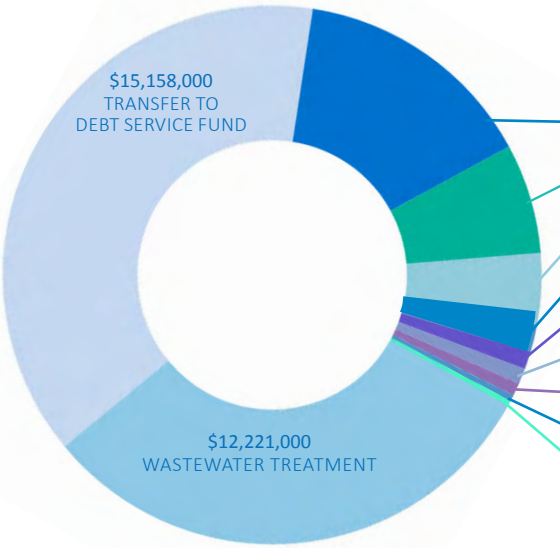
FIGURE 6 | 2019 Operating Budget



2019 OPERATING REVENUES

Total Operating Revenue $40,665,000

$1,200,000	USE OF RESERVES
$630,000	SEPTAGE DISPOSAL REVENUE
$429,000	SERVICING PUMPING STATIONS
$262,000	OTHER
$240,000	STRUVITE FERTILIZER SALES
$230,000	INTEREST INCOME



2019 OPERATING EXPENDITURES

Total Operating Expenditures $40,665,000

$5,788,000	ADMINISTRATION, ENGINEERING & PLANNING
$2,604,000	WASTEWATER COLLECTION
$1,687,000	METROGRO BIOSOLIDS REUSE PROGRAM
$,1,200,000	CONTRIBUTION TO CAPITAL PROJECTS FUND
$639,000	USER CHARGE & PRETREATMENT PROGRAM
$450,000	CONTRIBUTION TO EQUIPMENT REPLACEMENT FUND
$429,000	SERVICING PUMPING STATIONS OWNED BY OTHERD
$367,000	CAPITAL OUTLAY
$122,000	EFFLUENT DIVERSION

customers owned pumping stations are expected to increase by $85,000 because of additional planned maintenance for these stations. Revenues from struvite fertilizer sales are estimated to increase by $80,000 due to increased production. Based on interest rate trends, interest income is budgeted to increase to $230,000 from $19,000 last year. Annexation and plan review fees are projected to decrease by $39,000 and miscellaneous income to increase by $27,000 to better match recent experience with these revenues.

2019 Expenditures

The budgeted expenditures of $40,665,000 are $3.6 million or 9.8 percent more than the budget for 2018. Total operating budget expenditures for personnel related costs including salaries, benefits, payroll taxes and other items, will increase by $592,000 or 5.4 percent, to $11.6 million. Non-personnel related costs increase by $3 million, or 11.7 percent, to 29.1 million.

The personnel services increase is due to:

- A 2 percent market increase for all employees and a catch-up provision for some employees.
- Step and/or longevity increases for hourly employees.
- Performance increases for salaried employees.
- The addition of two full-time equivalent positions starting in April 2019 including a total salary and benefits cost of $113,000 for a collection system engineer and $111,000 for a CMMS coordinator position.
- A 4.65 percent increase in rates and enrollment changes for health insurance, resulting in an increase of $100,000 for health insurance costs, to $1.4 million for 2019.

Significant non-personnel related operating expenditure increases include:

- Transfer/contribution to the capital projects fund $1,200,000
- Clean Water Fund debt service $653,000
- Increased contribution to the equipment replacement fund $325,000
- Increases in operations and maintenance repair parts $300,000
- Computerized maintenance managment system transition launch $100,000

See departmental information in section five for more detail on department budgets.

Vehicle Replacement Fund

The commission created a vehicle replacement fund in 2018. The 2018 budget included $230,000 to start the fund. The 2019 budget includes a $160,000 contribution to the fund, a planned reduction of $70,000. Appendix H shows the proposed five year vehicle replacement schedule.

OPERATING FUND BALANCE

For 2019, the operating fund balance is projected to decrease to $17,334,000, down $750,000 or 4.1 percent from the $18,084,000 estimated 2018 ending balance. This decrease is due to the transfer of $1,200,000 to the capital projects fund offset by a $450,000 contribution to the equipment replacement fund, which is held in the operating fund.

The district's 2018 operating fund estimated ending balance includes the district's equipment replacement fund of $3.3 million and unrestricted operating reserves of $14.8 million or 241 days of operating expenses. This meets the district's minimum targeted end-of-year reserves of 180 days. Operating expenses for this purpose are defined as the operating budget expenditure total less the debt service expenditures and contributions to reserves. The projected operating fund balance at the end of 2019 of $17.3 million includes an equipment replacement fund balance of $3.8 million and unrestricted operating reserves of $13.6 million or 208 days of operating expenses. The projected balance meets the district's end-of-year minimum balance of 180 days operating expenses and is slightly below the maximum balance of 210 days.

IMPACTS OF CAPITAL INVESTMENTS ON THE OPERATING BUDGET

The district's capital investments have a major effect on the district's operating budget. The largest effect is from debt service expenses. Debt service accounts for 37.3 percent of the proposed operating budget expenditures in 2019 and accounted for 39.2 percent of budgeted expenditures in 2018. The $653,000 increase in debt service in the 2019 budget is 18 percent of the total increase in expenditures of $3.6 million. The debt service expenses are paid through service charges.

The district also funds some smaller capital investments in the capital outlay line item of the operating budget. The proposed 2019 operating budget includes $367,000 of capital outlay items, or 0.9 percent of total operating expenditures. Capital outlay items were budgeted at $219,000 or 0.6 percent of total operating expenditures in 2018.

In addition, the 2019 budget includes a $1,200,000 transfer from the operating fund to the capital projects fund in order to increase the amount of cash financing for capital projects and decrease the amount of debt financing needed. The $1.2 million includes $300,000 of anticipated continuing annual transfers and $900,000 in one-time, exceptional service charge revenues.

Debt service increases to support the capital improvements program have driven the operating budget increases in the last decade. This driver will lessen in the coming years. The last six budgets covering the years 2013 through 2018 have seen operating budget increases for debt service of 10 percent for 2013 and 2014, 9 percent in 2015 and 2016, and 6 percent in 2017 and 2018. The 2019 budget includes a 4.5 percent increase in debt service. The annual debt service increases are projected to continue at 4.5 percent from 2020 to 2026. This lower rate of increase in debt service will reduce pressure on the district operating budget in future years.

OPERATING BUDGET PLANNING

The district began work on developing a multi-year operating budget in 2017. This work proved to be difficult and the effort was temporarily set aside in favor of performing operational planning that focused more on understanding department priorities as a first step. Progress was made in 2018 on planning elements such as a study session with the commission on the use of debt financing and planning for the replacement of the existing computerized maintenance management system, Oracle's Work and Asset Management system. Work is ongoing with the commission on developing desired outcomes policies for the district, which will inform the development of a financial strategy and a longer term operating budget plan. Work will continue in 2019 on a long-term financial strategy to guide the commission during annual budgeting.

2019 SERVICE CHARGE RATES

The district service charge rates depend on the budget and the predicted pollutant loadings for the coming year. The budget determines the service charge revenues required to cover expenditures. The service charge rates are determined by dividing the required service charge revenues by the loadings expected to be received at the treatment plant.

Rate = (Required Revenue)/Loading

The district has seven billing parameters: five wastewater parameters and two customer parameters. District expenses are allocated to these seven parameters and loadings to the treatment plant are estimated from recent loadings history. Rates are determined for each parameter. The district therefore has seven rates that we use to determine billings to our customer communities. More details about the district's rate structure can be found in our sewer use ordinance at http://www.madsewer.org/Planning/Permits-Ordinances.

The current year has shown overall wastewater volumes and pollutant loadings that are on budget through July. This experience with loadings suggests that the overall increases in 2019 rates will be approximately the same as the increase in required service charge revenues. If this loading trend continues, overall service charge rates for 2019 would be expected to increase about the same as the 6 percent increase in service charges. This projection of service charge rates is subject to change based upon actual flows and loadings

in the coming months. The service charge rate determinations are made in October so that nine months of actual flow and loadings experience for the current year can be considered in determining the rates for the coming year.

REVENUE CATEGORIES

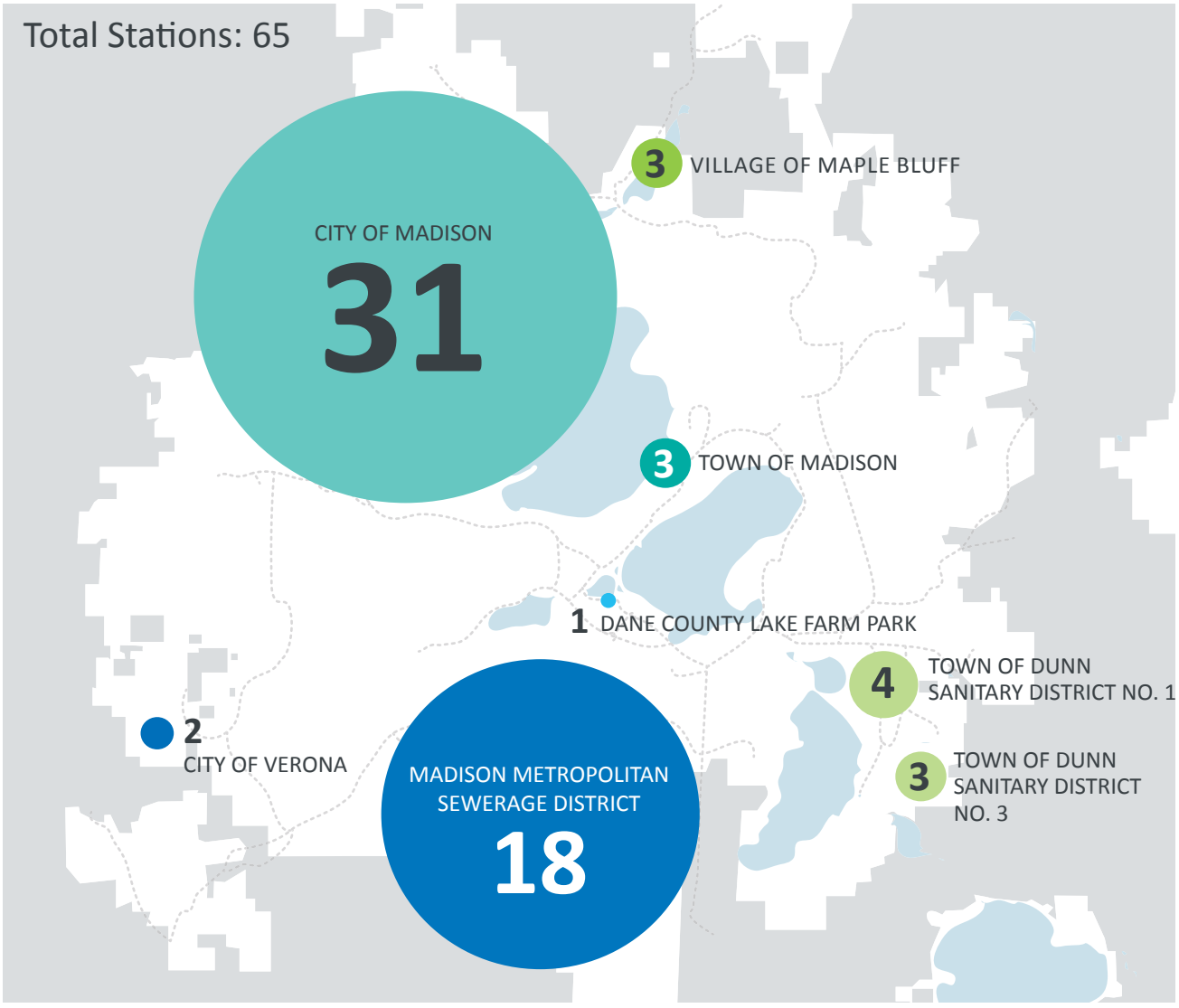
Sewer Service Charges

This category covers charges paid by the district's customer communities for the wastewater conveyance and treatment services provided by the district. Customer communities pay these charges according to the volume and strength of the wastewater they discharge to the district. These charges are the primary revenue source for the district. The district serves five cities, eight villages and thirteen sanitary or utility districts as of Aug. 1, 2018.

Servicing Pumping Stations (Figure 7)

This category covers charges to various customer communities for district services to operate and maintain pumping stations owned by the communities. The district currently services 47 pumping stations owned by others. The station owner and the number of stations served as of Aug. 1, 2018, are shown in **Figure 7**.

FIGURE 7 | Number of Pumping Stations Serviced by Location



Rent

This category covers rent the district receives for use of district-owned property. The district rents three houses, one set of farm buildings including a house, barn, sheds and associated acreage, 157 acres of farmland and land for an electrical substation.

Interest

This category covers interest earned on the district's cash reserves.

Annexation & Plan Review Fees

This category covers district expenses for the annexation process and sewer plan review and approval processes. Customer communities pay annexation fees when new lands are added to the district. Customer communities pay sewer plan review fees for modifications or additions to their sewer systems.

Miscellaneous Income

This category covers income received for various revenues that do not fit in other categories. For instance, the income from the sale of scrap materials and income for laboratory services performed for others are placed in this category.

Septage Disposal Income

This category covers income received for wastes delivered by truck to the Nine Springs Wastewater Treatment Plant. The largest single source of waste delivered by truck is septage from homes and businesses on septic systems. Thirty-one haulers have permits to discharge at the treatment plant as of Aug. 1, 2018.

Pretreatment Monitoring

This category covers the district's expenses for industrial monitoring. The fees are paid by businesses that are required to have industrial treatment permits issued by the district. Eighteen businesses have industrial discharge permits issued by the district as of Aug. 1, 2018.

Struvite Fertilizer Sales

This category covers the income from the sale of struvite fertilizer pellets. The district operates a process to recover phosphorus from the wastewater treated at the Nine Springs Wastewater Treatment Plant. The process recovers phosphorus in the form of struvite pellets, which are sold as a fertilizer.

Cash Reserves

This category covers funds used from our cash reserves.

EXPENDITURE CATEGORIES

Administration, Engineering and Planning

This cost center includes the chief engineer's office, accounting, information systems, communications, engineering, human resources/safety, planning and strategy and ecosystem services.

District Leadership and Support: Provides organizational leadership to the district.

Oversees communication and public information, coordinates district strategic efforts and oversees overall district performance and general administration of district business.

Accounting: Provides general accounting, payroll, purchasing and grants and loan administration.

Information Systems: Ensures data integrity, optimal network functionality and provides hardware, software and user support. Information systems also provide technological expertise to district staff.

Communications: Provides district-wide communications and business support.

Engineering: Provides engineering, design and construction of projects within the district's capital improvements plan.

Human Resources/Safety: Provides opportunities for growth of the organizational culture and performance. Provides cost-effective employee management services for recruitment, safety and leadership development while minimizing the district's liability in employment matters.

Madison Metropolitan Sewerage District's wilflife observation platform offers an excellent vantage point for viewing cranes, geese, deer, muskrat and other creatures.

Planning and Strategy: Provides strategic and capital improvements planning, sustainable infrastructure program management, customer service charge billing, connection charge and annexation management and geographic information system services.

Ecosystem Services: Oversees a wide range of regulatory, legislative and environmental and strategic initiatives that impact district operations and/or help establish overall district focus and oversees the Metrogro resource recovery program.

User Charge & Pretreatment Program

This cost center implements state and federal requirements directed towards industrial users and implements strategies for pollution prevention and source control. In addition, this cost center includes wastewater flow and loadings data sampling and analysis for customer billing.

Wastewater Collection

This cost center provides funding to operate and maintain the district's gravity sewers, pumping stations and raw wastewater force mains. The district operated and maintained 95 miles of gravity sewer, 18 pumping stations and 32 miles of raw wastewater force mains serving 13 cities and villages and 13 sanitary and utility districts as of Aug. 1, 2018.

Wastewater Treatment

This cost center includes funding to operate and maintain the Nine Springs Wastewater Treatment Plant. This plant treats about 40 million gallons of wastewater per day from our customer communities and districts and 80,000 gallons per day of hauled wastes.

Effluent Diversion

This cost center includes operations and maintenance for the district's 15 miles of force mains that discharge treated effluent to Badfish Creek and Badger Mill Creek. The cost center also includes monitoring to determine the impact on receiving streams.

Metrogro Biosolids Reuse Program

This cost center recycles biosolids to agricultural land through the Metrogro program.

Capital Outlay

This cost center funds asset purchases such as vehicles and equipment.

Service Pumping Stations Owned by Others

This cost center funds activities to operate and maintain, on a contract basis, local pumping stations owned by other cities and districts. The district operated and maintained 47 such pumping stations as of Aug. 1, 2018.

Contribution to Capital Projects Fund

This cost center accounts for the transfer of funds to the capital projects fund.

Contribution to Equipment Replacement Fund

This cost center accounts for additions to the equipment replacement fund required by the State of Wisconsin Clean Water Fund program.

Transfer to Debt Service

This cost center pays the annual debt service on the district's long-term debt.

TABLE 5 | Full-Time Equivalent Positions

DEPARTMENT	2017 FTE COUNT	2018 FTE COUNT	2019 PROPOSED	CHANGES FOR 2019
Administration	15	14	14	
District Leadership and Support	4	7	7	
Ecosystem Services	17	17	17	
Engineering	7	7	8	*Addition of Collection System Engineer*
Operations and Maintenance	51	51	51	
Planning and Strategy	6	6	7	*Addition of CMMS Coordinator*
TOTALS	**100**	**102**	**104**	

PERSONNEL

The district has experienced tremendous staff turnover over the past five years at all levels of the organization and this trend will continue as more employees retire or move on. We continue to prioritize leadership development through a number of methods such as the National Association of Clean Water Agencies Core Growth training program, the Certified Public Manager program at the University of Wisconsin and the Supervisory Academy through the City of Madison. Our investment in our people is crucial as the talent shortage worsens especially in the fields that are mission critical to the district such as science, technology, engineering and math jobs and the skilled trades.

In 2018, the district began a three-year partnership with the Young Women's Christian Association to further build on the inclusion and diversity work the district began in 2017. This partnership began with "Creating Equitable Organizations" training for district leadership and the employee leadership council. The goal of this work is to create significant sustainable organizational change not just diversity awareness. The district is continuing to implement the inclusion and diversity strategic plan and our use of the Intercultural Development Inventory, which is regarded as the premier tool for assessing organizational cultural competence.

The employee leadership council is in its third year serving as an advisory body to the executive team. The council is comprised of eight district employees representing all major departments and members are voted onto the council by their fellow employees. The council has established itself as a valuable employee resource and is regularly receiving requests from employees that are thoroughly evaluated before making recommendations to the executive team.

The district is making a focused effort on developing community relationships and promoting career opportunities to a variety of students in Dane County. We participated in the first Dane County School Consortium career fair which targets over 5,000 middle school students and exposes them to careers in 16 different career pathways. We also participated in career days in the Madison, Sun Prairie and Deerfield school districts. We continued our partnership with the Boys and Girls Club of Dane County. The district hosted a high school intern who spent six weeks working at the district learning about a variety of career paths. In addition, the district sponsored a half-day session with the career exploration academy exposing a group of 20 high school juniors to careers at the district.

The district's Employee Leadership Council tackles a variety of issues and offers opportunities for employees to become involved in policy development.

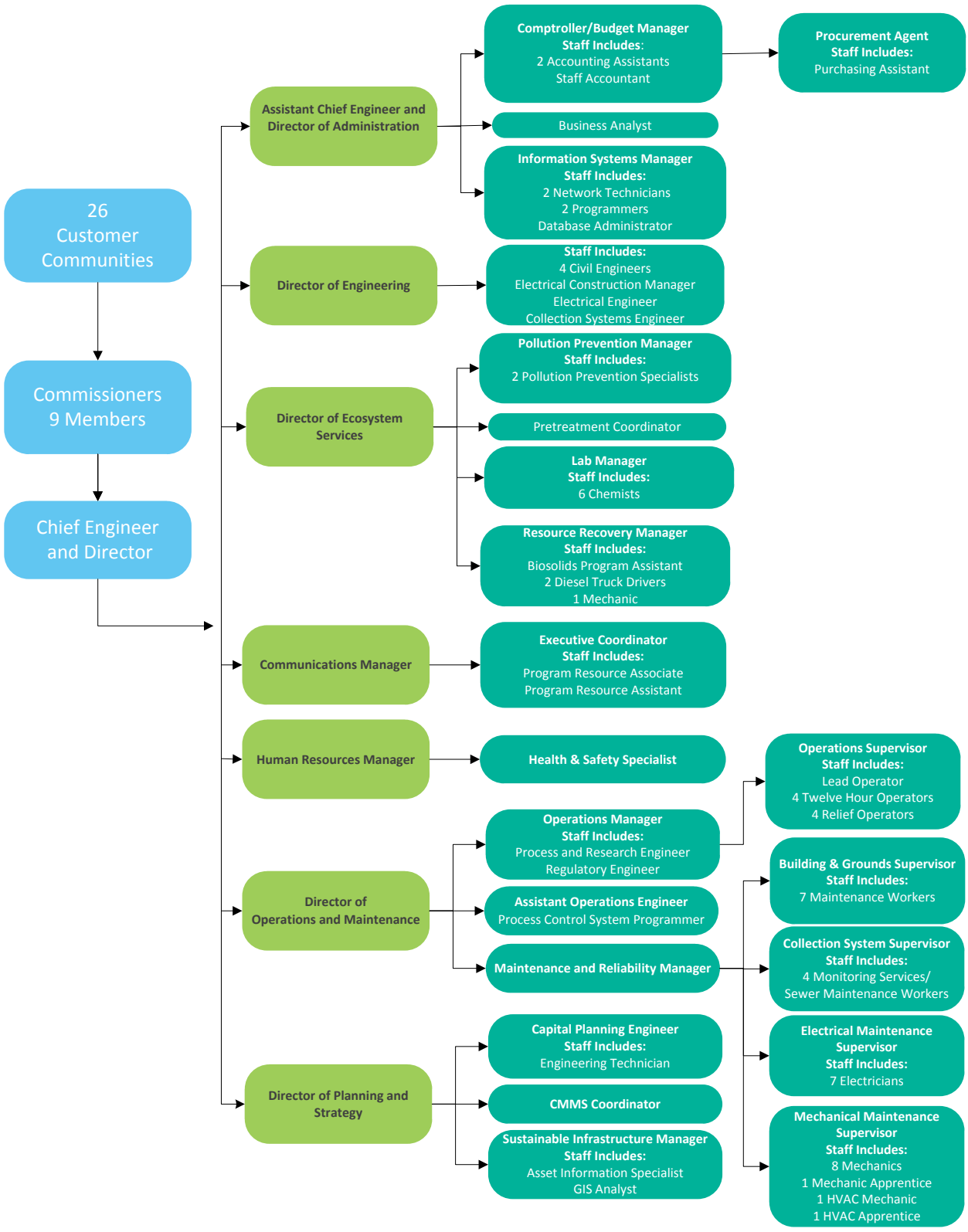
Safety has always been a district priority with a dedicated safety staff member, a safety committee and safety practices that go beyond mere compliance. Through those efforts a new priority has emerged- security of our people, the process and the plant.

We had an internal team research and evaluate our security risks and long and short term opportunities for improvement. This will be an ongoing effort requiring expert consultation in the future to fully determine the best investment to meet our specific security needs.

Table 5 shows changes in the district's overall staffing from 2017-2019. Two full-time positions are proposed for 2019, a collections systems engineer (engineering department) and a CMMS coordinator (planning and strategy department).

Figure 8 is an organization chart representing the district's hierarchy with the proposed positions included. For more information on the proposed positions, please see Appendix I : New Position Justifications section of this document.

FIGURE 8 | Organizational Chart



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SECTION THREE

2019 CAPITAL IMPROVEMENTS PLAN & BUDGET

Eric Dundee, director of wastewater operations and reliability, tours the network of tunnels that carry wastewater and trerated effluent underneath the plant.

INTRODUCTION

The district's capital improvements plan, or CIP, includes the major capital projects that are anticipated for the next six years and, in some cases, beyond. The projects included represent the best estimate of what might happen over the next six-year period. Staff members update this plan on an annual basis using the latest information and estimates available, integrating the district's current financial situation.

As a planning document, one of the main purposes of the district's CIP is to set the stage for development of the next year's capital projects fund budget (also known as the capital budget or capital projects budget). Therefore, the plan includes proposed projects for the next six-year period with approximate costs and timeframes for planning, design and construction. For some projects, costs and schedules have not been fully developed and thus placeholders have been included until the scope of work can be better defined.

The proposed 2019 capital budget is based on the CIP, the status of ongoing and pending projects, and the district's current financial situation. The capital budget shows past actual revenues and expenditures through 2017, anticipated revenues and expenditures through the remainder of 2018, and projected revenues and expenditures for 2019. In addition, the capital budget includes anticipated total project expenditures for projects underway and those that will be approved prior to the end of 2019. Projects in the CIP that will begin after 2019 will require approval in subsequent budgets; approval of the capital budget on an annual basis provides a means to reauthorize funding for ongoing projects.

The present revenues and expenditures information and total project costs typically change somewhat between the development of the draft CIP (the draft 2019 capital improvements plan was published on June 28, 2018) and the completion of the budget process. The district takes a conservative approach to budgeting and anticipates project spending as "early and often." This typically means that subsequent projections show less spending in the near term and more spending later. Additionally, estimates are updated to reflect the most recent best estimate, which can be less or more than previously anticipated. Project summaries for some existing projects and for new projects that are anticipated within the next six years are included in Appendix A. The project summaries highlight the scope, need, cost and schedule for each project. Detailed project information can be found at the district's website at http://www.madsewer.org/Planning. For each project, the project's anticipated financing mechanism has been identified with any resulting debt included in the debt service projection.

A brief discussion of recently completed projects can be found in Appendix B, along with the status of maintenance retainers for recently completed or soon to be completed projects.

OVERVIEW AND HIGHLIGHTS

For 2019, the CIP anticipates total funds received (identified as revenues) of $21.6 million, expenditures of $23.4 million and a projected 2019 year-end operating reserve of $4.9 million, down from a projected $6.7 million in 2018. The plan predicts that the district will incur additional debt of $18.4 million from construction activities during 2019. Revenue collected from service charges for payment of debt service will increase from $14.5 million in 2018 to $15.2 million in 2019. This is a 4.5 percent increase and is necessary to address debt service related to recently constructed projects and to position the district for projects related to the liquid processing facilities plan that will be constructed in phases over the next 10 years.

Major construction activities or equipment purchases in 2019 are expected to include the following:

- Treatment plant improvements related to the 2016 liquid processing facilities plan. These projects include the addition of hydraulic capacity to the plant, rehabilitation of the 54 inch diameter influent line to the east primary tanks, construction of a new unit substation building and upgrades to the process control system.
- Purchase of a new applicator for the Metrogro program.
- Replacement of potable and hot water piping in the solids handling tunnels at the treatment plant.
- Replacing a portion of the Southwest Interceptor on Haywood Drive in the City of Madison between Wingra Drive and West Shore Drive.
- Lining a portion of the Nine Springs Valley Interceptor between County Highway PD and Dunn's Marsh in the City of Fitchburg.
- Installation of a new relief sewer on the Northeast Interceptor between Pumping Station 13 and Lien Road in the City of Madison.
- Improvements to the HVAC system and mechanical and electrical systems at Pumping Station 7.
- Installation of a portion of a relief force main along the Badger Mill Creek in the City of Verona.

Lesser activities include the following:

- Replacement of control panels for the engine generators and engine blower at the treatment plant.
- Grouting of pipe joints in the Northeast Interceptor upstream of Pumping Station 10 to reduce inflow and infiltration of groundwater.
- Modifications to electrical systems at Pumping Stations 10 and 11 to provide greater redundancy and system reliability.
- Coating of two final clarifiers and pavement replacement at the treatment plant.

The design of several large projects in the collection system will also begin in 2019. These projects include a new relief sewer for the West Intercepting System along the University Avenue corridor between Walnut Street and Whitney Way, lining of the Spring Street Relief Sewer and rehabilitation of Pumping Stations 13 and 14.

Planning work in 2019 will include completion of the update to the collection system facilities plan, which is scheduled to begin in the second half of 2018. The original plan was prepared in 2002 and was updated in 2011. The 2019 update will incorporate the population and flow projections prepared by the Capital Area Regional Planning Commission in 2018 as part of the collection system evaluation.

The district's sustainable infrastructure program will continue work on the plant asset management plan in 2019. This plan, which began in 2018 and is scheduled for completion by the end of 2019, will provide data on plant assets, including locations, condition assessments and consequences of failure. This data will be used to guide decisions regarding future needs for equipment maintenance and replacement and the best methods to fund these activities. Implementation of asset management will largely transition to operating fund supported activities in the coming years.

Logan Miller works next to one of the clarifiers, which serve as the final step in reclaiming nutrients before clean surface water is returned to area streams.

In addition to those projects previously mentioned, numerous other projects are anticipated during the years 2020 through 2024. Table 7 highlights these projects and includes a six-year projection of estimated capital expenditures. Please note that some projects scheduled for construction in 2018 are included in Table 7 to provide updated project costs. It is expected that the majority of these projects will be substantially completed in 2018, although final completion and full closeout may not occur until 2019. A summary of each of the projects in Table 7 is included in Appendix A, except for those projects scheduled for construction beyond the year 2024.

Table 6.1 provides a summary of the district's 2019 capital budget. This table includes a summary of actual results from 2017, ongoing information related to 2018 and expected 2019 activities. The anticipated capital projects fund cash flow for 2019 to 2024 is included in Table 8. The plan's impact on the district's debt and debt service is summarized in Table 9 through Table 12 in the section on debt service. Chart 1 in the debt service section provides a look at projected debt service over the next 10 years.

The 2019 CIP includes an annual increase in the amount of debt service collected in 2019 from service charges of $653,000 or 4.5 percent, for a total $15.2 million. The plan also forecasts that this annual rate of increase should continue through the year 2028 to meet the district's projected debt service requirement.

In addition, several other trends continue to drive higher levels of construction and incurrence of debt. These include the need to replace or refurbish aging facilities, many of which the district constructed around the same timeframe, and the need for more capacity in certain parts of the district's system due to long-term growth.

It should be noted that the 2019 CIP assumes increased connection charge revenues for the six-year planning period in accordance with the provisions of the district's recently adopted connection charge regulation. The 2019 plan assumes that the increase in the treatment plant connection charge rate will be phased in over an eight-year period beginning in 2019.

Conformance With Adopted Plans And Programs

As with recently adopted capital budgets, the 2019 CIP assumes that capital projects will be in conformance with the recommendations of the district's 2009 50-year master plan regarding centralized treatment. The master plan recommends that the district continue to treat all wastewater from its service area at the Nine Springs Wastewater Treatment Plant and to return a portion of the effluent to Badger Mill Creek. As such, none of the projects in the CIP assumes that a satellite treatment facility will be located anywhere in the district's service area in the foreseeable future.

While the 50-year master plan provides long-term guidance, shorter-term planning is required to assess the condition and capacity of the district's systems and assets. The district relies upon facility planning efforts, its sustainable infrastructure program and other planning efforts to help direct annual updates to its CIP. The following planning efforts provide the most significant guidance to the district's annual capital improvements planning.

1. Collection System Facilities Plan
   Last updated in 2011, the collection system facilities plan provides a list of recommended capital improvements to the district's collection system. The Capital Area Regional Planning Commission is updating its 2009 evaluation of the district's collection system capacity in 2017 and 2018. This update will in turn allow the district to update its collection system facilities plan.

2. Solids Handling Facilities Plan
   This facilities plan formed the basis for work constructed during the 11th addition to the plant. This addition, completed in 2014, essentially revised the plant's entire solids handling processes, providing upgrades which will allow it to meet loadings for the next 20 years.

3. Liquid Processing Facilities Plan
   While the solids handling facilities plan investigated the plant's solids streams and processes, the liquid processing facilities plan reviewed the plant's liquid streams and processes. The facilities plan was substantially completed in 2017 and includes multiple projects that will address the plant's liquid processing needs. For purposes of the 2019 CIP, it is assumed that the 17 projects identified in the facilities plan will be combined into separate bid packages that will be constructed in multiple phases over the next ten years. The first phase of projects is being designed in 2018, with construction scheduled for 2019 and 2020.

4. Sustainable Infrastructure Management Program and Plant Asset Management Program
   The district developed a draft plant asset management plan in 2011 that has helped guide improvements and planning at the plant. In 2017, the district conducted a pilot asset management plan for the solids handling processes at the treatment plant and for all HVAC assets that the district owns. This pilot program used advanced asset management principles and will serve as a guide for the development of a full-scale asset management plan. The full-scale plan began in 2018 and is scheduled for completion in 2019.

District staff members cannot anticipate all projects that may become necessary in the future. However, the district's asset management efforts, which include plant asset management planning and collection system facilities planning, coupled with annual capital improvements planning, should capture most necessary major expenditures and reflect good long-term planning. Planning efforts continue throughout the year with a process that is continuous and constantly evolving. Staff members update formal plans annually for presentation to the district's commission and to the general public. However, as new information becomes available, plans, schedules and corresponding estimates are changed to reflect the most recent information.

During the warmer months, effluent is treated with ultraviolet light before being pumped to the outfalls at Badfish and Badger Mill creeks.

The district works with customer communities to provide infrastructure capable of handling needs for decades to come, as in this City of Monona well and manhole installation.

2019 CAPITAL PROJECTS BUDGET SUMMARY

Introduction

Table 6.1 provides a summary of the capital budget for years 2017 through 2019. For 2017, the summary shows the actual year-end totals for revenue and expenses for each project. For the current year, 2018, the summary shows the budgeted amount, the actual revenue and expenses through June, and the estimated year-end totals. For 2019, the summary shows anticipated revenues and expenditures. All estimates are rounded to the nearest thousand dollars.

Please note that the projects proposed for construction in 2019 for phase one of the liquid processing improvements are shown as a single expense category in Table 6.1 for clarity. Table 6.2 has been provided to show how the expenses are broken down among the various projects which are included in the phase one improvements.

2017 Summary

For 2017, revenues of $7.5 million exceeded 2017 expenditures of $6.6 million, leaving an end-of year balance of $10.3 million. Revenues included clean water loan proceeds of $4.5 million, connection charge revenues of $2.8 million, investment income of $57,000 and a transfer of $172,000 from the operating fund. Expenditures included $669,000 in treatment plant project expenses, $2.5 million in interceptor project expenses, $2.9 million in pumping station and force main project expenses and $551,000 of capital budget expenses.

TABLE 6.1 | Capital Projects Budget

	2017 Actual	2018 Thru June	2018 Estimated Total	2018 Budget	Proposed 2019 Budget	% Change
REVENUE CATEGORY						
CWF LOANS	**$4,495,451**	**$0**	**$3,065,652**	**$1,857,000**	**$18,445,000**	**893.27%**
Maintenance Facility/Space Needs Improvements	384,756	-	-	-	-	NMF
PS 11 & 12 Rehabiiation	314,694	-	256,015	-	-	NMF
Rimrock Int. Replacement/Relief	30,514	-	-	-	-	NMF
PS 15 Rehabilitation	2,195,256	-	339,561	-	-	NMF
PS 12 Forcemain Relocation at Verona Road	271,637	-	220,381	-	-	NMF
West Int.- West Randall to Near PS 2 (lining project)	1,298,594	-	68,694	-	-	NMF
Southeast Interceptor Rehabilitation Upstream of PS 9	-	-	285,000	-	-	NMF
PS 10 Forcemain Rehabilitation	-	-	1,390,000	1,156,000		-100.00%
West Interceptor- PS 5 to Gammon Ext (lining project)	-	-	506,000	701,000		-100.00%
PS 7 Improvements	-	-	-	-	2,050,000	NMF
Liquid Processing Improvements- Phase 1	-	-	-	-	7,200,000	NMF
Northeast Interceptor- Truax Extension Relief	-	-	-	-	4,950,000	NMF
NSVI- McKee Road to Dunn's Marsh (lining project)	-	-	-	-	2,090,000	NMF
Southwest Interceptor- Haywood Ext Replacement	-	-	-	-	1,384,000	NMF
Hot Water Piping and W1 Piping Improvements	-	-	-	-	771,000	NMF
CONNECTION CHARGE REVENUES	**$2,765,972**	**308,144**	**$1,050,000**	**$1,575,000**	**$1,825,000**	**15.87%**
INTEREST ON INVESTMENTS & MISC. INCOME	**$56,984**	**38,294**	**$95,000**	**$32,000**	**$100,000**	**212.50%**
CONTRIBUTION FROM OPERATING FUND	**172,000**	**$0**	**$0**	**$0**	**$1,200,000**	**NMF**
TOTAL SOURCES OF FUNDS	**$7,490,407**	**$346,437**	**$4,210,652**	**$3,464,000**	**$21,570,000**	**522.69%**
EXPENSE CATEGORY						
NINE SPRINGS WTP PROJECTS	**$669,331**	**$264,537**	**$1,321,701**	**$1,479,000**	**$9,479,000**	**540.91%**
New Maintenance Facility/Space Needs Improvements	104,868	-	-	-	-	NMF
Capital City Recreational Trail Relocation at Vehicle Loading Bldg.	27,266	-	-	-	-	NMF
Liquid Processing Facilities Plan	200,167	1,081	1,081	-	-	NMF
Liquid Processing Improvements- Phase 1	27,908	238,267	980,620	1,036,000	6,260,000	504.25%
Annual Clarifier Coating	154,101	19,602	180,000	180,000	185,000	2.78%
Annual Pavement Improvements	63,219	-	57,000	57,000	59,000	3.51%
Minor Capital Improvements	91,802	5,586	103,000	103,000	106,000	2.91%
Shop One Site Improvements	-	-	-	103,000	103,000	0.00%
Headworks Flow Metering	-	-	-	-	128,000	NMF
Resource Recovery Facility	-	-	-	-	52,000	NMF
Metrogro Applicators & Equipment	-	-	-	-	979,000	NMF
Badger Mill Creek Phosphorus Compliance	-	-	-	-	309,000	NMF
Operations Building First Floor Remodel	-	-	-	-	160,000	NMF
Miscellaneous Treatment Plant Projects	-	-	-	-	77,000	NMF
Engine Generator and Blower Control Panel Replacements	-	-	-	-	270,000	NMF
W1 Piping Improvements	-	-	-	-	579,000	NMF
Hot Water Piping Improvements	-	-	-	-	212,000	NMF
INTERCEPTORS	**$2,459,179**	**$796,675**	**$3,977,952**	**$3,797,000**	**$8,942,000**	**135.50%**
West Int.- Randall Avenue to Near PS 2 (lining project)	1,288,442	66,242	67,000	-	-	NMF
Rimrock Int. Replacement/Relief	192	-	-	-	-	NMF
Northend Int.- Sherman Avenue (lining project)	94,233	452	452	-	-	NMF
Lower Badger Mill Creek Int.- Phase 4	442,884	641,764	709,000	-	-	NMF
NSVI-Morse Pond Extension	587,445	2,255	1,598,000	1,960,000	-	-100.00%
SEI - Rehab upstream of PS 9 (lining project)	23,523	8,541	271,000	-	-	NMF
Southeast Int. Relocation- Monona Waterfront Redevelopment	18,843	1,045	250,500	250,000	-	-100.00%
West Int.- PS 5 to Gammon Extension (lining project)	-	14,307	516,000	711,000	-	-100.00%
Southwest Interceptor- Haywood Ext. Replacement	-	4,863	85,000	88,000	1,324,000	1404.55%
NSVI-McKee Road to Dunn's Marsh (lining project)	-	-	60,000	67,000	2,050,000	2959.70%
NEI- Truax Extension Relief	3,616	54,199	416,000	721,000	4,625,000	541.47%
West Int. Relief Sewer- Walnut Street to Whitney Way	-	3,008	5,000	-	582,000	NMF
West Int.- Spring Street Relief (lining project)	-	-	-	-	57,000	NMF
Northeast Interceptor Joint Grouting	-	-	-	-	304,000	NMF

*Table 6.1 continues on next page

TABLE 6.1 | Capital Projects Budget (cont.)

	2017 Actual	2018 Thru June	2018 Estimated Total	2018 Budget	Proposed 2019 Budget	% Change
PUMPING STATIONS AND FORCE MAINS	**$2,906,638**	**$245,573**	**$2,011,894**	**$2,035,000**	**$4,469,000**	**119.61%**
PS 11 & 12 Rehabilitation	253,315	3,026	3,100	-	-	NMF
PS 15 Rehabilitation	2,279,286	84,143	85,000	-	-	NMF
PS 12 Forcemain Relocation at Verona Road	342,387	507	550	-	-	NMF
Grass Lake Dike Stabilization	3,130	10,352	152,000	155,000	-	-100.00%
PS 10 Forcemain Rehabilitation	12,756	11,948	1,387,244	1,118,000	-	-100.00%
PS 13 & 14 Wet Well Repairs	-	-	-	319,000	-	-100.00%
PS 7 Improvements	15,764	135,595	384,000	443,000	1,772,000	300.00%
PS 17 Forcemain Relief- Phase 1	-	-	-	-	937,000	NMF
PS 13 Rehabilitation	-	-	-	-	706,000	NMF
PS 14 Rehabilitation	-	-	-	-	688,000	NMF
PS 16 Forcemain Rehabilitation	-	-	-	-	21,000	NMF
Automated Power Transfer at PS 10 and 11	-	-	-	-	268,000	NMF
Miscellaneous Collection System Improvements	-	-	-	-	77,000	NMF
CAPITAL BUDGET EXPENSES	**$551,085**	**$92,707**	**$484,000**	**$618,000**	**$494,000**	**-20.06%**
Capital Budget Expenses	-	-	5,000	52,000	52,000	0.00%
Sustainable Infrastructure Management Program	391,234	88,477	424,000	424,000	317,000	-25.24%
Collection System Evaluation	159,850	4,229	20,000	62,000	-	-100.00%
Collection System Facilities Plan Update	-	-	35,000	80,000	125,000	56.25%
TOTAL EXPENDITURES	**$6,586,232**	**$1,399,492**	**$7,795,547**	**$7,929,000**	**$23,384,000**	**194.92%**
CAPITAL PROJECTS FUND BALANCE						
BEGINNING BALANCE	$9,412,002	$10,316,177	$10,316,177	$8,706,000	$6,731,000	-22.69%
TOTAL SOURCES OF FUNDS	7,490,407	346,437	$4,211,000	3,464,000	21,570,000	522.69%
TOTAL EXPENDITURES	6,586,232	1,399,492	$7,796,000	7,929,000	23,384,000	194.92%
ENDING BALANCE	**$10,316,177**	**$9,263,122**	**$6,731,000**	**$4,241,000**	**$4,917,000**	**15.94%**

NMF=No Meaningful Value

1: Liquid Processing Improvements - Phase 1 includes multiple projects from the 2016 Liquid Processing Facilities Plan. See Table 6.2 for details for each project.

TABLE 6.2 | Liquid Processing Improvement Project

	2017 Actual	2018 Thru June	2018 Estimated Total	2018 Budget	Proposed 2019 Budget	% Change
EXPENSE CATEGORY						
LIQUID PROCESSING PROJECTS - PHASE 1	**$27,908**	**$238,267**	**$980,620**	**$1,036,000**	**$6,260,000**	**504.25%**
Plant Peak Capacity Improvements	9,334	52,536	255,000	196,000	2,733,000	1294.39%
UV Disinfection System Replacement	6,510	29,478	186,000	175,000	160,000	-8.57%
East Blower Controls	669	7,505	19,000	21,000	205,000	876.19%
Primary Tanks 1 and 2 Rehabilitation	771	6,748	22,000	31,000	238,000	667.74%
54" Primary Influent Rehabilitation	1,372	20,178	39,000	52,000	422,000	711.54%
East-West Plant Flow Metering	255	5,444	7,000	10,000	81,000	710.00%
Badfish Creek Effluent Force Main Standpipe	168	11,194	101,000	41,000	-	-100.00%
Plant Unit Substation Improvements	5,310	32,337	149,000	134,000	1,630,000	1116.42%
Process Control System Upgrade- Phase 2	3,022	32,323	72,000	309,000	791,000	155.99%
Clarifier Stress Testing	497	39,904	130,000	67,000	-	-100.00%
Nitrite Shunt Pilot	-	620	620	-	-	NMF

2018 Summary

The 2018 capital budget showed 2018 expenditures exceeding revenues by $4.5 million; we now anticipate that expenditures will exceed revenues by $3.6 million. The year-end fund balance is projected to be $6.7 million, which is greater than the budgeted $4.2 million. There are several reasons for the difference in the end of year balance. First of all, connection charge revenue in 2017 exceeded the budgeted amount by approximately $970,000. This extra revenue was collected in December 2017 as customers were looking to pay at 2017 rates and avoid the annual increase in rates. The estimate for connection charge revenue for 2018 has been lowered due to the December 2017 collections and to reflect the amount of actual collections received through July of 2018. Another factor in the higher end of year balance for 2018 is due to a significant change in scope for the rehabilitation project on the Southeast Interceptor upstream of Pumping Station 9. The 2017 budget anticipated a full rehabilitation project along the entire length of the project. During design it was discovered that only a partial rehabilitation was needed, reducing projected costs by $700,000. Finally, some of the difference can be attributed to several large existing projects taking longer to complete than anticipated and their completion moving into the subsequent budget year. Examples of these projects include the rehabilitation of Pumping Stations 11, 12 and 15. These delays cause actual revenue from loans to be received later than assumed in the budget projections.

For Clean Water Fund loan projects, the district pays for planning and design from reserves until projects have been bid and move to the construction phase. For larger projects, such as liquid processing improvements, planning and design costs can be significant and at times in the future, short-term lending may be required to fund these costs until loans close after the bidding process. Another possible way to cover these costs would be to increase the amount that the district keeps in reserves. The district's minimum balance is presently set at $3 million, or 10 percent of the next year's total capital expenditures, whichever is greater. Presently, no changes in the minimum reserve amount are contemplated. However, this does not mean that the district cannot increase reserves if it is advantageous to do so based upon anticipated spending.

District contractors work to install a new sewer line for the Northeast Interceptor Pflaum Road replacement project.

2019 REVENUES & EXPENDITURES

The proposed 2019 CIP anticipates revenues from all sources totaling $21.6 million and expenditures of $23.4 million with a resulting year-end capital fund balance of $4.9 million. The projected year-end fund balance for 2019 represents a fund balance decrease of $1.8 million relative to the estimated year-end balance for 2018. The decrease in the capital fund balance for 2019 is due in large part to the funding of one large equipment purchase and one conveyance project through cash reserves. A Metrogro applicator will be purchased in 2019 for approximately $980,000 and a portion of the Pumping Station 17 relief force main will be installed at an estimated cost of $940,000. In addition, the district is proposing a number of smaller rehabilitation projects for capital assets at the treatment plant which will be paid for through cash reserves.

Roy Wells is constructing a new control panel for Pumping Station 16. The panel will watch the control room air pressure and control the speed of the supply fan so that a positive pressure is maintained between the control room and the wet well.

Finally, design work for the rehabilitation of Pumping Station 13 and Pumping Station 14 and design of the West Interceptor relief sewer along University Avenue will also begin in 2019. Planning and design costs for these projects will be eligible for loans through the Clean Water Fund in subsequent years.

As detailed in Table 6.1, anticipated 2019 revenues include $18.4 million in Clean Water Fund loan proceeds for the projects listed below:

- Pumping Station 7 Improvements ($2.0 million)
- Liquid Processing Improvements – Phase 1 ($7.2 million)
- Northeast Interceptor – Truax Extension Relief ($5.0 million)
- NSVI – McKee Road to Dunn's Marsh (lining) ($2.1 million)
- Southwest Interceptor – Haywood Extension Replacement ($1.4 million)
- Hot Water Piping and W1 Piping Improvements ($770,000)

Other anticipated revenues include $1.8 million in conveyance facility and treatment plant connection charges (connection charge revenues), $100,000 in interest on investments and $1.2 million in contributions from the operating fund. The estimate for connection charge revenues assumes that the new methodology for calculation of treatment plant connection charges, as adopted by the commission in July 2017, will be phased in over a period of eight years starting in 2019. Interest on investments grew in 2018 relative to previous years and this increase is expected to continue in the short term. The contribution from the operating fund consists of two components: (a) $900,000 as a one-time transfer, reflecting increased service charge revenue from a high flow event in August 2018; and (b) $300,000 on an ongoing basis to support increased cash funding of smaller capital projects.

Also detailed in Table 6.1, the highest expense items for 2019 include the following projects:

- Liquid Processing Improvements – Phase 1 ($6.3 million)
-

The district discharges its treated wastewater into Badfish Creek and Badger Mill Creek, shown here.

- Metrogro applicators and equipment ($1 million)
- W1 Piping Improvements ($600,000)
- Southwest Interceptor – Haywood Extension Replacement ($1.3 million)
- NSVI – McKee Road to Dunn's Marsh (lining) ($2.1 million)
- Northeast Interceptor – Truax Extension Relief ($4.6 million)
- Design of West Interceptor Relief Sewer ($600,000)
- Pumping Station 7 Improvements ($1.8 million)
- Pumping Station 17 Force Main Relief – Phase 1 ($900,000)
- Design of Pumping Station 13 Rehabilitation ($700,000)
- Design of Pumping Station 14 Rehabilitation ($700,000)

Other anticipated expenditures include an additional $2.4 million in other capital project expenditures as well as $494,000 in capital budget expenses.

2019 CAPITAL PROJECTS FUND BALANCE

The 2019 capital projects fund ending balance of $4.9 million is projected to increase by 15.9 percent, or $676,000, in 2019 compared to the budgeted 2018 ending balance of $4.2 million and to decrease by 27 percent, or $1.8 million, compared to the present estimated 2018 ending balance of $6.7 million. The end-of-year capital projects fund balance varies significantly from year-to-year depending upon the timing of project expenses and loan proceeds.

District policy requires a minimum capital projects fund balance (or reserve) of the greater of $3 million or 10 percent of anticipated expenditures. Therefore, for 2019, the minimum acceptable balance should be $3 million (10 percent of $23.4 million is less than $3 million). The projected 2019 end-of-year balance is projected to be $4.9 million, which is above the minimum acceptable amount.

Cooperation with the state Department of Transportation on the Nine Springs Valley Interceptor – Morse Pond Extension and other projects allows for greater efficiency, including shared trench work.

SIX-YEAR CAPITAL PROJECTS BUDGET SUMMARY

Included in the district's six-year CIP projection are projects currently underway that will continue into 2019 as well as those future projects that will begin in the associated period. District staff members have identified these projects as high priority needs during the planning process. Drivers include addressing condition and capacity needs as well as meeting other facility needs or regulatory requirements.

Table 7 provides a summary of the six-year capital projects plan, including total costs for each project within the planning horizon. This table shows approximately $146 million worth of expenditures over the six-year period from 2019 to 2024, representing projects whose costs total $196 million.

It should be noted that the district's capital improvement plans since 2012 have included scenarios and costs for possible advanced nutrient removal facilities. At this time, district staff members do not anticipate that more stringent nitrogen limits will be included in the next discharge permit and it is uncertain when stricter limits will be required. As a result, the 2019 CIP does not include a separate scenario that relates to advanced nitrogen removal facilities that would be required as part of a discharge permit. The plan does, however, include a long-term project that proposes to enhance the removal of nitrogen and would position the district for any future regulations regarding nitrogen (see Project ID A01.15 Plant Aeration System Projects (Nitrite Shunt)).

Project Summaries And Business Cases

Summary descriptions for each of the projects in Table 7 are included in Appendix A. Projects are categorized as Nine Springs Wastewater Treatment Plant projects, interceptor projects or pumping station and force main projects. Projects are identified using an alphanumeric identifier. Specific identifiers included in Table 7 will match those used in the appendices. Project identification for Nine Springs Wastewater Treatment Plant projects begin with the letter A, those for interceptor projects begin with the letter B, those for pumping station and force main projects begin with the letter C and those for capital budget expenses begin with the letter D.

Additional project information for most projects is contained in comprehensive business cases, located on the district's website at http://www.madsewer.org/Planning. Excluded are some of the projects already underway and routine annual expenditures. Since some projects are closely connected or contingent upon other projects, more than one project may be included in a single business case. A table of contents identifies which projects are included in which business case summary. Note that some business cases, and hence associated costs, are more developed than others. Where costs have not been fully developed, amounts have been included as placeholders or allowances to identify the need. As with all projects, these costs will be modified as project scopes are refined and better estimates become available.

TABLE 7 | Six-Year Capital Projects Summary

No.	Project	Total Project Cost	2019 - 2024 Cost	2019	2020	2021	2022	2023	2024
NINE SPRINGS WTP PROJECTS		**$101,526,000**	**$63,136,000**	**$9,479,000**	**$12,348,000**	**$11,764,000**	**$11,873,000**	**$5,671,000**	**$12,001,000**
A01.01	Plant Peak Capacity Improvements	5,587,000	5,323,000	2,733,000	2,590,000	-	-	-	-
A01.02	UV Disinfection System Replacement	4,198,000	4,005,000	160,000	1,894,000	1,951,000	-	-	-
A01.03	East Blower Controls	420,000	400,000	205,000	195,000	-	-	-	-
A01.04	Primary Tanks 1 and 2 Rehabilitation	484,000	461,000	238,000	223,000	-	-	-	-
A01.05	54" Primary Influent Rehabilitation	860,000	820,000	422,000	398,000	-	-	-	-
A01.06	East-West Plant Flow Metering	165,000	158,000	81,000	77,000	-	-	-	-
A01.07	Badfish Creek Effluent Force Main Standpipe	101,000	0	-	-	-	-	-	-
A01.08	Plant Unit Substation I mprovements	3,331,000	3,177,000	1,630,000	1,547,000	-	-	-	-
A01.09	Process Control System Upgrade - Phase 2	1,614,000	1,539,000	791,000	748,000	-	-	-	-
A01.10.1	Clarifier Stress Testing	130,000	0	-	-	-	-	-	-
A01.10.2	Activated Sludge Projects	10,534,000	7,988,000	-	426,000	3,652,000	3,762,000	-	148,000
A01.11	Nitrite Shunt Pilot	2,615,000	2,614,000	-	-	214,000	2,400,000	-	-
A01.12	Headworks Flow Metering	2,325,000	2,325,000	128,000	1,082,000	1,115,000	-	-	-
A01.13	Septage Receiving Modifications	3,404,000	3,404,000	-	-	180,000	1,588,000	1,636,000	-
A01.14	Headworks Screening	3,991,000	3,991,000	-	-	214,000	1,861,000	1,916,000	-
A01.15	Plant Aeration Systems Projects (Nitrite Shunt)	22,908,000	1,242,000	-	-	-	-	-	1,242,000
A01.16	East and West Blower Switchgear	2,617,000	148,000	-	-	-	-	-	148,000
A01.17	Headworks Grit Management	2,681,000	0	-	-	-	-	-	-
A02	Shop One Site Improvements	103,000	103,000	103,000	-	-	-	-	-
A03	Resource Recovery Facility	2,587,000	2,587,000	52,000	212,000	328,000	1,126,000	869,000	-
A04	Plant Energy Generation Facilities Plan	887,000	887,000	-	437,000	450,000	-	-	-
A05	Plant Energy Generation and Management Projects	16,377,000	10,287,000	-	-	-	556,000	862,000	8,869,000
A06	Annual Clarifier Coating	776,000	776,000	185,000	191,000	197,000	203,000	-	-
A07	Annual Pavement Improvements	379,000	379,000	59,000	60,000	62,000	64,000	66,000	68,000
A08	Minor Capital Improvements	686,000	686,000	106,000	109,000	113,000	116,000	119,000	123,000
A09	Metrogro Applicators & Equipment	1,990,000	1,799,000	979,000	-	820,000	-	-	-
A10	Badger Mill Creek Phosphorus Compliance	839,000	839,000	309,000	530,000	-	-	-	-
A11	Operations Building First Floor Remodel	3,755,000	3,755,000	160,000	1,300,000	2,295,000	-	-	-
A12	Miscellaneous Treatment Plant Projects	886,000	500,000	77,000	80,000	82,000	84,000	87,000	90,000
A13	Engine Generator and Blower Control Panel Replacements	270,000	270,000	270,000	-	-	-	-	-
A14	W1 Piping Improvements	579,000	579,000	579,000	-	-	-	-	-
A15	Hot Water Piping Improvements	212,000	212,000	212,000	-	-	-	-	-
A16	Final Clarifier 4, 5 and 6 Effluent Launder Trough Replacement	234,000	234,000	-	154,000	80,000	-	-	-
A17	15 kV Electrical Service Replacement	3,001,000	1,648,000	-	95,000	11,000	113,000	116,000	1,313,000

*Table 7 continues on next page

TABLE 7 | Six-Year Capital Projects Summary (cont.)

No.	Project	Total Project Cost	2019 - 2024 Cost	2019	2020	2021	2022	2023	2024
INTERCEPTORS		**$52,648,000**	**$51,373,000**	**$8,942,000**	**$11,219,000**	**$7,780,000**	**$12,353,000**	**$7,258,000**	**$3,821,000**
B01	West Int.- PS 5 to Gammon Extension (lining project)	710,000	-	-	-	-	-	-	-
B02	Southwest Interceptor- Haywood Ext. Replacement	1,409,000	1,324,000	1,324,000	-	-	-	-	-
B03	NSVI-McKee Road to Dunn's Marsh (lining project)	2,110,000	2,050,000	2,050,000	-	-	-	-	-
B04	Northeast Interceptor Joint Grouting	304,000	304,000	304,000	-	-	-	-	-
B05	NEI- Truax Extension Relief	9,649,000	9,229,000	4,625,000	4,604,000	-	-	-	-
B06	West Int. Relief Sewer- Walnut Street to Whitney Way	14,236,000	14,236,000	582,000	4,748,000	4,387,000	4,519,000	-	-
B07	West Int.- Spring Street Relief (lining project)	1,744,000	1,744,000	57,000	1,687,000	-	-	-	-
B08	NEI- Truax Extension Rehabilitation (lining project)	5,781,000	5,781,000	-	180,000	2,759,000	2,842,000	-	-
B09	NEI- Waunakee Ext. Relief- Phase 1	10,642,000	10,642,000	-	-	634,000	4,930,000	5,078,000	-
B10	NEI- Far East Int. to Southeast Int. Junction (lining project)	1,923,000	1,923,000	-	-	-	62,000	1,861,000	-
B11	Lower Badger Mill Creek Int. - Phase 5	4,140,000	4,140,000	-	-	-	-	319,000	3,821,000
PUMPING STATIONS AND FORCE MAINS		**$39,752,000**	**$29,462,000**	**$4,469,000**	**$8,034,000**	**$8,330,000**	**$1,933,000**	**$4,761,000**	**$1,935,000**
C01	Grass Lake Dike Stabilization	155,000	0	-	-	-	-	-	-
C02	PS 10 Force Main Rehab	1,400,000	0	-	-	-	-	-	-
C03	PS 7 Improvements	3,997,000	3,597,000	1,772,000	1,825,000	-	-	-	-
C04	PS 17 Force Main Relief- Phase 1	1,754,000	1,754,000	937,000	817,000	-	-	-	-
C05	PS 13 Rehabilitation	5,746,000	5,746,000	706,000	2,483,000	2,557,000	-	-	-
C06	PS 14 Rehabilitation	5,590,000	5,590,000	688,000	2,415,000	2,487,000	-	-	-
C07	PS 4 Rehabilitation	5,158,000	5,158,000	-	414,000	3,204,000	1,540,000	-	-
C08	PS 17 Capacity Upgrade	1,522,000	1,522,000	-	-	-	113,000	1,409,000	-
C09	PS 17 Forcemain Relief- Phase 2	1,828,000	1,828,000	-	-	-	140,000	1,688,000	-
C10	PS 16 Forcemain Rehabilitation	1,654,000	1,654,000	21,000	-	-	56,000	1,577,000	-
C11	Automated Power Transfer at PS 10 and 11	268,000	268,000	268,000	-	-	-	-	-
C12	Miscellaneous Collection System Improvements	886,000	500,000	77,000	80,000	82,000	84,000	87,000	90,000
-	Other Future Pumping Station Improvements	9,794,000	1,845,000	-	-	-	-	-	1,845,000
CAPITAL BUDGET EXPENSES		**$1,920,000**	**$1,885,000**	**$494,000**	**$377,000**	**$320,000**	**$245,000**	**$246,000**	**$203,000**
D01	Capital Budget Expenses	334,000	334,000	52,000	53,000	55,000	56,000	58,000	60,000
D02	Plant Asset Management Plan Implementation	1,426,000	1,426,000	317,000	324,000	265,000	189,000	188,000	143,000
D03	Collection System Facilities Plan Update	160,000	125,000	125,000	-	-	-	-	-
TOTALS		$195,846,000	$145,856,000	$23,384,000	$31,978,000	$28,194,000	$26,404,000	$17,936,000	$17,960,000

Capital Projects Budget Expenses

The final category of expenditures in **Table 7** is capital budget expenses (letter D). These expenses typically include expenses related to planning and studies assessed against the capital fund but which would be difficult to capitalize to a specific asset. The 2018 budget included $618,000 related to ongoing planning efforts in the collection system and at the treatment plant including, but not limited to, sustainable infrastructure program expenses.

The 2019 budget allocates a similar level of funding for these longer-term planning efforts ($494,000).

To allow for completion of the district treatment plant asset management plan, $317,000 is included for this item in the 2019 CIP. Further details regarding this plan and the support needed to implement its recommendations in subsequent years are included in the business case for the plant asset management plan implementation, which can be found on the district's website. It

should be noted that program expenses for this category are anticipated to decline over the next six years as costs of implementing the sustainable infrastructure program are gradually transferred from the capital budget to the operating budget.

Additional expenditures that are anticipated in 2019 for this category include: (general) capital budget expenses ($52,000) and preparation of the collection system facilities plan update ($125,000). The first expenditure covers general planning expenses related to development of the CIP. The second item is for resources to study and prepare an update to the district's collection system facilities plan. While the original 2002 plan and the 2011 update were completed by district staff, it is anticipated that a portion of the 2019 update will require an engineering consultant for specialized work.

CAPITAL PROJECTS FUND CASH FLOW SUMMARY

Table 8 provides a summary of the district's capital projects fund cash flow for the period 2019 to 2024. The table includes anticipated revenue and expenditures for this six-year period. Total revenues for the period are anticipated at $146.8 million with total expenditures anticipated at $145.9 million.

Further details related to revenues are provided in the next section showing anticipated disbursements from the Wisconsin Clean Water Fund program, while expenditures were discussed previously as part of the six-year capital project summary for the district's CIP.

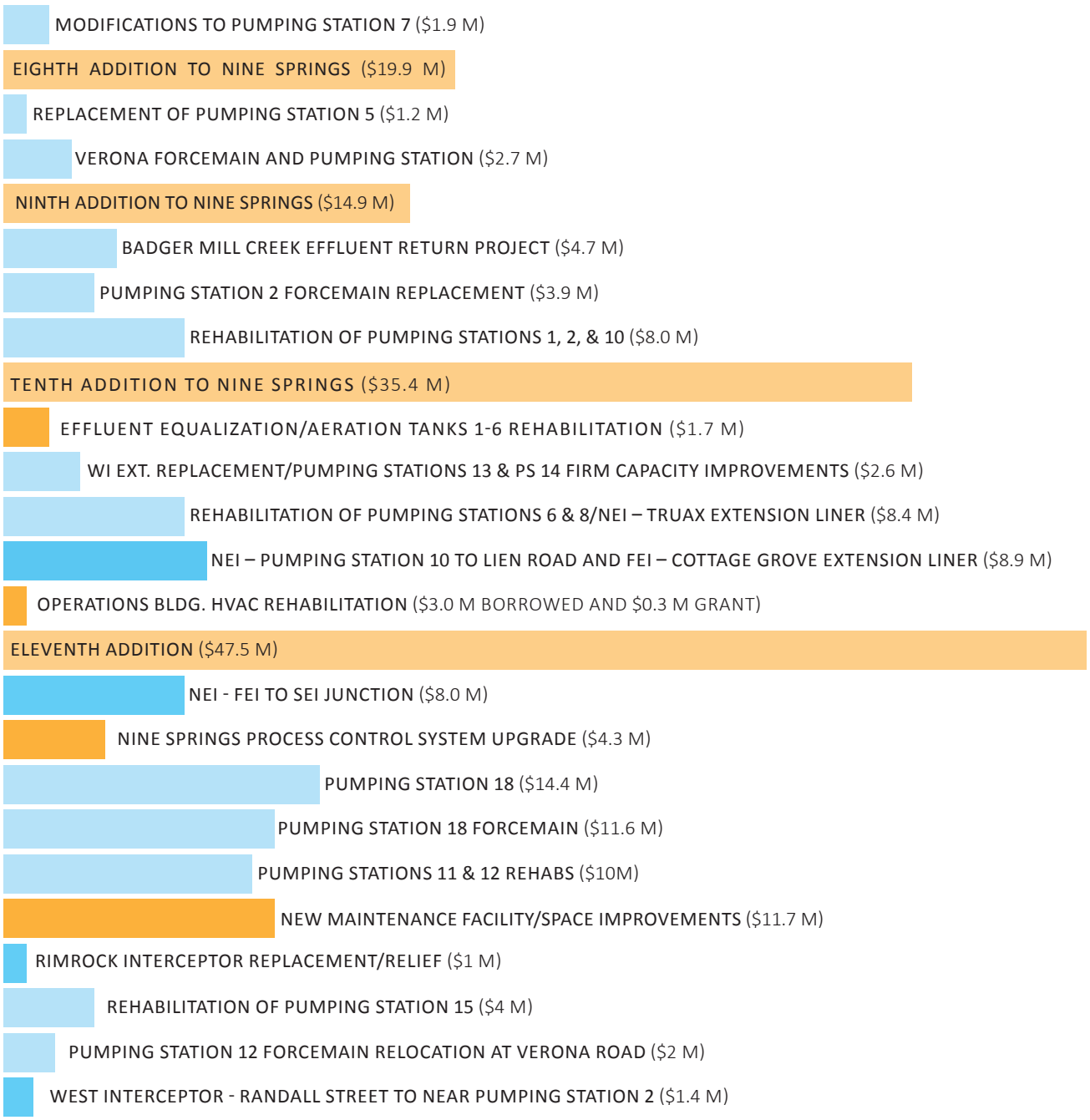
The district's capital projects fund includes revenues from three sources: loan proceeds, conveyance facility and treatment plant connection charges, interest received on account balances, and contributions from the operating fund. The projection anticipates funds from each of these sources during the six-year period; $127.8 million from loan proceeds, $15.4 million from connection charges, $576,000 from interest, and $2.9 million in contributions from the operating fund.

TABLE 8 | Capital Projects Fund Cash Flow Summary 2019-2024

REVENUES	2019	2020	2021	2022	2023	2024
CLEAN WATER FUND LOANS	18,445,000	29,470,000	25,370,000	23,625,000	16,305,000	14,567,000
CONNECTION CHARGES	$1,825,000	$2,125,000	$2,400,000	$2,700,000	$3,025,000	$3,375,000
INTEREST REVENUES	100,000	80,000	80,000	83,000	105,000	128,000
TRANSFER FROM (TO) OPERATING FUND	$1,200,000	$315,000	$331,000	$348,000	$365,000	$383,000
TOTAL REVENUES	$21,570,000	$31,990,000	$28,181,000	$26,756,000	$19,800,000	$18,453,000
EXPENDITURES	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
NINE SPRINGS WTP PROJECTS	$9,479,000	$12,348,000	$11,764,000	$11,873,000	$5,671,000	$12,001,000
INTERCEPTORS	8,942,000	11,219,000	7,780,000	12,353,000	7,258,000	3,821,000
PUMPING STATIONS AND FORCE MAINS	4,469,000	8,034,000	8,330,000	1,933,000	4,761,000	1,935,000
CAPITAL BUDGET EXPENSES	494,000	377,000	320,000	245,000	246,000	203,000
TOTAL EXPENDITURES	$23,384,000	$31,978,000	$28,194,000	$26,404,000	$17,936,000	$17,960,000
CAPITAL PROJECTS FUND CASH FLOW	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
BEGINNING BALANCE	$6,731,000	$4,917,000	$4,929,000	$4,916,000	$5,268,000	$7,132,000
TOTAL REVENUES	21,570,000	31,990,000	28,181,000	26,756,000	19,800,000	18,453,000
TOTAL EXPENDITURES	23,384,000	31,978,000	28,194,000	26,404,000	17,936,000	17,960,000
ENDING BALANCE	$4,917,000	$4,929,000	$4,916,000	$5,268,000	$7,132,000	$7,625,000

Wisconsin Clean Water Fund Loan Program

Although the district can, and may, fund future projects with general obligation bonds, staff members anticipate continued use of the Wisconsin Clean Water Fund Loan program to fund most larger projects and to ensure adequate capital reserves to address any unforeseen capital costs. As of Aug. 20, 2018, the district has borrowed $233.2 million from this program for the following projects:

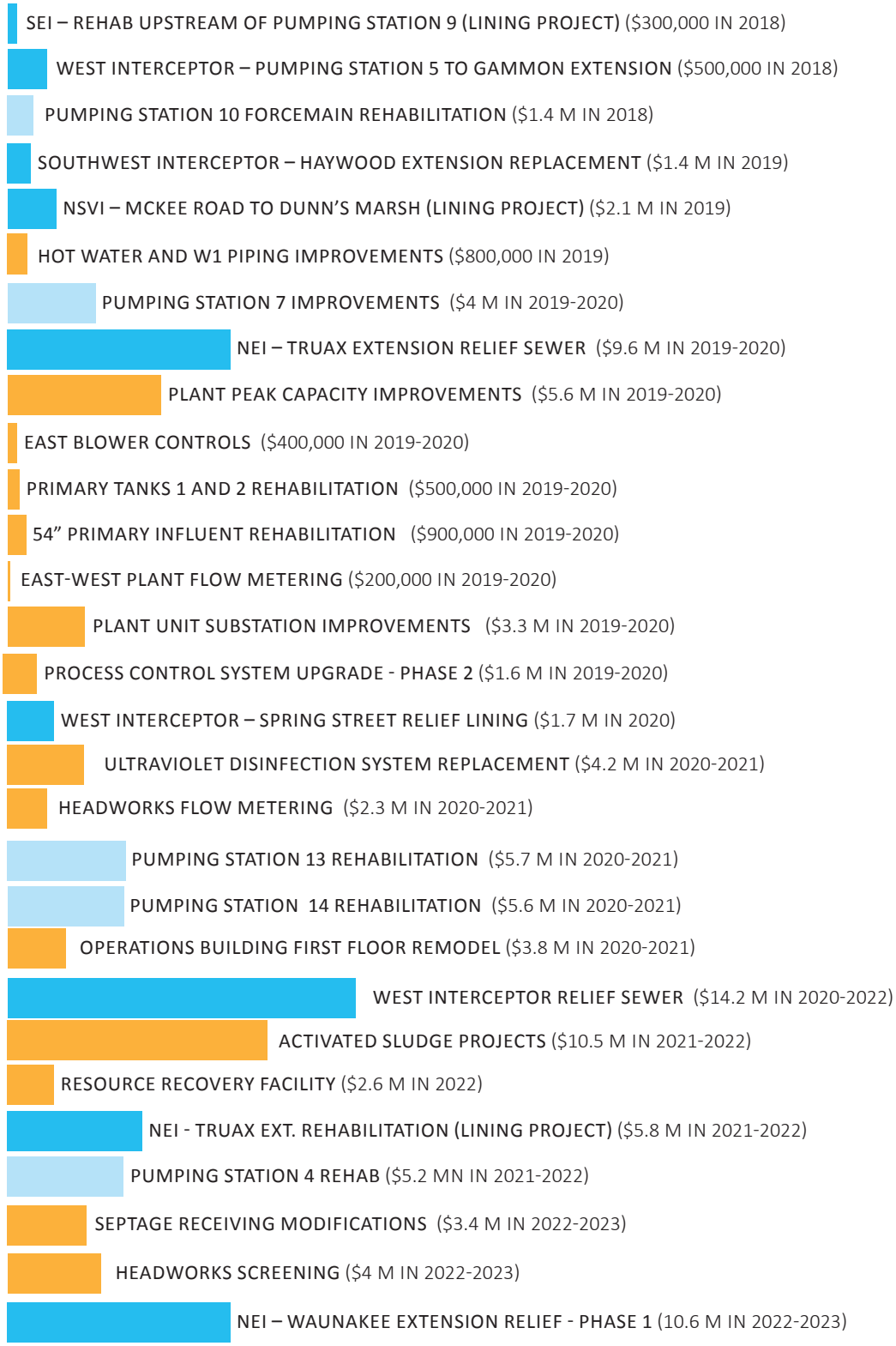


LEGEND

PUMPING STATIONS AND FORCE MAINS | INTERCEPTORS | ADDITIONS | NINE SPRING WTP PROJECTS

Wisconsin Clean Water Fund Loan Program

The district also anticipates that it will require funding for many of the following future projects. Many of these will be funded with Clean Water Fund loans:



Wisconsin Clean Water Fund Loan Program (cont.)

- NEI - FEI TO SEI JUNCTION (LINING PROJECT) ($1.9 M IN 2023)
- PUMPING STATION 17 CAPACITY UPGRADES ($1.5 M IN 2023)
- PUMPING STATION 17 FORCEMAIN RELIEF - PHASE 2 ($1.8 M IN 2023)
- PUMPING STATION 16 FORCEMAIN REHABILITATION ($1.7 M IN 2023)
- PLANT ENERGY GENERATION PROJECTS (17.3 M IN 2024-2025)
- 15 kV ELECTRICAL SERVICE REPLACEMENT ($3 M IN 2024-2025)

The Pumping Station 15 project was designed to increase resiliency and support the City of Middleton including growing areas such as Bishops Bay and much of the Town of Westport.

SECTION FOUR

2019 DEBT SERVICE

OVERVIEW

Projected debt service requirements under the 2019 CIP are similar to those of the 2018 plan, as detailed below. Service charge revenue collected for debt service in the 2019 CIP is projected to follow a smoother trend than the 2018 plan, with slightly lower increases in early years and higher ones in later years, compared to the 2018 plan. Finally, the year-end closing balance in the debt service fund is projected to rise over the planning period, to accommodate minimum balance requirements under the terms of Clean Water Fund loans.

ROLE OF DEBT IN DISTRICT FINANCES

Debt is a tool for paying for capital projects while managing increases in service charges. The district could — in principle — fund the entire CIP on a pay-as-you-go basis. Under that approach, district service charges would rise and fall in concert with capital costs over time. Such year-over-year rate changes would be significantly larger than current district practice.

To avoid large swings in required service charges, the district spreads capital costs over many years. The district borrows for capital costs when needed for projects, and then repays those loans over time, typically 20 years. Even when the district's capital spending needs are high for a period, the immediate effect on service charge amounts is limited through use of debt.

When a loan is needed for a given capital project, proceeds from the loan are deposited in the capital projects fund. Generally, a project will have more than one loan disbursement, to match the progress of construction. Loan proceeds join connection charge revenues as the primary sources of money in the capital projects fund. A small amount of interest is also earned on fund balances.

The district's debt service obligations are paid not from the capital projects fund, but from a separate debt service fund. Revenue for this fund is received from one main source: transfers from the district's operating fund. In other words, debt service is ultimately paid from service charges, after a stop in the debt service fund.

Having a separate debt service fund facilitates smoothing revenue requirements. The debt service fund balance rises and falls gradually over the years. At the end of each year the balance must, at a minimum, be sufficient to cover debt service obligations for the succeeding year. When the district anticipates significantly increased spending in future years, the balance is allowed to rise in anticipation of future debt service obligations. For periods without significant increases, the balance is allowed to remain slightly above the minimum. Rather than raise service charges immediately for capital projects, the district raises service charges gradually to meet the debt service requirements created by those projects.

DEBT LEVELS AND CONTROLS

There are important policy considerations with district debt. First, unlike a household or commercial business, the district's ability to repay debt is comparatively stable. District service charge revenue is reliable because of the financial stability of the district's customer communities. The ultimate safeguard against default is the district's ability to levy a property tax. In recognition of that option, state statute limits district debt to 5 percent of the equalized property valuation of the district.

The district's wildlife observation unit is part of the Capital Springs State Recreation Area and is home to 200 species of birds and waterfowl.

Metrogro's TerraGators inject biosolids into the soil to provide nutrients where plant roots can absorb the food source.

Currently, the equalized property valuation is approximately $45.3 billion. The district's debt limit is 5 percent of that, or approximately $2.3 billion. The district's projected debt at the end of 2023, $184 million, is well-below this limit. (The district does not currently collect property tax and has no plans to do so.)

A second consideration is the interest cost of using debt. Interest payments are the price of the rate-smoothing benefits discussed above. The state's Clean Water Fund loan program provides low-interest-rate funding, for which most district capital projects are eligible.

To reduce interest payments yet still achieve smoothing of required revenues, the district could shift to a strategy of growing the capital fund balance in advance of capital project needs. This would allow cash funding of projects, with smoothing accomplished through gradual increases in the capital project fund balance. The disadvantage of this approach is the need to maintain a large capital fund balance to fund large projects and to guard against unanticipated needs or schedule changes.

A third and final consideration is the potential for debt financing to encourage greater capital spending than is needed. This is an important concern.

However, the district has spending controls in place in capital planning, asset management, engineering project management and commission spending review. Limitations on use of debt could provide a fifth control, but would risk jeopardizing the district's service level or causing undesirable — and ultimately more costly — delays in needed projects.

The district's clarifiers are part of a system that uses natural processes to break down waste and reclaim nutrients before treated effluent is released into area surface waters.

TRENDS IN DISTRICT DEBT

At the start of the decade of the 1980s, the district had no outstanding debt. The district had benefited from significant federal and state grants for wastewater treatment infrastructure in the 1960s, 1970s and 1980s. Some grants covered as much as 80 percent of project costs. Thus, the district was able to expand to meet growing needs, install equipment required by stricter environmental limits and be debt free in 1982.

Since 1992, grant funding has been unavailable (with minor exceptions). Furthermore, the assets created during the grant-funded period are now coming due for repair or replacement. Reflecting these changes, and following the smoothing approach, the district's outstanding principal has risen from $46.2 million in 2000 ($65.7 million in present dollars) to approximately $139 million in 2018.

District debt service payments have similarly trended upward, from $5.7 million in 2000 ($8.1 million in present dollars) to approximately $13 million in 2018. As a percentage of the district's operating budget, amounts transferred from the operating fund for debt service have averaged 36 percent since 2004. Recent years have seen a slight trend upwards to 39 percent in 2018. Debt service has been a main driver of operating budget increases in recent years.

TABLE 9 | Debt Service Collected from Service Charges 2006-2026

YEAR	AMOUNT COLLECTED FOR DEBT SERVICE	PERCENT INCREASE OVER PREVIOUS YEAR	TYPE OF DATA
2006	$6,603,480	2.0%	Actual
2007	$6,828,000	3.4%	
2008	$7,060,000	3.4%	
2009	$7,300,000	3.4%	
2010	$7,650,400	4.8%	
2011	$8,017,600	4.8%	
2012	$8,980,000	12.0%	
2013	$9,878,000	10.0%	
2014	$10,865,000	10.0%	
2015	$11,843,000	9.0%	
2016	$12,909,000	9.0%	
2017	$13,684,000	6.0%	
2018	$14,505,000	6.0%	
2019	$15,158,000	4.5%	*Proposed*
2020	$15,840,000	4.5%	Projected
2021	$16,552,000	4.5%	
2022	$17,297,000	4.5%	
2023	$18,076,000	4.5%	
2024	$18,889,000	4.5%	
2025	$19,739,000	4.5%	
2026	$20,627,000	4.5%	

TABLE 10 | Six-Year Debt Service Summary

	2019	2020	2021	2022	2023	2024
DEBT SERVICE PAYMENTS	$13,083,000	$14,158,000	$16,354,000	$18,152,000	$20,218,000	$18,349,000
DEBT SERVICE COLLECTED IN RATES						
DEBT SERVICE REQUIREMENTS FOR SUCCEEDING YEAR	$14,158,000	$16,354,000	$18,152,000	$20,218,000	$18,349,000	$19,472,000
ADDITIONS TO (USE OF) DEBT SERVICE RESERVE	1,000,000	(515,000)	(1,600,000)	(2,921,000)	(273,000)	(583,000)
DEBT SERVICE INCLUDED IN SERVICE CHARGE RATES	$15,158,000	$15,839,000	$16,552,000	$17,297,000	$18,076,000	$18,889,000
PRINCIPAL AMOUNT OF OUTSTANDING DEBT AT FIRST OF THE YEAR	$129,437,792	$138,015,057	$157,207,517	$171,043,075	$181,911,612	$183,860,121

PROJECTED DEBT SERVICE

The 2019 CIP's use of debt is consistent with the district's debt smoothing approach and with plans from recent years, but projects more even year-over-year increases than projected in the 2018 plan. Projected debt service requirements under the 2019 plan are similar to those of the 2018 plan.

Service charge revenue collected for debt service in the 2019 CIP is projected to follow a smoother trend than the 2018 plan. Under the 2018 plan, year-over-year increases in service charge revenue collected for debt service were projected to be 6 percent in 2019, 4.5 percent in 2020 and 3.5 percent in 2021 and beyond. Under the 2019 plan, year-over-year increases are more even, at 4.5 percent through 2028 (see Table 9).

The year-end closing balance in the debt service fund is projected to rise over the planning period, to accommodate minimum balance requirements under the terms of Clean Water Fund loans.

Chart 1 illustrates the debt service requirements and service charge revenue collected for debt service extending to 2028. Solid lines are historical actual amounts. Dashed lines are the anticipated amounts from the CIP.

Over the period 2019–2028, amounts collected for debt service are above projected debt service requirements in early years and below in later years. This indicates that the debt service fund balance will be added to in early years and drawn from in later years, consistent with the smoothing strategy.

The point is also represented in Table 10, which shows debt service requirements over the first six years of the plan. The fourth row shows debt service included in service charge rates for the given year. A portion of that amount is held for debt service requirements for the succeeding year, shown in the second row. In some years, more is collected than is required for the succeeding year's debt payment. This addition to the debt service reserve is shown in the third row. In other years, the reserve is used, shown as a negative value in that same row. Additions to and use of reserves is the district's debt smoothing strategy. Separately, the table notes the total amount of outstanding principal at the start of each year shown.

Debt levels are one of several factors affecting a residential customer's service charges. Others include district operating expenses and user charges added by the district's customer communities. Holding other factors constant, $1 million in new debt service currently equates to approximately $6 to $7 for a typical household's annual bill. Using that guide, the $6.2 million debt service increase anticipated between 2018 and 2024 would increase a typical household's annual bill between $37 and $44 over that period.

TABLE 11 | 2019 Debt Service Budget

	2017 Actual	2018 Thru June	2018 Estimated Total	2018 Budget	Proposed 2019 Budget	% Change
REVENUES						
Transfer from Operating Fund	$13,684,000	$0	$14,505,000	$14,505,000	$15,158,000	4.50%
Interest	105,543	83,000	173,000	34,000	228,000	570.59%
TOTAL REVENUES	$13,789,543	$83,000	$14,678,000	$14,539,000	$15,386,000	5.83%
EXPENDITURES						
First Half Interest	$1,788,136	$1,711,000	$1,711,000	$1,755,000	$1,642,000	-6.44%
Principal	9,226,901	9,506,000	9,506,000	9,619,000	9,868,000	2.59%
Second Half Interest	1,694,993		1,596,000	1,645,000	1,574,000	-4.32%
TOTAL EXPENDITURES	$12,710,030	$11,217,000	$12,813,000	$13,019,000	$13,084,000	0.50%
DEBT SERVICE FUND BALANCE						
BEGINNING BALANCE	$18,466,077	$19,545,590	$19,545,590	$19,484,000	$21,411,000	9.89%
TOTAL REVENUES	13,789,543	83,000	14,678,000	14,539,000	15,386,000	5.83%
TOTAL EXPENDITURES	12,710,030	11,217,000	12,813,000	13,019,000	13,084,000	0.50%
ENDING BALANCE	$19,545,590	$8,411,590	$21,411,000	$21,004,000	$23,713,000	12.90%

TABLE 12 | Estimated Debt Service Payment Schedule

YEARS ENDING DECEMBER 31	PRINCIPAL	INTEREST	TOTAL
2019	9,794,493	3,074,327	12,868,820
2020	10,047,960	2,817,550	12,865,510
2021	10,180,925	2,556,102	12,737,027
2022	10,302,808	2,292,128	12,594,936
2023-2027	42,610,128	8,000,836	50,610,964
2028-2032	36,318,691	2,997,183	39,315,874
2033-2037	8,001,787	219,482	8,221,269
TOTAL	**$127,256,792**	**$21,957,608**	**$149,214,400**

DEBT SERVICE BUDGET AND SCHEDULE

Table 11 summarizes the debt service budget. Operating fund transfers are the main revenue source for the debt service fund. For Clean Water Fund loans, the district pays principal payments on May 1 and interest payments on both May 1 and November 1. Table 12 projects debt service payments. Amounts are per year for the first few years and then grouped by period for later years.

DEBT SERVICE FUND BALANCE

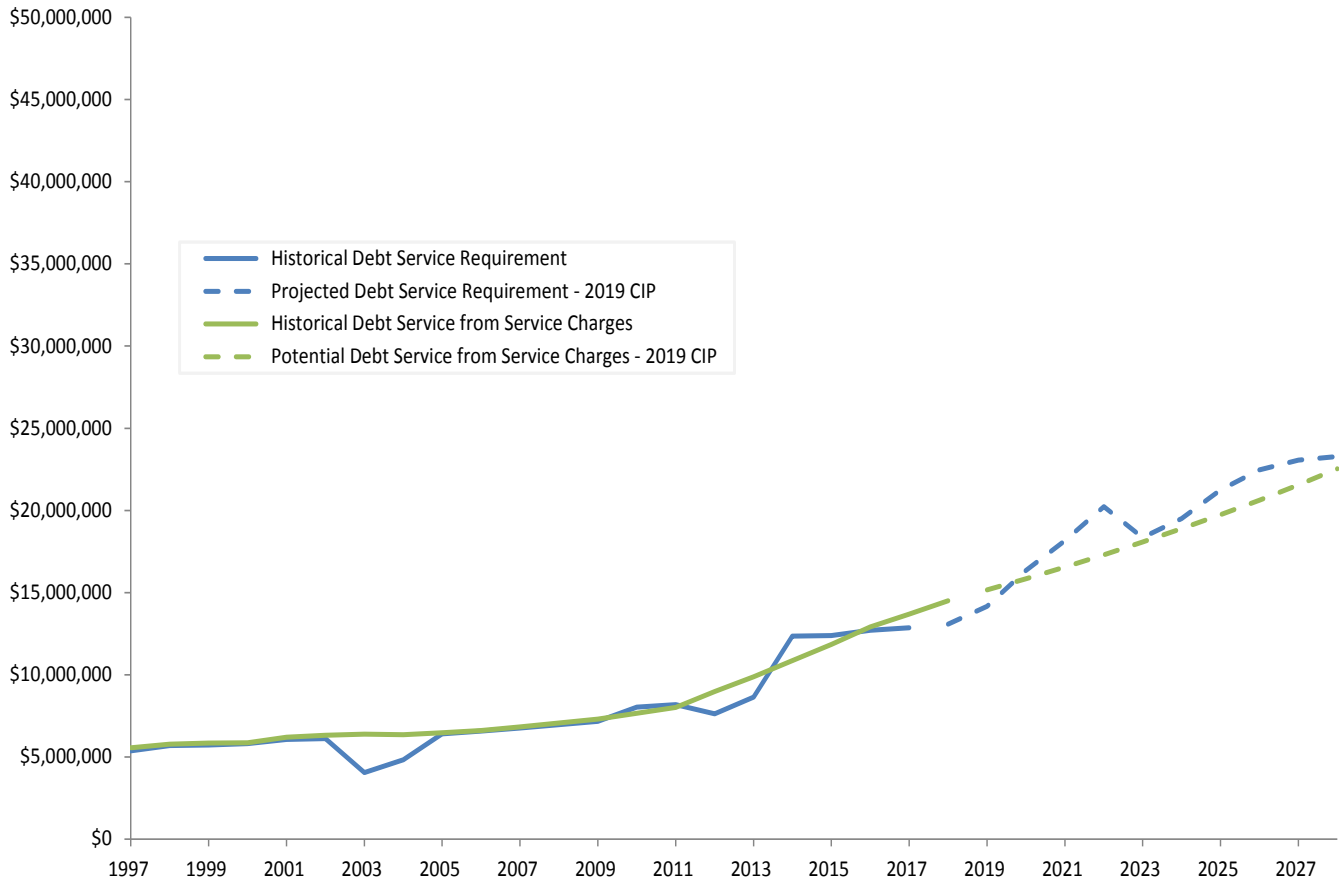
The debt service fund ending balance is projected to increase by 12.9 percent to $23.7 million in 2019. This amount is adequate to pay the required principal and interest payments on existing and anticipated Clean Water Fund loans. The budgeted debt service balance at the end of 2019 meets the district's policy requirement to maintain a balance sufficient to avoid levying a property tax to satisfy our debt service obligations.

CURRENT DEBT SERVICE SCHEDULE

Currently all debt is financed through the State of Wisconsin Clean Water Fund Program. The district makes principal payments on its long-term debt in May of each year and interest payments in May and November of each year. Future principal and interest due on long-term debt incurred as of July 31, 2018 are approximately as shown in **Table 12.** Note that this does not include any debt that will be incurred beyond July 31, 2018.

CHART 1 | Historical and Projected Debt Service

Annual Debt Service Included in Service Charges and Annual Debt Service Requirements



Future debt service is based on estimates for actual anticipated projects through 2024 plus average estimated project costs of $21 million per year for the period from 2025-2028. Assumes no advanced nutrient removal projects and Clean Water Fund loan rates of 4% for loans beyond 2019. Transfer amount increases by 4.5% in 2019 and 4.5% from 2020 to 2028.

Return to TOC

SECTION FIVE

DEPARTMENTAL INFORMATION

District safety and protective clothing helps keep employees visible and comfortable even in extreme weather.

DEPARTMENT INFORMATION

The district is made up of six departments: district leadership and support, engineering, planning and strategy, operations and maintenance, administrative services and ecosystem services. Each department's section includes a purpose statement, budget summary, influence factors and major changes to the budget. Each section also reviews goals that have been completed, are in progress or are anticipated for next year. Goals and policies highlighted in blue are district-wide initiatives.

TABLE 13 | Departmental Budget Summary

	2018 Adopted Budget	2019 Budget	2018 Change from 2019	% from 2018 Budget
District Leadership and Support	1,667,011	1,727,950	60,939	3.66%
Administration	2,836,118	3,212,103	375,985	13.26%
Engineering	723,575	927,062	203,487	28.12%
Ecosystem Services	4,139,085	4,426,166	287,081	6.94%
Operations and Maintenance	12,340,233	12,920,942	580,709	4.71%
Planning and Strategy	819,206	2,291,762	1,472,556	179.75%
Debt Service	14,505,000	15,158,000	653,000	4.5%
TOTAL	**37,030,228**	**40,663,985**	**3,633,757**	**9.81%**
TOTAL WITHOUT DEBT SERVICE	**22,525,228**	**25,505,985**	**2,980,757**	**13.23%**
MAJOR EXPENSE CATEGORIES				
Asset Addition, Repair and Replacement	16,731,180	18,028,790	1,297,610	7.76%
Personnel Services	11,090,396	11,689,983	599,587	5.41%
Contract Services	3,712,375	4,110,530	398,155	10.73%
Materials, Supplies and Misc.	5,621,876	5,767,906	146,030	2.60%
Leave Allocation Adjustment	-125,599	-133,224	-7,625	6.07%
Transfer to Capital Projects Fund	-	1,200,000	1,200,000	100%
TOTAL	**37,030,228**	**40,663,985**	**3,633,757**	**9.81%**

.

The Maintenance Facility received a platinum certification from the U.S. Green Building Council's Leadership in Energy and Environmental Design program for the building's energy and water conserving features – including these native plantings.

District Leadership and Support Department

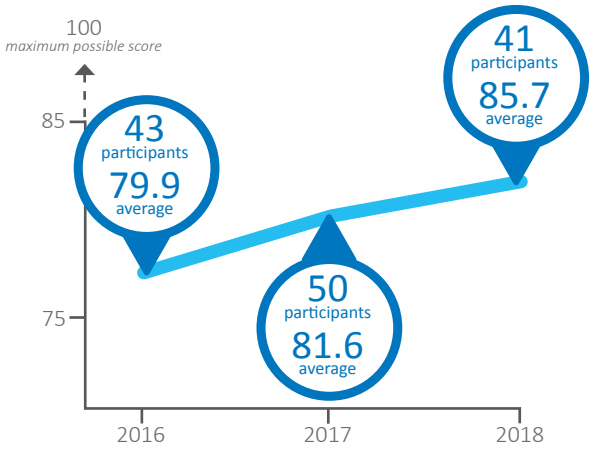
7 FTES

The purpose of the district leadership and support team is to provide human resources, commission and communication services to the organization so that the district develops and invests in coworkers, advances a policy driven strategic approach to governance and deepens relationships with customers and the public.

KEY RESULT INDICATORS

Key result indicators for the district leadership and support team highlight advances in employee health and engagement as well as efforts to deepen the district's external relationships.

HEALTH RISK ASSESSMENT RESULTS



RECORDABLE INJURIES

BUDGET SUMMARY

2018 ADOPTED BUDGET | TOTAL: $1,667,011

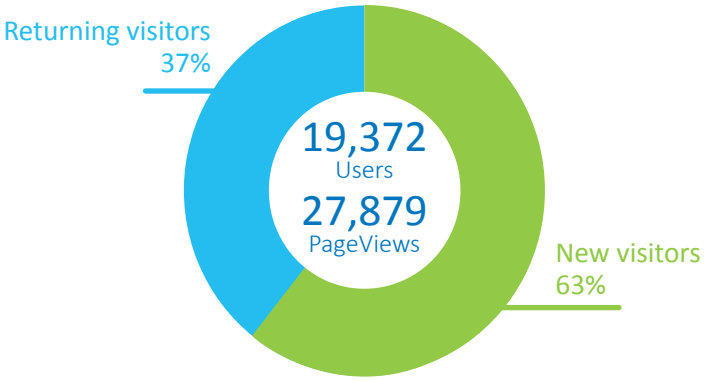
2019 BUDGET | TOTAL: $1,727,950

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	1,053,111	1,085,150	32,039
ASSET ADDITION, REPAIR AND REPLACEMENT	32,800	36,500	3,700
CONTRACT SERVICES	414,700	443,700	29,000
MATERIAL, SUPPLIES AND MISC.	166,400	162,600	(3,800)

3.66%
change from 2018 budget
(+$60,939)

Personnel Services: 3.04%
Asset Addition, Repair and Replacement: 11.28%
Contract Services: 6.99%
Material, Supplies & Misc.: -2.28%

INITIAL WEBSITE ANALYTICS



INTERCULTURAL DEVELOPMENT INVENTORY

98%
Percentage of employees completing inventory

88
District group score

INFLUENCE FACTORS

1. Workplace violence, security threats and data breaches are becoming common in the U.S., which is decreasing employees' feeling of security at work.
2. Rising public interest in water quality and affordability issues is increasing overall attention to the business of the district.
3. The district has experienced tremendous turnover in management due to retirements.
4. Recruitment and retention of top talent for science, technology, engineering and mathematics (STEM) related jobs and the trades have become more competitive as the available workforce shrinks and economic growth continues.
5. Efforts to achieve permit compliance through traditional brick and mortar solutions are having a decreasing return on investment.
6. There is increasing utility industry awareness that leveraging water investments can create workforce opportunity and equity.
7. Collaboration with diverse community groups is increasingly important.
8. To make more informed and strategic business decisions, information technology needs are growing.

DEPARTMENT UPDATE

The department of leadership and support works actively to support effective commission and organizational governance. Communication resources are in place to address the increasing demands for public engagement, Yahara WINS and to support pollution prevention programs. The department is also nurturing employee governance and inclusion programs to build employee capacity to be effective leaders at fulfilling the district's mission, vision and values. The department is made up of seven full-time employees: chief engineer and director, strategic communications manager, human resources manager, health and safety specialist, executive coordinator, program resource associate and program resource assistant.

MAJOR CHANGES TO THE BUDGET

An increase of $32,039 for market and progression increases for employees, additional part time support and increased health insurance and fringe benefits costs.

An increase of $35,000 to complete a needs assessment for campus security at the Nine Springs Treatment Plant.

KEY RESULT INITIATIVES

In addition to its many ongoing duties, the following initiatives highlight some of the transformative efforts of the department. They align with the five pillars described in the overview and strategic planning section.

2018 UPDATE

1. Policy Development Prioritization

   Goal: Review existing policies, identify potential new polices and develop a prioritization schedule to write, revise or eliminate.

   Status: The focus for 2018 was the development of outcome policies, which will be completed in the fall of 2018.

2. Employee Leadership Council (ELC)

   Goal: The council will establish a list of priorities and will start working on them. The group will also conduct facilitator training and interest based problem solving training for new members and new executive team members.

   Status: Interest based problem solving

training was completed. The council's operating guidelines were completed. The council made recommendations to the executive team on district communications and operator pay that were approved and implemented. The council participated in the chief engineer and director's performance review.

3. Communications Plan

Goal: Conduct a communications inventory, reflecting the current status of the district's communication efforts and identifying the channels, tools, staff capacity and processes needed to continue moving forward.

Status: This was completed.

4. Cultural Competency

Goal: Conduct in depth cultural competence training and communication.

Status: In 2018, the district began a three-year partnership with the Young Women's Christian Association to further build on the inclusion and diversity work the district began in 2017. This partnership began with "Creating Equitable Organizations" training for district leadership and the employee leadership council.

2019 GOALS

1. Conduct Strategic and Organizational Planning Background:

Clean water utilities are branching into new policy arenas to move toward the National Association of Clean Water Agencies' Utility of the Future model. The national conversation on the topic of infrastructure renewal, water equity, affordability and resiliency is evolving quickly. The commission developed a policy book in 2017 and 2018 to set a blueprint for governing the district in this new climate of change. The policy book outlines district outcome polices, process policies and delegation policies. The next phase is for the commission to set a strategic direction for the district. The commission also will operationalize the policy book to incorporate new procedures to monitor progress toward achieving strategic priorities.

Goal: Existing funds are in place to develop a policy level strategic plan that sets long term goals and establishes operational procedures such as performance monitoring, agenda planning and goal setting. Also, to inform policy level decision making, commissioners are encouraged to engage with policy making colleagues through participation in national associations.

2. Safety and Security

Background: The Nine Springs campus has limited security protocols and infrastructure in place. With workplace violence and security threats becoming more common, the district has initiated a process to take a comprehensive look at security, with a focus on employee safety.

Goal: Perform a safety and security needs assessment. New funds totaling $35,000 have been included to complete this first phase of the work. Future year budgets will include funds for necessary upgrades to district facilities.

3. Improve Cultural Competency of the Organization Background:

Having a diverse and inclusive work environment is no longer a benefit, it is a necessity. The district's customer communities are diverse and the district's working environment must evolve to support diversity in order to recruit, retain and engage employees at the highest level. The district is moving into a second year of a contract with the YWCA. The work in 2018 focused on conducting training to create an equitable organization. The work in 2019 will be to evaluate 10 focus areas that support equity in the workplace.

Goal: Existing budget funds will be used to implement the second year of inclusion and diversity work with the YWCA. The priorities include conducting a comprehensive review of culture and climate, district policies, hiring practices, communication, professional development, leadership and performance management.

Administrative Services Department

14 FTES

The department provides business and administrative services – procurement, financial, process improvement and information technology – to internal and external customers so that the district can achieve its mission of protecting public health and the environment.

KEY RESULT INDICATORS

2016 AUDIT RESULTS

2017	☑ UNQUALIFIED OPINION

BEST PRACTICES IN BUDGETING

The Government Finance Officers Association Distinguished Budget Award recognizes best practices and transparency in reporting on use of public funds.

2013	☑ YES	☐ NO
2014	☑ YES	☐ NO
2015	☑ YES	☐ NO
2016	☑ YES	☐ NO
2017	☑ YES	☐ NO
2018	☑ YES	☐ NO

BUDGET SUMMARY

2018 ADOPTED BUDGET | TOTAL: $2,836,118

2019 BUDGET | TOTAL: $3,212,103

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	1,538,404	1,574,039	35,635
ASSET ADDITION, REPAIR AND REPLACEMENT	535,255	807,265	272,010
CONTRACT SERVICES	661,508	745,928	84,420
MATERIAL, SUPPLIES AND MISC.	100,951	84,871	(16,080)

13.26%
change from 2018 budget
(+ $375,985)

Personnel Services: 2.32%
Asset Addition, Repair and Replacement: 50.82%
Contract Services: 12.76%
Material, Supplies & Miscellaneous: (15.93%)

INFLUENCE FACTORS

1. Projections for increased capital and operating obligations will exert pressure on district finances, requiring increased focus on district revenues and expenditures.
2. There is an increasing need for tools and systems that support the day-to-day work of the district, leading to increased emphasis on providing available and current information technology.
3. An increasing need for strategic decision making is requiring the development and availability of sophisticated analytical technologies and systems.
4. The growing size and complexity of the district and staff changes due to retirements and new hires are increasing the need for better records management systems and practices.

DEPARTMENT UPDATE

The current department is made up of: assistant chief engineer and director of administration, comptroller/budget manager, staff accountant, business analyst, two accounting assistants, procurement agent, purchasing and inventory assistant, information systems manager, database administrator, programmer/analyst, programmer I and two network technicians.

MAJOR CHANGES TO THE BUDGET

As shown in the department summary table, budgeted amounts for asset addition, repair and replacement increase by $272,010. The change is due to the contribution of $450,000 to the equipment replacement fund in 2019, an increase of $325,000 over the 2018 contribution.

KEY RESULT INITIATIVES

The administrative services department carries out a wide variety of core work that may not be apparent in this section. In this section, only new initiatives are discussed that have a strategic significance.

2018 UPDATE

1. Financial Plan

   Goal: Develop a five-year operating budget and financial plan.

   Status: This goal was only partially met. Developing a five-year operating budget proved to be difficult and the effort was temporarily suspended in favor of performing operational planning that focused more on understanding department priorities, as a first step. Progress was made on some planning elements such as a study session with the commission on the use of debt financing and planning for the replacement of the current Oracle Work and Asset Management system. Work is continuing with the commission on the development of desired outcomes policies, which will inform the development of a financial strategy.

2. Improve Database Management

   Goal: Improve database management.

   Status: A database administrator was hired and improvements have been made to database security, configuration and recovery plans. Work in the area of database management will be perpetual.

3. Budget Application Implementation

   Goal: Implementation of the Questica budget application.

   Status: This project was stopped. Technical issues, costs, the level of staff effort needed and the planned change in operational accounting and financial systems scheduled for 2021 led to this decision.

4. Move to Centralized Purchasing

   Goal: Centralize purchasing by moving to fewer buyers and increasing the use of requisitions.

   Status: This work is on track to be completed by the end of 2018.

5. Develop a Document Management Plan

   Goal: Develop a document management plan.

   Status: Good progress was made in 2018. A plan has been developed to improve use of the existing OnBase document management system, develop records management policies and improve oversight/management of the program.

6. Implement Office 365

   Goal: Implement Office 365 software.

   Status: This project will be completed in 2019.

2019 GOALS

1. Long-Term Financial Strategy

Background: Work is underway with the commission to develop outcomes policies for the district. Staff members are also pursuing various planning efforts such as a replacement for the district's existing computerized maintenance management system — Oracle's Work and Asset Management system — and a treatment plant asset management plan. As these and other emerging needs are better defined, the district can continue to pursue alignment of financial practices and capacity with its long-term service objectives.

Goal: This effort involves development of a long-term financial strategy to fulfill district obligations and objectives, minimize risk and guide the commission during annual budgeting. Budget capacity exists to achieve the work in 2019.

2. Implement a Records Management Strategy

Background: The growing size and complexity of the district as well as staffing changes due to retirements and new hires emphasize the need for better records management systems and practices. Records management will play a significant role in district-wide projects such as asset management, GIS and data governance.

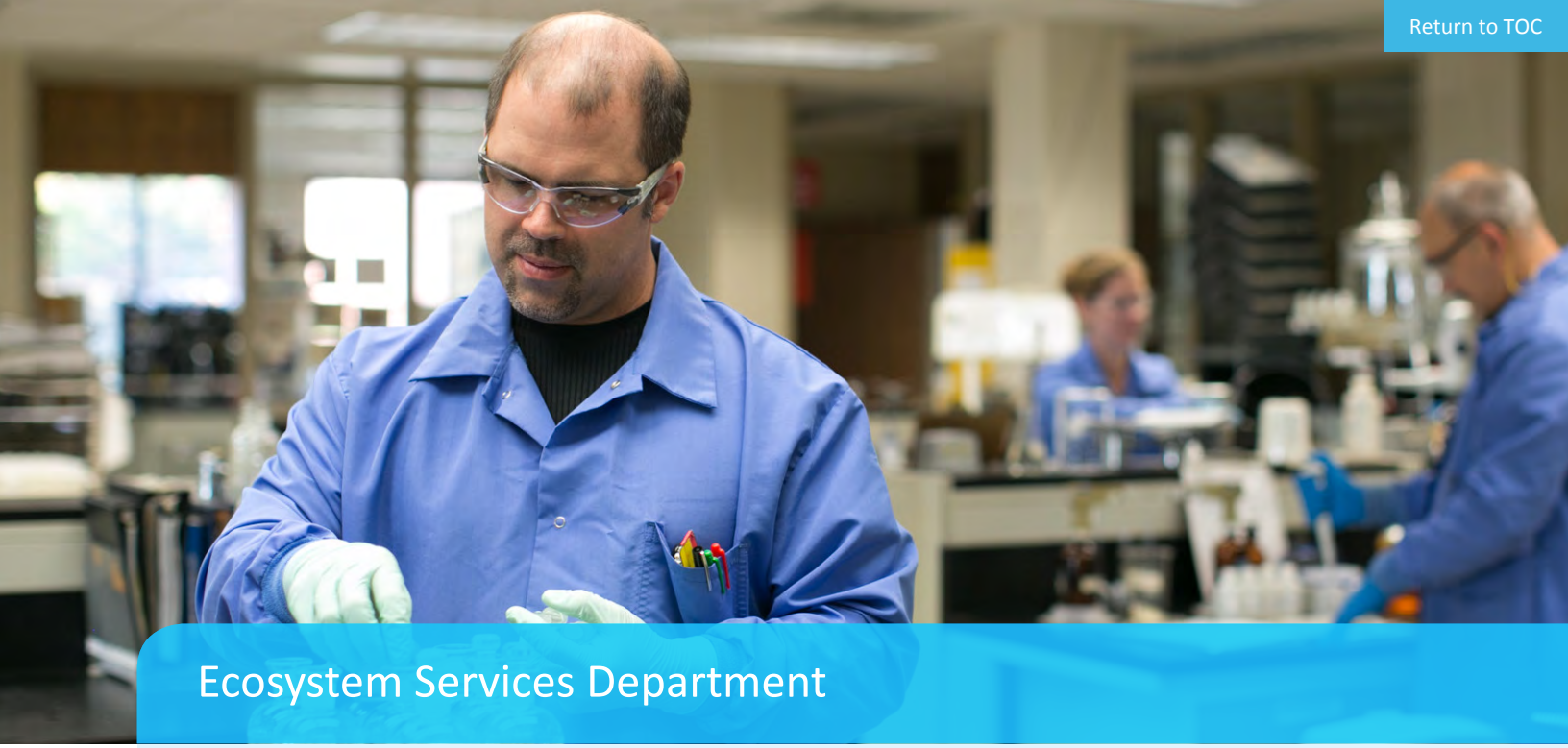
Goal: During 2019, the district will implement the initial phase of an updated records management program. The initiative will be funded with existing budget capacity.

3. Implement Office365 and SharePoint

Background: The district seeks to update its suite of office software by moving to Office 365 and adding capabilities that support records management through implementation of basic SharePoint elements. After a period of assessment, additional features of Office 365 and SharePoint will likely be implemented.

Goal: During 2019, the district will implement Office 365 and SharePoint. The initiative will be funded with existing budget capacity.

Michelle Stransky, purchasing assistant, and Matt Leitzen, procurement agent, focus their efforts on district purchases and vendors.



Ecosystem Services Department

17 FTES

The purpose of the ecosystem services department is to advance initiatives and provide support services so that treatment plant operating systems can be optimized, demand for traditional wastewater treatment infrastructure and collection services can be reduced, resources can be recovered and environmental quality can be enhanced.

KEY RESULT INDICATORS

WPDES PERMIT COMPLIANCE

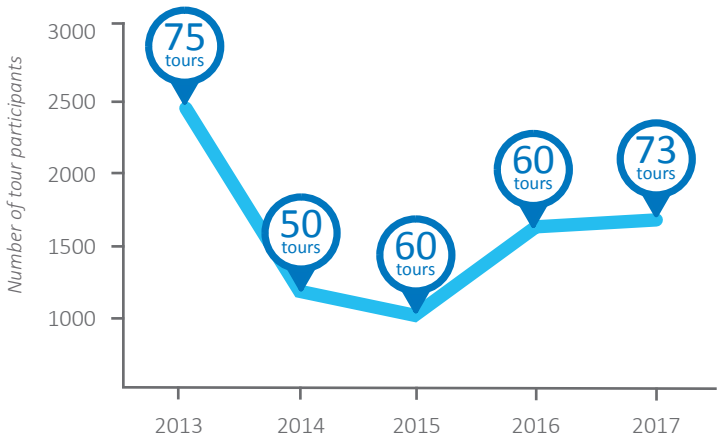
2017 99.945% COMPLIANCE

Percentage based on NACWA scoring for peak performance award

NATIONAL ASSOCIATION OF CLEAN WATER AGENCIES' PEAK PERFORMANCE AWARD

SILVER

DISTRICT TOURS



BUDGET SUMMARY

2018 ADOPTED BUDGET | TOTAL: $4,139,085

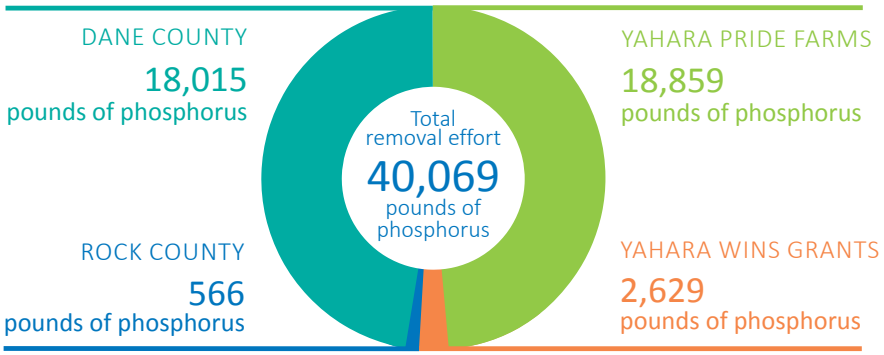
2019 BUDGET | TOTAL: $4,426,166

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	1,935,763	1,959,294	23,531
ASSET ADDITION, REPAIR AND REPLACEMENT	212,000	282,600	70,600
CONTRACT SERVICES	1,532,972	1,643,022	110,050
MATERIAL, SUPPLIES AND MISC.	458,350	541,250	82,900

6.94%
change from 2018 budget
(+$287,081)

Personnel Services: 1.22%
Asset Addition, Repair and Replacement: 33.30%
Contract Services: 7.18%
Material, Supplies & Misc.: 18.09%

YAHARA WINS PARTNERS REPORTED PHOSPHORUS REDUCTIONS IN 2017



2017 COMMERCIAL AND INDUSTRIAL CHLORIDE REDUCTION REBATES

13
awards

Total awarded:
$14,000

Results:
346
pound per day reduction

2016-17 WATER QUALITY PROFESSIONAL GRANTS

2
awards
941
water softeners upgraded

Total awarded:
$21,000

Results:
500
pound per day reduction

2017 ROAD SALT REDUCTION GRANTS

3
awards

Total awarded:
$12,000

Results:
50%
average reduction among participants

INFLUENCE FACTORS

1. Increasing community awareness about the impacts of phosphorus on surface water is creating rising expectations for effective local action.
2. The projected scarcity for mined phosphorus will create more volatility in prices and more demand for dependable and affordable nutrient-rich byproducts.
3. Meeting regulatory obligations through traditional infrastructure solutions is becoming less cost effective.

DEPARTMENT UPDATE

Since a district-wide reorganization in 2016, the ecosystem services department is aligned based on four program areas: resource recovery; pollution prevention; laboratory services; and pre-treatment and waste acceptance programs. Within these four areas are 17 full-time employees: director of ecosystem services, pretreatment coordinator, pollution prevention manager, two pollution prevention specialists, lab manager, six chemists, resource recovery manager, Metrogro assistant, two diesel truck drivers and one mechanic.

MAJOR CHANGES TO THE BUDGET

1. Market and progression increases for employees, changes in individuals in positions and increased health insurance and fringe benefit costs are the primary reasons for changes to personnel services.
2. An increase of $100,000 will be used to replace aging laboratory analytical testing equipment.
3. An increase of $95,000 will be used to increase the Metrogro hauling contract as a result of retirements and pay for the U.S. Environmental Agency's five year review of lagoon remediation site.
4. An increase of $70,000 will cover Metrogro tools and supplies for repair and maintenance of semitrailers and applicator trucks (terragators), capacity for research and development of planned Class A biosolids and Shop One supplies.

KEY RESULT INITIATIVES

The following initiatives highlight some of the department's efforts. The initiatives align with the five pillars described in the overview and strategic planning section.

2018 UPDATE

1. Phosphorous Management Strategy for Badger Mill Creek

   Goal: Phosphorus management options need to be evaluated, vetted, partners engaged, timelines identified and the district commission engaged to guide the selection of a viable path forward.

   Status: The proposed process and timeline was endorsed by the commission, which included the successful completion of:

   A. Identification and preliminary evaluation of current and emerging treatment technologies capable of treating phosphorus to the final legally required effluent limit.

   B. Ranking of proposed treatment options to determine which technologies will be pilot tested in 2019.

   C. Meetings with stakeholders in the Sugar River Watershed (leadership of the various cities, towns and villages as well as friends groups and other watershed groups) to educate, identify stakeholder goals, gauge interest, build support for future decisions and discuss potential phosphorus reducing practices and projects in the watershed.

Pollution prevention specialists Catherine Harris and Emily Jones check labortory equipment in preparation for a district tour.

2. Communications and Outreach
   Shop One

   Goal: Form Shop One advisers group to guide the implementation of programs.

   Status: This work is completed. Since commission approval of a Shop One conceptual framework, staff members have gathered key information for program development and physical space buildout by consulting with community leaders in sustainability and education in 2018. These conversations have helped staff begin to identify potential pilot projects and explore partnerships for funding opportunities in 2019.

3. Watershed Adaptive Management and Yahara WINS

   Goal: Fund and implement phosphorous reducing practices to achieve 2018 reduction goals outlined in the adaptive management plan. Develop a communications plan with Yahara WINS and elevate the community understanding of the Yahara WINS brand.

   Status: This work is completed. Yahara WINS has continued to fund phosphorus reducing practices in the landscape and exceeded the project's total phosphorus reduction goals for 2016. The project met reduction goals for 2017 and is on track to meet 2018 reduction goals while welcoming Columbia County as a new county partner in 2018. In addition, with the assistance of the district communications manager, Yahara WINS has completed a communications plan that is being used to guide communications in 2018.

4. Pollution Prevention and Source Reduction Outreach for Chloride

   Goal: Expand market penetration and interest in chloride reduction grants. Also, collaborate with the development community to target impacts of new development.

   Status: Source reduction activities focused on water softener efficiency, industrial process improvements, road salt optimization and education efforts to reduce salt use. The district continued chloride reduction grants and incentives including rebate programs. In 2017, the incentives helped fund projects that prevented approximately 211,836 pounds of salt from entering the wastewater stream.

5. Metrogro Phosphorous Challenge

Goal: Conduct more comprehensive field assessments using SnapPlus and land applications to achieve phosphorus indices at or below six pounds per acre for every field location.

Status: Legacy data clean-up is being completed to facilitate SnapPlus implementation. Staff members are currently working with research partners to determine the phosphorus availablity of Metrogro to help inform the assessment of how much soil and phosphorus has the potential to leave the field and enter surface water. Staff members are working toward modification of land application practices by testing new equipment in anticipation of implementing new practices.

6. Laboratory DNR Audit, Certification and Expanded Testing

Goals: Achieve laboratory certification and satisfy testing needs for Yahara WINS and Metromix research.

Status: This work is completed. The lab successfully completed certification for all of the analyses necessary for plant operations and state and federal reporting. Certification allows the lab to bill customers with greater confidence and provide laboratory services for partners and community customers. These services build community support for the district and provide additional revenue for the district.

2019 GOALS

1. **Phosphorous Management for Badger Mill Creek Background:**

Background: Badger Mill Creek is an effluent dominated stream downstream of one of the district's two discharge locations. The Nine Springs Wastewater Treatment Plant produces a high quality effluent with respect to phosphorus, but the effluent phosphorus concentration exceeds applicable water quality criterion. The district has evaluated compliance options.

Goal: Budget funds exist to begin pilot testing treatment technologies to evaluate the performance of different compliance options. During 2019, the district will work with DNR to approve potential methods for compliance, evaluate the current state of the site specific criterion for phosphorus and evaluate the effect of incremental volume reductions in water diverted to Badger Mill Creek.

Erik Reher, maintenance and reliability manager, leads a tour at the Pumping Station 15 community celebration.

The Friends of Badfish Creek Watershed group gathers to take advantage of the recreational opportunities supported by healthy stream flows from the district's outfall.

2. Phosphorous Management for Biosolids Recycling Program Background:

Background: The district strives to manage phosphorus through the Ostara system and involvement in the Yahara WINS adaptive management project. There is a significant opportunity to further reduce phosphorus loss to water through the Metrogro program.

With every Metrogro application, phosphorus is applied to area farm fields. Phosphorus is needed for crop production, but its application is important; phosphorus must be applied where the crops can use it and it also must be kept out of area surface waters.

Goal: Conduct more comprehensive field assessments using established agricultural models and evaluate low disturbance application technologies. There is $200,000 in the capital budget to purchase low disturbance injection toolbars for four applicators.

3. Reduce Chloride to Meet Regulatory Requirements

Background: Since 2010, the district has worked to reduce chloride throughout the Madison area with a goal of meeting water quality standards and protecting fresh water. Every five years, the district must apply for a new operating permit with DNR. In its upcoming permit, the district is pursuing a chloride variance to achieve the best possible outcomes for the environment and customer communities. The district has made a preliminary determination that a variance with source reduction is the best compliance option to protect all local waters from chloride pollution.

Goal: Budget funds exist to develop a comprehensive chloride reduction plan, collaborate with industrial and commercial users to eliminate high volume salt use and work with the development community to target impacts of new residential development.

Engineering Department

8 FTES

The purpose of the engineering team is to provide design and construction administration services to other departments and advisory services to district teams so that safe, reliable and cost-effective infrastructure is built.

KEY RESULT INDICATORS

CAPITAL PROJECTS MANAGEMENT

PROJECTS ON TARGET

- ☑ West Interceptor- PS5 to Gammon Extension Rehab
- ☑ Liquid Processing Improvments-Phase 1
- ☑ Lower Badger Mill Creek Interceptor-Phase 4
- ☑ Northeast Interceptor- Truax Extension Relief
- ☑ Pumping Station 7 Improvements
- ☑ Southwest Interceptor- Haywood Drive Replacement
- ☑ Grass Lake Dike Restoration
- ☑ Pumping Station 15 Rehab
- ☑ SEI Rehab Upstream of Pumping Station 9
- ☑ Southast Interceptor- Relocation at Yahara River

PROJECTS UNDER ADDITIONAL MONITORING

- Ⓜ NSVI – Morse Pond Extension *(Budget increase)*
- Ⓜ Pumping Station 10 Force Main Rehab *(Budget increase)*

PROJECTS REQUIRING COURSE CORRECTION

NONE

ENVISION RATINGS

GOLD Pumping Station 15 Rehabilitation

The Pumping Station 15 Rehabilitation project earned the First Envision Gold Award for sustainable infrastructure inthe state of Wisconsin. The award, presented by the Instititue for Sustainable Infrastructure, rated the project based on its environmental, social and economic impacts and benefits.

BUDGET SUMMARY

2018 ADOPTED BUDGET | TOTAL: $723,575

2019 BUDGET | TOTAL: $927,062

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	454,575	554,362	99,787
ASSET ADDITION, REPAIR AND REPLACEMENT	156,000	221,000	65,000
CONTRACT SERVICES	108,300	147,000	38,700
MATERIAL, SUPPLIES AND MISC.	4,700	4,700	0

28.12%
change from 2018 budget
(+ $203,487)

Personnel Services: 21.95%
Asset Addition, Repair and Replacement: 41.67%
Contract Services: 35.73%
Material, Supplies & Misc.: 0%

INFLUENCE FACTORS

1. As the economy continues to prosper and the skilled labor pool shrinks, there will be increased demand for construction services, reducing the availability of qualified bidders and increasing bids.
2. The average age of the district's infrastructure continues to increase (it is now nearing 40 years old), which means that many district facilities are reaching the end of their useful life. This will require increased investments for future capital improvement projects.
3. The use of adaptive measures and pollution prevention strategies to meet new regulatory requirements will reduce the need for future large infrastructure projects.
4. A more informed and connected citizenry will require project engineers to dedicate more time to engage external stakeholders, which will extend project timelines and increase soft costs.
5. Extreme weather events, including increased frequency of extreme precipitation events, are challenging the wastewater conveyance and treatment system. Conditions are no longer the same as they once were (i.e., they are no longer "stationary"), and the district must adapt as needed.
6. The level of service (including the desire for no overflows) that is expected by customers and regulators is increasing, which is causing more thorough reviews of resilient solutions.
7. The condition and overall reliability of the 40-plus miles of district-owned forcemains are unknown, which makes it difficult to assess, prioritize and renew infrastructure.

DEPARTMENT UPDATE

In 2018, the engineering department consisted of seven full-time employees: the department director; four civil engineers; one electrical engineer; and one electrical construction manager. The team's main purpose is to plan, design, construct and commission new capital improvements. These projects range in value from less than $100,000 to $40 million or more. One new full-time employee is proposed for 2019. This person, tentatively called the collection system engineer, would be the "caretaker" of the collection system and would be responsible for the overall operation of, and long-term planning for, the district's collection system. The collection system engineer also would be responsible for initiating and implementing new collection system programs required by the DNR Capacity, Management, Operation and Maintenance program, including working with communities to reduce fats/oils/greases and inflow/infiltration. The new engineer also will be the district's certified collection system operator, which will be a new requirement in the district's Wisconsin Pollutant Discharge Elimination System (WPDES) permit when it is issued. A full position justification is located in Appendix I.

MAJOR CHANGES TO THE BUDGET

1. The budget includes an increase in salaries/wages with a transfer to general operating accounts from capital accounts. This is based on recent trends and is due to increased general administrative work, including training, continuing education, asset management initiatives, etc. The budget also includes market pay adjustments and progression increases for eligible employees as well as increased health insurance and fringe benefits costs.
2. The new collection system engineer position is budgeted for nine months of the year (an April hire is anticipated) while the engineering intern position is being eliminated.
3. The budget contains an increase of $60,000 for three minor collection system asset repair projects that will be managed by the engineering department.
4. An increase of $50,000 is included to begin the process of providing back-up power generation at the treatment plant.

KEY RESULT INITIATIVES

The following initiatives highlight some of the department's efforts. The initiatives align with the five pillars described in the overview and strategic planning section.

2018 UPDATE

1. Forcemain Inspection Program

   Goal: Continued development of a forcemain inspection program. This includes implementing initial recommendations from the forcemain condition assessment plan.

   Status: This work is in progress and will continue for years to come. In 2018, detailed location information was obtained for several forcemains. The location information will be available in perpetuity and will be used to accurately locate the forcemain, thus reducing the risk of potential collateral damage. In initial years of program implementation, the district will need to continue to determine the best methods available to evaluate the forcemains.

2. Previously Unpaid Connection Charge Areas

   Goal: Obtain resolution to areas that have previously connected to the sanitary sewer system but not paid district connection charges.

   Status: This work was completed in early 2018, with commission direction to collect fees less than 10 years old and forgive those beyond 10 years.

3. Nine Springs Valley Interceptor-Morse Pond Extension

   Goal: Complete construction of the Nine Springs Valley Interceptor-Morse Pond Extension.

   Status: Construction of this project, which was included in the Wisconsin Department of Transportation reconstruction of County Highway M, started in late 2017 and was completed in August 2018.

The average age of the district's infrastructure continues to increase, which will require more construction planning and investment in the years ahead.

4. Liquid Processing Improvements-Phase 1

   Goal: Planning and design for the first "phase" of liquid processing improvements. This includes peak capacity improvements, ultraviolet disinfection replacement, east blower controls, substation rehabilitation and other improvements.

   Status: Planning/design work associated with recommendations from the liquid processing facility plan began in early 2018 and will continue into the spring of 2019.

5. Southwest Interceptor on Haywood Avenue

   Goal: Initial planning and design for replacement of the Southwest Interceptor on Haywood Street, including coordination with the City of Madison (which will also be performing work in this area).

   Status: A consultant was hired to assist with the design work, which began in the summer of 2018. Design is expected to be complete in late 2018, with bidding occurring in early 2019. District construction, which is expected to occur in the spring/summer of 2019, will be separate from any City of Madison work.

6. Nine Springs Valley Interceptor from Dunn's Marsh to McKee Road

   Goal: Complete initial planning and design for the rehabilitation of the Nine Springs Valley Interceptor from Dunn's Marsh to McKee Road.

   Status: Planning and design work is not scheduled to start until later in 2018, with construction occurring in 2019.

7. West Interceptor from Pumping Station 5 to the Gammon Extension junction

   Goal: Design and construction for the rehabilitation of the West Interceptor from Pumping Station 5 to the Gammon Extension junction.

   Status: Design for this project was completed by district staff in the summer of 2018. The project was bid in August and construction will be completed in late 2018 or early 2019.

8. Southeast Interceptor Relocation (i.e., the Monona Waterfront Relocation)

   Goal: Completion of all work associated with the Southeast Interceptor Relocation (i.e., the Monona Waterfront relocation).

   Status: This work, which was designed and bid through the City of Monona, was substantially complete in November 2017. Final construction was completed in the spring of 2018.

9. Construction Project Management

Goal: To standardize the methods and software used during construction project management.

Status: Currently, project engineers use various methods and software applications to manage the construction of district projects, including internally developed databases. In an effort to standardize this, different off-the-shelf software packages were evaluated and will be pilot tested over the next several years.

10. Pumping Station 7 Improvements

Goal: Complete initial planning and design for improvements to Pumping Station 7.

Status: A consultant was retained to assist with this work in early 2018 and planning and design progressed throughout the year. Bidding is currently planned for early 2019, with construction slated for 2019 and 2020.

11. Rehabilitation of Leaking Pipe Joints Upstream of Pumping Station 10

Goal: To repair pipe joints and stop significant inflow/infiltration into the Northeast Interceptor sewer system upstream of Pumping Station 10.

Status: This work was bid in late 2017 and the bids were much higher than expected. As a result, this work was moved to the capital improvements program and is scheduled for 2019.

12. Southeast Interceptor Rehabilitation Upstream of Pumping Station 9

Goal: Complete the Southeast Interceptor rehabilitation upstream of Pumping Station 9.

Status: Planning and design were completed by district staff in early 2018 and the project was bid in the spring. Construction is slated for the fall of 2018.

13. Grass Lake Dike Rehabilitation

Goal: Investigate, retain consulting services and make recommended improvements for stabilization of the Grass Lake dike.

Status: Initial project scoping was completed in 2018 and a consultant was retained to assist with determining the required improvements. Planning and design work will not occur until 2019, with any recommended improvements delayed until 2020.

14. Lower Badger Mill Creek Interceptor-Phase Four

Goal: Complete the Lower Badger Mill Creek Interceptor phase four project.

Status: This project was bid in the summer of 2017 and work commenced in early winter of 2017/2018. Construction was completed in late spring of 2018.

15. Northeast Interceptor-Truax Extension Relief

Goal: Complete initial planning and design for the Northeast Interceptor Truax Extension relief.

Status: Initial project scoping was completed by district staff in early 2018 and a consultant was retained to assist with planning and design. Planning and design will continue throughout 2018, with bidding anticipated during early 2019. To avoid disruption to park lands and cropped fields, construction is currently projected for the fall/winter of 2019/2020.

16. Pumping Station 10 Forcemain Rehabilitation

Goal: Design, bid and construct the rehabilitation of the Pumping Station 10 forcemain.

Status: Planning and design were completed by district staff during the first half of 2018 and the project was bid in August. Construction is currently scheduled for late 2018 or early 2019.

The district is continuing to seek infrastructure solutions that improve resiliency.

2019 GOALS

The budget includes funds to:

1. Continue development and implementation of a forcemain inspection program, including recommendations from the forcemain condition assessment plan.
2. Complete planning, design and bidding for rehabilitation of the West Interceptor Spring Street relief sewer.
3. Complete planning and design and begin construction for the first phase of the liquid processing facilities improvement plan. This includes peak capacity improvements, ultraviolet disinfection replacement, east blower controls and substation rehabilitation.
4. Complete planning, design and construction for replacement of the Southwest Interceptor on Haywood Avenue. This includes coordination with the City of Madison.
5. Complete planning and design and begin construction for the rehabilitation of the Nine Springs Valley Interceptor from Dunn's Marsh to McKee Road.
6. Complete construction of the West Interceptor – Pumping Station 5 to the Gammon extension junction rehabilitation.
7. Complete planning and design and begin construction on the project to lower the Venturi meter in the headworks building.
8. Begin a space needs study and planning for remodeling the first floor of the Operations Building.
9. Assist with the 2019 collection system facility plan update.
10. Complete planning and design and begin construction for improvements to Pumping Station 7.
11. Repair leaking pipe joints upstream of Pumping Station 10.
12. Begin planning and design for additional west interceptor capacity from Whitney Way to Walnut Street.
13. Complete a study and make recommended improvements to stabilize the Grass Lake dike.
14. Begin initial planning and design for the rehabilitation of Pumping Stations 13 and 14.
15. Complete planning and design and begin construction on the Northeast Interceptor – Truax extension relief sewer.
16. Continue coordination with the Wisconsin Department of Transportation, private companies, customers and other municipalities to ensure district collection system facilities are not adversely affected by other projects.
17. Complete the rehabilitation of the Pumping Station 10 forcemain.
18. Begin planning and design for the Pumping Station 17 forcemain relief project (in conjunction with the City of Verona).
19. Complete the automation of third power feed switching at Pumping Stations 10 and 11.
20. Complete an initial study and field investigations for rehabilitation of the Pumping Station 16 forcemain.

Planning and Strategy Department

7 FTES

The planning and strategy department monitors, evaluates and reports on the overall health of district infrastructure in support of long-term planning and financial sustainability. The department uses analytical tools and data, which it develops in cooperation with other departments. These include the asset management program; the capital planning process; the computerized maintenance management system (CMMS); the geographic information system (GIS); the annexation and extension program; forecasts; decision-making methods; process management; and facility planning.

The department is developing new key result indicators. However, needed data is not yet available. The indicators will report on costs of meeting the district's required level of service; risk of asset failure or costly repair; and impacts on ratepayers.

Possible indicators include:(a) total replacement costs for all assets that have high risks of failure; (b) projected asset replacement costs over a six to ten year period; (c) district rates relative to household incomes in the area; or (d) utility shutoff rates or other indicators of financial distress for utility customers in the area.

BUDGET SUMMARY

2018 ADOPTED BUDGET | TOTAL: $819,206

2019 BUDGET | TOTAL: $2,291,762

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	667,206	856,962	189,756
ASSET ADDITION, REPAIR AND REPLACEMENT	1,800	2,000	200
CONTRACT SERVICES	147,400	220,000	72,600
MATERIAL, SUPPLIES AND MISC.	2,800	12,800	10,000
TRANSFER TO CAPITAL PROJECTS	0	1,200,000	1,200,000

179.75%
change from 2018 budget
(+1,472,556)

Personnel Services: 28.44%
Asset Addition, Repair and Replacement: 11.11%
Contract Services: 49.25%
Material, Supplies & Misc.: 357.14%
Transfer to Capital Projects: NMF

INFLUENCE FACTORS

1. Many of the district's physical assets are nearing the end of their functional lives and will need replacement or rehabilitation. Furthermore, many were purchased with federal grant funds, but will need to be replaced or rehabilitated with services charges from district customers.
2. The district's physical infrastructure is becoming more technically advanced and interdependent. Planning for its growth and replacement requires correspondingly more sophisticated approaches to capital planning and asset management.
3. The availability and value of geographic information is increasing with technology, making its use an expectation and often a requirement for organizations like the district.
4. The community's expectations for governance of public bodies like the district have increased, requiring more formality and sophistication in community interactions, such as those relating to expansion of the district's service area.

DEPARTMENT UPDATE

The department was formed in 2016 by combining positions from the engineering and operations and maintenance departments. It is made up of six full-time positions: asset information specialist, capital planning engineer, GIS analyst, engineering technician, sustainable infrastructure manager and director. The department employs interns full-time during the summer and part-time during the school year and is proposing a new CMMS coordinator position be added in 2019.

The department's task is to monitor, evaluate and report on the overall health of district infrastructure in support of long-term district planning and financial sustainability. The analytical tools and data required for this task are still in development. During 2019 and beyond, the department will focus on tools and data development efforts including:

1. Asset management
   The department is working on a comprehensive program to track and evaluate district assets, including plant and collection system assets. The program is based on a risk-based framework developed in 2015. The plant asset management plan will be completed in 2019. The successful program will reduce costs and risks to the district going forward.
2. Reliability-centered maintenance
   This approach to maintenance minimizes reactivity and increases planned maintenance based on objective risks and costs. The approach depends on an effective computerized maintenance management system. The district's current system — Oracle's Work and Asset Management System — is outdated. The department is leading the effort to replace it, with implementation expected to run through 2023.
3. Capital improvements planning
   This process identifies, evaluates, plans and tracks capital projects. This is the best-developed of the department's tools. Future improvements will include project portfolio analysis tools and closer integration with asset management.
4. Capital budgeting and forecasting
   New tools and analytical capabilities are needed for tracking and planning capital expenditures; forecasting trends and scenarios; and evaluating long-term strategic options related to capital spending. This is the least-developed of the department's tools. Improvements will follow from asset management planning, a new computerized maintenance management system and better district capital reporting tools.
5. Geographic information system (GIS)
   A new platform is needed for gathering, validating, storing and sharing geographic information of all types. It includes tools for district staff to make new and better use of geographic data. The department is establishing a new GIS program on the Esri platform, to be in place in 2019.

MAJOR CHANGES TO THE BUDGET

1. The 2019 budget adds a new full-time position, estimated at $150,000 annually on an ongoing basis, but proposed at 75 percent funding for 2019 to reflect a likely delay in hiring. The position would serve as the computerized maintenance management system coordinator, responsible for developing, implementing, maintaining and overseeing the district's system. Appendix I includes a position justification report for this new position.
2. Market and progression increases for employees, changes in individuals in positions and increased health insurance and fringe benefit costs are the primary reasons for changes to personnel services.
3. The budget includes an increase of $100,000 for contract services related to implementation of a new computerized maintenance management system. The proposed $100,000 increase would fund six months of a selection and implementation consultant to help the district transition to a new system.
4. The budget includes a transfer of $1.2 million from the operating fund to the capital fund. This amount is recorded in the department's budget for accounting purposes but is used for capital projects identified in the capital improvements plan, not for department operating expenses. The transfer consists of: (a) $900,000 as a one-time transfer, reflecting increased service charges revenue from a high flow event in

The Wildlife Observation Unit covers some 140 acres and is home to sandhill cranes, great blue herons, hawks, songbirds and more.

August 2018; and (b) $300,000 on an ongoing basis to support increased cash funding of smaller capital projects.

5. An increase of $50,000 to begin the transition of funding the strategic asset manager position out of the operating fund instead of capital fund.

KEY RESULT INITIATIVES

In addition to its many ongoing duties, the following initiatives highlight some of the efforts of the department. They align with the five pillars described in the overview and strategic planning section.

2018 UPDATE

1. Decision Making

Goal: Develop a formal decision structure with commission input and final approval.

Status: The district's executive team has prepared draft "outcome statements" for consideration by the commission in fall of 2018. Establishing formal outcome goals for the district will foster commission oversight and structure district decision making.

2. Affordability

Goal: The outcome for 2018 was fourfold: "(a) research and understand the affordability issues in the service area (both demographic and regulatory); (b) develop options for addressing affordability while maintaining sufficient total revenue; (c) share with the commission staff's operational planning work to identify short and long-term revenue needs; and (d) engage customer communities in this conversation. Completion of goals b and c will form the basis for the development of a long-term financial strategy."

Status: The research component of this goal is proceeding gradually. The literature on the issue is extensive and includes a variety of factors, policy issues and measurement issues that still need to be evaluated. In addition, more work needs to be done on the demographics of affordability in the area. An update on research will be shared with the commission in fall 2018. The district is therefore not ready to develop options or engage customer communities. It is clear that the department will need to monitor this issue on an ongoing basis. Obtaining commission guidance on the issue is a 2019 goal.

2019 GOALS

1. Affordability and Financial Sustainability

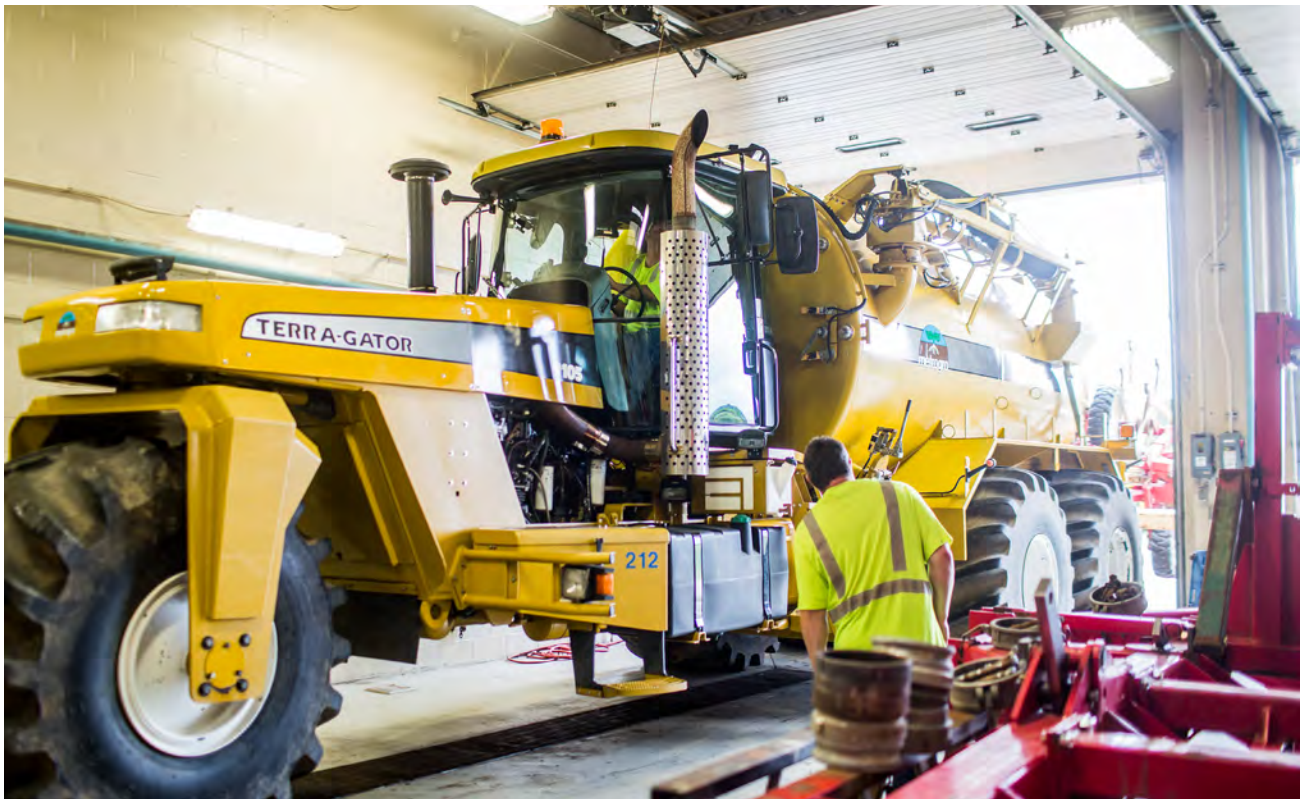
Background: The district faces increasing financial pressure from a combination of aging infrastructure, increasing regulatory requirements and the end of federal funding. In addition, the cost of water utility service — including district charges — is unaffordable for some in our community. The department is responsible for monitoring, forecasting and analyzing these issues. In 2018, the department is researching the issues and providing background information to the commission.

Goal: During 2019, the department will identify tools and information needed to monitor and analyze affordability and financial sustainability. Additionally, the department will plan steps to obtain those tools and information as well as obtain commission guidance on goals for affordability programs. This work will be managed with existing budget capacity.

2. Asset Management Program

Background: The district does not yet have a program for the orderly and cost-effective repair and replacement of plant infrastructure. Such a program was not necessary when most plant assets were new. As the plant ages, however, lack of a program will hamper the district's efforts to control costs and limit risks for present and future customers. Asset management programs are involved, including data on all assets; computer models of risk and cost; maintenance management practices; metrics; and coordination among operations, maintenance and planning. The department is leading development of the program.

Goal: During 2019, the department will complete the treatment plant asset management plan and begin implementation as well as develop metrics for cost and risk. The initiative will be covered with existing budget funds.



The Metrogro program uses TerraGators with special toolbars that inject biosolids into area farm fields for crops to use the nutrients.

District electrician Jim Meyer builds an electric control panel.

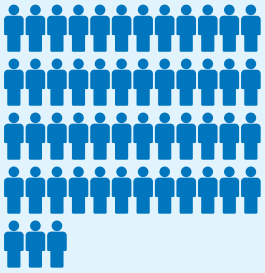
3. Computerized Maintenance Management System

Background: Implementing a reliability-centered maintenance program for district assets depends on a computerized maintenance management system. The district's current system is outdated and soon to be unsupported by its vendor. The department is responsible for transitioning the district to a new system. The effort will integrate with the asset management plan. Both will require active participation and ownership by engineering, operations, maintenance and accounting. Ultimate success will be demonstrated by full use of the system for: (a) maintenance work and (b) department analysis of cost and risk reduction related to maintenance.

Goal: During 2019, the department will hire a system coordinator and retain a selection and implementation consultant, both pending commission approval of 2019 budget (see major changes to budget for the Planning and Strategy department).

Operations and Maintenance Department

51 FTES



The employees of the operations and maintenance department protect human health and the environment by ensuring that all wastewater generated in the district's service area is safely conveyed to the Nine Springs Wastewater Treatment Plant where they recover the resources of clean water, biosolids, biogas and phosphorus fertilizer.

KEY RESULT INDICATORS

RESOURCE RECOVERY

CLEAN WATER

2016	14,869	million gallons
2017	16,032	million gallons
through July, 2018	8,986	million gallons

METROGRO

2016	39.8	million gallons
2017	35.7	million gallons
through July, 2018	21.88	million gallons

BUDGET SUMMARY

2018 BUDGET | TOTAL: $12,340,233

2019 BUDGET | TOTAL: $12,920,942

	2018 Adopted Budget	2019 Budget	Change from 2018
PERSONNEL SERVICES	5,315,738	5,526,952	211,214
ASSET ADDITION, REPAIR AND REPLACEMENT	1,288,325	1,521,425	233,100
CONTRACT SERVICES	847,495	910,880	63,385
ENERGY	3,514,500	3,570,075	55,575
MATERIAL, SUPPLIES AND MISC.	1,374,175	1,391,610	17,435

4.71%
change from 2018 budget
(+ $580,709)

Personnel Services: 3.97%
Asset Addition, Repair and Replacement: 18.09%
Contract Services: 7.48%
Energy: 1.58%
Material, Supplies & Misc.: 1.27%

RESOURCE RECOVERY

BIOGAS

2016 **269.94** million cubic feet
2017 **305.1** million cubic feet
through July, 2018 **170.97** million cubic feet

METROMIX

2016 **68** cubic yards
2017 **2335** cubic yards
through July, 2018 **277.1** cubic yards

STRUVITE

2016 **497.7** tons
2017 **585.1** tons
through July, 2018 **427.1** tons

REUSED EFFLUENT

2016 **200.2** million gallons
2017 **184** million gallons
through July, 2018 **98.9** million gallons

INFLUENCE FACTORS

1. The district is experiencing an increasing volume of unplanned maintenance driven by aging infrastructure and integration challenges associated with new assets. Costs for routinely scheduled preventive maintenance also are on the rise due to the overall increased complexity of the plant's operations. Together, these factors are exerting upward pressure on staffing costs as well as expenditures on parts and equipment.
2. The district now incurs significant energy costs and energy-related costs will continue to rise in the years ahead as the district's aging energy production infrastructure requires replacement. A planned energy study is expected to identify the most cost effective strategies and technologies for energy management.

DEPARTMENT UPDATE

The operations and maintenance department includes 51 employees who serve the district by operating and maintaining district assets. The operations section is in the discovery phase of a comprehensive energy management study, researching treatment alternatives to meet new regulatory limits and restructuring the supervisory control and data acquisition system for more efficient asset tagging and information sharing. The maintenance section activities focus on conducting preventive and reactive maintenance activities at the treatment plant, the pumping stations and the collection system along with monitoring and sampling for customer billing. The department has been significantly involved in asset management and fleet management. Involvement in asset management along with liquid processing facilities design review will continue in 2019.

MAJOR CHANGES TO THE BUDGET

1. Personnel services are budgeted to increase by $211,214 or 4 percent. Changes within the personnel services section include transfer of permitting fees to contracted services, market and progression increases for employees and increased health insurance and fringe benefits costs.
2. An increase of $300,000 is included to reflect actual expenditures for repair and equipment replacement.
3. An increase of $63,000 is included for contract services for plant pump and piping improvements and reintroduction of annual digester cleaning.
4. The budget includes an increase of $73,000 for chemicals, fuels, lubricants and water from the Madison Water Utility and a decrease in polymer for Class A biosolids.

KEY RESULT INITIATIVES

In addition to its many ongoing duties, the following initiatives highlight some of the efforts of the department. They align with the five pillars described in the overview and strategic planning section.

2018 UPDATE

1. Energy Management Plan

   Goals:

   A. During the first quarter of the year, staff will present to the commission a general range of options to be included in development of an energy policy.

   B. Based on commission input, staff will research and fully develop the options selected and submit a report to the commission by the end of the third quarter of the year.

Status: A district team has developed a draft energy policy framework. The commission is progressing with district end outcomes policies that will provide direction for staff to develop energy management options.

2. Struvite Recovery

Goals:

A. Increase the production of struvite to 1.7 tons per day.

B. Partner with Ostara to test other methods of capturing fine particles.

C. Provide a report to the district's commission in the fourth quarter of 2018.

Status: Struvite production has increased to approximately 2 tons per day. Staff members continue collaborative work with Ostara to increase production. A struvite harvesting update on fine particle capture came before the commission in the first quarter of 2018 and another commission report is anticipated for late 2018. The report in late 2018 will include an update on the Ostara partnership moving forward, including operation and production.

3. Investigate Food Waste Sources

Goals:

A. Select one or two sources of food waste to accept at the treatment plant on a trial basis.

B. Determine if a small scale project can occur with City of Madison source separated organics.

Status: Operations staff members have concluded a laboratory digestion trial using City of Madison source separated organic waste and food waste. Results of this trial support predicted estimates for increased biogas and biosolids production. The City of Madison has halted its source separated organics pilot project due to material contamination issues. The district team is still researching potential high quality waste streams for digestion and how these streams may affect plant processes.

2019 GOALS

1. Comprehensive Energy Management Study

Background: The district's commitment to sustainability extends to the efficiency, consumption and sourcing of energy needed to ensure reliable operations and meet customer expectations for service at an acceptable cost. As plant assets age and require replacement, a comprehensive energy management study will inform purchasing decisions. The district currently has critical process equipment reaching its end of life and suitable replacement options must be identified. Specifically, the plant engine generators play a significant role in operation functions and

Matt Seib, district research engineer, is monitoring a research project led by Menachem Tabanpour, vice president of business development for Centrisys Corp. and Philip Barak, a UW–Madison soil scientist, to recover brushite from the wastewater stream for potential use as a fertilizer.

energy sustainability. The generators support reuse of plant produced biogas for hot water supply to heat buildings and sludge while reducing outside energy demand. However, the generators are obsolete and will need replacement within approximately 10 years. Introducing new generators will create a need for multiple plant improvements including buildings, piping and possible new energy reuse equipment. The study will investigate this issue and other district energy options. The completed study will produce reliable options for equipment replacement with an emphasis that renewable resources are cost-effectively conserved and reclaimed while use of nonrenewable resources is minimized. The options will then be used to produce future district capital projects for implementation.

Goal: Budget funds exist for operations and maintenance staff members to scope a comprehensive study of energy management options. The scoping effort will provide future direction for the district with regard to process reliability, energy consumption and recovery. Development and execution of this study will be a multi-year project for the district. In 2019, the department will produce a request for quotes or request for proposal document and solicit proposals for a consultant team to provide the district with assistance in investigating possible solutions and opportunities with regards to energy.

2. Phosphorus Treatment Alternatives for Badger Mill Creek

Background: As part of the new regulatory limits of the district's Wisconsin Pollutant Discharge Elimination System permit, options need to be evaluated, vetted, partners engaged, timelines identified and the commission engaged to guide the selection of a viable path forward. The operations department's role is to explore tertiary treatment options to meet permit limits.

Goal: Operations staff will be leading different treatment pilot projects to meet the future regulatory limits. Staff members will also analyze options for treatment effectiveness and long term maintenance needs.

3. Asset Management Maintenance Performance

Background: The district is developing a comprehensive asset management program. Reliability-centered maintenance is one of the keys to asset management and is being developed along with the plant asset management plan and the new computerized maintenance management system. Effective maintenance requires careful balancing of unplanned maintenance and planned maintenance. If maintenance is too reactive, too many assets will reach failure, raising costs and increasing harm to other parts of the operation. If too much maintenance is planned, staff will waste time and money on assets that do not require attention or for which failure has little consequence. Achieving the proper balance requires accurate data and relevant analysis of asset information and maintenance practices. This is enabled by a properly configured computerized maintenance management system. There are many factors involved, including asset condition, consequence of failure, maintenance history, failure modes, staff time per asset and spending per asset, among others. For daily use by maintenance supervisors and staff, information must be summarized in key performance indicators. Finally, maintenance supervisors and staff must establish and follow proper procedures, including appropriate work planning.

Goal: Budget funds exist for operations and maintenance department to: (a) develop maintenance key performance indicators that support balancing of planned and unplanned maintenance and cost control; and (b) improve maintenance procedures and work planning. Maintenance management performance improvements will be identified in the asset management plan and implementation of priority recommendations will begin in 2019.

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APPENDICES

APPENDIX A: PROJECT SUMMARIES

In this section, you will find project summaries. These summaries are intended to give a broad overview of the project, including general location, scope of work, history, schedule and a summary of cost. Total project costs are adjusted for inflation on an annual basis, unless otherwise noted.

On our district website (madsewer.org) underneath “Planning- Budget & Finance,” you will find more detailed information on the project business cases. Project business cases provide justification for each project by including more detail than the project summary sheet and also incorporates additional information such as an analysis of alternatives, a life cycle cost estimate and an allocation of annual costs.

Please note that project summaries and business cases are provided only for those projects that are anticipated to occur within the planning horizon of this document (2019- 2024).

CIP ID#
A01.01

Plant Peak Capacity Improvements

START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – Peak Capacity
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will increase the peak flow capacity at the treatment plant, prevent overflows during peak flow events and improve peak flow operational flexibility and performance. Specific improvements include construction of a diversion structure to route excess flows from the treatment plant to the lagoons and implementation of a biological contact high-rate treatment process in the aeration basins to improve treatment during high flows. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	With the recent completion of Pumping Station 18, the collection system can convey more flow to the treatment plant in a large storm event than the plant can pass through the various treatment processes. This project will relieve the existing bottlenecks and provide better treatment reliability and flexibility during high flow events.

FINANCIAL ANALYSIS

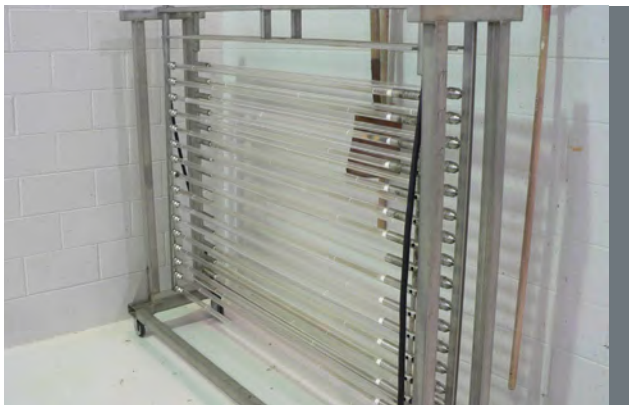
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$2,629,000	$5,070,000

TOTAL COST: $5,587,000

CIP ID#
A01.02

Ultraviolet Disinfection System Replacement

START DATE:
2018
COMPLETION DATE:
2021



PROJECT TYPE	Plant Improvements – Ultraviolet Disinfection
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will provide a replacement for the current effluent ultraviolet disinfection system. This project was included in the 2016 liquid processing facilities plan. It is anticipated that project costs will be funded through the Clean Water Fund program.
BACKGROUND	The existing ultraviolet (UV) disinfection system was installed in the mid-1990s as part of the ninth addition to the treatment plant. While the system has generally performed well, it requires substantial attention to address electrical system problems and to keep the system operational. Replacement parts are obtained through a third-party vendor and a local engineer who makes control boards for the system. A more reliable and efficient system for acquiring replacement parts is required. In addition, the existing system has disinfection and hydraulic limitations. With the ability to pump more flow to the plant from the collection system the UV system needs a corresponding upgrade in hydraulic capacity.

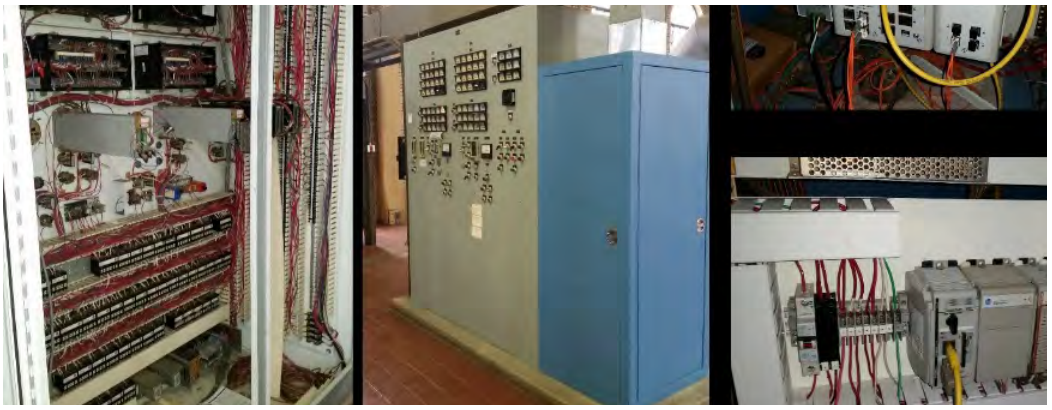
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$138,000	**$3,708,000**

TOTAL COST: $4,198,000

CIP ID#
A01.03

East Blower Controls



START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – East Blowers
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	Work under this project includes the replacement of the existing control panels for blowers two through five in the east blower building with new control panels for each of the blowers. This project was included in the liquid processing facilities plan. It is anticipated that it will be funded through the Clean Water Fund program.
BACKGROUND	The existing east blower control panel has been in use since the original blowers were installed in the 1960s. Several undocumented modifications have been performed to the panels over the years to keep the blowers in operation, but very little documentation exists for these changes. As a result, the controls are unreliable and legacy parts are difficult to obtain due to the age of the system. It is recommended that the each blower receive a new dedicated control panel that with a programmable logic controller.

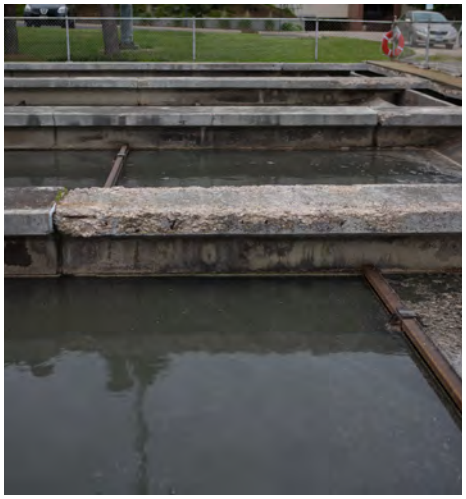
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$198,000	**$382,000**

TOTAL COST: $420,000

CIP ID#
A01.04

Primary Tanks One and Two Rehabilitation



START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – Primary Tanks
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to rehabilitate the concrete surfaces of two primary settling tanks in order to maintain their structural integrity. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	Primary tanks one and two were constructed in the 1930s and represent some of the oldest infrastructure that is still in operation at the treatment plant. Over many years the concrete surfaces above the water line have deteriorated to the point that reinforcing steel is visible in several locations. Rehabilitation is needed to preserve the structural integrity of the tanks and to improve safety for district staff working around the tanks.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$229,000	**$439,000**

TOTAL COST: $484,000

CIP ID#
A01.05

54” Primary Influent Rehabilitation

START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – Primary Tank Influent
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will correct condition defects in the influent pipeline to the primary settling tanks. The project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	The 54 inch primary influent line is located on the east side of the plant and transfers raw wastewater from the east primary junction chamber to the primary influent channel near primary tanks 12 and 13. The line was installed as part of the fifth addition in 1975 and is constructed of pre-stressed concrete cylinder pipe. Those portions of the pipe above the normal water line have started to corrode due to attack form hydrogen sulfide. The condition defects were first observed during the 10th addition construction in 2005 and a rehabilitation project was put out for bid in 2007. The bids received then were over the project budget and a decision was made to temporarily delay the project approximately 10 years.

FINANCIAL ANALYSIS

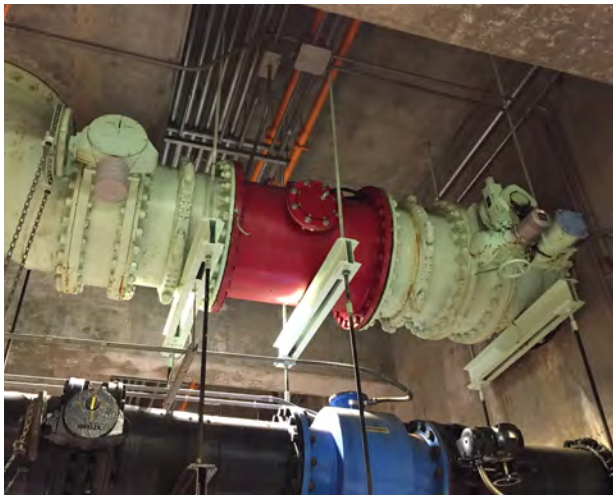
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$405,000	**$780,000**

TOTAL COST: $860,000

CIP ID#
A01.06

East-West Plant Flow Metering

START DATE:
2018
COMPLETION DATE:
2020



PROJECT TYPE	Plant Improvements – Plant Flow Metering
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to make improvements to the instrumentation that is used to meter flows between the west and east sides of the treatment plant. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	Influent flow to the treatment plant is currently distributed to the west and east sides of the treatment plant via the flow splitter structure that is located just downstream of the headworks facility. It is important for operations staff to have accurate data on the flows to each side of the plant, especially in high flow situations. The flows to each side of the plant are currently measured using a variety of different methods and meters. The data obtained from these meters does not match well with the flow distribution predicted at the flow splitter structure and from other process data collected by operations staff. The proposed improvements will investigate the use of the latest in-pipe metering technology to improve operational performance.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$78,000	**$151,000**

TOTAL COST: $165,000

CIP ID#
A01.07

Badfish Creek Effluent Force Main Standpipe

START DATE:
2018
COMPLETION DATE:
2018

PROJECT TYPE	System Rehabilitation – Effluent Force Main
LOCATION	Badfish Creek Effluent Force Main White Oak Trail, Town of Dunn
DESCRIPTION	The purpose of this project is to make improvements to the standpipe on the 54 inch Badfish Creek effluent force main near 2395 White Oak Trail in the Town of Dunn. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	The Badfish Creek pipeline is a complex system composed of approximately 5 miles of 54 inch pipe. Due to its length and profile, significant pressures can develop in the force main if pumps are shut off too quickly or some other type of water hammer event occurs. There are multiple air release and vacuum relief devices located along the force main to help maintain the proper pressure in the pipeline. One of these devices is a standpipe located on top of the force main just upstream of the force main outfall. The standpipe allows air to be safely expelled from the pipeline without water leaving the system. In recent years, effluent has been released from the standpipe on occasion, causing a nuisance and some damage to a neighboring residence. This project will enhance the standpipe function to allow for pressure control without spillage of effluent.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $101,000

CIP ID#
A01.08

Plant Unit Substation Improvements

START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – Electrical Substations
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to ensure that the portions of the treatment plant powered by unit substations U11, U12 and U13 retain a continuous and reliable source of power. It is expected that one substation will be removed and replaced and two other substations will be removed in their entirety and their loads directed to other existing substations. This project was included in the 2016 liquid processing facilities plan. It is anticipated that project costs will be funded through the Clean Water Fund program.
BACKGROUND	The district owns and operates eight substations on the treatment plant grounds that transform the voltage provided by Madison Gas & Electric into the voltage necessary to power plant equipment. Substations U11, U12 and U13 were constructed in the early to mid-1980s and are showing increasing signs of corrosion. The district hires a consultant to test the substation equipment every three years. Based on the most recent inspection, the consultant has rated all equipment as fair to marginal and is specifically recommending replacement of substations U11, U12 and U13 as soon as practicable.

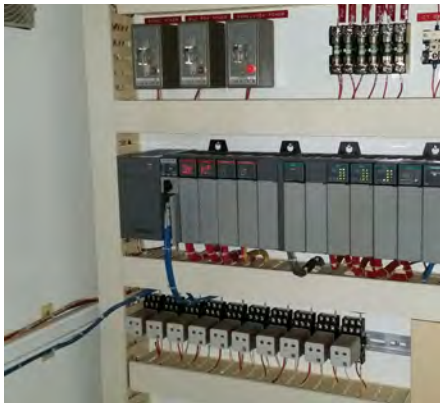
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$1,569,000	**$3,027,000**

TOTAL COST: $3,331,000

CIP ID#
A01.09

PCS Upgrade - Phase 2



START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Plant Improvements – Process Control System (PCS)
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will replace the controllers that provide automation for the secondary treatment system. This project was included in the 2016 liquid processing facilities plan. It is anticipated that project costs will be funded through the Clean Water Fund program.
BACKGROUND	The district completed phase one of the PCS upgrade project in 2016 at a cost of $4.3 million. Phase two of the project involves replacing 10 controllers that provide for automation and regulation of the secondary treatment system. These controllers are obsolete and replacement parts are no longer available. In addition, the controllers run on the Windows NT operating system, which has been obsolete since 2004. It was originally intended that phase two of the PCS upgrade project would be completed prior to 2020 and would be done in conjunction with upgrades to the blowers, blower controls and aeration system controls. Now that the blower improvements will not be constructed until 2021 at the earliest, it is recommended that phase two of the PCS upgrade project proceed as soon as possible to reduce the risk of the district violating its discharge permit through failure of the control systems for the secondary treatment system.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$761,000	**$1,466,000**

TOTAL COST: $1,614,000

CIP ID#
A01.10.1

Clarifier Stress Testing

START DATE:
2018
COMPLETION DATE:
2018

PROJECT TYPE	Plant Improvements – Activated Sludge Process
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project involves testing the existing secondary clarifiers to verify their performance characteristics and to establish future facility requirements. This project was included in the 2016 liquid processing facilities plan. It is anticipated that project costs will be funded through reserves in the capital fund.
BACKGROUND	As part of the district's 2016 liquid processing facilities plan, several alternatives were investigated for improved performance of the activated sludge operation. While the preferred alternative could result in more efficient nutrient removal while using less energy, it is possible that it will also require additional secondary clarifier capacity. The purpose of this project is to perform testing of the existing secondary clarifiers by taking some units out of service and operating the remaining units at their maximum capacities. The results will be analyzed using computational fluid dynamics and will be used to help determine if additional clarifier capacity will be needed as part of the future modifications to the activated sludge process. This work will take place in 2018 so that the results can be used for planning and design purposes.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $130,000

CIP ID#
A01.10.2

Activated Sludge Improvements

START DATE:
2018
COMPLETION DATE:
2026

PROJECT TYPE	Plant Improvements – Activated Sludge Process
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project includes a series of improvements to the activated sludge process that will improve energy efficiency and system reliability and also relieve existing maintenance issues. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	The treatment plant's east and west blower complexes supply air to the east and west plants, respectively. Currently, they are separate systems that are not optimized with regards to energy use. This project includes provisions to connect the east and west blower systems to allow for more efficient use of the existing blowers and to provide improved redundancy. The project also allows for the phased replacement of all three west blowers so that the system operates more efficiently.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$7,211,000**

TOTAL COST: $10,534,000

CIP ID#
A01.11

Nitrite Shunt (Full-Scale Pilot)

START DATE:
2021
COMPLETION DATE:
2022

PROJECT TYPE	Plant Improvements – Aeration System
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to full-scale pilot test the nitrite shunt biological nutrient removal process to confirm process design criteria, impacts to sludge quality and operational requirements for potential future whole-plant implementation. It is anticipated that costs associated with the pilot project will be funded through capital fund reserves.
BACKGROUND	The existing activated sludge facilities operate an enhanced biological phosphorus removal process. The process relies on anaerobic and aerobic zones to remove phosphorus but do not provide significant total nitrogen removal. As part of the 2016 liquid processing facilities plan, changes to the existing processes were evaluated, including processes that could result in more effective nutrient removal while using less energy and potentially positioning the district for future total nitrogen regulations. Bench-scale testing of the process is currently underway. If bench-scale testing is successful, full-scale pilot testing would be conducted before implanting the changes plant wide.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$2,328,000**

TOTAL COST: $2,615,000

CIP ID#
A01.12

Headworks Flow Metering

START DATE:
2019
COMPLETION DATE:
2021

PROJECT TYPE	Plant Improvements – Headworks Facility
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	Work under this project will include relocating and lowering the existing flow meters in the meter vault room at the headworks facility such that the flow meters will be completely submerged at all times. Piping changes and a minor addition to the meter vault room will also be needed. This project was included in the 2016 liquid processing facilities plan. It is anticipated that it will be funded through the Clean Water Fund program.
BACKGROUND	The influent flow meters at the Headworks Facility record all flow entering the treatment plant from the collection system and the data collected is used extensively for service charge billing, permit compliance monitoring and for operational control throughout the plant. The existing flow meters were installed in the 10th addition project approximately 10 feet above the floor of the meter vault room. In order to measure flows accurately, these types of meters need to be completely submerged with wastewater. To keep the meters submerged, the water elevation in the downstream screening channel needs to be raised higher than desired and one screen must run continuously to keep the water level within a narrow operating range. The proposed project would lower the meters closer to the floor of the meter vault room and allow the screening equipment to run intermittently (as designed) and within a wider range of water levels. As such, it is desirable to implement this project prior to the planned replacement of the fine screening equipment so that performance of the screens can be evaluated under improved operating conditions (see related project ID A01.10.14).

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$124,000	**$2,164,000**

TOTAL COST: $2,325,000

CIP ID#
A01.13

Septage Receiving Modifications

START DATE:
2021
COMPLETION DATE:
2023

PROJECT TYPE	Plant Improvements – Septage Receiving
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will correct problems encountered with operation of the existing septage receiving facility. Work will include reconfiguration of the existing facility to allow improved traffic flow, better screening equipment upstream of the headworks facility and implementation of more security and tracking measures to reduce the potential for unauthorized discharges. This project was included in the 2016 liquid processing facilities plan. It is anticipated that project costs will be funded through the Clean Water Fund program.
BACKGROUND	The septage receiving facility was constructed as part of the 10th addition to the treatment plant and has experienced a number of operational difficulties since it was placed into operation. Trucks discharging at the facility have to back up to empty their contents, resulting in congestion during periods of heavy traffic and icy and unsafe conditions in winter. Further, sand and grit accumulate in the discharge trough, which requires manual cleaning by district staff on a frequent basis. Improvements will allow for one-way traffic for haulers and an improved screening system to keep unwanted material out of the screening channel.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$2,987,000**

TOTAL COST: $3,404,000

CIP ID#
A01.14

Headworks Screening

START DATE:
2021
COMPLETION DATE:
2023

PROJECT TYPE	Plant Improvements – Screening at Headworks Facility
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project includes the replacement of the fine screening equipment and related screenings handling system at the headworks facility. The existing band screens will be replaced with new step screens and wash presses to dewater the captured material. This project was included in the 2016 liquid processing facilities plan. It is anticipated that the project will be funded through the Clean Water Fund program.
BACKGROUND	Three fine screening units were installed at the headworks facility as part of the tenth addition to the treatment plant. The screens have openings of one quarter inch and are designed to remove rags and other large material from the raw wastewater to keep it out of the biosolids and to protect downstream process equipment. Several problems have been experienced with the existing screening system, particularly with the processing of the material that is captured on the screens. The existing screenings handlings system requires frequent operator attention to keep it running. Further, the equipment for the screenings handling system is prone to plugging and wear and tear and it is difficult to obtain replacement parts in a cost effective and timely manner.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$3,502,000**

TOTAL COST: $3,991,000

CIP ID#
A01.15

Plant Aeration Systems Projects (Nitrite Shunt)

START DATE:
2024
COMPLETION DATE:
2026

PROJECT TYPE	Plant Improvements – Aeration System
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project involves implementation of the nitrite shunt biological nutrient removal process on a plant wide basis, This project assumes successful bench scale and pilot testing of the process in prior years (see related project ID A01.11). It is anticipated that costs associated with the project will be funded through the Clean Water Fund program.
BACKGROUND	The existing activated sludge facilities operate an enhanced biological phosphorus removal process. The process relies on anaerobic and aerobic zones to remove phosphorus but do not provide significant total nitrogen removal. As part of the 2016 liquid processing facilities plan, changes to the existing processes were evaluated, including processes that could result in more effective nutrient removal while using less energy and potentially positioning the district for future total nitrogen regulations. Bench-scale testing of the process is currently underway. If bench-scale testing is successful, full-scale pilot testing would be conducted before implanting the changes plant wide.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$1,040,000**

TOTAL COST: $22,908,000

CIP ID#
A01.16

East and West Blower Switchgear

START DATE:
2024
COMPLETION DATE:
2026

PROJECT TYPE	Plant Improvements – Activated Sludge Process
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to replace the switchgear that powers the blower motors in the east blower building and the west blower building. The equipment in these buildings has exceeded its expected service life of 30 years and needs replacement in conjunction with the blower systems at these facilities. It is expected that the project will be funded with a loan from the Clean Water Fund.
BACKGROUND	The switchgear equipment for the east blower building was installed in 1963 and powers four blower motors. The switchgear equipment for the west blower building was installed in 1985 and currently powers three blower motors. While this equipment is regularly inspected and well maintained, it has exceeded its expected service life and should be replaced as part of the blower system improvements that are anticipated in future phases of the liquid processing projects. Failure to replace this equipment in a timely manner increases the risk of arc-fault events and the likelihood of permit violations due to interruptions in the secondary treatment process.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$124,000**

TOTAL COST: $2,617,000

CIP ID#
A02

Shop One Site Improvements

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	Plant Improvements – Shop One
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to design and build minor site improvements at the district's Shop One building that will provide for expanded and enhanced public use of the facility. Improvements will allow for additional educational opportunities and could include refinements to the interior meeting space to better accommodate large tours and public use of the facility. It is possible that further capital improvements will be undertaken at the facility beyond the year 2019, pending the success of the program and the ability to secure funding from other stakeholders. It is anticipated that the project will be funded through reserves from the capital fund.
BACKGROUND	The Shop One building used to serve as the district's maintenance facility. Upon construction of a new maintenance facility, major renovations to the building were completed in 2016. The renovations created a space that is currently used in conducting public tours of the treatment plant and for large group meetings for district staff. Future uses of the space will include additional public education and outreach to further promote the 'one water' concept.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$100,000	**$100,000**

TOTAL COST: $103,000

CIP ID#
A03

Resource Recovery Facility

START DATE:
2019
COMPLETION DATE:
2023

PROJECT TYPE	Plant Improvements – Biosolids End Use
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to provide facility and equipment for storage, mixing, composting or air-drying and distribution of a class A biosolids compost or air-dried product. This project will only be done if a market for a class A biosolids product exists and it can be produced in a competitive manner. If implemented, it is expected that the projected will be funded through a loan from the Clean Water Fund.
BACKGROUND	The district has been pursuing development of a class A biosolids product to diversify its biosolids reuse program since the early 2000s. Process modifications installed during the 11th addition to the plant allowed production of class A biosolids through a batch anaerobic digestion process meeting EPA time/ temperature requirements. Early research focused on adding amendments such as sand and sawdust to the dewatered biosolids. The cost of these amendments was high and market interest was low. Current focus has shifted to investigate a composted or air-dried product. Biosolids compost will be created by mixing the dewatered biosolids with locally available carbon sources such as leaves, corn stalks and grass hay. Composting significantly reduces the volume of the material, creates less odors than mixing biosolids with amendments and creates a product that would be compatible with uses within urban and rural markets. Small-scale composting trials were successfully conducted in 2017 and will continue in 2018 to determine the product's viability.

FINANCIAL ANALYSIS

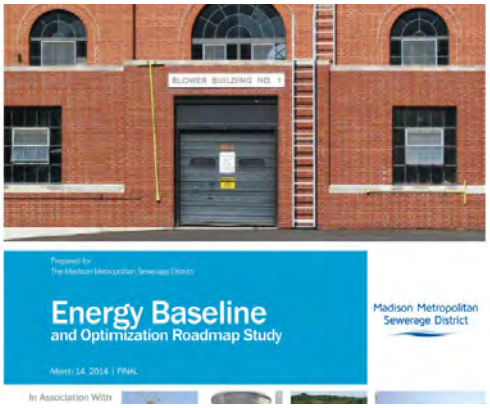
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$50,000	**$2,300,000**

TOTAL COST: $2,587,000

CIP ID#
A04

Plant Energy Generation Facilities Plan

START DATE:
2020
COMPLETION DATE
2021



PROJECT TYPE	Energy related projects – use reduction/generation
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This facilities plan will evaluate the district's various energy-related systems and provide a framework for how to best optimize those systems. Specific items that will be evaluated and studied include the following: best uses for digester gas; potential for using food scraps as a feed source for the digesters; potential sources of high strength waste; capacity of the existing digesters; need for additional digesters or other types of digesters; additional amount of gas that could be produced; remaining life of the existing gas-driven engines and potential replacements; and heat recovery and hot water systems.
BACKGROUND	An energy study was conducted in 2014 by Strand and Brown and Caldwell in an effort to provide a roadmap for how the district might achieve energy independence. Strategies outlined in the study focused on reducing energy use, improving the use of digester gas and the production of more energy. Some projects recommended by the energy study related to the aeration system have been incorporated into the liquid processing facilities plan. Many of the other recommendations from the energy study will be studied further as part of the plant energy generation facilities plan.

FINANCIAL ANALYSIS

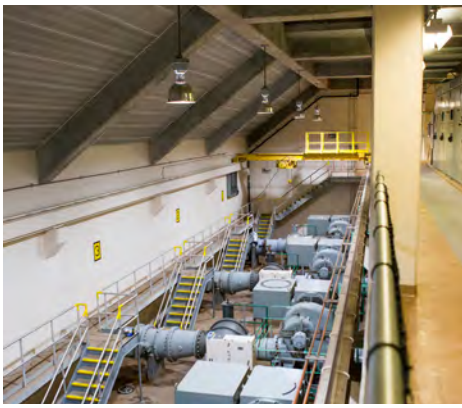
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$824,000**

TOTAL COST: $887,000

CIP ID#
A05

Plant Energy Generation and Management Projects

START DATE:
2022
COMPLETION DATE:
2025



PROJECT TYPE	Energy related projects – use reduction/generation
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	These projects address items identified during the 2014 energy study relating to the plant's generation systems and process improvements or equipment replacements that reduce plant energy use/purchase. Cost estimates and project details will be developed from the plant energy generation facilities plan (See CIP ID# A04). At this time, we anticipate further study of the best options for digester gas and the availability and use of high strength wastes and source separated organics as feed sources. Staff anticipates larger project funding through the Clean Water Fund program while smaller project funding will be from capital fund reserves.
BACKGROUND	The 2014 energy study provided a long-term energy road map for the district to reduce its energy consumption and increase its energy production. The intent of this item is to address plant projects identified in the energy road map and the plant energy generation facilities plan. Please note that energy is an ongoing consideration in this and all district projects, and this project does not cover all items in the roadmap. Projects already funded include mixer and lighting replacements with more efficient units.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$8,666,000**

TOTAL COST: $16,377,000

CIP ID#
A06, A07, A08

Minor Capital Improvements

START DATE:
ONGOING
COMPLETION DATE
ONGOING

PROJECT TYPE	Plant improvements – Minor Capital Improvements
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This summary covers three areas: (A06) Annual Clarifier Coating ($185,000) (A07) Annual Pavement Improvements ($59,000) (A08) Minor Capital Improvements ($106,000)
BACKGROUND	The district annually includes funds in its capital budget for coating of its clarifier tanks and resurfacing of roads. These funds are used to protectively coat the clarifiers and restore paved areas of the plant where necessary. In addition, other minor capital improvements are routinely necessary and funds have been included to address these improvements on an as needed basis.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$340,000	**$1,680,000**

TOTAL COST: ONGOING

CIP ID#
A09

Metrogro Applicators & Equipment

START DATE:
VARIABLE
COMPLETION DATE:
VARIABLE

PROJECT TYPE	Metrogro Applicators and Equipment
LOCATION	Metrogro Program
DESCRIPTION	This line item is included in the capital improvements plan to fund the replacement of two new biosolids applicators and storage tanks. Four toolbar retrofits for the applicators will also be purchased to facilitate low disturbance subsurface injection. It is anticipated that these replacements will be funded through reserves from the capital fund.
BACKGROUND	The district's Metrogro program remains the backbone of the district's biosolids reuse program. Metrogro applicators and equipment convey and apply millions of gallons of Metrogro to regional farm fields annually. Capital funds were used to purchase a used applicator in 2015 and additional applicator and other equipment purchases are anticipated in 2019 and 2021.

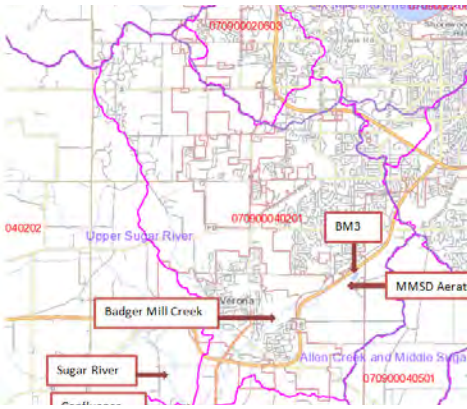
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$950,000	**$1,700,000**

TOTAL COST: $1,990,000

CIP ID#
A10

Badger Mill Creek Phosphorus Compliance



START DATE:
2019
COMPLETION DATE:
TBD

PROJECT TYPE	Effluent
LOCATION	Badger Mill Creek Town of Verona & City of Verona
DESCRIPTION	The purpose of this project is to allow for evaluation, plan development and implementation of a solution to address new phosphorus water quality criterion for Badger Mill Creek. It is expected that the new water quality standards will be set forth in the district's next Wisconsin Pollution Discharge Elimination System or WPDES permit, which should be reissued in 2019. The district is beginning preliminary planning for the new standards in 2019, assuming that the maximum length of a compliance schedule will be nine years. It is anticipated that early planning work related to this effort will be funded through reserves from the capital fund.
BACKGROUND	Badger Mill Creek is an effluent dominated stream located in the Town of Verona and City of Verona. The district returns approximately 3.6 million gallons per day of treated effluent to this waterway to offset groundwater that is pumped out of the Sugar River basin and sent to the Nine Springs Wastewater Treatment Plant as wastewater for treatment. It is expected that the district's WPDES permit will be reissued in 2019 and will require a new phosphorus water quality criterion for Badger Mill Creek of 0.075 mg/L, significantly less than the district's current effluent quality for this parameter. The district has developed six preliminary options to comply with this new criterion, including diverting flow from Badger Mill Creek and enhanced treatment. Preliminary work will involve the evaluation of these options and possible pilot testing of any options which appear viable.

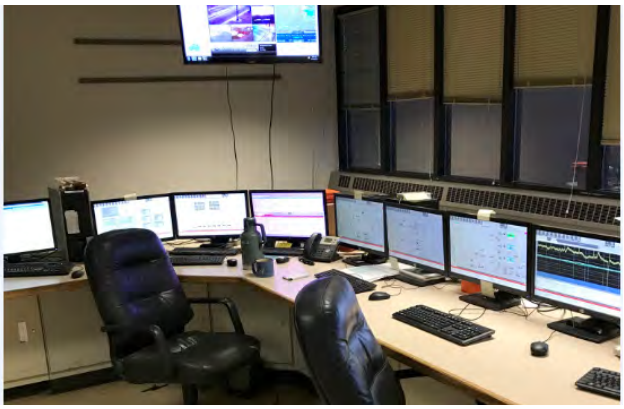
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$300,000	**$800,000**

TOTAL COST: $839,000

CIP ID#
A11

Operations Building First Floor Remodel



START DATE:
2019
COMPLETION DATE:
2021

PROJECT TYPE	Building Improvements
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to evaluate, design and build site improvements on the first floor of the Operations Building that will provide a safer and more efficient use of space for staff from the operations and ecosystems services departments. The improvements will also allow for safer and enhanced tours of the laboratory facility by the general public. It is anticipated that funding for these improvements will be through a loan from the Clean Water Fund.
BACKGROUND	Some aspects of this project were evaluated in the space needs study performed by Bray Architects in 2013. In that study, the operators' control room was evaluated and a need for improved personal storage and better efficiency was identified. Specific recommendations for improvement of these conditions were not advanced and implemented, however. Since the 2013 study was performed, three members of the ecosystems services department have moved into offices in the laboratory and the operations supervisor and lead operator now share a standard sized office near the control room. These recent changes have led to concerns over worker safety, the safety of the public during facility tours and unsanitary conditions in these work spaces. It is now desired to further evaluate these conditions and implement improvements as part of this project.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$155,000	**$3,480,000**

TOTAL COST: $3,755,000

CIP ID#
A12

Miscellaneous Treatment Plant Improvements

START DATE:
ONGOING
COMPLETION DATE:
ONGOING

PROJECT TYPE	Variable
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of these projects is to make modifications or minor improvements to capital assets at the treatment plant on an annual basis to ensure that they remain in good working condition and to ensure the safety of the district's workers. These projects will be funded through reserves in the capital fund.
BACKGROUND	As the district's assets at the treatment plant continue to age and process complexity increases, operations staff have noted a need to make a number of minor improvements to assets to ensure the assets remain in good working order. In many cases, the projects are relatively small in scope, yet they are too large and time consuming to be addressed by the district's maintenance staff. The intent of this item in the capital budget is to provide an annual allowance for the identification and completion of these smaller improvement projects at the treatment plant. The projects will be administered through the operations or engineering department and completed by a contractor in accordance with the district's procurement code.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$75,000	**$450,000**

TOTAL COST: $ ONGOING

CIP ID#
A13

Engine Generator and Blower Control Panel Replacements

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	Plant Improvements – Energy Generation Systems
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	The purpose of this project is to replace the control panels on each of the three engines that are powered by digester gas at the treatment plant. Work will include replacing outdated technology with modernized control logic and improvements to worker safety through the elimination of high voltage conditions. Funding for this project will be through reserves in the capital fund.
BACKGROUND	The three engines and associated control panels were installed in 1991 as part of the digester gas utilization improvements. Since that time very few improvements have been made to the control panels. The existing panels use relays for engine control and should be replaced with more modern controllers. In addition, the panels have high voltage cabling that requires special safety equipment and worker expertise. It is expected that this equipment will need to remain in service until at least the year 2024 and possibly beyond. Given the age, condition and safety issues surrounding this equipment, it is desirable to replace the panels as soon as possible. Work will be performed by staff from the district's electrical maintenance department.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$262,500	**$262,500**

TOTAL COST: $270,000

CIP ID#
A14

W1 Piping Improvements

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	Plant Improvements – Potable Water System
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will replace the potable water (W1) piping and valves in the east galleries at the treatment plant. The work will be performed in conjunction with the replacement of hot water piping in tunnel two (see work under CIP ID# A15). It is anticipated that funding for this work will be through a loan from the Clean Water Fund.
BACKGROUND	The potable water system was installed in the east galleries through a number of plant additions dating back to the 1960s. This water network is critical to the proper functioning of several plant systems. The piping is constructed primarily of galvanized steel that has reached the end of its useful service life and has failed 17 times over the past 10 years. This project will replace the aging galvanized steel pipe with welded stainless steel pipe.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$562,500	**$562,500**

TOTAL COST: $579,000

CIP ID#
A15

Hot Water Piping Improvements

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	Plant Improvements – Hot Water System
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will replace the hot water piping and valves between the boiler building and sludge control building one. The work will be performed in conjunction with the replacement of potable water piping in the east galleries (see work under CIP ID# A14). It is anticipated that funding for this work will be through a loan from the Clean Water Fund.
BACKGROUND	The hot water system between the boiler building and sludge control building one was installed in 1961 during construction of the fourth addition. The piping ranges in size from 6 to 10 inches in diameter and is critical for heating the thermophilic digesters, heating and cooling various buildings and for operation of the engine blower. Several small leaks have been observed in the pipe and larger leaks are evident when the loop is taken out of service. This project will replace the aging steel pipe with welded carbon steel pipe.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$206,250	$206,250

TOTAL COST: $212,000

CIP ID#
A16

Final Clarifier 4, 5 and 6 Launder Trough

START DATE:
2020
COMPLETION DATE:
2021

PROJECT TYPE	Plant Improvements – Final Clarifiers
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project will replace the effluent launder troughs on final clarifiers four through six. The existing steel troughs have corroded to the point where they are unsafe and may interfere with system performance. It is anticipated that this project will be funded with reserves from the capital fund.
BACKGROUND	In the fall of 2017 district staff discovered numerous holes in the effluent launder trough of final clarifier six. It is thought that these holes are due to corrosion. Similar holes were found in the launder trough for final clarifier five in the spring of 2018. The troughs need to be structurally sound, as they need to be able to safely support a worker while performing maintenance on the clarifier. Further, as the troughs continue to corrode, the holes in the steel will enlarge and more mixed liquor will combine with the effluent, compromising treatment efficiency. It is proposed to replace the effluent troughs on final clarifiers five and six in 2020. The effluent trough on final clarifier four will be replaced in 2021. While there is no visible damage to final clarifier four at present, it was installed at the same time as the other two clarifiers and operates under similar conditions.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$219,000**

TOTAL COST: $234,000

CIP ID#
A17

15kV Electrical Service Replacement

START DATE:
2020
COMPLETION DATE:
2025

PROJECT TYPE	Plant Improvements – Electrical Distribution
LOCATION	Nine Springs Wastewater Treatment Plant
DESCRIPTION	This project proposes to replace the outdoor service switchgear, transformers and busway system for the incoming electrical service to the treatment plant. This system is responsible for transforming the incoming voltage from 15,000 volts to 5,000 volts so that it can be utilized by plant equipment. It is anticipated that any future equipment replacement will be funded through a loan from the Clean Water Fund. Initial investigation and assessments of equipment condition will be paid for through capital fund reserves.
BACKGROUND	This equipment was installed in 1984-85 and is located outside, just north of the effluent building. The equipment steps down the incoming voltage to 5,000 volts for use by large equipment such as the effluent pumps and the blowers for the aeration system (a secondary system further steps down the voltage from 5,000 volts to 480 volts for use by other equipment). Industry standards estimate a service life of 40 to 50 years for this equipment. Based on the lower bound of this estimate, the district is planning for the equipment to be replaced in 2024. Staff intends to hire a consultant in 2020 to do a thorough evaluation of the equipment's condition. A more definitive schedule will be established after that time.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$1,400,000**

TOTAL COST: $3,001,000

CIP ID#
B01

West Interceptor - PS 5 to Gammon Extension (lining project)

START DATE:
2018
COMPLETION DATE:
2018

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	West Interceptor Lake Mendota Drive (Spring Harbor Drive to Baker Avenue), City of Madison
DESCRIPTION	This project will correct condition defects in the West Interceptor from the district's Pumping Station 5 to its junction with the Gammon Extension to the West Interceptor. Approximately 3,500 feet of 18 inch cast iron sewer will be rehabilitated through the installation of a new cured-in-place liner within the existing pipe. It is anticipated that the project will financed through a Clean Water Fund loan.
BACKGROUND	This section of the West Interceptor was constructed in 1931 and is composed of cast iron sewer. Due to the age of this facility and the type of pipe material, the pipeline is suffering from corrosion, or tuberculation, of the interior pipe surface above the normal waterline. Tuberculation results from the buildup of iron precipitates on the pipe surface that are caused by chemical interactions between the pipe and the wastewater. These precipitates decrease the effective diameter of the pipe and reduce its capacity as they grow. If left unchecked they may cause the pipe to fail. The precipitates can generally be removed with mechanical equipment such that the pipeline can be successfully rehabilitated with a liner.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $710,000

CIP ID#
B02

Southwest Interceptor - Haywod Ext. Replacement

START DATE:
2018
COMPLETION DATE:
2019

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	Southwest Interceptor – Haywood Extension Haywood Drive, North Wingra Drive to West Shore Drive, City of Madison
DESCRIPTION	This project will allow for the replacement of the deteriorating Southwest Interceptor on Haywood Drive. It will also provide additional capacity so that flow can be better diverted between Pumping Station 2 and Pumping Station 8 during high flow and/or emergency situations. Approximately 1,500 feet of 24 inch cast iron sewer on Haywood Drive will be replaced with a 36 inch sewer as part of the improvements. Staff intends to fund this project through the Clean Water Fund program. This project will be constructed just prior to the City of Madison's reconstruction of Haywood Drive between Wingra Drive and South Park Street in 2019. District and city staff will coordinate all outreach efforts with area residents and businesses.
BACKGROUND	This section of the Southwest Interceptor was constructed in 1936 and consists of 24 inch cast iron sewer. As with other district interceptors made of cast iron sewer with service lives in excess of 50 years, this pipeline is suffering from tuberculation. Tuberculation is a process in which iron precipitates form on the inside surface of the pipe due to chemical reactions between the cast iron sewer material and the wastewater. The precipitates in this pipeline have reduced the effective diameter of the pipeline and its carrying capacity. This section of the Southwest Interceptor also serves as an important inter-tie between Pumping Station 2 and Pumping Station 8 and has been used on several occasions in the last 15 years to avoid sewer backups during high flows and other emergency events. The district's 2011 collection system facilities plan update identified a need to increase the carrying capacity of this pipeline so that more flow could be transferred between these two pumping stations.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$1,285,000	$1,285,000

TOTAL COST: $1,409,000

CIP ID#
B03

Nine Springs Valley Interceptor -McKee Road to Dunn's Marsh (lining project)

START DATE:
2018
COMPLETION DATE:
2019

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Nine Springs Valley Interceptor Cannonball bike path corridor, McKee Road to Dunn's Marsh, City of Fitchburg
DESCRIPTION	This project will correct condition defects caused by corrosion in the Nine Springs Valley Interceptor (NSVI) along the Cannonball bike path. Approximately 4,200 feet of reinforced concrete pipe, ranging in size from 30 to 42 inches, will be rehabilitated with a cured-in-place liner. Staff intends to fund this project through the Clean Water Fund program.
BACKGROUND	The portion of the NSVI between McKee Road and Dunn's Marsh was constructed in 1965 and provides service to lands in the southwest portion of the district's collection system, including the cities of Fitchburg, Madison, Middleton and Verona. The existing sewer is suffering from severe corrosion due to its proximity to the end of the Pumping Station 12 force main and steeper than normal pipe slopes. Both of these conditions result in turbulent wastewater which releases hydrogen sulfide gas from the wastewater. The hydrogen sulfide gas forms sulfuric acid along the pipe wall and leads to deterioration of the pipe material over time.

FINANCIAL ANALYSIS

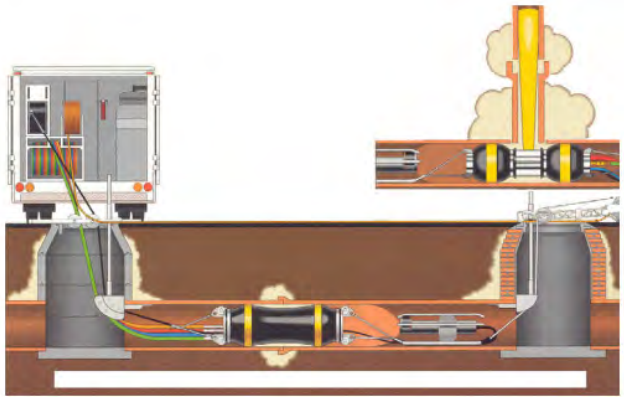
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$1,990,000	**$1,990,000**

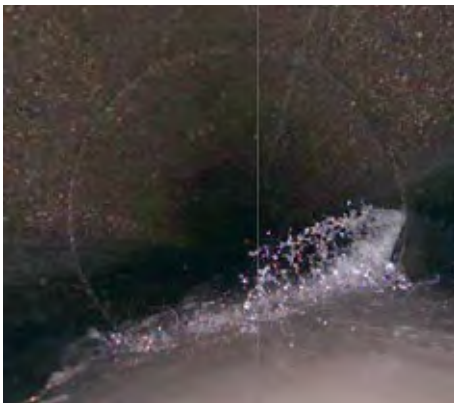
TOTAL COST: $2,110,000

CIP ID#
B04

Northeast Interceptor Joint Grouting

START DATE:
2019
COMPLETION DATE:
2019





PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Northeast Interceptor Milwaukee Street to Nakoosa Trail, City of Madison
DESCRIPTION	The purpose of this project is to identify joints in the Northeast Interceptor upstream of Pumping Station 10 that have excessive rates of infiltration and to seal these joints by injecting them with grout. This project is expected to be through reserves from the capital fund.
BACKGROUND	The Northeast Interceptor from Pumping Station 10 to Lien Road was installed in 1964. In 2010 a relief sewer was added from Pumping Station 10 to Nakoosa Trail and a replacement sewer was installed from Nakoosa Trail to Lien Road, thereby allowing a portion of the 1964 sewer to be abandoned. During construction of the relief sewer in 2010 it was discovered that numerous joints in the 1964 sewer that remained in service were leaking. Subsequent televising in 2014 confirmed the leaks. In approximately 10 locations the water is flowing into the sewer at a rate that is estimated to be 5 gallons per minute or more. This project proposes to test all joints in the 1964 sewer with pressurized air. Those joints that fail the test will be grouted with specialized equipment to eliminate excessive intrusion of groundwater through the pipe joints and into the public sewerage system.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$295,000	**$295,000**

TOTAL COST: $304,000

CIP ID#
B05

Northeast Interceptor - Truax Extension Relief

START DATE:
2018
COMPLETION DATE:
2020

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	Northeast Interceptor US Highway 51 corridor, Rieder Road to Lien Road, City of Madison
DESCRIPTION	System capacity in the Northeast Interceptor system will be increased through the addition of a relief interceptor near the southeast corner of the Dane County Regional Airport. Approximately 9,800 feet of relief sewer will be installed roughly parallel to the existing 48 inch sewer to provide the required system capacity. Funding for this project is expected to be provided through the Clean Water Fund program.
BACKGROUND	The Northeast Interceptor system provides service to the northerly and easterly areas of the collection system, including the City of Madison and the Villages of Cottage Grove, DeForest, Waunakee and Windsor. High rates of growth have been observed in the Villages of Waunakee and DeForest in the past several years and it is anticipated that additional capacity will be needed in this portion of the Northeast Interceptor prior to the year 2025. Approximately 22,000 feet of relief or replacement sewer in the Northeast Interceptor system has been installed downstream of this project in the last ten years to provide additional capacity.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$4,430,000	**$8,680,00**

TOTAL COST: $9,649,000

CIP ID#
B06

West Interceptor Relief Sewer - Walnut Street to Whitney Way

START DATE:
2019
COMPLETION DATE:
2022

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	West Interceptor Relief Sewer University Avenue, Walnut Street to Whitney Way, City of Madison and Village of Shorewood
DESCRIPTION	This project will provide additional capacity to the West Interceptor system in order to convey projected flows from the west side of the district's service area. The improvements consist of the installation of 11,500 feet of relief sewer that will be installed roughly parallel to the district's existing sewer that runs along the University Avenue corridor between Walnut Street and Whitney Way. Due to the size and complexity of this project, it is proposed that construction will occur in three phases, with construction beginning in 2020 and ending in 2022. It is anticipated that this project will be financed through the Clean Water Fund program.
BACKGROUND	Expected growth in the district's Pumping Station 15 service area, including the Bishops Bay development in the City of Middleton and the Town of Westport, has created a need for the district to add additional capacity to its West Intercepting system. In its 2009 report entitled "MMSD Collection System Evaluation" the Capital Area Regional Planning Commission identified several sections of the West Interceptor within the proposed project limits that required capacity relief prior to the year 2010 based on population forecasts. The district's 2011 collection system facilities plan update included a detailed analysis of the system between Walnut Street and Whitney Way and determined that additional capacity should be provided in or around the year 2020.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$565,000	**$13,070,000**

TOTAL COST: $14,236,000

CIP ID#
B07

West Interceptor - Spring Street Relief (lining project)

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	West Interceptor – Spring Street Relief North Randall Avenue/Spring Street to West Washington Avenue, City of Madison
DESCRIPTION	This project will correct condition defects in the West Interceptor – Spring Street Relief along its entire length from the intersection of Randall Avenue and Spring Street to its junction with the West Interceptor at Pumping Station 2. Approximately 4,600 feet of 24 inch cast iron sewer will be rehabilitated through the installation of a new cured-in-place liner within the existing pipe. This project also includes the rehabilitation of approximately 600 feet of 24 inch cast iron sewer along the West Interceptor, north of West Washington Avenue. It is anticipated that the project will be funded with a Clean Water Fund loan.
BACKGROUND	The West Interceptor – Spring Street Relief Sewer was constructed in 1940 and is composed of cast iron. Due to the age of this facility and the type of pipe material, the pipeline is suffering from corrosion, or tuberculation, of the interior pipe surface above the normal waterline. Tuberculation results from the buildup of iron precipitates on the pipe surface that are caused by chemical interactions between the pipe and the wastewater. These precipitates decrease the effective diameter of the pipe and reduce its capacity as they grow. If left unchecked, they may cause the pipe to fail. The precipitates can generally be removed with mechanical equipment, allowing the pipeline to be successfully rehabilitated with a liner.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$55,00	**$1,645,000**

TOTAL COST: $1,744,000

CIP ID#
B08

NEI - Truax Extension Rehab (lining project)

START DATE:
2020
COMPLETION DATE:
2022

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Northeast Interceptor – Truax Extension USH 51 corridor, Rieder Road to Lien Road, City of Madison
DESCRIPTION	This project will correct condition defects in the Northeast Interceptor between Lien Road and the end of the Pumping Station 13 force main at Rieder Road. Approximately 11,000 feet of existing 48 inch concrete pipe will be rehabilitated through the installation of a new cured-in-place liner within the existing pipe. This project will be undertaken shortly after a new relief sewer is installed roughly parallel to the existing sewer (see CIP ID# B05). It is anticipated that this project will be financed through a Clean Water Fund loan.
BACKGROUND	This section of the Northeast Interceptor was installed in 1969 and suffers from internal corrosion due to the presence of elevated levels of hydrogen sulfide in the wastewater. Approximately one-half of the Northeast Interceptor System between Pumping Station 18 and Pumping Station 14 has either been rehabilitated or replaced due to corrosion. Corrosion of the pipe reduces the capacity by increasing surface roughness and may eventually cause the pipe to fail. Installation of a cured-in-place liner can extend the service life of the interceptor if installed before the corrosion progresses too far.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$5,220,000**

TOTAL COST: $5,781,000

CIP ID#
B09

NEI - Waunakee Extension Relief

START DATE:
2021
COMPLETION DATE:
2023

PROJECT TYPE	Capacity Relief – Conveyance System
LOCATION	Northeast Interceptor – Waunakee Extension Yahara River to Village of Waunakee, Town of Westport and Village of Waunakee
DESCRIPTION	This project will provide additional capacity to the Northeast Interceptor system in order to convey projected flows from the villages of Dane and Waunakee and the Town of Westport. The improvements consist of the installation of approximately 24,200 feet of relief sewer that will be installed parallel to the district's existing sewer that extends from the Yahara River to the Village of Waunakee. At this time it is proposed that construction will occur in two phases, with construction of the first phase tentatively scheduled for 2022. It is anticipated that this project will be financed through the Clean Water Fund program.
BACKGROUND	Continued high rates of growth in the Village of Waunakee and Town of Westport are expected to create a need for the district to add capacity to the Waunakee Extension of the Northeast Interceptor. The Capital Area Regional Planning Commission (CARPC) is projecting that capacity will be reached in the majority of the Waunakee Extension by the year 2022 based on population forecasts. Periodic flow monitoring performed by district staff as part of the billing program validates the existing flows used by CARPC in its analysis. This project could be postponed if development patterns in the service area change. It is included in the capital improvements plan at this time based on the best information available.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$9,340,000**

TOTAL COST: $10,642,000

CIP ID#
B10

NEI - FEI to SEI (lining project)

START DATE:
2022
COMPLETION DATE:
2023

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Northeast Interceptor Femrite Drive/ Copps Avenue to Progress Road, City of Monona and City of Madison
DESCRIPTION	This project will correct condition defects in the Northeast Interceptor between its junction with the Far East Interceptor and its junction with the Southeast Interceptor. Approximately 3,300 feet of existing 48 inch concrete pipe will be rehabilitated through the installation of a new cured-in-place liner within the existing pipe. It is anticipated that financing of the project will be through a loan from the Clean Water Fund.
BACKGROUND	This section of the Northeast Interceptor was installed in 1964 and suffers from internal corrosion due to the presence of elevated levels of hydrogen sulfide in the wastewater. Approximately 2,250 feet of the Northeast Interceptor between the Far East and Southeast interceptors was abandoned in 2013 and replaced with a new sewer due to the condition of the pipe. This project will rehabilitate and extend the service lives of the remaining sewer segments that were not replaced in the 2013 project.

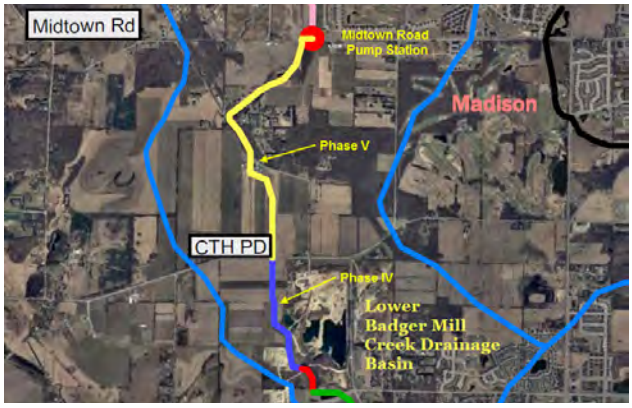
FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$1,660,000**

TOTAL COST: $1,923,000

CIP ID#
B11

Lower Badger Mill Creek Interceptor (Phase V)



START DATE:
2023
COMPLETION DATE:
2024

PROJECT TYPE	New Capacity – Conveyance System
LOCATION	Lower Badger Mill Creek Interceptor CTH PD to Midtown Road, Town of Verona & City of Madison
DESCRIPTION	This project will extend the district's Lower Badger Mill Creek Interceptor from Highway PD to Midtown Road to provide service for new development and relieve the City of Madison's existing pumping station at Midtown Road. Approximately 8,500 feet of new interceptor sewer will be installed as part of the proposed improvements. This project will be funded through capital fund reserves. Project costs will be recovered from connection charges from new users upon connection to the interceptor improvements.
BACKGROUND	District policy allows for the construction of district interceptors only when that interceptor shall serve at least two municipalities. Sanitary sewer service options for the Lower Badger Mill Creek drainage basin were studied by district staff in 2005. At that time it was decided that a regional interceptor sewer would be constructed in several phases as development needs dictated in order to serve the Cities of Verona and Madison and the Towns of Verona and Middleton. Phase one of the interceptor was built in 2006 from the district's Pumping Station 17 to Edwards Street; phase two was constructed in 2008 from Edwards Street to Cross County Road on the Epic Campus; phase three extended the interceptor 900 feet north of Cross Country Road; and phase four of the interceptor was installed up to CTH PD in the spring of 2018. Phase five of the interceptor will be constructed when the City of Madison's Midtown Road Lift Station reaches capacity and flows require diversion to the district's Pumping Station 17 and/or when new development between Highway PD and Midtown Road dictates the need to provide service.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $4,140,000

CIP ID#
C01

Grass Lake Dike Stablization

START DATE:
2018
COMPLETION DATE:
2018

PROJECT TYPE	System Rehabilitation – Effluent Conveyance System
LOCATION	Badfish Creek and Grass Lake Badfish Creek, Schneider Road to Rutland Dunn Town Line Road, Town of Dunn
DESCRIPTION	The purpose of this project is to evaluate corrective measures to stabilize the Grass Lake dike to prevent sloughing of the shoreline soil. It is anticipated that a consultant will be retained to provide technical services, including soil investigations and analysis and preparation of plans and specifications. Funding of the consulting services will be via capital fund reserves. Depending on the consultant's recommendations, additional funds may be required in subsequent years to construct the improvements.
BACKGROUND	The Grass Lake dike roads were built to provide a barrier between the district's effluent in Badfish Creek and Grass Lake. Repairs have been made in the past to prevent subsurface flow from the effluent channel from passing into Grass Lake and also to prevent animals from tunneling through the dike. Despite the repairs made by the district's buildings and grounds department over the years, these problems are recurring and a more permanent solution is needed.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $155,000

CIP ID#
C02

Pumping Station 10 Force Main Rehabilitation

START DATE:
2018
COMPLETION DATE:
2018

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pump Station 10 Force Main Wisconsin Southern Railroad corridor, Buckeye Road to north 1,500 feet, City of Madison
DESCRIPTION	This project will correct condition defects in a portion of the Pumping Station 10 force main. Approximately 1,500 feet of cured-in-place liner will be installed in the existing 36 inch concrete force main just north of Buckeye Road in the City of Madison. It is anticipated that funding for the project will come from a Clean Water Fund loan.
BACKGROUND	The Pumping Station 10 force main was installed in 1964 as part of the northeast intercepting system. Like other parts of the northeast system, the discharge end of the force main is suffering from corrosion due to high levels of hydrogen sulfide. Inspection of the force main by television inspection in 2015 revealed that approximately 1,500 feet of the pipe is in need of rehabilitation where the pipe does not normally flow full. This project carries some unique challenges. The Pumping Station 10 force main conveys an average flow of approximately 8 million gallons per day and is a critical facility for the district. This flow will need to be bypassed continuously throughout construction with an engineered bypass system. Another challenge involves inserting a cured-in-place liner within a force main that has no access points. The section to be lined will need to be cut apart in smaller segments to allow for access and then repaired upon insertion of the liner.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$0**

TOTAL COST: $1,400,000

CIP ID#
C03

Pumping Station 7 Improvements

START DATE:
2018
COMPLETION DATE:
2021

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pumping Station 7 6300 Metropolitan Lane, City of Monona
DESCRIPTION	This project provides for various improvements to Pumping Station 7 that are needed following the start-up of Pumping Station 18 to ensure that the station continues to operate effectively and reliably. The following is a list of potential improvements that are anticipated: replacement of existing controllers and control system; replacement of electrical switchgear (including outdoor transformers and utility equipment); installation of an odor control system; replacement or modifications to the HVAC system; separation of control room space from garage and screen room; installation of variable speed drive(s) to optimize pumping operations; increase in station pumping capacity; and replacement of manual valves with electrically actuated valves. It is anticipated that this project will be funded with a loan from the Clean Water Fund.
BACKGROUND	Prior to Pumping Station 18 being placed into service in 2015, Pumping Station 7 pumped roughly 40 percent of the district's wastewater to the treatment plant each day. The facility is in excess of 60 years old and was last rehabilitated in 1992. Given the age of the station, the time that has elapsed since the last rehabilitation, and the complexities of operating Pumping Station 7 in tandem with Pumping Station 18, district staff have recommended a number of potential improvements at Pumping Station 7 to keep this critical facility operating in an efficient and effective manner. The most pressing needs at this time are to replace the controllers and control system and the HVAC system to mitigate the corrosion of electrical gear and control systems.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$1,720,000	**$3,440,000**

TOTAL COST: $3,997,000

CIP ID#
C04

Pumping Station 17 Force Main Relief - Phase One

START DATE:
2018
COMPLETION DATE:
2021

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	Pumping Station 17 Force Main Badger Mill Creek, Highway M to north 6,900 feet, City of Verona
DESCRIPTION	This project will add a relief force main to the existing 16 inch force main that will provide additional capacity for wastewater that is pumped from Pumping Station 17 in the City of Verona. Approximately 6,900 feet of 16 inch force main will be installed in the first phase of construction and 6,400 feet in the second phase, doubling the capacity of the force main system from 7.2 to 14.4 million gallons per day. It is anticipated that this project will be funded through reserves from the capital fund.
BACKGROUND	At this time the Pumping Station 17 force main serves only areas within the City of Verona. It is projected that the Pumping Station 17 force main has enough capacity to serve lands within the City of Verona until approximately 2027. It is expected, however, that additional flow from the City of Madison, and possibly the Town of Verona, will drain to Pumping Station 17 in or about 2024 when the final phase of the Lower Badger Mill Creek Interceptor is constructed up to Midtown Road and the City of Madison abandons its pumping station in this location. Capacity relief will be needed for both Pumping Station 17 and its force main system when this occurs. Relief for the force main system has been separated into two construction phases to coordinate with a City of Verona public works project. The City has plans to construct a new gravity sewer along the proposed route of the district's relief force main in 2019. The district is proposing to construct phase one of the relief force main as a joint project with the city in 2019 to reduce costs and inconvenience to the general public.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$910,000	**$1,680,000**

TOTAL COST: $1,754,000

CIP ID#
C05

Pumping Station 13 Rehab

START DATE:
2019
COMPLETION DATE:
2021

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pumping Station 13 3634 Amelia Earhart Drive, City of Madison
DESCRIPTION	This project provides for a major rehabilitation at Pumping Station 13. Improvements to the station will include the following features: replacement of one or more pumps to increase capacity; improvements to the power systems to achieve the desired level of redundancy; replacement of aging electrical and control equipment; new HVAC system; installation of flow meter; and possible enlargement of the existing building footprint to house new equipment. It is anticipated that this project will be funded through a Clean Water Fund loan
BACKGROUND	Table 5.1 of the district's 2011 collection system facilities plan update included a capacity and condition assessment for each of its 17 pumping stations across six categories. This table was updated in May of 2017 to reflect current conditions, including the construction of Pumping Station 18. Firm capacity improvements and replacement of aging equipment have been identified as the primary needs at Pumping Station 13. Overall Pumping Station 13 received the highest priority ranking among the 18 pumping stations with regard to the need for future rehabilitation.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$685,000	**$5,365,000**

TOTAL COST: $5,746,000

CIP ID#
C06

Pumping Station 14 Rehabilitation

START DATE:
2019
COMPLETION DATE:
2021

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pumping Station 14 5000 School Road, City of Madison
DESCRIPTION	This project provides for a major rehabilitation at Pumping Station 14. Improvements to the station will include the following features: replacement of one or more pumps to increase capacity; improvements to the power systems to achieve the desired level of redundancy; replacement of aging electrical and control equipment; new HVAC system; installation of flow meter; and possible enlargement of the existing building footprint to house new equipment. It is anticipated that this project will be funded through a Clean Water Fund loan.
BACKGROUND	Table 5.1 of the district's 2011 collection system facilities plan update included a capacity and condition assessment for each of its 17 pumping stations across six categories. This table was updated in May of 2017 to reflect current conditions, including the construction of Pumping Station 18. Firm capacity improvements and replacement of aging equipment have been identified as the primary needs at Pumping Station 14. Overall Pumping Station 14 received the third highest priority ranking among the 18 pumping stations with regard to the need for future rehabilitation.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$668,000	**$5,220,000**

TOTAL COST: $5,590,000

CIP ID#
C07

Pumping Station 4 Rehabilitation

START DATE:
2020
COMPLETION DATE:
2022

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pumping Station 4 620 John Nolen Drive, City of Madison
DESCRIPTION	This project provides for a major rehabilitation of Pumping Station 4. Improvements to the station are expected to include the following: replacement of all three pumps due to age and lack of adequate capacity; provision of variable frequency drives to improve operational performance; improvements to the power system to achieve greater redundancy, including provision of an on-site generator; replacement of aging electrical and control equipment; and a new HVAC system. It is anticipated that this program will be funded through a Clean Water Fund loan.
BACKGROUND	Pumping Station 4 was placed into service in 1967 and pumps flow directly to the Nine Springs Wastewater Treatment Plant through a parallel force main system with Pumping Stations 2 and 3. Most of the equipment in the station has not been replaced or upgraded since the station was started up in 1967. As a result, it is recommended that the major electrical equipment and associated controls be replaced to ensure that the station operates reliably. In addition it is recommended that the pumping units be replaced and optimized so that the station is able to work in concert with the pumps from Pumping Stations 2 and 3.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$4,690,000**

TOTAL COST: $5,158,000

CIP ID#
C08

Pumping Station 17 Capacity Upgrade

START DATE:
2022
COMPLETION DATE:
2023

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	Pumping Station 17 407 Bruce Street, City of Verona
DESCRIPTION	This project will add capacity at Pumping Station 17 through three new pumping units and variable frequency drives. Other planned improvements include a new programmable logic controller and power redundancy upgrades. It is anticipated that this project will be funded through a loan from the Clean Water Fund.
BACKGROUND	At this time Pumping Station 17 serves only areas within the City of Verona. It is projected that Pumping Station 17 has enough capacity to serve lands within the City of Verona until approximately 2027. It is expected, however, that additional flow from the City of Madison, and possibly the Town of Verona, will drain to Pumping Station 17 in or about 2024 when the final phase of the Lower Badger Mill Creek Interceptor is constructed up to Midtown Road and the City of Madison abandons its pumping station in this location. A capacity upgrade will be needed for Pumping Station 17 when this occurs.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$1,315,000**

TOTAL COST: $1,522,000

CIP ID#
C09

Pumping Station 17 Force Main Relief - Phase 2

START DATE:
2022
COMPLETION DATE:
2023

PROJECT TYPE	Capacity Improvement – Conveyance System
LOCATION	Pumping Station 17 Force Main Badger Mill Creek, Bruce Street to Maple Grove Drive, City of Verona and Town of Verona
DESCRIPTION	This project will add a relief force main to the existing 16 inch force main and will provide additional capacity for wastewater that is pumped from Pumping Station 17 in the City of Verona. Approximately 6,900 feet of 16 inch force main will be installed in the first phase of construction and 6,400 feet in the second phase. It is anticipated that this project will be funded through a loan from the Clean Water Fund.
BACKGROUND	It is projected that the Pumping Station 17 force main has enough capacity to serve lands within the City of Verona until approximately 2027. It is expected, however, that additional flow will drain to Pumping Station 17 in or about 2024 when the final phase of the Lower Badger Mill Creek Interceptor is constructed up to Midtown Road and the City of Madison abandons its pumping station in this location. Capacity relief will be needed for both Pumping Station 17 and its force main system when this occurs. Relief for the force main system has been separated into two construction phases to coordinate with a City of Verona public works project. The district is proposing to construct phase one of the relief force main as a joint project with the city in 2019 to reduce costs and inconvenience to the general public. Phase two of the project will occur in or about 2023, just prior to completion of the final phase of the Lower Badger Mill Creek Interceptor project.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$0	**$1,580,000**

TOTAL COST: $1,828,000

CIP ID#
C10

Pumping Station 16 Force Main Rehabilitation

START DATE:

COMPLETION DATE:

PROJECT TYPE	System Rehabilitation – Conveyance System
LOCATION	Pumping Station 16 Force Main North Gammon Road (Colony Drive to Mineral Point Road), City of Madison
DESCRIPTION	The purpose of this project is to correct condition defects in the Pumping Station 16 force main on North Gammon Road between Colony Drive and Mineral Point Road. Approximately 400 feet of interceptor sewer will also be rehabilitated through insertion of a cured-in-place liner as part of this project. It is anticipated that this project will be funded through a loan from the Clean Water Fund.
BACKGROUND	The Pumping Station 16 force main was installed in 1979-80 on Gammon Road from Pumping Station 16 in the City of Middleton to just north of Mineral Point Road in the City of Madison. The system consists of approximately 6,900 feet of 36 inch diameter ductile iron pressure sewer and 2,900 feet of 30 inch diameter ductile iron sewer that is not pressurized. The majority of the pressurized sewer is fully submerged at all times and is believed to be in good condition. Approximately 1,600 feet of the non-pressurized sewer is not fully submerged with wastewater and thus is showing evidence of corrosion via inspection by closed circuit television. District staff intends to retain a consultant in the year 2020 to do a more thorough evaluation of the pipe condition to verify the need for rehabilitation. The project proposes to either rehabilitate the corroded force main sections with a cured-in-place liner or to replace those sections with new pipe. A 400 foot segment of interceptor sewer immediately downstream of the Pumping Station 16 force main discharge will also be rehabilitated with a cured-in-place liner as part of this project.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$20,000	**$1,430,000**

TOTAL COST: $1,654,000

CIP ID#
C11

Automated Power Transfer at Pumping Stations 10 and 11

START DATE:
2019
COMPLETION DATE:
2019

PROJECT TYPE	System Resoliency- Conveyance System
LOCATION	Pumping Station 10 192 Regas Road, City of Madison Pumping Station 11 4760 E. Clayton Road, Town of Blooming Grove
DESCRIPTION	The purpose of this project is to automate the process by which a third electrical feed can be utilized to provide power to both Pumping Station 10 and Pumping Station 11. It is anticipated that costs for this project will be paid for from reserves in the capital fund.
BACKGROUND	At present both pumping stations have two separate power feeds from the local utility company. In the event of a loss of power from one feed, station power can be transferred automatically to the second feed. Both stations also have a third feed available but it requires manual intervention to transfer power to the station. In emergency situations that often involve high wastewater flows, there may not be enough time for the utility company to respond and transfer the power. Addition of an automatic transfer switch for the third power feed at each station will allow the utility company to provide continuous monitoring of all power feeds and allow for automatic switching of the third feed as needed, greatly increasing station reliability.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$260,000	**$260,000**

TOTAL COST: $268,000

CIP ID#
C12

Miscellaneous Collection System Improvements

START DATE:
ONGOING
COMPLETION DATE:
ONGOING

PROJECT TYPE	Variable
LOCATION	Conveyance System
DESCRIPTION	The purpose of these projects is to make modifications or minor improvements to capital assets in the collection system on an annual basis to ensure that they remain in good working condition and enhance the safety of the district's workers. These projects will be funded through reserves in the capital fund.
BACKGROUND	As the district's assets in the collection system age, operations staff members have noted a need to make a number of minor improvements to ensure that they remain in good working order. In many cases, the projects are relatively small in scope, yet they are too large and time consuming to be addressed by the district's maintenance staff. The intent of this item in the capital budget is to provide an annual allowance for the identification and completion of these smaller improvement projects. The projects will be administered through the operations or engineering department and completed by a contractor in accordance with the district's procurement code.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$75,000	**$450,000**

TOTAL COST: $ONGOING

CIP ID#
D01

Capital Budget Expenses

START DATE:
ONGOING
COMPLETION DATE:
ONGOING

PROJECT TYPE	Capital Budget Expenses
LOCATION	District-wide
DESCRIPTION	These are general capital budget expenses. More specifically, they are annual funds used for smaller planning, study and related expenses that are required to update and implement the capital improvements plan.
BACKGROUND	Development of the district's capital improvements plan and capital budget requires almost continual study and planning. Often, internal resources are not available to conduct studies or planning in desirable timeframes and external resources are necessary. This budget item provides funds to cover expenditures for smaller studies or planning efforts.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$50,000	**$300,000**

TOTAL COST: $ONGOING

CIP ID#
D02

Plant Asset Management Plan Implementation

START DATE:
2019
COMPLETION DATE:
2024

PROJECT TYPE	Capdital Budget Expenses
LOCATION	District-wide
DESCRIPTION	This project is to implement the plant asset management plan, which is currently being developed. The plan provides data on assets, including locations, conditions and consequences of failure. Tools and procedures are required to use this data, particularly for the maintenance program and capital planning program. Tasks within this project include cleanup and migration of data in the current maintenance management system; development of a utility for in-field condition assessments; integration with the GIS system; improvement of positional accuracy for force mains and interceptors; and improvement in tools used for planning maintenance work. Funding for this work will be through reserves from the capital fund. (continued on next page)

CIP ID#
D02

Plant Asset Management Plan Implementation (cont.)

START DATE:
2019
COMPLETION DATE:
2024

BACKGROUND

The district follows the practices of sustainable infrastructure management, a systematic approach to asset management. It uses comprehensive data on asset types, locations, conditions and consequences of failure to facilitate cost-effective maintenance and replacement decisions and manage risk.

In previous capital improvement plans, sustainable infrastructure management has been pursued as an ongoing capital expense, with costs escalating year-over-year to approximate inflation. The program has advanced to the point where it can begin integrating into the normal course of business of the district. Over the six years of this plan, annual capital spending will decline from just over $300,000 in 2019 to just over $100,000 in 2024. The decline reflects more precise estimates of project costs, made possible by progress to date on developing the plant asset management plan. In addition, planning and strategy department salary costs related to the plan will return to the operating fund gradually over the first four years of the plan.

It is possible that additional operating budget authority will be needed in the maintenance group in future years to continue implementing the plan. Exact needs will not be known for a few years. Finally, it is expected that future asset management capital projects will be needed, including condition assessments and updates to plans.

FINANCIAL ANALYSIS

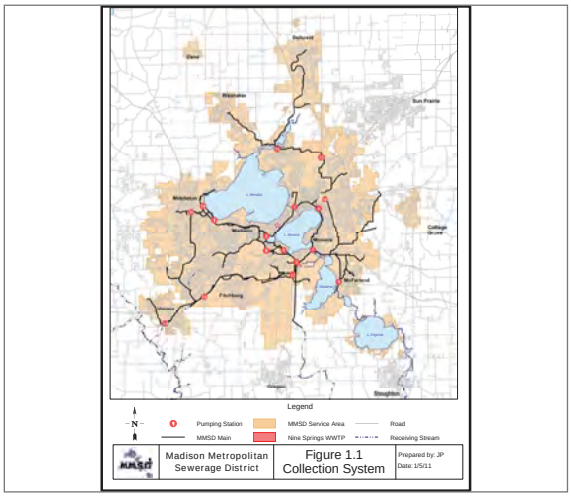
2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$307,500	**$1,305,000**

TOTAL COST: $1,426,000

CIP ID#
D03

Collection System Facilities Plan Update

START DATE:
2018
COMPLETION DATE:
2019



PROJECT TYPE	Capital Budget Expenses
LOCATION	Collection System
DESCRIPTION	The district's 2019 collection system facilities plan is a key planning document that is periodically updated based on projections from the Capital Area Regional Planning Commission. Funding for this study will be through reserves from the capital fund.
BACKGROUND	The purpose of the collection system facilities plan is to update and revise the previous plan conducted in 2011. As with the original 2002 plan, the 2011 update reviewed and assessed the adequacy and condition of the district's collection system to identify and recommend future collection system projects. Since plan adoption, the district has completed many of the recommended projects. Following the Capital Area Regional Planning Commission's update of the district's collection system evaluation in 2018, it will be time to review those projects remaining on the list and identify additional future projects that may be required to sustain and/or enhance the integrity of the district's collection system. In the past, the facility plans have been completed solely with district staff at considerable levels of time and effort. It is anticipated that an engineering consultant will be retained to complete a portion of the 2019 update, with particular attention given to work on control of inflow and infiltration.

FINANCIAL ANALYSIS

2019 EXPENDITURE ($2018)	2019-2024 CIP ($2018)
$120,000	**$120,000**

TOTAL COST: $160,000

APPENDIX B: COMPLETED PROJECTS & RETAINERS

2017 PROJECT COMPLETIONS

PUMPING STATIONS 11 AND 12 REHABILITATION

The district identified many of its pumping facilities as needing rehabilitation and improvements to bring them up to the proper standards. The rehabilitations were prioritized in the district's collection system facilities plan update (approved by the Wisconsin Department of Natural Resources in July 2012). The plan determined that Pumping Stations 11 and 12 both needed rehabilitation and required scrutiny of the long-term capacity needs. Construction began in February 2015 and the project was formally accepted by the commission in October 2017. The total project cost of $10 million is being financed with a Clean Water Fund loan.

PUMPING STATION 12 FORCEMAIN RELOCATION

The Wisconsin Department of Transportation is constructing major roadway improvements to Verona Road at its intersection with Highway PD. The improvements include the widening of Verona Road and an elevated crossing at Highway PD. The district's Pumping Station 12 force main and Nine Springs Valley Interceptor/Mineral Point Extension were located in the highway right-of-way and would be adversely affected by the improvements. Given this conflict, the condition of the interceptor and force main and capacity limitations for the existing interceptor, the facilities in the right-of-way were abandoned and a new force main was installed along the Military Ridge bike path corridor. Construction on the project began in August 2016. The project was substantially completed in the spring of 2017 and formally accepted by the commission in October 2017. The total project cost of $2 million is being financed with a Clean Water Fund loan.

MAINTENANCE FACILITY

In August 2012, the district hired Bray Architects to conduct a space needs analysis for its existing maintenance facilities and operations space to help determine the best long-term facilities solution for maintenance and operational needs. The study led to the design and construction of a new Maintenance Facility and minor space needs improvements to the existing Maintenance Shop One and Operations Building. The new Maintenance Facility provides district staff with a safe working environment and the necessary tools and equipment to address maintenance needs well into the future. The project was accepted by the commission in June 2017. The total project cost of $11.8 million will be financed with a Clean Water Fund loan.

NORTHEND INTERCEPTOR (LINING PROJECT)

The Northend Interceptor system was constructed between 1924 and 1927. The portion of sewer on North Sherman Avenue between Commercial Avenue and Northfield Place consists of approximately 1,500 feet of 10 inch vitrified clay sewer. Television inspection in 2011 revealed several defects that required rehabilitation, including cracked pipe and leaky joints. The rehabilitation project placed a new liner within the host pipe to correct these defects. The project was completed in October 2017, with the total project cost of $105,000 financed with reserves from the capital fund.

CAPITAL CITY RECREATIONAL TRAIL RELOCATION AT VEHICLE LOADING BUILDING

The Capital City Recreational Trail provides valuable recreation to the community and presently routes directly in front of the district's vehicle loading building along South Towne Drive and along Moorland Road. The Moorland Road gate provides the entrance for Metrogro vehicles to the vehicle loading building while the South Towne gate provides the exit from the facility. During the hauling season, a significant amount of vehicle traffic crosses the bike path on a routine basis, raising safety concerns. The district's consultant finished plans for the bike path relocation in 2017. Also in 2017, some trees were removed from the exit gate to improve visibility for both Metrogro drivers and trail users. At this time, district staff members are evaluating the impact of the landscaping improvements on trail safety before proceeding with construction of the trail relocation. Total project costs of $57,000 were funded with capital fund reserves.

ANNUAL CLARIFIER COATING

The district retained JSM General Contracting LLC to coat final clarifiers 16 and 18 in 2017 as part of on-going efforts to upgrade and extend the life of the district's tanks and mechanisms. The total project cost of $154,100 was paid with reserves from the capital fund.

ANNUAL PAVEMENT IMPROVEMENTS

As part of annual efforts to upgrade worn pavement areas, the district hired Tri-County Paving to repave approximately 22,000 square feet of pavement along the pit access road in 2017. This road runs from Moorland Road to the district's sludge drying beds and is heavily used by Metrogro's hauling equipment and the City of Madison's sewer cleaning trucks. The repaving costs of approximately $63,200 were funded through the use of capital fund reserves.

2018 PROJECT COMPLETIONS/ ANTICIPATED COMPLETIONS

FINAL COMPLETION OR SUBSTANTIAL COMPLETION IN 2018:

LIQUID PROCESSING FACILITIES PLAN

The district's asset management program identified a number of plant related liquid processing needs that were included in business cases within the district's 2016- 2021 capital improvements plan. Liquid processing includes the processes and equipment necessary for the plant's liquid stream, specifically screenings and grit removal, primary treatment, secondary treatment including aeration and final clarification, ultraviolet disinfection and effluent storage and discharge. Prior to construction of new or rehabilitation of existing wastewater facilities, DNR requires owners to prepare and have approved a facilities plan. Staff members determined that with several potential liquid stream projects on the horizon, a single planning effort would best address the needs and provide coordination. Work on the facilities plan began in February 2016 and was accepted by the district's commission for planning purposes on Jan. 25, 2018.

A concrete channel sends wastewater from the aeration tanks to the clarifiers for further treatment.

The total project cost of $962,000 was funded from the capital reserve fund. These planning costs will be recovered through a loan from the Clean Water Fund program upon construction of the projects outlined in the facilities plan.

WEST INTERCEPTOR – WEST RANDALL AVENUE TO NEAR PUMPING STATION 2 (LINING PROJECT)

The original West Interceptor is one of the oldest facilities in the collection system. It was constructed in 1916 from Pumping Station 2 to the intersection of University Avenue and Farley Avenue. The section extending from West Washington Avenue to Randall Avenue consists of approximately 4,575 feet of 24 inch cast iron pipe. Television inspection of this section of sewer in 2011 found increased levels of corrosion in the sewer, which can compromise the structural integrity of the pipe and limits its carrying capacity. Rehabilitation of the sewer included the removal of excess deposits from the pipe walls and insertion of a new liner within the host pipe. The project was substantially completed in May of 2017, with final completion in April of 2018. The total project cost of $1.4 million will be financed with a Clean Water Fund loan.

PUMPING STATION 15 REHABILITATION

Rehabilitation of Pumping Station 15 was determined as a priority in the district's collection system facilities plan update (approved by DNR in July 2012). The primary improvements include an increase to firm pumping capacity, replacement of aging electrical equipment and a new superstructure to allow better access to and protection for the equipment. Construction began in June 2016 and the project was accepted by the commission in April 2018. The total project cost of $4.2 million is being financed with a Clean Water Fund loan.

LOWER BADGER MILL CREEK INTERCEPTOR – PHASE FOUR

The Lower Badger Mill Creek watershed is located along the district's westerly boundary and includes lands in the Town of Middleton, Town of Verona, City of Madison and City of Verona. Since 1995, the district has been working with the City of Verona and City of Madison on the design of an interceptor that would serve the entire watershed. Construction of the interceptor began in 2006 and has included construction from Pumping Station 17 to the Epic campus in three separate phases over a seven year period. The phase four extension, which includes approximately 4,000 feet of 30 inch diameter pipe from the Epic campus to Highway PD, is required for expansion of the Epic campus and future development north of Highway PD. The project was substantially completed in the spring of 2018. The total project cost of $1.2 million will be funded via reserves from the capital fund.

SOUTHEAST INTERCEPTOR RELOCATION – MONONA WATERFRONT DEVELOPMENT

The City of Monona is undertaking a major redevelopment project near the Yahara River between West Broadway and Bridge Road. The Chase Bank building at 802 W. Broadway was located over the district's 60 inch sewer in the redevelopment area. The redevelopment plans required that the existing building be demolished and a new building and parking structure be built in the area of the 60 inch sewer. To accommodate these plans, the city and the district coordinated the relocation of the sewer around the new infrastructure. The work was substantially complete by the end of 2017. The total project cost, estimated at $275,000, will be paid for from reserves in the capital fund. The district's total payment to the City of Monona of $250,000 is expected to be paid in fall of 2018.

ANTICIPATED COMPLETIONS IN 2018:

SOUTHEAST INTERCEPTOR – REHABILITATION UPSTREAM OF PUMPING STATION 9 (LINING PROJECT)

The Southeast Interceptor was constructed in 1961 as part of the Southeast Interceptor project, which began at Pumping Station 7 in the City of Monona and ended at the Yahara River in the Village of McFarland. The section upstream of Pumping Station 9 consists of approximately 3,360 feet of 24 and 27 inch reinforced concrete pipe which runs parallel to the west side of U.S. Highway 51 and crosses to the east side of the highway just north of the Yahara River. Due to the number of customer connections at the manhole at the Yahara River, the geometry of the manhole, turbulence in the flow and release of hydrogen sulfide gas, there is a significant amount of corrosion at this location. The district rehabilitated this manhole in 2014 with

a protective liner due to the degree of corrosion present. This project will continue rehabilitation efforts by lining approximately 600 feet of 27 inch pipe immediately downstream of the manhole and grouting pipe joints between the manhole and Pumping Station 9 to eliminate intrusion of groundwater into the sewer. Total project costs, estimated at $295,000, will be funded through the Clean Water Fund program.

To make the most efficient use of resources in construction of the Nine Springs Valley Interceptor-Morse Pond Extension, the district is coordinating construction with the City of Madison and Wisconsin Department of Transportation. The project includes approximately 3,200 feet of 20 inch sanitary sewer pipe along the larger city stormwater pipe, shown here with project engineer Eric Hjellen.

NSVI-MORSE POND EXTENSION

This project involves the construction of approximately 3,200 feet of new sanitary sewer to be installed from the existing Nine Springs Valley Interceptor (Midtown Extension) to the southwest corner of Highway PD and Highway M. The new sewer will generally be located along Raymond Road and will provide service for lands in the City of Madison and lands south of Highway PD that will likely be annexed to the City of Verona. The sewer construction is being coordinated with the reconstruction of Highway M from Cross Country Road in the City of Verona to Flagstone Drive in the City of Madison. The total estimated project cost of $2.3 will be financed through reserves from the capital fund.

WEST INTERCEPTOR – PUMPING STATION 5 TO WEST INTERCEPTOR (GAMMON EXTENSION)

This section of the West Interceptor was constructed in 1931 and consists of approximately 3,560 feet of 18 inch cast iron sewer. It was inspected by closed-circuit television in 2017 and shows evidence of moderate tuberculation along the entire length. Tuberculation is the buildup of deposits on the inside walls of the pipe due to chemical reactions between the wastewater and the cast iron pipe. The deposits generally form above the normal waterline and decrease the carrying capacity of the sewer by reducing the effective diameter of the pipe and increasing the surface roughness. Tuberculation may also compromise the structural integrity of the pipe if left unchecked. The total project cost, estimated at $516,000, will be funded through the Clean Water Fund program.

PUMPING STATION 10 FORCEMAIN REHABILITATION

The Pumping Station 10 force main was constructed in 1964 and the entire length consists of approximately 11,000 feet of 36 inch diameter prestressed concrete cylinder pipe. Approximately 70 feet of 36 inch ductile iron force main was installed in 2001 at the end of the force main as part of the improvements to Buckeye Road. Portions of the original force main that were removed as part of the road project showed appreciable corrosion of the interior pipe surfaces above the normal water line. Inspection of the non-submerged portions of the prestressed concrete cylinder pipe in 2014 and 2016 showed similar results. This project will line approximately 2,000 feet of prestressed concrete cylinder pipe at the downstream end of the force main. The total estimated project cost of $1.4 million will be funded through the Clean Water Fund program.

COLLECTION SYSTEM EVALUATION

The district's collection system evaluation is an important planning document that assesses and forecasts population, employment and wastewater flow trends throughout the district's service area. The Capital Area Regional Planning Commission will use the results of the latest U.S. census, community

development plans and their knowledge of the district's collection system to make population and flow forecasts for various time increments, up to and including the year 2040. These flow forecasts will be used to determine existing and future capacity requirements throughout the collection system. Work began on the project in September 2017 and is scheduled for completion in September 2018. Total anticipated project costs of $180,000 will be financed through reserves from the capital fund.

RETAINERS

The district often includes maintenance or performance retainers within its contracts. The retainers are typically released to the contractor at the end of one year (in some cases contracts include longer performance periods) following completion of the contract and assuming satisfactory performance. The following are retainers that the district has released or is presently withholding:

PUMPING STATION 11 AND 12 REHABILITATION

The district withheld a $20,000 three-year special maintenance retainer upon final project closeout. The retainer will be released three years after project closeout to J.F. Ahern Co. pending satisfactory performance. A total of $10,000 is for satisfactory performance of the pumps and motors and $10,000 is for satisfactory performance of the adjustable frequency drives.

NEW MAINTENANCE FACILITY/SPACE NEEDS IMPROVEMENTS

The district withheld a $20,000 one-year maintenance retainer upon final project closeout. The retainer was released in July 2018 to C.D. Smith Construction.

PUMPING STATION 15 REHABILITATION

The district withheld a $27,500 three-year special maintenance retainer upon final project closeout. Three separate retainers will be released three years after closeout of the work as follows: (1) $10,000 to be paid to contractor and pump/motor supplier after three years of satisfactory performance; (2) $10,000 to be paid to contractor and supplier of variable frequency drives after three years of satisfactory performance; and (3) $7,500 to be paid to contractor after three years for landscape maintenance warranty. Payments to the contractor of $2,500 per year will be made for each year's successful warranty work for the landscaping.

PUMPING STATION 12 FORCEMAIN RELOCATION

The district withheld a $10,000 one-year maintenance retainer upon final project closeout. The retainer will be released to Speedway Sand and Gravel one year after project closeout, pending satisfactory performance.

WEST INTERCEPTOR – WEST RANDALL AVENUE TO NEAR PUMPING STATION 2 (LINING PROJECT)

The district withheld a $10,000 one-year maintenance retainer upon final project closeout. The retainer will be released to Michels Pipe Services one year after project closeout, pending satisfactory performance.

NORTHEND INTERCEPTOR

The district withheld a $5,000 one-year maintenance retainer upon final completion of this project. The retainer will be released to Michels Pipe Services in October 2018 pending satisfactory performance.

LOWER BADGER MILL CREEK INTERCEPTOR – PHASE FOUR

The district will withhold a $20,000 one-year maintenance retainer upon final project closeout. The retainer will be released to SJ Louis Construction one year after project closeout, pending satisfactory performance.

NSVI-MORSE POND EXTENSION

The district's interceptor is being constructed under a contract that is being administered by the Wisconsin Department of Transportation. The district will withhold a maintenance retainer upon final project closeout in accordance with the Wisconsin Department of Transportation's contracting provisions.

Return to TOC

APPENDIX C

BUDGET SUMMARIES

2019 OPERATING BUDGET SUMMARY

REVENUES

Revenue Category	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Sewer Service Charges	$17,814,000	$36,630,000	$35,432,000	$37,674,000	6.33%
Servicing Pumping Stations	153,000	338,000	344,000	429,000	24.71%
Rent	45,000	69,000	49,000	83,000	69.39%
Interest	75,000	188,000	19,000	230,000	1110.53%
Annexation and Plan Review Fees	48,000	68,000	99,000	60,000	-39.39%
Miscellaneous Income	75,000	111,000	66,000	93,000	40.91%
Septage Disposal Revenue	281,000	650,000	540,000	630,000	16.67%
Pretreatment Monitoring	-	25,000	22,000	26,000	18.18%
Struvite Fertilizer Sales	106,000	225,000	160,000	240,000	50.00%
Cash Reserves	-	-	300,000	1,200,000	300.00%
TOTAL REVENUES	**$18,597,000**	**$38,304,000**	**$37,031,000**	**$40,665,000**	**9.81%**

EXPENDITURES

Expenditure Category	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Administration, Engineering, and Planning	$2,551,000	$5,320,000	$5,407,000	$5,788,000	7.05%
User Charge & PreTreatment Program	249,000	627,000	710,000	639,000	-10.00%
Wastewater Collection	975,000	2,524,000	2,534,000	2,604,000	2.76%
Wastewater Treatment	5,608,000	11,361,000	11,464,000	12,221,000	6.60%
Effluent Diversion	42,000	100,000	117,000	122,000	4.27%
Metrogro Biosolids Reuse Program	556,000	1,621,000	1,606,000	1,687,000	5.04%
Capital Outlay	61,000	453,000	219,000	367,000	67.58%
Servicing Pumping Stations Owned by Others	153,000	338,000	344,000	429,000	24.71%
Contribution to Capital Projects Fund	-	-	-	1,200,000	NMF
Contribution to Equipment Replacement Fund	-	125,000	125,000	450,000	260.00%
Transfer to Debt Service Fund	-	14,505,000	14,505,000	15,158,000	4.50%
TOTAL EXPENDITURES	**$10,195,000**	**$36,974,000**	**$37,031,000**	**$40,665,000**	**9.81%**

OPERATING RESERVE BALANCE

Operating Reserves	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Beginning Balance	**$16,629,000**	**$16,629,000**	**$16,244,000**	**$18,084,000**	**11.33%**
Ending Balance	**$25,031,000**	**$18,084,000**	**$16,069,000**	**$17,334,000**	**7.87%**

NMF - No Meaningful Figure

2019 CAPITAL PROJECTS BUDGET SUMMARY

REVENUES

Revenue Source	2018 Thru June	Estimated 2018 Total	2018 Budgeted Amount	2019 Budgeted Amount	Percent Change
LOANS	-	3,065,652	1,857,000	18,445,000	893.27%
CWF Loan - Maintenance Facility/Space Needs Improvements	-	-	-	-	NMF
CWF Loan - PS 11 & 12 Rehab	-	256,015	-	-	NMF
CWF Loan - Rimrock Int. Replacement/Relief	-	-	-	-	NMF
CWF Loan - Pumping Station 15 Rehabilitation	-	339,561	-	-	NMF
CWF Loan - PS 12 Force Main Relocation at Verona Road	-	220,381	-	-	NMF
CWF Loan - West Int. - West Randall to Near PS 2 (lining project)	-	68,694	-	-	NMF
CWF Loan - Southeast Interceptor Rehab Upstream of PS 9	-	285,000	-	-	NMF
CWF Loan - PS 10 Force Main Rehabilitation		1,390,000	1,156,000	-	-100.00%
CWF Loan - West Interceptor - PS 5 to Gammon Ext (lining project)		506,000	701,000	-	-100.00%
CWF Loan - Pump Station 7 Improvements				2,050,000	NMF
CWF Loan - Liquid Processing Improvements - Phase 1				7,200,000	NMF
CWF Loan - Northeast Interceptor - Truax Extension Relief				4,950,000	NMF
CWF Loan - NSVI - McKee Road to Dunn's Marsh (Lining)				2,090,000	NMF
CWF Loan - Southwest Interceptor - Haywood Ext Replacement				1,384,000	NMF
CWF Loan - Hot Water Piping and W1 Piping Improvements				771,000	NMF
CONNECTION CHARGE REVENUES	308,144	1,050,000	1,575,000	1,825,000	15.87%
INTEREST ON INVESTMENTS & MISC. INCOME	38,294	95,000	32,000	100,000	212.50%
CONTRIBUTION FROM OPERATING FUND	-	-	-	1,200,000	NMF
TOTAL SOURCES OF FUNDS	**346,437**	**4,210,652**	**3,464,000**	**21,570,000**	**522.69%**

EXPENDITURES

Project	2018 Thru June	Estimated 2018 Total	2018 Budgeted Amount	2019 Budgeted Amount	Percent Change
NINE SPRINGS WASTEWATER TREATMENT PLANT PROJECTS	**$264,537**	**$1,321,701**	**$1,479,000**	**$9,479,000**	**540.91%**
New Maintenance Facility/Space Needs Improvements					NMF
Capital City Recreational Trail Relocation at Vehicle Loading Bldg.					NMF
Liquid Processing Facilities Plan	1,081	1,081	-	-	NMF
Liquid Processing Improvements - Phase 1	238,267	980,620	1,036,000	6,260,000	504.25%
Annual Clarifier Coating	19,602	180,000	180,000	185,000	2.78%
Annual Pavement Improvements	-	57,000	57,000	59,000	3.51%
Minor Capital Improvements	5,586	103,000	103,000	106,000	2.91%
Shop One Site Improvements	-	-	103,000	103,000	0.00%
Headworks Flow Metering	-	-	-	128,000	NMF
Resource Recovery Facility	-	-	-	52,000	NMF
Metrogro Applicators & Equipment	-	-	-	979,000	NMF
Badger Mill Creek Phosphorus Compliance	-	-	-	309,000	NMF
Operations Building First Floor Remodel	-	-	-	160,000	NMF
Miscellaneous Treatment Plant Projects	-	-	-	77,000	NMF
Engine Generator and Blower Control Panel Replacements	-	-	-	270,000	NMF
W1 Piping Improvements	-	-	-	579,000	NMF
Hot Water Piping Improvements	-	-	-	212,000	NMF
INTERCEPTORS	**$796,675**	**$3,977,952**	**$3,797,000**	**$8,942,000**	**135.50%**
West Int. - Randall Avenue to Near PS 2 (lining project)	66,242	67,000	-	-	NMF
Rimrock Int. Replacement/Relief	-	-	-	-	NMF
Northend Int. - Sherman Avenue (lining project)	452	452	-	-	NMF
Lower Badger Mill Creek Int. - Phase 4	641,764	709,000	-	-	NMF
NSVI-Morse Pond Extension	2,255	1,598,000	1,960,000	-	-100.00%
SEI - Rehab upstream of PS 9 (lining project)	8,541	271,000	-	-	NMF
Southeast Int. Relocation - Monona Waterfront Redevelopment	1,045	250,500	250,000	-	-100.00%
West Int. - PS 5 to Gammon Extension (lining project)	14,307	516,000	711,000	-	-100.00%
Southwest Interceptor - Haywood Ext. Replacement	4,863	85,000	88,000	1,324,000	1404.55%
NSVI-McKee Road to Dunn's Marsh (lining project)	-	60,000	67,000	2,050,000	2959.70%
NEI - Truax Extension Relief	54,199	416,000	721,000	4,625,000	541.47%
West Int. Relief Sewer - Walnut Street to Whitney Way	3,008	5,000	-	582,000	NMF
West Int. - Spring Street Relief (lining project)	-	-	-	57,000	NMF
Northeast Interceptor Joint Grouting	-	-	-	304,000	NMF
PUMPING STATIONS AND FORCE MAINS	**$245,573**	**$2,011,894**	**$2,035,000**	**$4,469,000**	**119.61%**
PS 11 & 12 Rehab	3,026	3,100	-	-	NMF
PS 15 Rehab	84,143	85,000	-	-	NMF
PS 12 FM Relocation at Verona Road	507	550	-	-	NMF
Grass Lake Dike Stabilization	10,352	152,000	155,000	-	-100.00%
PS 10 Force Main Rehab	11,948	1,387,244	1,118,000	-	-100.00%
Pump Stations 13 & 14 Wet Well Repairs	-	-	319,000	-	-100.00%
PS 7 Improvements	135,595	384,000	443,000	1,772,000	300.00%
PS 17 Force Main Relief - Phase 1	-	-	-	937,000	NMF
PS 13 Rehabilitation	-	-	-	706,000	NMF
PS 14 Rehabilitation	-	-	-	688,000	NMF
PS 16 Force Main Rehabilitation	-	-	-	21,000	NMF
Automated Power Transfer at Pump Stations 10 and 11	-	-	-	268,000	NMF
Miscellaneous Collection System Improvements	-	-	-	77,000	NMF
CAPITAL BUDGET EXPENSES	**$ 92,707**	**$ 484,000**	**$ 618,000**	**$ 494,000**	**-20.06%**
Capital Budget Expenses	-	5,000	52,000	52,000	0.00%
Plant Asset Management Plan Implementation	88,477	424,000	424,000	317,000	-25.24%
Collection System Evaluation	4,229	20,000	62,000	-	-100.00%
Collection System Facilities Plan Update	-	35,000	80,000	125,000	56.25%
TOTAL EXPENDITURES	**$ 1,399,492**	**$ 7,795,547**	**$ 7,929,000**	**$ 23,384,000**	**194.92%**

CAPITAL PROJECTS RESERVE BALANCE

Capital Projects Reserves	2018 Thru June	Estimated 2018 Total	2018 Budgeted Amount	2019 Budgeted Amount	Percent Change
Beginning Reserve Balance	$10,316,177	$10,316,177	$8,706,000	$6,731,000	-22.69%
Ending Reserve Balance	$9,263,122	$6,731,000	$4,241,000	$4,917,000	15.94%

2019 DEBT SERVICE BUDGET SUMMARY

REVENUES

Revenue Category	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Transfer From Operating Fund	$0	$14,505,000	$14,505,000	$15,158,000	4.50%
Interest	83,000	173,000	34,000	228,000	570.59%
TOTAL REVENUES	**$83,000**	**$14,678,000**	**$14,539,000**	**$15,386,000**	**5.83%**

EXPENDITURES

Expenditure Category	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
First half Interest	$1,711,000	$1,711,000	$1,755,000	$1,642,000	-6.44%
Principal	9,506,000	9,506,000	9,619,000	9,868,000	2.59%
Second Half Interest	-	1,596,000	1,645,000	1,574,000	-4.32%
TOTAL EXPENDITURES	**$11,217,000**	**$12,813,000**	**$13,019,000**	**$13,084,000**	**0.50%**

DEBT SERVICE RESERVE BALANCE

Debt Service Reserves	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Beginning Balance	$19,545,590	$19,545,590	$19,484,000	$21,411,000	9.89%
Ending Balance	$8,411,590	$21,411,000	$21,004,000	$23,713,000	12.90%

SCHEDULE OF PRINCIPAL AMOUNT OF INDEBTEDNESS

Sewerage System Improvement Bonds	January 2018	January 2019	January 2020
Series 2000 P.S. No. 2 Force Main Replacement - Phase 1	358,186	242,534	123,178
Series 2001 P.S. No. 2 Force Main Replacement - Phase 2	521,315	397,081	268,870
Series 2003A PS's 1, 2 and 10 Rehabilitation	2,881,699	2,434,222	1,974,109
Series 2003B Tenth Addition	13,949,925	11,782,228	9,553,922
Series 2005 PS's 1, 2 and 10 Rehabilitation	130,266	115,317	100,005
Series 2006 Effluent Equalization Projects and AT's 1-6	880,484	791,547	700,507
Series 2007 West In Ext and PS 13-14 Projects	1,538,083	1,401,142	1,260,702
Series 2008 PS's 6-8 Rehabilitation and NEI Truax Ext Liner	5,549,531	5,101,969	4,643,808
Series 2010A NEI-PS 10 to Lien Rd	6,239,679	5,824,206	5,398,890
Series 2012A Nine Springs Eleventh Addition	40,545,020	38,093,539	35,580,329
Series 2012B Operations Building HVAC Rehab	2,381,476	2,253,432	2,121,547
Series 2013A NEI-SEI to FEI - Replacement Project	6,750,993	6,410,619	6,060,731
Series 2013B Pumping Station No. 18	12,614,486	11,970,845	11,310,192
Series 2013C Process Control System Upgrade	3,893,735	3,694,781	3,490,604
Series 2014A Pumping Station No. 18 Force Main	10,123,602	9,610,007	9,082,463
Series 2015A PS 11 & 12 Rehabilitation	9,049,244	8,862,829	8,396,933
Series 2015B Maintenance Facility Expansion	10,834,000	10,339,000	9,833,002
Series 2016A PS 15 Rehabilitation, PS 12 FM Relocation, Rimrock Int. Lining	6,337,451	6,618,883	6,308,671
Series 2017A West Interceptor-Randall St. to Near PS2	1,298,594	1,312,554	1,253,780
Anticipated Loans			
2018 Loans		2,181,000	2,108,000
2019 Loans			18,445,000
Total Indebtedness	**$ 135,877,769**	**$ 129,438,000**	**$ 138,015,000**

OVERALL BUDGET SUMMARY, NET OF TRANSFERS

Summarized Budget Items	2018 Thru June	Estimated 2018 Total	2018 Budget	Proposed 2019 Budget	Percent Change
Total Revenues	$19,026,437	$42,687,652	$40,229,000	$60,063,000	49.3%
Total Expenditures	22,811,492	42,952,547	43,349,000	60,325,000	39.2%
Beginning Reserve Balance	$46,490,767	$46,490,767	$44,434,000	$46,226,000	4.0%
Ending Reserve Balance	$42,705,712	$46,226,000	$41,314,000	$45,964,000	11.3%

APPENDIX D

2019 WAGE SCHEDULE FOR HOURLY EMPLOYEES

Marcus Canty, health and safety specialist, demonstrates harness techniques as part of comprehensive safety efforts.

TABLE 14| 2019 WAGE SCHEDULE FOR HOURLY EMPLOYEES

Pay Grade 5 Progression						
Range and Titles	Step 1	Step 2	Step 3	Step 4	Step 5	Step 5 plus 15% longevity
5: Custodian	$17.82	$18.18	$18.54	$18.91	$19.66	$22.61
8: Sr. Custodian	$19.36	$19.75	$20.14	$20.54	$20.96	$24.10

Pay Grade 8 Progression						
Current Range and Titles	Step 1	Step 2	Step 3	Step 4	Step 5	Step 5 plus 15% longevity
7: Utility Maintenance Worker	$23.11	$23.58	$24.04	$24.53	$25.01	$28.77
10: Sr. Utility Maintenance Worker	$25.12	$25.62	$26.14	$26.65	$27.19	$31.27

Pay Grade 10 Progression						
Current Range and Titles	Step 1	Step 2	Step 3	Step 4	Step 5	Step 5 plus 15% longevity
11: Operator I, MS/SM I, Apprentice I	$27.75	$28.33	$28.93	$29.54	$30.16	$34.69
12: Operator II, MS/SM II, Apprentice II	$28.33	$28.93	$29.54	$30.16	$30.78	$35.40
13: Metrogro Mechanic, Journey Mechanic, Journey Electrician, Journey HVAC Tech, Operator III, MS/SM III	$28.93	$29.54	$30.16	$30.78	$31.41	$36.12
14: Senior Journey Mechanic, Senior Journey Electrician, Senior Metrogro Mechanic, Senior Journey HVAC Tech, Operator IV, MS/SM IV	$29.54	$30.16	$30.78	$31.41	$32.02	$36.83
15: Biosolids Program Assistant , Senior Journey Mechanic II, Senior Journey Electrician II, Senior Metrogro Mechanic II, Senior Journey HVAC Tech II, Operator V, MS/SM V	$30.16	$30.78	$31.41	$32.02	$32.66	$37.55

*This wage schedule applies to employees hired after July 1, 2017 and assumes a 2% market increase effective Jan. 1, 2019.

APPENDIX E

2019 SALARIED WAGE SCHEDULE

Eric Dundee, director of wastewater operations and reliability, checks a solar panel installation. The district is working to develop an energy policy and plan that supports reliability, improves sustainability and manages costs.

TABLE 15| 2019 WAGE SCHEDULE FOR SALARIED EMPLOYEES

GRADE	MIN	MID	MAX
22	$70.34	$82.76	$95.17
18	$57.61	$67.77	$77.94
17	$52.37	$61.61	$70.85
16	$47.78	$56.21	$64.64
15	$43.61	$51.30	$59.00
14	$39.80	$46.83	$53.85
13	$36.38	$42.80	$49.22
12	$33.24	$39.10	$44.97
11	$30.35	$35.71	$41.07
10	$27.75	$32.65	$37.55
9	$25.32	$29.78	$34.25
8	$23.11	$27.19	$31.27
7	$21.19	$24.93	$28.67
6	$19.43	$22.86	$26.29
5	$17.82	$20.96	$24.10

*assumes a 2% market increase effective Jan. 1, 2019

APPENDIX F

STATISTICAL & SUPPLEMENTAL DATA

Through the Yahara WINS adaptive management project, the district is working with partners throughout the Yahara Watershed to improve water quality by reducing the amount of phosphorus flowing into area rivers, lakes and streams.

Governance

Madison Metropolitan Sewerage District is a body corporate with the powers of a municipal corporation for the purpose of carrying out the provisions of Sections 200.01 to 200.15 of the State of Wisconsin statutes. It was created by judgment of the County Court for Dane County, entered on the 8th day of February, 1930. Its existence was validated and confirmed by Chapter 132 of the Laws of 1969, effective Aug. 2, 1969. The constitutionality of that law was sustained by the Wisconsin Supreme Court in Madison Metropolitan Sewerage District vs. Stein, 47 Wis. 2nd 349, 177 N.W. 2nd 131 (1969).

The district is governed by nine commissioners serving staggered terms: five commissioners are appointed by the mayor of the City of Madison, three are appointed by an executive council made up of elected officials from district cities and villages, and one is appointed by an executive council made up of by town-elected officials. The commissioners meet once or twice each month at the district. Special meetings are held as required upon call of any member of the commission.

Service Area

The district services 15 percent of the entire county by area and 70 percent of the county population as shown in **Figure 9**. Areas served include the Cities of Madison, Fitchburg, Middleton, Monona and Verona as well as the Villages of Cottage Grove, Dane, De Forest, Maple Bluff, McFarland, Shorewood Hills, Waunakee and the Towns of Blooming Grove, Dunn, Madison, Middleton, Pleasant Springs, Verona, Vienna, Westport and Windsor **(Figure 11)**.

A complete list of district customer communities and their estimated wastewater contributions is shown in **Table 16**. The largest taxpayers and employers in the county are shown in **Tables 17 and 18**, respectively. The equalized property tax valuation for the district is shown in **Figure 10**.

Additional information regarding Dane County and the City of Madison can be found at: www.countyofdane.com and www.cityofmadison.com.

FIGURE 9| Dane County and District Data

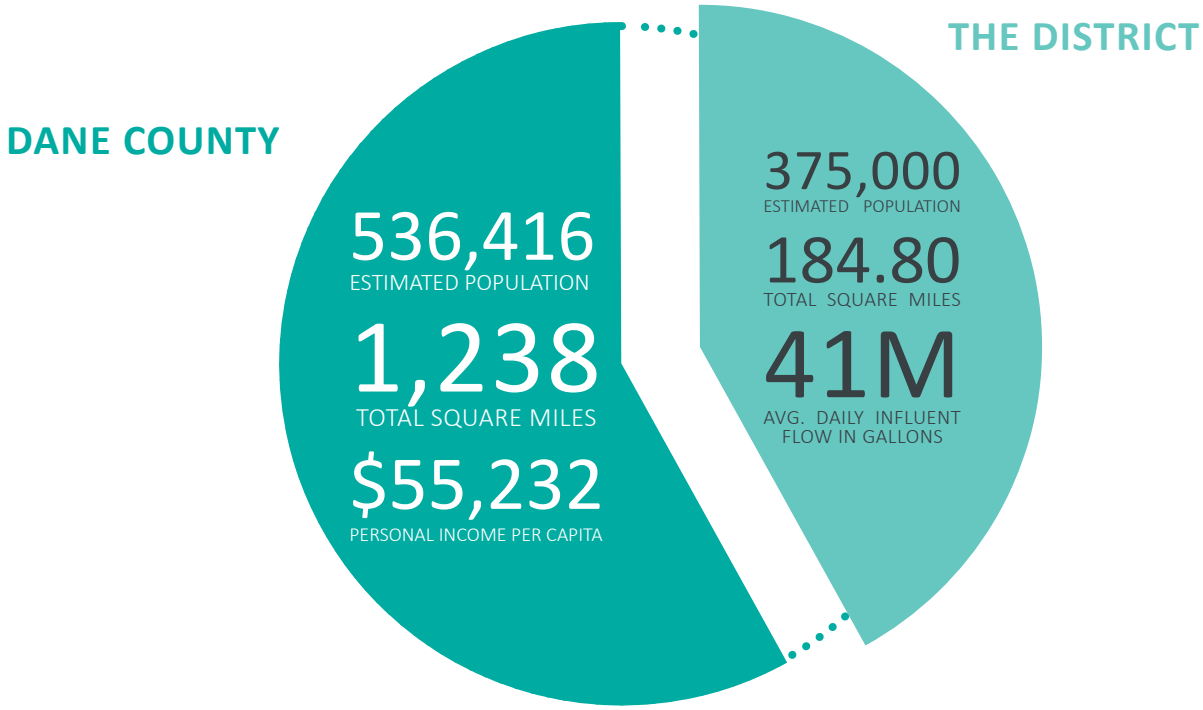


FIGURE 10 | Equalized Property Valuation for the District

TID Out Values in Billions

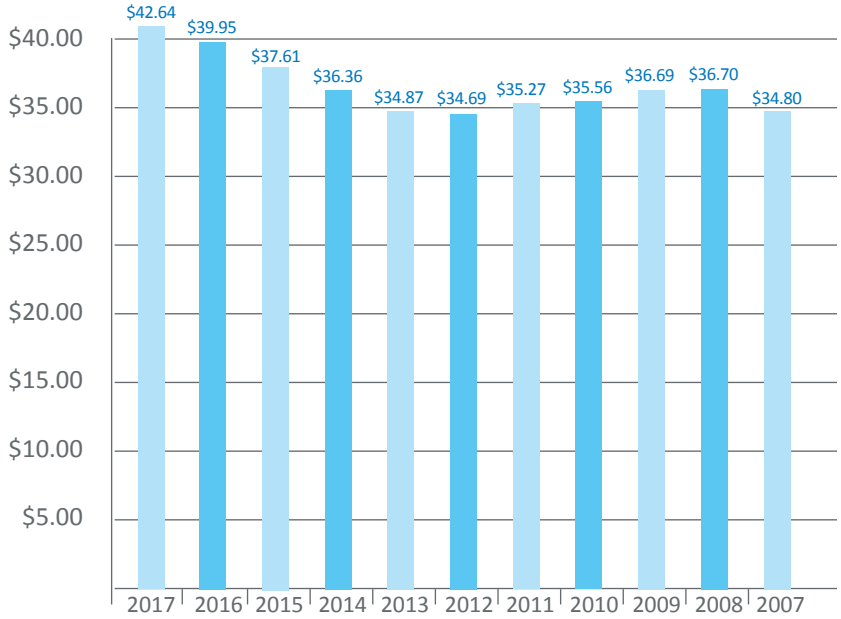


TABLE 16 | Estimated Wastewater Contributions for 2018

	Community	Volume (gpd)	CBOD (lbs/day)	Solids (lbs/day)	Nitrogen (lbs/day)	Phosphorus (lbs/day)	Equivalent Meters	Actual Customers
CITIES	Fitchburg	1,950,000	6,200	4,600	865	115	8,565	6,130
	Madison	27,300,000	51,250	53,500	10,750	1,260	86,900	67,800
	Middleton	2,050,000	4,750	3,600	825	100	8,625	5,755
	Monona	900,000	1,535	1,400	260	33	4,030	2,975
	Verona	1,040,000	3,150	2,000	500	61	5,845	4,420
VILLAGES	Cottage Grove	665,000	1,040	1,050	215	27	2,505	2,230
	Dane	52,500	142	110	33	4	430	395
	DeForest (including ABS)	820,000	5,500	2,100	540	85	4,345	3,575
	Maple Bluff	200,000	180	165	43	5	756	593
	McFarland	710,000	1,150	1,050	245	29	3,565	3,120
	Shorewood Hills	140,000	300	280	58	7	1,360	735
	Waunakee	1,630,000	4,500	2,700	750	80	5,620	4,725
	Windsor	440,000	675	690	155	19	2,045	1,790
TOWN SANITARY AND UTILITY DISTRICTS	Dunn S.D. No. 1	175,000	77	140	20	2.8	191	191
	Dunn S.D. No. 3	70,000	91.0	105	23	3	490	490
	Dunn S.D. No. 4	18,000	15	15	4	1	68	68
	Dunn- Lake Kegonsa	130,000	250	325	56	7	675	565
	Madison	660,000	1,330	1,200	250	45	1,905	999
	Pleasant Springs No. 1	61,000	100	117	24	3	511	505
	Verona, Town of	558	0.76	0.94	0.20	0.03	3	3
	Verona U.D. No. 1	24,000	45	48	10	1	128	115
	Town of Vienna	100	0.14	0.17	0.04	0.00	1	1
	Vienna U.D. No. 1	76,000	106	100	18	2	85	39
	Vienna U.D. No. 2	38,000	57	65	15	2	205	205
	Westport- Cherokee Golf	6,000	10	6	1	0	8	1
	Westport Utility District	600,000	550	600	133	16	1,890	1,630
Interceptor Infiltration		**1,921,000**						
Daily Nine Springs Loadings		41,766,808	84,422	79,620	16,062	1,955	141,051	109,085
ESTIMATED 2017 TOTAL Loadings(Units)		**15,245** (MG)	**30,814,036** (Pounds)	**29,061,264** (Pounds)	**5,862,715** (Pounds)	**713,461** (Pounds)	**141,051** (EqMtrs)	**109,085** (Cstmrs)

TABLE 17 | Dane County Principal Taxpayers (Budget Year 2017)

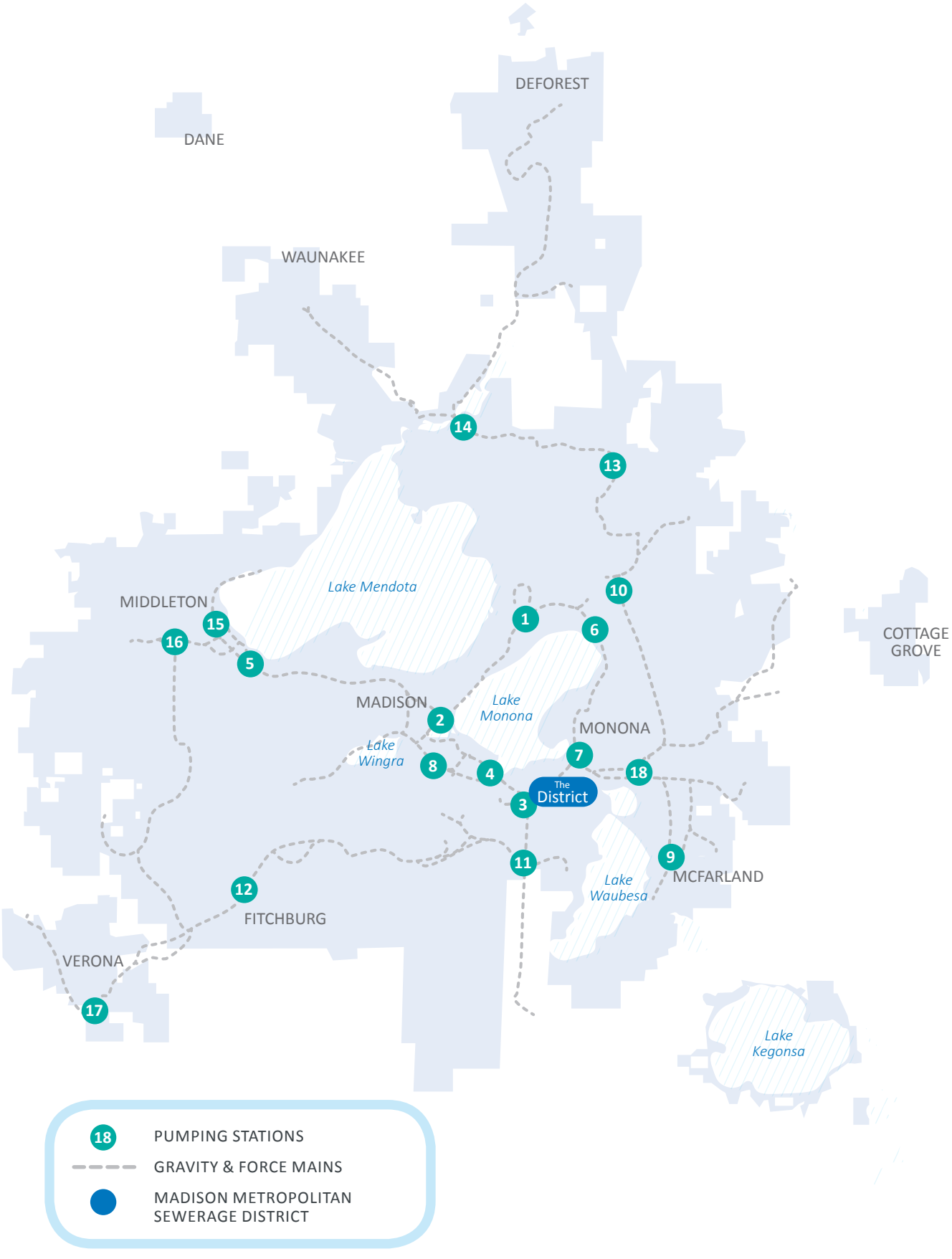
TAXPAYER	TYPE OF BUSINESS	2016 EQUALIZED ASSESSED VALUE	PERCENTAGE OF TOTAL EQUALIZED ASSESSED VALUATION
Epic Systems Corp.	Medical Software	983,174,075	1.31%
Madison Joint Venture	Shopping Centers	179,343,600	0.24%
American Family Insurance	Insurance	142,734,800	0.19%
Greenway Office Center, LLC	Property Management	121,433,492	0.16%
Promega Corporation	Biotechnology	103,564,719	0.14%
Covance Laboratories, Inc.	Research	79,586,000	0.11%
University Research Park	Research & Technology Park	73,702,300	0.10%
777 University Ave LLC	Property Development	57,060,000	0.08%
CMFG Life Insurance Co	Insurance	52,596,500	0.07%
Core Campus Madison LLC	Property Development	51,910,000	0.07%
	TOTALS	**$1,845,105,486**	**2.47%**

TABLE 18 | Dane County Largest Employers

[1] *Source: Comprehensive Annual Financial Reports - MATC*

EMPLOYER	TYPE OF ORGANIZATION	EMPLOYEES
State of Wisconsin	State Government	36,475
University of Wisconsin-Madison	University/College	14,464
UW Hospital and Clinics	Healthcare	7,447
Epic Systems	Software Services	7,400
American Standard Insurance	Insurance	4,000
Madison Metropolitan School District	Education	3,591
WPS Insurance Corporation	Health Benefits/Insurance	3,500
Meriter Home Health	Home Health Service	3,000
American Family Insurance	Insurance	2,000
CUNA Mutual Holding Co	Insurance	2,000

FIGURE 11| Collection System Overview Map



APPENDIX G

SUMMARY OF ORGANIZATIONAL CHANGES

Summary of Organizational Changes as of August 30, 2018

Below is a summary of strategic level organizational changes that have occurred over the past year.

Administration

No strategic level changes.

District Leadership And Support

No strategic level changes.

Ecosystem Services

No strategic level changes.

Engineering

One position, a collection system engineer, is requested in the 2019 budget. The collection system engineer would be the "caretaker" of the collection system and would be responsible for the overall operation of, and long-term planning for, the district's collection system. A position justification report for this new position is included in an Appendix I.

Planning And Strategy

One position is requested in the 2019 proposed budget: a CMMS coordinator, responsible for developing, implementing, maintaining and overseeing the district's computerized maintenance management system. A position justification report for this new position is included in an Appendix I.

Operations And Maintenance

No strategic level changes.

District Leadership And Support

No strategic level changes.

APPENDIX H

FIVE-YEAR VEHICLE REPLACEMENT SCHEDULE

TABLE 19 | Five Year Vehicle Replacement Schedule 2018-2023

The district fleet management plan details the procedure to evaluate existing vehicles for replacement. A fleet replacement fund using a 5-year vehicle replacement schedule is used to smooth funding requirements. See below for the 5-year schedule.

5-Year Vehicle Replacement Schedule		
Year	Vehicle	Est. Cost
2019	Dump Truck-Tandem Axle	$50,000
	HVAC Cargo Van	$30,000
	Operator UTV	$15,000
	Mechanical Pickup-Two Wheel Drive	$30,000
	Metrogro Pickup-Four Wheel Drive	$35,000
	2019 Requested Budget Total	**$160,000**
2020	Engineering Pickup-Four Wheel Drive	$30,000
	B&G Pickup-Four Wheel Drive	$35,000
	Admin Pool Vehicle	$25,000
	Bobcat Toolcat	$50,000
	2020 Anticipated Budget Total	**$140,000**
2021	Admin Pool Vehicle	$20,000
	Lab Sampling Cargo Van	$30,000
	SM/MS Pickup-Four Wheel Drive	$35,000
	Mechanical Pickup-Two Wheel Drive	$30,000
	Metrogro Pickup-Four Wheel Drive	$35,000
	2021 Anticipated Budget Total	**$150,000**
2022	Electrical Cargo Van	$30,000
	Engineering Pickup-Four Wheel Drive	$30,000
	SM/MS Service Truck	$50,000
	Mechanical Service Truck	$80,000
	2022 Anticipated Budget Total	**$190,000**
2023	Admin Pool Van	$25,000
	Operator's Pickup-Four Wheel Drive	$25,000
	Electrical Cargo Van	$30,000
	Electrical Cargo Van	$30,000
	Maintenance Pool Vehicle	$25,000
	2023 Anticipated Budget Total	**$135,000**

APPENDIX I

NEW POSITIONS JUSTIFICATION

Hard hat tours take visitors behind the scenes to see how the district reclaims resources and recycles water.

CMMS Coordinator

New Work Justification and Implementation Plan

Prepared by: William D. Walker, Director of Planning & Strategy
August 28, 2018

1. What new work is necessary to conduct effective District operations?

The proposed position would oversee the district's computerized maintenance management system (CMMS), ensuring that the system provides the accountability, cost-control and risk reduction benefits needed for the district's infrastructure, including 12,000 plant assets. The current system is outdated and will need to be replaced with a new system to provide these benefits.

The CMMS coordinator's role would be to ensure the CMMS meets user needs and supports oversight. This includes performing the sophisticated analysis required to improve performance. The role is removed from day-to-day work, to ensure focus on systemic factors. In addition, the CMMS's coordinator's role is to work closely with IT, maintenance supervisors and end users, who have the most direct and detailed knowledge of the CMMS. This is needed for the system to be properly implemented, have quality data and be useful in practice.

[A CMMS is a necessary tool for managing infrastructure, as important as a SCADA control system. No plant can be without one. A CMMS tracks assets centrally, including maintenance records, costs and condition information. Using the system, staff prioritize and schedule maintenance, follow quality control and safety procedures, and use standardized maintenance practices where possible. The system focuses limited resources on the most important assets and maintenance tasks.

Furthermore, a CMMS is necessary for full accountability over maintenance and capital spending. A CMMS provides metrics and other information to find improvement opportunities and track performance over time. It allows the detailed analysis required to find root causes of inefficiencies and problems.

Improved maintenance management reduces costs on a day-to-day basis. The ultimate savings from a CMMS comes from reducing risks of catastrophic failure, service interruptions and injuries.

Because of its value in accountability and oversight, a CMMS must be designed and managed to support long-term district goals for risk management and cost control. Because of its role in maintenance and other district functions, a CMMS must also be designed and managed to meet user needs. Both factors change over time, so the CMMS must be regularly evaluated and adjusted.]

2. What are the drivers for the need for this new work at this time?

Although the district has had a CMMS for about 20 years, the CMMS coordinator role is newly important because of two factors: (a) the district's adoption of a comprehensive asset management program; and (b) the end of support for the district's current CMMS.

First, for comprehensive asset management to succeed, the district will require a higher level of oversight and use of the CMMS than was required before. Asset management is an organized, disciplined approach to infrastructure designed to achieve a needed level of service at lowest total cost, for both current and future customers. Asset management is fundamentally different than the old industry approach, which relied on individual knowledge and reactions to daily emergencies. A modern CMMS uses data and analysis to lower risk and reactivity. This is particularly necessary at the district because of aging infrastructure, anticipated retirements of maintenance staff and increased expectations for transparency.

Second, the district will need to select and implement a new CMMS in the next few years. The district's current CMMS is two decades old and will be unsupported by its vendor by 2021. Even to maintain current limited functionality will require a new CMMS in that time frame. Furthermore, to support asset management, the new system will require a level of oversight, integration and use that was not previously required. Both the transition to a new system and ongoing use of the system will require greater staff support than was needed before.

3. What critical results must be achieved?

The most immediate critical result is selection and implementation of a new CMMS. The new system must fully reflect and meet user needs in all areas (maintenance, capital budgeting, accounting, procurement, etc.). It must also be fully integrated with maintenance and capital budgeting processes.

On an ongoing basis, there are three critical results: (a) maintain and update the system to continue meeting user needs; (b) ensure that system data is of high quality and is regularly updated by maintenance staff and others; (c) regularly and deeply analyze system data and key performance indicators for root cause analyses, optimizations, forecasting, risk reduction, etc.

Ultimately, the role of the position is to monitor performance of the maintenance program and asset management overall. If successful, the position and the CMMS will result in transparency and accountability on how the district spends time and money.

4. What are the success factors for the individual(s) who will perform this work?

- User-focused — deeply understands business processes and user needs.
- Conscientious and persistent project manager — sets high standards, attends to details and follows through with others.
- Technically skilled —understands enterprise systems, asset management concepts, business analysis and data quality.
- Collaborative leadership — sees opportunities for improvement in the system and business processes and works with all levels of the organization to achieve success.
- Creative thinking — sees new and innovative approaches.

5. What are options for performing this work effectively?

There are two alternatives to a dedicated CMMS coordinator position:

1. Use existing staff by reducing work in other areas.
    a. No additional expenditures would be required.
    b. The skills required for some of the work imply that existing staff would have to come from the IT workgroup; no other staff have needed technical knowledge.
    c. However, use of existing staff would result in inadequate attention to user needs and business practices in maintenance specifically. Current staff do not have the background required to integrate a reliability-centered maintenance program and a CMMS.
    d. It is impossible to say with certainty which other IT work would be reduced but options include planned new technologies such as Office 365, SharePoint, records management and data warehouse development.
2. Contract with an outside individual or firm to serve on a temporary basis.
    a. Preliminary cost estimate is $172,000 per year for a half-time consultant.[1]
    b. High cost may also bring more specialized and advanced skills.
    c. Would require freeing some staff time for contract administration.
    d. Outside contractor would be limited in interactions with district staff, lack intangible knowledge of district operations and have limited ability to represent district interests in negotiation with the system vendor.
    e. Ongoing needs identified above would be unsupported.

6. If new resources are not available, how will this work be performed?

If the requested position is not authorized in the 2019 budget, the district would not pursue either of the alternatives above at first. Rather, the district would likely evaluate the following options in combination:

[1] Source: Hours and cost estimate from TMG Consulting, via email to Amy Bublitz, May 16, 2018.

- Scale back the asset management program and reliability-centered maintenance to reduce need for CMMS coordination. This would delay completion of a plant asset management plan and improvements in maintenance management practices that will reduce costs long term.
- Reduce IT work in other areas to free staff time for CMMS coordination. This would have to be carefully evaluated to assess the likely impact on core work responsibilities.
- Search for full-service outsourced CMMS options requiring less CMMS coordination.

If no viable pathway is found in those options, the district would request a position in the 2020 budget.

7. What is your recommendation for moving forward?

- Authorize a new, full-time permanent position in the 2019 budget.
- Finalize job description immediately thereafter.
- 2019 Quarter 1: Begin recruitment; hire date not before April 1, 2019.
- Quarter 2: Onboard individual, educating on asset management, IT and maintenance.
- Quarter 3: Position works with sustainable Infrastructure manager, IT manager and maintenance and reliability manager to develop RFP for CMMS selection and implementation.
- Quarter 3–4: Select implementation consultant and begin CMMS transition project.

(The project would be overseen by the CMMS coordinator who would work with a selection and implementation consultant. The consultant would deal directly with the software vendor. This model is similar to the engineering model of project manager / design consultant / contractor. It is being used with the GIS transition project in the district.)

Madison Metropolitan Sewerage District

Job Title: CMMS Coordinator
FLSA Classification: Exempt
Document Version: 0.5

Department: Planning and Strategy
Salary Grade: To Be Determined
Last Revised: August 28, 2018

This is a draft position description for consideration in the 2019 operating budget. Details regarding job duties, qualifications and requirements will be added with input from hiring experts before recruitment.

Position Purpose

The CMMS coordinator is responsible for the computerized maintenance management system (CMMS) in the district. The coordinator ensures that: (a) the system is configured to meet user needs in maintenance, accounting, operations, capital budgeting and related areas; (b) asset data is accurate and complete; and (c) data is analyzed and used to foster increased performance and lower costs.

The coordinator brings a **user-focused** approach to the CMMS — deeply understanding business processes and user needs. The coordinator is a **conscientious and persistent project manager** — setting high standards, attending to details and following through with others. The coordinator is **technically skilled** —understanding enterprise systems, asset management concepts, business analysis and data quality. The coordinator provides **collaborative leadership** — seeing opportunities for improvement in the system and business processes and working with all levels of the organization to achieve success. The coordinator brings **creative thinking** — seeing new and innovative approaches.

The CMMS coordinator works under the general direction of the director of planning and strategy and works closely with the sustainable infrastructure manager and capital planning engineer.

Success Factors

The successful CMMS coordinator brings the following qualities to the work:

- **User Focus.** Has strong skills in learning and understanding business processes and user needs. Digs deeply and questions assumptions to identify overlooked opportunities. Respects, values and learns from user expertise. Offers creative solutions to support user success.
- **Project Management.** Is a conscientious and persistent project manager. Fully understands and applies project management principles and techniques, including priority setting and progress monitoring. Helps project team members learn and apply project management ideas. Models high quality project management in the district.
- **Technical Skill.** Has solid knowledge of CMMS software, including configuration, data structures and use of the system. Understands data quality and integrity concepts, including techniques for data validation. Is skilled in managing software implementation projects.

- **Collaborative Leadership.** Takes an active leadership role in development and use of the CMMS. Fosters improvement in maintenance practices and business practices. Seeks out and works comfortably with peers at all levels in the organization. Helps translate the vision of a district-wide asset management program into integrated projects and activities. Participates in information technology governance teams and uses the district's IT governance structure for decision-making and problem solving.
- **Creative Thinking.** Has a mindset that is creative, forward-looking, systematic and strategic. Looks for improvements, new approaches and opportunities.

Critical Results and Essential Job Duties

Results

The following results fulfill the purpose and meaning of the CMMS analyst's work:

1. The CMMS is designed and implemented to meet district needs for increased performance and lower costs.
2. The CMMS fully reflects user requirements.
3. Data in the CMMS is regularly updated and maintained.
4. The CMMS is regularly used to analyze trends, problems and opportunities for increased performance and lower costs.
5. Affected workgroups and staff are kept involved in and informed of CMMS issues.
6. Affected workgroups and staff are supported in making full use of the CMMS.
7. Asset management policies, procedures and strategies are followed and enforced within the CMMS.

Duties

The following duties are needed for the CMMS coordinator to achieve results:

[Specific duties to be determined; will include maintaining data quality; working with IT and maintenance staff; following IT standards; analysis; program evaluation; coordination; training; etc.]

Qualifications and Requirements

Education and Experience

- [Specific degree and program requirements to be determined; likely to require a bachelor's degree.]
- [Specific experience requirements to be determined; likely in the range of 3–5 years minimum.]

Knowledge

- [Specific knowledge requirements to be determined; will include software systems, data, project management, maintenance management, etc.]

Skills and Abilities

- [Specific skills and abilities requirements to be determined; will include analysis, writing, presentation, self-management, leadership, etc.]

Other

- To be eligible for this position, candidates must pass a pre-employment drug screen.

Physical Demands and Work Environment

Work is primarily performed in a standard office environment, but occasional trips to field sites should be expected. The position requires one to be able to sit or stand for extended periods of time with sufficient hand, arm and finger dexterity to operate a computer keyboard or other office equipment. The position requires visual acuity to read and write words and numbers and identify features in the field and on media such as orthophotos. It also requires the necessary speaking and hearing ability to communicate in person, publicly or over the phone. This position requires the ability to lift up to 25 pounds occasionally and the noise level varies from quiet to loud.

Eligibility and Acknowledgement Sign-Off

All employees are expected to adhere to company policies.

I have read and understand the expectations, qualifications and demands of this job description.

_____ _____

Signature Date

Collection System Engineer

New Work Justification and Implementation Plan

Prepared by: Bruce Borelli, Director of Engineering

August 28, 2018

1. What new work is necessary to conduct effective District operations?

This person would manage the overall collection system with a focus on longer-term programs and initiatives. Duties would include optimizing how the collection system operates, studying trends and flows related to the collection system and working with satellite communities to improve their collection systems. In general, this person would be in-charge of the overall collection system and accountable to ensure the collection system is operating in a safe, reliable and cost-effective manner.

2. What are the drivers for the need for this new work at this time?

New regulatory requirements include recommendations outlined in the "Capacity, Maintenance, Operation and Management" document issued by the WDNR. These include infiltration/inflow reduction initiatives, fats/oil/grease reduction (FOG), hydrogen sulfide monitoring, flow studies, etc. The new Wisconsin Pollutant Discharge Elimination System permit will also include a requirement that the district has a certified collection system operator. This position would fill that role. Overall, this position will reduce the risk of damage to the collection system and emergency events/sanitary sewer overflows associated with the collection system.

3. What critical results must be achieved?

This position would work with customer communities to develop and enforce programs to reduce infiltration/inflow, FOG and to ensure our satellite communities are properly operated and maintained. The position would continuously evaluate the district's collection system to determine that it is operating efficiently and that needed improvements are identified and completed. Other duties would include managing the overall sewer maintenance program, including locating services, annual televising/cleaning and the forcemain condition assessment program.

4. What are the success factors for the individual(s) who will perform this work?

This person will need to have a strong technical knowledge of how sewer collection systems operate, including hydraulics and pump stations. They will need to proactively work with customer communities to reduce infiltration/inflow and other items (FOG, etc.) that are detrimental to the collection system. This position would have limited day-to-day responsibilities associated with the collection system, with a primary focus on longer-term issues and evaluating ways to optimize the collection system. This will require an engineering degree with extensive collection system experience and a person with a collaborative spirit willing to challenge others.

5. What are options for performing this work effectively?

Options include assigning new work and on-going collection system duties that are currently spread across numerous individuals to an existing employee dedicated to this. This would require other tasks and programs/projects managed by this person to remain undone. Having these duties/responsibilities spread across numerous individuals lacks accountability and is inefficient, as other primary work is typically higher priority and collection system tasks languish. Another option would be to contract these services to an external firm. However, this will take time to manage and an external firm may not be as dedicated, accountable and responsive, especially to emergency events.

6. If new resources are not available, how will this work be performed?

Some of the duties performed by this position are currently completed on an ad hoc basis by numerous individuals in various departments. This lacks focus and accountability, with existing work being completed on a reactive basis and new work being left undone. This position would provide the time and attention needed to manage the overall collection system. It will reduce the risk of collateral damage to collection system facilities, add resiliency to the collection system and have a point-person for emergency events.

7. What is your recommendation for moving forward?

This would be a full-time position that would be budgeted to start in April of 2019. The position would be in the engineering department and report to the director of engineering. The person would not manage the day-to-day operation of the collection system or the sewer maintenance department, but will work closely with them on items that impact the collection system. The position would also work closely with the capital planning engineer to ensure the capital improvements related to the collection system are included in the capital improvements plan. The position would also serve as a back-up to the customer billing system.

Madison Metropolitan Sewerage District

Job Title: Collection System Engineer
FLSA Classification: Exempt
Document Version: 1

Department: Engineering
Salary Grade: To Be Determined
Last Revised: August 29, 2018

This is a draft position description for consideration in the 2019 operating budget. Further details and clarifications regarding job duties, qualifications and requirements will be added during the recruitment process.

Position Purpose

The collection system engineer is responsible for the management of the overall collection system at the district, with a focus on longer-term programs and initiatives. The collection system engineer will continuously evaluate the district's collection system to determine that it is operating efficiently and that needed improvements are identified and completed. He/she will also work with customer communities to develop and enforce programs to reduce inflow/infiltration, fats/oils/greases, and ensure our satellite communities are properly operated and maintained. In general, the collection system engineer will be accountable to ensure the collection system is operating in a safe, reliable, resilient and cost-effective manner.

The collection system engineer is **technically skilled and detail -oriented**— including a strong knowledge of how sewer collection systems operate and are maintained. The collection system engineer is **willing to challenge others** – both internally and externally, on how collection systems are operated/maintained and how they can be, and should be, improved. The collection system engineer is a skilled **program manager** — thinking ahead on ways to reduce infiltration/inflow, design programmatic solutions and policies for items (FOG, etc.) that are detrimental to the collection system. The coordinator provides **collaboration** — working with customer communities, external agencies, and internal departments to ensure the regional collection system is operating efficiently, safely and effectively. The collection system engineer brings **creative thinking** — seeking new and innovative approaches to future operation and maintenance of the collection system.

The collection system engineer works under the general direction of the director of engineering and works closely with the operations and maintenance sewer maintenance department and the capital planning engineer.

Success Factors

The successful collection system engineer brings the following qualities to the work:

- **Technically-skilled and detailed.** Has the ability to identify problems, research and analyze information, develop and present recommendations and provide justifications for solutions. She\he is skilled at generating and utilizing complex information for technical analysis and decision-making.
- **Willing to challenge others.** Is willing to challenge existing practices and procedures and "push the envelope" concerning new collection system initiatives, ensuring that the system is reliable, resilient and safe.
- **Skilled program manager.** Has the ability to think-ahead, consider potential issues/problems and systematically develop programs to find proactive solutions.
- **Collaboration.** Has the ability to develop and maintain effective, trusting, collaborative relationships with other district personnel and outside agencies and work with these parties toward common collection system goals.
- **Creative Thinking.** Has the ability to navigate through ambiguity in order to find connections between different systems and see possibilities when no clear solutions exist, especially concerning future collection system initiatives.

Critical Results and Essential Job Duties

Results

The following results fulfill the purpose and meaning of the collection system engineer's work:

1. Develop longer-term programs and initiatives that deliver results.
2. Ensure the collection system is operating in a safe, reliable, resilient and cost-effective manner.
3. Advise and collaborate with customer communities to improve their collection systems.
4. Continuously evaluate the district's collection system to determine that it is operating efficiently and that needed improvements are identified and completed.
5. Manage the overall sewer maintenance program, including locating services, annual televising/cleaning and the forcemain condition assessment program.
6. Reduce the risk of collateral damage to collection system facilities, add resiliency to the collection system and be the point-person for emergency events.

Duties

The following duties are needed for the collection system engineer to achieve results:

This is a preliminary list of duties. Specific duties to be determined at a later date.

- Responsible for the overall ownership of the district conveyance system. This includes pumping stations, interceptors, forcemains, air release valves, overflow structures and all other features of the conveyance system.
- Prepare business case analysis for capital improvements related to the collection system.

- Work with customer communities to develop and implement programs to reduce fats/oils/greases, inflow/infiltration and other items detrimental to the overall effective operation of the collection system.
- Become the certified collection system operator at the district (a new permit requirement).
- Maintain the district's collection system hydraulic model.
- Provide oversight of collection system-related studies prepared by self or others, e.g., infiltration and inflow (I/I) studies, transient studies (i.e., water hammer), etc.
- Review the district's sewer maintenance program on an annual basis to determine new capital improvement program projects and areas to keep on the high-priority watch list.
- Determine the most efficient pumping operations and work with programmers to implement the best control sequences.
- Manage the annual televising/cleaning of district interceptors.
- Manage the annual forcemain condition assessment program.
- Assume all responsibilities associated with the locating program.
- Assume all responsibilities associated with the annual manhole rehabilitation program.
- Assume responsibility of the infiltration/inflow -chloride reduction program
- Monitor pumping station pumping patterns and energy usage frequently. Track pump operations to ensure pumps are not deteriorating, plugging, etc.
- Serve as the district point-of-contact for external utility coordination. Includes City of Madison liaison and coordination with other agencies (e.g., WisDOT, Dane County, etc.) and private companies working near district facilities.
- Act as a technical resource to properly size and specify pumps.

Qualifications and Requirements

Education and Experience

- Specific degree and requirements to be determined; likely to require a bachelor’s degree in Civil/Environmental Engineering or equal at a minimum.
- Specific experience requirements to be determined; likely in the range of 5–10 years minimum.

Knowledge

- Specific knowledge requirements to be determined; will include wastewater collection systems, hydraulic analysis, data analysis, project management, etc.

Skills and Abilities

- Specific skills and abilities requirements to be determined; will include analysis, writing, presentation, self-management, leadership, etc.

Other

- To be eligible for this position, candidates must pass a pre-employment drug screen.

Physical Demands and Work Environment

Work is primarily performed in a standard office environment, but occasional trips to field sites should be expected. The position requires one to be able to sit or stand for extended periods of time with sufficient hand, arm and finger dexterity to operate a computer keyboard or other office equipment. The position requires visual acuity to read and write words and numbers and identify features in the field and on media such as orthophotos. It also requires the necessary speaking and hearing ability to communicate in person, publicly, or over the phone. This position requires the ability to lift up to 25 pounds occasionally and the noise level varies from quiet to loud.

Eligibility and Acknowledgement Sign-Off

All employees are expected to adhere to company policies.

I have read and understand the expectations, qualifications and demands of this job description.

_____ _____

Signature Date

APPENDIX J: GLOSSARY

COMMON ACRONYMS

CARPC - Capital Area Regional Planning Commission

CIP - Capital Improvements Plan

CMMS - Computerized Maintenance Management System

CWF - Clean Water Fund (loan program for wastewater facilities)

DNR - Department of Natural Resources

FEI - Far East Interceptor

FOG - Fats, Oils and Grease

MH - Manhole

MMSD - Madison Metropolitan Sewerage District

NACWA - National Association of Clean Water Agencies

NEI - Northeast Interceptor

NSVI - Nine Springs Valley Interceptor

O&M - Operations and Maintenance

PCS - Process Control System

PS - Pumping Station

SEI - Southeast Interceptor

WAM - Work and Asset Management (MMSD's CMMS software)

WPDES - Wisconsin Pollutant Discharge Elimination System (District permit)

WRS - Wisconsin Retirement System

DISTRICT DEFINITIONS

adaptive management - Watershed approach developed to comply with stringent phosphorus limits.

additions - Major construction related additions, alterations, conversions, reconstruction, renovations, rehabilitations and replacements at the Nine Springs Wastewater Treatment Plant.

anaerobic digestion - Under this process, the organic sludge is treated in the absence of oxygen to reduce both the quantity and odor of sludges by breaking down the organic matter and producing methane and carbon dioxide.

acid digestion - One of the primary steps of the anaerobic digestion process in which soluble products are fermented to acids and alcohols of lower molecular weight.

annexation - The process whereby a city, village, town or other unit of government (e.g., district) expands its boundaries to include a specific geographic area.

asset management - Comprehensive management of parts and physical infrastructure to provide needed levels of service with tolerable risk at an acceptable lifecycle cost.

billing parameters - District billing parameters include: carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), total phosphorus (TP), total Kjehldahl nitrogen (TKN), volume, equivalent meters and actual customers.

biosolids - The soil-like residue of materials removed from sewage during the treatment process.

capital projects fund - Fund that accounts for financial resources used for the acquisition, construction or rehabilitation of major capital facilities. The budget for this fund is often referred to as the capital projects budget or capital budget.

class "A" products (biosolids) - Refers to sludge that contains minute levels of pathogens (disease causing organisms). To achieve class A certification, biosolids must undergo heating, composting, digestion or increased pH that reduces pathogens to below detectable levels. Once these goals are achieved, class A biosolids can be land-applied without any pathogen-related restrictions at the site.

class "B" products (biosolids) - Refers to sludge that has undergone treatment that has reduced but not eliminated pathogens. Class B biosolids have less stringent standards for treatment and contain small but compliant amounts of pathogens. Class B requirements ensure that pathogens in biosolids have been reduced to levels that protect public health and the environment and include certain restrictions for crop harvesting, grazing animals and public contact. As is true of their class A counterpart, class B biosolids are treated in a wastewater treatment facility and undergo heating, composting, digestion or increased pH processes before leaving the plant.

CMOM/SSO regulations - Refers to a capacity, management, operation, and maintenance program (CMOM) that focuses on sewer collection systems with a goal of eliminating sanitary sewer overflows (SSO).

collection system - A system of pipes and pumping facilities carrying sewage for disposal.

collection system facilities plan (CSFP) - An overall assessment of the condition and capacity of the key components that comprise the district's wastewater collection system. The plan identifies the scope and timing of required projects over the next 20 years so that the infrastructure continues to provide a high level of service to the district's customers while also addressing environmental concerns and regulatory requirements.

commission - A group appointed pursuant to law to conduct certain government business; the district has nine appointed commissioners.

connection charges - Charges related to connecting with district sewers.

conveyance system - Synonymous with collection system.

debt service fund - A fund established by a government agency or business for the purpose of reducing debt by repaying or purchasing outstanding loans and securities held against the entity. The district transfers a portion of its collected service charges to this fund to pay for its debt service.

effluent - Wastewater, treated or untreated, that flows out of a treatment plant or sewer outfall. The Nine Springs Wastewater Treatment Plant returns treated effluent to the environment.

executive team - Refers to the executive team at the district.

forcemain - The discharge pipeline of a pumping station.

conveyance facility connection charge (CFCC) - CFCC represents the user's "fair share" of collection system investments the district has made to install interceptor sewers and pumping stations.

influent - Water or wastewater entering a physical structure or process such as a treatment plant, pumping station or tank.

interceptor - Large sewer lines that convey the flow of sewage to a pumping station or treatment plant by gravity.

lining - A rehabilitation process in which a coating material is introduced to extend the life of the existing sewer.

master plan - The district's 50-year blueprint for the future.

Metrogro - A program that recycles liquid biosolids to agricultural land as fertilizer and soil conditioner.

Metromix - a "soil like" material created by the district that combines biosolids with amendments such as sand, sawdust and/or bulking agents. Metromix is intended for use in landscaping, turf production, general gardening and other similar applications.

Nine Springs Wastewater Treatment Plant (NSWTP) - Wastewater treatment plant originally constructed in the late 1920s in Madison, WI. Since then, the plant has experienced numerous changes and additions. The plant presently serves 26 communities in the Madison area.

nutrient removal - The removal of phosphorus and nitrogen from wastewater. The district uses a process called biological nutrient removal (BNR) that removes nitrogen and phosphorus from wastewater by using specific groups of micro-organisms and providing suitable conditions for their growth.

OnBase - OnBase is a software application that electronically captures, stores and manages documents generated or received by a company.

operating fund - In government accounting, fund used to account for all assets and liabilities of a nonprofit entity except those particularly assigned for other purposes in another more specialized fund. The cost of normal operations is expended from this fund.

Ostara - A process to recover phosphorus-containing fertilizer (struvite) as a natural byproduct of wastewater treatment.

plan review fee - Customer communities pay sewer plan review fees for the district's plan review of modifications or additions to their sewer systems.

pretreatment - Processes used by industrial or commercial customers to reduce or eliminate the contaminants in non-domestic wastewater to alter its nature, before discharging it into the collection system.

pumping stations - Also called lift stations, pumping stations are normally designed to handle raw sewage that is fed from underground gravity pipelines (pipes that are laid at an angle so that a liquid can flow in one direction by gravity). Sewage is fed into and stored in an underground pit, commonly known as a wet well. The well is equipped with instruments to detect the level of sewage present. When the sewage level rises to a predetermined point, a pump will start and lift the sewage upward through a pressurized pipe system called a sewer force main. The sewage discharges into another gravity sewer or its final destination a treatment plant.

relief sewer - A sewer built to carry the flows in excess of the capacity of an existing sewer; generally in parallel with the existing sewer.

septage - The waste content found in a septic tank.

service charges - Annual amounts collected through customer rates that are used to fund the district's ongoing operations and debt service.

sewer extension permit - Refers to a required permit for an extension, addition, or modification to the sanitary sewer collection system.

struvite - A phosphate mineral (magnesium ammonium phosphate).

televising - A method using video camera(s) to assess the condition of a sewer line in real time. It can reveal blockages from debris, roots or grease; show cracks, breaks or deterioration of a pipe. It allows detailed diagnosis without the need for excavation, saving time and money.

thermal requirements - Potential regulatory requirements to meet particular thermal temperatures in effluent receiving streams.

treatment plant connection charge (TPCC) - Represents a new users' fair-share of the total cost of the wastewater treatment plant.

user charge - Service charge based on wastewater flow and loadings data for a specific customer. The wastewater flow and loadings are used to develop customer bills (see also billing parameters).

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