REQUEST FOR PROPOSALS

NINE SPRINGS WASTEWATER TREATMENT PLANT

ASSET MANAGEMENT PLAN

Announcement

The Madison Metropolitan Sewerage District (MMSD or the “district”) seeks proposals from qualified vendors to develop an asset management plan covering all assets at the MMSD Nine Springs Wastewater Treatment Plant (NSWWTP). The project is intended to develop capital re-investment and maintenance strategies based on a detailed analysis of projected needs and current practices that could be improved. It should cover a 20 and 40 year forecast. The request for proposals (RFP) and any additional materials will be posted on the district’s website at:

http://www.madsewer.org/Projects/Current-Professional-Services-Projects

MMSD understands that proposers may have questions that cannot be answered by the information contained within this RFP. Proposers are welcome to contact the MMSD Project Manager, Claudia Haack via email prior to October 20, 2017. It is also possible to arrange for a meeting with district staff (in person or via a web conference) prior to that date. Proposals must be submitted by 4:00 p.m. CDT on November 3, 2017. Please submit proposals via email to:

Madison Metropolitan Sewerage District
Attn: Claudia Haack, Sustainable Infrastructure Manager
claudiah@madsewer.org

Your email should clearly state in the subject line that you are sending a:

“NSWWTP Asset Management Plan Proposal”

No proposals will be accepted after the proposal deadline. MMSD reserves the right to reject any or all proposals in part or in full for any reason.
1. Background

MMSD

The Madison Metropolitan Sewerage District is a municipal corporation created for the purpose of collecting, conveying and treating wastewater from the Madison metropolitan area. The District provides service to 26 municipal and utility district customers and serves a population of approximately 367,000 people. All wastewater generated in the district’s 184 square mile service area is treated at the Nine Springs Wastewater Treatment Plant NSWWTP. Current design flow for the NSWWTP is 50-million gallons per day (MGD). An overview of the processes at the NSWWTP can be found in the annual report. A link to the 2016 report is provided in the appendix.

MMSD employs approximately 100 individuals including skilled labor and professional staff. District management is organized into five departments: Planning and Strategy; Engineering; Operations and Maintenance; Administrative Services; and, Ecosystem Services. Every department has some level – and some staff members – with responsibilities in the lifecycle of our assets. Planning and Strategy is responsible for overall asset management; setting data and other standards; establishing the asset register; and, capital planning. Engineering manages most capital projects from concept through construction and is often an expert resource on asset operations and maintenance. Operations and maintenance is responsible for all ongoing operations and maintenance functions. Administrative Services develops the annual operational budget, keeps the financial records, such as depreciation and is responsible for parts and inventory management. Ecosystem Services manages the lab and the biosolids land application program Metrogro.

A nine-member commission governs the district, with commissioners appointed by the district’s customer communities.

Sustainable infrastructure and asset management at the district

MMSD protects public health and the environment, strives to enrich life through clean water and resource recovery, and is a workplace that values integrity, teamwork, creativity and balance. The district is also committed to providing excellent services at low costs to its ratepayers. While all these goals are important components for greater sustainability, the district has more recently established goals that focus on achieving specific sustainability targets. For example, the Energy Roadmap (2013) outlines options for reducing energy use and increasing renewable energy production at its treatment plant to support a move towards energy independence (net zero). For capital improvement projects, the district now uses screening tools, such as ISI Envision™ to increase the transparency of decisions and to ensure the most sustainable solutions are sought and implemented.

Building on these plans and activities, the district is pursuing the development of a sustainable asset management program with the mission to manage infrastructure to meet customer expectations at the lowest cost of ownership while managing business risk. The district, like
most other water and wastewater utilities, is faced with an aging infrastructure that requires substantial investments to maintain the current level of service while managing risk. MMSD also faces increasing regulatory requirements for treatment processes.

Asset management is recognized in the industry and is increasingly required by regulatory agencies as an approach to address these issues. MMSD has a long history of pro-actively managing its assets to achieve effective and efficient treatment; high engineering standards; and, meet regulatory and customer requirements. However, recognizing that a more focused and formal approach may be necessary, the district created the sustainable infrastructure program in 2014 with the goal to manage district infrastructure at its lowest lifecycle cost, while maintaining the needed level of service. Since 2014, the District has hired a sustainable infrastructure manager, conducted a gap analysis and completed the sustainable asset management framework and implementation plan. The framework follows the approach that was originally developed by the Environmental Protection Agency (EPA) as well as best practices from organizations such as the Institute for Asset Management. Many projects from the implementation plan have been completed. The framework will be provided on the district website as an attachment to this RFP and is the foundation for the development of the NSWWTP AMP. Asset management, and more specifically, the development of asset management plans, is a core component in the overall sustainable infrastructure objective of the district.

A major program initiative over the last 18 months was the development of a risk management approach that includes rating each asset for criticality (as a measure of consequence of failure) and condition (as a measure of likelihood of failure). To begin, the district associated all assets with a management strategy group (MSG). In the district’s approach, a MSG defines default attributes for an asset and provides direction to the investment modelling process via three treatment options that specify the timing and/or frequency of: (1) replacement, (2) rehabilitation, and (3) operations & maintenance, which includes defining condition assessment techniques. The condition assessment techniques are captured in condition assessment templates. In the appendix samples of MSGs and associated data, as well as condition assessment templates are provided. It is expected that the selected firm/firms will build on this foundation and use the associated data in its forecasting and modelling systems or tools.

Another program initiative is the development of two pilot asset management plans. One for the sludge digestion process at the plant, the other for all HVAC equipment. MMSD’s current asset management vendor used their in-house system (a spreadsheet-based calculator) to house the asset register and related data and develop the investment-need profile. Some of the key findings of the pilot initiative to date are:

1. MMSD has a substantially complete and reasonably up-to-date inventory of assets in the CMMS.
2. It is anticipated that size data (for example horsepower) will have to be gathered for most assets in the plan scope. This is information that is often known or relatively easily obtained by MMSD staff, but it is not consistently captured in the CMMS.
3. While failure data exists, it isn’t specific and consistent enough to use in the investment modelling.
4. MMSD staff involvement will need to be substantial in data verification and gathering.

The district also recently completed the Liquid Process Facilities Plan, which included a condition assessment for core assets. Data generated for that plan will be provided to the selected vendor once the work on the asset management plan starts.

The districts’ computerized asset management system (CMMS) Oracle Work and Asset Management (WAM), has been in place since 1997. It is the main asset management tool that is used for NSWWTP assets. Asset records in this system include identification number, description, location, process, work orders, specifications, asset type, crew, building, etc. The district is planning the transition to a completely re-designed version of WAM by 2021. Please see additional information in the appendix.

Additional asset information can be found in the districts’ geographic information system that will be transitioned into a centralized Esri based system over the next two years. That system holds attribute data mostly on manholes and linear assets in the collection system as well as sewer basins.

There are a number of additional data sources, including the fixed asset management system that tracks depreciation. MMSD currently does not own a forecasting system or other decision support system and does not anticipate the purchase of such a tool during the development period of the asset management plan. It is expected that the selected firm has a tool or system in-house that can be used for the purposes of developing this plan. It is also expected that the selected firm has certain necessary data, such as maximum economic life, rehab frequency/counts, life expectancy at the MSG level already available.

It is further expected that the selected firm will familiarize themselves quickly with the work that has been completed and the data available from our existing systems and adapt their proposed approach as needed for developing the NSWWTP asset management plan.

2. Goals, deliverables, qualifications

Goals

MMSD is seeking proposals that will result in a well-written, illustrated, useable, and easy to update asset management plan that provides detailed implementation and improvement recommendations which enhance the districts’ ability to:

1. Forecast and manage funding needs for renewal, replacement and maintenance of its assets at NSWWTP.
2. Lower the lifecycle costs of these assets.
3. Review, revise and continually optimize the allocation of maintenance resources considering the risk profile of assets.

4. Integrate asset management plans with existing and future planning initiatives, including the annual capital and operational budget development and facility plans.

5. Improve related business processes (for example asset data maintenance) and implement quality controls (for example control reports to ensure the data entry is complete) to achieve the objectives identified in the plan.

**Deliverables**

The key deliverable for this project is an asset management plan (AMP) that covers the assets at the NSWWTP including any underlying data, analytical approaches, documentation and calculations. The district requests five (5) hard-copies of the plan in addition to electronic copies, will be provided. At minimum, the AMP should contain the following sections:

1. **Overview and executive summary.**

   This section should provide a summary of the asset management framework that was applied to the development of the NSWWTP AMP; the approach that was taken to generate the recommendations; and summarize the results of the planning effort. It should explain key asset management concepts and serve as a foundation for the following sections.

   It should also illustrate the relationship of the plan to other planning activities at the district, particularly the annual operations and capital budget development as well as facilities' planning efforts.

2. **Asset portfolio.**

   There are roughly 7,000\(^1\) assets at the NSWWTP. This section of the plan should include descriptions and summarized data about the current state of the assets.

   a. Brief description of processes/asset types covered in the plan.

   b. Current state of the assets (various overview statistics, by process, by location, age, asset type, etc.).

3. **Level of service and performance measures.**

   This section should include performance measures and benchmarks, in particular for maintenance activities.

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\(^1\) About 1,200 assets are covered in the pilot plans and will not have to be re-evaluated. Another set of assets were assessed in the context of the Liquid Process Facilities Plan (LPFP) and have relevant data available.
4. Growth and demand changes (summary only for reference purposes – no new analysis)\(^2\)

5. Lifecycle analysis.
   a. Overview.
      This section should outline the analytical approach; what assumptions were used and why; and, which scenarios were modeled and why. It should further document how remaining life of the assets was determined, including the applied decay curves.\(^3\)
   
   b. Remaining life, risk and long-term replacement cost.
      
      This section should provide graphs and narrative on the analysis that projects the districts’ capital and operating (including maintenance) annual investment requirement for the next 20 and 40 years, as well as an average. At least three scenarios should be modelled:
      
      A. Base (as-is): Model for asset replacement when current condition reaches the worst condition rating over time as a function of asset decay curve, current condition, and asset life expectancy.
      
      B. Base + Risk: Similar to base scenario but for assets with high criticality, model for earlier intervention vs. waiting until condition reaches the worst condition rating.
      
      C. Do nothing: If we never renew our assets, what is the projected increase in corrective maintenance expenditure? \(^4\)

6. Capital and maintenance management strategies.
   a. Capital investment strategy with recommended CIP projects including schedule (timing) and planning level cost estimates. The projects that are identified need to be integrated with projects (and assets affected by those projects) that are already in the CIP.
   
   b. Maintenance management strategy.
      i. Current maintenance practices.

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\(^2\) The district is currently updating its demand forecast. The results will be made available to the selected vendor for the AMP project.

\(^3\) As mentioned earlier in the RFP, the vendor should have industry standard data for the modelling process, including life expectancy; maximum economic life; decay curves; replacement costs at the MSG level available. MMSD anticipates that his information will be reviewed and adjusted in collaboration with MMSD staff.

\(^4\) While there could be additional components in this scenario, for example the impact on level of service, based on the pilot plan results, MMSD’s data is insufficient for those modelling efforts at this point.
In addition to the lifecycle analysis, the AMP should analyze work order data to gain further insights for the development of maintenance management strategies and improvement efforts. MMSD is seeking insights to identify strengths and weaknesses of current practices and how the CMMS is used. The district has over 20 years of maintenance data at the asset level. This section should include an analysis of this data to identify how resources have been allocated; which assets experience failures; patterns of failures; and identifying trends that enable improvement activities. The district considers this data analysis as a critical success factor of the overall “identify, plan, schedule, execute, closeout, analysis (IPSECA)” workflow process improvement.

Analysis of historic data should be both quantitative (number of work orders by asset type, priority, criticality; total number of staff hours expended against what assets; total cumulative cost of parts for the period etc.), and qualitative (quality of work performed and related impact on uptime, availability and mean-time-between failures (MTBF); failure rate by asset type (1/MTBF)).

Analysis of the existing data will help identify assets that consume excessive labor and materials due to their condition, design, maintenance strategy applied, quality of work performed based on maintainer skill, knowledge and experience.

ii. Targets and strategies for maintenance performance improvement.

Based on the lifecycle analysis and the work order analysis, this section should provide guidance on targets, benchmarks, improvement strategies, resource requirements, business process changes, etc. It should also illustrate how to improve data collection, including which data to collect.  

iii. Proposed maintenance management improvement strategy initiatives.

iv. Staffing and resource needs for recommended preventative and corrective maintenance as well as condition assessment activities.

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5 MMSD’s AMP pilot is currently evaluating this data for a limited set of assets. The results of this pilot will be shared with the selected vendor.

6 The district anticipates that the following key measures and data will be covered:

- Increase in preventive maintenance and reduction in reactive maintenance.
- Identification and creation of the work order that starts the clock.
- Timely execution of work and completion of the work order by the maintenance technician that stops the clock and establishes the mean-time-to-repair (MTTR)
- Closeout of the work order following QA/QC review by the maintenance supervisor, or lead technician to ensure work has been completed to standard and equipment restored to service.
- Preventive maintenance (PM) work order on-time completion should be reviewed to ensure data skew is not occurring due to untimely completion and reporting practices such as delay in completing work orders or undocumented activity.
7. Financial aspects

   a. High-level review of current accounting and financial practices (incl. budget and CIP). Perform a basic gap assessment against industry best practices in cost of service allocation, recapitalization funding, contingency funds, etc., and make recommendations that help support asset management best practices and minimization of life cycle costs.

   b. Examples of alternative approaches, benchmarks and recommended next steps.

8. Improvement recommendations

MMSD is looking to the consultant to provide recommendations in all business processes that impact life-cycle costs of assets. In addition to the core areas that are covered in the preceding sections of the AMP, the following areas are of interest:

   a. Recommendations for improving information flow, data collection, asset creation (and retirement) and systems to allow updates to the AMP and monitoring of asset management business improvement activities. Develop and clarify asset creation and retirement policies and procedures as well as associated practices for parts, inventory, etc. This section should also include a requirements documentation for implementation in the CMMS.

   b. Condition assessment practice improvement (type of assets, frequency, level of condition assessment). Recommendations for asset condition and criticality rating rescoring frequencies and approaches.

   c. Change management needs; recommendations for managing change required to adapt to improved business processes and implementing changes in systems.

   d. Planning and forecasting tools. MMSD is looking for recommendations on decision support tools: what functionality is necessary; what tools are available in the market; known strengths/weaknesses, etc.

   e. Staff training needs.

In addition to the NSWWTP asset management plan, the following deliverables are required:

1. An updated asset register that includes:

   a. Level 2 (visual) condition assessments for all assets with both, a level 1 (desktop) condition assessment of “3”, or worse and a consequence of failure rating that
results in a category “4” or higher risk rating\textsuperscript{7}. (See the appendix for a level 2 condition assessment sample)

b. Replacement costs.

2. Spreadsheet, or compatible data base and documentation with all data used as inputs in the decision support tool, such as decay curves, replacement/rehab schedules, life expectancy, maximum economic life, replacement costs, etc. (to be coordinated with MMSD IT department).

**Optional/future**

As an optional deliverable, MMSD is interested in receiving proposals that apply the same principles as outlined for the NSWWTP asset management plan to the development of an asset management plan for our vehicle fleet assets. The appendix includes a listing of our current fleet.

**Qualifications**

The objective of this RFP is to solicit proposals from qualified vendors that have specialized and applicable knowledge developing asset management plans for organizations similar to MMSD in size, function, infrastructure, staffing and other relevant categories. The consultant needs to have demonstrated experience in the following areas:

- Developing comprehensive asset management plans.
- Forecasting year-by-year investment needs for asset operations/maintenance, renewal and replacement using different scenarios and time-horizons (20- and 40 year).
- Conducting level 2 condition assessments for all asset types common in wastewater treatment facilities.
- Analyzing current practices and data and developing improvement recommendations (based on industry best practices or similar benchmarks) for business processes that:
  - Create and maintain asset related data.
  - Determine maintenance procedures, schedules, priorities.
  - Drive decision-making on investment priorities.

It is further expected that the firms demonstrate that it is their practice to work collaboratively with internal (i.e. client) staff on a similar scope of work with organizations comparable to MMSD.

\textsuperscript{7} MMSD has established a risk rating (likelihood of failure/condition \times consequence of failure) scale of 1 (very low/no risk) to 5 (very high risk, imminent failure).
3. Proposal Submittal

Schedule

<table>
<thead>
<tr>
<th>Date (all in 2017)</th>
<th>Task</th>
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<tbody>
<tr>
<td>October</td>
<td></td>
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<tr>
<td>10</td>
<td>RFP posted</td>
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<tr>
<td>20</td>
<td>Notice of interest and questions due</td>
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<tr>
<td>24</td>
<td>Last date for addenda - response to questions - posted</td>
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<tr>
<td>November</td>
<td></td>
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<tr>
<td>3</td>
<td>Proposal due</td>
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<tr>
<td>13 – 14</td>
<td>Tentative dates for vendor interviews</td>
</tr>
<tr>
<td>22</td>
<td>Tentative commission authorization</td>
</tr>
<tr>
<td>December 31</td>
<td>Contract finalized</td>
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</tbody>
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Notice of interest and questions

To facilitate effective pre-proposal communication and exchange of information, please email a notice of interest with your firm’s name, assigned primary contact person, and all contact information to MMSD’s project manager (see above under “Announcement”) no later than 4:00 p.m. CDT on October 20, 2017. Please contact the project manager with any questions you might have by the same deadline. Email is preferred.

Responses to substantive questions will be distributed via email to firms that have submitted a notice of interest and posted as a addenda to the RFP on our website at the latest by October 24, 2017. The submission of a notice of interest or questions is not required in order to participate in the RFP proposal process.

Proposals

Proposals are due on or before 4:00 p.m. CDT on November 3, 2017. Proposals shall not exceed 35 pages, not counting tab or divider pages, and resumes of key personnel (each resume not to exceed 2 pages). Please do not include extensive marketing materials, nor proposals that would expand the scope of work. Faxed submittals will not be considered. Please email your proposal in pdf format to the project manager as outlined under “Announcement”

No proposals will be accepted after the proposal deadline. MMSD reserves the right to reject any or all proposals in part or in full for any reason.
Proposal Format

The proposals shall include the following sections:

1. **Project understanding and approach**: Demonstrate a complete understanding of the project and include a detailed description of your team’s approach to the work. Include a discussion of key issues that may be encountered during the process and how they will be addressed. Comment on what you believe will be particularly important to the success of the project.

2. **Qualifications and experience**: Provide recent (within the last 5 years) project examples that illustrate applicable experience and qualifications of your firm, team members and any sub-consultants. For each team member assigned to this project include relevant experience for their specific responsibility and role in the project.

3. **Work plan and budget**: Break down the approach into tasks and illustrate when the various tasks will be completed to meet major milestones. Include hours per task, timelines, and key meetings. Provide estimated hours and budget for each task and each team-member included in your approach, as well as an overall project budget. Include billable rates for each team member; clearly indicate any expenses (e.g., travel, food, etc.) that are billed outside of salaries and account for any expected adjustments.

4. **References**: Please include at least three (3) references for projects listed under section 2: “Qualification and experience”. Include contact information and a brief description of the scope of work performed for that client. Similar organizations to MMSD and scope of work to this RFP are preferred.

4. Evaluation of Proposals, Consultant Selection and Contracting

Proposals will be evaluated by a committee comprised of District staff. Proposals will be scored on the basis of 100 possible points, as follows:

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<tr>
<th>Maximum Points</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>40</td>
<td>Project understanding and approach</td>
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<tr>
<td>30</td>
<td>Firm and team member qualifications and experience</td>
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<tr>
<td>30</td>
<td>Costs, schedule, tasks and availability</td>
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The review committee’s recommendation will be for the consultant deemed to be in the best interest of the project based on the proposal and the interview, if interviews are conducted.

MMSD reserves the right to contract for all or part of the project. The contract and associated scope of work will be a “not-to-exceed” contract.

The district anticipates that between $300,000 and $400,000, will be available for this project. The district’s desire is to complete this project by June 2019.
Appendix

The documents in the appendix are provided as embedded PDFs. Please click on the image to open the entire document. These are illustrations of the information that will be provided by MMSD to support the development of the proposal. Actual data and

MSG and Condition Assessment Templates Samples

WAM System Illustration
DSS Data Input Sample

NSWWTP Assets Register Extract

Workorder Sample Data
Fleet Assets Register Extract

MMSD Annual Report

MMSD Capital Improvement Plan (Draft)
http://www.madsewer.org/Portals/0/Planning/CapitalImprovementsPlan/2018%20CIP%20FINAL.pdf

MMSD Budget (Draft)
http://www.madsewer.org/Portals/0/AboutUs/Commission/MeetingAgendas/2108Budget_v4_Web.pdf

Attachment
Sustainable Asset Management Framework – document posted here:

http://www.madsewer.org/Projects/Current-Professional-Services-Projects