



FORT BRAGG MUNICIPAL IMPROVEMENT DISTRICT

REQUEST FOR PROPOSALS FOR WASTEWATER COLLECTION SYSTEM MASTER PLAN

The Fort Bragg Municipal Improvement District (MID) is seeking proposals from qualified consultants interested in contracting with the MID to prepare a Wastewater Collection System Master Plan. The purpose of the Collection System Master Plan is to evaluate existing data, collect and model new information, develop risk models, and prepare capital improvement priorities and budgets for the replacement and renovation of the City's sanitary sewer collection system.

BACKGROUND

The wastewater collection system is wholly owned and operated by the City through the Municipal Improvement District. The Fort Bragg Municipal Improvement District No. 1 was formed in 1969 and encompasses the City of Fort Bragg and areas to the north and south, which are not within the City limits. The Fort Bragg wastewater facilities consist of a sewer system, six pump stations, a wastewater treatment plant, and an outfall pipeline, which extends 690 feet into the Pacific Ocean.

The first sewers were constructed in the late 1800's. A large proportion of the gravity sewers still in use are older vitrified clay pipes, notoriously subject to leaks through broken pipes and defective joints caused by intruding roots, seismic activity, and differential settling as well as from external damage. The force main system is primarily composed of Techite pipe. The original wastewater treatment plant was built in 1971. A number of upgrades to the treatment plant occurred in the intervening years. Between 2017 and 2022, the treatment plant received a full overhaul.

The City's economic base has been undergoing a major transition for many years. The Georgia Pacific (GP) Lumber Mill (Mill Site), previously the City's largest employer, ceased operations in 2002. To this day, the undeveloped area of the Mill Site occupying 315 acres is zoned Timber Industrial. Over this same time, the regional fishing industry has been in decline while the local tourism sector has been growing and has roughly offset these economic losses. Consequently, there has been little to no net growth in the City's population for 20 years or more.

The wastewater system includes:

- The **Wastewater Treatment Plant** is located on the western most part of Fort Bragg at 281 Jere Melo Street in Fort Bragg.
 - The wastewater treatment plant is rated for 0.800 MGD dry weather flow and an average daily wet weather treatment capacity of 4.9 MGD wet weather flow.

- The treated effluent outfall pipeline extends 690 feet into the Pacific Ocean.
- **The Collection system** consists of:
 - Approximately 30 miles of gravity sewers and pressure mains. The gravity sewers range in size from 6 inches to 30 inches in diameter.
 - Six (6) lift stations: 1. North Noyo, 2. South Noyo, 3. Noyo Point, 4. Sanderson Street, 5. Elm Street, and 6. Pudding Creek.

Having an up-to-date plan is essential for use by City and MID staff in developing a plan for future capital needs. The MID's wastewater collection system is critical to the MID's wastewater responsibility, so having a relevant Collection System Master Plan document is crucial to understanding and strategically rehabilitating the system. The proposals should anticipate providing support to staff from the Collection System Master Plan through Preliminary Engineering Reporting. The Master Plan will culminate in a comprehensive document that can be used to facilitate funding applications, environmental analysis, project design, and construction.

Other Background Variables for Consideration:

- a. The Fort Bragg Municipal Improvement District is located in an area subject to **seismic activity**.
 - While there are no active earthquake faults in the MID, the San Andreas Fault is located approximately nine (9) miles to the west, and the Mayacama Fault is 22 miles to the east.
 - Should the Pudding Creek or Noyo River Bridges become unusable following a seismic event, people may not be able to evacuate, emergency access would be blocked, and there is a high potential for wastewater collection line damage/failure in these locations.
 - One of the primary Wastewater Collection System Master Plan goals is to create resiliency in the MID's wastewater system and thus should address seismic protection of the system against risks associated with the effects of earthquakes, landslides, slope instability, subsidence, tsunami, and other hazards including flood and fire.
- b. The MID is preparing to commence design of the **Water and Sewer Line Extension** for the industrial area north of Pudding Creek to the edge of the MID limits. The selected consultant should plan to coordinate with the design engineer selected for this project if it is underway simultaneously with Collection System Master Plan.
- c. The MID does not have a **Programmatic Environmental Impact Report (EIR)** for its utility Collection System Master Plans or Capital Improvement Program (CIP). Historically, MID practice has been to undertake environmental review as part of each project. The MID is working with a consultant to investigate the benefits of preparing a programmatic EIR and one may be developed in tandem with this master planning effort.
- d. The City is currently under contract with a consultant who is updating the Waste Water GIS and modeling data that will be updated and used by the selected consultant throughout the Master Planning. Placement of the flow meters and subsequent data

entry and analysis will utilize the models prepared under this separate contract. The mapping/modeling software being used is InfoWater Pro which runs in the ESRI ArcGIS Pro environment or EPANET files.

- e. The following facilities and infrastructure are **not planned for consideration** in this study, unless a collection system investigation is deemed necessary:
 - a. Waste Wastewater Treatment Plant
 - b. Storm drainage facilities

PROJECT DESCRIPTION AND GOALS

The Wastewater Collection System Master Plan is expected to consist of a review of the existing records and studies. The selected Consultant will need to gain a clear understanding of the current issues and plan for the future by examining the existing customer base and anticipating future connections as they relate to National Pollutant Discharge Elimination System permits.

The project includes updates to the modeling/mapping of the wastewater collection infrastructure. An update to the model and mapping is currently underway, using InfoWater Pro which runs in the ESRI ArcGIS Pro environment. The ArcGIS computer model will be used in conjunction with data collected during the flow monitoring to strategically determine locations where closed circuit television (CCTV) data collection is needed. Both flow monitoring and CCTV data will then be used in combination with modeling to determine the likelihood and consequence of risk and recommend improvement projects to repair the system and ensure its resiliency.

Specific issues that the project should address include maximizing planning potential; minimizing inflow and infiltration, prioritizing crucial infrastructure needs; identifying leaks/failures in wastewater collection lines; scheduling wastewater line repairs/replacements; and working with local watershed groups to maximize the protection of local waterbodies.

Implementation of this project is also expected to provide the MID with detailed project descriptions, priority ranking, schedules, and cost estimates that will be used to coordinate investments in maintaining the MID's wastewater system.

SCOPE OF WORK

This contract would consist of the following four (4) major tasks:

All Tasks 1-4 assume the consultant will work closely with staff both virtually and on-site for **working meetings** as needed to coordinate and complete the various tasks and deliverables.

TASK 1: DATA COLLECTION AND MODELING

A full update to the model and mapping is currently underway, using InfoWater Pro which runs in the ESRI ArcGIS Pro environment or EPANET files. The ArcGIS computer model will be used in conjunction with field data collected to identify and prioritize projects. Data collection may consist of flow monitoring, closed circuit television (CCTV) of the gravity sanitary system,

smoke testing, water table analysis, and evaluation of force mains. This task may also include fieldwork, surveying, geotechnical evaluations, potholing utilities, etc. sufficient for mapping deliverables as needed.

TASK 1: DELIVERABLES

1. Complete a field investigation and assessment of existing conditions and constraints of gravity sewers and pressure mains, lift stations, and all other system appurtenances.
2. Conduct a flow monitoring study using 8-12 flow meters installed to record wastewater flows. Rainfall data will also need to be recorded. The length of the study may be limited by available funding but should last a minimum of six to eight weeks. The study should take place during the time of year when the largest storm events occur. However, it should be of sufficient duration to measure wastewater flows during both dry weather and wet weather periods. If significant rain events are not adequately captured during the study, the period of study should be extended.
 - a. The flow monitoring study will be based on the data being currently obtained in a smaller contract which includes dry weather monitoring analysis and establishes the planned locations for flow monitoring installation.
 - b. This task is anticipated to occur during the wet season of 2023-2024 beginning as early as November 2023.
 - c. Traffic control plans and/or a traffic control contractor may be necessary for the deployment of flow monitors and these costs should be included in the proposal.
3. Data from the flow monitoring will then be used to strategically determine the quantity and locations of CCTV data necessary for collection to best assess the system.
 - a. CCTV data collection mileage will be based on available funding and priorities established via modeling and the City.
 - b. CCTV data will be imported into asset performance modeling software.
 - c. The contractor collecting the CCTV data will be expected to clean mains and coordinate with maintenance to determine the needs for this activity.
4. Smoke testing, water table analysis, or other industry-standard data collection methods will be employed as recommended by the Consultant to ensure sufficient system information is collected to understand and make informed capital project recommendations.
5. Survey data: Raw data points and processed data.
6. Updated modeling/mapping of wastewater infrastructure.
7. Prescribe a plan for an on-going condition assessment cycle.
8. Apply the Risk Master Plan Condition Index or Pipeline Assessment and Certification Program criteria (PACP) established in Task 4 Deliverable 3 to the model data to help improve project prioritization.

TASK 2: ANALYZING ENVIRONMENTAL VARIABLES

Evaluate the existing and proposed collection system in relation to existing and proposed needs to ensure the system is resilient for current customers and sized for reasonably Expected Growth.

- Review the MID's most up-to-date Municipal Services Review report and evaluate reasonably expected Growth Factors for future wastewater service to:
 - The GP Mill site;

- North Fort Bragg industrial sewer line extension from Pudding Creek to the edge of MID Limits (a 2022/23 programmed CIP project);
 - Future development/annexation including the Harbor, and one (1) additional future annexation area, as defined in the most updated LAFCO Municipal Services Review. This will likely be the east Fort Bragg area.
- Review the MID’s General Plan (inland and coastal) Element 7 Safety and other Emergency Contingency Planning documents and consider Disaster Mitigation strategies and other environmental factors impacting the MID’s wastewater resiliency planning including:
 - Impacts of climate change and sea level rise;
 - Analyze geotechnical sensitive areas most subject to seismic activity including earthquakes, landslides, slope instability, subsidence, tsunami, other geologic hazards, flood, and fire;
 - Environmental factors; including soil corrosiveness, pH, ground wastewater, etc.
- Inflow and infiltration (I&I) can trigger sanitary sewer overflows and put costly pressure on wastewater treatment facilities. I&I data collected from the flow monitoring shall be analyzed, average dry weather flow curves will be determined, and rain-dependent infiltration and inflow (RDI&I) response will be isolated during wet weather rainfall events. I&I analysis will include developing synthetic I&I hydrographs for each flow monitoring site and applying the synthetic hydrographs to a 10-year, 24-hour design storm.

TASK 2: DELIVERABLES

1. Technical Report including analysis of future wastewater services, resiliency planning, and consideration of environmental factors. The report should recommend strategies for Climate Change and other disaster preparedness, address system efficiencies in keeping with environmental constructs and ethical practices, and discuss new, innovative, or emerging pipe/wastewater system technologies.
2. Flow Monitoring and I&I Analysis Study Report: Following the flow monitoring activities and after the meters are removed, data collected shall be downloaded and reduced to 15-minute intervals for analysis and include data QA/QC.

TASK 3: CAPITAL PROJECT PLANNING

Identify and prioritize critical wastewater system improvements to ensure a strategic approach to rehabilitating the system. The study should evaluate and prioritize improvements based on analysis of the likelihood of failure and the consequence of failure after assessing the existing infrastructure conditions and information gathered during Tasks 1 and 2 and meetings with Staff. The improvement strategy should consider:

- Prioritizing the prevention of sanitary sewer overflows (SSOs), reduction of inflow and infiltration, and ensuring system resiliency using a risk condition assessment index or Pipeline Assessment and Certification Program criteria (PACP).
- Ensuring that adequate wastewater systems are available to meet current needs.
- MID Planning and Improvements: Identification of new wastewater systems within the MID and recommendations of necessary system modifications to ensure demands of future projected growth can be accommodated.

- Analyze the MID's current asset management practices for the wastewater collection system scoping and prioritize future asset management procedures (tracking, evaluating, and replacing aging infrastructure).
- Identification of project funding opportunities and funding streams.

TASK 3: DELIVERABLES

1. Technical memo of risk-based analysis of the likelihood of failure and consequence of failure. This memo shall use system assessment data collected on the existing infrastructure conditions to create a defined risk condition rating system or use the standardized Pipeline Assessment and Certification Program criteria (PACP) to determine the capital project prioritization.
2. A Project Planning Report, which includes project descriptions for all recommended projects, needed to bring the system infrastructure into a fully rehabilitated state. This report should incorporate mapping, schedules, cost estimates, anticipated level of environmental review, permitting needs, analysis of grant funding competitiveness, constructability, and a priority ranking for each project.
 - a. Recommended projects may include repairs, replacements, new infrastructure, or other appropriate actions including innovative or emerging technology as deemed appropriate for a given location, budget, and other factors analyzed herein (i.e. pipe-lining, seismic retrofits, etc.).
 - b. Proposed schedule of collection system rehabilitation projects based on identified priorities funding availability, and feasibility of successful project implementation including factors like staffing over a 10-year timeline.
3. Asset Management Planning recommendations including a valuation of current Assets for use by staff to maintain the system day to day and into the future beyond the proposed rehabilitation projects.

TASK 4: COLLECTION SYSTEM MASTER PLAN

After reviewing the existing studies to gain a clear understanding of MID planning needs and work described in tasks 1-3 above, the consultant shall prepare a complete collection system condition Master Plan.

TASK 4: DELIVERABLES

1. Draft Collection System Master Plan Report, which includes information on the existing conditions and constraints of the system, with copies of all data in an appendix.
2. Attendance and presentation at up to three (3) City Council meetings, including preparation of staff reports, meeting notes that incorporate all agency comments, and recommendations to Council regarding the adoption of the Final Collection System Master Plan.
3. Final Collection System Master Plan Report including all other deliverables (listed above) both digitally and three (3) bound hard-copy reports.