

ORDINANCE NO. 67-23
BY: CHRISTINA MORRIS

AN EMERGENCY ORDINANCE AUTHORIZING THE MAYOR TO
ENTER INTO A CONTRACT BETWEEN THE CITY OF ROCKY RIVER AND BROWN
AND CALDWELL FOR PROFESSIONAL ENGINEERING SERVICES BIOGAS
FEASIBILITY STUDY FOR THE ROCKY RIVER WASTEWATER TREATMENT PLANT
IN AN AMOUNT NOT TO EXCEED \$150,320.00

WHEREAS, The City of Rocky River Wastewater Treatment Plant has determined the need to contract for professional engineering services to perform a feasibility study for reuse of biogas and development of a biosolids master plan for sustainable reuse of wastewater treatment plant biproducts; and

WHEREAS, qualifications were requested of (4) engineering firms for performance of such engineering services necessary to complete the study; and

WHEREAS, designees of the Rocky River Wastewater Treatment Plant, including the Superintendent of the Wastewater Treatment Plant, have evaluated Brown and Caldwell's qualifications submitted, and have determined Brown and Caldwell not only meet minimum qualifications requested but also to be the most qualified candidate to perform the study; and

WHEREAS, on August 8, 2023, the Rocky River Wastewater Treatment Plant Management Committee has recommended the SCOPE of services and associated not to exceed fee to be adopted by the Rocky River City Council.

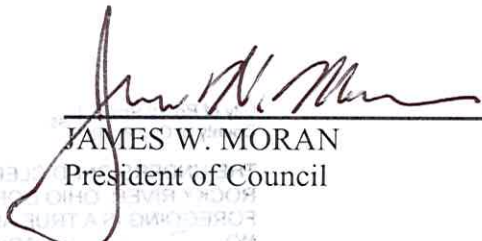
NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF ROCKY RIVER, COUNTY OF CUYAHOGA, STATE OF OHIO:

SECTION 1. That the Mayor for the City of Rocky River is hereby authorized to enter into an agreement with Brown and Caldwell, 6055 Rockside Woods Blvd., Suite 350, Independence, OH 44131, in an amount not to exceed One Hundred and Fifty Thousand Three Hundred and Twenty Dollars and 00/100 (\$150,320.00) as outlined further in Exhibit "A".

SECTION 2. That funds for the consulting engineering services for the feasibility study shall be paid from the Wastewater Treatment Plant Capital Fund.

SECTION 4. That this Ordinance is hereby declared to be an emergency measure necessary for the immediate preservation of public peace, health and safety and for the further reason that services referred to above must be expedited in order to comply with NPDES and funding source requirements, and provided it receives the affirmative vote of two-thirds (2/3) of all members elected to Council, it shall take effect and be in force immediately upon its passage and approval by the Mayor; otherwise, it shall take effect and be in force from and after the earliest period allowed by law.

PASSED: September 25, 2023

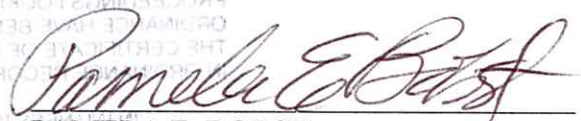

JAMES W. MORAN
President of Council

PRESENTED TO
MAYOR: September 25, 2023

APPROVED: September 25, 2023

TEST:


MARY ELLEN UMERLEY
Acting Clerk of Council


PAMELA E. BOBST
Mayor

I, the undersigned clerk of the City of Rocky River, State of Ohio, do hereby certify that publication of the foregoing ordinance was duly made by posting a true copy thereof in the lobby of the Rocky River City Hall, in accordance with the charter of Rocky River, commencing on the 25th day of September, 2023.

City of Rocky River } ss
County of Cuyahoga }

THE UNDERSIGNED CLERK OF THE COUNCIL OF THE CITY OF
ROCKY RIVER, OHIO DOES HEREBY CERTIFY THAT THE
FOREGOING IS A TRUE AND CORRECT COPY OF ORDINANCE
NO. 67-23 ADOPTED BY THE COUNCIL OF SAID CITY
ON THE 25th DAY OF September, 20 23 THAT THE
PUBLICATION OF SUCH ORDINANCE HAS BEEN MADE AND
CERTIFIED OF RECORD ACCORDING TO LAW; THAT NO
PROCEEDINGS LOOKING TO A REFERENDUM UPON SUCH
ORDINANCE HAVE BEEN TAKEN; THAT SUCH ORDINANCE AND
THE CERTIFICATE OF PUBLICATION THEREOF, ARE OF RECORD
IN ORDINANCE RECORD NO. 67-23

IN WITNESS WHEREOF, I HAVE HEREUNTO SUBSCRIBED
MY NAME AND AFFIXED MY OFFICIAL SEAL THIS 25th DAY OF
September, 20 23

Mary Ellen Zimerley
CLERK OF COUNCIL OF THE CITY OF ROCKY RIVER, OHIO

BROWN AND CALDWELL
BIOSOLIDS EVALUATION PROJECT
CITY OF ROCKY RIVER WASTEWATER TREATMENT PLANT

BC Project Number XXXXXX

Client Name City of Rocky River Wastewater Treatment Plant (RRWWTP)
Client Address 22303 Lake Road
 Rocky River, Ohio 44116

Effective Date
of Authorization _____

This Project for the Digester Evaluation Project between the City of Rocky River Wastewater Treatment Plant (RRWWTP), hereinafter referred to as "Client", "the City", or the RRWWTP, and Brown and Caldwell, a California corporation, hereinafter referred to as "Consultant" or "BC" is made and entered into this __day of __, 2023.

RECITALS:
WHEREAS, Client and Consultant entered into an agreement for consulting services dated MM, DD, YYYY (hereinafter referred to as the "Agreement");

NOW, THEREFORE, Client and Consultant agree to the Project Scope as follows:

SCOPE OF SERVICES

Purpose:
City of Rocky River Wastewater Treatment Plant staff as well as its Management Committee have previously expressed interest in enhancing the City of Rocky River Wastewater Treatment Plant (RRWWTP) sustainability. Specifically, the City is striving to reduce the plant's carbon footprint, reduce greenhouse gas emissions, reclaim high quality (Class A) biosolids, and maximize on-site energy product for use at the plant. Recently, new funding opportunities have emerged that may reduce the payback time of installing an energy recovery facility at the WWTP. The available funding opportunities have specific requirements and strict deadlines.

The RRWWTP currently has some sustainability practices. The plant is effectively and economically managing their biosolids by creating a Class B product. The product is beneficially land applied to the extent possible during warmer months and landfilled during colder months. The facility currently uses the digester gas beneficially to heat the digesters which offsets the use of natural gas. The facility produces roughly 85% excess gas of what is required to heat the digesters which is flared to the atmosphere.

The purpose of this Feasibility Study is to explore options to enhance the plant’s sustainability through the biosolids handling, digestion, GHG reduction, and renewable energy processes of the RRWWTP by the following:

1. Identify the components of the solids handling and digester facilities that have reached their useful life and make recommendations for repair or replacement.
2. Determine if the RRWWTP is a candidate for feasibly installing a renewable energy system and estimate a payback period.
 - a. Investigate if excess digester gas can be beneficially reused to offset power demands at the facility.
 - b. Identify and recommend improvements to the solids handling and digester processes to optimize the output of a renewable energy system.
3. Evaluate the need for digester and solids handling upgrades.
4. Evaluate alternatives to produce Class A solids.
5. Evaluate the means to reduce GHG emissions within the solids handling and digestion processes at the RRWWTP. Detect and estimate the amount of GHG emitted from the existing components and recommend improvements for GHG reduction.
6. Explore funding mechanisms available.
7. Evaluate delivery methods for capital improvement projects.
8. Update the current Capital Improvement project (CIP)schedule to implement CIPs while meeting funding deadlines.

Key Tasks: The scope of services includes the following primary tasks:

Phase 1 // Project Conditions and Requirements

Phase 1 tasks kick off the project, establish evaluation criteria, and defined baseline conditions for the alternatives analysis.

Task 1.1 Kickoff Workshop: This workshop will confirm biosolids management objectives and priorities for the master plan and set service requirements for candidate technologies. Consultant will present biosolids end-use options and technologies to develop biosolids products to meet these options. In collaboration with Client staff, we will develop a list of biosolids end-use outlets and treatment technologies for initial screening. Existing baseline conditions and future projects will also be discussed.

- **Assumptions:**
 - The kickoff workshop will be a workshop organized and led by the Consultant.
 - The Consultant’s attendees will include Project Manager (Tony Blanc), Deputy Project Manager (Joe Sicurezza), and Technical Expert (Tom Nagle).
 - Biosolids processes to include solids handling, digesters, conveyance systems, digester mixing, and ancillary equipment.
 - Biosolids use and treatment technologies will be identified.
 - Initial screening criteria will be developed in collaboration with the Client and will be used at the Initial Screening Workshop.
- **Deliverables**

- Kickoff Workshop agenda, minutes and materials.
- Existing conditions and planning information request.
- **Client Responsibilities**
 - Kickoff Workshop participation.
 - Provide requested existing conditions and planning information within **one week (City to confirm for final scope)** after the Kickoff Workshop. Information request may include data related to existing biosolids production, flow projections, sludge hauling contracts, landfill contracts, and energy usage and contracts.

Task 1.2 – Evaluation of Existing Conditions BC will review current condition of the biosolids processes.

- **Assumptions**
 - One meeting to discuss and receive input from O&M and Engineering staff.
 - BC to complete sight evaluation of existing equipment.
 - No material or equipment testing to be completed.
 - No code evaluation will be completed, any code issues that are identified in the field will be noted in the overall summary.
- **Client Responsibilities**
 - Draft solids mass balance and solids production projections in advance of Initial Screening Workshop will be provided by owner.
 - Take and analyze any required sludge samples.
 - Provide copy of previous Hazen Biosolids analysis.

Task 1.3 – Baseline Cost and Energy Profile The Consultant will construct a baseline cost and energy profile based on continuation of current biosolids management operations. Information gathered and developed in Task 1.2 will be used to develop the baseline cost and energy profile. This baseline profile will be used for comparison with alternatives considered for this project.

- **Assumptions**
 - The Consultant's Digester Gas Utilization and Evaluation Tool (DUET) model will be used to develop the baseline profile and serve as the primary alternative evaluation tool for this study.
 - The RRWWTP will provide the following data within 1 week of NTP:
 - 3 years of digester gas data (pressure, flow rates such as total production, boiler use, and flared flow rates)
 - Provide results from any historical analytical digester gas data (gas composition of methane, carbon dioxide, hydrogen sulfide, siloxanes, BTU content, etc).
 - 1 year of natural gas and electrical bills or summarized billing data.
 - Staffing rates .
 - The feasibility analysis of a future renewable energy system will be based on digester gas flow meter data, which will not be verified for accuracy
- **Deliverables**
 - Draft baseline cost and energy profile summary in advance of the Initial Screening Workshop.
- **Client Responsibilities**
 - Review and provide input for draft baseline cost and energy profile summary during the Initial Screening Workshop.

Phase 2 Sustainability Evaluation

Phase 2 tasks identify and define attributes of biosolids treatment strategies and energy recovery strategies. BC will focus on identifying opportunities to capture renewable energy to be utilized within the confines of the City of Rocky River WWTP, reduce GHG emissions, and conversion of Class B to Class A biosolids. Technologies to be evaluated will be screened in Phase 3 tasks.

Task 2.1 – Digester and Biogas Utilization Evaluation BC will develop project alternatives and iterating on solutions to determine if there is viable energy recovery project. BC will utilize our DUET tool to perform a technical and financial analysis.

Critical to the evaluation is the quantification of gas production and evaluation of current digester performance. BC will evaluate historical data and work with the plant staff to obtain some additional data during the study. All of the biogas use alternatives will be developed using a range of digester gas production that encompasses the status quo and estimations of potential gas losses or digestion inefficiencies.

Assumptions

- Limit to three technologies for sustainable reuse of biogas within the confines of the plant.
- Measurement of the existing biogas composition (methane, BTU content carbon dioxide, hydrogen sulfide and siloxane concentrations) will be completed by others. At least three samples over three months are recommended.
- **Deliverables**
- **Client Responsibilities**
 - Comment on previous negotiations that Client has had with other parties.
 - Measurement and composition analysis of any biogas sampling.

Task 2.2 – Digester Optimization The study will make recommendations to optimize digester gas production. To maximize the benefit of any energy recovery project, optimized anaerobic digestion is desirable. Optimization of current digesters performance may include replacement of the existing mixers with a new more effective technology, thickening improvements, reconfiguring the existing feed piping, and/or replacement or rehabilitation of the existing primary sludge degritting system.

- **Assumptions** Up to five biosolids treatment technologies will be evaluated at this level.
- **Deliverables** Alternatives and recommendations to be included in the Biosolids Road Map.
- **Client Responsibilities** None.

Task 2.3 – Energy Recovery Evaluation Options to recover energy to enhance the biosolids treatment technology alternatives will be identified. BC will focus on identifying opportunities to capture renewable energy to be utilized within the confines of the City of Rocky River WWTP. BC will develop conceptual information for energy recovery technologies selected during the Kickoff Workshop and evaluate the candidate technologies against Client's screening criteria. BC will consider the use of producing electrical power for use within the confines of the WWTP only.

BC will evaluate the needs for gas treatment systems required for the operation of engines or microturbines. Removal technologies will be evaluated based on capital and operational costs and will be included in the overall net present worth evaluation of the cogeneration system.

- **Assumptions**
 - Up to three energy recovery alternatives will be evaluated. The following renewable energy options are assumed to be considered during the study:
 - Status quo or “do nothing” option.
 - Cogeneration system. Engines and microturbines will be evaluated.
 - Renewable Natural Gas (RNG) system
 - Options will not include selling of natural gas or electricity to an offsite utility.
 - The study will evaluate the sizing of equipment required for cogeneration including:
 - Gas conditioning such as H₂S, Siloxane, or moisture removal. BC will assume conventional gas conditioning for this evaluation.
 - Post-combustion exhaust gas treatment for NO_x, CO and/or hydrocarbons. BC will investigate the current regulations and make recommendations if exhaust gas treatment is to be included under the current project or to be considered for future expansion.
- **Deliverables** Alternatives and recommendations to be included in the Biosolids Road Map.
- **Client Responsibilities** Collection and analyzation of any gas samples to evaluate H₂S, Siloxane, moisture or other chemical compounds.

Task 2.4 – Permitting/Funding BC will assess local, state, and federal regulations and applicable trends that have been observed nationwide. The assessment will identify regulatory and permitting changes that may result in short term, long-term, or substantial impacts to a renewable energy program.

BC will evaluate the funding available for the proposed biosolids process improvements at the RRWWTP. BC will make recommendations on the possible funding sources and which portions of the project are applicable for funding. BC will evaluate and present the requirements and deadlines that will be critical to obtaining funding.

- **Assumptions**
 - **The following funding mechanisms will be evaluated:**
 - Infrastructure Investment & Jobs Act (IIJA),
 - Inflation Reduction Act (IRA) as it applied to renewable energy
 - State Revolving Fund (SRF).
 - Greenhouse Gas Reduction Fund.
- **Deliverables** Alternatives and recommendations to be included in the Biosolids Road Map.
- **Client Responsibilities** None.

Task 2.6 – Fugitive Emissions BC will scan the biosolids processes utilizing a high-resolution methane imaging camera to evaluate fugitive methane emissions from wastewater processes. Methane imaging will likely become an integral part of WWTP rehabilitation design and operational decision making. Methane imaging will justify improvements to the City of Rocky River WWTP biosolids process by identifying where GHG are emitting to the atmosphere. BC will baseline conditions and provide evidence if equipment needs to be modified or if direct in-kind replacement is appropriate.

- **Assumptions**

- Infrared imagery will be collected at locations accessible by foot.
 - Confined space entry will not be conducted.
 - Imagery by drone will not be conducted.
- Infrared imagery will indicate the location of the fugitive methane emissions.
- Quantification of methane emissions at the RRWWTP will not be conducted in this study.
- **Deliverables.**
 - Results of the imagery to be included in the Biosolids Road Map.
- **Client Responsibilities** None.

Task 2.7 – Conversion to Class A Biosolids BC will evaluate the upgrades and modifications needed at the RRWWTP to convert the biosolids produced at the plant from Class B to Class A.

- **Assumptions**
 - RRWWTP is currently producing Class B Biosolids.
 - Three total alternatives will be considered that may include:
 - Compositing
 - TPAD
 - Conversion to a Thermal Hydrolysis Process (THP).
- **Deliverables.**
 - Alternatives and recommendations to be included in the Biosolids Road Map.
- **Client Responsibilities** None.

Phase 3// Alternatives Screening and Evaluation

BC will develop NPV evaluations on the preferred biosolids improvement strategies that are eligible for funding and meet City of Rocky River Wastewater Treatment Plant's budget and CIP.

Task 3.1 – Initial Screening Workshop During this workshop, we will review the results of the necessary Digester Improvements, energy recovery improvements, future biosolids process improvements and available funding.

- **Assumptions**
 - The Initial Screening Workshop will be a workshop organized and led by the Consultant.
 - The Consultant's Project Manager, Tony Blanc, and Deputy Project manager, Joe Sicurezza, will attend.
 - Candidate biosolids end-use outlets and biosolids treatment and energy recovery technologies will be screened to determine which candidates advance to the end-to-end alternative evaluation phase. A pass/fail approach will be used for screening.
 - Qualitative screening criteria will be developed with Client staff for end-to-end technologies and biosolids end-use outlets; this will be used during the End-to-End Alternative Selection Workshop. Criteria may include:
 - O&M impacts
 - Public impacts (noise/odor/visual/truck traffic)
 - Financial incentives (available grants, loans, tax credits, etc.)
- **Deliverables**
 - Initial Screening Workshop agenda and minutes
 - Proposed qualitative screening scoring approach

- **Client Responsibilities**
 - Initial Screening Workshop participation.

Task 3.2 – End-to-End Alternative Scenarios Development and Evaluation BC will develop end-to-end alternatives by matching up the screened biosolids end-use outlets, biosolids treatment technologies, and energy recovery technologies. By employing this holistic end-to-end approach, we increase our understanding of how each alternative impacts the facility instead of limiting our field of vision to only individual unit processes. Additionally, solutions are developed with the goal of identifying a continuous, integrated and energy optimized biosolids treatment and beneficial use process. The SWEET model will evaluate the end-to-end alternatives, and those that align with Client objectives and priorities will then be assessed using a NPV evaluation. Alternative evaluation results will be presented at the End-to-End Alternative Selection Workshop and summarized in the final Biosolids Master Plan.

- **Assumptions**
 - The Consultant will model up to five end-to-end alternative scenarios using the SWEET model
 - Costs included in NPV evaluations are provided to support selection of alternatives and will not be used as a basis for project budget planning.
- **Deliverables** None.
- **Client Responsibilities** None.

Task 3.3 Project Delivery Alternatives BC will complete an evaluation of available project delivery methods and present the various options to the City. The study will weigh the benefits and risks to the project, impacts on schedule, cost and the effects on securing assistance through funding programs.

- **Assumptions**
 - Alternative approaches to be presented as follows.
 - **Equipment Pre-procurement and Pre-selection**
 - **Alternate project delivery methods**
 - Design-Build
 - Multiple Design and/or Construction Packages
- **Deliverables**
 - Alternatives and recommendations to be included in the Biosolids Road Map.
- **Client Responsibilities** None.

Task 3.4 –Alternative Selection Workshops A series of Alternative Selection Workshop will be held to review the results of the study. This will include SWEET modeling, NPV evaluation, technology alternatives, capital improvement project delivery methods, funding and permitting. One workshop will be held for each subject evaluated in Phases Two and Three. The workshops will take place over a span of **a week (City to confirm)**. Technical advisors from the Consultant will be available to assist in workshop facilitation.

Following the workshops, BC will apply a final screening process using qualitative criteria to select the alternative that aligns with Client's objectives and priorities.

- **Assumptions**
 - The following Alternative Selection Workshops will be organized and led by BC
 1. Digesters and Related Equipment
 2. Biosolids Handling Equipment
 3. Greenhouse Gas Reductions

4. Renewable Energy Alternatives and Operational Strategies
 5. Project Delivery Methods
 6. Funding Potentiality, Cost Analysis and Schedule Requirements
 - The Consultant's Project Manager, Tony Blanc, and Deputy Project Manager, Joe Sicurezza, and technical advisors will attend.
- **Deliverables** Alternative Selection Workshops agenda, minutes and materials. All workshop materials to be appended to the Biosolids Road Map.
 - **Client Responsibilities** Alternative Selection Workshop participation.

Phase 4// Biosolids Road Map At the conclusion of Phase 3, technologies will have been selected to produce biosolids products cost-effectively, and in alignment and support of a flexible biosolids management approach. Phase 4 will take that information and develop a Road Map of how to cost-effectively implement the new biosolids strategy. BC will complete a Capital Cost Plan for the improvements recommended under this study. After review and acceptance from the City, BC will then update the City's current CIP with the approved CIP for the Biosolids process improvements.

- **Assumptions**
 - BC will update existing CIP with findings of this study only.
 - Cost estimates will be conducted assume ACE Class IV estimates.
- **Deliverables**
 - Draft Biosolids Road Map
 - Final Biosolids Road Map
 - Update to existing Long Term CIP.
- **Client Responsibilities**
 - Provide existing Long term Capital Improvement Plan.
 - Review Draft Biosolids Master Plan and provide comments.

Phase 5// Project Management and Administration The Consultant will provide project management, administration, and coordination efforts between the Client, Consultant's subconsultants, and Consultant's own staff to plan and execute the project, including the following:

- Plan and coordinate resources for the project
- Maintain project schedules
- Prepare and maintain project Health and Safety plan for Consultant's staff
- Prepare monthly project-level invoices and progress reports documenting work completed and work anticipated during the subsequent period using Consultant's standard format
- Provide overall contract management of project and subconsultants
- Quality reviews of engineering evaluations.

COMPENSATION

Compensation for this project will be lump sum \$103,400. Compensation by task is summarized in the table below.

Task	Phase Description	Total Effort
100	Project Conditions & Requirements	
001	Kickoff Workshop	
002	Existing and Future Conditions Eval	
003	Baseline Cost & Energy Profile	
200	Market Analysis and Technology Evaluation	
001	End Use Market Analysis	
002	Biosolids Process Evaluation	
003	Energy Recovery Evaluation	
300	Alternatives Screening and Evaluation	
001	Initial Screening Workshop	
002	Alternatives Development	
003	Alternative Selection Workshop	
400	Biosolids Road Map	
001	Implementation Plan	
002	Master Plan Development	
500	Project Management & Administration	
001	Project Management and Administration	
002	Coordination Meetings	
003	QA/QC	
GRAND TOTAL		

GENERAL TERMS AND CONDITIONS

Brown and Caldwell’s services shall be governed by the Master Agreement dated XXXX, together with this Project and any Exhibits attached hereto.

BROWN AND CALDWELL

City of Rocky River Wastewater Treatment
Plant

Signature _____

Signature _____

Title Vice President

Title _____

Date _____

Date _____

Signature _____

Title _____

Date _____

DRAFT