

MEMORANDUM OF AGREEMENT

TO OBTAIN A FEASIBILITY STUDY FOR A MID-MICHIGAN REGIONAL LIME CALCINER

This Memorandum of Agreement (“Agreement”) is between the Tri-County Regional Planning Commission, City of Ann Arbor, City of Jackson, Lansing Board of Water & Light, East Lansing Meridian Water & Sewer Authority, Plainfield Charter Township, City of Owosso, City of Mt. Pleasant, City of Howell, Marion-Howell-Oceola-Genoa Sewer & Water Utilities, and City of Fenton (collectively referred to as the “Parties”). Additionally, the City of Ann Arbor, Lansing Board of Water & Light, East Lansing Meridian Water & Sewer Authority, Plainfield Charter Township, City of Owosso, City of Mt. Pleasant, City of Howell, Marion-Howell-Oceola-Genoa Sewer & Water Utilities, and City of Fenton are the participating entities currently utilizing lime and generating lime sludge (collectively referred to as the “Municipal Parties”).

I. Purpose

It is the purpose of this Memorandum of Agreement (the “Agreement”) to set forth the responsibilities of the Parties, including cost sharing, to obtain a feasibility study for a Mid-Michigan Regional Lime Calciner as more particularly described below. Local public agencies and communities believe there are substantial benefits that can be derived by exploring the potential for building a lime calciner in the mid-Michigan area. A facility of this nature would assist local water utilities in the disposal of lime sludge in a reliable, effective, and cost-efficient manner, and allow for the continual recycling and reuse of lime for softening with a higher quality of supply. The Parties wish to obtain a Mid-Michigan Regional Lime Calciner Feasibility Study (the “Study”) to help determine the feasibility of building a regional lime calciner facility for the Parties.

II. Background

In 2014, several water providers in the mid-Michigan area came together to address issues with chemical supply and residual disposal surrounding their quick lime water softening processes. The participating entities were receiving highly varied qualities of quick lime and experiencing inconsistent byproduct disposal markets. The group was concerned with security, competitive bids, cradle-to-grave product management, and potential regulatory changes related to quick lime supply and residual disposal.

To address these concerns, the group began discussions of the creation of a regional lime calciner to convert the residuals back into usable quick lime. Due to a variety of factors, efforts were paused by the group in 2015. In 2022, the Tri-County Regional Planning Commission hosted the Greater Lansing Regional Groundwater Summit, which reignited conversations surrounding the need to address access to chemical supply and residual disposal, especially in a post-pandemic economic environment. The group has continued to meet and discuss the costs and benefits of creating a regional lime kiln. These discussions have led the Parties to agree to support and facilitate the process of developing a feasibility study for a lime calciner facility and discuss the next steps for the potential construction of the facility.

NOW THEREFORE, in consideration of the promises and mutual covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree to work collaboratively to obtain the Study in accordance with the following terms.

III. General Provisions

A. Term

This Agreement shall commence retroactively on the effective date of April 1, 2024, and remain in effect until August 29, 2025, unless terminated earlier as provided for in this Agreement.

B. Tasks

1. Mid-Michigan Regional Lime Calciner Feasibility Study

a. Scope of Work

The Parties agree to work together to obtain a Study which will address the following criteria as detailed in the scope of services included in Appendix B:

- Identify the best type of kiln for mid-Michigan
- Determine potential site locations and transportation options
- Conduct a financial analysis and options for ownership
- Conduct an environmental and economic analysis

b. Contracting Services

1. Tri-County Regional Planning Commission Contracting

Tri-County Regional Planning Commission will provide administrative support services as it pertains to the Study as needed by the Municipal Parties. These duties include the coordination of meetings and the management of the consultant contract. If additional services are needed, this agreement can be revised by the written agreement of all Parties to include the new scope and budget. Tri-County Regional Planning Commission will act as fiduciary agent for the acquisition of the Study. Tri-County Regional Planning Commission will enter into an agreement with a consultant for professional services to complete the Study, as defined in Appendix B. Tri-County Regional Planning Commission is responsible for the management of the consultant to complete the Study. Upon the hiring of a consultant, Tri-County Regional Planning Commission shall administer the Study, process consultant invoices, ensure the agreed-upon scope of work is adhered to, and distribute consultant-provided project deliverables in a mutually agreeable format.

2. Cost Sharing

Tri-County Regional Planning Commission will pay all costs for the consultant up to \$675,000. Tri-County Regional Planning Commission will use \$75,000 of their Michigan Department of Environment, Great Lakes, and Energy's (Michigan EGLE) Affordability and Planning Grant award to support project management of the Study and administrative services for the Municipal Parties. Tri-County Regional Planning Commission will be solely responsible for all Michigan EGLE's Affordability and Planning Grant fulfillment responsibilities, including project and financial progress reports.

The Municipal Parties will pay additional costs for the consultant should they exceed the set budget of \$675,000 based on their percentage of lime utilized and lime sludge generated relative to the total of all Municipal Parties as set

forth in Appendix A, subject to any internal approvals required by each Municipal Party and appropriation of funds by each Municipal Party. Additional costs related to the Study will be issued by Tri-County Regional Planning Commission to each Municipal Party in the form of an invoice to be paid in full within thirty (30) days of receipt of invoice in accordance with the cost distribution system set forth in Appendix A. It is understood that funds paid shall be used only for the consultant services needed to fulfill the agreed-upon scope of work for the Study identified in Appendix B and are not to exceed the total amount as defined in the approved resolutions. The funds shall be accounted for in Tri-County Regional Planning Commission's accounting system for the purpose of managing a consultant and the completion of the Study.

c. Data Requests

The Parties shall supply all data requested by the consultant for the completion of the Study. Any Party data that is compiled as part of the analysis shall be included by the consultant as an appendix to the final report.

d. Participation Requirements

The Parties are expected to attend the Study kickoff and Study finalization meetings, regularly attend progress and planning meetings, keep apprised of Study updates and provide feedback when appropriate on information provided by the managing entity/project fiduciary and/or hired consultant, review and provide feedback on draft and final reports of the Study, and support additional Study needs as requested.

e. Meeting Attendance

Due to the nature of the Study and the necessity for cooperation between all members, if a Party fails to attend three consecutive meetings, the other Parties shall notify that Party and request appropriate action to ensure adequate representation at meetings.

2. Project Completion and Implementation

Upon the completion of the Study, the Parties will continue to meet as necessary to pursue the potential implementation of the Study recommendations, contingent on the feasibility of the Study findings. In the event additional administrative services from Tri-County are needed, an amendment to this Agreement can be made, as defined in Section III - B - 1 - b - 1.

IV. Resolution

Each Municipal Party agrees to enter this Agreement by the passage of a formal resolution, or other exercise of authority that includes an approval to commit to the payment of its portion of the cost share as described in Appendix A. The persons signing this Agreement on behalf of the Parties hereto certify by their signatures that they are duly authorized to sign this Agreement on behalf of said Parties and that this Agreement has been authorized by said Parties.

V. Modification of Agreement

This Agreement contains the entire understanding between the Parties and supersedes all previous agreements, if any, between the Parties concerning the same or substantially similar subject matter. Modifications, amendments, extensions, or waivers of any provisions of this

Agreement may only be made by written amendment signed by all Parties.

VI. Termination of Agreement

Any Party may terminate its participation in this Agreement effective upon a ninety (90) day written notice to all Parties. Nevertheless, all Municipal Parties will be held accountable for and required to fulfill all financial obligations that have or will arise throughout the duration of the Study, in accordance with Appendix A, regardless of the point at which a Party may terminate its participation in this Agreement.

VII. Governing Law

This Agreement shall be governed by, and construed and interpreted in accordance with, the laws of the State of Michigan.

VIII. Assignment

No Party shall subcontract or assign any portion of any right or obligation under this Agreement without prior written consent from the other Parties. Nothing in this Agreement is intended or shall be construed to confer any rights or remedies on any person or other entity, other than the Parties and their respective permitted successors and assigns.

IX. Severability

If any part of this Agreement is declared by any Court having jurisdiction to be invalid, unconstitutional, or beyond the authority of any party to enter into or carry out, such part shall be deemed deleted and shall not affect the validity of the remainder of this Agreement, which shall continue in full force and effect. If the removal of such provision would result in the illegality and/or unenforceability of this Agreement, this Agreement shall terminate as of the date in which the provision was found invalid.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

Lansing Board of Water & Light

By: _____

Name: _____

Title: _____

Date: _____

**Marion-Howell-Oceola-Genoa (MHOG)
Sewer & Water Utilities**

By: _____

Name: _____

Title: _____

Date: _____

City of Jackson

By: _____

Name: _____

Title: _____

Date: _____

**East Lansing Meridian Water & Sewer
Authority**

By: _____

Name: _____

Title: _____

Date: _____

Plainfield Charter Township

By: _____

Name: _____

Title: _____

Date: _____

City of Owosso

By: _____

Name: _____

Title: _____

Date: _____

City of Mount Pleasant

By: _____

Name: _____

Title: _____

Date: _____

City of Howell

By: _____

Name: _____

Title: _____

Date: _____

City of Ann Arbor

By: _____

Name: _____

Title: _____

Date: _____

City of Fenton

By: _____

Name: _____

Title: _____

Date: _____

Tri-County Regional Planning Commission

By: _____

Name: Jim Snell

Title: Executive Director

Date: _____

Appendix A: Mid-Michigan Regional Lime Calciner Feasibility Study Cost Distribution System

Below is the breakdown of the percentage costs of the Municipal Parties for all future expenses. This cost distribution system is based on each Party's percentage of lime utilized and lime sludge generated relative to the total of all Parties for 2023.

	Percentage Based on Lime Utilized and Lime Sludge Generated	Hypothetical Expenditure Amounts		
		\$10,000	\$75,000	\$250,000
<i>Lansing Board of Water & Light</i>	46.76%	\$4,676	\$35,070	\$116,900
<i>City of Ann Arbor</i>	15.21%	\$1,521	\$11,407	\$38,025
<i>City of Jackson</i>	14.36%	\$1,436	\$10,770	\$35,900
<i>East Lansing Meridian Water & Sewer Authority</i>	8.98%	\$898	\$6,735	\$22,450
<i>Plainfield Charter Township</i>	3.78%	\$378	\$2,835	\$9,450
<i>City of Owosso</i>	3.19%	\$319	\$2,393	\$7,975
<i>City of Mount Pleasant</i>	2.84%	\$284	\$2,130	\$7,100
<i>City of Howell</i>	1.66%	\$166	\$1,245	\$4,150
<i>Marion-Howell- Oceola-Genoa (MHOG) Sewer & Water Utilities</i>	1.65%	\$165	\$1,237	\$4,125
<i>City of Fenton</i>	1.57%	\$157	\$1,178	\$3,925

Appendix B: Mid-Michigan Regional Lime Calciner Feasibility Study Scope of Work

Below is the detailed scope of work listed out in the Mid-Michigan Regional Lime Calciner Feasibility Study Request for Proposals.

1. Financial Analysis
 - a. The Consultant shall perform a complete engineering financial analysis on the initial construction cost as well as recurring costs including costs for capital, operations and maintenance, labor, energy (fuel, power, etc.), sludge transportation and loading, lime transportation and loading, lime sales, waste disposal, permitting, and any other pertinent cost.
 - b. The financial analysis shall evaluate the annual and lifecycle cost for each participating entity.
 - c. Evaluate the return-on-investment timeline.
2. Funding
 - a. The study should evaluate potential funding options for constructing the calciner plant.
3. Water Chemistry and Treatment Analysis
 - a. The Consultant shall take samples and perform a chemical analysis of each entity's softening residual.
 - b. The study shall evaluate the impact of the use of metal salts and other treatment chemicals on the ability to calcine residuals and on the quality of calcined lime.
 - c. Consultant shall verify all recommendations are in alignment with approved options by the Michigan Department of Environment, Great Lakes, and Energy.
 - d. Recommendations to the water treatment process of each participating system shall be made as necessary to conform to the chemical requirements of the calciner. The Consultant should also note if any entity would be required to change their treatment process or be excluded from the project based on unfavorable water chemistry.
4. Mass and Energy Balance
 - a. Conduct a mass balance for each entity, based on their individual water chemistry and water production. Calculate the mass balance for the entire calciner with consideration to blending of sludge to mitigate unfavorable water chemistry. Provide a process flow diagram.
 - b. Calculate the energy (and cost) per ton of lime produced.
5. Lime and Residual Transport
 - a. Evaluate alternatives for lime residual transportation including water content, trucking dry, trucking wet, pumping, loading facilities at water treatment plants, and unloading facilities at lime kiln site. Evaluation should include logistics as well as financials. Consideration should be given to seasonal variability in production. Michigan weather should also be considered as it applies to the handling and transport of residuals and lime.
 - b. Evaluate alternatives for quick lime transportation including trucking options and loading facilities at the lime kiln site.
 - c. Perform cost/benefit analysis of owning/operating trucks versus contracting with a hauling company.

- d. Evaluate feasible/beneficial radius of residuals and lime transport.
6. Lime and Residual Storage Logistics
 - a. Recommend any on-site storage and handling modifications needed at each water treatment plant for both residuals and lime.
 - b. Recommend on-site storage facilities needed for residuals and lime at the calciner facility.
 - c. Consideration should be given to seasonal variability in production.
 - d. Michigan weather should also be considered as it applies to the storage of residuals and lime.
 7. Site Location
 - a. In conjunction with transportation and storage evaluation, evaluate potential site locations. Evaluation shall include cost/benefit analysis as well as entities within the feasible radius of the location.
 - b. Site location evaluation shall include consideration for fuel source, surrounding community, zoning requirements, permitting, etc.
 8. Kiln Type and Fuel Alternatives
 - a. Evaluate different types of kilns and recommend the best alternative.
 - b. Evaluate fuel options for the kiln and make recommendations.
 - c. Evaluate methods of production of multiple pellet sizes.
 - d. Optimize the size and number of kilns for cost, reliability, and efficiency with anticipated seasonal variability in production rates and to serve feasible entities.
 9. Owner/Operator Alternatives
 - a. Evaluate potential alternatives for ownership and operation of the calciner facility. Possible options include an Authority, a single entity as owner/operator, and a private company. Propose other options if identified. Identify driving factors and variations in capital/operations and maintenance costs dependent on owner/operator.
 - b. Develop a sample collaborative agreement for shared ownership of all participating entities with regard to operations and shared services.
 10. Kiln Operation
 - a. The Consultant shall evaluate continuous vs. batch lime production, necessary planned outages, seasonal fluctuations in residual production and lime demand, and kiln efficiency and turndown in relation to these factors.
 - b. Identify additional sources of lime for emergency purposes and maintenance needs.
 11. Environmental Impacts
 - a. Quantify CO₂ emissions and options for beneficial reuse of CO₂.
 - b. Determine air permitting requirements. Determine how current requirements impact the process and the cost. Evaluate how expected regulatory changes would impact the process and cost.
 - c. Calculate carbon footprint and compare with the existing lime process. Perform this analysis for various fuel sources.

- d. Address other potential environmental impacts related to the calcining process, site location, transport of residual and lime, etc.
- e. Identify and highlight other sustainability benefits through the use of the lime kiln facility.

12. Economic Analysis

- a. Quantify workforce development needs of facility construction, operations and maintenance, and other related labor demands, and creation of high-wage and/or high-skill jobs.

13. Regulatory and Financial Risk Assessment

- a. Quantify the regulatory and financial risk that would be mitigated by eliminating the need for residual disposal.
- b. Identify new regulatory and financial risks that would be created by calcining lime and transporting it to participating entities.

14. Kiln Byproducts

- a. The calcining process will generate liquid and gas waste streams. The Consultant shall characterize and quantify these streams, evaluate disposal options (including regulatory requirements), and evaluate potential reuse alternatives, including business opportunities.
- b. Evaluate potential markets for any byproducts of the process including, but not limited to, magnesium, carbon dioxide, calcium carbonate slurry or cake, heat, and dust. The report will include the available markets and the cost-benefit basis to implement the various by-product recoveries.

15. Pilot Study

- a. If the lime kiln project proves feasible, the Consultant shall evaluate the need for a pilot study.
- b. If a pilot study is recommended, the Consultant shall provide pilot study options (with preferences).

16. Calcined Lime Purity

- a. Lime calcined from softening residuals is typically of a greater purity than quick lime calcined from limestone. Quantify how this difference in purity impacts the financials for water plant operation for each entity.
- b. Address whether National Sanitation Foundation (NSF) certification(s) or other certifications are necessary for using calcined lime. Also, address whether this is different if excess lime is being sold. Quantify costs of certification.

17. Excess Lime Sales Markets

- a. The softening process creates more calcium carbonate residual than the amount of lime added to the process. Quantify the amount of excess calcined lime based on each entity's water chemistry.
- b. Investigate markets for the sale of this excess lime, considering the amount that will theoretically be available.

18. Stored Residuals

- a. The Consultant shall evaluate the use of residuals that have been stored in lagoons (or other facilities) in the lime kiln. The Consultant will quantify the amount of stored residual available and recommend if/when/how to calcine this material.

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