



Jacobs



Request for Proposals for

Odor Control System for Solids Handling Building Truck Loading

City of Ann Arbor, Michigan

Submission Date 12/4/2025 **RFP No.** #25-55



“Our team is the best fit for these services because we have local and national experience to address the variety of design and improvement projects, we have flexibility to adjust team members to your changing needs, our team members have worked collaboratively with Ann Arbor on prior projects, and the staff who will perform the on-site as needed services are local with the majority of support either local or within a short driving distance away.”

Robert Czachorski, PE, Principal at OHM Advisors



PRIME NAME Orchard, Hiltz & McCliment, Inc. dba OHM Advisors (Corporation, Michigan)
CONTRACT OFFICE 34000 Plymouth Road, Livonia, Michigan 48150

Cover Letter

DEAR MS. WARROW

The City of Ann Arbor (City) Water Resource Recovery Facility (WRRF) desires to be a good neighbor in the community and improve the working atmosphere in the Solids Handling Building (SHB) truck loading area during the discharge of cake into open gravel haulers for landfill disposal. The City is committed to the environment and is looking to minimize the impact of nuisance odors on the community surrounding the WRRF. Incorporating energy efficient equipment and processes in managing the odors is desirable.

The City desires to retain a highly qualified team to provide design services to implement the findings from the Area Odor Study completed in 2020. We believe that the key factors for a successful team include:

- Technical expertise to address the unique features of the odor source from the truck loading area during the dynamic process of discharging dewatered biosolids cake into trucks for disposal.
- Familiarity with Ann Arbor's WRRF's heating, ventilation, dewatering, and truck loading processes.
- Knowledgeable of Ann Arbor's operations to incorporate operational needs and limitations into the design minimizing disruptions during the construction phase.
- Project performed by local staff with the ability to respond to the needs of the City quickly.

OHM Advisors has teamed with **Jacobs** for this opportunity. Our team is **the best fit** for these services because we have **experience and expertise** capturing the foul air and removing odors via different technologies including activated carbon, biofilters, and scrubbers; we have a team with **deep knowledge** of the truck loading process and odor study; our team members have worked **collaboratively** with Ann Arbor on prior projects, and the staff who will perform the on-site services are **local** with the majority of support either local or within a short driving distance away.

We are excited at the prospect to continue working with the City of Ann Arbor and would welcome the opportunity to meet with you to discuss our qualifications and approach further.

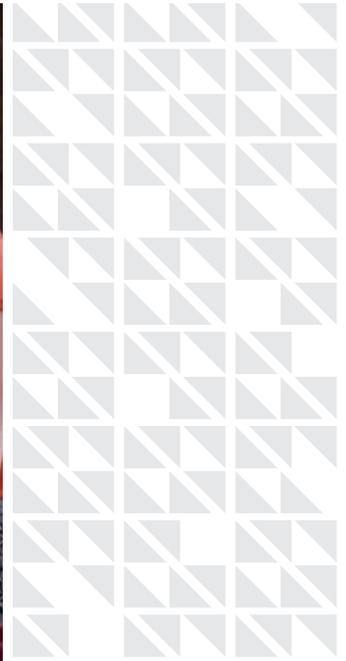
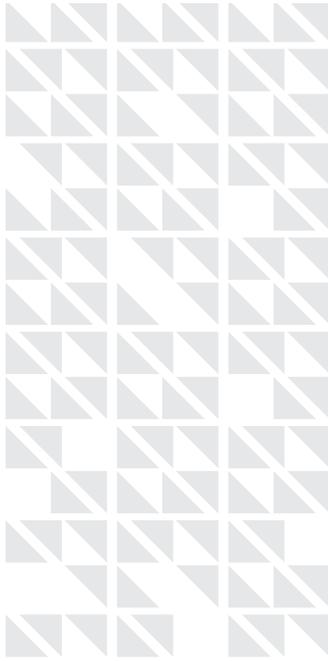


Jennifer Drinan, PE
Senior Project Manager, OHM Advisors

Table of Contents

PROPOSAL SECTIONS

A. Professional Qualifications	4
B. Past Involvement with Similar Projects	24
C. Proposed Work Plan	34
D. Fee Proposal	—
E. Authorized Negotiator	51
F. Attachments	53



Professional Qualifications

SECTION A.

This section outlines the qualifications of the proposed team, including structure and roles. It details key personnel resumes and relevant service experience to demonstrate the team's capability to successfully deliver the project.

ADVANCING COMMUNITIES

Since our founding in 1962, we've stayed true to our roots—our people, our values and our mission—as we cultivate innovative solutions for the future. It's where we start in every client community we partner with, working together today to make tomorrow better.

Who We Are

FIRM OVERVIEW

We are the community advancement firm. Our mission-driven team works collaboratively across multiple service areas—including architecture, engineering, planning, urban design and landscape architecture, surveying, construction engineering and more—to fulfill our mission of advancing communities and creating lasting, meaningful impact for those we serve.

Our Mission

Everything we do is grounded in the need to help communities solve problems and make places better for people. Not just today, but well into the future. Our singular forward-thinking focus on putting the needs of people first in our solutions drives our thinking and innovation from conception through completion—and guides us in everything we do.

Our Mindset

We bring together diverse experts to create innovative, people-focused solutions shaped by each client's unique vision. By collaborating closely and thinking beyond expectations, we turn ideas into lasting impact for communities today and tomorrow.

27

LOCATIONS
THROUGHOUT
MI, IN, KY, OH,
TN, & FL

10

COLLABORATIVE
DISCIPLINES

01

MISSION OF
ADVANCING
COMMUNITIES.





What We Do

DISCIPLINES & SERVICES

At OHM Advisors, we believe innovation flourishes when experts from diverse disciplines unite around a shared vision. With over 800 professionals across multiple offices, we bring deep expertise and a strong commitment to advancing the communities we serve. Our capacity to perform is backed by responsive, reliable service, a collaborative approach, and a passion for impactful results. We maintain rigorous quality control through regular interdisciplinary coordination, clear communication, and shared project understanding.

Federal ID No.	38-1691323
Firm Age	1962 (63 Years)
Entity Type	Corporation (MI)
Authorized Negotiator	Robert Czachorski
Contract Office	Livonia, Michigan

DISCIPLINES & PROFESSIONALS

Water & Environmental Resources	58
Municipal Engineering	189
Construction Engineering	184
Transportation	72
MEP Engineering	21
Architecture	60
Planning	25
GIS & Innovative Technologies	15
Surveying	65
Landscape Arch & Urban Design	24

OTHER KEY PROFESSIONALS

Support Staff	103
Structural & Geotech Engineering	7
Technicians & Analysts	15
Licensed Engineers	289
Licensed Architects	56
Professional Surveyors	17
CADD Technicians	26
Drone Operators	20

Our team works closely with clients to align direction with goals, delivering accurate cost estimates and dependable schedules using regional data, proactive assessments, and innovative planning strategies.

STRONGER TOGETHER.

We build strong, strategic partnerships with sub-consultants who enhance our capabilities and share our mission. These collaborations provide seamless coordination, technical excellence, and innovative solutions—delivering comprehensive, client-focused outcomes through the strength of a unified, interdisciplinary team.

Our Partners

WELCOME TO THE TEAM

Jacobs OHM Advisors values collaboration to deliver exceptional results. While our team provides broad expertise, some specialized services require trusted partners. For this project, we've teamed with Jacobs—an industry leader in odor and corrosion control modeling. This partnership strengthens our ability to manage odor and air emissions, implement safety programs to prevent chemical releases, and ensure air quality compliance. By combining OHM Advisors' local knowledge and project management with Jacobs' technical capabilities, we deliver a tailored, high-quality solution for the City.

A 51050 Wilshire Drive, Suite 155, Troy, MI 48084 (Local Office)

T 1 (248) 839-0900 [w jacobs.com](http://jacobs.com)



FK Engineering Associates (FKE), is a full service civil design and geotechnical engineering firm specializing in innovative solutions to complex infrastructure engineering challenges. FKE offers services to local and state government, other engineering design firms, industry, and contractors. Our team of qualified and experienced professionals strive to develop unique and cost effective solutions for our clients' varied infrastructure needs. Our engineers have lead underground engineering investigations and design for many large public works and industrial projects locally and across the country.

A 30425 Stephenson Hwy, Madison Heights, MI 48071 (Local Office)

T 1 (248) 817-2946 [w fkengineering.com](http://fkengineering.com)



A.2 Our Partners

OUR PARTNER'S **CONTINUED...**

OHM Advisors and Jacobs are continuing to team together for the City's SHB truck loading odor control system. Our team is uniquely qualified for this work because we bring the following combination of abilities and knowledge to this project:

- Our Project Manger Jennifer Drinan is intimately knowledgable about the City's truck loading system from Residual Handling Improvement Project.
- Team with national expertise in WRRF odor issues.
- Team with local presence for assessing the truck loading system mechanical and electrical requirements.
- Access to the plant model being developed by Jacobs to address changes in the facility's biological operating system.
- Our team has a local presence including our Project Manager living in Ann Arbor and our local Ann Arbor office with staff available for construction services if desired.
- We are currently working on the City's Sanitary Sewer Collection System Comprehensive Plan to address the potential growth in the City. We are aware of the changes pending and will keep future expansion in mind throughout this design.
- Our extensive work with the City of Ann Arbor on a variety of engineering engagements so we know what the City expects and are familiar with the City's public engagement process and their public engagement toolkit.

Several key members of our project team were identified in the OHM Advisors and Jacobs As-Needed Engineering Services proposal. Resumes for key employees for this Odor Control project are included on pages 10-23. The key team members are:

Jennifer Drinan, PE, Project Manager: Jennifer was the on-site project manager for the construction and commissioning of the Residuals Handling Improvements project. She is very knowledgeable about the storage, thickening, and dewatering systems and the City's operations. Jennifer will provide coordination between the City and Jacobs during this study and evaluation project.

Allen Gelderloos, PE, QAQC Manager: Allen was the process design leader for the Ann Arbor WRRF Facility Renovation project design as well as the task manager on the Centrifuge Centrate Treatment Evaluation and is currently working with the City on the development of the process simulation model to aid the City with operating decisions.

Bill Desing, PE, Odor/Corrosion Control

Technology Lead: As leader of Jacobs' Global Odor Control and Air Quality Management Practice, Bill has served as senior reviewer or project manager on more than 50 wastewater odor projects. He has authored several publications and presentations regarding odor issues, including the upcoming revised WEF Odor Control Manual of Practice.

Sean Tabacsko, Mechanical Engineer: Sean is the lead mechanical engineer and has extensive experience with ventilation systems for complex chemical and wastewater buildings. His experience with both odor control and heating and ventilation system is perfect for this project to unite the two systems in the Truck Loading area to provide an economical and effective solution.

Chris Easter, Technical Advisor: Although semi-retired from Jacobs, Chris will use his experience from the Area Odor Study to provide expert insights into the final design of the odor control system.

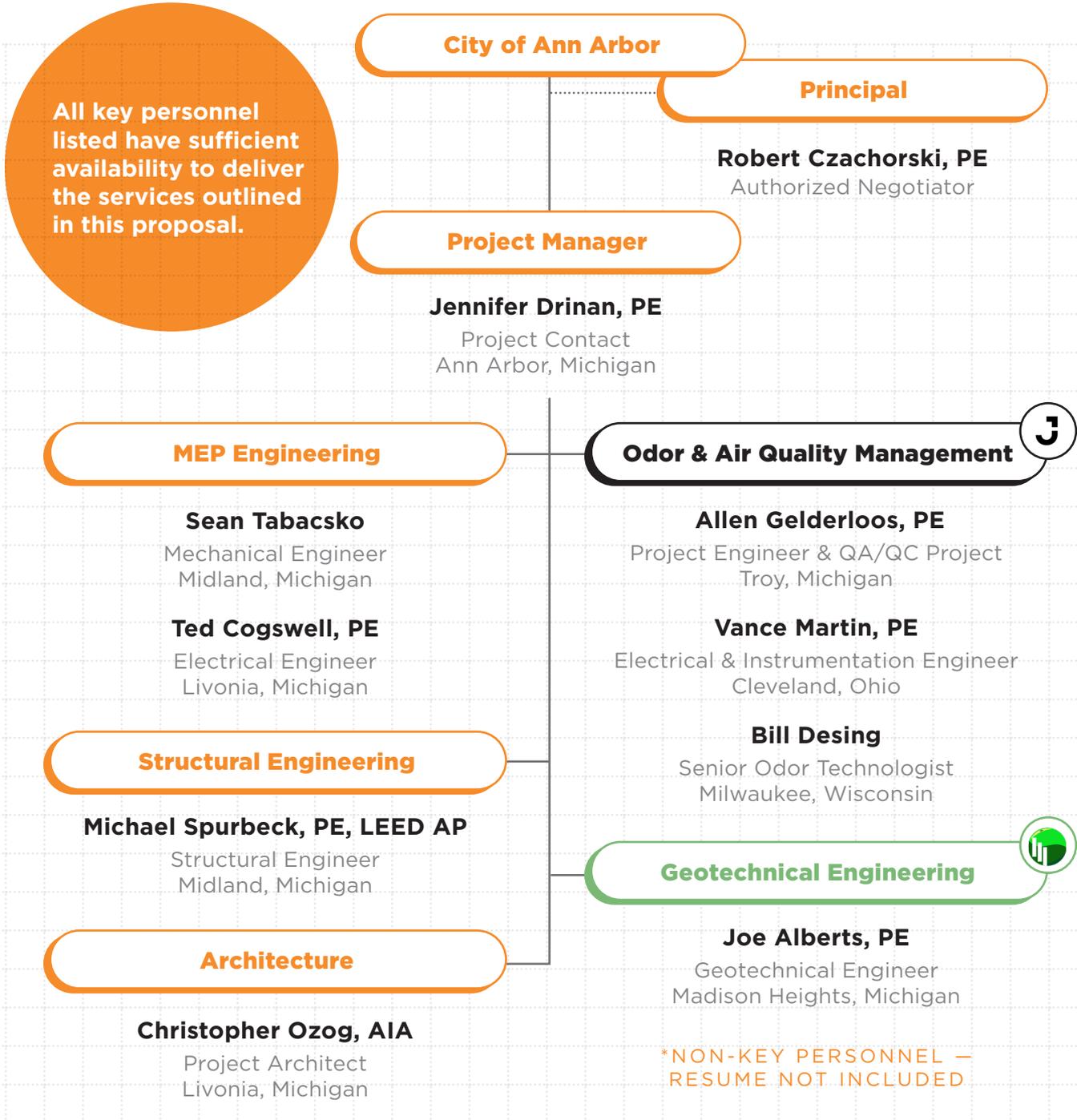


Team Structure Chart

OUR PEOPLE, YOUR TEAM

OHM Advisors is committed to providing Ann Arbor with the best team for this contract. We carefully considered experience and availability to ensure the right staff.

All key personnel listed have sufficient availability to deliver the services outlined in this proposal.



WE THINK DIFFERENTLY.

We believe extraordinary things happen when experts from diverse specialties come together with a shared vision for the future. The result? Broader perspectives. Smarter solutions. And boundless creativity that drives meaningful impact for our clients.

Key Personnel Resumes

OUR PEOPLE, YOUR TEAM.

Our team is more than a collection of credentials—we're a collaborative force of odor control and ventilation specialists who bring vision, creativity, and technical excellence to every project. The following resumes highlight the individuals who will lead and support your work, showcasing not only their qualifications but also their experience on projects that directly align with those featured in our portfolio. These connections reflect our deep understanding of your needs and our proven ability to deliver impactful results. We invite you to explore how each team member's expertise contributes to our mission of advancing communities through thoughtful, integrated design and engineering solutions.

 Look for this icon throughout the key personnel resumes to identify projects that are also featured in our portfolio. These highlighted projects include in-depth write-ups that offer expanded insights into goals, challenges, solutions, and outcomes—demonstrating the impact of our work, the expertise of the team members who helped bring them to life, and their relevance to your project needs.

800+

EXPERTS STRONG AND COUNTING—FROM DIVERSE BACKGROUNDS, UNITED BY A SHARED MISSION TO USE OUR COMBINED EXPERTISE AND TALENTS TO CONTINUALLY ADVANCE THE COMMUNITIES WE SERVE.





Education	Master of Science in Hydraulics in Civil Engineering, University of Michigan (1996), B.S. in Civil Engineering, University of Michigan (1994)
Registrations	PE: MI: #43827 (1998), OH: #73798(2009)
Expertise	Collection Systems, Innovation, Analytics, Leadership

PROFESSIONAL BIO

Robert has 30 years of experience in consulting with a focus on water resources and a deep expertise in sewer collection systems. Robert is the firm’s Practice Leader for Collection Systems and is a nationally recognized expert in wet weather sewer issues. His focus has been on bringing new technologies to water resource systems. His key accomplishments include:

- **Extensive Collection Systems Experience**
Performed studies and designs for an extremely broad array of clients and projects, including some of the largest and most complicated sewer collection systems in the Country.
- **The Antecedent Moisture Model (AMM)**
Developed a hydrologic model for antecedent moisture impacts on sewer systems. The model has been applied to hundreds of catchments and has optimized wet weather upgrades for dozens of systems.
- **AMM Learning Library & Users Group**
Formed the AMM Learning Library and Users Group after putting the model in the public domain in 2020. The Learning Library contains papers, spreadsheets, videos, and guides for how to use the AMM.
- **H2Ometrics Data Analytics Platform**
Developed cloud-based water and sewer data analytics platform that manages flow and rain data from dozens of systems, comprising thousands of data feeds and billions of data points.

Robert has performed studies and designs for hundreds of municipal utility systems. He has helped these communities gain a better understanding of their systems, improve system performance, and optimize capital upgrades. He is one of the firm’s top Principals and Project Managers. Robert delivers successful projects to clients with high levels of quality and satisfaction through a unique combination of strong technical capabilities, excellent communication skills, and team building that includes the client, consultants, and the public.



Scan the QR Code
Link to AMM Learning Library
FlowPrediction.com

AMM Information
Robert Maintains the AMM Learning Library and founded the AMM Users Group.



RELEVANT PROJECT EXPERIENCE

Ann Arbor Sanitary Sewer Collection System Comprehensive Plan; City of Ann Arbor (Ann Arbor, MI)

Technical Advisor for the Sanitary Sewer Collection System Comprehensive Plan (SSCSCP), which evaluated options for the sewer collection system to handle future growth. The City's comprehensive land use plan projects between 50% and 75% growth in the City over the next 20 years, which will require significant sewer infrastructure upgrades. The project involved flow metering, inflow and infiltration analysis, antecedent moisture modeling, hydraulic modeling in PC-SWMM, alternative evaluation, recommendations and conceptual engineering and cost estimates.

Great Lakes Water Authority (GLWA) CSO Long-Term Corrective Action Plan; Great Lakes Water Authority (GLWA) (Detroit, MI)

Project Manager for OHM Advisors as the civil engineering lead on a team for the development of the CSO Long Term Control Plan (LTCP) for this regional wastewater system serving over 3,000,000 people in the City of Detroit and surrounding suburbs. Robert led the design standards and level of service development, alternatives evaluation, and conceptual engineering. The Antecedent Moisture Model was used for validating the hydrologic model. The final plan focused on system optimization and water quality, resulting in a \$200 million program, which was substantially less expensive than prior recommendations focused on grey infrastructure that would have been unaffordable for the residents of the City of Detroit.

Dearborn Citywide Sewer Study; City of Dearborn (Dearborn, MI)

QA/QC Officer for this citywide hydrologic and hydraulic evaluation of the sanitary, combined, and storm sewers and development of recommendations to successfully mitigate street and basement flooding.

Evergreen-Farmington System Metering, Billing System, & Long-Term Corrective Action Plan; Oakland County Water Resources Commissioner

Robert has performed many projects for this regional sewer system of over 300,000 people and 15 communities. He led the development of a meter-based billing system using 200 flow meters. OHM still processes this flow data today. Robert was the Program Manager for development of the Long-Term Corrective Action Plan, which encompassed \$200 million in capital upgrades, including tunnels, relief sewers, storage facilities and conveyance improvements. These have been implemented and successfully control SSOs. The Antecedent Moisture Model was the basis of the system evaluation and sizing. Robert led the project and consultant team, the project scope and schedule, the program strategies, the technical tasks, and coordinating with the 15 communities and the MDEQ.

Delta Township, Ultium 3 LS, GM PS Modification, Force Main, & EQ Basin, 2021-Current

Principal for team designing the sewer services to serve the new GM Ultium Battery Facility in Delta Township. Providing sewer services for the \$2 billion dollar facility required sewer master planning, a sewer extension to the property, upgrades to an existing pump station, a new pump station, and an equalization basin. The project had an aggressive schedule to meet the needs of the facility and required a multi-disciplinary team to execute and collaborate with a multitude of stakeholders and agencies. As principal in charge of the team, Robert was responsible for assembling and managing the team, overseeing the development of the project approach and scope, and ensuring that the team executed well to meet schedule and delivery expectations.



Education	B.S. in Civil & Environmental Engineering Magna Cum Laude, University of Michigan (1995), B.S. in Business Administration, University of Michigan (1988)
Registrations	PE: MI, #6101046859 (2000)
Expertise	Water Infrastructure Design, Wastewater Treatment Construction, Asset Management

PROFESSIONAL BIO

Jennifer has **25+ years of experience** years of experience in the construction and design of wastewater treatment, water treatment facilities, storm water, and wastewater collection systems and water distribution systems. Her planning, design, and construction experience has provided her with the technical and managerial skills required for complex water and wastewater projects. She has proven success in projects involving multi-disciplined facilities and construction sequencing at existing facilities to provide process continuity during construction. During water and wastewater rehab projects, Jennifer works with plant staff to assess equipment, schedule construction within operational limits, and manage startup, testing, and troubleshooting.

RELEVANT PROJECT EXPERIENCE

Residuals Handling Improvements; City of Ann Arbor (Ann Arbor, MI)*

Lead Resident Project Representative for Residuals Handling Improvements construction services for the City of Ann Arbor, Michigan. The Wastewater Treatment Plant, with a 29.5 MGD design capacity, currently disposes of biosolids through land application or dewatering and landfilling. The project retrofits gravity belt thickening and centrifuge dewatering systems into existing solids facilities, replaces gravity thickener equipment, and converts thickeners to blend tanks. Temporary sludge and cake truck loading facilities enable construction sequencing while plant staff maintain residuals handling. Additional design elements include odor control, polymer systems, conveyance equipment, truck loading stations, HVAC, new boilers, and a 4.8kV unit substation. Responsibilities include supervising resident engineers, coordinating construction with plant operations, reviewing and preparing RFIs, resolving construction issues, and negotiating change orders.

Expansion of Existing Wastewater Treatment; Ypsilanti Community Utilities Authority (YCUA) (Ypsilanti, MI)*

Lead Resident Engineer for the expansion of the existing wastewater treatment from a nominal 29 mgd facility to an average capacity of 46 mgd for the Ypsilanti Community Utilities Authority, Ypsilanti, Michigan. Project included new concrete tanks, mechanical, and electrical systems for the primary, secondary, and tertiary treatment of water, biosolids treatment improvements which required the staging of demolition; construction and start-up of temporary solids dewatering equipment; and the renovation and installation of new thickening, dewatering, truck loading, and incineration systems. The project also included implementation of the plant wide odor control system.

Efficient plant upgrades through collaboration and planning.



RELEVANT PROJECT EXPERIENCE CONTINUED...

Ann Arbor WWTP Tertiary Clearwells Improvements; City of Ann Arbor (Ann Arbor, MI)

Project Manager; Leading the study and design team in the inspection and design of the WWTP Clear Wells. Confined space entries were performed for each of the two clear wells to evaluate the existing condition and identify needed repairs of the structure and equipment. The design team identified that the function of the clear wells changed since the original design intent. The WWTP currently uses UV for disinfection in lieu of chlorine. This allowed the team to re-evaluate the aeration system to focus energy efficient and cost-effective improvements in the clear well and coordinate monitoring of improvements with the existing dissolved oxygen and blower control system. The design also included geotechnical investigations to determine the impact of ground water elevations on the sequence of construction and the impact of the known artesian conditions located at the WWTP site.

Wastewater Treatment Plant Tertiary Filter Improvements; Ypsilanti Community Utilities Authority (YCUA) (Ypsilanti, MI)

Project Manager; Design and construction for the tertiary filters improvement project. The existing 12 west filters, with a design filtering capacity of 5 mgd, were constructed and commissioned as part of the original plant in the early 1980s. This project includes assessment of the existing multi-media filters and backwash system; recommendation of replacement filtering technologies and air-assisted backwashing; replacement of washwater supply pumps right-sized for the new filter systems; integration of VFDs on the washwater pumps to improve flow control and energy savings; associated demolition; provision of air piping and valves, and associated improvements in electrical and instrumentation. The construction phase focused on coordinating with YCUA's operations to minimize disturbances from construction while maintaining YCUA's ability to effectively treat wastewater.

**Completed Prior to OHM Advisors*

Milford Waste Water Treatment Plant Improvements, Village of Milford (Milford, MI)

Construction Manager; The WWTP is a 1 MGD average daily flow with permitted peak flow of 2.65 MGD. The \$9 Million construction improvements to the plant includes: demolition of existing and construction of new spiral mechanical screen, grit vortex, and grit classifier with cyclone; addition of a new 400,000 gallon equalization basin to accommodate both diurnal equalization and the larger storm flows; dry well raw sewage pumping station; additional 400,000 gallon sludge storage tank and associated sludge transfer pumps; replacement to the ferric and polymer chemical treatment systems; and upgrades to the SCADA plant operating system. Project specific challenges related to deep excavations with shoring, dewatering without impacts to nearby protected wetlands, and coordination of construction activities with plant staff and contractors to allow for continued plant operations during the project.

Wastewater System Improvements; City of Harrisville (Harrisville, MI)

Project Manager for alternatives evaluation of Harrisville's two 500 gpm pump stations and lagoon wastewater treatment system. The existing pump stations, originally constructed in the 1980s, consisted of the canned wetwell and drywell system which presented confined space entry challenges for the City's staff of two DPW workers. OHM Advisors' cost/benefit analysis took into account the need to improve safe access for operations and maintenance activities resulted in the proposed conversion of the wetwell to a submersible pump station with an above grade valve and meter building. The new building also houses the electrical and pump control panels. A new radio telemetry system and an onsite natural gas generator were included in the project to improve reliability and efficiency of maintenance. Because of the high groundwater table, reusing the existing wetwell and bypass pumping was deemed more cost-effective than dewatering for installing a new wetwell.



Education

B.S. in Mechanical Engineering, Michigan Technological University (2004)

Expertise

Mechanical Design, HVAC Systems, Energy Efficiency, Project Coordination & Specifications, Construction Observation, Plumbing Systems, Fire Protection

PROFESSIONAL BIO

Sean oversees technical aspects of mechanical engineering projects, including design, system analysis, code research, technical calculations, drawing preparation, specifications, field work, shop drawings, and coordination with other trades and job progress meetings. He is proficient in Trane Trace 700 simulation and AutoCAD design software. Sean manages the engineering, planning, and delivery of HVAC and plumbing systems for multiple concurrent projects, ensuring technical accuracy and efficiency. He takes pride in creating energy-efficient designs that prioritize client comfort while minimizing installation and operating costs. His responsibilities include coordinating with other design disciplines, establishing preliminary scopes and budgets, performing detailed calculations, producing final design documents, conducting on-site construction observations, and reviewing or approving construction change directives. In addition, Sean brings extensive experience in project coordination, construction services, budgeting, programming, and overall project planning.

RELEVANT PROJECT EXPERIENCE

★ Oxygen Injection at Jackson Road Pump Station; Scio Township (Scio Township, MI)

Mechanical Engineer; OHM Advisors completed technical analysis of liquid-phase odor control options to assess best present worth value for permanent installation. Oxygen injection was determined to be best value (cost and performance) for pump station. Substantial modifications of the existing pump station were necessary.

★ 1776 Building Laboratory Compliance; Dow Chemical (Midland, MI)

Project Manager & Lead Mechanical Engineer; for the inventory of over 150 spaces and the calculation of compliant airflow in each area. This information was used to design and implement changes to the chemical fume hoods and air handling systems to provide a productive, safe and compliant workspace for the occupants.

★ Dow Chemical Environmental Solids Handling; Dow Chemical (Midland, MI)

Mechanical Engineer; Provide mechanical engineering design services for the ventilation of the facility where waste water treatment plant solid material is dried and loaded into sleds for transport to the on site incinerator. The project included a study of the process, determination of the odor source, evaluation of air changes required and design of a makeup up and exhaust system. Additionally, the project included instrumentation and warning lights for occupants arriving at the facility to notify if the ventilation system was not functioning.

Sean brings 20+ years of expertise in HVAC, plumbing, and complex energy-efficient mechanical system design.



RELEVANT PROJECT EXPERIENCE CONTINUED...

**Canton Storage Tank Implementation;
Canton Township (Canton Township, MI)**

Mechanical Engineer; Assistance for design and detailing of a new 5,700 sf multi-level Booster Pump Building. Building designed to be compatible with adjacent residential zoning and local community zoning standards. Steel framed, masonry bearing wall with brick veneer system. Services included coordination with OHM Advisors' Water Resource Group to accommodate critical spatial and dimensional requirements crucial to the proper operations of the facility.

Water System Improvements; Elevated Water Storage Tank; Oakland County Water Resources Commissioner's Office (Farmington Hills, MI)

Schematic Controls Engineer; Preparation of plans and specifications for the construction of a 3.0 MG elevated composite water storage tank for the City of Farmington Hills.

Milford Waste Water Treatment Plant Improvements; Village of Milford (Milford, MI)

Mechanical Engineer; Provided assistance for mechanical design and construction documents for new waste water treatment buildings housing highly specialized equipment and ongoing processes. This included special attention to design detailing and specifying materials to resist the caustic effect of the waste water processing.

M&M Animal Care Facility HVAC Study (Houghton, MI)

Lead Mechanical Engineer; for the development of project goals consistent with recommendations of governing bodies for registered animal care facilities. Once established fieldwork was performed to identify existing conditions and identify those differing from project goals. Two options for renovations for compliance were developed and cost estimates created to assist the University with fiscal planning.

Oakland Farms Well House Chemical Room (Oakland Township, MI)

Mechanical Engineer; Under the direction of the Michigan Department of Environment, Great Lakes and Energy and to improve water quality in the southeast pressure district of Oakland Township, polyphosphate (PO₄) and sodium hypochlorite (NaOCL) were added at the Oakland Farms well house locations. The design focused on improvements necessary to the currently facility to provide separation and protection of personnel from corrosive off gassing common with the use of sodium hypochlorite. Design and construction services were performed on a fast-tracked basis to meet EGLE compliance requirements.

Upper Peninsula Geological Repository Air Exchange Study (Gwinn, MI)

Lead Mechanical Engineer; for a study to review the current ventilation within the office and storage facility. Schematic level recommendations were made to provide and understanding of the proposed revisions, along with a high-level construction estimate for planning purposes. The revisions will provide increased ventilation within both the office and the storage area. An air pressure gradient was recommended to reduce the transfer of containments from the storage area to the office area.

DPW Ventilation Project; City of Troy (Troy, MI)

Mechanical Designer; The City of Troy wanted to upgrade their ventilation in three vehicle garages at the DPW to meet current Michigan Mechanical Code and National Electrical code standards as well as upgrade current heating systems. Integration of the ventilation with the newly installed CO/N₂ system occurred to ensure that the system coordinates with the new equipment. The project consisted of two ceiling hung units and an outside grade level unit, associated electrical, and plumbing work to complete systems.



Education

B.S. in Electrical Engineering, Michigan State University (1981)

Registrations

PE: MI, #47576 (2001), OH: #PE.66288 (2001)

Expertise

Electrical Engineering, Water/Wastewater Systems, Sustainability, Energy Efficiency, Diverse Infrastructure

PROFESSIONAL BIO

Ted is an Electrical Engineer with 43 years experience in the consulting realm. He has worked on numerous projects from design through construction and start-up, primarily working for municipal clients on water and wastewater facilities. Other projects have included industrial, buildings, transportation, remediation, buildings, industrial, manufacturing, solar, wind, rail, and infrastructure. Ted’s most recent former role was with ProMedica Health System, which has ten hospitals, and many office buildings and clinics in Ohio and Michigan. He was hired into the sustainability department to work on improvements to facilities, reducing energy use, and identifying ways to save costs.

RELEVANT PROJECT EXPERIENCE

Oakland Farms Well House Chemical Room (Oakland Township, MI)

Electrical Engineer; Under EGLE direction to improve water quality in Oakland Township’s southeast pressure district, polyphosphate and sodium hypochlorite were added at Oakland Farms well houses. Design focused on facility upgrades to protect personnel from corrosive off-gassing from sodium hypochlorite. Fast-tracked design and construction met EGLE compliance requirements.

DPW Renovation; City of Southfield (Southfield, MI)

Electrical Engineer; Renovation of approximately 6,000 SF including minor exterior work and new public entry. Upgrades included replacement of mechanical, electrical, and plumbing systems for reconfigured spaces. Licensed Professional for Southfield DPW building renovations. Design featured energy-efficient lighting, controls, fire alarm system, and HVAC improvements to office and work areas.

Comprehensive Facilities Needs Assessment; City of Southfield (Southfield, MI)

Electrical Engineer; Ted performed a comprehensive electrical engineering assessment of the Southfield Civic Center. The assessment included the Municipal building, Parks and Recreation building, Public Services building and Pavilion. Existing conditions were thoroughly evaluated. Systems included lighting, power, electrical service, energy efficiency and life safety. Detailed recommendations and cost estimates were provided for improvements to these facilities.

Willow Lift Station Upgrades; Delta Township (Delta Township, MI)

Electrical Engineer; Project included improvements to Willow Sanitary Lift Station. Electrical improvements included replacement of the existing standby generator with larger diesel generator. The larger generator enabled increased pumping during a power outage. The project also included the replacement of the service and motor control center. Pump station operation had to be maintained during construction.



Education

B.S. in Civil / Structural Engineering, Michigan State University (1978), B.S. in Mechanical Engineering, Michigan State University (1983)

Registrations

PE: MI, #30659 (1983)

Expertise

Structural Design, Mechanical Design, Retrofits

PROFESSIONAL BIO

Michael is a Structural and Mechanical Design Engineer with 45+ years of experience providing structural and mechanical engineering for municipal, commercial, and industrial buildings, educational facilities, and electric/steam utilities. He is also able to evaluate existing mechanical systems and provide design solutions that include existing equipment reuse. Michael has performed confined space entries into clear wells and retention basins to assess the structural integrity and identify repairs and rehabilitation efforts to extend the serviceability of the structures.

RELEVANT PROJECT EXPERIENCE

★ Oxygen Injection at Jackson Road Pump Station; Scio Township (Scio Township, MI)

Structural Engineer; OHM Advisors completed technical analysis of liquid-phase odor control options to assess best present worth value for permanent installation. Oxygen injection was determined to be best value (cost and performance) for pump station. Substantial modifications of the existing pump station were necessary.

WRRF Clear Well Improvements; City of Ann Arbor (Ann Arbor, MI)

Structural Engineer; Structural assessment, renovations, and rehabilitation of concrete tertiary clear wells. Work included the rework of walls, accesses, and overall structures; and the design for construction vehicle entry/egress during the work.

RARA Mechanical Upgrades (Rochester, MI)

Structural Engineer; RARA had identified a need to add air conditioning to areas within two of their facilities. The areas originally were not air conditioned and are minimally heated and ventilated from current rooftop units.

Kinross Correctional Facility HVAC & Boiler Improvements; DTMB (Kincheloe, MI)

Structural Engineer; Replaced heating boilers and unit ventilators for two housing units at Kinross Correctional Facility. Scope included reviewing existing heating and ventilation systems and recommending replacements or revisions.

Northeast Water Treatment Plant Structural Repairs; GLWA (Detroit, MI)

Structural Engineer; Performed on-site structural assessments and designed repairs at the Northeast Water Treatment Plant (NEWP), built in 1955 with reinforced concrete structures. Water infiltration caused corrosion, spalling, cracking, and efflorescence.

DPW Ventilation Project; City of Troy (Troy, MI)

Structural Engineer; Upgraded ventilation and heating in three DPW vehicle garages to meet Michigan Mechanical and National Electrical Code standards. Integrated ventilation with new CO/NO₂ system for proper coordination. Project included two ceiling-hung units, one grade-level unit, and associated electrical and plumbing work.



Education

Master of Architecture, Lawrence Technological University (2001), B.S. in Architecture, Lawrence Technological University (2000)

Licenses

Architect: MI, #1301053769 (2006)

Expertise

Architectural Design, Specifications, BIM Coordination

PROFESSIONAL BIO

Christopher is a Senior Architect with 25 years of professional experience, with a background on multi-discipline and complex project coordination as well as technology and documentation process and production. Leading teams to provide efficient and responsible solutions to client’s needs is integral to his approach to the design process. Consideration for constructability, quality, visual aesthetics, and project specific goals is important to the overall success and is something he provides in all aspects of the project and each discipline.

RELEVANT PROJECT EXPERIENCE

Clark Road Pump Station Replacement & Sanitary Sewer Design (Superior Township, MI)

Architect; Professional services on design related tasks for the full replacement of the Clark Road Pump Station. A permanent building enclosure for the discharge piping and electrical equipment was built. Other improvements included replacement of the pump station wet well, pumps, motors, controls, with new equipment to enhance maintenance, safety and improve reliability.

Imlay Station Energy Management; Freeze Protection Pump Installation; GLWA (Imlay City, MI)

Architect; Freeze Protection Pump Installation at GLWA Imlay Pump Station. Project provided a right-sized pump to improve reservoir turnover, reduce operational complexity, and address decreased demand. Design included selective demolition, process mechanical work, structural supports, electrical switchgear with VFD, equipment heating/cooling, and stairway and catwalk improvements.

Knorrwood Pines Water Storage Tank (Oakland Township, MI)

Architect; 1,600-GPM package booster station, 500,000-gallon ground storage tank, permanent generator, controls and SCADA improvements, and the addition of a chemical room in the existing wellhouse. The system will add sodium hypochlorite for disinfection and polyphosphate for dissolved iron sequestration. The project will be located on an existing well field property adjacent to a wetland which created unique challenges through the design process

With 25 years of architectural expertise, Chris leads multi-discipline teams to deliver efficient, client-focused designs emphasizing constructability, aesthetics, and quality for complex projects across diverse sectors.



RELEVANT PROJECT EXPERIENCE CONTINUED...

Sylvan Glen Pro Shop Renovation; City of Troy (Troy, MI)

Project Manager & Lead Design Architect; Renovated 2,600 SF Sylvan Glen Golf Course pro-shop for City of Troy. Reconfigured layout for efficient use and clear public/private separation. Exterior upgrades modernized the building while preserving character and creating a more prominent entry.

 **Oxygen Injection at Jackson Road Pump Station (Scio Township, MI)**

Architect; OHM Advisors completed a detailed technical analysis of liquid-phase odor control options to assess best present worth value for permanent installation. Oxygen injection was determined to be the best value (cost and performance) for the pump station. Substantial modifications of the existing pump station were necessary. Modifications included a building addition, liquid oxygen storage facility, and Class I, Division 2 electrical improvements, among other critical items.

Milford Waste Water Treatment Plant Improvements; Village of Milford (Milford, MI)

Architect; Prepared detailed contract drawings for comprehensive wastewater treatment plant improvements. These improvements included significant upgrades to the headworks, raw sewage pumping systems, and sludge storage facilities, ensuring enhanced efficiency, reliability, and compliance with modern design standards.

Water System Demand Management & Storage Tank Implementation; Canton Township (Canton Township, MI)

Architect; Assisted in reviewing documents and details for new 5,700 sf multi-level Booster Pump Building. Steel framed, masonry bearing wall with brick veneer system. Services included coordination with OHM Advisors' Water Resource Group to accommodate critical spatial and dimensional requirements crucial to the proper operations of the facility.



Livonia DPW Maintenance Garage Ventilation; City of Livonia (Livonia, MI)

Architect; The City of Livonia wanted to upgrade their ventilation in their maintenance garage to meet current Michigan Mechanical Code and National Electrical code standards as well as upgrade current mechanical systems. Integration of the ventilation with the newly installed CO/N02 system occurred to ensure that the system coordinates with the new equipment. The project consisted of a single roof top hung unit, associated electrical, plumbing, and architectural work to complete systems.

Troy DPW Ventilation Project; City of Troy (Troy, MI)

Architect; The City of Troy wanted to upgrade their ventilation in three vehicle garages at the DPW to meet current Michigan Mechanical Code and National Electrical code standards as well as upgrade current heating systems. Integration of the ventilation with the newly installed CO/N02 system occurred to ensure that the system coordinates with the new equipment. The project consisted of two ceiling hung units and an outside grade level unit, associated electrical, and plumbing work to complete systems.



Allen Gelderloos, PE
Project Engineer & QA/QC

With Jacobs Since 2018
29 Years Prior



Education

M.S. in Environmental Engineering University of Illinois (1990), B.S. in Environmental Engineering, University of Michigan (1988)

Registrations

PE: MI

Expertise

Management, Maser Planning, Process Evaluations, Treatment Plants

PROFESSIONAL BIO

With over 34 years of experience as Project Manager and providing technical support for a wide range of wastewater treatment and collection projects, including master planning, process engineering and design, construction engineering assistance, asset management, design-build oversight and program management in Michigan and Ohio. Allen brings a wealth of knowledge and practical experience to every project. His extensive experience includes master planning and process evaluations for treatment plants of all sizes, ensuring efficient and effective operations.

RELEVANT PROJECT EXPERIENCE

Wastewater Treatment Plant Facilities Renovation; City of Ann Arbor (Ann Arbor, MI)

Process Design Leader for replacement of the 10-mgd West Plant and rehabilitation of the 20-mgd East Plant at the Ann Arbor WWTP. Process design included improvements to both plants to meet future stringent total phosphorus limits of 0.2 mg/L using biological nutrient removal and ferric chloride addition.

Hybrid Optimizer; City of Ann Arbor (Ann Arbor, MI)

Project Manager; Led implementation of the Hybrid Optimizer Digital Twin to enhance plant operations through soft sensors, forecasting, and process intelligence—providing actionable insights to improve reliability and optimize maintenance efforts.

Odor Control Study; Clinton River WRRF, WRC (Oakland County, MI)

Project Manager; Managed an on-site odor survey of the Clinton River WRRF (Auburn and East Boulevard plants) to identify the sources and magnitudes of odors generated at both facilities.

Odor & Corrosion Control Study, Northeast Sewage Pumping Station; Oakland–Macomb Interceptor Drain Drainage District (Oakland & Macomb Counties, MI)

Design & Permitting Assistance; Conducted odor and corrosion analysis, design, and permitting assistance for a new biotrickling filter at the NESPS. The biotrickling filter consisted of a 25,000 CFM unit and an associated chemical feed system. Developed pre-purchase documents for the filter and prepared the City of Detroit permit application for the building modifications and filter installation.

Werk & Westbourne CSO Basin, Metropolitan Sewer District of Greater (Cincinnati, OH)

Process Design Engineer; Delivered mechanical process design for a 106-mgd CSO facility, including fine screening and influent control structures, and supported CDR/PDR development with pumping, flushing, and operational strategy analyses.



Education

M.S. in Science, Environmental Engineering, Marquette University (1993), B.S. in Science, Civil Engineering, Marquette University

Registrations

Professional Engineer: Wisconsin

Expertise

Wastewater Planning, Design & Operations, Odor Control & Air Quality Management

PROFESSIONAL BIO

With more than three decades of experience in wastewater engineering, Bill Desing is a recognized leader in odor control, air quality and sustainable infrastructure. Bill serves as Jacobs’ global principal for air quality and odor control, guiding a team of technologists across North America, Europe, Asia and Australia. His work helps communities around the world breathe easier — literally. Bill’s passion for environmental engineering began at Marquette University, where he earned both his bachelor’s and master’s degrees in civil and environmental engineering and was an intern at the Milwaukee Metropolitan Sewerage District (MMSD)’s Jones Island Water Reclamation Plant. That academic foundation, combined with a deep curiosity for how infrastructure intersects with public health and environmental justice, has shaped a career defined by innovation and impact. He has led or reviewed more than 80 odor and air quality projects across the U.S. and internationally, helping utilities reduce emissions, improve community relations and meet evolving regulatory standards. Over his career, Bill has served in a variety of roles, from project and construction manager to client service manager, process designer and plant startup manager.

RELEVANT PROJECT EXPERIENCE

ST-S-3 Odor Investigation; MIDDD (Detroit, MI)

Lead Odor Technologist; This project is designed to determine the source of the odor problems near the ST-S-3-meter station in Sterling Heights, which have been a nuisance to the surrounding neighborhood. As lead odor technologist, developed the fan testing plan, reviewed the results and developed the recommendations.

Senior Technology Lead, Odor and Corrosion Study; Macomb Interceptor Drain Drainage District (Macomb County, MI)

Comprehensive odor and corrosion study of the 250-square-mile MIDDD and North Gratiot Interceptor systems. Used WATS model to determine the source of odors, estimate corrosion potential, and evaluate operational and add-on technology modifications to reduce odors and corrosion.

Odor & Corrosion Mitigation System Study; Northeast Sewage Pumping Station (NESPS) OMIDDD (Oakland & Macomb Counties, MI)

Senior Technology Lead; Led team to evaluate improvements for ongoing odor and corrosion mitigation. Used extensive sampling data to determine optimum solution. Led conceptual design of 25,000-cfm biotrickling filter and major modification to the pump station HVAC system.

Thames Combined Sewer Overflow Tunnel Odor Control Project (London, England)

Study Lead Engineer & Design Oversight; Led a study to estimate odor emissions and odor control mitigation alternatives for the Thames CSO Tunnel, including development of dynamic and steady-state models to estimate odor generation, stripping, emissions, and impacts along a 15-mile tunnel route.



Education B.S. in Electrical Engineering, Ohio University

Registrations PE: OH

Expertise Electrical Systems, Programming, Construction Services, Instrumentation & Control Systems

PROFESSIONAL BIO

Vance is a Senior Electrical and Control systems Engineer with over 29 years of experience in electrical systems and instrumentation and control planning, management, design, including PC, PLC, and SCADA programming. He is responsible for the control and instrumentation design of water and wastewater plants, lift stations, booster stations, manufacturing facilities, and food processing facilities. His responsibilities include development of specifications, design, programming, construction services including start-up/commissioning, and management services for instrumentation and control systems. All work performed with an emphasis on robust quality assurance and quality control.

RELEVANT PROJECT EXPERIENCE

Plant-wide Control System Upgrade Detailed Design Memorandum, Southerly Wastewater Treatment Plant, Division of Sewerage & Drainage (Columbus, OH)

Senior I&C Engineer; Oversaw automation upgrades at Easterly WWTP, including SCADA, PLCs, HMI reliability, alarm reduction, and data system updates.

Automation Program Management Phase II, Easterly Wastewater Treatment Plant; NEORS (Cleveland, OH)

I&C Engineer; Led automation upgrades at Easterly WWTP, including SCADA, PLC replacements, HMI reliability, alarm reduction, and data system updates.

Automation Program Management Phase I, Westerly Wastewater Treatment Plant; NEORS (Cleveland, OH)

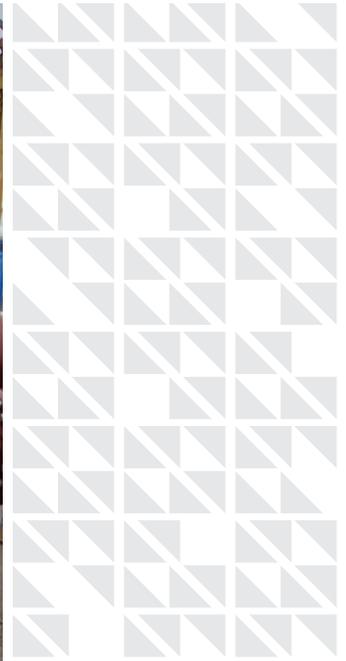
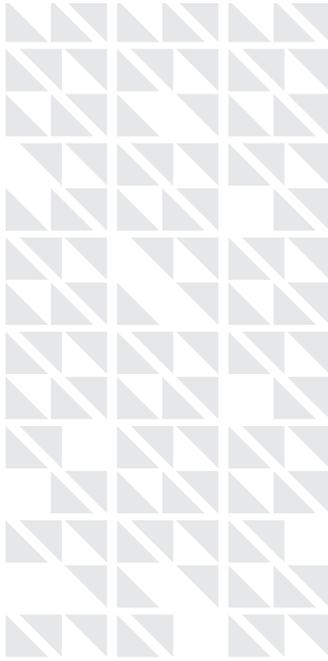
Lead I&C Engineer; Directed automation upgrades across District facilities, including SCADA and HMI improvements, fiber installation, PLC replacements, alarm reduction, and data system updates.

Southerly Wastewater Treatment Plant Second Stage Lift Station Improvements; NEORS (Cleveland, OH)

Electrical Engineer; Design work included medium voltage electrical switchgear, medium voltage VFDs, instrumentation and control systems, for three 1000Hp variable speed pumps and three 800Hp constant speed pumps. Design included sequencing to maintain five of the six pumps in operation during construction.

Peachblow Pump Station & Forcemain, Delaware County Regional Sewer District (Delaware, OH)

Lead Electrical & I&C Engineer; The Peachblow pump station was originally constructed in 1975 and is comprised of a duplex submersible pumping facility. With a current firm pumping capacity of 0.864 MGD, major expansion is required to meet both near and long term flow conditions. Design included increasing pumping capacity to 3.5 MGD, with provisions to easily upgrade the station to 6.6 MGD, as facilitated by long-term needs.



Past Involvement with Similar Projects

SECTION B.

To us, each client relationship is unique, so every solution is tailor-made to their goals. We view success as creating places that capture the vision and aspirations of the community of people who live and work there—both now and for generations to come.

LET THE CLIENT'S VISION INSPIRE.

We see what you see—and what could be. We get in the trenches with you, diving deeply into your challenges with inspiration and enthusiasm to offer solutions that go beyond what you've asked of us.

Portfolio & References

OUR WORK & REPUTATION

Dow Chemical Environmental Solids Handling (Midland, MI)	OHM Advisors
Dow Chemical 1702 Labs (Midland, MI)	OHM Advisors
Oxygen Injection at Jackson Road Pump Station (Scio Township, MI)	OHM Advisors
OMIDDD Northeast Sewage Pumping Station Biotrickling Filter (Detroit, MI)	Jacobs
Ina Road Water Reclamation Facility Odor Control Upgrades (Pima County, AZ)	Jacobs
Water Pollution Control Facility Facilities Plan & Design (Stamford, CT)	Jacobs
H2S & Odor Mitigation Planning Study Project (Milwaukee, WI)	Jacobs
Odor Control Study Water Pollution Control Plant (Fort Wayne, IN)	Jacobs
Air Flow Management & Odor Control Study (Raleigh, NC)	Jacobs
Clean Water Program (San Mateo, CA)	Jacobs
Air Flow Management & Odor Control Study (Denver, CO)	Jacobs
Collection System & Treatment Plant Odor Master Planning (Kentucky)	Jacobs





PROJECTS & CLIENT REFERENCES **CONTINUED...**

Dow Chemical Environmental Solids Handling

Midland, Michigan

Provide mechanical engineering design services for the ventilation of the facility where waste water treatment plant solid material is dried and loaded into sleds for transport to the on site incinerator. The project included a study of the process, determination of the odor source, evaluation of air changes required and design of a makeup up and exhaust system. Additionally, the project included instrumentation and warning lights for occupants arriving at the facility to notify if the ventilation system was not functioning.

Client Information

Dow Chemical Company
Don Starin, Project Manager
T (989) 636-0428

Dow Chemical 1702 Labs

Midland, Michigan

Provided the renovation of a research and development laboratory that included the replacement of all casework and fume hoods as well as a new ventilation system. The ventilation system included an odor control removal scrubber for the removal of Chloromethyl Methyl Ether (CMME) which is a flammable, highly odorous and known carcinogen. The system included a high pressure fan, water scrubber unit and high plume exhaust system to ensure proper dilution of the discharge. The project also included plumbing and electrical engineering to support the ventilation system and the remainder of the laboratory renovation.

Client Information

Dow Chemical Company
Debbie Gehringer, Project Manager
T (989) 636-1000



PROJECTS & CLIENT REFERENCES CONTINUED...

Oxygen Injection at Jackson Road Pump Station

Scio Township, Michigan

Scio Township contracts with the City of Ann Arbor to receive the Township's sanitary sewer flows. Odor complaints from residents near the sewer force main outfall were reported and verified. The odors were a result of excess hydrogen sulfide gas created from the extended time that sewer flows travel in the force main without oxygen and the turbulent nature of the force main's outfall in the City of Ann Arbor.

OHM Advisors had been assisting the Township with an odor control treatment evaluation study that began in Fall 2015. The Township and OHM Advisors investigated and agreed upon both short-term and long-term solutions to minimize odors. The short-term and most expedient solution was the use of calcium nitrate, a liquid-phase treatment system at the pump station's wet well. The long-term solution was to install an oxygen injection system at the Jackson Road pump station, as it was determined to be the best value (cost and performance) for the pump station.

The oxygen injection system operates by pumping a side stream portion of raw sewage from the pump station's force main through a conical-shaped oxygen transfer device, known as a speece cone.



Oxygen is injected in the speece cone for complete dissolution to increase the dissolved oxygen of the sewage to keep the wastewaters from becoming anaerobic and generating hydrogen sulfide.

Substantial modifications of the existing pump station were necessary. Modifications included a building addition, liquid oxygen storage facility, and Class I, Division 2 electrical improvements, among other items.

Client Information

Scio Township
Brandon McNiel, Utilities Director
T (734) 369-9355
E bmcniel@sciotownshipmi.gov

PROJECTS & CLIENT REFERENCES
CONTINUED...

OMIDDD Northeast Sewage Pumping Station Biotrickling Filter

Detroit, Michigan

Following our successful system-wide odor/corrosion study of the OMID and MID interceptor systems, Jacobs was contracted by the OMIDDD to complete the preliminary and final designs and perform services during construction for a new large-capacity biotrickling filter odor/corrosion control system and an overhaul to the NESPS heating, ventilation and air condition (HVAC) improvements.

The NESPS is operated by GLWA and maintained by the OMIDDD. The new NESPS facilities reduce the rate of sewer corrosion in the OMID and the downstream North Interceptor-East Arm (NI-EA) and mitigate sewer odors and included the following:

- New 25,000 cfm biotrickling filter located on a concrete pad and odorous air ductwork to GLWA's NESPS wet wells and discharge chamber.
- Significant modifications to existing NESPS HVAC ductwork, new supply fans, and replacement of existing roof mounted exhausted fans to increase air flow in the NESPS dry well to six (6) air changes per hour.
- New gas detection monitors in NESPS wet well with interior and exterior alarms.
- Replaced existing water main and appurtenant equipment.

This project resulted in the successful construction and start-up/commissioning of the new NESPS biotrickling filter and pump station HVAC improvements, protecting the existing NESPS equipment and other planned improvements from further corrosion degradation. This project resulted in change orders totaling approximately 1% of the original construction contract value, with few issues during facility start-up/commissioning.

Jacobs delivered a 25,000 CFM biotrickling filter and HVAC upgrades at NESPS—cutting corrosion, controlling odors, and protecting critical infrastructure.



Our successful design and implementation of corrosion/odor mitigation strategies were due to the following:

- Close collaboration with OMIDDD and GLWA during alternative evaluation, including criteria weighting and scoring of alternatives.
- Jacobs' use of the state-of-the-art Wastewater Aerobic/Anaerobic Transformations in Sewers (WATS) sewer process model coupled with field sampling as part of a comprehensive study. Jacobs' WATS model of the OMID, portions of GLWA, and the MID is the largest known model of its kind and includes over 120 miles of larger diameter interceptor sewer.
- Jacobs' technical knowledge and expertise in sewer odor/corrosion control.
- Jacobs' local knowledge of the GLWA and OMID wastewater collection systems and their operations.

PROJECTS & CLIENT REFERENCES
CONTINUED...

Ina Road Water Reclamation Facility Odor Control Upgrades

Pima County, Arizona

Jacobs/CH2MHill was responsible for the design of a major upgrade and expansion of a 1970s-vintage wastewater treatment plant (WWTP) that serves the northern parts of the Tucson metropolitan area, Oro Valley, and a major portion of the Town of Marana.

Project features included upgrading the preliminary treatment system, upgrading and expanding the primary treatment system, significantly upgrading and expanding the disinfection system, upgrading the electrical system and I&C system, design of a new onsite process control laboratory, upgrading all ancillary support systems and upgrading odor control systems for multiple processes around the plant.

Odor control upgrades included new systems and modifications to existing ones. Headworks and Intermediate Pump Station systems were enhanced for increased flow, while clarifier, thickener, and centrifuge systems were replaced and connected to new odor control facilities. Below is a list of the newly designed and constructed systems:

- 41,700CFM, single stage carbon treatment system for the East Bioreactor facility.
- 107,800CFM, single stage carbon treatment system for the West Bioreactor facility.
- 7,700 CFM, three stage treatment system (Ammonia scrubber, Biofilter and Carbon polisher) for treating the centrifuge process system.
- 14,700 CFM, single stage carbon system for treating the Centrifuge Truck Load out system.
- 4,500 CFM, single stage biological system for treating the conveyance systems.
- 800 CFM, three stage treatment system (ammonia scrubbing, biofiltration and carbon polishing) gravity belt thickening and sludge storage systems.



Twelve Carbon Polishers

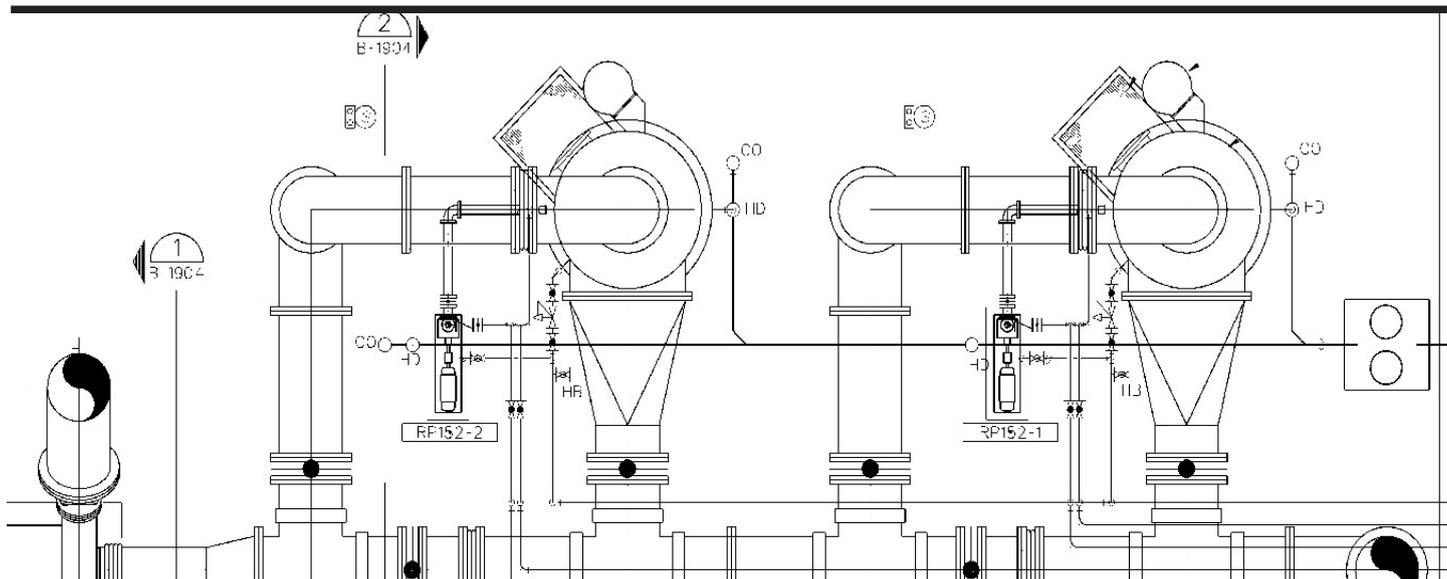


Three-Stage Odor Control System

Over 150,000 CFM of new odor control capacity, plus 40,000 CFM in system upgrades—delivering comprehensive plant-wide odor management.

Offsite Odor Requirements

The offsite odor design criterion for all processes at the WWTP is 7 dilutions to threshold at the facility fence line, with a compliance level of 99% as confirmed by dispersion modeling. An Odawatch system was installed at the site which uses onsite metrological data and odor sensors to create a continuous dispersion model to confirm the offsite odor criterion has been achieved.



PROJECTS & CLIENT REFERENCES
CONTINUED...

Water Pollution Control Facility (WPCF) Facilities Plan & Design

Stamford, Connecticut

Sn 2000 the WPCF initiated a facility upgrade and expansion plan to expand from a base flow of 20 mgd to 24 mgd. As part of this upgrade and expansion the city decided to address growing concerns about odor impacts both inside of the plant and past the plant’s fence line. The plant is located at One Harborview Avenue and is nearly surrounded by local businesses and restaurants.

Before this facility plan the only odor control consisted of a small biofilter treating odorous air from a Sludge Thickening Facility.

Odor Source Survey

A odor control evaluation was undertaken to take a plant-wide look at the odor issue and to identify the priority odor sources. This consisted of a subjective site survey as well as limited source sampling and source characterization. The subjective survey identified many areas where the working environment was poor and there was strong evidence of corrosion due to elevated hydrogen sulfide levels.

A plant-wide odor control strategy featuring centralized systems across three key process areas, with innovative two-stage packed tower scrubbers designed for maintenance flexibility—ensuring continuous treatment even during service.

Odor Control Assessment

A technology screening process was completed with plant staff. This process resulted in selection of two-stage packed tower scrubbers to treat odorous air from three localized facilities. These included:

- The Raw Sewage Pump Station (2750 scfm)
- Primary Clarifiers, sludge thickening, and degritting (14,000 scfm)
- Sludge processing and loadout (25,000 scfm)

The two-stage scrubber layout allowed for dropping either stage off-line for maintenance activity while still providing for single-stage treatment. This approach to redundancy saved costs and provided system flexibility.

Ventilation System Improvement

In the headworks all open channels were covered and screening and screenings conveyors enclosed and vented. This direct ventilation approach at the odor source improved the building working environment and reduced the tendency for continued corrosion.

Covers were installed on primary clarifier, thickener, and degritting facilities to contain odors, while new dewatering and cake load-out areas were equipped with targeted ventilation—improving air quality and ensuring odor control.

PROJECTS & CLIENT REFERENCES
CONTINUED...

H2S & Odor Mitigation Planning Study Project

Milwaukee, Wisconsin

Jacobs performed a holistic, comprehensive study of the H2S odor and corrosion issues across the Milwaukee Metropolitan Sewerage District's conveyance system. The District has had a history of odor issues, caused mostly by H2S in its collection system. The study addressed additional locations of odor and corrosion in the conveyance system and further verified and documented those identified by the District. The study assisted the District in developing the plan for controlling H2S odors and corrosion in its entire collection system.

The District's service area covers 411 square miles with 290 miles of interceptor sewers that collect 200+ mgd of wastewater from 28 satellite municipalities and conveys it to the District's two treatment plants. The District's interceptor sewers range in size from 8 to 150 inches in diameter and are mainly constructed from reinforced concrete pipe or monolithically constructed reinforced concrete. The system also includes a deep tunnel to store CSO with 27 miles of tunnels with diameters up to 32 feet and depths up to 340 feet.

Jacobs developed a WATS sewer process model of the entire interceptor system to assist in the evaluation. A focused sampling campaign was conducted to collect wastewater and H2S and pressure data to calibrate the WATS model. Sampling and model results indicated that sulfide generation occurs mainly within the District's interceptor system rather than customer communities due to the relatively long detention time in the interceptor sewers. Most H2S issues were determined to be caused by turbulence at drops along with issues at some siphons.

Using the model and Jacobs odor experience, eight zones were identified to likely require odor and corrosion mitigation. Conceptual designs using liquid- and vapor-phase mitigation technologies were completed, and cost estimates were prepared for the eight zones. Noise and visual impacts of the odor control systems to neighbors were also considered.

The recommended mitigation technologies included iron salts for liquid-phase treatment and activated carbon and biofilters for vapor-phase treatment. A nonmonetary evaluation of the mitigation options was conducted using the Envision evaluation framework. A prioritized list of the zones was prepared. The project included developing conceptual designs for each of the prioritized zones that will address H2S odor and corrosion issues across its expansive collection system.

Client Information

Milwaukee Metropolitan Sewerage District
Micki Klappa-Sullivan, Manager
T (414) 225-2178
E mklappasullivan@mmsd.com

Odor Control Study, Water Pollution Control Plant

Fort Wayne, Indiana

The City of Fort Wayne engaged Jacobs to conduct an odor control study at the Water Pollution Control Plant (WPCP). Odor sources at the plant posed safety risks, equipment corrosion, and onsite/offsite nuisance odors. The study confirmed odor locations and levels, identified areas needing control, and recommended improvements to reduce emissions. Jacobs developed a sampling plan for major odor sources, evaluated control alternatives, and prioritized treatment based on cost, effectiveness, reliability, and safety. Life-cycle cost analysis guided recommendations, and biotrickling filters were selected after comparing chemical treatment options for capital, O&M, and 20-year present worth.

Client Information

City of Fort Wayne
Zach Schortgen, Manager
T (260) 410-1270
E zachary.schortgen@ci.ft-wayne.in.us

PROJECTS & CLIENT REFERENCES
CONTINUED...

Air Flow & Odor Control Study

Denver, Colorado

The Denver Metro Wastewater Reclamation District (District) retained Jacobs to perform a comprehensive odor analysis of their entire sewer collection system. Historically, the District had dealt with odor emissions and subsequent odor complaints at multiple locations within their collection system and were looking for cost effective mitigation solutions. Our team developed multiple liquid phase and vapor phase alternatives and evaluated each using the WATS model. The WATS model was calibrated using extensive sampling results which provided confidence that the model as an accurate representation of the transmission system.

WATS modeling revealed that natural reaeration in the branches appeared to suppress sulfide in the branches, and because of that, the branches were shown not to require odor control. Methyl mercaptan levels were shown to be present at some locations even when H₂S had been oxidized. The presence of methyl mercaptan revealed the need for odor control irrespective of sulfide levels. Based on a comprehensive benefit/cost analysis, we recommended technologies that included a combination of organic and engineered media biofilters located at specific locations within the collection system.

Client Information

Denver Metro Wastewater
Reclamation District
Jim Mallory, Project Engineer
E jmallorey@mwr.d.dst.co.us

Jacobs delivered a comprehensive odor analysis for Denver's sewer system, using WATS modeling and benefit/cost evaluations to recommend targeted, cost-effective odor control solutions.

Collection System & Treatment Plant Odor Master Planning

Louisville & Jefferson County, Kentucky

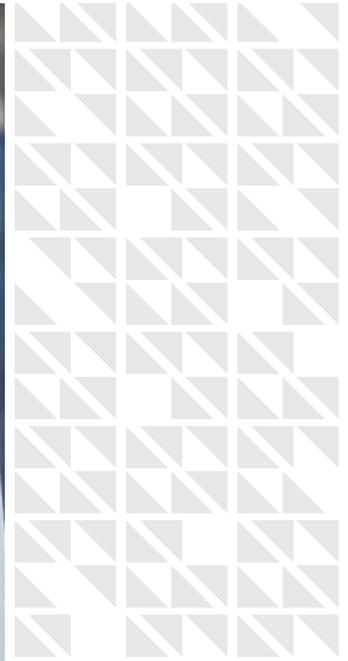
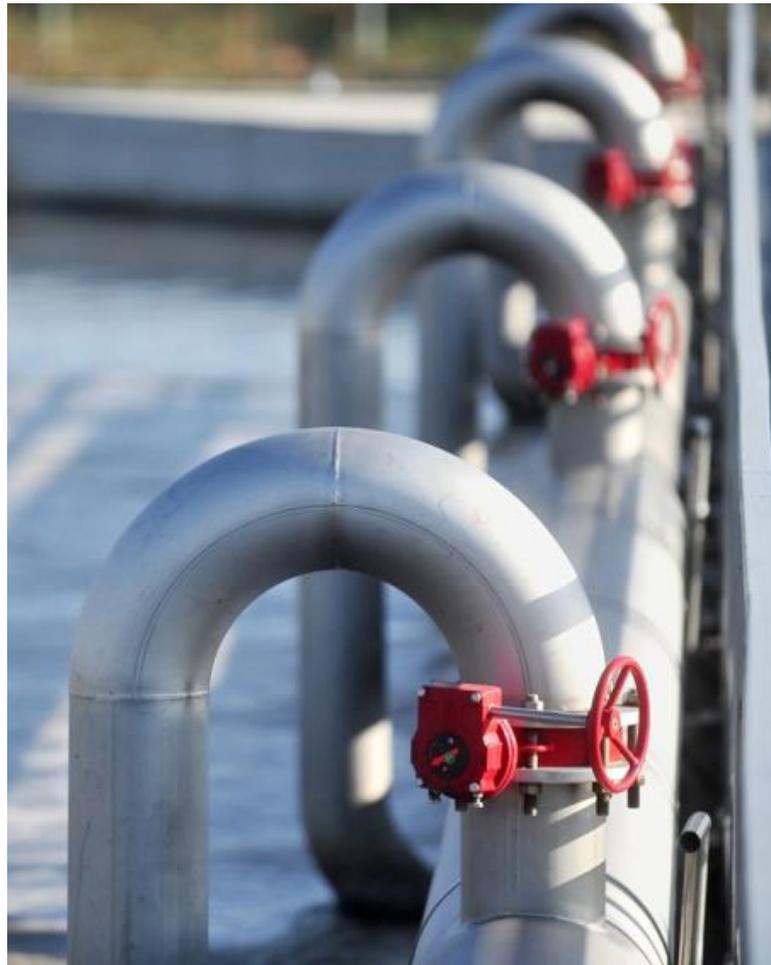
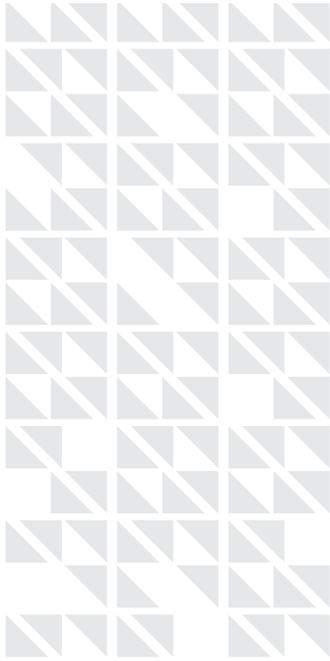
The Louisville and Jefferson County Metropolitan Sewer District owns and operates 6 WWTPs, 230 pump stations, 30 small treatment plants, and over 3,000 miles of sewer collection systems. Odors from these facilities have the potential to negatively impact homes and nearby businesses. To address the negative impacts of odors from District facilities, an Odor Control Master Plan was completed. The purpose of this plan was to reduce offsite odorous impacts to acceptable levels by using the most cost-effective combination of available mitigation methods.

Jacobs developed an Odor Control Master Plan that addressed six plants and significant portions of the collection system. Odorous emissions from each of the plants were characterized using odor sampling and offsite impacts were determined using air dispersion modeling. Over 100 samples were collected and analyzed for several parameters, including total odor (D/T), reduced sulfides, hedonic tone, and ammonia. Preliminary design of odor control devices was completed in order to mitigate offsite odor impacts.

For the collection system, Jacobs' computer models, including the WATS model, were used to determine liquid- and vapor phase H₂S concentrations throughout the collection system to determine potential odor and corrosion "hot spots." More than 50 miles of the force mains and gravity sewers, located primarily in sensitive areas, were modeled. The model was then used to determine the optimum location for chemical addition that would minimize dosing rates and ensure complete reactions. Combined with bench scale testing, the model was used to estimate dosage rates required to reduce odors in the interceptors, force mains, and pump stations. In addition, preliminary design of odor control systems for the interceptors and pump stations was completed.

Client Information

Louisville & Jefferson County
Metropolitan Sewer District
Sharon Worley, Senior Engineer
T (502) 540-6000



Proposed Work Plan

SECTION C.

This section outlines our approach to delivering services through clear communication, strong client-consultant collaboration, and rigorous quality assurance. Jennifer Drinan, our dedicated Project Manager, will lead coordination, act as the City's primary contact, and drive timely progress through regular meetings—promoting accountability and alignment with the City's goals.

FRESH AIR COMMITMENT

As part of its commitment to being a good neighbor, the Ann Arbor WRRF is taking proactive steps to reduce nuisance odors, improve air quality for surrounding communities, and create a safer, more pleasant working environment.

Project Objectives

CLEANER AIR, SAFER COMMUNITY

The City of Ann Arbor (City) Water Resource Recovery Facility (WRRF) desires to be a good neighbor in the community and improve the working atmosphere in the Solids Handling Building (SHB) truck loading area during the discharge of cake into open gravel haulers for landfill disposal. The City is committed to the environment and is looking to minimize the impact of nuisance odors on the community surrounding the WRRF. Incorporating energy efficient equipment and processes in managing the odors is desirable. Funding for the design services of the odor control system for the SHB truck loading area is available in fiscal year 2025-2026. The construction phase funding is available for award to the responsive bidder in fiscal year starting July 1, 2026.

The City desires to be a good neighbor and minimize the impact of nuisance odors on the community surrounding the WRRF, while incorporating energy efficient equipment and processes where feasible.



**Community
Commitment**



**Workplace
Improvement**



**Sustainability
Focus**



**Funding
Timeline**



Project Background

OUR UNDERSTANDING

Over the years, the WRRF has received ongoing odor complaints from several neighbors surrounding the facility. The City is responsive when complaints are received and has been proactive in meeting with neighbors to educate them on the issues associated with WRRF odors. In 2018 the City engaged HDR, Michigan, Inc. for an area odor study to identify possible sources of the odors, the chemical characteristics of these odors, create a dispersion model to analyze the impact of the odor sources on the surrounding community, and propose solutions.

HDR's study and evaluation proposed activated carbon adsorption systems for the Screen and Grit area and another unit for the SHB truck loading area. The activated carbon system for the Screen and Grit area was installed and commissioned in 2024. At this time, the City intends to implement an activated carbon adsorption system for the SHB truck loading area and thus needs to engage a highly qualified engineering team to develop the design and construction documents for bidding.

In the Residuals Handling Improvement project, the City upgraded the SHB with gravity belt thickeners for thickening waste active sludge (WAS) and centrifuges for dewatering the blended thickened WAS and thickened primary solids (PS) products. The WRRF has two modes for disposal of biosolids:

1. Thickened WAS and PS are stabilized with lime and disposed of as a liquid in land application of agricultural fields.
2. Thickened WAS and thickened PS are dewatered using centrifuges. The cake is temporarily stored in hoppers for loading into open top gravel train style trucks for disposal at landfills.

Several changes in the City's WRRF operations have taken place since HDR issued the Area Odor Study Report in 2020.

After the upgrades to the SHB, the land application method of disposal was used during the warmer months (April through November, weather dependent) and the landfill method was used during the winter months when agricultural fields were not available. In the past two or three years, the WRRF started using the landfill disposal method all year round. Switching to landfill disposal was due to challenges related to the availability of fields and the public's concerns over land application. There were also economic reasons for utilizing landfill disposal.

Michigan Department of Environment, Great Lakes, and Energy (EGLE) issued an updated National Pollutant Discharge Elimination System (NPDES) permit (MI0022217), effective February 1, 2022 through October 1, 2025. Starting in April 2023, the WRRF was required to meet lower Total Phosphorus maximum loading limits through the warmer months (the lowest is 50 lb./day during July and August).

The City implemented the recommendation from the Centrifuge Centrate Treatment Evaluation Project of adding lime to promote the formation of calcium phosphate-based precipitates from phosphate that naturally releases in the unaerated sludge storage tanks. This retains the phosphate in the solids stream and minimize soluble phosphate loads in the centrifuge centrate after sludge dewatering. The lime dosage is small, but it is our understanding that with this change the plant staff has noted an ammonia odor associated with the dewatered cake that was not present prior to this treatment modification.



PROJECT BACKGROUND CONTINUED...

The OHM Advisors and Jacobs' team (Team) proposes to build upon the information and experience gained in the Area Odor Study Report. During the preliminary design phase, we will work closely with the WRRF staff to understand their experiences with odors and the truck loading operations and how recent operational changes have impacted the truck loading process. Based on the updated process, we will assess the impacts on the odor control system design to confirm activated carbon adsorption system is still the most economical solution.

Our Team's general strategy and philosophy to deliver the requested services is to begin with the end in mind. The City's needs will be at the center of everything that we do. The client's team is a critical component of the project team. At the project onset we ask the client to identify their project lead, and which staff will be involved and their roles. We do the same with our team, and this information is then reviewed at the kick-off meeting with those involved in the project to set clear expectations for communication and coordination during the project. At the kickoff meeting, we will ask the City's team to provide the factors they feel will define success for the odor control project.

We will maintain focus on the City's success factors related to the project objectives, timeline, and budget throughout the project. Progress meetings will offer opportunities for open and transparent communication on these success factors. If challenges arise, these will be communicated in a timely fashion verbally and in writing. Together we will review options and agree on a path forward. Focusing on the success factors identified at the beginning of the project will guide this team to an excellent project for all stakeholders.

Our approach to project management starts by building the right project team where each member has clearly defined roles that suit their strengths. A Project Management Plan (PMP) is developed to serve as our road map for the project and includes the scope, schedule, budget, and communications plan. We track and report on our progress during the project through progress meetings, schedule updates, and budget tracking as we achieve project deliverables.

Throughout the project, we follow our quality assurance and quality control processes. During project execution, we use several tools to stay in sync with the client so that the project status is known, decisions can be made when required, and any changes to the plan can be discussed before major impacts to the project. These tools include:

- **Kickoff Meeting:** The kick-off meeting is where the team member roles, communication plan, project scope, and key success factors are reviewed to set clear expectations for the project.
- **Progress Meetings:** Regular recurring progress meetings are held during the project as defined in the project scope. The status of the scope, schedule, budget, and deliverables are reviewed, and client decisions needed are identified in advance.
- **Schedule & Budget Tracking:** We use the schedule and budget developed for the PMP as a roadmap for the project and to measure our progress. We have several cost control tools that we use to do this, including our accounting software, budget spreadsheets, and professional scheduling tools, depending on the project complexity. We use these tools during the project to update the client on the project status.
- **Deliverables Staging:** Project deliverables are carefully staged so that there is sufficient time for their development and review. The deadlines for deliverables are identified in the PMP and the status is reviewed with the client regularly at progress meetings. Sufficient time for client review and internal client approval processes is built into the schedule through collaboration with the client on the PMP development.
- **QA/QC:** Quality Control (QC) and Quality Assurance (QA) will be applied to every deliverable. QA ensures a systematic approach to producing a quality project, starting with OHM Advisors' established procedures developed over decades of practice. QC verifies that all work meets standards of care and includes senior staff review at critical milestones. The project budget accounts for these QC reviews.

LASTING SOLUTIONS.

Building success step by step—our work plan ensures clarity, collaboration, and efficiency from kickoff to completion, with every task designed to deliver practical solutions and lasting value.

Proposed Work Plan

PLAN OF ACTION

Our work plan is designed to provide a clear, collaborative, and efficient process from project kickoff through final design and bidding. Each task builds on the previous step, starting with alignment on scope and expectations, followed by verification of design parameters, development of detailed plans, and preparation of bid documents. Optional tasks for air testing and public engagement provide added value to optimize system performance and strengthen community relations.

Work Plan Tasks

Task 1: Kickoff Meeting

Task 2: Basis of Design Verification & Conceptual Design

Task 3: Detailed Design Development

Task 4: Bidding Assistance

Task 5: Additional Air Sampling (Optional Task)

Task 6: Public Engagement (Optional Task)



PROPOSED WORK PLAN CONTINUED...

Task 1: Kickoff Meeting

OHM Advisors and Jacobs will meet in person with City staff to review the project scope and schedule, identify key point of contact for the project, and establish the City’s expectations for communication norms. Prior to this meeting, we will request and review available data including the AutoCAD files from the Residuals Handling Improvements (RHI) and the site plans from Facility Renovation Projects (FRP). We will also review and discuss the alternatives identified in this proposal to receive feedback on these and identify if there are additional alternatives to consider.

We begin by aligning on scope, schedule, and expectations to set a strong foundation for collaboration.

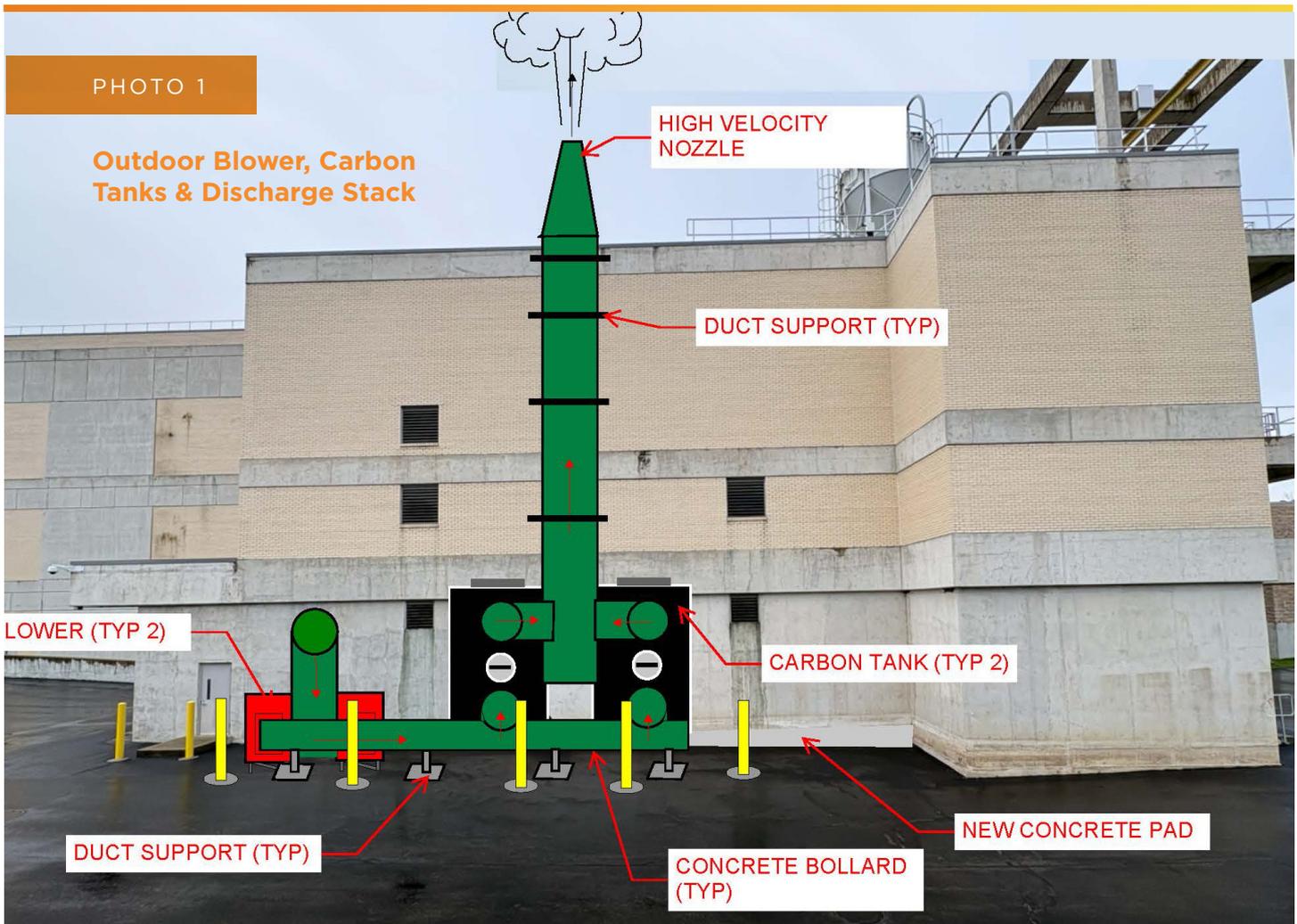
Task 2: Basis of Design Verification & Conceptual Design

The first step in designing the odor control improvements for the SHB truck loading facility will be to verify the design parameters as presented in HDR’s Odor Study. It has been over five years since the study was completed, and we are aware of a few changes in operations that may impact the design of the truck loading odor control system.

It is our understanding that the focus of HDR’s Area Odor Study was to investigate and determine the priority odor sources impacting the nuisance odor complaints received from the surrounding community. The loading of dewater cakes into open trucks for landfill disposal was identified as a high priority source. Land application disposal was not identified as a priority source of nuisance odors. HDR’s report provided the following data associated with the dewatered cake loading method.

Metric	Truck Loading Bay (No loading for 24 Hours)	Truck Loading Bay (Actively Loading a Truck)
Ann Abor Odor D/T	19	16,575
Odor Description	Sour, Stale, Plastic, Swampy	Sewage, Sulfur, Garbage, Manure, Fecal, Rotten Sludge
H2S (ppm)	0	3.40
Methyl Mercaptan (ppm)	ND	0.80
Dimethyl Sulfide (ppm)	ND	0.60
Dimethyl Disulfide (ppm)	0.04	ND
Carbonyl Sulfide (ppm)	0.13	0.12
Ammonia or Amine (ppm)	0.10	ND

ND = Non-Detect; Concentration is less than testing equipment detection limits



PROPOSED WORK PLAN CONTINUED...

The recommendation was for a single carbon system located on the exterior of the SHB truck loading area sized for 19,000 SCFM and a concentration of 4 ppm of H₂S and 1.5 ppm for other sulfur organic compounds. The air rate recommended is based on 12 air changes per hour (ACH) for the volume of the first floor of the truck loading area. The samples for testing were obtained at the exhaust fan locations on the first floor. In this preliminary stage we will evaluate the following:

- Obtain and convert the RHI and FRP CAD files to 2024 AutoCAD format for use as a background.
- Review options for location of the carbon units, this will include both vertical and horizontal configurations:
 - Option 1 is locating the carbon unit on the exterior to truck loading. Refer to [Photo 1](#) (above).
 - Option 2 is locating carbon units on the first floor of the SHB.
 - Refer to [Figure 1](#) (following page) for concept drawing.
- Review of duct work routes to efficiently capture the odorous air to improve the working conditions inside the truck loading area and minimize off site nuisance odor complaints. Refer to [Photo 2](#) (following pages) for concepts. The concept demonstrates the idea to remove air close to the truck loading area. Options for mounting the duct to the Custom Conveyor support steel or to the concrete columns and beams will be investigated. The duct work will need to be above the bottom of the discharge chutes so not to interfere with the trucks. The cross over to the east lane will probably be located at the north end of the building to avoid interferences.

FIGURE 1

Another potential option to install carbon units inside on first floor. Duct routing would be more complicated and 3' around units is considered explosion proof area (NFPA 820)

30" Stack to Roof with 22" nozzle for high plume discharge

option 2
option 1

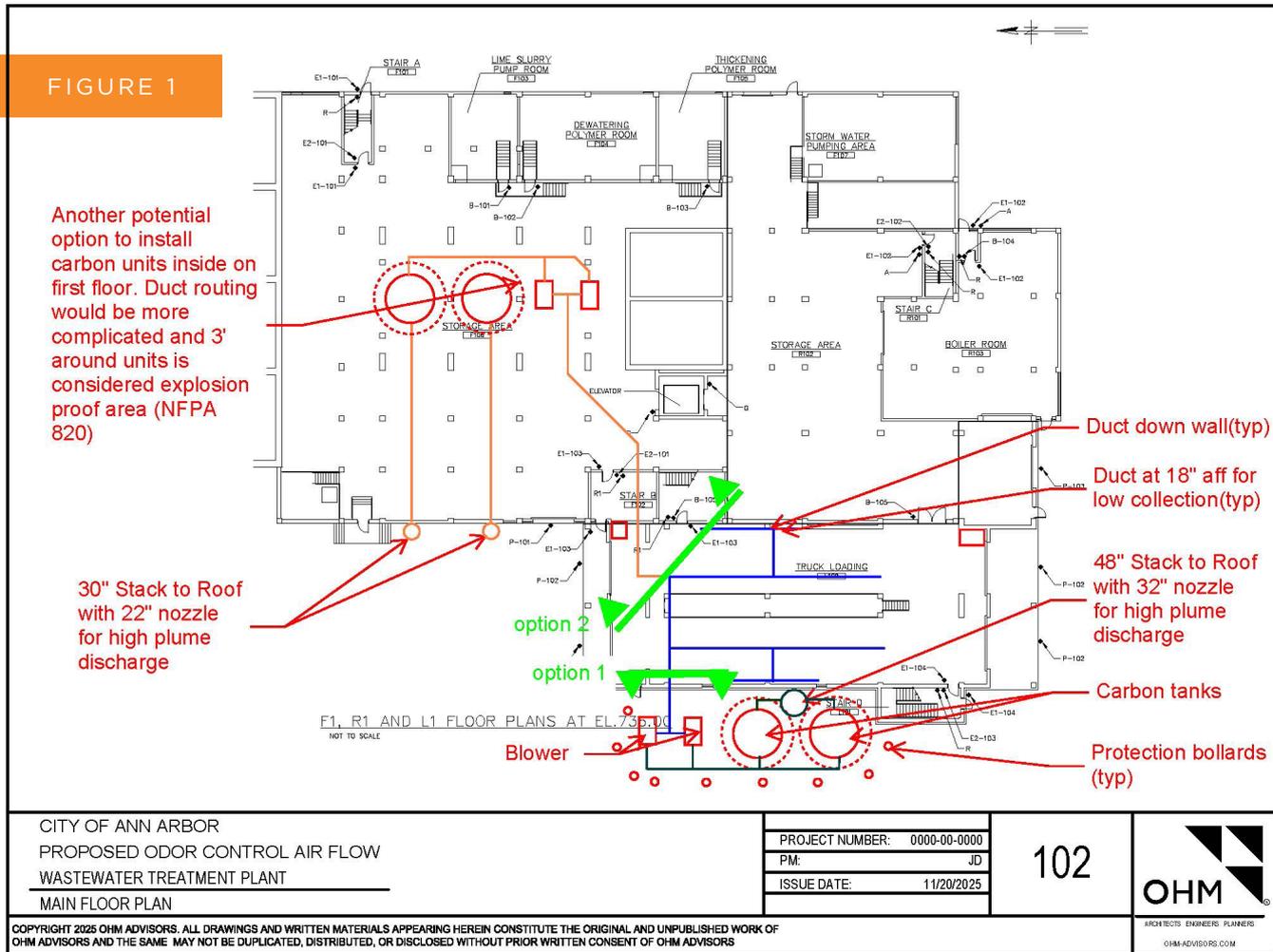
Duct down wall (typ)

Duct at 18" aff for low collection (typ)

48" Stack to Roof with 32" nozzle for high plume discharge

Carbon tanks

Protection bollards (typ)



CITY OF ANN ARBOR
PROPOSED ODOR CONTROL AIR FLOW
WASTEWATER TREATMENT PLANT
MAIN FLOOR PLAN

PROJECT NUMBER: 0000-00-0000
PM: JD
ISSUE DATE: 11/20/2025

102

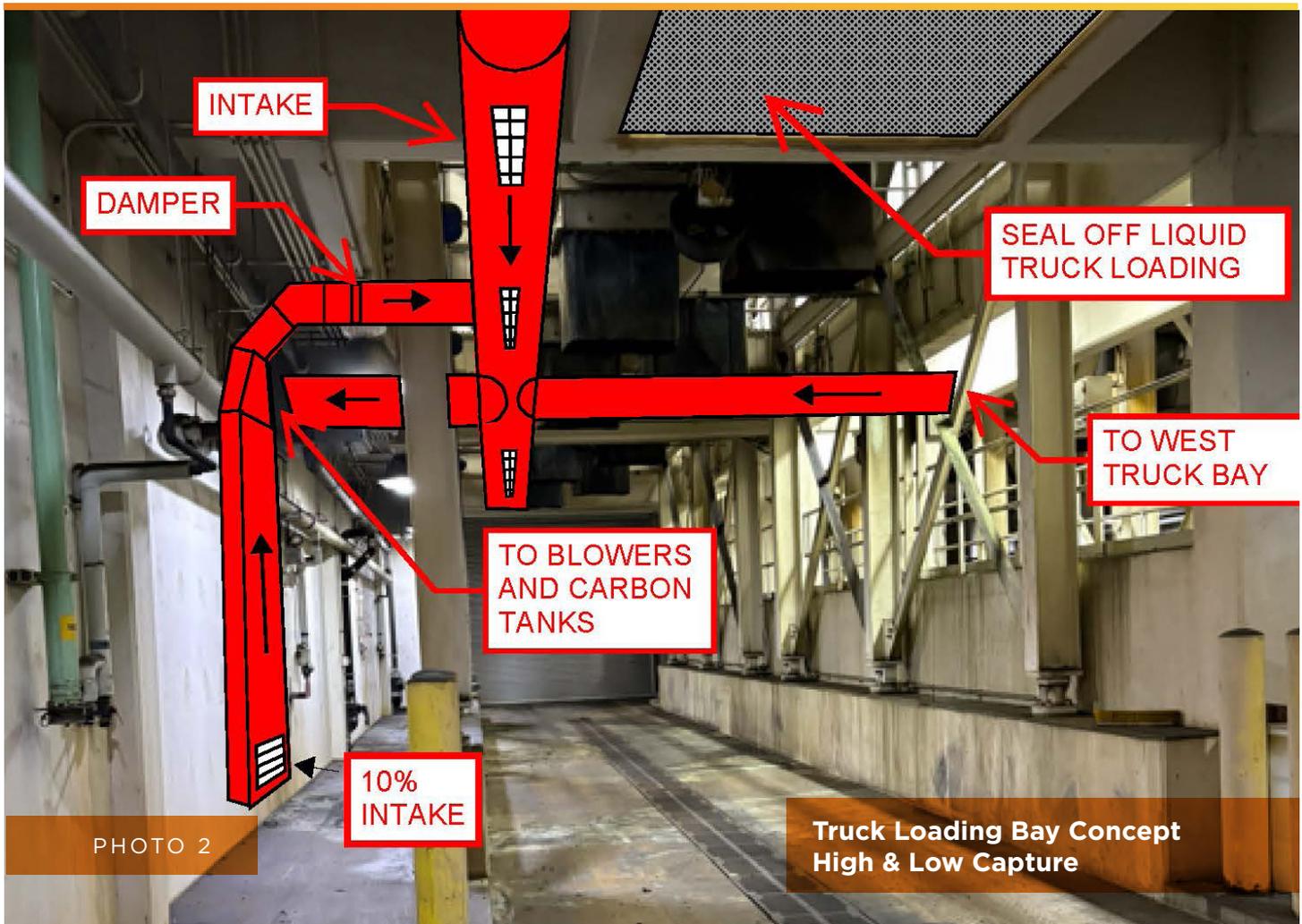


COPYRIGHT 2025 OHM ADVISORS. ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM ADVISORS AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM ADVISORS

ARCHITECTS ENGINEERS PLANNERS
OHM ADVISORS.COM

PROPOSED WORK PLAN CONTINUED...

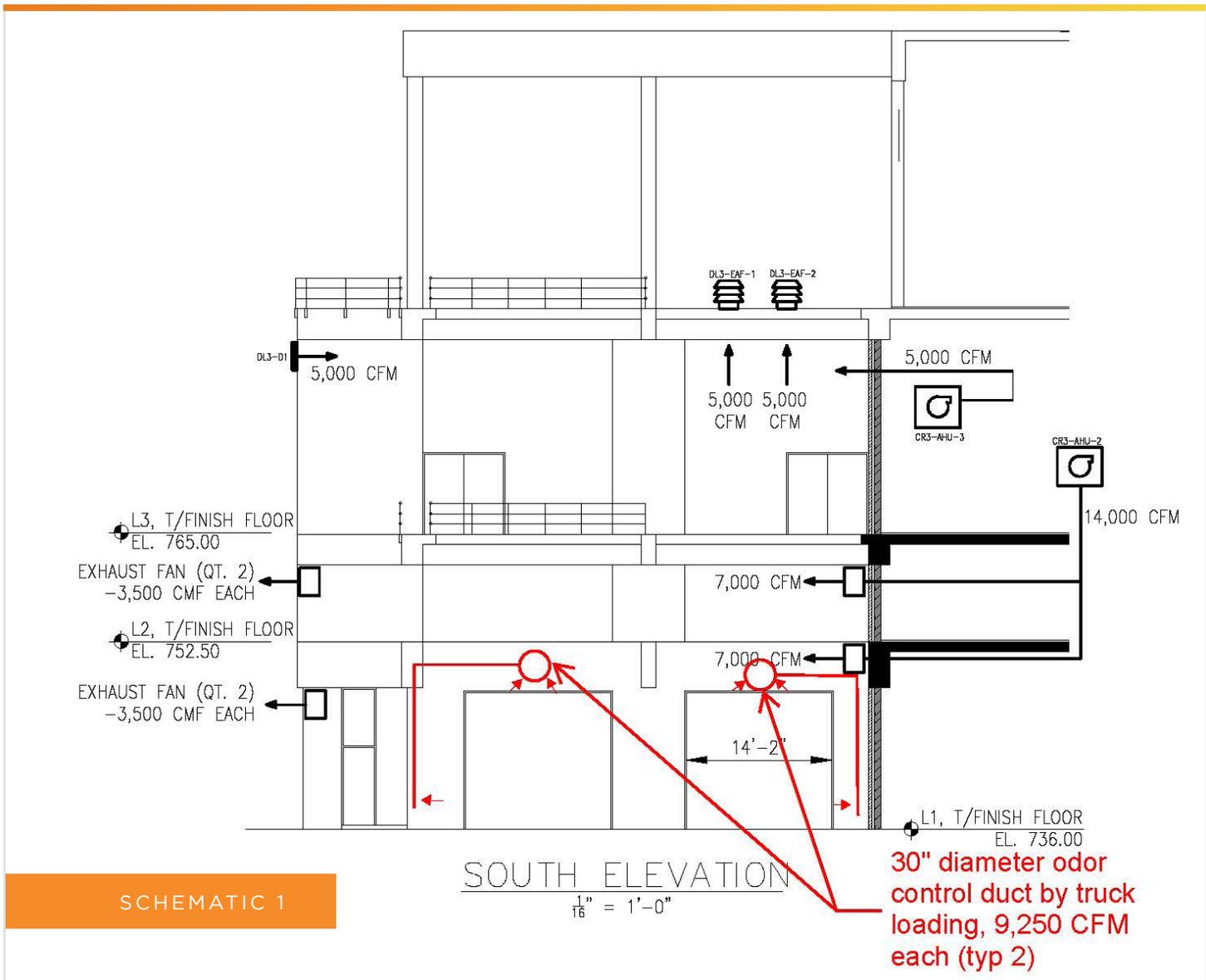
- Identify areas that can be sealed off such as the opening for the liquid biosolids loading. We propose to install FRP covers over the liquid loading area to deter odorous gas from migrating to the second floor. These covers would be removable if the City returned to land application disposal method. Refer to [Photo 2](#) for concept drawing.
- Outline operating sequence, instrumentation and controls, and modification to the temperature controls for the existing heating and ventilation system.
 - Odor control system to operate independently of the existing heating and ventilation system for the first and second floor of truck loading area. See [Schematic 1](#) (following pages).
 - The existing ventilation system will operate as it currently does except for during truck loading operations. When cake is being loaded into truck, the existing ventilation system will be turned off and the odor control system will operate. Once the loading is complete and the air in the truck loading area is no longer deemed odorous (estimated about 20 to 30 minutes after loading has been completed), the odor control system will be turned off and the existing ventilation system will resume operations (via an adjustable timer).
 - The base design does not include replacement of the existing air handling units serving the truck loading area.
 - During design review meetings, we will work with the City to determine how automated this system should be. It could be based on operator adjustable timers or levels of H₂S as measured in the influent duct work to the carbon unit.



PROPOSED WORK PLAN CONTINUED...

- Discuss options for redundancy with the City. How long is the City comfortable having the odor control system offline for maintenance of blowers or replacement of carbon media? If coordinated, the carbon media replacement may only require the system to be offline for one to two days. This level of service may not require complete system redundancy.
- Survey and geotechnical investigations to be performed on the exterior of the SHB truck loading for the installation of odor control system.
 - Topographical survey will be limited to the west side of the SBH. No boundary or right of way information will be determined or shown. Location of underground utilities will be provided by the City.
 - Geotechnical services will be limited to three soil borings approximately 15 feet in depth to aid in the design of foundations and identification of the ground water elevation. The proposal does not include design of a dewatering system.

Designing with foresight—every detail, from redundancy planning to geotechnical insights, ensures reliability and efficiency for the City’s odor control system, delivering confidence, resilience, and long-term operational success.



PROPOSED WORK PLAN CONTINUED...

- During the preliminary design phase, the following items will be determined so that detailed design can proceed in an efficient manner:
 - Confirmation of activated carbon adsorption method of odor control.
 - Location of the carbon units, exterior or interior of SHB.
 - Assessment of O&M considerations include ease of replenishment or replacement of carbon.
 - Sizing of blowers (CFM) and location. Is the roof of Truck Loading economically feasible?
 - Identification of impacts on the existing ventilation system and proposed solutions.
 - Draft sequence of operations for the Odor Control System with the existing heating and ventilation system.
 - Draft maintenance of plant operation (MOPO) plan for the construction phase. This will be coordinated with the Sequence of Construction provided in the bidding documents.
- Finalize Basis of Design which will be included in the Part 41 permit application to EGLE.

PROPOSED WORK PLAN CONTINUED...

Task 2: Deliverables

Conceptual Drawings (process flow diagrams, schematics, and process and instrumentation diagrams).

Technical Memorandum

Opinion of construction costs will be issued to the City for review prior to progress meetings to discuss the Options.

Decisions on alternatives and agreement on path forward will be recorded in progress meeting notes.

Task 3: Detailed Design Development

Confirmation of the design approach during the preliminary design leads to the detailed design phase. In the 60% phase we will focus on solidifying the details of the odor control system, blowers, and duct work. The majority of the work will be performed by Bill Desing and Sean Tabacsko with input from electrical, structural, architectural, and instrumentation and controls disciplines. During the 90% design phase the electrical, structural, architectural, and instrumentation and controls discipline details will be finalized.

QC reviews are performed at critical milestones in the project, and the budget includes time for senior staff to perform QC reviews. Allen Gelderloss will lead the QAQC process and provide an overall review of the design throughout the project. Each technical discipline has its own subject matter experts for QC reviews and their own QC procedures and checklists that will be used during project execution.

Turning concepts into reality—our detailed design process provides precision, collaboration, and quality at every milestone.



Centrifuges are used to dewatered biosolids for landfill disposal. Recently, the City started adding lime to the feed to retain phosphate in solids from the centrifuges.

At agreed upon milestones, the City's project team will be asked for their input. The City's comments will be incorporated at the start of the next phase of the design process. Prior to finalizing the documents for bidding, we will have an in person review session to walk through the contract documents to verify understanding of the project and capture comments on a PDF version of the drawings while reviewing.

60% Design Phase will include:

- Perform field visits to verify CAD files, identify potential conflicts or interferences with the conceptual design layouts and resolve issues.
- Confirm with odor control and blower equipment suppliers design criteria and foul air odor constituents.
- Identify the structural improvements required for installation of proposed equipment such as mounting the foul air duct work near truck loading (is it possible to use the cake hopper structural steel for support?), foundations for equipment, and determine additional structural supports required for roof mounted equipment. Identify needs of access platforms for operation and maintenance activities.
- Prepare architectural layouts for exterior louvers and wall penetrations for duct work and electrical conduits.
- Commence communication with permitting agencies – Ann Arbor Township and EGLE.
- Draft sequence of construction and the MOPO Plan. Determine periods that one truck lane could be offline for construction of duct work.

PROPOSED WORK PLAN CONTINUED...

60% Design Deliverables

- Process flow diagrams, process and instrumentation diagrams, temperature control diagrams.
- Layout and sections drawings for odor control, blowers, duct work.
- Electrical one-lines.
- Table of contents for specifications and draft specifications for odor control equipment, blowers, and duct work.
- Draft versions of construction sequence and MOPO plan.
- Updated opinion of probable construction costs and schedule.

90% Design Phase will include:

- Finalize odor control, blower, and HV equipment layout plans and sections, details, and schedules. Duct work routing and supports will be determined and shown in plan and section views on drawings.
- Coordination with the selected manufacturers and suppliers will be performed. Any final clarifications and coordination items will be incorporated into the drawings and specifications.
- Finalize structural and architectural details. If color selections are necessary these will be presented to and finalized with the City.
- Finalize the electrical and instrumentation and control plans, schedules, and details. Coordination with updates in the WRRF's SCADA system will be reviewed with the City's project team.
- Submittal of applications to permitting agencies – Site and MEP permits to Ann Arbor Township and permit to install Air Quality Division of EGLE.
- Incorporate the City's comments and finalize the sequence of construction and the MOPO Plan. Determine periods that one truck lane could be offline for construction of duct work.



Third floor of Truck Loading is not significantly impacted by the truck loading activities.



Second floor of Truck Loading is impacted by the odors from loading truck. To mitigate the odors, we plan to seal off the liquid loading openings.



Mounting of odor control duct work will be coordinated with existing equipment and interferences.

90% Design Deliverables

- Final construction plans and specifications for approval.
- Final versions of construction sequence and MOPO plans.
- Updated opinion of probable construction costs and schedule.

100% Design Phase will include:

After review with the City, the 90% deliverable will be refined to address comments and then finalized as bid documents ready for advertising.

PROPOSED WORK PLAN CONTINUED...

Task 4: Bidding Assistance

OHM Advisors' team will prepare bidding documents in accordance with the City's standards and requirements, including using the City's front-end documents. Bidding construction projects will conform with the City's procurement policy. We will assist with:

- Attending pre-bid meetings.
- Responding to bidders' questions.
- Preparing addenda.
- Reviewing bids received as responsive.
- Preparing a Bid Evaluation letter.

Task 5: Additional Air Testing (Optional)

Understanding the makeup of the odorous air is critical in sizing the carbon unit and selecting the carbon material. This testing will also confirm the use of activated carbon adsorption as the preferred method of treatment. During the Area Odor Study, samples were taken from the first-floor exhaust fan, one prior to loading a truck loading with dewatered cake and a second during the truck loading process. The location of the sampling was chosen to develop the dispersion model.

As an option, we recommend additional air sampling to determine if the change in operations has affected the odorous gas composition. Sampling from additional areas will also improve the design of the capture system. We propose grab samples in Tedlar bags would be collected before, during and after the dewatered cake truck loading operation at the following locations:

- Near the truck on the first floor.
- At the exhaust fans for the first floor loading.
- At the exhaust fans for the second floor loading
- The samples would be sent to a laboratory for Gas Chromatology/Sulfur Chemiluminescence Detection (GC/SCD). Focus would be H₂S and a scan for 20 reduced sulfur organic based odor compounds as defined in ASTM DD5504 or equal and ammonia compound analysis.
- Colorimetric detection tubes may also be used to measure ammonia/amine compounds.

Plain virgin carbon, or traditional H₂S high-capacity media, generally does not adsorb ammonia effectively. Instead, a mixed media or impregnated media that has a greater affinity for ammonia should be considered if ammonia compounds are discovered in the sampling. Depending on the level, other options such as pretreatment for ammonia may be necessary but not currently included in the scope or fee.

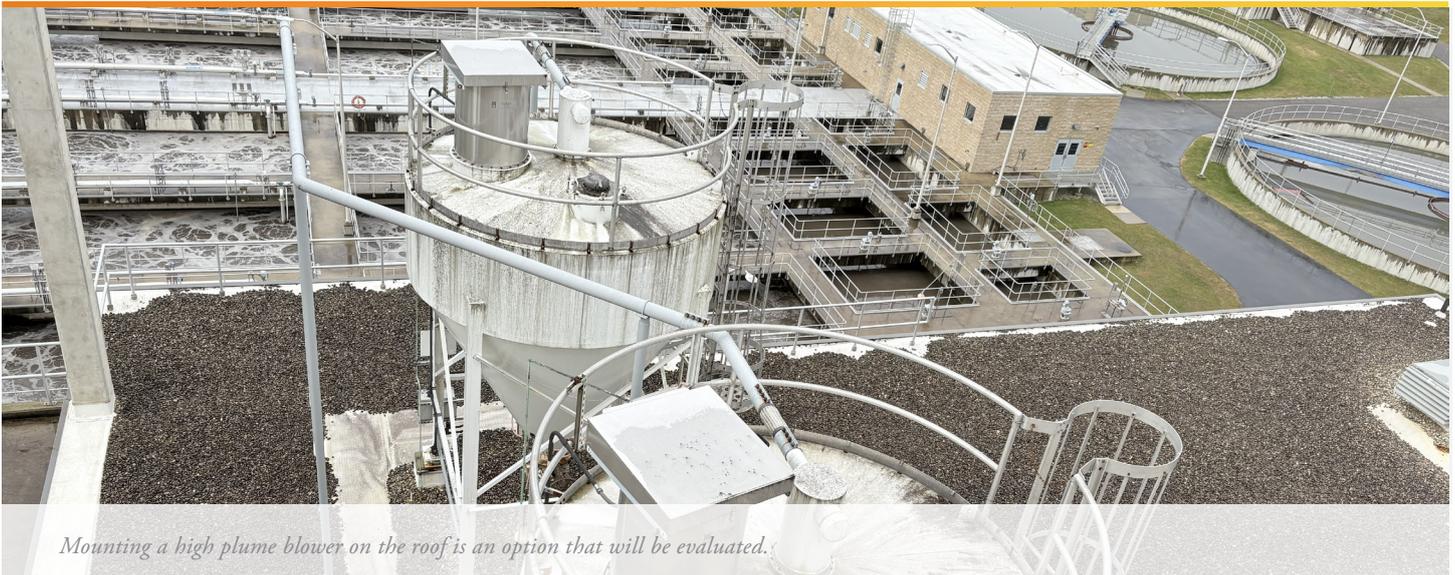
Task 6: Public Engagement (Optional)

Reducing nuisance odors from migrating off the WRRF site is one of the primary goals of this project. The work being performed will help the City to be good neighbors. This project offers an opportunity to educate the community stakeholders of the efforts to improve the odor issues from the WRRF. As part of this project development, we will utilize the City's public engagement toolkit and will develop a recommendation for a public engagement plan for the project during construction. OHM Advisors will coordinate with the City to develop digital and social media materials that effectively communicate the project's process, outcomes, and impacts to interested stakeholders and residents.

We will complete the City's Community Engagement Toolkit with City staff, help create a target audience list, which may include stakeholders, City staff, and media, we will help develop a message model that identifies the messages that should be communicated to engage stakeholders, outline the project team's competencies and project merits, coordinate with the City to provide materials for the City to develop a project website that will provide a summary of the project and will include educational materials, periodic project updates, dashboards, and a project information.

Additional Ideas for the Optional Public Engagement Task

Engage the public as desired by the City, including public meetings, meeting directly one-on-one with the affected property owners, before and after interviews, produce project video that provides a high-level overview of the project and its findings and recommendations, develop and assist with presentations to City Council and/or City Commissions, prepare a recommendation for future public engagement activities to be performed during construction.



Mounting a high plume blower on the roof is an option that will be evaluated.



The City is satisfied with the performance of the existing Solids Handling Building activated carbon adsorption system. They are familiar with the operation and maintenance required.



PROPOSED WORK PLAN CONTINUED...

Anticipated Involvement by Ann Arbor Staff

In order to coordinate future construction shutdowns and obtain buy in from operations and maintenance staff, we recommend that representatives from WRRF management (director and assistant director), engineering, operations supervisors and select operation and maintenance staff be involved in each of the progress meetings. We estimate that each meeting will take approximately one to two hours.

Collaboration drives success—engaging WRRF leadership and staff ensures smooth coordination and operational confidence throughout the project.

In addition to the City’s project team’s participation in the meetings identified above, we anticipate the team will be involved in providing the following:

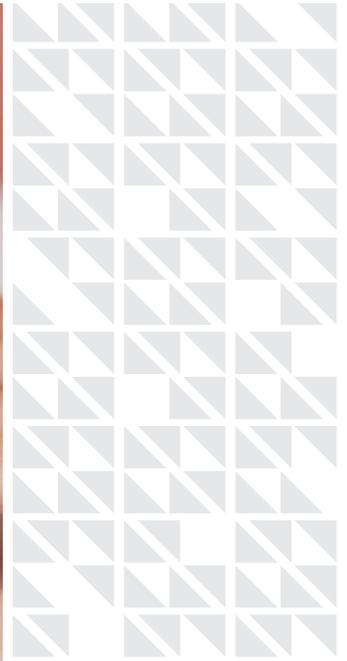
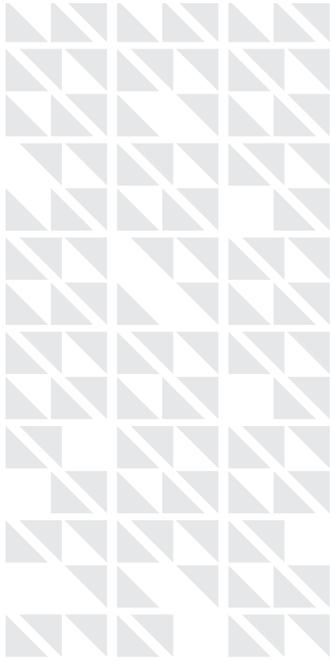
- Provide the Residuals Handling Improvements Project and the Facility Renovation Project (site plans) AutoCAD files.
- Shop drawings and O&M manual for the Custom Conveyor and Hopper Equipment.
- SCADA data showing loading of the dewatered cake trucks. How long does this process take?
- Temperature control data (O&M manuals or programs) for the HV units serving the truck loading area.
- Provide access to the SHB and truck loading for site investigations. Assist with coordinating activities during active dewatered cake loading activities, if necessary.

Schedule & Meetings

FROM START TO FINISH

Note, additional air sampling and analysis is not included in the schedule. If included, it would extend the overall schedule by the duration of testing which is estimated at 3-4 weeks for sampling and analysis.

Task	Duration & Timing	Cumulative Duration
Kickoff Meeting	<ul style="list-style-type: none"> • Within 2 Weeks of Notice to Proceed • In Person Meeting with Site walkthrough with Technical Leads 	2 Weeks
Preliminary Design	<ul style="list-style-type: none"> • 8 Weeks • Three (3) Progress Meetings (Virtual) • Site Visits • Topographical Survey • Geotechnical Investigation 	10 Weeks
60% Design	<ul style="list-style-type: none"> • 6 Weeks • Two (2) Progress meeting (Virtual) 	16 Weeks
90% Design	<ul style="list-style-type: none"> • 4 Weeks • One (1) Progress Meeting (Virtual) • One (1) In Person Meeting to walk through design and obtain comments. 	20 Weeks
Final Documents	<ul style="list-style-type: none"> • 2 Weeks • One (1) Virtual Meeting 	22 Weeks
Bidding & Bid Award	<ul style="list-style-type: none"> • 4 Weeks • One (1) Prebid In Person Meeting 	26 Weeks



Fee Proposal

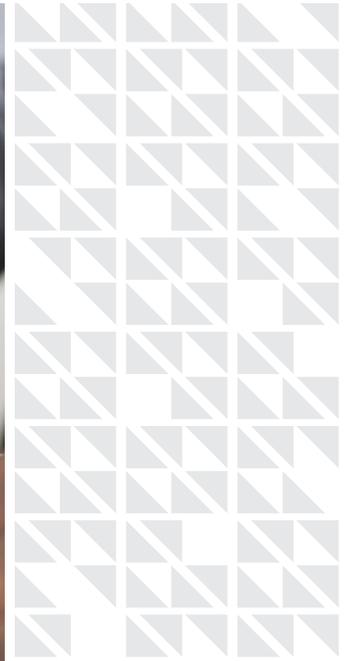
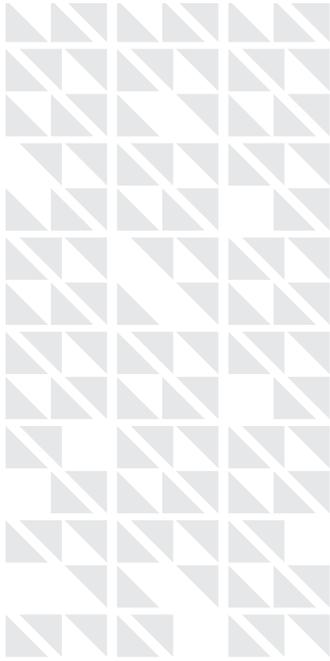
SECTION D.

With client goals and requirements guiding every step, our team collaborates closely with you to define direction within the established plan, schedule, and budget. Leveraging a robust database of regional project costs, we deliver accurate estimates and proactively assess existing conditions to understand their impact—ensuring realistic budgets and reliable schedules from the outset.

D.1 Fee Proposal

Intentionally left blank. This section is attached separately.





Authorized Negotiator

SECTION E.

To fulfill the City of Ann Arbor's request, OHM Advisors has designated an authorized negotiator for this agreement. The following section provides the name and contact information of the individual empowered to negotiate on behalf of our firm.

LEADING WITH VISION.

At OHM Advisors, leadership isn't just about guiding projects—it's about inspiring innovation and collaboration. Our leaders set the standard for excellence, ensuring every client receives solutions that are visionary, practical, and impactful.

Authorized Negotiator

INSPIRING INNOVATION & COLLABORATION

OHM Advisors has designated Robert Czachorski, PE, as the Authorized Negotiator for this agreement. With over 30 years of consulting experience focused on water resources and sewer collection systems, Robert is the firm's Practice Leader for Collection Systems and a nationally recognized expert in wet weather sewer issues. His career has centered on advancing technologies and processes to improve water resource systems, including developing the H2Ometrics data analytics platform and pioneering hydrologic modeling approaches that have earned national awards. Robert has led studies for nearly 100 municipal utility systems and serves as Principal for some of OHM Advisors' largest accounts, including the City of Ann Arbor. His combination of technical expertise, leadership, and commitment to client success ensures a collaborative and effective negotiation process.



Robert Czachorski, PE

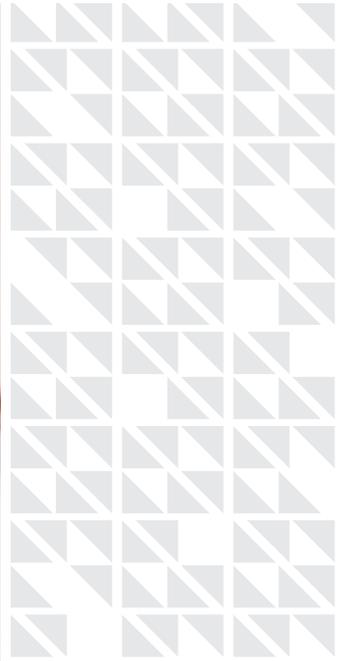
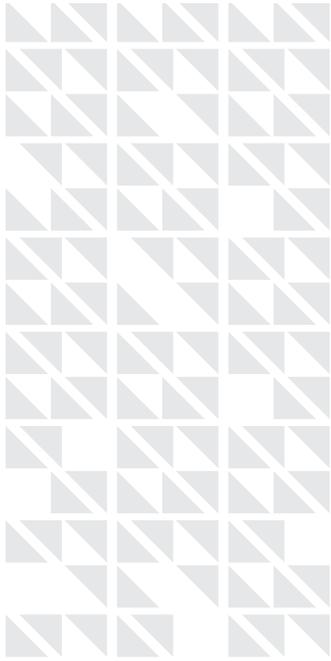
Principal & Authorized Negotiator

A 34000 Plymouth Road, Livonia, Michigan 48150 (Local Office)

E robert.czachorski@ohm-advisors.com **T** (734) 466-4548

EXPERIENCE With OHM Advisors Since 2004, 10 Years Prior





Attachments

SECTION F.

Our mission-driven team works collaboratively across multiple service areas, including architecture, engineering, planning, urban design and landscape architecture, surveying, and construction engineering, to create better places for people.

F.1 Required Forms (RFP Attachment B – Legal Status of Offeror)

**ATTACHMENT B
LEGAL STATUS OF OFFEROR**

(The Respondent shall fill out the provision and strike out the remaining ones.)

The Respondent is:

- A corporation organized and doing business under the laws of the state of Michigan, for whom Robert Czachorski bearing the office title of Principal, whose signature is affixed to this proposal, is authorized to execute contracts on behalf of respondent.*

*If not incorporated in Michigan, please attach the corporation's Certificate of Authority

- A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.
- A partnership organized under the laws of the State of _____ and filed with the County of _____, whose members are (attach list including street and mailing address for each.)
- An individual, whose signature with address, is affixed to this RFP.

Respondent has examined the basic requirements of this RFP and its scope of services, including all Addendum (if applicable) and hereby agrees to offer the services as specified in the RFP

Robert Czachorski Date: 12/4/2025,
Signature Orchard, Hiltz & McCliment, Inc. (dba OHM Advisors)

(Print) Name Robert Czachorski, PE Title Principal

Firm: OHM Advisors

Address: 355 South Zeeb Road, Suite A, Ann Arbor, MI 48103

Contact Phone (734) 466-4548 Fax NA

Email robert.czachorski@ohm-advisors.com



ADDENDUM No. 1

Received

RFP No. 25-55

**ODOR CONTROL SYSTEM FOR SOLIDS HANDLING BUILDING
TRUCKING LOADING**

Due: DECEMBER 4, 2025 at 11:00 A.M. (local time)

The information contained herein shall take precedence over the original documents and all previous addenda (if any), and is appended thereto. **This Addendum includes thirty (30) pages.**

The Proposer is to acknowledge receipt of this Addendum No. 1 by signing and submitting Attachment B, including all attachments in its Proposal by so indicating in the proposal that the addendum has been received. Proposals submitted without acknowledgement of receipt of this addendum may be considered non-conforming.

The following forms provided within the RFP Document should be included in submitted proposal:

- Attachment C - City of Ann Arbor Non-Discrimination Declaration of Compliance
- Attachment D - City of Ann Arbor Living Wage Declaration of Compliance
- Attachment E - Vendor Conflict of Interest Disclosure Form of the RFP

Proposals that fail to provide these completed forms listed above upon proposal opening may be rejected as non-responsive and may not be considered for award.

I. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Respondents are directed to take note in its review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: Is a full site survey needed?

Answer 1: No, a full site survey will likely not be required.

Question 2: Can alternate designs be proposed?

Answer 2: The *Area Odor Study Report*, dated July 27, 2020, and prepared by HDR recommends odor control system for the truck loading area. Alternatives to these recommendations may be presented if the the consultant feels as if there are compelling reasons.

Question 3: Based on the site walkthrough, there seems to be two levels of the truck unloading; Level 1 is the Truck Bay and Level 2 is the hopper unloading area to fill the trucks.

Addendum-1-1



**ATTACHMENT C
CITY OF ANN ARBOR DECLARATION OF COMPLIANCE**

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

- (a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy.
- (b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.
- (c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.
- (d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

Orchard, Hiltz & McCliment, Inc. (dba OHM Advisors)

Company Name

 Signature of Authorized Representative 2/4/2025
 Date

Robert Czachorski, PE, Principal

Print Name and Title
 355 South Zeeb Road, Suite A, Ann Arbor, MI 48103
 Address, City, State, Zip
 T (734) 466-4548 E robert.czachorski@ohm-advisors.com
 Phone/Email address

Questions about the Notice or the City Administrative Policy, Please contact:
 Procurement Office of the City of Ann Arbor
 (734) 794-6500

Revised 3/31/15 Rev. 0

NDO-2

**ATTACHMENT D
CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE**

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees _____

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$17.08/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$19.04/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Orchard, Hiltz & McCliment, Inc. (dba OHM Advisors)

355 South Zeeb Road, Suite A

Company Name

Street Address

Robert Czachorski
Signature of Authorized Representative

Ann Arbor, MI 48103

Date

City, State, Zip

(734) 466-4548

Robert Czachorski, PE

robert.czachorski@ohm-advisors.com

Print Name and Title

Phone/Email address

City of Ann Arbor Procurement Office, 734/794-6500, procurement@a2gov.org

25-26



ATTACHMENT E

VENDOR CONFLICT OF INTEREST DISCLOSURE FORM

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr/> <input type="checkbox"/> Interest in vendor's company <input type="checkbox"/> Other (please describe in box below)
OHM Advisors has no conflicts of interest.	

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Orchard, Hiltz & McCliment, Inc. (dba OHM Advisors)	(734) 466-4548	
Vendor Name	Vendor Phone Number	
<i>Robert Czachorski</i> 2025	Robert Czachorski, PE	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

**Request for Taxpayer
Identification Number and Certification**

Go to www.irs.gov/FormW9 for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See Specific Instructions on page 3.	1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.) Orchard, Hiltz & McCliment, Inc.		
	2 Business name/disregarded entity name, if different from above. OHM Advisors		
	3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor <input checked="" type="checkbox"/> C corporation <input type="checkbox"/> S corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) _____ Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see Instructions)		4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any) _____ <i>(Applies to accounts maintained outside the United States.)</i>
	3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions <input type="checkbox"/>		
	5 Address (number, street, and apt. or suite no.). See instructions. 34000 Plymouth Rd		Requester's name and address (optional)
	6 City, state, and ZIP code Livonia, MI 48150		
	7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Social security number									
				-					
or									
Employer identification number									
3	8	-	1	6	9	1	3	2	3

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person	Date
		1/16/25

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they



