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March 27, 2020

City of Scottsburg
Attn: Mayor Terry Amick
2 E. McClain Ave
Scottsburg, IN 47170
Via Electronic Mail

Dear Mayor Amick:

Thank you for allowing Midwestern Engineers, Inc. to consult with your team and for the opportunity to provide a recommended scope of services for necessary improvements at your wastewater treatment facility. Over the last few weeks, Midwestern has carefully evaluated your current conditions regarding both infrastructure and regulatory compliance. We appreciate the candid input from all city officials and your operations personnel.

Using your valuable insight and feedback, we have prepared a scope of services that represents a cost-effective path forward. This plan exceeds all IDEM requirements, prioritizes the critical elements emphasized by the City, and anticipates future demands for the system.

Our proposal expands the current SBR technology, incorporating the necessary rehabilitation and replacement of piping, processes, and equipment. This proposal provides a significant reduction in previously forecasted costs and the associated long-term debt obligation.

We have also shared preliminary information regarding Midwestern's experience with solar technology projects that provide a renewable power source and long-term energy cost savings for wastewater treatment facilities. With the global emphasis on clean energy, the return on investment for solar technology continues to improve. Our firm has several solar fields under

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of Indiana

design and construction at treatment plants throughout Indiana. We will work with Scottsburg to fully evaluate its potential use as part of this project.

Midwestern also wants to emphasize our willingness to work with other finance and construction professionals selected by the City. We have considerable experience in Design-Build, and BOT type projects and look forward to working closely with these professionals to meet the aggressive timeline that we have proposed.

We look forward to being part of your team as you strive to make the needed improvements in the critical infrastructure that serves as the backbone of your community's economic health and prosperity. Please contact us if we can provide any additional information or clarification to this document. We look forward to working with the City.

Sincerely:

Midwestern Engineers, Inc.

A handwritten signature in cursive script that reads "Mark W. Sullivan".

Mark Sullivan, P.E.
CEO

DETAILED SCOPE OF WORK

for

Sanitary Sewer Repair Project

for

**CITY OF SCOTTSBURG
SCOTT COUNTY, INDIANA**

PREPARED BY

MIDWESTERN ENGINEERS, INC.

MARCH, 2020

Detailed Scope of Work:

Main Pump Station

The existing pump station is an old "canned" dry pit unit that is unsafe and obsolete. A new submersible pump type station will be constructed in the vicinity of the existing pump station. The new pump station will include a series of process pumps, and storm mode pumps capable of pumping peak wastewater flows to the new treatment facilities. The peak flow capabilities will be at least 6 MGD. The average flow to the new treatment facilities will be 2.7 MGD. It is proposed that the submersible pumps shall be designed with provisions to deal with clogging due to existing stringy materials in the wastewater. This problem currently plagues the City, resulting in the need for existing pumps to be unplugged daily, which is not acceptable. Ideally it would be nice to have headworks facilities preceding the main pump station; however, due to the depth of the incoming sewers, this may not be economically feasible. We currently have a very similar main pump station under construction for the City of Union City, Indiana. The design of the Union City pump station includes process pumps and stormwater mode pumps to handle average and peak flows similar to those expected in Scottsburg.

New Headworks Facilities

A new headworks facility will be constructed with screening and grit removal equipment. This facility will be housed to protect against freezing. The collection of screening and grit materials will be designed for easy pick-up by local hauling contractors. The design capacity of the facilities will be at 6 MGD or at least matching peak design flow capabilities of the new treatment facilities. In the last two



Picture of Plymouth's below ground headworks.

years, Midwestern has design three (3) similar headworks facilities to that which is proposed for Scottsburg. The two facilities, Plymouth and New Whiteland, were deep and had the headworks facilities ahead of the main pump station to protect the pumps. Midwestern has experience with a number of drum type screens and vertical mechanical bar screens.



Picture of Plymouth's below ground headworks.



Picture of Plymouth's below ground headworks with a building over the top for freeze protection.

Relocation of Existing Incoming Sewers

With the base of the final location of the main pumping station and headworks, it will be necessary to re-direct existing incoming sewers to the new site. The overall incoming sewer depths are deep, which will make the relocation somewhat costly. A sewer comes from the west along Montgomery street, another comes from the Northwest, and a third comes from the south. All converge at the existing main pump station. Costs and provisions have been made to address these sewers.

Expansion and Re-Use of Existing Sequential Batch Reactors (SBR)

The Scottsburg WWTP currently utilizes SBR's for the treatment units to provide for biological treatment. Midwestern is proposing to expand the capacity of the existing units by adding up to three new units. The existing three SBR's are rated at 1.35 MGD, so in theory, adding an additional three new SBR's would increase the overall plant capacity to the desired capacity of 2.7 MGD. We have been working extensively with the manufacturer's representative of the existing SBR's to layout the design of the configuration to reach an ultimate plant rating of 2.7 MGD and a peak flow in excess of 6 MGD. Due to the capabilities of the SBR's to handle peak flows in excess of 6 MGD, **we can confidently indicate that no additional equalization basin capacity will be required.**

Within the last two years, Midwestern completed a project to expand the capacity of the SBR's at West Central Conservancy District in Avon, Indiana. For that project, the SBR's were expand from 3.5 MGD to 5.0 MGD by adding additional adjacent SBR tanks. This is the same design concept, which is proposed for Scottsburg. We work closely with the manufacturer's representative, and mutually agree that the proposed construction costs will greatly reduce with this concept versus constructing entirely new oxidation ditch tanks.

We are also proposing to replace existing SBR equipment in the existing tanks, which, when complete will provide the City of Scottsburg with an entirely new SBR treatment system.



Picture of the West Central Conservancy District's SBR expansion.



Picture of the West Central Conservancy District's SBR expansion.



Picture of the West Central Conservancy District's SBR expansion.

Turbo Blowers Versus Conventional Blowers

The SBR system will require aeration to be provided to the process. It is proposed to replace the existing blowers. Midwestern will evaluate the cost and energy savings associated with powering the blower system. The Blowers are a significant part of the energy requirements at the WWTP. Turbo blowers, which are more costly upfront, will provide for significant energy savings as they require less horsepower to operate. We designed turbo blowers for the City of Plymouth approximately three years ago and found that their energy consumption associated with the blowers were cut in half. This resulted in considerable savings to the City. We would propose the same evaluation for the City of Scottsburg.



Picture of the City of Plymouth's new Turbo Blowers.



Picture showing turbo blowers next to old centrifugal blowers.

Effluent Pit Renovation

The effluent pit which collects the effluent coming from the SBR's is too small and experiences back ups. It will be necessary to construct a new effluent pit or enlarge the existing pit. The pumps for the effluent pit pumps effluent to the southernmost large steel tank. This is necessary to accumulate effluent to force the flow through the existing UV system. These processes will be modified, which will be discussed later. The new pumps will pump effluent flow directly through the UV system by pressure and will no longer pump to the steel holding tank.

Steel Tanks and Sludge Digestion/Storage

There are two large steel tanks existing at the southwest corner of the treatment plant. One tank is used for sludge storage and digestion. The other tank is used for equalization ahead of the UV system. It is proposed to convert the equalization tank to additional sludge storage for dewatering. This will provide a total of 1.25 million gallons of sludge storage, which will significantly benefit the City of Scottsburg. Renovations to these tanks would include aeration and repair to the pitting of the steel tanks. Additionally, piping and valve modifications would be necessary to connect into the sludge system.

UV System Expansion

The existing UV system will need to be expanded to provide for a minimum capacity of 6 MGD peak. Additionally, we are budgeting to expand the existing building to house the new UV unit. The UV unit is enclosed, and flow will be pumped through the unit from the effluent pit for the SBR's. Over the past two years, Midwestern has designed new UV systems for Patoka Lake Regional Sewer District WWTP, Union City WWTP, and the Town of Lynn WWTP.

Mechanical, Electrical, and SCADA Improvements

Midwestern has an in-house electrical Engineer who will design the new mechanical and electrical improvements for the project. He will also evaluate incoming electrical service requirements and the compatibility of the existing service entrances and motor control centers. Generally speaking, with the improvements proposed, the current electric components will need to be upgraded. This same individual will work with your SCADA integrator to update and improve the communications systems. It is our experience that other engineers generally underestimate this crucial part of your project. We will also look at the standby power improvements necessary for the plant to operate during a power outage.



Example Power Transfer



Example Stand By Generator

Administration and Control Building

A new building is proposed to house the administrative offices and controls for the new facilities. Midwestern has designed numerous similar facilities and can accommodate the wishes of the City while keeping the project within budget.

Solar Fields

The City has discussed looking into solar fields at the wastewater treatment plant and the potential savings which could be realized by this endeavor. Midwestern has been involved in several designs of solar fields over the past couple of years. To name a few, we would highlight the City of Boonville WWTP, the City of Huntingburg WTP, and the City of Plymouth WWTP. Following is a brief description of the project at the Boonville WWTP, which is currently under construction:

The City of Boonville operates a Class III, 2.9 MGD wastewater treatment facility (WWTP), which consists of a grit chamber, comminutor, bar screen, three vertical loop reactors, two secondary clarifiers, ultraviolet light disinfection, and post aeration. Sludge is pumped and treated by four aerobic digesters and a sludge press for dewatering. Due to the size of the facility, the City's

electrical bill at the WWTP averages around \$17,000 a month. To reduce operations costs, the City decided to begin the process of undertaking the design of a solar array at the WWTP in 2017.

The City decided to construct the solar array in two phases due to its location in a floodplain and floodway. Phase I is located in the floodplain and consisted of the installation and construction of a 618.80 kW (DC)/466.20 kW (AC) PV Utility Interactive System serving existing switchgear. The PV system consists of 1904 Tier 1 PV modules and 14 high energy efficiency utility-interactive inverters. The array is considered an interactive utility system that will interconnect with the existing electric distribution system, which is leased from the City of Boonville by Vectren, a CenterPoint Energy Company. The project was commissioned in early 2020 after undergoing witness testing by Vectren. Phase II is located in the floodway and will commence design in the future. The Phase I facility is anticipated to produce approximately 900,000 kWh per year, which will result in approximately \$105,000 per year in energy savings.



Example solar panel and apparatuses

Scottsburg Project Timeline:

Following is Midwestern Engineer’s project timeline. It is an aggressive schedule, targeting construction activities commencing in the fall of 2020. Midwestern has the resources to meet this aggressive schedule:

City Selects Engineer	April 2020
Sign Engineering Contracts	April 2020
Begin Design	April 2020
Complete 60% Design	June 2020
Contractor Begins GMP	June 2020
Submit Plans for IDEM Review	June 2020
Engineer Complete Construction Plans	August 2020
Contractor Completes GMP	August 2020
Receive IDEM Construction Permit	September 2020
Begin Construction	September 2020
Substantial Completion	September 2021
Project Start-up	September 2021
Final Completion	November 2021

Construction Cost Estimate:

Midwestern has prepared a preliminary cost estimate for information purposes only. This will assist the city by providing a general idea where project improvements would fit into the City's utility budget. We understand the final GMP price will come from the selected Contractor.

SCOTTSBURG WWTP Improvements - Estimate of Probable Construction Costs

Existing Sequential Batch Reactor (SBR) Expansion	\$2,200,000
New Headworks Structure	\$1,500,000
New Main Pump Station	\$700,000
Re-Locate incoming Sewers to New Pump Station	\$200,000
Effluent Pit Improvements	\$150,000
UV Disinfection Improvements	\$500,000
Mechanical, Electrical and Plumbing	\$900,000
SCADA System Improvements	\$350,000
Digester Improvements	\$150,000
Piping and Valves	\$500,000
Sitework	\$200,000
New Admin/Control Building	\$800,000
<hr/>	
SUB-TOTAL OF CONSTRUCTION COSTS	\$8,150,000
	Contingency <u> \$815,000</u>
Total Estimated Construction	\$8,965,000 *

* Engineer's Estimate Only. Selected Contractor Shall Determine the Final Price

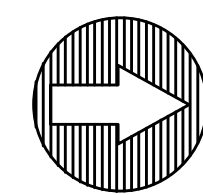
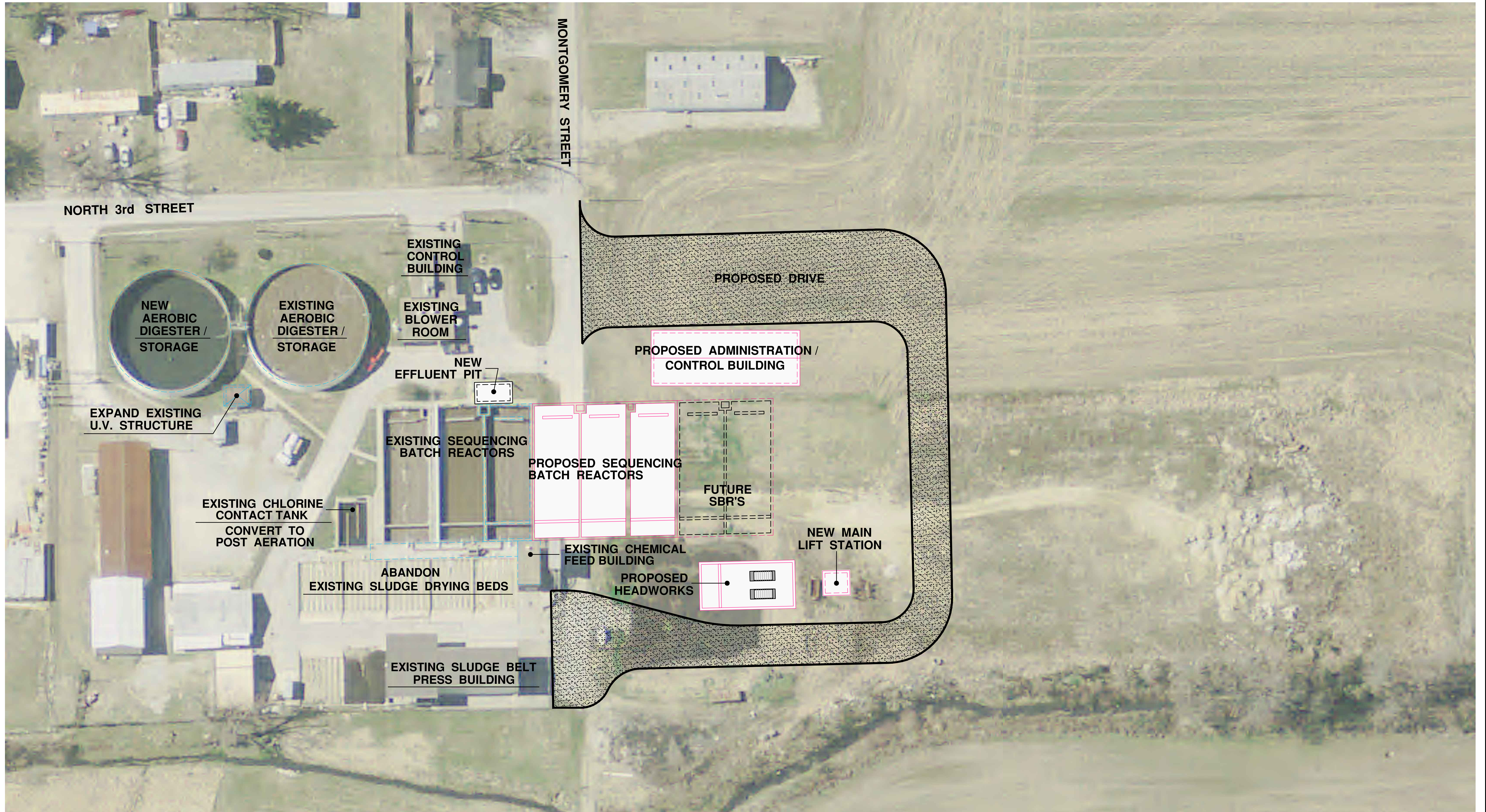
Engineering Fees:

Following are the proposed Engineering Fees for the proposed project:

Design	\$384,000
Bidding	\$10,000
Construction Engineering (During Construction Phase Only)	\$75,000

Conceptual Layout:

On the following page is a conceptual layout of the improvements making up the proposed project. This is only conceptual, and the final layout will be determined through consultation with the City of Scottsburg.



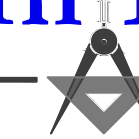
SCOTTSBURG : PROPOSED WASTEWATER TREATMENT PLANT IMPROVEMENTS

SCALE: 1" = 30'

Quality Engineering Services Since 1959

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