

200900017375

**Newton County Regional Water and Sewer District**

8/17

**Newton County, Indiana**

**Wastewater Collection and Treatment System**

**Addendum No. 1**

**August 10, 2009**

This Addendum forms part of the Contract Documents and modifies the original Bidding Documents, as noted below. Acknowledge receipt of the Addendum in the space provided in the Bid Form. Failure to do so may subject Bidder to disqualification.

This Addendum consists of one (1) page plus attachments.

**GENERAL**

- 1. The pre-bid meeting minutes (6 pages) are attached and made a part of this Addendum as Attachment 1.

**PROJECT MANUAL**

- 1. ADD Section 11500 Membrane Bioreactor System (attached to this Addendum) to the Project Manual.

**END OF ADDENDUM NO. 1**



AMERICAN  
**STRUCTUREPOINT**  
INC.

7260 Shadeland Station, Indianapolis, Indiana 46256  
TEL 317.547.5580 FAX 317.543.0270

www.structurepoint.com

**WASTEWATER COLLECTION AND TREATMENT SYSTEM  
NEWTON COUNTY REGIONAL WATER & SEWER DISTRICT  
MOROCCO, NEWTON COUNTY, INDIANA  
PRE-BID MEETING MINUTES**

**Location:** Morocco, Newton County  
**Date:** August 7, 2009  
**Project Name:** Wastewater Collection and Treatment System  
**Project No.:** IN20060783  
**Owner:** Newton County Regional Water and Sewer District  
**Attendees:** See attached list  
**Minutes By:** Sebastian Mino, American Structurepoint, Inc.  
**Copy to:** Attendees, Design Team

**ITEMS DISCUSSED:**

1. Introductions of the attendees were made.
2. The project consists of, but is not necessarily limited to, the following construction of approximately 4,600 ft of 8-inch sanitary sewer, 2,400 feet of 2-inch low pressure force main, 2,200 feet of 3-inch effluent force main, and a 0.010-MGD wastewater treatment plant including influent lift station, flow meters, mechanical headworks, extended aeration multi-stage biological process, clarifiers, biosolids holding tank, ultraviolet disinfection system, effluent lift station, headworks building and office building, driveway, yard piping, electrical, instrumental and control, traffic maintenance, erosion control, and site restoration.
3. There are no MBE/WBE participation requirements for this project.
4. Standard coordination with utilities will be required for this project, including power and telephone. Water tank project may not be finished on schedule; and this will prevent the wastewater treatment plant from having readily available water by the time it begins operating.
5. Collection System: Substantial completion for line SS-1 and the structural components of the influent lift station shall be 45 days after notice to proceed. Substantial completion for

AUG-10-2009 19:20 RECEIVED 08/10/2009 18:21 3176878639  
STRUCTUREPOINTMCGRAW DODGE  
3175430270 P.04/13

the remainder of the collection system shall be 130 days after notice to proceed. Final completion shall be 160 days after notice to proceed.

Treatment System: Substantial completion for the wastewater treatment plant shall be 160 days after notice to proceed. Final completion shall be 45 days after substantial completion or 45 days after NPDES permit is approved.

The substantial completion dates are based on the water system construction schedule being completed around the end of January 2010. The Owner's intent is to have the water and wastewater system operation at approximately the same time.

6. This project is locally funded. All money will come from the Newton County RWSD.

Engineer is acquiring the IDEM Construction Permit and Erosion Control Permit. These are anticipated to be in place by the time Notice to Proceed is issued. Contractor is responsible for all other permits including Newton County road crossing permits and building permits. Newton County road crossing permits can be obtained through the Newton County Highway Superintendent's Office at 219-285-2595.

Building permit fees for the wastewater treatment plant are being waived by Newton County.

7. The site lies along County Roads and is accessible at any time.
8. Bids will be received by the Newton County Regional Water and Sewer District (NCRWSD) until 12:00 pm local time on Monday, August 17, 2009. Sealed bids shall be received at the Newton County Auditor's Office, located at the Newton County Courthouse; One Courthouse Square, Kentland, Indiana, 47951.

Bidders shall provide the lump sum price for the collection system and lump sum price for the treatment system where shown on the bid form. The total lump sum price shall be the sum of the two lump sum prices.

Bid Proposal Form is set up to allow alternate Membrane Bioreactor (MBR) technologies to be used for the main process. Contractor is responsible for all design and material changes to accommodate using the alternates. The design and material differences shall be included in the Basis of Bid Lump Sum Price submitted.

A second set of columns is provided in the table of the Bid Proposal Form. If Bidder wishes to use a substitute piece of equipment listed in the table, the substitute equipment shall be listed in the second column along with installed price. The project will be awarded on the first column Basis of Bid equipment only. Bidder shall submit a substitute equipment package with their bid for consideration after bid opening.

9. Bid Award will be based on the lowest, responsive, responsible bid.
10. Wage scale included in the project manual is to be used for this project unless otherwise stated.

11. Questions or clarifications are due by Tuesday, August 11 at 12:00 pm either by email, phone or fax. Addendum 1 is expected to come out on Monday, August 10.

12. Open Discussion:

- a. Some existing mature trees on the Right-of-way along 300E and 500S may need to be removed. Plan on removing them if they are in the way and in Newton County road right-of-way.
- b. All disturbed areas will be seeded with grass after the work has been performed.
- c. Concerns about the soil conditions in the site were voiced, including the possibility of having pockets of soft sand along some areas in the project. The geotechnical report in the appendix includes an original report plus an addendum which shows borings at the plant site and throughout the project area. These should be reviewed when considering soil and water conditions.
- d. The ongoing water project for the NCRWSD has experienced problems with old clay drain tiles being damaged during linear water main construction. It is anticipated that an addendum will contain an allowance for a certain number of clay tile crossings.
- e. Proposed low pressure force main "SS-3" and effluent force main "OF-1" pipe can be PVC or HDPE as long as it is DR-11 rated.
- f. The manufacturer for the Aquarius System (MSABP) can supply stainless steel plates for separating the cells.
- g. Since the water system may not be operational during the treatment plant construction, Contractor shall be responsible for hauling in water if needed.
- h. Electric and telephone utilities are in the County r/w adjacent to the plant site.
- i. Location of the Bid Opening may be moved to the Newton County Government Center. This will be clarified in an addendum.
- j. Generator is included in bid package.

13. The meeting was adjourned at approximately 1:50 pm, local time.



AUG-10-2009 19:20

RECEIVED 08/10/2009 18:21  
STRUCTUREPOINT

3176878639

MCGRAW DODGE  
3175430270

P.07/13

## SECTION 11500 MEMBRANE BIOREACTOR SYSTEM

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. The IDEM construction permit application includes the construction of an MBR as an alternate activated sludge technology. Therefore the Contractor does not have to make a separate IDEM construction permit application to utilize this technology.
- B. Construction of a Membrane Bioreactor System (MBR) is allowed as a secondary "Basis of Bid" element. Contractor shall provide and install all elements of the MBR system required to make a complete and functional system.
- C. For the MBR system, Contractor shall utilize the treatment plant elements upstream and downstream of the biological process. If the MBR manufacturer believes another element, including the blowers, either upstream or downstream of the biological process is required or needs to be modified, it shall be included as part of the MBR installation cost on the bid form and shall be provided and installed.
- D. The Contractor may modify the tank dimensions as needed to accommodate the MBR system which is proposed. If the tank is modified, Contractor shall submit design calculations to support the dimension changes as part of the shop drawing review process.
- E. All pumping systems and blower systems shall have an installed back up unit. In a case where two units are required, a third spare which is plumbed to both systems is acceptable.
- F. The biological process has been purposefully designed as two 5,000 gpd treatment units. The initial flow to the treatment plant is estimated to be 1700 gallons per day. If the Contractor/MBR Manufacturer believes it is possible to treat the initial flow and final flow in one biological tank, the following elements shall be incorporated:
  - a. Removable air diffusers
  - b. Two membrane units (minimum) each capable of withdrawing 5,000 gpd. The membrane units shall be able to be removed from the tank independent of the other one and the air system.
- G. The Contractor shall provide and install a heated and ventilated building to house the process equipment (such as the permeate pumps) and piping which is above ground. The building shall be large enough to accommodate the equipment with a minimum of 5 feet clearance to the walls from the equipment. The building shall be tall enough to accommodate removal of the membranes - if they are enclosed in the building. It is anticipated a mobile hoist (truck mounted) will be utilized to remove the membranes from the tanks.
- H. The contractor shall provide and install handrail around the tanks unless covers are provided.

#### 1.2 RELATED DOCUMENTS

- A. The general conditions of the Contract, including applicable General Conditions, Supplementary Conditions and General Requirements sections apply to the work specified in this section.

AUG-10-2009 19:20 RECEIVED 08/10/2009 18:21 3176878639  
STRUCTUREPOINTMCGRAW DODGE  
3175430270 P.08/13

### 1.3 DESCRIPTION OF WORK

- A. The Contractor shall furnish, install and place into satisfactory operation, the full membrane bioreactor wastewater treatment system which includes aeration piping and diffusers, membranes, permeate pumps, sludge recirculation pumps if needed, associated process piping, chemical cleaning tanks and associated equipment, one year supply of cleaning chemicals, and all other appurtenances required to make a complete and functional membrane bioreactor system.
- B. The system furnished shall be the PurAM MBR manufactured by Bord na Mona or Z-MOD, MBR, manufactured by Zenon Environmental. The type of MBR is an immersed ultrafiltration membrane system that operates alternating permeate pumps for an average daily flow of 10,000 GPD. Maximum daily capacity of 12,500 GPD shall be provided by the membranes.
- C. The MBR system have a nominal pore size of 0.05 microns.
- D. Automated relax periods, maintenance and recovery cleans shall be performed in-situ.
- E. Contractor shall provide sludge recycle pumps if required.
- F. Clean water is withdrawn from the mixed liquor through the membranes by the permeate pumps and discharged into a clearwell or the pipe to the UV system. Water from the clear well maybe used to backpulse the membranes for cleaning. Effluent is pumped or flows by gravity from the clearwell to the UV system depending on the Manufacturer's equipment.

### 1.4 SUBMITTALS

- A. Refer to Section 01330 for shop drawing and operation and maintenance manual submittal requirements.

### 1.5 EQUIPMENT WARRANTY

- A. The equipment manufacturer shall warrant the equipment being supplied to the Owner against defects in workmanship and materials for a period of three (3) year from the date of substantial completion, under normal use, operation and service. The warranty shall be in published form and apply to similar units. A warranty offered by a representative will not be acceptable in lieu of the manufacturer's warranty.

## PART 2 - PRODUCTS

### 2.1 Bord na Mona SUPPLIED MBR

- A. Modifications to the proposed tanks as required for the proposed process (such as removal of the clarifier, addition of clear well, addition of an anoxic zone).
- B. Diffused air system for the treatment system complete with diffusers, air piping and associated valves. Blower size and pressure increase if needed to accommodate air required for the process.
- C. Membrane modules, assembled into two (2) cassettes.
- D. Two (2) permeate pumps (or 3 if both cassettes are in two tanks) to extract effluent from the membrane chamber and discharge into the clear well. The permeate pumps shall also be used for

AUG-10-2009 19:21

RECEIVED 08/10/2009 18:21 3176878639  
STRUCTUREPOINTMCGRAW DODGE  
3175430270

P.09/13

membrane backpulse and cleaning. System shall be complete with valves and associated piping.

- E. External or in-place membrane cleaning system including hypochlorite and citric acid tanks, associated piping, valves, and controls.
- F. Two (2) sludge recirculation pumps (RAS) to transport mixed liquor from the membrane chamber to the anoxic chamber, if required. System shall be complete with controls, timers, piping and nozzles. RAS shall be introduced back to anoxic zone through nozzles which keep the contents mixed.
- G. Two (2) effluent pumps to remove the effluent from the clear well, if required, and discharge it to effluent pipe line to the UV system or gravity connection to the effluent line.
- G. NEMA 12 (if inside or NEMA 4X if outside) Process control panel complete with PLC, HMI and motor control equipment for operating the Membrane Bioreactor System. PLC shall provide notification of alarms via telephone calling.
- H. Membrane Modules
  - a. Membranes shall be flat-plate type. The membrane material shall be Polysulphone. The support material shall be Polyethylene. The mean pore diameter shall be 0.05 microns. The flux rate shall be 15 gal/sq ft/day at 15 degrees C.
  - b. Membranes shall not require back pulses for cleaning.
  - c. Membrane drop frames shall conform to the following:
    - i. All structural members including tubes, plate and flat bar shall be 304 stainless steel.
    - ii. All mounting hardware shall be 304 stainless steel.
    - iii. All welds shall be watertight and continuous without breaks or pits.
    - iv. The cassette shall have a stainless steel lifting bracket to allow removal from the tank.
  - d. Membrane cassette frame shall house and support the individual membranes as a functional group. The cassette shall include the following:
    - i. Air scour grid and air distribution system and permeate conveyance system integral to the cassette design.
    - ii. 2-inch polypropylene camlock, and couplers complete with stainless steel hardware for connection to permeate and air lines.
    - iii. 2-inch schedule 80 PVC pipe and fittings complete with saddles for permeate and air piping connections to membranes.
    - iv. Hose, Tiger flex or equal, 2-inch ID, clear food grade, 2.36-inch OD full vacuum rating.
    - v. Cassette shall be fitted with flexible condensate release pipe work and ball valve.
  - e. Membrane plate assembly



j. Valves

- i. Actuated air valves shall be stainless steel electric actuated butterfly valves. Actuators shall be capable of providing position feedback to the PLC.
- ii. Actuated permeate valves shall be true union electric actuated PVC ball valves. Actuators shall be capable of providing position feedback to the PLC.
- iii. Manual air valves shall be stainless steel flange butterfly valves or stainless steel socket weld ball valves.
- iv. Manual permeate valves shall be true union PVC ball valves.

2.2 ZENON SUPPLIED MBR

- A. Modifications to the proposed tanks as required for the proposed process (such as removal of the clarifier, addition of clear well, addition of an anoxic zone).
- B. Diffused air system for the treatment system complete with diffusers, air piping and associated valves. Blower size and pressure increase if needed to accommodate air required for the process.
- C. ZeeWeed® membrane modules, assembled into two (2) cassettes.
- D. Two (2) permeate pumps (or 3 if both cassettes are in two tanks) to extract effluent from the membrane chamber and discharge into the clear well. The permeate pumps shall also be used for ultrafiltration membrane backpulse and cleaning. System shall be complete with valves and associated piping.
- E. External or in-place membrane cleaning system including hypochlorite and citric acid tanks, associated piping, valves, and controls.
- F. Two (2) sludge recirculation pumps (RAS) to transport mixed liquor from the membrane chamber to the anoxic chamber if required. System shall be complete with controls, timers, piping and nozzles. RAS shall be introduced back to anoxic zone through nozzles which keep the contents mixed.
- G. Two (2) effluent pumps to remove the effluent from the clear well, if required, and discharge it to effluent pipe line to the UV system or gravity connection to the effluent line.
- H. NEMA 12 Process control panel complete with PLC (Automation Direct DL205 Koyo with D2-250-1 CPU), HMI (EZ Automation - 6 inch TFT Color Touch Panel) and motor control equipment for operating Ultrafiltration System. PLC shall provide notification of alarms via telephone calling.
- I. Filter Membrane Modules:
  - a. Two (2) 500a cassettes each with two (2) reinforced hollow fiber membrane modules shall be supplied. Modules shall consist of ZeeWeed® 500Series membranes and each cassette shall be capable of accommodating up to two (2) ZW500a modules. The membranes shall operate under low-pressure vacuum conditions. The membrane shall be able to sustain a maximum negative pressure of 12 psig and a maximum positive pressure of 8 psig during backpulse.
  - b. Membranes shall have a nominal pore size of 0.04 microns and an absolute pore size of 0.1

AUG-10-2009 19:21

RECEIVED 08/10/2009 18:21 3176878639  
STRUCTUREPOINTMCGRAW DODGE  
3175430270

P. 12/13

microns.

- e. Minimum surface area of membranes supplied shall be 2,000 ft<sup>2</sup>. This corresponds to average daily fluxes of 10 gfd during average day flow (ADF).
- d. The membranes shall be a proven design of a membrane manufacturer engaged in the production of membrane of this type. The membrane shall be manufactured and supplied by a North American based manufacturer. Replacement membranes shall be available for delivery within 1 week of receipt of order.
- e. The membranes, membrane modules, membrane cassettes and appurtenances shall be by one manufacturer and the MBR design provided by the same manufacturer.
- f. Membranes shall be constructed of chemically resistant materials and shall be capable of being washed repeatedly in high chlorine solutions (minimum 100 mg/L and maximum 2000 mg/L) for up to 24 hours, and low pH (range 2 to 3) and high pH wash solutions (range 10 to 11) for up to 24 hours respectively.
- g. Membranes shall be physically strong enough to withstand the operating conditions associated with continuous operation in an aerated tank of mixed liquor at concentrations of up to 12,000 mg/L.
- h. Membranes shall allow product water (permeate) to be drawn through from the outside surface of the membrane to the inside (lumen) of each membrane strand (fiber).
- i. Membranes shall be capable of regular backwashing with and without cleaning chemicals at a backwash trans-membrane pressure as high as 8 psi to minimize pore fouling.
- j. The membrane modules shall be constructed such that the membranes are held vertically and bonded firmly at the top and bottom of the module.
- k. The internal lumens of the membrane fibers shall connect into a common area at the top and/or bottom of each module.
- l. The membrane cassette shall include three connection points: one for agitation air and two for permeate water.
- m. All steel components of each membrane cassette shall be manufactured from epoxy coated carbon steel.
- n. All non-steel components of the membrane modules shall be UV resistant and have a chemical resistance at least equal to that of the membranes.
- o. The membrane modules shall also be attached to each other at the base to avoid lateral movement of the membrane modules during operation.
- p. The pipe connections between the membrane cassettes and the manifold header pipe work shall be UV resistant pipe capable of operating at the positive and negative pressures expected for this system.
- q. It shall be possible to isolate and remove a membrane cassette from the manifold header pipe work while the system is in operation without the need to shut down the permeation or aeration system, or drain the entire membrane train.
- r. The Contractor shall ensure that the membrane filtration system is completed with all

necessary additional components, accessories and appurtenances, not supplied by the membrane filtration system supplier, but required to make a complete and operable system. This includes, but not limited to, interconnecting piping within membrane trains and interconnecting piping within ancillary systems.

- s. Membrane cassettes shall be prefabricated, preassembled, and tested, to the greatest extent possible before shipment to the site.
- t. Items to be furnished shall be Manufacturer's standard model unless otherwise indicated. Items shall be new and unused.

### PART 3 - EXECUTION

#### 3.1 PROTECTION

- A. All membranes shall be carefully handled and stored to prevent damage. Membranes are shipped in a glycol solution. Membranes shall be stored in a sheltered area protected from sunlight, freezing and extreme heat. They shall not be allowed to dry out.

#### 3.2 INSTALLATION

- A. Contractor shall install equipment supplied, install process piping, control systems, electrical connections and process control systems in order to have a fully functional wastewater treatment system.
- B. After the Contractor has installed the equipment and it is capable of being operated, the equipment manufacturer shall furnish a qualified representative for a minimum of one (1) day (8 hours) to inspect the equipment, supervise field testing and start-up of the equipment. A written report covering the representative's findings and installation approval shall be submitted to the Engineer covering all inspections and outlining in detail any deficiencies noted.
- C. After the equipment had been placed in operation, the manufacturer's representative shall make all final adjustments for proper operation.

#### 3.3 OPERATOR TRAINING

- A. Provide two (2) day (16 hours) of operator training for Owner's personnel after the system is operational. Training will occur on a schedule convenient to the Owner. Training will not take place while the manufacturer's representative is at the job site for equipment installation and inspection.
- B. Provide one (1) day (8 hours) of follow up operator training at the request of the Owner.

END OF SECTION 11500