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Evansville Water & Wastewater Utility East & West WWTP Digester Cleaning & Rehabilitation Project Statement of Qualifications - January 31, 2014

In Collaboration with CE Solutions, Powers Engineering, Earth Exploration,
and Jacobi, Toombs, & Lanz, Inc.

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101 Plaza East Boulevard, Suite 200
Evansville, Indiana

812.474.1177
812.474.1176 Fax

January 31, 2014

Mr. Michael D. Labitzke, P.E., Deputy Director of Utilities - Engineering
City of Evansville
Evansville Water & Sewer Utility
1931 Allens Lane
Evansville, Indiana 47720

**Re: Statement of Qualifications (SOQ)
East & West Wastewater Treatment Plants Digester Cleaning & Rehabilitation Project**

Dear Mr. Labitzke:

Commonwealth Engineers, Inc. is pleased to submit our SOQ in response to the EWSU's Request for Proposals for the **East & West Wastewater Treatment Plants Digester Cleaning & Rehabilitation Project**. As requested, please find five copies of our SOQ enclosed for your review.

Commonwealth has been providing professional engineering services to cities, towns, and counties across the State of Indiana since 1974. We have developed a reputation for being a leader in environmental engineering services. Working with our firm will offer the following benefits:

- ✧ The advantage in working with a firm that has eighteen (18) professional engineers registered in the State of Indiana;
- ✧ The knowledge that Commonwealth has obtained from working on numerous projects, similar to yours, providing planning, design, construction engineering, and resident project representative services;
- ✧ The responsiveness of a local firm (both to the state in-large and specifically Evansville) that has strong representation with state regulatory and funding agencies;
- ✧ A team of professionals personalized for EWSU's project with expertise, experience, and a strong commitment to the success of EWSU's project;
- ✧ Assurance that project recommendations will be made that are in best interest of the EWSU using experience and technical merit.

Additionally, Commonwealth has enhanced our team's qualifications by utilizing the services of specialty sub-consultants with whom we have a long history of partnership. Further, Commonwealth is committed to supporting and mentoring WBE/MBE firms as they continue to expand their successful businesses (as you will see reflected by our proposed team structure). We look forward to working with EWSU. Should you have any questions or need additional information, please feel free to call us.

Sincerely,

Albert C. Stong, P.E.
President

Eric T. Parsley, P.E.
Project Manager/VP of Evansville Operations



East & West WWTP Digester Cleaning & Rehabilitation Project

Project Understanding and Approach



PROJECT UNDERSTANDING AND APPROACH



PROJECT UNDERSTANDING AND APPROACH

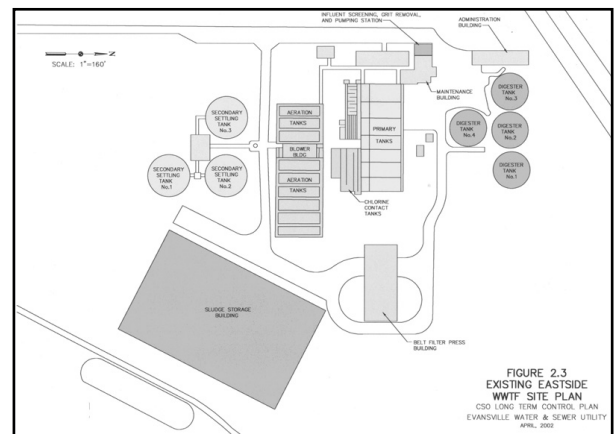
The City of Evansville maintains two (2) wastewater treatment plants (WWTPs); the East WWTP located on Waterworks Road and the West WWTP located on Tekoppel Avenue. Both WWTPs employ the anaerobic digestion process as a means of managing waste (i.e. sludge).

At both the East and West WWTPs primary sludge is accumulated on the bottom of the primary clarifiers, collected, and pumped to three (3) anaerobic digesters. Waste activated sludge from the secondary clarifiers is thickened by gravity belt thickeners (GBTs) and pumped to these anaerobic digesters. A secondary anaerobic digester follows these primary anaerobic digesters. Digested sludge is pumped from the West WWTP to the East WWTP where the sum total is dewatered with four (4) belt filter presses (BFPs). The dewatered sludge is then trucked to an on-site storage facility and ultimately disposed of via land application. The anaerobic digestion process presents intrinsic advantages, including:

- (1) energy savings,
- (2) reduced sludge yield
- (3) production of biofuel

These advantages have led to the processes inclusion within a current guaranteed energy savings project being performed by the City in partnership with Johnson Controls. The wastewater component of the Johnson Controls projects includes the supply of a sludge centrifuge (at the East WWTP in tandem with the existing BFPs) and incorporation of Gas Electric Generation; through the addition of Fats, Oils, and Grease (FOG) at the City's sludge receiving stations.

The improvements project presents opportunity to perform related work; namely, necessary cleaning/maintenance and desired upgrades to the anaerobic digestion processes at both WWTPs.



PROJECT UNDERSTANDING AND APPROACH

Anticipated Overall Project Scope

1. Cleaning, complete, the anaerobic digester tanks at both the East and West WWTPs; with lawful disposal of all materials.
2. Inspecting the condition of the anaerobic digestion components, specifically: the tankage, the covers, and the existing mixing nozzles within the anaerobic digesters at the East WWTP.
3. Performing necessary corrective actions on the existing anaerobic digestion components, including: structural repairs, coatings for the covers, and repairs of other internal miscellaneous components.
4. Eliminating the existing Pearth System at the West WWTP and replacing with a RotaMix System similar to that currently in place at the East WWTP.
5. Replacement of the old Heat Exchangers/Boilers at the West WWTP (and designing same for alternate bid solicitation at the East WWTP; to be performed if funds allow and Owner deems fit).
6. Simplification of the corresponding piping systems at both facilities (to minimize the need for valves and to afford a more focused operational scheme consistent to the manner in which staff currently operates the facilities).
7. New components integration into the existing SCADA system.
8. Startup and proper function of the anaerobic digestion systems at both WWTPs.

ANAEROBIC DIGESTER CLEANING/SLUDGE REMOVAL

Through our January 15, 2014 visual site inspection of the facilities and corresponding project scoping discussions with WWTP staff we have identified the following: (1) cleaning of anaerobic digesters has last occurred in 2003 (East WWTP) and 1999 (West WWTP); (2) WWTP personnel anticipate high volumes of materials within the tankage at the West WWTP; (3) Side access to the digesters is not present; (4) the utility has a land disposal permit that they are willing to allow the contractor to utilize for disposal purposes; and (5) the utility can operate the facilities utilizing two (2) of the four (4) anaerobic digesters (with associated time limitations).



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PROJECT UNDERSTANDING AND APPROACH

It is anticipated large volumes of inert materials, rags, hair, and highly concentrated biosolids are present within the anaerobic digesters. Detrimental effects associated with this situation include: (1) a decrease in biosolids detention time within the vessels; (2) an increase in fuel costs – to heat the solids; (3) an increase in sludge disposal costs - due to diminished digestion; and (4) increased wear on the sludge pumps – decreasing their useful life and increasing the frequency of required maintenance.

The Engineer will coordinate with the utility during design to determine the extent in which the anaerobic digesters contents can be lowered through normal operational capabilities. Ideally, the vessels will be able to be pumped such that the floating covers are resting on the corbels. The grit level will then be probed and an approximation of material required removed and disposed of by Contractor assembled for bidding purposes.

The following **key provisions** will be incorporated within the contract documents to insure the Owners interests are protected:

Key Project Provisions

1. **Rate of removal of materials from the anaerobic digesters will be limited** to insure the materials are not drawn out too fast (to mitigate the potential for creating a vacuum and collapsing the cover);
2. The material will be examined to **determine suitability for disposal via the Owners land application permit** (with a corresponding credit to Owner) **or the likely disposal to a landfill** (given the unsuitable nature of materials for land application);
3. Provisions will be highlighted **allowing for on-site dewatering operations** by Contractor (to minimize the costs associated with the sludge disposal);
4. Provisions to afford **payment to the Contractor only for materials present, and not the water likely added** by the contractor to facilitate material pumping and removal.
5. Requirement to **clean and decontaminate the vessels** once empty via pressure washing with a water soluble, biodegradable, alkaline based detergent (to remove acid constituents, grease, oil, and other contaminants) along with subsequent testing of surficial concrete pH .
6. **Time limitations on the Contractors work will be clearly defined** consistent with the facilities operational needs.



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PROJECT UNDERSTANDING AND APPROACH



A staged approach will be defined and employed to insure the operational staff have the necessary facilities available at all times and “other” work on site does not adversely affect the contractor’s anticipated schedule. Further, since sludge removal and disposal is likely to be executed by a sub-contractor, we will discuss with the Owner the benefits of **prequalification requirements** to insure the low, responsive, responsible bidders select sub-contractors whom are qualified.

STRUCTURAL EVALUATION & REPAIR OF TANKAGE AND COVERS

Structural evaluation will be performed during design, but there is no means to inspect the interior of the tanks until cleaning commences. Additionally, the full extent of existing cover disrepair will only be determined once the project commences and the covers are removed. The covers at the West WWTP present a greater potential for required repairs since structural repairs were performed on the covers at the East WWTP in 2003.

In general, **there is a risk for the existing corbels being in a state of failure.** This may necessitate replacement either in-kind or through the incorporation of a steel column system during construction. Provisions will be incorporated within the design to insure additional cost and time required by the Contractor is defined (to minimize the potential for costly change orders and project delays that often come at a premium when potential issues are not vetted before hand).

Cover ballasting methods and associated requirements will be reviewed with the Owner to insure the method employed by the Contractor is clearly defined and meets the Owners expectations. **Ballast blocks will be required pre-manufactured versus on-site construction (for quality assurance)** to avoid unnecessary time delay.

Further, should the Owner desire to incorporate side access into the anaerobic digesters, it will be vetted during design. Given the nature of this project, the opportunity to incorporate side access for future maintenance concerns could be most economically accomplished at this time.

COATINGS

Corrosive liquids and gases within the anaerobic digester have the potential for causing significant degradation to both the concrete tankage as well as the metallic covers. Typically, one focuses on mitigating hydrogen sulfide and variants thereof. However, in recent years, we have become aware of other corrosion contributors; such as carbon dioxide and methane. Upon cleaning, evaluation, and repair of the tankage, covers and supporting components, protection from future degradation will be incorporated through the proper specification and application of protective coatings.



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PROJECT UNDERSTANDING AND APPROACH



The coatings will be reviewed for sewer gas permeation resistance, sulfuric acid resistance, abrasion resistance, film thickness, ability to withstand thermal cycling, and application requirements supporting a rapid return to service. A minimum of two (2) “equal” products can be identified if there is a desire to optimize pricing. We have had great success with the Perma-Shield product line by Tnemec and have worked with others offering relative equivalents such as Devoe and Sherwin Williams.

PROCESS TANK MIXING SYSTEM

The East WWTP currently employs a “Rotamix” Mixing System within their anaerobic digesters. A like system is desired to replace the existing Pearth mixers in the anaerobic digesters at the West WWTP. The “Rotamix” process mixing system provides a cost effective means of mechanically mixing the contents within the anaerobic digesters. Additionally, through the suction/chopping/discharge action of the Vaughan Chopper Pumps and directional nozzles, scum mats, rags, fibres/hair, and general overall solids build up are mitigated.

At the East WWTP, the fixed nozzle assemblies will be inspected for wear and corrosion. These nozzles are provided with a 10-year factory warranty. Inspection will be coordinated with the original vendor to insure any damage identified is corroborated—affording timely **warranty replacement** (if necessary), as we have confirmation from the manufacturer that these nozzles are under warranty.

The nozzles are made of ductile cast iron and are completely glass-lined. Inspection will generally consist of insuring (1) they remain connected and properly aimed and (2) the glass coating is still intact. The best method of monitoring wear is through review of differential pressure at the pump. This is done through collection of suction and discharge pressures (pump on and off) with the distance measured in inches and taking into account the pipe diameter. Further, we will examine the existing pump(s) cutter bar clearance to determine any necessary adjustments for optimal performance (which can be done without pump disassembly).

A proposal was assembled by Rotamix in July 2011 for the supply of the mixing system at the West WWTP. This proposal accommodated three (3) of the 75-foot diameter, 26-foot HWL cylindrical anaerobic digesters. During our site visit and pre-proposal assembly meeting with staff, we reviewed this proposal. At that time it was identified that the current needs essentially remain the same with the following exception: the original proposal identified one operational and one standby pump per tank; the current approach will incorporate the cost saving measure of one operational and no standby pump per tank. During design, appropriate valve placement will be examined to afford flexibility in operation (should a pump fail).



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PROJECT UNDERSTANDING AND APPROACH



Alternate “like” suppliers, such as Siemens, do exist. However, given the system is in place and operating admirably at the East WWTP **there is benefit in considering a sole-source approach of the Rotamix system on this project.** To best protect the Owners interest, the Engineer proposes soliciting quotes from Rotamix and two (2) additional “equal” system vendors. These quotes will then be reviewed and if necessary a comparable pricing guarantee from Rotamix, for incorporation into the bid documents, will be pursued. This will protect the Owner from the potential of price gauging at the time of bidding.

NEW MIXING SYSTEM PUMP HOUSE

A new building, and access there to, is desired east of the existing anaerobic digesters. This building will be utilized to house the mixing system pumps, discharge header (in building or vault), and associated electrical/instrumentation/control system components. This addition will provide for ease of maintenance and increased protection from hazardous/corrosive gases. This new Mixing System Pump House will avoid NEC/NFPA 820 code conflicts and will provide cost avoidance of otherwise applicable Class I electrical/mechanical requirements vs. an installation in the existing anaerobic digester building. Further, the Engineer will insure consideration of any applicable “construction in a floodplain” mitigation and permitting requirements (with respect to building location).

PROCESS PIPING

The existing process piping will be reviewed with the express purpose of performing modifications to limit the number of valves. The piping was originally designed to afford any digester to feed any boiler. The WWTP is operated with boilers dedicated to digesters. Therefore, **the additional valves only present confusion and unnecessary maintenance costs beyond the facilities operational needs.** This will be corrected.

Further, through the visual site inspection, the Engineer identified the prevalence of Victaulic piping at the WWTPs. It has been our experience that this is both economical and provides noted maintenance benefits. Grooved mechanical piping systems can shorten plant shutdowns and provide easy access for maintenance. Further, this piping system is readily installed, limiting associated contractor/pipefitter labor hours. Continuation of this Victaulic piping protocol and/or the incorporation of flange coupling adapters will be vetted with the Owner during design.

Additionally, it is often beneficial to include quick connects near the pump suction and discharge to afford pressure washing of sludge buildup that may be clogging the pumps/piping. The need and/or desire will also be



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PROJECT UNDERSTANDING AND APPROACH

examined during design with operational staff. The design will also insure proper placement of check valves to avoid plugging that can occur in on/off sludge pumping applications.

ELECTRICAL/MECHANICAL/INSTRUMENTATION & CONTROLS

ELECTRICAL

The design will generally consist of all the electrical required for the new Vaughan Rotamix System and the new Boilers. Per our meeting with the Owner, an electrical study has been performed and is available for evaluation prior to commencing the design. Adequate power was stated to be available. New circuits will be designed from existing electrical to feed the new Vaughan Rotamix System. Modifications to existing MCC's will be included if required. Existing circuits will be evaluated and modified as required for the new Boilers (alternate bid) as required.

INSTRUMENTATION AND CONTROL (I & C)

The design will generally include integration of the new Vaughan Rotamix System and the new Boilers into the existing SCADA system. Our team will work closely with Jim Memmer of J.H. Memmer Technical Services, Inc. to ensure compatibility of the design with the existing system. **We have spoken with Jim Memmer regarding this project and have discussed a plan of design for the new work and its integration. In so-much, we would "hit-the-ground running"!** We anticipate providing detailed P&I Drawings for controlled and monitored equipment.

MECHANICAL

Necessary mechanical components will be designed for the new Rotamix Structure. Mechanical equipment will be relatively simple on this project, including a unit heater and ventilation fans. Also, we will investigate the existing Boiler Room ventilation and present our findings for further discussion.

The design will anticipate the replacement of the existing three (3) Envirex Boilers and associated Heat Exchangers at the West WWTP. We will further evaluate boiler manufacturers including discussions with the owner regarding Walker Boiler and Heat Exchangers and the desire to match what is installed at the East WWTP. If desired by the Owner, we will also obtain an alternate bid to replace the units at the East plant with funds permitting.

CODE ISSUE

According to NFPA 820 the Digester Boiler Room is considered a Class 1 Division 1 or 2 space depending upon the ventilation. Indiana has yet to adopt NFPA 820 but as many firms do it is our opinion that on all new construction, the Owner should strongly consider following NFPA 820 as a "best practice". We evaluate existing structures on a case by case basis.



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Since this is an existing structure, the boiler room can be considered a non-classified space. It has been operated as a non-classified space in the past. Many of the components in the Boiler Room are not rated for a Class 1 space including the MCC. Therefore, this approach would prove most economical.

It is recommended that we ensure the existing ventilation provides for 6 air changes per hour (at a minimum) if it does not provide for the minimum 6 air changes per hour then we should review the pro's and con's of making the necessary upgrades with the Owner so an informed decision can be made by the Owner. It is also recommended we discuss this further with the local "authority having jurisdiction" to ensure our approach is acceptable.

ANAEROBIC DIGESTER STARTUP CONSIDERATIONS

Desired startup protocol will be vetted with the Owner during the design process. Clear responsibilities will be established (i.e. expectations of the Contractor versus desired responsibilities of the Owner).

Seeding the digester during startup is often performed and the material obtained from adjacent facilities (i.e. another anaerobic digester). Given the anticipated nature of the existing anaerobic digester contents, a potential detriment with this approach is the introduction of unwanted materials.

Alkalinity augmentation, limited feeding and reseeded of digester are all alternatives that will be reviewed to determine the Owner's desired approach. Further, the time and effects/limitation placed on the Contractors schedule vary dependent upon the method of start-up. One can conservatively assume a 6 to 8 week requirement if we do not seed with adjacent tankage, to get the first digester back on-line. Also, the potential detriments associated with risk of excessive odor generation and corresponding complaints will be taken into account and reviewed to insure a manner of startup consistent with the Owner's priorities and corresponding Contractor schedule restrictions included in the Contract Documents.



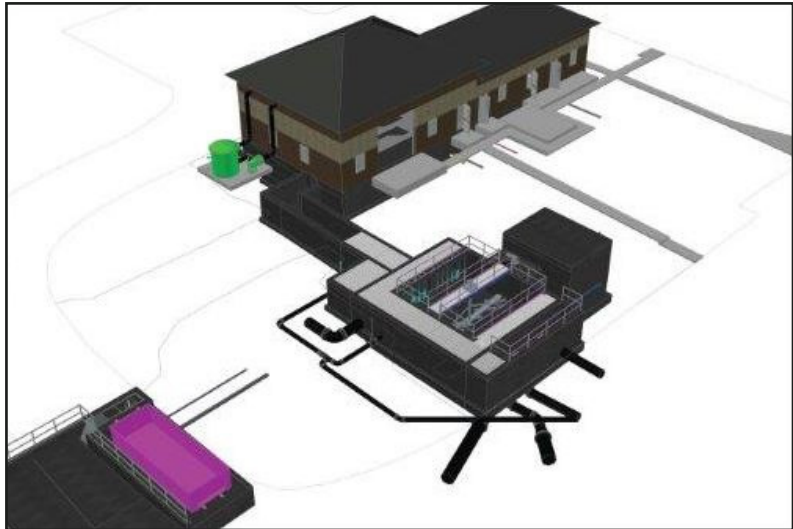
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PROJECT UNDERSTANDING AND APPROACH

PLAN ASSEMBLY

The Evansville Anaerobic Digesters Improvements Project will be assembled through the use of BIM (Building Information Modeling). This tool:

1. Aids in overall project visualization
2. Expedites contractor fabrication time
3. Insures accuracy and fit of equipment
4. Provide a future means of facility management
5. Affords assembly of highly accurate opinions of probable construction cost
6. Aids in construction sequencing considerations, and;
7. Detects and avoids interferences and potential collisions (i.e. insure piping does not intersect with steel beams, ducts, etc).



CONSTRUCTION SEQUENCING/OPINIONS OF PROBABLE CONSTRUCTION COST/RESIDENT PROJECT REPRESENTATION

Commonwealth employs a team of highly qualified construction specialists. **Several of our specialists use to be employed with the very Contractors that will be bidding and performing this work!** Their backgrounds vary from construction managers to estimators. Their skill sets prove invaluable in the performance of constructability reviews, construction sequencing, cost optimization, and cost estimation. Through this team approach, we bridge the gap between the efficiencies often realized through a design/build approach and the cost benefit potential to the Owner associated with design/bid/build approach. This also insures the quality of the finished product through our concerted and knowledgeable RPR effort.



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East & West WWTP Digester Cleaning & Rehabilitation Project

Anticipated Project Schedule



ANTICIPATED PROJECT SCHEDULE

The following is a provisional project schedule that assumes a notice to proceed in February of 2014. The project is scheduled to take approximately 18 months. The construction schedule is based on crews working simultaneously at the East and West WWTPs.

PHASE	START	FINISH
Project Scoping & Administration	February 2014	March 2014
Preliminary Design	March 2014	April 2014
Final Design	April 2014	June 2014
Bidding	June 2014	July 2014
Construction Start	July 2014	
EAST WWTP CONSTRUCTION	START	FINISH
Dewater and Clean Digesters (E1, E2)	July 2014	September 2014
Digester Repair (E1, E2)	September 2014	November 2014
Digester Startup (E1, E2)	November 2014	December 2014
Dewater and Clean Digesters (E3, E4)	December 2014	January 2015
Digester Repair (E3, E4)	January 2015	February 2015
Digester Startup (E3, E4)	March 2015	April 2015
Construction Complete		May 2015
WEST WWTP CONSTRUCTION	START	FINISH
Mixing System Order and Lead Time	August 2014	September 2014
Dewater and Clean Digesters (W1, W2)	July 2014	September 2014
Digester Repair (W1, W2)	September 2014	November 2014
Digester Startup (W1, W2)	November 2014	December 2014
Dewater and Clean Digesters (W3, W4)	December 2014	January 2015
Digester Repair (W3, W4)	January 2015	May 2015
Digester Startup (W3, W4)	May 2015	June 2015
Construction Complete		July 2015



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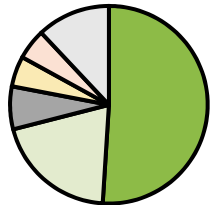
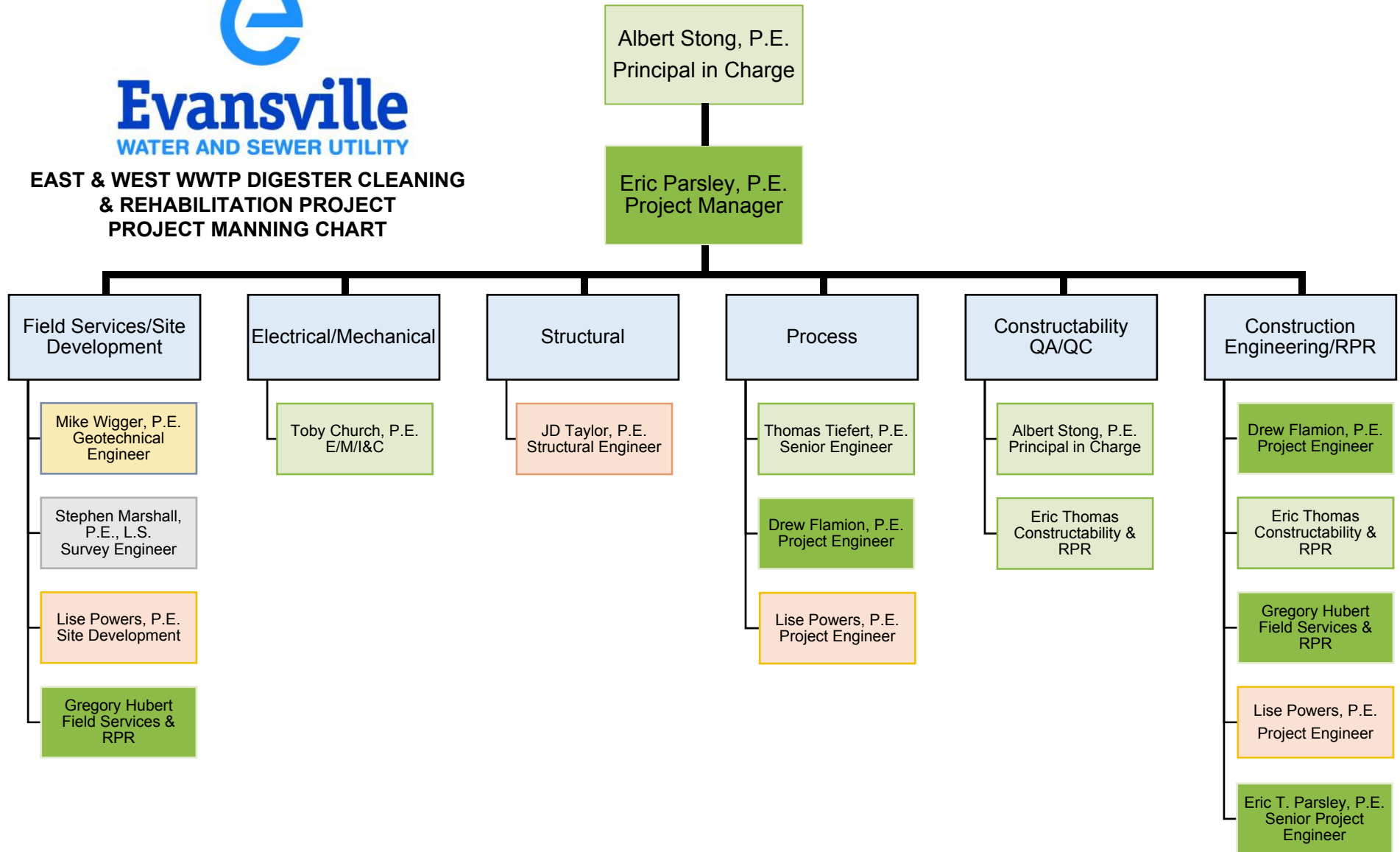
East & West WWTP Digester Cleaning & Rehabilitation Project

Staff Resumes





EAST & WEST WWTP DIGESTER CLEANING & REHABILITATION PROJECT PROJECT MANNING CHART



PARTICIPATION PERCENTAGES		
Evansville	58%	Commonwealth-Evansville (51%) and Powers Engineering (7%)
Indiana	100%	All Firms are located in the State of Indiana
MBE	12%	Jacobi, Toombs and Lanz
WBE	7%	Powers Engineering

Legend	
Commonwealth (Evansville Office)	Commonwealth (Indianapolis Office)
CE Solutions, Inc.	Powers Engineering, Inc.
Earth Explorations, Inc.	Jacobi, Toombs, & Lanz, Inc.



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Albert C. Stong, P.E.
Principal in Charge

EXPERIENCE AND EXPERTISE

Mr. Stong has extensive experience with the planning, design, and construction administration of a wide range of wastewater treatment systems. Al leads Commonwealth's WWTP Team orchestrating the project design, ensuring process; hydraulics; structural; electrical and mechanical; instrumentation and control; constructability; and project financing considerations are all seamlessly intertwined. He also spearheads our QA/QC and value engineering initiatives as they relate to wastewater conveyance and treatment. Al has designed dozens of biosolids facilities over the past 17 years and looks forward to bringing the benefits of his knowledge and experience to EWSU's project.

RELEVANT PROJECT EXPERIENCE

- **Indianapolis Southport AWT Headworks Expansion Design:** Preliminary design for the 180 mgd headworks facilities (screens, grit, and pumping)
- **Indianapolis Belmont AWT Gravity Belt Thickener Project:** Design of new gravity belt thickening and primary effluent pump station facilities; mechanical screening and grit removal improvements; a new plant drain pump station, and thickened sludge pumping and mixing facilities
- **Terre Haute WWTP Improvements Design:** Design of the septage/grease receiving facility. Expanded and improved the sludge treatment processes
- **Fishers WWTP Improvements:** Numerous projects since 1997 including construction inspection of the 4 mgd WWTP expansion; design of the 8 mgd WWTP expansion; and several biosolids projects including centrifuges, sludge pumps and jet mix systems.
- **Nappanee WWTP Improvements:** Aeration systems; SCADA; biosolids facilities; UV disinfection



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Eric T. Parsley, P.E.
Project Manager

EXPERIENCE AND EXPERTISE

Mr. Parsley is a licensed professional engineer with experience in a variety environmental engineering disciplines. Eric's duties involve planning, design, and project management, as well as assistance with regulatory compliance, permitting, and enforcement proceedings. His wastewater experience ranges from collection system related activities such as analysis of existing systems; flow metering; inflow and infiltration studies; combined sewer evaluations; and complete system design to wastewater treatment design for existing industrial and municipal wastewater treatment plants as well as projects involving the construction of entirely new wastewater treatment facilities. Eric has a track record of success in partnering with the City of Evansville on collection system related projects and looks forward to the opportunity to demonstrate his talent on this important WWTP improvements project.

RELEVANT PROJECT EXPERIENCE

- **Newburgh WWTP Expansion:** \$20M expansion project with complex construction scheduling and site restrictions. Numerous biosolids improvements including; new sludge treatment units, thickened sludge pumping systems, dewatering, and sludge storage facilities.
- **Evansville Mt. Auburn STEP:** Service to 100 year old neighborhood in an area with difficult, steep topography
- **Evansville Museum Sewer Relocation:** Relocation of 100 year old 48" x 60" brick sewer that exceeded 30 feet in depth.
- **Rockport New North WWTP Design and Construction:** Designed for future incremental expansion, new aerobic digesters, and sludge pumping facilities



Toby Church, P.E., CEA
Senior Electrical Engineer



Thomas Tiefert, P.E.
Senior Project Engineer



Drew Flamion, P.E.
Project Engineer



Eric Thomas
Constructability & RPR



Gregory Hubert Jr. (AJ)
Field Services & RPR

INSTRUMENTATION AND CONTROL DESIGN

Toby has over 20 years of experience in the design and implementation of electrical, mechanical, control systems; energy auditing; and power quality analysis. Toby is a Licensed Master Electrician and is able to design electrical, mechanical, and control systems using the latest technology but keeping practicality in mind. He has formal training in Power Quality Analysis and is able to help customers with high level electrical issues.

PROCESS

Tom has over thirty (30) years of experience in the planning and design of wastewater treatment facilities. He received an M.S. in Civil Engineering from Ohio State University and has extensive knowledge of both the theory and design of wastewater treatment plants; specifically biosolids handling facilities. Tom will serve as the senior project engineer on the project.

Drew is experienced with the design and construction of wastewater systems. He has performed numerous projects involving the rehabilitation of complex concrete structures that will prove valuable on the project. Drew's talents will be utilized on this project in the role of Project Engineer.

FIELD SERVICES, CONSTRUCTABILITY, AND RESIDENT PROJECT REPRESENTATIVE (RPR)

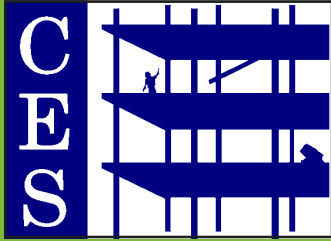
Eric has in excess of 15 years experience as an estimator and project manager with water/wastewater specialty contractors within the state of Indiana. Eric brings a unique skillset of constructability review, accurate cost estimating, and construction phasing to the Commonwealth Team!

AJ has completed numerous wastewater rehabilitation projects both as a designer and as a RPR for Commonwealth. AJ's involvement in the design phase will provide significant insight as he monitors daily construction activities in his role as resident project representative.



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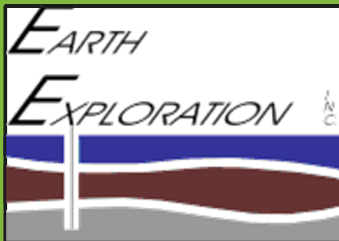
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JD Taylor, P.E.
Structural Engineer



Lise Powers, P.E.
Project Engineer



Michael Wigger, P.E.
Project Engineer



Stephen Marshall, P.E., PLS
Director of Surveying



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STRUCTURAL ENGINEERING

JD's portfolio includes many high-profile, complex facilities in a wide variety of markets and structure types. He has a long history working on wastewater treatment plant projects with Commonwealth. JD recently completed a renovation project of a 1950s building with limited existing documentation. The Client commented that JD made himself available at a moment's notice to address hidden field conditions, keeping the construction moving and on schedule. We have partnered with JD on past projects with very similar needs; tankage evaluation and remediation; and steel structure assessment and replacement. Most notably, we worked with JD and CES at the Belmont WWTP. This project remedied the same type of concrete tankage degradation observed during our site inspection of the EWSU's WWTPs.

PROJECT DESIGN AND CONSTRUCTABILITY REVIEW

Lise has 23 years of experience in the design and analysis of a wide variety of water resources and civil engineering projects. She designed and managed multiple large and small projects for numerous public and private sector clients throughout the Midwestern United States. As a WBE firm located in Evansville, she will be a valuable asset to our local team providing assistance with both design and construction matters.

GEOTECHNICAL ENGINEER

Mike is the principal engineer in the Evansville office responsible for providing technical support of professional personnel and managing special projects. Mike is focused toward public-funded projects with geotechnical involvement ranging from bridge foundations, earth retention systems, tankage, and other infrastructure improvements. Mike will provide geotechnical services for new building foundation design (i.e. soil boring capacity) and as needed support in assessing existing structures.

SURVEYOR

Stephen has been in the engineering/surveying profession for over 20 years. As Director of Surveying, he is responsible for supervising the successful completion of all surveying tasks associated with various projects. His duties include client contact, proposal preparation, personnel management, implementation of technical procedures, and daily coordination of office operations and field logistics. Stephen has served as a field crew chief, staff surveyor, project design engineer, and surveying department manager and is pleased to bring these talents to this very important project.

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East & West WWTP Digester Cleaning & Rehabilitation Project

Relevant Experience



CLIENT

City of Crown Point
Mr. Chris Previs
101 North East Street
Crown Point, IN 46307
(219) 662-3240

COMMONWEALTH PERSONNEL

- Al Stong, PE
- Tom Tiefert, PE

PROJECT HIGHLIGHTS

- Emergency repair.
- Sludge removal/tank cleaning.
- Demolition of old cover.
- Replacement with new cover.
- Coatings.
- Assessment of tank interior over the course of the project and direction for repair/replacements of equipment and materials within tank.

CONSTRUCTION COSTS

\$315,000

ENGINEERING FEES

\$23,000

WASTEWATER TREATMENT ANAEROBIC DIGESTER EMERGENCY REPAIR CROWN POINT, INDIANA

The City of Crown Point experienced a digester cover failure in the fall of 2006. Commonwealth has provided all engineering related services for the City on wastewater related matters for over 20 years and serves as an extension of the City's Engineering Department on both Water and Wastewater matters. Upon being notified of this failure (due to corrosion of the cover) Commonwealth assisted the City with identifying the need for an "emergency repair" and assembled a fast-track project to insure the Digester was rehabilitated (i.e. cleaned, repaired, the Anaerobic Digester Lid replaced in kind, and the internal digester piping and mixing equipment assessed, repaired and/or replaced) in time to bring it back on-line and avoid any additional unnecessary costs and efforts associated with the need for an alternate wasting location.



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CLIENT

Town of Fishers
Mr. Rick Farnham
One Municipal Drive
Fishers, Indiana 46038
(317) 595-3172

COMMONWEALTH PERSONNEL

- Al Stong, PE
- Tom Tiefert, PE
- Toby Church, PE

PROJECT HIGHLIGHTS

- Second Rotamix System installed within the State of Indiana at the WWTP.
- Multi-million dollar savings alternative proposed designed, and constructed with the capacity expansion of Allisonville & Hague Road lift stations.
- Energy savings evaluations and collaborations on WWTP improvements projects.

CONSTRUCTION COSTS

\$1.3 Million*

ENGINEERING FEES

\$260,000*

*Cost related to current headworks and grit facilities upgrades



WASTEWATER TREATMENT FACILITY FISHERS, INDIANA

Town of Fishers population has increased some 360% over the last three (3) decades. During this time, the Town utilized Commonwealth to address all wastewater related matters. This included four WWTP improvements projects to increase their capacity from 1 mgd to 16 mgd, as well as necessary improvements to the collection system. Specifically, new facilities to support existing sludge mixing and feed systems, protective coatings, piping reconfiguration, piping replacement, metering upgrades, and sludge processing unit improvements were performed. The following is a list of relevant projects that Commonwealth has completed for the Town of Fisher's over the last five (5) years:

- Protective coating projects (sludge holding tank).
- Polymer feed improvements.
- Piping and valve replacement/modification and metering upgrades.
- Major equipment improvements/replacement.
- Modifications to existing headworks to insure Class I Div I compliance.
- Cemen-Tech Sludge Processing Unit improvements.
- New facilities to support the existing sludge mixing and feed system (Rotamix); originally designed by Commonwealth.

Commonwealth continues to serve as the Town's go-to firm for all wastewater related matters.



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Citizens Energy Group
Dan Kramer (United Water)
Steve Nielsen (Citizens Energy Group)
PO Box 1990
Indianapolis, IN 46206
(317) 429-3963

COMMONWEALTH PERSONNEL

- Al Stong, PE
- Tom Tiefert, PE
- Toby Church, PE

PROJECT HIGHLIGHTS

- Conversion of an abandoned dissolved air flotation (DAF) facility to gravity belt sludge thickening.
- Six new gravity belt thickeners.
- Conversion of DAF tanks to storage tanks with mixers.
- Extensive modifications of existing piping and valving to support new intended purpose.
- Air exhaust and treatment system.

CONSTRUCTION COSTS

\$6.1 Million

ENGINEERING FEES

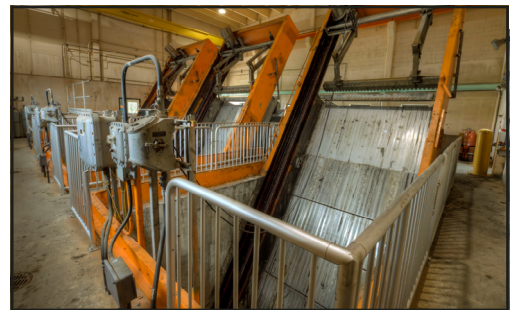
\$580,000

BELMONT AWT PLANT HEADWORKS IMPROVEMENTS & GRAVITY BELT THICKENER (GBT) OFF GAS TREATMENT INDIANAPOLIS, INDIANA

As part of the design of several components for the Belmont AWT Treatment Facility, Commonwealth, designed a new sludge gravity belt thickener facility. Belmont AWT thickens, dewateres and incinerates the waste solids from both the Belmont and Southport AWT facilities. A plan was developed to replace the existing dissolved air flotation (DAF) sludge thickening system with gravity belt thickening operation.



Six (6) gravity belt thickeners were installed in an existing structure. The DAF tanks were re-used and covered for sludge and filtrate storage. Three (3) thickened sludge wet wells were installed along with sludge feed and thickening pumps with corresponding sludge mixing systems. Existing piping and valving modifications were also designed. A new non-potable water supply system was also installed. An exhaust system was constructed for the sludge wells and the gravity belt thickeners and a dry odor scrubber installed. Odor prevention has been successful. This project has been presented at the 2009 WEF Conference, the 2010 IWEA Conference, and was published in the Indiana Digester.



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City of Nappanee
Mr. Gale Gerber
300 W. Lincoln Street
Nappanee, Indiana 46550
(574) 773-2112

COMMONWEALTH PERSONNEL

- Al Stong, PE
- Tom Tiefert, PE
- Toby Church, PE

PROJECT HIGHLIGHTS

- Biosolids Improvement Project including; cleaning and rehabilitation of anaerobic digesters, new sludge dewatering and storage facilities, and assisted with SOP's for Class A Sludge Composting procedures.
- Replaced coarse bubble diffusers and blowers with fine bubble diffusers and energy efficient blowers-reduced electrical costs 2 fold!
- Rehabilitated facilities existing grit handling systems.

CONSTRUCTION COSTS

\$4.2 Million

ENGINEERING FEES

\$567,000

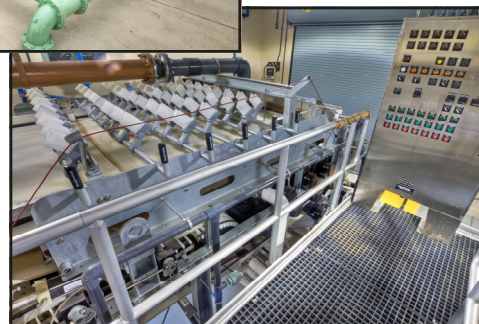


WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT NAPPANEE, INDIANA

Commonwealth has worked with the City of Nappanee for more than 25 years and originally designed the WWTP in the 1980s. The WWTP contains both anaerobic and aerobic sludge digesters, and a gas handling system. A study was conducted in 2007-2008 to identify various improvements with a heavy emphasis on the sludge (biosolids) processing and handling systems.



Commonwealth provided planning, design, bidding, construction administration, inspection, and start-up services for the WWTP improvements project. The Project included new air blowers, air handling equipment, ultraviolet disinfection, and a new SCADA monitoring system. Although the project included work on all aspects of the WWTP, biosolids processing improvements were a significant focus. Biosolids improvements included the construction of two new digesters, new handling equipment, a dewatering press and building, and a new roofed storage facility. Additionally, the existing anaerobic digesters were cleaned, sludge removed, and internal pearth system with associated appurtenances repaired/replaced.



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Town of Newburgh
Mr. Leon Key
23 W. Jennings Street
Newburgh, IN 47630
(812) 853-6512

COMMONWEALTH PERSONNEL

- Al Stong, P.E.
- Eric Parsley, P.E.
- Tom Tiefert, P.E.
- Toby Church, P.E.
- Drew Flamion, P.E.

PROJECT HIGHLIGHTS

- Dry Weather Capacity increased from 4.6 mgd to 7.4 mgd.
- Constructability, planning and scheduling was critical as the expansion had to be completed within the existing footprint while maintaining operation.
- Existing aerobic digesters were demolished and new sludge treatment units were constructed in the same location.
- The WWTP successfully treated wet weather flows in excess of 17 mgd during construction.

CONSTRUCTION COSTS

\$19.7 Million

ENGINEERING FEES

\$1.9 Million

WASTEWATER TREATMENT PLANT EXPANSION NEWBURGH, INDIANA

Due to an expanding customer base and ever increasing wet weather flows, the Town of Newburgh embarked upon a WWTP expansion to increase dry and wet weather flow capabilities. The project would involve every process at the WWTP and ultimately encompass every square foot of the site. The design had to focus heavily on constructability and sequencing to maintain full operation during construction.

The sludge processing, handling, and dewatering facilities received the most extensive upgrades. Existing aerobic digesters were demolished and replaced with two, new multistage sludge treatment units in the exact same location. To accomplish this, the design allowed for one new sludge treatment unit to be constructed and operated while an existing unit remained in service. Also the existing belt filter presses remained in place while the building it's building was demolished and rebuilt to house a second unit.

Commonwealth spearheaded the planning design, bidding and construction efforts. Construction oversight, scheduling, and coordination was handled by Commonwealth's nearby Evansville office. The project was completed in approximately 2 years and within budget.



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CLIENT

City of Terre Haute
Mr. Mark Thompson
3200 S. SR 63
Terre Haute, IN 47802
(812) 232-6564

COMMONWEALTH PERSONNEL

- Al Stong, PE
- Tom Tiefert, PE
- Toby Church, PE

PROJECT HIGHLIGHTS

- Eliminate odor.
- Minimize costs associated with operating and maintaining Bio-Solids facilities.
- Provide fully automated septage receiving facility.

CONSTRUCTION COSTS

\$115 Million

ENGINEERING FEES

\$854,000

WASTEWATER TREATMENT PLANT EXPANSION BIO-SOLIDS FACILITIES TERRE HAUTE, INDIANA

Commonwealth is a member of the project team designing improvements to the City of Terre Haute's new and improved 48 mgd WWTP. Commonwealth was selected by the City of Terre Haute to design the biosolids facilities improvements. These improvements included a new septage/grease/scum receiving facility; pump additions and improvements in the existing digester control building; and a new sludge processing facility.



The new septage/grease facility is designed to receive up to 45,000 gpd of septage and grease and 15,000 gpd of scum from the treatment plant's final clarifiers. The facility includes a septage/grease receiving unit, two storage tanks with mixers, two diaphragm pumps, and a rotary dewatering press. The septage/grease receiving unit includes a card reader, grit sump, automatic motor valve, flow meter, grinder, mechanical screen, flow meter and pH meter. The rotary dewatering press includes the press, heated wash water and polymer feeders.

The sludge processing facility includes sludge pumping, thickening and dewatering equipment along with polymer feeders and conveyors. Four (4) 400 gpm rotary drum thickeners are provided along with three 200 gpm (nominal) dewatering centrifuges.



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