

# **Britt Bassett, PE BCEE, President**

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## **SUMMARY OF EXPERIENCE**

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Working in the civil and environmental engineering field for over 35 years, Mr. Bassett has studied, designed, bid, and provided construction phase engineering for scores of water and wastewater projects. Completed projects cover feasibility studies including Act 537 Plans, wastewater collection systems, pump stations, treatment plants and sludge disposal systems, as well as water supplies, treatment facilities, storage tanks, pump stations and distribution systems. He has designed numerous innovative and alternative systems, including one that won the 2013 American Academy of Environmental Engineers and Scientists Superior Achievement Award. On most of those systems he also supervised the bidding, construction, and start-up phases. He helped write three Water Environment Foundation Manuals of Practice including Nutrient Removal, Design of Municipal WWTPs, and Process Modeling.



## **EDUCATION**

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Bachelor of Science	Civil Engineering	Bucknell University, Lewisburg, PA	1983
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## **PROFESSIONAL CERTIFICATION**

Professional Engineer, Pennsylvania, License No. PE-037258-E, 1989-Present

Professional Engineer, Maryland, License No. 16855, 1990-Present

Professional Engineer, Delaware, License No. 24415, 2019

Professional Engineer, New York, License No. 103571, 2020-Present

Professional Engineer, West Virginia, License No. 24359, 2020-Present

Board Certified Environmental Engineer, American Academy of Environmental Engineers, 2004-Present

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## **AWARD WINNING**

2013 American Academy of Environmental Engineers Superior Achievement Award (top award)

Altoona Westerly WWTP Biological Nutrient Removal Upgrade (partner - Gwin Dobson & Foreman)

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## **VOLUNTEER**

Board Member, Loyalsock Creek Watershed Association 2001-2007: Supervising a variety of watershed improvement projects including water quality testing, inventory of physical characteristics, riparian buffer restoration, fluvial geomorphology, and acid mine drainage neutralization. Planned projects include dam removal and public education President 2003-2005 Vice President 2001 - 2003

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## **DETAILED PROJECT EXPERIENCE**

## **BASSETT ENGINEERING**

### **Wastewater Treatment**

#### **Altoona Water Authority Westerly WWTF: NRT Upgrade**

*Blair County, PA*

Expanded capacity to 10.8 MGD Design, 60 Peak Flow. Process consultant to GDF Engineers. Utilized Hybrid Bardenpho Process with Step-Feed to meet annual loading limits of 5 mg/l TN and 0.67 mg/l TP. Designed biological reactors, mixed liquor and nitrate recycle pumping, aeration blowers, secondary clarifiers, instruments and process control system. Conducted extensive data review and process modeling using BIOWIN. Won AAEE Superior Achievement Award.

**Altoona Water Authority Westerly WWTF Codigestion Conservation Measures** *Blair County, PA*

New anaerobic digesters, HSOW receiving, sludge dryer, boilers. Converted aerobic digesters, sludge holding tanks. Prepared Site/Civil & Yard Piping Designs. Prepared and applied for DEP Permits: Chapter 102 General, Water Quality Management Part II, and Air Quality Management Plan Approval. Twp. LD, SWM, Floodplain Development Plan approvals.

**Altoona Water Authority Easterly WWTF: NRT Upgrade** *Blair County, PA*

Expanded capacity to 9.0 MGD Design, 35 Peak Flow. Process consultant to GDF Engineers. Utilized Hybrid Bardenpho Process with Step-Feed to meet annual loading limits of 6 mg/l TN and 0.8 mg/l TP. Designed biological reactors, mixed liquor and nitrate recycle pumping, aeration blowers, secondary clarifiers, instruments and process control system.

**Altoona Westerly Wastewater Treatment Facility NRT Feasibility Study** *Blair County, PA*

Principal Engineer for NRT feasibility study that evaluated alternatives to upgrade two WWTPs to DEP's NRT limits, and possibly expand capacity. Project entailed upgrading the existing aeration tanks to NRT Reactors and adding two more using automating Dissolved Oxygen control, anaerobic and anoxic pre-react zones plus mixed liquor and nitrate internal recycle pumps. NRT capacity would be 10.8 MGD.

**LRBSA Archbald Wastewater Treatment Plant** *Lackawanna County, PA*

Nutrient Removal feasibility study evaluated alternatives to upgrade a WWTP to meet DEP's Nutrient Cap Loadings. Recommended converting eight SBR's into two MLE Reactors and adding secondary clarifiers. Also designed and oversaw construction of new Headworks: combined sewer overflow with mechanical screen, fine screens, grit removal, plus non-potable water pumping system.

**Clearfield WWTP NRT Upgrade Design** *Blair County, PA*

PaDEP imposed annual cap loadings (limits) for total pounds of Total Nitrogen (TN) and Total Phosphorus (TP) on all larger wastewater treatment plants that discharge into tributaries of the Chesapeake Bay, including Clearfield. Clearfield Municipal Authority needed to upgrade its wastewater treatment plant to meet DEP's Nutrient Cap Loading limits. Bassett Engineering (BE) partnered with Gwinn, Dobson & Foreman, CMA's Engineer, to evaluate, design and upgrade the Clearfield Wastewater Treatment Plant to provide Enhanced Nutrient Removal using the Hybrid Bardenpho Process with Step-Feed to meet annual loading limits equivalent to concentrations of 6.0 mg/L TN and 0.8 mg/L TP. Design flow 4.5 MGD, Peak Flow capacity 25 MGD. The ENR Upgrade involved the full replacement of the entire liquid treatment process: influent screening, pumping, grit removal, biological reactors, secondary clarifiers, ultraviolet light disinfection.

**Derry Township Municipal Authority Clearwater GESA** *Dauphin County, PA*

Land Development Plan, Ch. 102 General Permit, DEP Air Quality Management and Water Quality Management Permits for GESA project that will expand co-digestion of biosolids and food waste to produce digester gas to generate electricity or renewable natural gas. Project includes 1.3 million gallon anaerobic digester, gas conditioning to produce pipeline-quality natural gas, gas storage, waste blending, sludge dewatering, rebuild sludge dryer. Expanded food waste receiving.

**Derry Township Municipal Authority Clearwater WWTF** *Dauphin County, PA*

Cogeneration (combined heat and power) project will expand electricity generation by burning digester gas. Added flexible membrane cover on secondary digester to expand gas storage. New gas conditioning system, CHP engine generators, waste gas flares. Prepared Site/Civil & Yard Piping Designs. Prepared and applied for DEP environmental Permits: DEP AQM Plan Approval and Ch. 102 General Permit incl. SWM plus E&S Plans. Twp. LD and SWM Planning.

**Dutchland Packaged Wastewater Treatment Plants** *Multiple Counties, PA*

Designing multiple wastewater treatment plants with design flows from 23,000 gallons per day to 500,000 gallons per day with modular packaged WWTPs and larger precast concrete tanks to meet a variety of effluent limits using a wide range of treatment procedures.

**LRBSA Archbald Headworks Improvements***Lackawanna County, PA***LRBSA Throop Anaerobic Digesters Covers Replacement***Lackawanna County, PA*

Installed dual-membrane flexible gasholder covers on two 65-foot anaerobic digesters to provide 65,000 cf of storage in each digester. Related components included aeration fans, instruments and controls. Revised digester gas and thickened waste activated sludge piping. Demolished existing steel floating covers. Rehabilitated and recoated concrete digester walls.

**LRBSA Throop Wastewater Treatment Plant NRT Upgrade & Expansion** *Lackawanna County, PA*

Solids handling systems as part of capacity expansion to 10 MGD and Process Upgrade to NRT. Responsible for design of gravity belt thickener, belt filter press, sludge pumping and polymer feed systems. Also provided QA/QC review of NRT Feasibility Study.

**Mid-Shore Leachate, Septage and Grease Treatment Facility***Talbot County, MD*

Principal engineer responsible for feasibility study of a process to treat leachate generated by the Mid Shore I and Mid Shore II landfills (Caroline, Kent, Queen Anne's and Talbot Counties), along with septage and grease generated in Talbot and Caroline Counties. The study recommended a water reclamation process to treat the diverse waste streams with a single treatment process, to the point where the effluent quality would be adequate to apply to land.

**Moshannon Valley Wastewater Treatment Plant Replacement** *Centre, Clearfield Counties, PA*

Act 537 Plan and design of a new upgraded and expanded WWTP that features Biological Nutrient Removal to meet the Chesapeake Bay Agreement. Plant serves Phillipsburg and Chester Hill Boroughs plus Morris, Decatur and Rush Townships. Design Flow 2.24 MGD, Peak Flow 8.0 MGD. Plan reviewed by multiple engineers working for municipalities and authorities served by plant.

**Nicholas Meats LLC, Digester/Cogen Feasibility***Clinton County, PA***Nicholas Meats LLC, Sewage Module***Clinton County, PA***South Centre Township Act 537 Plan***Columbia County, PA*

Prepared an Act 537 Plan to provide public sewer to approximately 1,600 EDU's served by failing OLDS and package WWTP's. Negotiated alternatives with a variety of parties including the two neighboring Authorities of Bloomsburg and Berwick. Provided final recommendation of construction of a gravity collection system and WWTP.

**Tri-County Wastewater Facilities Master Plan***Eastern Shore, Maryland*

Engineer for Feasibility Study that evaluated alternatives to regionalize sewers in Dorchester, Talbot and Caroline Counties, combined population 140,000. Proposed 51 pump stations and 173 miles of force mains to convey flow from existing towns to regional WWTP's, eliminating some local WWTP's and enlarging others.

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**PROFESSIONAL PUBLICATIONS**

"Excellence in Environmental Engineering & Science", 2013, Environmental Engineer & Scientist, 2013

"Raising or Relocating Roads Out of Floodplains Can Save Money in the Long Run", 2013, Pennsylvania Township News, 5/2013

Biological and Chemical Systems for Nutrient Removal, 2009 Revision, WEF 1998 (Task Force Member & Technical Reviewer)

Design of Municipal Wastewater Treatment Plants – MOP 8, 2009 Revision, WEF (Task Force Member & Technical Reviewer)

"Lessons from 20 Years of Biological Nutrient Removal," The Authority, 2 Parts: 12/2008, 2/2009

"Reducing the Load, Lessons from 20 Years of Biological Nutrient Removal," Pennsylvania Borough News, 3/2009

Non-Proprietary Leachate Treatment System Incorporating BNR for Groundwater Discharge, WEF, 1993, Chesapeake WPCA, 1993, Virginia WPCA, 1993.  
Oxidation Ditch Conversion to VIP Process, Water Environment Federation, 1994.  
Cogeneration with an Egg-Shaped Anaerobic Digester, WEF, 1994.  
Model to Design Diffused Aeration System for BNR, ASCE Environmental Conference, 1992.  
Aeration Control Strategies for BNR, Virginia WPCA, 1992.  
New Windsor Water Supply Expansion: A Case Study, Chesapeake Section, AWWA, 1990.

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## **AWARDS RECEIVED**

AEEES Superior Achievement: Altoona Westerly Hybrid Bardenpho Process with Step Feed: Achieves near-ENR levels of treatment in 10.8 MGD WWTP without using any chemicals. Step-Feed enhancement allows Westerly to treat extended peak flows without upsetting nitrification. Peak hydraulic capacity 60 MGD.

PSATS 33rd Annual Bridge and Road Safety Improvement Award: Penn Township 3 Bridge Replacement & 1 Bridge Repair: Replaced three existing bridges and repaired a fourth. Bridge bundling provided economy of scale, reducing construction costs. Completed construction in six weeks.

PSATS 34rd Annual Bridge and Road Safety Improvement Award: Upper Fairfield Township Kaiser Hollow Road Culvert Replacement: Replaced a bridge, reconstructed the roadway and stabilized the stream bank. Bundling two contracts under one bid took advantage of ACT 89 and used Act 13 impact fees.

PSAB 37th Annual Road and Bridge Safety Improvement Award: Renovo Borough Ontario Avenue Reconstruction and 5<sup>th</sup> Street River Access: Ontario Avenue went from 4th to 11th Streets, this project involved an almost complete rebuild of the roads. The 5th Street River Access involved demolishing several derelict residential properties and converting into a new community park and boat launch.

Maryland Consulting Engineers Council: The Solomons Island WWTP is three plants in one. Leachate from an adjacent landfill is chemically pretreated. From there it is combined with primary effluent and biologically pretreated to remove BOD and nitrogen. The effluent from that plant is combined with primary effluent and septage. The combined flow is then also treated to achieve BNR. Effluent is land-applied through rapid infiltration basins. The 1.0-MGD plant won the 1995 Grand Conceptor award for small projects. Total cost was \$4,000,000.

Maryland Consulting Engineers Council: The Broadneck WRF was a failed example of draft-tube aeration. The system was replaced by a combination of fine bubble membrane diffusers and horizontal mixers. The system was completely automated and run by a central plant computer - no more powerful than a desktop PC. The system nitrifies and denitrifies prior to discharging to the Chesapeake Bay. The 6.0-MGD plant won the 1994 Maryland CEC Grand Conceptor award for small projects. Total cost was less than \$3,000,000.

Pennsylvania Department of Environmental Protection: The Millville Wastewater Treatment plant will receive a combination of leachate, septage, and raw wastewater. The discharge to Little Fishing Creek received strict effluent limits for ammonia, requiring nitrification. We added denitrification to reduce aeration costs and chemical consumption, and stabilize the treatment process. For this DEP awarded a \$100,000 Growing Greener Grant in 2000.