



JEFFREY M. BROSS, P.E., LEED AP, F. ACEC

Senior Consultant

Registration
Professional Engineer - DE,
PA, NE, MD, NJ

Education
B.C.E., University of
Delaware, 1969

Memberships

Appointed member of the
Delaware Surface Water
Management/Flood
Abatement Task Force

Appointed Chair of the
Delaware Clean Water
Advisory Council

Member of the DE
Environmental Institute
External Advisory Board

Recipient of the Samuel S.
Baxter Memorial Award

Member of the Delaware
Geological Survey, Geologic
Mapping Advisory
Committee

Jury Chairperson/Board
member of the Delaware
Valley Smart Growth Alliance

Background/Skill Set

Mr. Bross has consulting and project management responsibility for civil engineering, coastal engineering, water resources, environmental, hazardous waste, and regulatory agency projects. He has extensive experience in the preparation and attainment of permits and the development of requisite mitigation associated with permitting for difficult and challenging projects. Mr. Bross has been a principal regulatory negotiator and has a strong working relationship with local, state, and federal regulatory agencies throughout the Mid-Atlantic region. He has authored numerous technical articles and papers, and is a featured speaker on issues involving environmental and construction matters. Mr. Bross was named Delaware's Engineer of the Year in 2006 by the Delaware Council of Engineering Societies.

Selected Projects

Principal-in-Charge, Cavaliers Country Club Residential Redevelopment, Newark, DE
Project for approximately 720-unit mixed residential redevelopment of a former 140-acre golf course. Responsibilities include coordination oversight and direction of civil site and roadway design, environmental remediation, wastewater pumping station design, and regulatory and agency approvals.

Principal-in-Charge, Fort DuPont Redevelopment Project, Delaware City, DE
Duffield Associates' engineers and scientists are assisting the Fort DuPont Redevelopment and Preservation Corporation with comprehensive planning and design for wastewater and drinking water; stormwater planning and design for the 325-acre site; development of flooding mitigation and flood proofing design for the site; traffic studies and highway entrance design; geotechnical investigations; permitting and design consultation for a 150-slip; and permitting and design consultation for development of a living shoreline to mitigate wave and ship wake erosion along the Delaware River shoreline.

Principal-in-Charge, Three Forts Crossing Master Plan, DE and NJ
Duffield Associates provided engineering services to support the development of a Master Plan for this Delaware River & Bay Authority (DRBA) project. Base maps were created for five sites designated to be included in the Master Plan. These sites were: Delaware City, Old New Castle and The City of Wilmington, Delaware; and Pennsville and Penns Grove, New Jersey. Our team also evaluated permitting issues and developed a briefing memo and an order-of-magnitude.

Project Manager, Fort DuPont Emergency Staging, Delaware City, DE
Mr. Bross served as a Project Manager for a DEMA funded study to utilize Fort DuPont as a catastrophic disaster staging area. Services included conducting planning workshops.

Memberships (cont.)

Member of American Society of Civil Engineers

Member of Consulting Engineers Council of Delaware

Member of National Society of Professional Engineers

Member of Environmental Business Action Coalition

Founder/Past Co-Chairman and member of the New Castle County Economic Development Council

Former President and Board member of the Committee of 100

Appointed Vice-Chair of the State of Delaware Workforce Development Board

Appointed member of the New Castle County Executive's Task Force on Redevelopment

Appointed member of the Livable Delaware, Infill and Redevelopment Subcommittee

Appointed member of the Delaware Redevelopment Authority

Former Chairman of Delaware EPSCoR State Committee

Board member of the Faithful Friends Animal Society

Past-Chair and member of the National American Council of Engineering Companies and Associated General Contractor's Construction Liaison Committee

Fellow American Council of Engineering Companies

Project Manager - Fort DuPont Offshore Wind Assembly/Staging, Delaware City, DE
Mr. Bross was Project Manager for the evaluation of Fort DuPont for use as an assembly and staging facility for offshore wind facilities in the Mid-Atlantic region. This work was done under a Memorandum of Understanding with the State of Delaware Department of Natural Resources and Environmental Control and included reviewing site utilization, transportation access, water access/benthos, zoning and natural/cultural resource protection.

Principal-in-Charge, Delaware City Marina, Delaware City, DE
Duffield Associates evaluated, designed and permitted a major bank stabilization project along the old canal marina banks to reduce erosion and improve water quality.

Principal-in-Charge/Senior Consultant, Nemours Dam Restoration, Wilmington, DE
Mr. Bross was Principal-in-Charge and a Senior Consultant for this project that included evaluation of a 25 foot high stone masonry dam's integrity/stability and environmental evaluation of accumulated sediments in the adjoining reservoir. Recommendations and construction drawings were prepared for grouting cracks and joints to restore dam and excavation/disposal of accumulated reservoir sediments. Duffield Associates provided evaluation/design services, preparation of construction drawings and specifications and construction review/testing. Duffield Associates received the Delaware Consulting Engineers' Merit Award for this project.

Principal-in-Charge, Eleutherian Dam, Hagley Museum and Library, Wilmington, DE
This project involved the restoration of an approximately 200-year old masonry/timber dam and adjacent millrace on the Brandywine River. Project included a detailed structural review of the dam's and mill race's existing condition as well as designing structural repairs for the proposed renovation. Extensive coordination and permitting between multiple federal, state, and local agencies was required to develop the restoration. The restoration consisted of constructing a new concrete support slab and adding wooden planking to the dam face. Due to the complexities with the project and operating in a river environment, Duffield Associates provided construction services through our affiliate, CGC Geoservices, Inc.

Principal-in-Charge - Energy Plant Permitting Assistance, New Castle County, DE (2011)
Mr. Bross served as a Principal-in-Charge for a project to assist an energy company acquire a State of Delaware Coastal Zone Permit and an Underground Injection Control Permit in support of a new power production facility in New Castle County, Delaware. Services provided included environmental and natural resources assessments in support of the project, estimation of specific environmental impacts (as defined by the Coastal Zone regulations), developing offset proposals for those impacts, and negotiating with regulatory agency personnel on the client's behalf.

Project Manager, Stone Harbor Bird Sanctuary Separator Dike, Stone Harbor, NJ (2007)
Mr. Bross was Project Manager for this landmark ecologic renovation project which involved the study and design of a tidal regulator structure and the construction of an approximately 400 foot long earthen dike and pedestrian path to isolate salt water and fresh water impoundments within the sanctuary.

Principal-in-Charge, Delaware City Flood Mitigation, Delaware City, DE

Mr. Bross was Principal-in-Charge for two flooding mitigation projects in Delaware City spanning over 30 years. The initial project involved the construction of flood mitigation dikes and flood walls and the subsequent project involved the raising and extension of both the flood/storm surge walls and dike system to mitigate prevailing flood design elevations.

Principal-in-Charge, Bay View Beach, Bay View Beach, DE

Duffield Associates performed a review of an existing concrete retaining wall that currently acts as a bulkhead due to continual beach loss and scour at the toe of the structure. As part of our evaluation, we visually reviewed the conditions, provided recommendations for repair and/or replacement, provided conceptual cost estimates, and assisted them in contacting agencies that could possibly provide financial assistance for their failing wall.

Principal-in-Charge, Former Automobile Assembly Plant, DE

Duffield Associates is working for the site owner and closely with DNREC-SIRB to perform Environmental Site Assessments and provide assistance with the master planning for site redevelopment of an automotive assembly plant that encompasses over 200 acres, which is among the largest certified Brownfield sites in the region. Environmental conditions have been and will be evaluated under DNREC-SIRB procedures. The services provided by Duffield Associates are useful for maintaining public communication, planning site redevelopment, financing, achieving regulatory compliance and, if necessary, performing site cleanup.

Principal-in-Charge, Asbestos Abatement Associated with Redevelopment Projects

Mr. Bross directed sampling, regulatory approvals, and field abatement in accordance with State of Delaware regulations. Six buildings, which were slated for demolition or extensive renovation, ranged in size from 3000 sf to 33,000 sf.

Managing Principal, Shellpot Creek Watershed Study, New Castle County, DE

The watershed study, which was funded and directed by a consortium of governmental agencies, had the goal of identifying and mitigating basin-wide flooding problems and developing water quality measures and neighborhood programs to enhance riparian areas and improve water quality. This study, which will result in the implementation of over several million dollars in mitigation measures, will become a model for future watershed studies in New Castle County. Mr. Bross implemented a number of innovative and effective methods for gathering citizen input and disseminating information to residents affected by this study. These methods included public workshop sessions enabling citizen discussion directly with key project staff; preparation of a pre-study informational bulletin, and use of a web site to keep residents abreast of study progress and enable them to ask questions and receive answers by e-mail.

Principal-in-Charge/Senior Consultant, Rancocas Creek Dam Failures & Flooding Evaluation

Mr. Bross was the Principal-In-Charge of this project for professional engineering and science services related to multiple dam and dike failures and resultant flooding on the Rancocas Creek and its tributary branches. Duffield Associates was responsible for with evaluating potential causes and resultant damage impacts brought about by the failure of up to 10 impoundment structures.

Principal-in-Charge/Senior Consultant, Red Clay Creek Hydraulic Modeling

Mr. Bross is Principal-In-Charge and DeIDOT liaison for the hydraulic modeling of the entire Red Clay Creek in Delaware for New Castle County. The purpose of this modeling is to evaluate the flood plain and flood level impacts/mitigation which result from selective structural (bridges and dams) removal and/or enlargement and which result from selective channel improvements. The model will also be utilized to assess downstream impacts to existing flooding conditions.

Principal-In-Charge - Brandywine State Park Greenway, Wilmington, DE

Mr. Bross served as Principal-in-Charge during the design of a one and one-half mile long greenway trail through Brandywine Creek State Park, an environmentally sensitive area. This project was designed in accordance with DeDOT Appendix H, Plans, Specifications and Estimates and ISTEA requirements and included design of trail grading, trail head parking lot design, bridge replacement, watershed analysis, stormwater quality management, a HEC-RAS floodplain study, and the development of plans for submission to the DeDOT and DNREC. Mr. Bross served as liaison during the project's permitting efforts, which included wetlands permits, floodplain approval, and erosion and sediment control permits.

Principal-In-Charge, Budd Metal, Brownfield/Superfund Project, New Castle, DE

Mr. Bross served as a Technical Consultant and Principal-In-Charge for a state Superfund site. Under his guidance, negotiations were successful in placing the site as a "flagship" brownfield site for Delaware's Voluntary Cleanup Program. The approximately 15 acre former metal fabricating plant required remediation of metals and PCBs in soils. The project team developed a remedial program which included excavation, chemical stabilization, and replacement on-site of contaminated soils.

Principal-In-Charge, Frawley Stadium, Brownfield Project, New Castle, DE

The Delaware Department of Natural Resources and Environmental Control (DNREC) was planning to investigate the former ship building site as a Superfund site. The City and the developer, with concurrence from DNREC, contacted Duffield Associates to perform an environmental site investigation and risk assessment. The environmental investigation, reporting and negotiations with DNREC were completed in just 13 weeks and for 1/3 of the original budget. The outcome was that the stadium site was not classified as a Superfund site and the ball park construction started immediately.

Project Manager, Oil Spill Remediation, Major East Coast Refinery

Mr. Bross was Project Manager for investigations and remedial design of oil seeping into the Delaware River from a dredge disposal impoundment. The project included hydrogeologic and geotechnical evaluations; development of containment systems, including geosynthetic liners, slurry walls, and sheet piles; and development of groundwater suppression, interceptor systems, and oil recovery processes. The project was performed on a "fast track" delivery basis to address regulatory orders and was completed.

Project Manager, Hewlett Packard, Little Falls Site, DE

Duffield Associates provided geotechnical, environmental, wetland, and other critical natural area evaluations as part of the planning and design process for their 100-acre office campus. Mr. Bross served as the Environmental Project Manager responsible for site assessments and natural resource inventories. He also directed the development and implementation of permitting, natural resources protection and creation, and environmental mitigation programs.

Principal-In-Charge Project Manager, Resource Extraction Projects

Mr. Bross has served as the Principal and Project Manager for the design and licensing of all privately operated resource extraction projects operating in New Castle County including projects near Middletown, Delaware City and Bear, Delaware. Mr. Bross was responsible for site investigations, site design, including site access and circulation, hydrogeologic evaluations and permitting.

Principal-In-Charge, Multipurpose Dock Study, Port of Wilmington, DE

Mr. Bross served as Principal-In-Charge and Sr. Consultant for a feasibility study of a new RO/RO and multipurpose double berth dock. The study included: bathymetric surveys; offshore geotechnical evaluations; environmental and wetlands studies; modeling to evaluate maintenance dredging requirements; preliminary design of dock structure and causeway; preliminary design of access roadways and utilities; regulatory liaison; cost estimates; and schedule preparation.

Principal-In-Charge, Stone Harbor Bird Sanctuary Rejuvenation, Borough of Stone Harbor, NJ

Assisting the Borough with a rejuvenation effort for the Sanctuary to restore habitat for wading birds (7000+ nests) that historically nested at this barrier island dune/marsh mosaic. Services include wetlands delineation, USACE/NJDEP permitting, mitigation design for wetlands, protected species consultation, invasive species management, protected species habitat management for this National Natural Landmark.

Project Manager, Mid-Atlantic Offshore Wind Project

This project involved a feasibility evaluation and development of preliminary costs for the permitting and construction of multiple land based staging locations for off loading wind turbines from ocean going vessels, assembling various turbine components and loading onto barges/workboats for transporting to offshore wind farm.

Senior Consultant, Lantana/Valley Road/Tweeds Park, Hockessin, DE

Duffield Associates was retained to assist the Delaware Department of Transportation in planning, designing, and constructing a recreation park that includes the relocation and restoration of the historic two-story Tweed's Tavern dating from 1796. Duffield Associates provided "Green Technologies" for control of the runoff from the park, such as reforestation, wetlands creation, bio-retention and bio-swales. This turn-key design build park project consisted of one or two historic structures, 3 multi-purpose athletic fields, a Tot-lot, parking and access improvements for adjoining properties.

Project Manager/Engineer, On-Site Wastewater Disposal System Feasibility and Design

As a Class C licensed on-site wastewater system designer and registered professional engineer, Mr. Bross has done over 100 feasibility studies, design and operational/repair consultations for new systems, expanded systems and repair systems for residential, industrial, institutional, commercial and community applications. From 1970 until 1975, Mr. Bross was the co-owner of Site Investigations, Inc. a firm which performed feasibility studies and on-site wastewater system design for over 150 systems of varying sizes.

Project Manager - Indian River Inlet North Channel Closure, DE

Mr. Bross was Project Manager for the North Channel Closure Project at the Indian River Inlet for the Delaware Department of Natural Resources and Environmental Control. This project involved hydraulic modeling; sediment sampling and transport analysis; geotechnical evaluation; design; permitting; and construction review.

Principal-In-Charge - Oil Recovery Vessel Berth and Support Facilities, DE

Mr. Bross served as Principal-In-Charge for the feasibility studies, permit preparation, and design of a new berth on the Delaware River for a 240 foot long spill recovery vessel. This \$1.5 million project was completed for the Marine Spill Response Corporation of Washington, DC. Duffield Associates' work included: design of a 200 foot long sheet pile dock; preparation of dredging study and design of dredging of the Delaware River to accommodate vessel and to access navigable waters; reinforcing of an adjacent sheet pile bulkhead; sediment environmental analysis; design of onshore warehouse and support facility; analysis of dredge material disposal area; preparation and processing of all permits; and management construction.

Project Manager - Mary Elmer Lake Dam and Spillway, Bridgeton, NJ

Mr. Bross was the Project Manager for the reconstruction of this dam - a composite earth embankment and semicircular concrete spillway that impounded a large freshwater lake. The original embankment and spillway were washed away during a hurricane because of hydraulic under capacity and deteriorated embankments. Responsibilities included geotechnical investigation, hydraulic design, embankment design, permitting, and construction review.

Principal-In-Charge - Hoopes Reservoir Emergency Action Plan Update

Mr. Bross is Principal-In-Charge for this dam breach evaluation of the State of Delaware's largest dam and reservoir. The project included the evaluation of a "sunny day" failure of the 110-foot high masonry structure and the dynamic routing of the ensuing flood wave through the downstream Red Clay Creek valley.

Principal-In-Charge - United Water Delaware Tidal Capture Structure, Stanton, DE

Mr. Bross served as Principal-In-Charge and Senior Consultant for a project to develop a reliable 30 million gallon a day (MGD) raw water withdrawal from the White Clay Creek at United Water Delaware's Stanton, Delaware Water Treatment Plant. He directed Duffield Associates' team of engineers and scientists in developing a unique solution to this problem that involved the design of a water inflated bladder structure, which impounded the creek and prolonged the availability of water during the twice daily high tides. The project was permitted in record time and constructed within budget.

Senior Consultant - Wilmington Harbor South, DE

This project included the construction of a 7,000-ft long containment dike for dredge spoil disposal in the Delaware River. Construction of the dike required the placement of a high-strength geotextile reinforcement to provide adequate stability. Mr. Bross was responsible for providing technical guidance and oversight.

Project Manager, Fort Delaware State Park, Delaware City, DE

Mr. Bross served as Project Manager for the Fort Delaware Bicentennial Improvement Project which included the design and construction review of: new docks in Delaware City and on Pea Patch Island; a new access road on Pea Patch Island; a comfort station and new water supply system at Fort Delaware; a maintenance building in Delaware City; new bulkhead and boat boarding facilities in Delaware City; a pedestrian plaza; and restoration of an historic lock on the old C and D Canal.

Project Manager, Beach Erosion and Hurricane Protection, Delaware Coastline

Mr. Bross served as Project Manager and Key Technical Member for the first Phase II General Design Memorandum prepared for the Philadelphia District Army Corps of Engineer. This study utilized predictive models to evaluate littoral movement, storm surges, and wave action along Delaware's Atlantic Coast. The study evaluated and recommended a combination of structural, operational, and institutional solutions to protect natural resources and public/private property, as well as to enhance recreational opportunities. Extensive evaluations were performed on groins, jetties, bulkheads, nearshore and offshore beach nourishment, sand bypass, dune reconstruction, and revegetation. The study also required detailed topographic, bathymetric, geotechnical and vibrocore surveys and investigations. Benefit-cost analyses were performed using economic studies developed as part of the study.

Project Manager, Groin Design, Atlantic Coast, DE

Over the last 25 years, Mr. Bross served as Project Engineer and Project Manager for multiple beach erosion control projects, groin design and reconstruction projects, and groin studies at many locations along Delaware's Atlantic Coast. This work included littoral and wave studies, geotechnical evaluations, design, permitting, and community involvement.

Principal-In-Charge, Corestates Bank, Wilmington, DE

Duffield Associates was retained by the project architect to provide civil, environmental and structural engineering services for the design of an approximately 4,300 square foot branch bank facility in Wilmington, Delaware. As part of their services, Duffield Associates performed an environmental assessment, a geotechnical evaluation, a wetland delineation, and flood studies; agency negotiation and construction review services. This project was done concurrently with a large restaurant expansion on an adjacent parcel for which Duffield Associates provided civil engineering design services. The Duffield Team successfully designed, achieved Department of Transportation approvals, and implemented a shared access onto a major arterial highway for these projects and an adjoining shopping center.

Principal-In-Charge, Bellevue State Park Greenway, Wilmington, DE

Services provided by the design team overseen by Mr. Bross, included design of trails, delineation and protection of freshwater wetlands, design of drainage improvements, landscape design, and design of visual and informational amenities. Under Mr. Bross' direction the greenway was designed and constructed in accordance with DeIDOT Appendix H, Plans, Specifications and Estimates (PS and E) and ISTE requirements.

Senior Consultant - Championship Golf Course, Wilmington, DE

Mr. Bross served as the lead permitting professional for the development and construction of a championship golf course situated on both sides of the White Clay Creek, a designated Wild and Scenic River. In addition, the entire golf course project was located in a regulated flood plain and encompassed numerous regulated resource protection areas such as riparian buffer, steep slopes and forest. Under Mr. Bross' guidance, all necessary local, state, and federal permits, approvals, and variances were obtained within a one-year period. Identification of and liaison with special interest environmental organizations was successfully implemented and was a key element in the approval process.

Project Manager - Flood Studies, New Castle County, DE

Mr. Bross served as Project Manager for flood studies in 18 major watersheds throughout New Castle County. These studies included the acquisition of topographic and structural surveys, hydrologic computations, flood plain modeling, and recommendations for flooding mitigation. Watershed basins included White Clay Creek, Belltown Run, Hyde Run, Cool Run, South Branch Naamans Creek, White Clay Creek, Appoquinimink River, Christina River, Shellpot Creek, Silverbrook Run, Matson Run, Little Mill Creek, Magazine Ditch, Broad Dyke, Buttonwood Ditch, Red Lion Creek, and Dragon Run Creek.

Principal-in-Charge, Hockessin Athletic Club, Hockessin, DE

Duffield Associates was retained to provide land development and site engineering consulting services to assist in the design of the new Hockessin Athletic Center on an approximate 12-acre site in Hockessin. This project consisted of a 80,000 square feet multi-story structure, outdoor swimming pools and recreation areas, and associated parking. Mr. Bross was Principal-in-Charge of this project which also included providing design/build services on behalf of the Delaware Department of Transportation for the surrounding Tweeds Park which incorporates, wetlands, regional stormwater management facilities, athletic fields, and hydraulic control structures.

Principal-In-Charge - AstraZeneca Pharmaceutical Research Campus Expansion, Wilmington, DE

Mr. Bross served as Principal-in-Charge for environmental studies and provided consultation, guidance and design for compliance with the environmental provisions of the New Castle County Unified Development Code.

Principal-In-Charge, Keene Elementary School, Glasgow, DE

Duffield Associates was retained by the Christina School District to perform multidiscipline services for the design of this 64,600 sf elementary school. These services included structural engineering, geotechnical engineering and civil engineering services. Civil engineering services included site design, processing of land development approvals, design of stormwater management facilities, site grading, and erosion and sediment control.

Project Manager, Belltown Run Interceptor Sewer, New Castle County, DE

This sewer line was instrumental in eliminating failing septic systems in an area of New Castle County that had been designated for future planned development. The approximate 3.5 miles of large diameter sewer were designed and constructed under challenging conditions including soft soils, running sands, and high groundwater tables. In spite of these challenging issues, this project was constructed within budget.

Principal-In-Charge, Weatherhill Sanitary Sewer, Wilmington, DE

Mr. Bross served as Principal-In-Charge for this value added project that included the design of a grinder pump system to divert sewer flow from an existing office building from entering the Mill Creek System to the Pike Creek System. This provided additional capacity in the Mill Creek System to accommodate flow from a new office building. This included negotiations/liason with New Castle County, Department of Special Services, New Castle County, Department of Land Use, and the Delaware Department of Transportation for sewer design approval, sewer agreement approval, and right-of-way construction permit approval.

Project Manager - Belltown Run Basin Study, New Castle County, DE

This study represented County Government's first successful effort to perform a basin-wide study to plan and develop sewer infrastructure, stormwater management and environmental protection standards on a comprehensive basis in advance of full-scale basin-wide development. This study served as the standard for future studies and stormwater management and sediment/erosion control efforts now widely used throughout the County. It also provided a mechanism for public/private partnerships to construct necessary wastewater conveyance systems.

Principal-In-Charge, Farm Meadows Mixed Used Development, Wilmington, DE

This project included determining the closest available public sewer system and whether capacity existed. 2 concepts were developed for connecting to the nearby sewer and regulatory and technical feasibility of providing wastewater treatment/ disposal on site.

Principal-In-Charge, New Castle Conservation District Operations Center and Office, Glasgow, DE

Duffield Associates was retained by the New Castle County Conservation District to assist in rezoning, community liaison, geotechnical engineering, land development planning, natural resource inventories, record plan preparation, civil, site design and structural engineering for this approximately 25 acre site. The site was one of the first major office/multi-use projects to be developed under the Unified Development Code (UDC) of New Castle County. It includes a multi-story office building, parking designed to accommodate public access, nature interpretive area, extensive landscaping, and a separate operation maintenance and storage facility.

Principal-In-Charge, Wilmington Trust Operations Center, Wilmington, DE

Duffield Associates, Inc. provided complete environmental, geotechnical and structural engineering services on this approximately 70,000 square foot operations center located outside of Wilmington, Delaware. Mr. Bross, as Project Manager and Principal-In-Charge, oversaw the subsurface investigation, site assessment, and analysis and design of the foundation and superstructure.

Principal-In-Charge/Senior Consultant, Evaluation of Flood Relief Bypass Channel Glenville Community

This evaluation report was prepared at the request of the Delaware Emergency Management Agency (DEMA) to further review the efficacy costs and issues associated with a proposed mitigation project to reduce flooding to the Glenville Community and surrounding area. The mitigation project is the construction of a flood relief bypass channel.

Project Manager - Energy Generating Facility, Pigeon Point, DE

Duffield Associates was retained to provide geotechnical, structural, civil, environmental and construction engineering services for construction of the facility. Mr. Bross served as Project Manager. The energy generating facility (EGF) was a structure which, because of the extremely soft soil conditions, was constructed on a combination of both shallow and deep (pile) foundations. It was necessary to construct embankments over the very soft soils. The installation of over 5300 prefabricated vertical drains ("wick drains") and use of a soil surcharge were used to stabilize the soft soils during construction and reduce settlements after construction. The use of wick drains allowed the use of shallow foundations under portions of the building, which significantly reduced foundation costs for these portions of the building.

Project Manager and Key Technical Member - River Flood Damage Inventory Studies, DE

This project was performed for the Philadelphia District Corps of Engineers on the Brandywine Creek and the Christina River. These studies involved flood damage field surveys, interviews with affected parties and governmental agencies, preparation of damage cost estimates, data compilation, and report preparation.

Principal-In-Charge/Senior Consultant, Glenville Community Flood Mitigation Evaluation

Duffield Associates was retained by New Castle County to evaluate the advisability, feasibility and cost of purchasing some or all of the homes in the Glenville Community as a permanent solution to the flooding problems which have impacted this community for many years.

Principal-In-Charge - Petroleum Hydrocarbon Remediation

Duffield Associates was retained to evaluate the possible source and potential remedial actions of oily substances leaking into a marsh and river at a major mid-Atlantic refinery. Mr. Bross served as Principal-In-Charge to oversee the remediation.

Principal-In-Charge/Senior Consultant, Reservoir/Pumped Storage

Mr. Bross served as a Senior Consultant for a major water utility company in the study for a 500 million-gallon pumped storage reservoir, a 6 MGD pumping station and a 30-inch diameter transmission main. The pumping system is designed to both skim flows to fill the reservoir during periods of high stream flow and to pump water from the lower reservoir operating levels into the nearby water treatment plant.

Principal-In-Charge - Becks Pond Water Quality Study, New Castle County, DE

Mr. Bross served as the Principal-in-Charge for a project funded by the New Castle Conservation District that examined water quality issues in Becks Pond in New Castle County, Delaware. Duffield Associates was retained to evaluate water quality issues and recommend in-pond and basin-wide mitigation measures to improve water quality and enhance recreational uses.

Project Manager, Cool Spring Reservoir, City of Wilmington, Department of Public Works, DE

Duffield Associates performed an evaluation for the City of Wilmington involving determination and confirmation of leakage of treated water from a masonry-lined reservoir. As Project Manager, Mr. Bross oversaw the geotechnical evaluation, design and construction review services of a new shotcrete lining and cap for portion of the reservoir, design of a system to control leakage, as well as other appurtenant rehabilitative work.

Senior Consultant, Porter Reservoir Expansion Study, Wilmington, DE

This project involved the preparation of a concept layout and design for a 250-400 million gallon finished water reservoir across from the existing Porter Reservoir and a 200-350 million-gallon finished water reservoir adjacent to Porter Reservoir. Each of the reservoirs included embankments of approximately a mile in length and maximum embankment heights of 30 to 40 feet. The project included concept plans, concept cost estimates, a summary report on the feasibility of various alternatives, preparation of a 3-dimensional rendering and assistance to the City of Wilmington in presenting the concept to the Governor's Drought Task Force Committee.

Principal-In-Charge, Bread and Cheese Island Reservoir Study, Stanton, DE

Mr. Bross is the Principal-In-Charge for the evaluation and design of this 0.5 billion-gallon potable water supply reservoir. This project included three miles of embankment varying in height from 15 to 40 feet, and the identification and resolution of environmental issues and local, state and federal permitting.

Principal-In-Charge, May B. Leasure Elementary School, Bear, DE

Duffield Associates was retained by the project architect to perform the analysis and design of both the foundation and superstructure systems for this 64,600-square foot elementary school. Duffield Associates provided geotechnical engineering, site and stormwater management design, environmental site assessment, and structural engineering services for the design and construction of this new school.

Project Manager, Northern Solid Waste Facility-1 (NSWF-1)

Mr. Bross served as the Project Manager to the Delaware Solid Waste Authority for over 20 individual projects during a 9-year period at the NSWF-1 including landfill expansion, leachate collection, stormwater management access roadways, cover studies, compaction studies, monitor well installation, gas well installation, gas venting/collection; QC/QA monitoring, and closure.

Project Manager/Principal-In-Charge, Northern Solid Waste Facility-2 (NSWF-2)

Mr. Bross served as Project Manager or Principal-In-Charge for over 10 projects during a 5-year period at the Delaware Solid Waste Authority's NSWF-2 landfill. These projects included: geotechnical studies; compaction/cover studies; environmental monitoring; access roads; and cell closure.