



Paul K Boyce, PE, Senior Vice President

PROFESSIONAL EXPERIENCE

PWGC: 20 years

PRIOR: 3 years

EDUCATION

- MS, Environmental Engineering, Polytechnic University, NY
- BS, Civil Engineering, SUNY Buffalo, NY

PROFESSIONAL CERTIFICATION/TRAINING

- Professional Engineer, NYS & PA
- BNL Radiological Worker I & III
- OSHA HAZWOPER 40-hr (29CRR 1910.120)

AREAS OF EXPERTISE

- Water Resource/Supply Design
- Civil Site Design
- Remedial System Design
- Geothermal Systems
- Groundwater Hydrology

AFFILIATIONS

- American Society of Civil Engineers
- NYS Society of Professional Engineers - Suffolk County Chapter
- American Council of Engineering Companies
- Long Island Professional Geologists Association
- American Water Works Association
- National Groundwater Association
- International Ground Source Heat Pump Association

HONORS AND AWARDS

- Platinum Award, C. W. Post College Campus Geothermal System, ACEC New York 2009 Engineering Excellence Award
- ACEC-NY, 2005 New Principal of the Year
- NYSSPE Suffolk Chapter - 2006 Young Engineer of the Year

PROFILE

An environmental engineering professional for more than 20 years, Mr. Boyce has an impressive portfolio of successful project strategies, designs, management and execution. He is an expert in providing commercial, public, and private clients with targeted analyses, designs, modeling services, investigations, master planning development, construction oversight, and regulatory as well as sustainability consulting.

His experience covers a broad spectrum of remediation designs and techniques, such as combining institutional controls and engineered systems to create workable, cost-effective solutions. Mr. Boyce looks beyond the obvious to determine whether new natural techniques will achieve the client's long-term plans, limit future liability and have the least impact on overall operations. He assists clients with choosing conventional technologies and implementing them for use to their fullest capacity.

Mr. Boyce creates customized structural, mechanical, civil/environmental designs, implementation strategies and ultimately, management plans. His thorough knowledge of regulatory issues and his dedication to sustainable engineering solutions provides clients with invaluable guidance and effective tools to establish, and implement, long-term strategies based on factual.

Mr. Boyce is an expert on all aspects relevant to Geothermal Wells - from the planning stage through to system start up and operation. He assists clients with selecting the appropriate system and location, assessing a given system's feasibility in terms of the client's objectives, preparing designs in accordance with regulatory requirements, managing the system's construction, and coordinating its startup.

Mr. Boyce has earned a reputation with clients and within the industry for his vast hands-on experience in assessing feasibility of existing systems and providing financially sound modifications for possible improvements.

NOTABLE PROJECTS

Town of Oyster Bay Department of Public Works, NY

Design of Compressed Natural Gas (CNG) Fueling Station - As the Project Director, Mr. Boyce serves as the client's representative in our office and is responsible for the overall quality assurance and quality control of the project. He oversees the team of engineers to ensure that the firm resources are available so that the project is adequately staffed, equipped and managed to effectively develop the civil, mechanical, and electrical design details and construction bid documents for a combined time- and fast-fill CNG fueling station at the Town's Syosset, NY facility. Mr. Boyce attends meetings with the town and reviews designs, plans, and specifications as necessary.

Suffolk County Department of Public Works, NY

Design of Compressed Natural Gas (CNG) Fueling Stations - As the Project Director for three locations, Mr. Boyce serves as the client's representative in our office and is responsible for the overall quality assurance and quality control of the project. He oversees the team of engineers to ensure that the firm resources are available so that the project is adequately staffed, equipped and managed to effectively develop the civil, mechanical, and electrical design details and construction bid documents for two fast-fill CNG refueling stations and one time-fill refueling station in Suffolk County, NY. Mr. Boyce attends meetings with the town and reviews designs, plans, and specifications as necessary.

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Ross School, East Hampton, NY

Master Planning & Campus Design - Mr. Boyce provided civil engineering design services to develop a master plan for the private school campus, which was to be :“one of a kind”, transforming the school into a state of the art learning institution, situated in a rural, wooded groundwater recharge area.

Civil Engineering Services - Civil engineering and consulting were provided for grading, drainage, utility layout, roadways, parking, site lighting, athletic playing fields, irrigation, water supply, sanitary, wastewater collection, and open loop geothermal heating/cooling water systems. Throughout the project, Mr. Boyce collaborated with other project consultants, foremost planners, architects, landscape architects, MEP engineers, surveyors, contractors, the construction manager, and the school administration. He oversaw and participated in the conceptualization and preliminary design of the campus’ proposed layout, which included eco-friendly engineering designs consulting/development and integration of civil engineering design aspects with other important features such as academic programs, architecture, landscaping and pedestrian walkways.

Environmental Engineering Services - The campus was to be as green as possible utilizing available eco-friendly technologies for the most environmentally sensitive and appealing design. The campus’ sensitive environmental location as well as sanitary density issues required a sewage treatment plant. Mr. Boyce investigated and evaluated different sewage treatment technologies capable to meet the school’s projected needs functionally, aesthetically and academically. Taking into consideration some sustainability goals and be in compliance with regulatory requirements.

Environmental Consulting/Conceptual Design Services After researching the latest sewage treatment technologies, Mr. Boyce recommended to the master planning team and school administration a wastewater treatment system that naturally treats sewage and industrial waste to re-use quality and meet Master Plan goals: aesthetics, economic/environmental advantages and well below regulatory discharge standards. The panel accepted his recommendation and he created conceptualized layouts, sited for possible plant locations and designed a preliminary ecologically engineered sewage collection system.

Geothermal Well System Design – Mr. Boyce managed the site assessment, design, construction oversight, and preparation of O&M manuals for the systems, conducted a feasibility study of using open-loop geothermal systems to heat and cool 2 of the school’s most prominent buildings - The Center for Well Being (Bldg 5) and the Media Pavilion (Bldg 2). He researched local hydrogeological and groundwater quality conditions and analyzed the effects of required flow rates on a nearby Suffolk County Water Authority (SCWA) well field. Mr. Boyce employed Groundwater Vistas by ESI, to create a detailed 3-dimensional model for the area. His analysis illustrated the potential effects of supply and recharge wells on (1) each other, (2) nearby neighboring shallow wells, (3) the SCWA well field, and (4) the local water table (The model also took into account of the local groundwater divide). Once he had demonstrated that operating two separate open-loop geothermal well systems in close proximity would not have an impact, he prepared the engineering report for the NYS Department of Environmental Conservation, along with the appropriate Long Island Well permit applications for approval.

Suffolk County Department of Public Works, NY

Timber Point Country Club, Great River, Water Supply System & Irrigation Well Upgrades – Mr. Boyce directed the well’s condition assessment, including a pump test, to determine capacity and water quality, and prepared specifications/plans to upgrade supply well with new pump and motor. Further, he designed new piping configurations to integrate irrigation well with distribution and cross-connection to the Suffolk County Water Authority, and specified new variable frequency drive for well pump motor.

West Sayville Golf Course, Sanitary System Improvements – Mr. Boyce oversaw construction phases through completion including, supervised design; development of permitting; bidding and construction documents to modernize the upgrade of the existing administrative buildings sub-surface sanitary disposal system.

Peconic Dunes Park, Peconic, NY, Water Distribution System Improvements – Mr. Boyce supervised design/development of permitting, bidding, and construction documents to upgrade the existing water distribution system’s components including backflow prevention devices water mains/meters, hydrants, and internal plumbing. Further, he oversaw construction phase services through to completion.

BOMARC Police Firing Range Westhampton, Drainage Improvements - Mr. Boyce directed design/development of permitting, bidding, and construction documents for drainage conditions improvements (i.e. stormwater collection/conveyance systems, new recharge system), and oversaw construction phase services through to completion.

Suffolk County Fire Academy, Yaphank, Water Supply Well Improvements - Mr. Boyce supervised design/development of bidding and construction documents for the re-circulated supply system. This included: physical/chemical rehabilitation, electrical service upgrades, a new motor starter, and replacement of a diesel driven booster pump with an electrically operated one, as well as the deep well vertical turbine pump and motor with a new submersible pumping unit. He managed construction phase services (administration, observation) to project completion.

SUNY Stony Brook, Sewer District 21, Groundwater Modeling Study, Stony Brook NY - Mr. Boyce performed a 3-d numerical groundwater modeling to estimate flow path and travel time of sewage treatment plant effluent from recharge basins to the Long Island Sound, and prepared an engineering report documenting findings and modeling results.

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Pinelawn Memorial Park, Farmingdale, NY

Colonial Springs Golf Course Irrigation Well System Design & Construction – Mr. Boyce designed and supervised the installation of a new system for the new 18-hole golf course. The system, comprised of 2 groundwater supply wells, a 12-acre storage lake, booster pumping station, and distribution piping, has been running smoothly since start-up.

Three Mile Harbor Boat Yard, East Hampton, NY

Site Planning Analysis – After evaluating site conditions, Mr. Boyce recommended feasible improvements to enhance an existing boat yard facility. He investigated local zoning/building codes, sized/located sanitary facilities, sized/designed layout and arrangement of parking facilities, sized/located/orientated a new proposed structure to house a marine shop, offices, storage, and industrial space. He effectively addressed critical issues such as the site's location in a harbor protection area and no public water access, which put severe constraints on sizing and locating the sanitary facilities. He prepared plans and reports delineating suitable site alternatives and requirements for implementation in compliance with regulatory agencies and utility companies.

Inlet Seafood, East Hampton NY

Site Plan Application - As senior engineer, Mr. Boyce designed and coordinated the preparation of site-plan application drawings for the commercial/industrial fishing marina looking to expand the site from a commercial to a multiple use area that included retail, restaurant, and commercial fishing. He managed civil/site concerns, which included grading, drainage, sanitary, water supply, utilities, parking, traffic controls, site lighting, and building locations/elevations. Mr. Boyce worked with the owners and other project consultants to conceptualize and plan the site layout for optimum use and compliance with local zoning and building codes. In addition, he prepared site-plan application drawings for the Town Planning Board and local regulatory agencies. He supervised development of designs and bidding/construction documents for new water mains/services/flow meters, hydrants, and drinking water fountains, oversaw construction, and supervised wetlands delineation and permitting with the NYSDEC through to project completion.

Benjamin Beechwood, LLC, Arverne Urban Renewal Area (URA), Far Rockaway, NY

Design/Engineering Management Services, Stormwater Collection & Conveyance System - Mr. Boyce managed the design and siting of a stormwater collection and conveyance system for an 80+ acre development along the south shore of Queens County. He coordinated catch basins locating, grading design, sizing interconnected piping networks and tie-ins with the local NYC storm sewer system. Mr. Boyce was also responsible for incorporating BMP's in the system design.

Stormwater Quality Impact Assessment on Local Surface Water Body - Mr. Boyce was responsible for determining stormwater roadway run-off concentrations for TPH's, suspended solids, metals, coli forms, pH, and dissolved oxygen. To estimate the influence of these parameters on the nearby canal basins into which they were to be discharged, he employed chemical and mathematical relations using chemical properties and mass balances based on flow rates and tidal flushing volumes to estimate potential effects. Subsequently, he assisted in preparing the stormwater portion section of a DEIS (Draft Environmental Impact Statement).

Montauk Yacht Club, Star Island, Lake Montauk, NY

Sewage Treatment Plant Design – Mr. Boyce managed the structural design of the key components of a sewage treatment plant for the Montauk Yacht Club. The plant, a sequential batch reactor (SBR) type with a peak design load of 50,000 gpd, featured a treatment process involving several large tanks made of reinforced concrete. He worked closely with the process design engineers to size, arrange, and orientate the various tanks in the treatment train within the plant. He then prepared the structural design of the tanks and associated building facilities, which included reinforced concrete, steel and masonry components. In addition, Mr. Boyce prepared the design drawings and specifications, and collaborated with the project architect to coordinate the overall height, shape, and exterior appearance of the sewage treatment plant.

Environmental Compliance Audits (ECA) - Mr. Boyce oversaw the ECAs for NSUH at Glen Cove, Franklin, Syosset, Southside, and Plainview. ECAs concentrate on major environmental areas of concern: storage tanks, air emissions, hazardous materials/wastes, storm water, potable, and wastewater. He prepared an Environmental Compliance Issues report, based on ECAs. Further, he provides on-going guidance and support to address any identified violations per government, state, and local environmental regulations.

North Shore Long Island Jewish Health System, NY

North Shore University Hospital (NSUH), Glen Cove, NY, Geothermal Wells Project – As project manager, Mr. Boyce prepared the feasibility study, well permits, construction documents, oversaw the construction and fieldwork for the installation of a 400 GPM open-loop groundwater heat pump system. Before design, Mr. Boyce conducted the study to assess the feasibility of augmenting the AC's geothermal well system; he investigated size and location options for new wells and prepared construction cost estimates based on minimizing potential conflicts with existing site constraints and the likelihood of regulatory agency approval. He determined that expansion of the existing system would be feasible based on cost, local hydrogeology, and his modeling results. He advised the client that construction would cause significant disruptions to the hospital's daily operations. In accordance with NYSDEC guidelines, he investigated

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the potential effects of the proposed project on a nearby inactive hazardous waste site, obtained baseline water quality data, estimated aquifer characteristics to refine and calibrate the model and drafted a design and construction plan of a test and monitoring well to determine local geologic conditions. As liaison between NSUH, the NYSDEC, and the local regulatory agencies, Mr. Boyce established that a scaled-down, relocated system would have negligible effects on the hazardous waste site, and consequently, obtained approval for the proposed construction. NSUH selected Mr. Boyce to design, plan, and oversee the construction of the new system, which involved developing the design and strategy for a supply and recharge well system with inter-connecting process piping, detailed hydraulic analyses, sizing the various system components, and coordination with other project consultants on the installation of piping and process equipment.

Heatherwood Communities, LLC, Manorville, NY

Ecologically Engineered STP Design & Engineering Study - Mr. Boyce designed and supervised an engineering study to determine optimum site for the planned STP in the environmentally sensitive and shallow groundwater area. After thorough analysis of the area's historical groundwater level data from nearby off-site wells, and simulation (using numerical analysis to estimate anticipated high water levels for the site), he compared water level readings at the designated site to readings from nearby off-site wells. He had a series of observation wells installed, which he used to investigate the relationship between his findings, the proposed layout for the apartment community and STP location, and environmental constraints (i.e. wetlands setbacks).

Southampton College, Southampton, NY

Sewage Treatment Alternatives Evaluation - Mr. Boyce assisted in preparing an engineering report to evaluate various sewage treatment alternatives for the current campus, and for possible expansion of the campus. He researched ecologically engineered sewage treatment systems (i.e. Living Machines, Solar Aquatics, and Ocean Arks), determined their applicability, coordinated with the SCDHS regarding acceptance, and computed estimated sanitary flow numbers based on County sanitary code requirements. Mr. Boyce was involved with the conceptual layout of sewage treatment locations and associated sewage collection systems. He helped develop and cost out the various viable alternatives and provided input into the report recommendations.

Ridge Mobil Gas Station, Ridge, NY

Soil & Groundwater Remediation System - Mr. Boyce evaluated, selected, and designed the system for a petroleum spill at a gas station. He chose a soil vapor extraction (SVE) system in conjunction with an air-sparging system as the appropriate remedial technology, based on the characteristics of the contamination, site hydrogeology and overall size of the spill and associated plume. Mr. Boyce oversaw SVE wells and air-sparge points locating/sizing, SVE blower and air sparge compressor designs, off-gas treatment needs assessment, and appropriate controls and instrumentation selection for system interlocking capability. He prepared project plans/specifications for NYSDEC review and construction purposes

Pratt Institute, Brooklyn, NY

Geothermal Feasibility Study - Mr. Boyce oversaw and coordinated a test hole drilling, geological characterization, water quality sampling. Additionally he prepared a feasibility study comparing and evaluating open loop, closed loop and standing column well geothermal technologies and recommended the most appropriate based on site constraints and water quality issues.

C.W. Post Campus – LI University, Brookville, NY

Open Loop Geothermal Well System –Mr. Boyce conducted 3-d numerical groundwater modeling to determine possible and real effects of proposed geothermal wells (i.e. effects on each another, and/or other nearby wells). He designed open loop geothermal system wells and associated piping; and managed the development of project plans and specifications as well as permitting documents. Subsequent, he supervised, and provided QA/QC, for construction services, and served as regulatory agency liaison and primary client contact. The system went in service spring 2007.

Minmilt Realty, Farmingdale NY

Groundwater & Soil Remediation Systems Design - Mr. Boyce evaluated, selected and designed appropriate remediation systems to cleanup a large industrial solvent plume that had contaminated nearby soil and groundwater. The chosen groundwater remediation consisted of an air-stripping tower, granular activated carbon (GAC) filters for off gas treatment and recharge structures; the soil treatment system was a soil-vapor extraction system (SVE) and GAC filters. Mr. Boyce's design responsibilities included sizing and selecting remediation system equipment, structural, mechanical, electrical, hydraulic, well, controls and instrumentation design. Mr. Boyce also performed three-dimensional numerical groundwater modeling to evaluate the effectiveness of the proposed groundwater remediation system and to size and locate a series of deep and shallow wells. Mr. Boyce prepared plans and specifications, a technical report for the NYSDEC detailing the choice of the specific components overall design process. He was involved in the construction

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administration and oversight of the remediation systems and was responsible for reviewing and approving shop drawings and performing routine construction observation services.

Lincoln Bright Bay, Bay Shore, NY

Groundwater & Soil Remediation System Design - Mr. Boyce evaluated, selected and designed a soil and groundwater remediation system for a petroleum spill at a car dealership. His choice of a soil vapor extraction (SVE) system in combination with an air-sparging system as the appropriate remedial technology based on the characteristics of the contamination, the site hydrogeology and capability to measure the extent of the spill and associated plume. Mr. Boyce located and sized SVE wells and air-sparge points, designed the SVE blower and air-sparge compressor, evaluated whether off-gas treatment would be necessary and selected appropriate controls and instrumentation to interlock the systems smoothly. He prepared plans and specifications, assisted the client in the bid and award of construction contracts and oversaw the system's construction, testing, startup and operation, maintenance and monitoring.

Computer Circuits Hauppauge, NY

Soil Remediation System Design - Mr. Boyce was responsible for the design of a soil vapor extraction (SVE) system to remediate a small plume of solvents at an industrial site in Hauppauge, NY. The design included SVE wells both vertical and horizontal, a treatment shed, an SVE blower, air/water separator, a particle separator, electrical power supply and distribution and instrumentation and controls. He performed all necessary calculations to estimate radii of influence for the horizontal and vertical SVE wells and was responsible for preparing the project plans and specifications that were to be submitted to the NYSDEC for approval and used as construction documents.

Water Authority of Great Neck North, Nassau County, NY

Weybridge Road Clearwell Design - Mr. Boyce prepared design for new air stripper clearwell, upgraded the booster pump, piping, controls modifications, coordinated with NCDOH, and performed cost estimates. The design is completed and NCDOH has approved it, however, funding constraints have put the project on hold.

SCADA System Design - Mr. Boyce prepared design for new Supervisory Control and Data Acquisition System, prepared bidding and construction documents, providing construction administration and observation services, cost estimates, construction is about to begin in late 2007.

Emergency Water Main Replacement, Berkshire Road - Mr. Boyce prepared design, construction and bidding documents for emergency water main replacements, expedited NCDOH review and approval, provided PE certification services, project is complete water mains have been installed in 2006.

Community Drive Treatment System Upgrades - Mr. Boyce prepared design, construction and bidding documents for perchlorate removal, and Freon removal that includes new packed column air stripper and resin filtration units.

Air Stripper Cap at Watermill Lane - Mr. Boyce coordinated with contractor and WAGNN regarding design and sizing of appropriate air exit cap atop existing air stripper at Watermill Lane treatment plant.

Valve Book Review/Updates - Mr. Boyce updated valve location sketches as new valves are being installed in the distribution system.

Municipal Supply Well Design, Well #14 - Mr. Boyce oversaw the design services for the new 1,400 gpm municipal supply well include engineering report for NYSDEC and NCDOH review/approval, preparation of plans and specifications for new well, associated piping, well house, electric, controls, instrumentation, chemical treatment, safeties, etc. Project is just underway as of Sept 2007. Construction phase services will also be provided.

Weybridge Road Ground Storage Tank Replacement - Mr. Boyce lead the project team charged with designing new 500,000-gallon steel ground storage tank to replace deteriorated and dilapidated existing 400,000-gallon ground storage tank. Subsequent the team prepared bidding/construction documents, inclusive plans and specifications, obtained NCDOH approval, provided construction administration and oversight services.

General Consulting Services - Mr. Boyce attended Board of Directors meetings to present monthly engineering report, assist with hydrogeological issues, contaminant fate and transport concerns, well maintenance, water main rehabilitation, etc.

Lemon-X Corp., Huntington Station, NY

Industrial Wastewater Treatment Study - Generating roughly 3,000 gallons per day of industrial wastewater at a facility without a wastewater treatment system, the mixed drink and fruit juice beverages manufacturer was required to comply with a NYSDEC order of consent. To rectify their current method of wastewater disposal into on-site drywells, Mr. Boyce prepared an analysis of viable treatment options, such as a hold and haul, and a 2-step treatment process that uses roughing filters to filter and remove nitrogen. He led the on-going waste stream sampling program, was involved with the treatment process selections and cost estimates. The treatment system design received NYSDEC approval based on the report's recommendations.

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Hampton Bays Water District, Suffolk, NY

Well Field Construction & Integration – Mr. Boyce prepared the structural, mechanical, and electrical designs for a new well field including 2 pump stations. In addition to construction plans and specifications, Mr. Boyce oversaw the integration of new well field with an existing distribution system via hydraulic analyses, and guided the client through the regulatory agency review and approval process. In a subsequent project phase, he partook in creating the layout of several residential water main projects, for which he analyzed the proposed water main layouts and prepared conceptual designs based on Health Department and ISO requirements.

Caustic Feed Systems Design - Mr. Boyce was responsible for the design of caustic feed systems at all 8 District supply wells. He prepared existing conditions drawings by conducting field visits to obtain the necessary information. He then designed caustic feed systems consisting of double-walled underground storage tanks, piping, metering pumps, safety interlocks, controls, alarms and injection equipment to raise the ambient pH of the groundwater withdrawn from the shallow aquifer system to between 7 and 8.5. He was responsible for preparing plans and specifications, obtaining Health Department approval, and then overseeing the construction administration and observation aspects of the project.

Isolated Pressure Zone Design - Mr. Boyce was responsible for designing an isolated pressure zone in an area that was experiencing chronic low-pressure conditions within the District's distribution system. He worked with existing distribution system maps and survey data to identify the boundaries of the proposed zone, he worked with available hydraulic data to estimate pressure conditions and developed a planned approach as to how to isolate the zone and create a booster pumping station to raise pressures within the zone to acceptable levels. Mr. Boyce was responsible for preparing the project plans and specifications that included a new packaged booster pumping station, water main and valve work, electrical service and site work. The SCDHS approved the plans and the pressure zone's was constructed closely to his design and construction cost estimate.

Good Samaritan Hospital, West Islip NY

Well Turbidity Study – After review of existing water quality data, Mr. Boyce recommended sampling and analyses for additional parameters. He applied a Water quality model, using the existing raw water quality data. To achieve optimal water quality pH-level, hardness, and alkalinity, he performed trial and error solutions using a numerical model. Different treatment chemicals were included in the model in various combinations or by themselves. Concluding modeling efforts led to a realistic chemical concentration.

Copper & Lead Desktop Study – The results of the study Mr. Boyce performed served to identify the possible cases for turbid water condition and proposing alternative options for corrective actions to restore acceptable water quality. He presented each alternative for evaluation and comparison to determine most advantageous choice, based on potential for success, technical complexity, and cost. In addition, he prepared a treatment specification and coordinated with an experienced well driller, resulting in a successful chemical treatment, and restoration of the water quality to acceptable conditions.

Times Square Construction, New York, NY

Geotechnical Report for 47 East 34th Street Building Construction – Mr. Boyce oversaw rock core boring program, characterized rock core samples, developed geotechnical report based upon findings of rock core boring program, provided foundation recommendations for a new 38 story residential building being erected upon Manhattan schist on the east side of mid town Manhattan. Assisted with the rock anchor design and specification. Supervised and managed field observation services for rock anchor testing. Supervised and managed the design and development of a foundation waterproofing system. Foundation is nearly complete as of September 2007.

Islip Resource Recovery Agency, Town of Islip, NY

Environmental Compliance and Permitting – Mr. Boyce managed and supervised environmental compliance audits for three Town facilities that included a C&D landfill, a composting facility, and a recycling center. He managed the preparation of environmental permits and design upgrades to bring facilities into compliance with SCDHS and NYSDEC requirements. As of Sept 2007 project is awaiting regulatory agency approvals.

NYC Transit – Multiple Projects, NY

Environmental Anticipatory Boring Program - Mr. Boyce served as the Environmental Engineer for multiple New York City Transit (NYCT) capital improvement projects. He reviewed the project scope and resulting project plans and documentation for feasibility, accuracy and completeness. When necessary or requested, Mr. Boyce attended meetings and performed site visits with the client and NYCT

Allied Aviation Services, LaGuardia Airport, NY

Filter Pad Design – Mr. Boyce managed the structural design of a reinforced concrete pad to supply fuel for a jet fuel tank farm. After investigating soil conditions to determine bearing capacity/structural adequacy to support the new proposed loads, Mr. Boyce located,

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sized, and situated the new filter pad among an existing pipe and tank network, and prepared designs for concrete reinforcement to withstand differential settling effects. He sized a secondary containment volume and dyke wall for the pad; and prepared designs to integrate fuel filters into the existing system, and for a steel frame staircase and catwalk system to provide maintenance workers access to the fuel filters. Subsequently, he prepared structural calculations and construction documents (i.e. plans and specifications). Before construction, he submitted the plans to the NY/NJ Port Authority for review and comment. During construction, unexpected sub-surface conditions were encountered that required significant design changes, including re-engineering the pad foundation. He provided adjusted structural calculations and revised the design to accommodate the conditions that could not be alleviated.

Stormwater Sediment & pH Control Investigation, LaGuardia Airport, Queens, NY – Mr. Boyce was responsible for reviewing and investigating an on going problem of storm water discharge to a surface water body with a too high solids content level. Storm water runoff collected at the fuel tank farm for LGA is passed through a treatment system to remove oils and organic contaminants. Under severe rainfall events, the treated storm water effluent had been discharged to the adjacent harbor with unusually high amounts of suspended solids, which were temporary violations of the facility's SPDES permit. To find a cost effective solution for the continuing problem, he evaluated various alternatives from in line cartridge filters, to settling tanks, to storm drain separators. Aside from cost, he considered other restrictions, such as limited space for installation, maintenance, durability, and reliability. Mr. Boyce studied peak hydrologic events and recommended the most efficient and effective treatment option for the owner to implement. Elevated pH of the discharged treated storm water effluent presented an unexpected, and separate, water quality issue. In addition he was responsible for investigating the cause of the problem and recommending a course of corrective action.

City of Long Beach, NY

Elevated Storage Tank Hydraulic Analysis & Permitting - Mr. Boyce was responsible for performing a hydraulic analysis to identify the optimal height and location for a new steel elevated water storage tank for the City of Long Beach. He used computer modeling to perform the analysis and was responsible for obtaining and entering all data into the model. He worked closely with the City's water department personnel to accurately represent the City's distribution system and obtain factual hydraulic data such as flow rates, operating flow rates, velocities, pipe sizes, etc. Mr. Boyce ran several different modeling scenarios including worst-case conditions under peak day with fire flow demands. He used the model output to locate and recommend an appropriate height for the new tank.

Catholic Health Services – St. Charles Hospital, Port Jefferson, NY

Cooling Tower and Boiler Blow Down Discharges – SPDES Permitting – Mr. Boyce led the investigation into alternatives for blow-down discharges that included discharge to either groundwater or sanitary sewer. He conducted flow studies of the sanitary sewer to determine how much water the Hospital was discharging and compared it to the Hospital's water bills, which the SCDPW was basing sewer usage on. As well as oversaw and managed the preparation SPDES permit applications for groundwater discharges. Project completed in Fall 2011.

Roanoke Sand & Gravel, Mid Island, NY

Sand Mining Design and Permitting – As the primary client contact, Mr. Boyce oversaw the application submittal to the Town of Brookhaven and NYSDEC to expand mining operations at an existing sand and gravel mine. The scope of services included assembling engineering drawings for proposed mining operations by excavating deeper through the bottom; preparing an engineering report addressing environmental, geotechnical and hydrogeological issues; preparing volume estimates to determine how much more sand and gravel could be mined by expanding the operations at the existing site and acting as regulatory liaison for the client. Project completed in 2010.

Lawrence Livermore National Laboratory, Livermore, CA

CD 0/1 Document Peer Review – As a member of a National Nuclear Security Administration (NNSA) team, Mr. Boyce was charged with conducting a peer review of preliminary CD 0/1 documents that site staff had prepared for the D&D of a nuclear research facility at LLNL (Bldg 431). As a focus area lead, he conducted the review's technical scope and value engineering portions. He toured the facility, reviewed pertinent work documents, interviewed staff responsible for document preparation, reviewed/evaluated the work documents for coherency, completeness and acceptable levels of detail for CD 0/1 stage requirements. He recommended document improvements and participated in a debriefing with the NNSA team and site staff.

NYC DOT, Kensico Reservoir Rte, Westchester, NY

120 Expansion Stormwater Management System Stormwater Quality Pre-Construction Baseline Assessment – Mr. Boyce directed the roadway run-off sampling of 15 storm events and 5 outfalls along the Reservoir. He oversaw installation of automated sampling equipment to monitor weather conditions, sampling events, and system/statistical data analyses for a stormwater-runoff quality report.

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Shelter Island Heights Water District

Water Main Replacement - Mr. Boyce was responsible for providing construction observation services for a water main replacement project in the Shelter Island Heights Water District. He provided daily oversight throughout the new mains' installation. He ensured the mains were installed in accordance with project plans and specifications. Mr. Boyce inspected pipe sizes and materials, installation and excavation procedures, flushing, pressure testing and backfilling of the trenches. He prepared inspector's daily reports and coordinated closely the contractor, design engineer, and heights personnel.

Brentwood Water District (BWD) Air Stripper, Plant No. 2, Brentwood, NY

Treatment Alternatives Study & System Design – As Project Engineer, Mr. Boyce conducted the treatment alternatives study for a VOC contaminated well field at BWD. The study ultimately recommended air stripping as the most effective and cost efficient technology to treat groundwater withdrawn from Plant No. 2. Upon the study's completion and acceptance, he prepared the design for the treatment system, which encompassed mechanical, electrical, structural, hydraulic, architectural and site components. Specific design components: an 11' diameter by 30' packed bed depth aluminum air stripper, a 100,000-gallon ground storage clearwell, and booster pumps. Specific design aspects: Restaging an existing well pump, electrical service upgrade, a new natural gas engine generator set, stripping tower enclosure and three existing pumping stations refinish. Mr. Boyce prepared the plans and specifications, which were approved by the SCDHS and ultimately used to construct the air stripper and related facilities. Following the design phase of the project Mr. Boyce was then responsible for providing construction administration and observation services.

Nitrate Study & Analysis - Mr. Boyce prepared a statistical analysis to compare increasing groundwater nitrate concentrations with pumpage from Plant # 2 of the BWD. The analysis involved compiling water quality data to measure levels in three wells of Plant No. 2, reviewing the data, and using statistical methods to forecast the water quality of pumpage from the aquifers utilized by the BWD. He superimposed pumpage data from Plant # 2 over his water quality findings to create a trend analysis, which showed nitrate concentrations fluctuated in the different wells based on pumpage. Mr. Boyce recommended available treatment technologies which eventually would be necessary to slow the deterioration rate of water quality caused by nitrate level changes. He advised that, based on the statistical analysis, establishing pumping sequences would slow the rate of water quality deterioration. His report also included estimates for when treatment of nitrate will become necessary and appropriate treatment technologies available.

Town of Oyster Bay, Syosset, NY

Potable Water Supply System Upgrade Design & Compliance Management Services – As Project Manager, Mr. Boyce coordinates inspection and assessment services for the town's Tobay Beach Park & Marina potable water supply system. PWGC focuses on the water supply system's status of compliance with NYSDOH, NCDOH, 10-State Standards, and provides feasible engineering designs to in response to the town's objectives: Safe, potable water for Tobay Beach patrons, in an economically sound fashion. Mr. Boyce managed the authoring of a feasibility report and selected/recommended minimum corrections and system upgrades. In addition, he prepared the design of a dry-briquette calcium hypochlorite chlorination system and other upgrades at Well House 3 of the Tobay Beach Park & Marina. To date, he continues to provide engineering services and design specifications for wellhead improvements. He also directs PWGC water quality monitoring and assessment services at the beach to determine compliance with local and state health department water quality and equipment guidance.

Jay Construction Corp, NY

Pile Foundation Designs for Residential Homes - Mr. Boyce was responsible for designing foundations for four residential homes in Patchogue, New York. The design included investigating existing soil conditions, reviewing architectural plans, sizing piles based on soil conditions, locating piles based on architectural layout, determining number of piles based on loads including self weight, building dead, live, snow and wind load, and worst case combination of loads based on building code. He created designs for reinforced concrete pile caps in accordance with ACI requirements and foundation walls to serve as grade beams between pile caps. In addition, Mr. Boyce prepared construction documents including plans and specifications, and acted as the primary client contact throughout the project.

Village of Dering Harbor Water District

Corrosion Control – A study to evaluate various corrosion-control treatment options for the Village's water district was performed. Based on the study, Mr. Boyce recommended adding soda ash to raise the groundwater's pH and allow for continued water supply to the Village. Following completion and acceptance of the study by the SCDHS, he designed the chemical solution feed systems to inject soda ash at the wellheads of the Village's two supply wells. He designed chemical mixing and solution storage tanks, feed pumps, interconnecting piping, injection tube assemblies, and safety interlocks. Once the systems' construction was completed, Mr. Boyce prepared record drawings for the Village and SCDHS.

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Village of Hempstead

Iron Sequestering Report - Mr. Boyce was responsible for preparing a report that documented the results of an iron sequestering study that was performed for the Village of Hempstead. He evaluated different sequestering products for effectiveness in keeping the dissolved iron in the Village's water supply in solution. He was responsible for collecting all the field data, comparing the various sequestering agents that were used and ultimately recommending the most effective and cost efficient product.

West Neck Water District, Shelter Island

New Well and Upgraded Pumping Station - Mr. Boyce was responsible for designing a new well and the upgrade for an existing treatment plant for the West Neck Water District on Shelter Island. The existing plant was basically a below grade vault that housed two shallow supply wells, two pressure tanks and some chemical feed equipment. He designed and integrated a new well and upgraded the vault to an above ground treatment building. The upgrade involved new piping, pumps, monitoring equipment, controls, a new structure, and accessories such as heating, ventilation, lighting, and power. Mr. Boyce was responsible for preparing plans and specifications obtaining Health Department approval and preparing as-built drawings once the project was completed.

AIL Systems Inc, Deer Park, NY

Recharge Basin Size Analysis - To assess the feasibility of reclaiming land used for recharge purposes, to sell or alter its land use, Mr. Boyce analyzed the industrial facility's existing cooling/cooling water recharge system. His analysis included an investigation of the facility's hydrological and drainage characteristics, and the existing storm water handling facilities' capability to accommodate various storm events. Mr. Boyce reviewed local building codes to make sure any proposed alterations could handle the minimum required storm events. He investigated also cooling water discharge rates to the recharge basins, to determine how much of the existing basins were required to handle the cooling water. With his report, AIL Systems was able to effectively evaluate its real estate options.

AIL Systems, Deer Park, NY

Sewage Treatment Plant Evaluation Study - ALL Systems, an electrical defense contractor, was attempting to sell their Deer Park property occupied by their large engineering and testing facility. The facility has its own sanitary wastewater treatment plant on-site. Located outdoors, the activated sludge type plant has a peak design flow of 43,000 gpd. A prospective buyer, The Tree line Companies, contracted PWGC to evaluate the condition and performance of the existing sewage treatment plant. Mr. Boyce performed a plant inspection; obtained and reviewed: operational records, annual operating costs, O&M manuals, plant influent, the effluent water quality data, design drawings, reports, schematics and equipment catalog cuts. He supervised the following analysis and evaluation to determine the overall condition of the plant, its estimated remaining life expectancy, future operating costs, and level of performance according to the facility's SPDES permit requirements.

Village of Sag Harbor, East Hampton, NY

Municipal Sewage Treatment Plant Engineer of Record - Mr. Boyce is assisting in providing engineering services for the Village of Sag Harbor municipal sewage treatment plant. The plant is a sequential batch reactor (SBR) with a peak design flow of 250,000 gpd. His responsibilities include (1) providing on-call technical support to plant operators on how to troubleshoot operational and process problems, (2) review of plant effluent data, (3) analysis of flow and effluent quality conditions, and (4) provision of design services when needed.

Birchwood Nursing Home, Huntington, NY

Structural Design - Mr. Boyce developed and created the structural design of a sewage treatment plant (STP) retrofit and upgrade for the nursing home, which, thus far, utilized a rotating biological contactor (RBC) process to treat 40,000 gpd of wastewater. The plant was to be upgraded to handle a new peak design flow of 60,000 gpd and be retrofitted from the RBC type of process to a sequential batch reactor (SBR) style plant while utilizing as much of the existing plant as possible. Process tanks needed to be increased in capacity and the footprint of the plant needed to be enlarged to accommodate the expansion. Mr. Boyce conducted a site survey to review and confirm the existing conditions. He worked closely with the process design engineers to rearrange and configure new tank sizes, piping runs, equipment locations, and the proposed building layout. To conduct the structural design of the tank upgrades and building expansion, Mr. Boyce utilized reinforced concrete and steel design procedures. He prepared plans, specifications and coordinated with contractors during construction accordingly.

City of Long Beach, NY

New Elevated Storage Tank Hydraulic Analysis & Permitting - Mr. Boyce was responsible for performing a hydraulic analysis to identify the optimal height and location for a new steel elevated water storage tank for the City of Long Beach. He used computer modeling to perform the analysis and was responsible for obtaining and entering all data into the model. He worked closely with the City's water department personnel to accurately represent the City's distribution system and obtain factual hydraulic data (ie: flow rates,

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operating flow rates, velocities, pipe sizes). Mr. Boyce ran several different modeling scenarios including worst-case conditions under peak day with fire flow demands. He used the model output to locate and recommend an appropriate height for the new tank.

Brookhaven National Laboratory, Upton, NY

Building 705 Stack Study – Mr. Boyce was the lead author of the study report, which was an evaluation of end-state alternatives for the D&D of a 320-ft tall reinforced concrete stack that had been used to exhaust reactor and nuclear experiment cooling gases. The report assessed different D&D technologies, disposal options and potential effects of demolishing such a large structure on laboratory operations. PWGC prepared preliminary cost estimates the DOE used to select a feasible demolition methodology as well as a plan to construct a smaller replacement stack for any site activities that still needed a stack.

Engineering Services for the Glass Holes & Animal Chemical Pits CERCLA Remedial Excavation - Mr. Boyce prepared the excavation plan and design drawings for a remedial excavation of over 50 individual waste pits at the client’s site. He managed the waste pits’ initial delineation, oversaw the geophysical survey using electromagnetic survey equipment, and prepared the excavation plan detailing technical guidelines for the hazardous waste site’s remediation. The plan provided direction for the removal/recovery of organic, inorganic, biological and radioactive buried wastes, as well as explosive, reactive, and corrosive materials. His engineering drawings detailed excavation layout, work/stockpiling areas, grading, drainage, haul routes, utilities, and site restoration. He acted as a field engineer during the field operations, oversaw excavation/waste removal, stockpiling, characterization and segregation of excavated materials, and monitored daily logistics for field crews.

Mercury-Contaminated Soil Treatment Alternatives Evaluation Report - Mr. Boyce’s report evaluated various appropriate remedial treatment technologies, including visual and technical system descriptions, a comparison study of each alternative’s technology, treatment process efficiency in the types, quantities and concentrations of mercury present in the soil, as well as the overall economics and cost effectiveness. He called attention to the presence of other contaminants such as organics and radioactive parameters, and studied the available technologies. He also presented recommendations for a soil stabilization process and options for the remediated soil’s disposal.

OUIII Western South Boundary Remedial System Design - Mr. Boyce was responsible for assisting in selecting the appropriate remedial technology for a groundwater pump treatment system for a volatile organic contaminant plume clean up. He suggested appropriate technologies and reviewed them from a feasibility standpoint. He recommended the most applicable one, based on effectiveness, available capital and O&M costs, implementation, reliability, operation, and maintenance. Mr. Boyce was then responsible for preparing a portion of the design of the recommended treatment technology, which included sizing and optimizing the primary treatment equipment (4-foot diameter x 35-foot tall air stripping tower).

Ash Pits Capping –Mr. Boyce was responsible for preparing the design of a capping system for an area formerly used as incinerator ash repository. He conducted the initial investigation to assess the area’s extent by reviewing old aerial photographs, digging test pits, and conducting interviews with BNL personnel. Once he had delineated and surveyed the area, Mr. Boyce designed a soil-cap cover system in accordance with NYSDEC regulations to prevent surface exposure to ash and to minimize rainfall infiltration through the area. He was responsible for preparing design/construction drawings that included grading, drainage, slope stabilization details, limits of clearing and coverage and site restoration work such as fencing, roadways, signage, etc.

High Flux Beam Reactor (HFBR) D&D Cost Estimates & Scheduling - Mr. Boyce is well versed in D&D services for nuclear research facilities. He managed and oversaw various services at this DOE facility to provide the client with estimates for a facilities ultimate D&D end-state. Key tasks included

- Quantity takeoffs from original design and as-built/record drawings
- “Bottoms-up” cost estimating for D&D, waste management, health physics (HP), radiation control (rad-con) support, project management, engineering and planning aspects
- Development of project contingency matrix, and assignment of contingency degree for each D&D activity
- Applicable labor rates review and analysis
- Comprehensive project schedule (permitting, planning, engineering, execution, program management, closeout)
- Preliminary scope of work and estimates for indirect HP quantities and costs
- Regulatory rules/regulations review
- Liaison between client, contractors, vendors
- Preliminary D&D, restoration sequences
- Key assumption establishment for cost estimates and schedule

Medical Research Reactor (BMRR) D&D Consulting - Mr. Boyce provided the planning and cost estimates for the planned D&D activities at the 5-megawatt research reactor and its associated structures (stack and well house). He provided an estimate for the complete demolition of the mechanical, electrical, and structural components of the reactor building and the exhaust stack, including quantity estimates (construction & demolition debris, hazardous wastes, LLW materials and site restoration materials). In addition, he

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developed work scopes for D&D activities relative to specific BOPs and individual levels within the BMRR, and a project schedule and time line for D&D activities, and furnished supporting documentation in the form of a work-breakdown structure dictionary

Brookhaven Graphite Research Reactor (BGRR) D&D Services – As project manager, Mr. Boyce was responsible for D&D oversight and engineering services, which included the design of ventilation systems, design of structural components in support of radiation shielding and equipment placement, as well as the design and construction of a facility mock-up to assist in personnel training for actual D&D activities. Throughout the project he provided guidance and direction to project engineers charged with performing design work and reviewed design drawings for adequacy. D&D activities design services were associated with included demolition and removal of radiological contaminated air filters

Geothermal Consulting, Planning, Design, Compliance & Construction Management

Mr. Boyce is the designated PWGC expert on all aspects relevant to Geothermal Wells - from the planning stage through to system start up and operation. He assists clients with selecting the appropriate system and location, assessing a given system’s feasibility in terms of the client’s objectives, preparing designs in accordance with regulatory requirements, managing the system’s construction, and coordinating its startup. Mr. Boyce has earned a reputation with clients and within the industry for his vast hands-on experience in assessing feasibility of existing systems and providing financially sound modifications for possible improvements enables clients to make sound decisions on how and if at all to conduct a proposed project.

GEOTHERMAL SYSTEMS PROJECTS – Summary Table	
Glen Cove Hospital, Glen Cove, NY - 800 gpm Open Loop	
Feasibility Study, Hydrogeological Study/Engineering Report, Long Island Well Permit Application, Groundwater Modeling	Design, Aquifer Testing, Water Quality Investigations, Regulatory Agency Liaison, (2) Existing Systems Rehabilitation, 650 gpm & 180 gpm – Physical/Chemical Rehab, New Well Screen Installation
Standard Microsystems, Hauppauge, NY - 600 gpm Open Loop	
Design , Construction administration/oversight	Water quality investigation/iron related bacteria study Troubleshooting & Rehabilitation
C.W. Post College, Brookville, NY - 320 gpm Open Loop	
Feasibility Study, Long Island Well Permit Application, Regulatory Agency Liaison	Groundwater Modeling & Water Quality Investigation Design, Construction Administration/Oversight
Bear Mountain, Upstate NY - Closed Loop Lake System – Coils	
Evaluation of Thermal Effects on Lake Biota, Bathymetric Survey	Analysis & Report Preparation
157 Central Ave, Greenport, NY - Closed Loop System 4 Ton	
Feasibility Study Open Loop vs. Closed Loop, Closed Loop Boreholes Preliminary Design	Cost Estimating
Loeb Residence, East Hampton, NY - Open Loop System	
Supply & Recharge Well Design for Residential Air Conditioning System	Cost Estimating & Construction Oversight
175 Mohawk Ave, Watermill, NY - Closed Loop System 56 Ton	
Proposed Design Peer Review (borehole depths, spacing, sizes, piping)	
Ross School, East Hampton, NY - Bldg 5 (500 gpm) & Bldg 2 (250 gpm) Open Loop Systems	
Hydrogeological Study/Engineering Report, Long Island Well Permit Application, Groundwater Modeling	Design, Construction Admin/Oversight, O&M Manual Preparation
Telyas Residence, Old Westbury, NY - 90 gpm Open Loop System	
Long Island Well Permit Application & Design	Construction Administration
New Lane Elementary School, Coram, NY – Open Loop	
Existing System Assessment, Corrective Actions Recommendations	TV Inspections
Citibank, Melville, NY - 325 gpm Open Loop System	
Existing System Evaluation Corrective Actions Recommendations	TV Inspections
Pratt Institute, Brooklyn, NY - Standing Column Wells 150 Ton System (5 Wells)	
Feasibility Study Compared Open Loop, Closed-Loop & Standing Column, Test Hole Oversight & Logging, Cost Estimating	Standing Column Test Well Design, Evaluation Oversight, Closed loop layout & preliminary sizing, Pond/open loop system investigation/analysis
ALL Systems, Deer Park, NY - 2,650 gpm Open Loop System	
4 supply wells totaling 2,650 gpm discharging to a recharge basin, hydrogeological analysis	Basin Capacity Study & Study for Land Reclamation Purposes
Lerner Residence, Lloyd Harbor, NY – 66 gpm Open Loop System	
Feasibility Study – hydrogeological & water quality investigations	Design & Permitting
30 Wheatley Road, Old Westbury, NY - 90 gpm Open Loop	
Iron Removal System Design	As-built Preparation & Construction Oversight
Front Street (Manhattan, NYC) - Standing Column Well	
Expert Witness Testimony & Support	
Brooklyn Children’s Museum (Brooklyn, NYC, NY) - 420 gpm open loop system	
Investigation & Trouble Shooting, Analysis of Malfunctioning Diffusion Wells	Improvements/Recovery Recommendations for Recharge Performance & Capacity
Kensington Public Library, NYC DDC (Brooklyn, NY) - 200 gpm open loop system	
Consult and advise on design and feasibility	Perform hydrogeological calculations

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Cow Neck (Suffolk County, NY) - Closed loop system 40 tons	
Feasibility study, Field testing program+	Design – modeling using GLHEPRO Version 4.0
Queens Botanical Garden, NYC DDC (Queens, NY) - open loop system	
Consult and advise on construction, Rehabilitation and re-development specification	Coordinate and observe rehab using impulse generation technology
Snug Harbor, NYC DDC (Staten Island, NY) – closed loop system 230 tons	
Field testing program, Design – modeling using GLHEPRO Version 4.0	Construction administration and observation services
Bronx Zoo Lion House, NYC DDC (Bronx, NY) – standing column well 160 tons	
Investigation and troubleshooting analysis of malfunctioning well system	Recommendations to improve and recover performance and capacity
NYC DDC Geothermal Heat Pump Manual (NYC, NY)	
Update NYC Depart of Design and Construction Technical Manual on Geothermal Heat Pumps	
Macys Bay Shore Mall (Suffolk County, NY) – Open loop system	
Existing System Assessment, Develop Corrective Actions, Well Rehabilitation	Troubleshooting, Video Logging
Macy's Broadway Mall (Nassau County, NY) – Open loop system	
Hydrogeological Analysis, Design, Cost Estimating, Groundwater Sampling , Permit/Filings Support	Existing System Assessment, Develop Corrective Actions, Well Rehabilitation, Troubleshooting, Video Logging
Underwriters Laboratories (Suffolk County, NY) – Open loop system	
Feasibility Study, Groundwater Investigation	Test Loop & Thermal Testing, Existing System Assessment
Eastport/South Manor School District (Suffolk County, NY) – Open loop system	
Feasibility Study, Subsurface Due Diligence, Hydrogeological Analysis, Groundwater Investigation	Design, Cost Estimating, Permits/Filings Support, Regulatory Agency Liaison
Clark Art Institute- New Visitor, Exhibition and Conference Center, Williamstown, MA - Open loop system	
Subsurface Due Diligence, Hydrogeological Analysis, Groundwater Investigation	Design Consult
Clark Art Institute- Stone Hill Conservation Center - Open loop system	
Subsurface Due Diligence, Hydrogeological Analysis, Groundwater Investigation	Design Peer Review, Existing System Assessment, Troubleshooting
NYC Department of Design and Construction Town of Babylon, Office of the Supervisor, Wyandanch Rising	
ATES Feasibility Study	Aquifer, Thermal Energy, Storage

MODELING EXPERIENCE

MODEL – CLIENT & APPLICATION
Groundwater Vistas - Environmental Simulations International
(I) Glen Cove Hospital, Glen Cove, NY - Study of geothermal wells impacting each other, hazardous waste site, and water table
(II) Glen Cove Hospital, Glen Cove, NY – Replacement of two geothermal systems, one in Lloyd Aquifer required extensive modeling of Lloyd Aquifer plus North Shore Confining Unit and North Shore Aquifer
Amneal Pharmaceuticals, Yaphank, NY – 3,600 gpm open loop geothermal system, analyze influence on neighboring SCWA well fields, surface water bodies and heat transport
NYIT, Old Westbury, NY – 2,2250 gpm open loop geothermal system, analyze influence on area municipal supply wells and model heat transport
SCCC Brentwood Campus, Brentwood, NY - 600n gpm open loop geothermal system, locate and space supply and return wells and model heat transport
C.W. Post College, Brookville, NY - Size & locate open loop geothermal well system
Trigen-Nassau Energy Corp, Garden City, NY - Size new industrial well, estimate impacts on nearby wells and East Meadow Brook headwaters
BNL, Western South Boundary, Upton, NY - Estimate capture zone of groundwater recovery wells for Remediation Project
Ross School, East Hampton, NY - Study effects of geothermal wells on neighboring wells, water table, each other
Suffolk County, Department of Public Works, Sewer District 21, SUNY Stony Brook - Evaluate Travel time and flow of Sewage Treatment Plant effluent to Long Island Sound using The County's Groundwater Model
WaterCAD - Haestad Methods
Hampton Bays Water District, Hampton Bays, NY - Water distribution system design & analysis
West Neck Water Supply, Shelter Island, NY - Water distribution system design & analysis
City of Long Beach, Long Beach, NY - New elevated storage tank integration into existing distribution system
GMS – Aquaveo, LLC
BNL – New Remediation Well at Middle Road System
BNL – Industrial Park fate and transport of VOC plume
BNL – Rebalancing of Recharge Basin Water

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PUBLICATIONS

Not Just a Chemical Interaction: Complementary Roles of Geologist & Engineer on a Hazardous Waste Remediation Project at BNL (5th Conference: Metropolitan & Long Island Association of Prof'l Geologists (M/LIPAG, 04/98, SUNY Stony Brook)

Much Ado About Mercury: Evaluation of Treatment Options for Mercury Contaminated Soil at Brookhaven Nat'l Laboratory (BNL) (6th Conference, M/LIPAG, 04/99, SUNY Stony Brook)

Open-Loop Geothermal Well Systems on Long Island (10th Conference, M/LIPAG, 04/03, SUNY Stony Brook)