



GROUNDWATER INVESTIGATION SERVICES

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FIRM PROFILE

PWGC: ENVIRONMENTAL ENGINEERING & CONSULTING

MEET PWGC

PWGC was founded 36 years ago to meet the need for a multi-disciplined environmental engineering and consulting firm offering a diverse range of services to meet market demand. Based in Bohemia, NY, PWGC has offices in Manhattan, Monticello, Saratoga Springs, and Syracuse, NY.

PWGC serves the Northeastern United States and has established an industry recognized reputation for innovative problem solving and providing quality services to municipal, educational, private, public and federal clients. We are dedicated to providing timely services that result in practical solutions for our clients.

With nearly 100 employees, we at PWGC understand our strength lies with our licensed professional engineers, geologists and hydrogeologists, LEED accredited professionals and environmental compliance specialists, which gives us a wealth of expertise and experience to bring your project to fruition.

CHOOSE PWGC

Whether your objectives are planning, design, redevelopment, remediation or resiliency, PWGC's services are innovative and economical. PWGC is committed to meeting client goals, and our dynamic team of professionals provide the innovation and flexibility necessary to deliver project-driven solutions.

THE PWGC DIFFERENCE

What sets us apart is our targeted approach to each project, the allocation of a dedicated and responsive team, our rapport with relevant regulatory agencies, and our exceptional project management. These assets provide client value and include the following:

- Strong working relationships with key regulatory sector players
- Specialists in regulatory requirements to facilitate quicker approvals
- Highly responsive to project budgets and time constraints
- Project and quality control monitoring that meet project needs
- Dozens of dedicated professionals to provide a wide array of services
- Strong understanding of environmental compliance standards

Make PWGC's quality environmental consulting and engineering solutions work for you.

PWGC QUICK FACTS

Corporate

- Founded & Incorporated: 1990
- SAM/SBA Registered
- Small Business
- DUNS # 152032251
- Federal ID: 11-3037778

Offices

- Bohemia, NY
- New York, NY
- Saratoga Springs, NY
- Monticello, NY
- Syracuse, NY

Qualifications

- LICENSES - Engineer, Geologist, LSP, NC, NY, NJ, PA, MD, IN, NH, FL, WA
- LEED-AP
- Envision

Service Codes

- NAICS
- 541620 Environmental Consulting
 - 541330 Engineering
 - 562910 Environmental Remediation
 - 562998 Waste Management Services
 - 541370 GIS Base Mapping
 - 237130 Green Services



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SUMMARY LIST OF SERVICES

Environmental Services

- Investigation and Remediation Programs
 - Brownfields Redevelopment, including tax credit evaluation
 - Federal and NYS Superfund Site Investigation & Remediation
 - NYC OER E-Designated Sites, including grant funding application
- Phase I, Phase II Environmental Site Assessments
- Petroleum, Chemical, PFAS, and 1-4 Dioxane Spill Investigation & Remediation
- Vapor Intrusion Mitigation & Remedial Design
- Remedial Construction Management
- Soil & Waste Characterization / Disposal Management
- Cost Estimating—Property Investigation & Remediation
- RCRA Site Closure Reports
- MOSF Closure
- Air, Water, & Soil Sampling/Monitoring
- Radiological Investigation & Remediation Services

Environmental Compliance/Management

- Air Quality—Title V Permitting, Air Emission Inventories, Tier II & TRI Reporting
- Articles XI & 12 Hazardous Materials Storage Compliance for Nassau & Suffolk Counties, NY
- Chemical/Petroleum Bulk Storage Tanks—Permitting, Audits, Regulatory/Environmental Compliance Management
- Facilities Contingency Plan Development/Management, including SPCC, SWPPP, FRP
- Compliance Review
- Regulatory Compliance Reporting
- FAR 139.321 Fire Safety Inspections
- Fuel Storage Facilities & Mobile Fuel Equipment
- Stormwater Management
- Dewatering Design, Permitting & Compliance Sampling

Industrial Hygiene

- Asbestos Bulk Sampling
- Project Monitoring
- Indoor Air Quality
- Opacity Testing
- Mold Testing and Remedial Plans

Wastewater/Water Supply

- Water Supply/Wastewater—Systems, Planning, Design
- Groundwater Modeling
- Site/System/Feasibility Evaluation, Planning & Technical Assistance
- Water Conservation Plan Development

Natural Resource Studies

- Wetlands Delineation, Permitting & Mitigation Design
- Threatened & Endangered Species Surveys
- Migratory Studies
- Ecological Studies
- Ecological Risk Assessments
- National Environmental Policy Act (NEPA) Studies
- Planning
- Watershed Analysis

Energy/Sustainability Solutions

- Geothermal System Feasibility Analysis, Design, Permitting & Construction Management
- Renewable Energy Design for Solar & Wind
- Building Due Diligence & Energy Studies
- LEED Administration & Sustainable Design Practices
- Power Generation, Cogeneration & Fuel Cells
- Energy Modeling, Utility Rebate Programs & Tax Incentives

Civil/General Engineering

- Comprehensive Feasibility Studies
- Construction Planning, Management, QA/QC
- Drainage Planning, Grading & Design
- Facility Design & Condition Assessment
- Planning & Design
- Property Condition Report

SEQRA Consulting and Planning Services

- SEQRA Process Administration
- Type II Opinion Letters
- Coordinated Review
- Environmental Assessment Forms
- Scoping Documents
- Environmental Impact Statements
- Determinations of Significance
- Findings Statements
- Notices and Assistance with Resolutions
- Land Use and Zoning Assessments

Geographical Information Systems/Global Position Systems

- Data Collection & Conversion
- Asset Management
- Digital Elevation Model Analysis
- GIS Applications, GIS/CAD Integration, & Manual Digitizing
- Database Development
- GPS Field Data Collection & Post-Processing
- Image Collection & Image Processing
- Licensed FAA UAV Pilots



**GROUNDWATER
INVESTIGATION SERVICES**

INTRODUCTION TO GROUNDWATER INVESTIGATION



A cornerstone of the suite of environmental consulting provided by PWGC, groundwater investigation remains at the forefront of requested services from our clients, both new and existing. For more than 36 years, PWGC has worked successfully with the public and private sectors to address groundwater issues through the application of proven methods, which may include the following:

- Preliminary site characterization
- Historical records search and review
- Soil and groundwater sampling
- Identification of areas of concern
- Public outreach and community participation

PWGC has a multi-disciplined staff of more than 80 professionals, which includes industry-recognized experts in environmental assessment and remediation. Our strength lies with these licensed professional engineers, geologists and hydrogeologists, LEED accredited professionals and environmental compliance specialists, which gives PWGC a wealth of experience key to helping bring your project from idea to reality.

Groundwater investigation represents one of the array of environmental consulting services expertly provided by PWGC, which allows for the handling of a given project from its opening to its closure. Do not hesitate to review our suite of services to see what PWGC can do for you.



**GROUNDWATER
INVESTIGATION EXPERIENCE**

GROUNDWATER INVESTIGATION PROJECTS

SUFFOLK COUNTY

Suffolk County Firematics Site – Yaphank, NY

PWGC has been retained by Suffolk County Department of Health (SCDHS) to prepare workplans and conduct a remedial investigation at the site. PWGC is currently preparing a Citizens Participation Plan (CPP), a records search report, and a Remedial Investigation Work Plan. Levels of Perfluorinated Compound (PFCs) including PFOA and PFOS have been found in groundwater at the site and are believed to be present as a result of the use of the firefighting foam containing PFCs.

Baumann Bus – Westhampton, NY

PWGC was retained by the Suffolk County Department of Health Services (SCDHS) to investigate the former Baumann Bus Site as part of Suffolk County's Brownfields Program. The county-owned site is an approximately 58 acre property located at Francis S. Gabreski Airport in Westhampton, New York. The site, which up until 1970 was used as an U.S. Air Force Base, was used by several industrial and commercial tenants. Suffolk County's goal for the cleanup was to see the site developed into a business park, so as long as the environmental issues have been addressed. PWGC was initially tasked with the environmental investigation of the property, which focused on two issues: Onsite Underground Injection Control (UIC) structures, and an approximately 20,000-square-foot contaminant plume resulting from a spill of JP-4 jet fuel.

Canine Kennel – Westhampton, NY

PWGC directed and oversaw a Remedial Investigation (RI) and prepared a RI Report for the site. Based on the results of the RI, PWGC prepared and executed an Interim Remedial Measure (IRM) Work Plan to address surficial PCB impact at an adjacent property. The IRM consisted of the delineation, removal, and proper offsite disposal of approximately 225 tons of PCB impacted surface soils at the adjacent property. Following completion of the IRM, PWGC prepared a Remedial Action Work Plan (RAWP) to address PCB impacted soils at the subject property. The RAWP includes the removal and proper offsite disposal of approximately 500 tons of PCB impacted soils above a site specific Soil Cleanup Objective (SCO) of 10 ppm and installation of a clean soil cap over surficial soils exceeding the Residential SCO of 1 ppm. The RAWP has been approved by NYSDEC, and remedial action is currently underway, expected to be completed in October 2016. Following completion of remedial action, engineering controls (perimeter fence, clean soil cap), and administrative controls (environmental easement), will be managed under a Site Management Plan (SMP).

Ronkonkoma Wallpaper – Ronkonkoma, NY

The site suffered from a negative environmental impact and was adopted into Suffolk County's Brownfield Cleanup Program (BCP). The site was primarily impacted by heavy metals, although only limited sampling has been conducted for Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). Releases to the environment were from discharges to underground injection control (UIC) structures. The site's soil, and potentially groundwater, have been impacted.

PWGC was tasked with coordinating with a project manager from the New York State Department of Environmental Conservation (NYSDEC). In addition, it expertly provided a Remedial Investigation (RI), and Interim Remedial Measure (IRM), and a Remedial Work Plan with alternatives analysis that was implemented.

The project is now being completed under the auspices of NYSDEC.

Bellport Gas Station – Bellport, NY

PWGC performed a remedial investigation at the site in March of 2010, which identified the presence of contaminants in the sites sanitary and storm water systems and low-level groundwater contamination. An interim remedial measure was performed to remove contaminants within the sanitary and storm water systems in April 2010. In December of 2010, NYSDEC issued a Record of Decision presenting the selected remedy, which was no further action with monitoring of site groundwater.

PWGC prepared a Final Engineering Report and Site Management Plan for the site and a Certificate of Completion was issued by NYSDEC on Dec. 17, 2013. PWGC is currently ensuring implementation of institutional and engineering controls for the site.



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Brownfield Program – Various Locations

The Suffolk County Department of Health Service (SCDHS) has initiated a county wide environmental restoration program under the New York State Department of Environmental Conservation's (NYSDEC) Brownfield's Cleanup Program. As part of the 1996 Clean Water/Clean Air Act, this program provides grants to municipalities for the investigation and remediation of municipally owned contaminated properties. Under this program, the SCDHS aims to investigate, restore and re-develop numerous County owned contaminated properties, many of which were obtained by the County through tax foreclosure proceedings and have been environmentally impaired to the point where the cost of the cleanup approaches the value of the property. It is the County's intention to leverage the funding available through the New York State Brownfield Cleanup Program to restore these properties to productive use and put them back on the tax rolls.

To accomplish their objectives, the County required the services of an environmental engineering firm capable of managing the Brownfield initiative. The chosen firm needed to possess the technical expertise to perform the required environmental services, but perhaps more importantly, required the capability to manage the entire Brownfield Program for the County. This required a thorough understanding of the myriad of requirements spelled out the Brownfield Legislation essential to maximizing the allowable reimbursements available under the Program.

PWGC was awarded the contract in 2006 to provide Program Management for the County's Brownfield initiative. Since that time, PWGC continues to serve as Suffolk County's sole Brownfield Consultant.

BROOKHAVEN NATIONAL LAB - UPTON, NY

Engineering-Environmental Experience

Since 1993, PWGC has provided a wide range of environmental and engineering services to this state of the art research facility located in eastern Suffolk County. Owned by the US Dept. of Energy, the 5,300 acre facility has evolved from a US Army Camp in the early 1900s to an atomic energy research facility throughout most of the twentieth century to a world class high energy physics research center today. For the over 15 years PWGC has assisted the laboratory in its efforts to remedy the legacy environmental liabilities resulting from nearly 100 years of site use. PWGC services have included remedial investigations, feasibility studies, remedial system design and operation and maintenance support for seven Operable Units under the lab's Superfund cleanup effort which was completed in 2005. More recently, PWGC assists the lab in its efforts to eliminate its decaying atomic research infrastructure by providing project management support, engineering cost estimating, budget costing and planning services. This initiative also includes contaminated soil removal; decontamination & demolition (D&D) projects, UST removal designs and civil site design services.

Groundwater Remediation System – South Boundary

Under a Basic Ordering Agreement (BOA), PWGC worked with Brookhaven National Lab (BNL) to plan, design, and manage the construction and start-up of a fast-paced groundwater remediation project. As part of an Interim Remedial Measure (IRM), PWGC designed six wells to intercept a large solvent plume at the southern property boundary. A change in plume orientation resulted in the addition of a seventh well.

The scope of services included the design of extraction recovery wells, pumps, treatment system mechanical design, structural, electrical and controls systems, as well as piping, recharge basin and related site work. The final design included an air stripping groundwater treatment system with vapor phase granular activated carbon (GAC) treatment unit for the air discharge. The air stripper design included an exterior mounted aluminum counter-current packed tower that was 6 feet in diameter with a packed bed depth of 40 feet. A single blower was located adjacent to the stripper and treated water was discharged to an open recharge basin. Controls included high water level sensors in the sump of the stripping tower and pressure and flow sensors on the blower ductwork and water mains.

PWGC completed the design several weeks ahead of schedule and bids on various construction contracts were under the original cost estimates. The remediation system was



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GROUNDWATER INVESTIGATION PROJECTS

installed in a remote wooded location of the BNL site and required the client to bring new electric service to the area.

Groundwater Remediation System – Western South Boundary

PWGC developed a detailed design for the installation of a GRS to remediate the low-level VOCs in the upper glacial aquifer along Brookhaven National Lab (BNL) Western South Boundary.

Submittals for the design included a Draft 30% Design Report, Draft and Final 90% Design Reports, and the Final Design Report. The Draft 30% Design included evaluations of several conventional air stripping technologies and activated carbon treatment to select a treatment technology for the Western South Boundary. Cost effectiveness and practicality were the primary criteria for PWGC's evaluations. The selected technology was air stripping using packed tower aeration. Upon completion of design activities, PWGC provided shop drawing review, construction oversight, preparation of an operation, and maintenance manual, and start up testing. PWGC prepared and submitted to BNL a start up testing report.

PWGC's comprehensive design and complete involvement during the construction enabled BNL to go ahead with a quick trouble free construction and system operation.

Sewage Treatment Facility

In order to comply with a New York State Department of Environmental Conservation (NYSDEC) directive to reduce concentrations of metals discharged into the Peconic River from Brookhaven National Laboratory's (BNL) Wastewater Treatment Plant (WWTP), the laboratory decided to upgrade the WWTP by adding a tertiary treatment component and re-directing the plant effluent away from the Peconic River to groundwater recharge beds. Unique project challenges included the careful siting of the proposed groundwater beds so as not to significantly alter the groundwater flow regime beneath the site. Altering of the flow regime could influence the pathways of several groundwater contaminant plumes that are currently being remedied under CERCLA. Further, the proposed groundwater recharge beds were required to be located close to the existing WWTP infrastructure, but not so close to the adjacent Peconic River that treated effluent would contribute base flow to the river bed. PWGC worked closely with BNL and their groundwater modeling support team to identify a location for the groundwater recharge beds that would not negatively impact the local groundwater flow regime and Peconic River base flow.

In addition to the design of the groundwater recharge beds, PWGC prepared detailed plans and specifications for the addition of a tertiary treatment system which included two drum filters and drum filter building.

Building 96 Groundwater Remediation

PWGC was contracted to investigate and identify the horizontal and vertical extend of contamination relative to the Building 96 Scrapyard. First a geophysical survey was performed to identify buried objects. An area of approximately one acre was surveyed. Anomalies identified were investigated and found to be of no significance. PWGC prepared bid specifications, participated in award selection, reviewed submittals and provided engineering support during construction. After construction PWGC assisted with fine-tune adjustments for the system, prepared the Start-up Report and Operations and O&M Manual.

To expedite phase remediation, PWGC designed and implemented KMnO₄ injection using permanent and temporary well points.

PWGC participation in the project has managed to significantly reduce VOC concentrations in three years, and BNL has turned off three of the four recirculation wells.

