

Mr. Richard Powell has extensive multimedia environmental permitting and design experience for electric utilities, chemical plants, and manufacturing facilities. His experience includes the management of and participation in multimedia environmental due diligence projects for high technology manufacturers and utilities. Mr. Powell's compliance assurance activities include facility inspections, permit application preparation and negotiations, and report preparation. Mr. Powell is a professional engineer with a degree in chemical engineering, having worked in 25 states.

**Project Engineer; Wastewater Treatment Plant**

**Emergency Design and Operation, Activis**

**Pharmaceutical**—Designed, implemented, and operated an interim wastewater treatment system to optimize and augment the existing wastewater treatment plant to assure continued facility operation and permitted discharge to the municipal public-owned treatment works (POTW) in Fort Lauderdale, Florida. Emergency filtration and carbon adsorption were added, new chemical treatment was applied, the existing steam stripper was evaluated and enhanced, and operator training of the enhanced treatment unit was provided.

**Project Engineer; Wastewater Treatment Plant Design,**

**Activis Pharmaceutical**—Designed a \$9 million industrial wastewater treatment system to treat pharmaceutical residuals in the wastewater to meet sanitary sewer standards of the POTW in Fort Lauderdale, Florida. Design included waste projections, flow equalization strategy, clarifier design, chemical feed system selection, filtration design, steam stripper optimization, carbon adsorption, pump selection, and control system design.

**Project Manager; Tampa Bay Fisheries**—Provide project management for the weekly and quarterly sampling, analyses, and discharge monitoring report preparation for wastewater and potable water system within the food processing facility. The project requires the collection and analyses of treated and untreated potable water, produced ice, influent wastewater, treated wastewater, and reuse water. Monthly reports are produced for submittal that include data management for reporting maximum, minimum, monthly average and running 12-month averages of the analytical results.

**Project Manager and Process Design Engineer; Design of Wastewater Pilot Plant, Confidential Client**—Designed wastewater treatment pilot plant to treat the combined flows of suspension polymerization, ethylbenzene, and styrene monomer production wastewaters.

**Process Design Engineer and Construction Oversight; Wastewater Treatment Facility, Flavorings**

**Manufacturer**—Responsible for designing a treatment system

## AREAS OF SPECIALIZATION

Project Management, Hazardous and Industrial Waste Treatment, Hazardous Materials Management, RCRA and Environmental Permitting, Reclamation and Process Evaluation and Design, Environmental Site Assessments, Contamination Assessments, Feasibility Studies, Process Engineering, Industrial Facility Inspection, Emissions Source Surveying, Emissions Rate Estimation, Source Testing, Regulatory Analysis, Emissions Minimization, Emissions Control System Design, Source Permit Application Preparation, and Regulatory Negotiation Support

for a flavorings manufacturing facility in Florida. Design included flow equalization, neutralization, and cooling systems.

**Project Management; Foster Grant Company, Inc.**—

Designed pretreatment facility for handling wastewater from metal finishing and plating operation within a fully integrated production facility in Leominster, Massachusetts.

**Process Engineer; Bid Specification Preparation,**

**University of Florida**—Preparation of bid specification for facility-wide water treatment chemical solicitation.

Specifications referenced chemical treatment scenarios and performance targets to ensure effective water treatment while allowing bidders to propose proprietary treatments to achieve results and allow the client to effectively rank the bidders.

**Engineer; Wastewater Treatment and Discharge**

**Monitoring Design and Permitting, Pinellas County**—

Design oversight for wastewater pretreatment system and sewer monitoring connection for plating line in Pinellas County, Florida. This pretreatment facility utilized ion exchange, water recirculation, metals precipitation, and sludge filtration. The facility designed utilized ion exchange to optimize water quality and minimize waste generation as well as effluent discharge.

**Expert Witness; Potable Water System, Public Service**

**Commission Hearing**—Conducted a site inspection and

system sampling event to determine general condition and adequacy of the supply and distribution system for a privately

owned public water supply system. Information and testimony was used during a Public Service Commission Hearing.

**Engineer; Wastewater Study, Fortune 10 Company—**

Designed and directed a wastewater study at facility in Burlington, Iowa, to determine the quantity and quality of wastewater generated from various metal cleaning, and painting processes, as well as chemical etching and plating lines. The study involved the examination of the pretreatment processes and their capacity and the identification of wastewater streams and determining appropriate treatment scenarios. Wastewater streams were identified, dye traced, and sampled. Treatment requirements were determined and modified permit limits were negotiated.

**Permitting Engineer; Power Plant NPDES Permitting, Calpine—**Prepared facility water balance, determined discharge parameters, selected discharge routes, prepared discharge structure drawings, and NPDES permit application packages for a natural gas fired power plant in Tennessee discharging to the headwaters of a small tributary.

**Project Manager; EPA Effluent Guidelines, EPA (Office of Water)—**Directed the Cross Industries analysis using wastewater treatment data collected from the initial 21 primary industries. Data from each industry was extracted and evaluated on the basis of implemented technologies targeting individual pollutant removal efficiencies. Removal technologies were then grouped based on statistical analyses and technological capabilities, determining their overall effectiveness to remove targeted pollutants.

**Program Manager/Engineer; Support of NAVSEA—**Preparation of engineering design guidance, technical manuals, and integrated logistics support, plans/documentation and development of NATO specifications for equipment for shipboard sanitation wastes.

**Project Manager; Confidential Client—**Design and permitting of interactive water features at a tourist attraction in Orange County, Florida. Evaluated existing interactive water features for compliance with revised Department of Health regulatory guidance. Specified equipment and system upgrades and prepared and sealed permit application packages to achieve approval.

**Field Response Manager; Confidential Client—**Directed field team that provided 24-hour, 7-day per week coverage to treat and monitor surface water discharges resulting from the unplanned release of acid. Treatment consisted of field neutralization for surface water flows of both pumped and naturally flowing streams in Florida.

**Project Management; Closure of the Sydney Mine Waste Disposal Site, Hillsborough County Department of Solid Waste—**The Sydney Mine waste disposal site in Hillsborough County, Florida was permitted by the Florida Department of Environmental Protection (FDEP) as a land disposal area for septic waste, oil sludges, and grease trap wastes. Closure was mandated by FDEP after contaminated groundwater was

found. Closure assessment incorporated soil, sludge, surface water, groundwater and air sampling, groundwater monitoring well placement and construction, magnetometer survey, ground penetrating radar survey, soil borings, and confirmatory excavations. Remedial measures involved onsite soil/sludge and water incineration, slurry wall construction, groundwater reclamation (pumping and vacuum), soil vacuuming, flow equalization, air stripping, carbon adsorption, groundwater recharge, soil farming, and pilot operations.

**Engineer of Record; Remediation Design for Gas Kwick**

**No. 43, Federated Insurance—**Engineer of record for site remediation system in Hillsborough County, Florida, that addresses impacted surficial and Floridan aquifers. The remediation system comprises two surficial and two Floridan recovery wells, surface pumping, air stripping, and carbon adsorption. Treated groundwater is discharged under a NPDES permit. Impacted soils are treated onsite by a vapor extraction system and carbon adsorption.

**Engineer; Wastewater Study, Fortune 10 Company—**

Directed the wastewater study of a metal finishing facility in Morrison, Illinois. Metal finishing sources including dye casting, drawing, deburring, chromating, and tin, copper, and zinc plating were identified, dye traced and quantified. Wastewater samples were taken and raw water quality projected from the analytical results. An assessment of treatment operation and capabilities was conducted and recommendations were made for improved operations and process improvements.

**Engineer of Record; Plating Line and Wastewater Pretreatment Plant Permitting, Fortune 10 Company—**

Prepared permit applications for the construction of a tin plating line, silver cyanide plating line, and a wastewater pretreatment facility to treat metal finishing wastewaters at facility in Burlington, Iowa. These three permit applications were prepared over a 2-year period and represented a significant improvement in facility production and treatment technologies.

**Engineer; Wastewater Study, Fortune 10 Company—**

Designed and directed wastewater studies of a facility engaged in the drawing, plating, and borating of wire located in Goldsboro, North Carolina. The study consisted of identifying, dye tracing, and sampling of wastewater sources, documenting the current compliance status, reviewing the pretreatment facility capabilities, and preparing recommendations for pretreatment system improvements.

**Certifying Engineer; Multiple Clients—**Perform

environmental resource permit inspections and certifications of operating stormwater management systems to determine that the system's infrastructure is intact and the facility is properly maintained. When the inspections reveal system malfunctions, make recommendations for reconstruction or improved maintenance.

**Engineer; Multiple Facilities—**Prepare Notice of Intent and best management practices for industrial facilities to comply with the National Pollutant Discharge Elimination System

(NPDES) Stormwater Multi-Sector General Permit for Industrial Activities.

**Project Manager; Site Assessment and Remediation, Confidential Client**—Project involved extensive site assessment, remediation design and contractor oversite to address the historical releases of chlorinated solvent from onsite degreasing operations in Wesson and Brookhaven, Mississippi. Assessment and remediation addressed both soils, surface water, and groundwater as well as impacts to the public water supply.

**Design Engineer; Project Management/Construction Oversite Confidential Client**—Process analyses/design for treatment of wastewater from beverage concentrate formulation facility in Clearwater, Florida.