CIVIL ENVIRONMENTAL VITAE

OF JAMES M. GREEN, P.E., DEE

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EXPERIENCE PROFILE

The primary focus of the experience listings contained herein is representative in nature. Additional information can be provided upon request. Mr. Green has extensive experience in forensic engineering, which is the determination of the causal factors of engineering phenomena. To accomplish this, extensive expertise in operations research has been utilized to model engineering problems and accidents to a high degree of engineering probability. The primary areas of emphasis in this resume are:

- Education and professional registration
- Experience summary
- Representative publications
- Representative engineering projects
- Forensic applications in hydrology, groundwater contamination, and general engineering
- Air pollution, toxicity, and environmental health
- Solid waste applications in civil engineering
- Miscellaneous information

Mr. Green is qualified in general civil and environmental engineering including physical/chemical systems and operations research.

P.E. = Professional Engineer by examination

DEE = Board Certified Diplomate by examination,

American Academy of Environmental Engineers

EDUCATION AND PROFESSIONAL REGISTRATION

- *B.S. Physical Science* - Emphasis in Chemistry and Mathematics, University of Maryland/East Tennessee State University
- *M.S. Environmental Health and Science* - Emphasis in Occupational Health and Air, Water, and Hazardous Solid Waste Control
- *M.S. Engineering* - Emphasis in Operations Research, Physical/Chemical Treatment methods, Systems Engineering and Water, Air, and Hazardous Solid Waste Control - University of Tennessee
- *Member of:* American Academy of Environmental Engineers (Board Certified Diplomate), National Society of Professional Engineers, National Academy of Forensic Engineers, American Society of Civil Engineers, Tennessee Society of Professional Engineers, American Institute of Plant Engineers, Water Pollution Control Federation, American Council of Engineering Consultants, Division of Chemical Health and Safety
- *Registered Professional Engineer*
- *Conducted and taught* seminars in Professional Engineering ethics at North Carolina State University, University of Tennessee, and at Professional Engineers of North Carolina seminars.

EXPERIENCE SUMMARY

- 1964 - 1965: *Engineering Piping Technician*, Filtration Systems, Braddock Road, Washington, D.C.
- June 1965 - January 1966: *Engineering Laboratory Technician*, American Saint Gobain, Kingsport, TN
- 1966 - 1975: *Senior Engineering Technologist*, Holston Defense Corporation, a subsidiary of Eastman Kodak
- 1975 - 1978: *Project Director*, Water Management Plan of Upper East Tennessee/Southwest Virginia; Consulting Engineer under contract to the Environmental Protection Agency
- 1978 - 1984: *Director of Process Engineering*, Consulting Engineering firm specializing in civil and environmental engineering
- 1984 - Present: *President of a professional engineering consulting firm* specializing in industrial engineering problems, operations research and forensic engineering
- *Published* over two hundred (200) technical reports and articles on civil engineering, environmental engineering and operations research areas

REPRESENTATIVE PUBLICATIONS

"Assessing Non-point Water Quality for Small Streams", Journal of Environmental Engineering, April 1980

"Conceptual Design for Proposed Wastewater Pretreatment Facilities", - Engineering Report, Pharmaseal Laboratories, December 1978

"Continuous Monitoring of Methyl Nitrate from the Manufacturer of RDX and HMX", - Engineering Report, Confidential, September 1975

"A Definition of Waste Generation from a Metal Preparation Plant", - Engineering Report, Confidential, July, 1979

"Delisting of Hazardous Waste", - Engineering Report, Aerojet Heavy Metals Co., 1982

"Engineering Report on Wastewater", Engineering Report, Aerojet Heavy Metals Co., 1982

"Nitramine Removal Study for Waste Water", - Engineering Report, Confidential, May 1976

"Physical/Chemical Adjustments to a Pretreatment System for a Metal Fabrication Plant", - Engineering Report, Confidential, September 1979

"Removal of Hexavalent Chromium from Waste Water", - Engineering Report, Confidential, 1982

"Solid Waste Management Plant", - Engineering Report, Aerojet Heavy Metals Co., 1982

"A Study of Treatment for Zinc Removal by Physical/Chemical Methods" - Engineering Report, Beaunit Fibers, July 1977, 50 pages

"Surface Water Hydrologic Consequence and Determination and Description of Protective Measures for a Sub-surface Mining Operation", - Engineering Report, Confidential, December 1982

"A Treatability Study and Recommended Treatment Mode for Metal Plating Wastes from a Plating Operation" - Engineering Report, Confidential, September 1979

REPRESENTATIVE ENGINEERING PROJECTS

"An Investigation of Holding Pond Leaching", Aerojet Heavy Metals Co., 1978, Project Engineer

"An Investigation of Utilizing Evaporation for Treating Pickle Liquor Waste", Aerojet Heavy Metals Co., 1978, Project Engineer

"A Treatability Study for Treating Waste Water", Aerojet Heavy Metals Co., 1979, Project Engineer

"An Investigation of Uranium Slag Disposal as a Non-Radioactive Waste", Aerojet Heavy Metals, 1980, Project Engineer.

"Engineering Report on Wastewater - Part I", Aerojet Heavy Metals Co., 1982, Project Engineer

"Engineering Report on Wastewater - Part II", Aerojet Heavy Metals Co., 1983, Project Engineer

"Permit Negotiation for Aerojet Heavy Metals Co., 1979 - 1983, Project Engineer

"TNS Uranium Slag Treatment", Aerojet Heavy Metals Co., 1982 Project Engineer

"Potential Location of UF_6 - UF_4 Facility", Aerojet Heavy Metals Co., 1983, Project Engineer

"A Plan for Wastewater Treatment Studies and Monitoring Studies", Aerojet Heavy Metals Co., 1982, Project Engineer

"Ground Water Movement Study", Aerojet Heavy Metals Co., 1983, Project Engineer

"An Evaluation of Oil Tank Leakage from an Underground Storage System", Sun Oil Company, 1979, Project Engineer

"Hazardous Solid Waste Survey Enclosure Plant", North Electric ITT Corporation, 1981, Plant Engineer

"Alternative Concepts for Stabilization of 76-Acre Burial Ground at Savannah River Plant, 1985, Project Engineer

"Water Management and Conservation Study", Holston Defense Corporation, Department of Defense, 1974, Project Manager

"Pilot Plant Study for Removal of Nitramines from Waste Water", Holston Defense Corporation, Project Manager, 1972

"Material Balance and Waste Characterization for Cadmium and Lead", Holston Defense Corporation, Project Manager, 1985

"An Investigation of Naturally Occurring Cadmium in Upper East Tennessee", Mapes Piano String Co., Project Director, 1985

"Evaluation of the Air Pollution and Environmental Health Effects of the Pioneer Quarry Operation, San Antonio, Texas," Project Director, 1985

"A Treatability Study for the Wave Soldering Aqueous Cleaning Effluent, Wang Laboratories, Puerto Rico", 1985, Project Director

"The Effect of the Aqueous Wave Cleaning Discharge on the Existing Wastewater Treatment System at Wang Laboratories, Puerto Rico", 1985, Project Director

"An Environmental Assessment of the Impact of the J.A.D. Coal Company Site on the Wolf Branch Watershed", 1985, Project Director

"Proposed Remedial Engineering Actions for the Head of the Hollow Fill and the High Wall at the J.A.D. Coal Site, St. Charles, Virginia:, 1985, Project Engineer

"Treatability Study for Disposing of 3,000 Gallons per day of Radioactive Cooling Water from Aerojet Heavy Metals Co., Jonesborough, Tennessee", 1985, Project Engineer

"An Investigation of a Recommended Treatment Mode to Remove Sulfides from Amerace Waste Water", 1985, Project Director

"A Determination of the Bioinhibition Level of the Water Soluble Flux being Discharged from the Wang Laboratories Aqueous Wave Cleaning System", Wang Laboratories, Puerto Rico, 1985, Project Director

"Development of Alternative Concepts for Stabilization of a 76-Acre Low Level and High Level Radioactive Waste Burial Site at the Savannah River Plant, South Carolina", 1985, Project Director

"Proposal for Consulting Engineering Services for Design and Installation of a Physical/Chemical System to Treat 3,000 Gallons of Coolant", Aerojet Heavy Metals Co., September 1985, Project Director

"Field Survey of Noise Levels Generated by the Houston Lighting and Power Company, Kingswood Substation, Houston, Texas", August 1986, Project Director

"A Noise Survey Conducted on the Marshall Aviary in Winterhaven, Florida", April 1986, Project Director.

"Proposed Remedial Actions for Cleaning Up a PCB Spill at Euclid Avenue Plaza, Bristol, Virginia", August 1986, Project Director

"A Conceptual Engineering Report of the Effects of Storm-water Runoff on the PG & W Watersheds Discharging into Spring Brook", February 1986, Project Director

"Evaluation of the Air Pollution and Environmental Health Effects of the Pioneer Quarry Operations, San Antonio, Texas", November 1985, Project Director

"An Analysis of Historical Blasting Operations at Pioneer Quarry, San Antonio, Texas", January 1986, Project Director

"A Determination of the Noise Levels in the Residential Areas Surrounding Pioneer Quarry", February 1986, Project Director

"An Evaluation of the Causal Factors Contributing to the Flood that Occurred on September 27, 1985 in Spring Brook Creek", June 1986, Project Director

"A Determination of the Decay Period for Residential Homes Impacted from Blasting Operations at Pioneer Quarry, San Antonio, Texas, An Engineering Memorandum", October 1986, Project Director

"A Determination of the Loss of Market Value for the Residential Homes Impacted from Blasting Operations at Pioneer Quarry, San Antonio, Texas", November 1986, Project Director

"Mass Balance - Silver Removal Project, Alachua General Hospital, Gainesville, Florida", March 25, 1987

"Conceptual Engineering Report Silver Wastewater Management - Alachua General Hospital, Gainesville, Florida", April 30, 1987

"Design and Specifications of Filtration System For Washwater and Fixer Water at Alachua General Hospital", June 25, 1987

"An Evaluation of the Pipe Clogging Problem at the Marion Community Hospital, Ocala, Florida - A Preliminary Engineering Report", March 1988

"A Determination of a Removal Mode for Sludge Blocking Pipes at the Marion County Community Hospital, Phase II - Engineering Report"

"Evaluation of Civil Engineering Structures for Railroad Companies for Compliance with Acceptable Engineering Standards"

"A Feasibility Study for the Gum Springs Road Landfill, Sullivan County, Tennessee", Engineering Report, March 1990

"An Operations Manual for the Gum Springs Road Landfill Sullivan County, Tennessee", Engineering Report, March 1990

"A Conceptual Engineering Design for the Gum Springs Road Landfill, Sullivan County, Tennessee", Engineering Design, March 1990

FORENSIC APPLICATIONS IN HYDROLOGY, GROUNDWATER CONTAMINATION, AND GENERAL CIVIL ENGINEERING

Dam Collapse and Overflow, Lackawanna County, Pennsylvania, 1989-1999 – Modeled the hydrology involved in a series of dams during a hurricane. The failure of the dam system was determined to be caused by the lack of regulatory free board. The determination of the cause of the flooding involved detailed analysis of the hydraulic integrity of several of the dams in the system.

Wastewater Pipeline Rupture, Duluth, Minnesota (1990) - Determined the environmental health impact of several ruptures of a 14 million gallon per day (14 mgd) wastewater line. A determination of the causal factor of the rupture included an evaluation of the forensic testing accomplished on the line. Additionally, the extent of groundwater contamination was defined using accepted hydrogeological techniques. The operational and design criteria of the line was also evaluated and determined to be satisfactory. The causal factor of the rupture was found to be improperly manufactured pipe.

Evaluation of Design and Operation of a Landfill, LaCrosse, Wisconsin, (1986-1990) - Determined the extent of groundwater contamination in an operating landfill in LaCrosse, Wisconsin. Due to burial of waste in an unlined landfill, leachate had migrated into the surrounding groundwater. The extent of the migration was defined via operations research modeling for current and projected movement over a 20 year period. Recommended remedial measures were also defined to alleviate future contamination.

Berm and Holding Facility Failure, Sioux Falls, South Dakota (1986-1989) - Was responsible for determining the causal factors of the failure of a berm and holding facility for 15 million gallons (mg) of slaughterhouse waste. The structure failed during a winter storm thus releasing 15 mg of liquid into the Sioux Falls River. The investigation centered on the responsibility during the design, construction, and start up of the facility. The data revealed that improper construction and start up of the facility was the causal factor of the failure.

Design and Operation of Access Road in a Wastewater Treatment Facility, Pikeville, Kentucky (1989) - The design and traffic flow pattern in a wastewater treatment plant was evaluated to determine the reason for failure of a guard rail. The rail failed when a vehicle lost control and ran into the railing causing collapse. Serious injury was caused when the driver fell into the plant clarifier. Evaluation showed that the guard rail did not meet accepted Civil Engineering standards even though the original design specified the standard rail.

Determination of Clay Migration , Pinnacle Lake, Missouri (2002) – Determined the causal factor of clay migration from an upstream source. Modeled migration using stream characteristics. Submitted an engineering report on the issue.

AIR POLLUTION, TOXICITY, AND ENVIRONMENTAL HEALTH

Worker Exposure in a Chemical Plant - Chattanooga, Tennessee (1988) - The environmental health impacts of chemical exposure during discharge of carbon disulfide-contaminated water onto a frozen holding pond were evaluated. The discharge resulted in worker contamination from airborne mists of the chemical. The ground level concentration was defined using the meteorological data present at the time of the discharge. As a result of this analysis, the degree of the exposure to the workers was defined.

Muriatic Acid Spill, Miami, Florida (1986-1987) - Determined the concentration of muriatic acid at ground level from ruptured chemical containers at the port of Miami. Concentration was defined by knowing the initial concentration of acid in the tanks and meteorological conditions at the time of the spill. The movement of the gas was then defined by a dispersion model. The air concentration of muriatic acid was also determined as a function of the environmental health impacts on workers in the surrounding area.

Power Plant Discharge Dispersion, Jacksonville, Florida (1986-1987) - Determined the downwind dispersion rate of power plant stack discharges at certain levels of ground level concentration. Due to widespread corrosion from the discharges, an air model was utilized to define the concentrations at the stacks resulting from improper operation of the power plants. Engineering operations were recommended to correct the discharge problems.

Chlorine Gas Spill, Buffalo, New York (1984-1986) - Was the Project Engineer for determining the environmental health impacts of 5000 pounds of chlorine released accidentally from a major chemical manufacturer into the Buffalo, New York area. The effort consisted of examination of production records during the occurrence, defining the concentration of the gas, and determination of the ground level concentration of the gas at the time of exposure to the general public. The Engineering parameters that caused violation of the company's discharge permit were defined. Factors were combined in an air pollution model to predict with a high degree of Engineering probability the cause of events that occurred at the time of the spill.

Asphalt Toxicity (1985) - Worker exposure to asphalt was investigated to determine the causal factors of severe personal health damage. Carcinogenic compounds were identified that, upon exposure to workers, created toxicological damage to soft tissue. Remedial measures were recommended to prevent exposure to workers from routine manufacture and handling.

SOLID WASTE APPLICATIONS IN CIVIL ENGINEERING

Forensic Project Engineer: Department of Justice (DOJ) vs. Trail King Industries (1989-1999) - This ten year project consisted of negotiating a consent decree between the industry and DOJ. An initial 18 million dollar fine was negotiated to $400,000 and all negotiated time goals were met. The goals consisted of several Engineering Reports and activities to bring the industries infrastructure and operations into compliance with the Consent Decree.

Arbitration of a Construction Dispute (1999) - Presented a complex arbitration demand after reconstructing the time line details of a construction site cost over run. The dispute between the two firms regarding the over run was resolved successfully.

Definition of Groundwater and Wastewater Line Migration of Gasoline, St. Louis, Missouri (1987-1989) - Determined the source of an explosion in a water lift station that seriously burned a worker when a light switch was turned on during a 100 year storm event. Leaking underground storage tanks (LUST), discharge gasoline into the surrounding groundwater which then migrated into water lines. The gasoline then migrated to the lift station causing the explosion. The movement of the gasoline was defined using groundwater modeling, and the development of a detailed inventory for the tanks being studied.

Aerojet Heavy Metals Company Closure Plan (1977-1985) - Was the Project Engineer for the closure plan for the low-level radioactive waste site for Aerojet General, Jonesborough, Tennessee. The site at Aerojet General was monitored for groundwater contamination and surface water contamination. The site consisted of a 3-acre holding pond as well as numerous subsurface low-level waste contaminated burial sites. The low-level waste was exhumed, the low-level waste pond was removed, and a closure plan submitted and instituted on the area. Contingent with the closure and post-closure plan were groundwater monitoring sites. The closure plan was submitted and approved by the Tennessee Department of Public Health, Solid Waste Division.

Design of Alternative Engineering Concepts for Stabilizing a 76-Acre Burial Ground at the Savannah River Plant, South Carolina (1985) - Remedial measures were defined for stabilizing a high-level and low-level radioactive waste site at the Savannah River Laboratory in South Carolina. This consisted of several Engineering alternatives which considered storm water runoff, as well as numerous classical closure procedures.

Expert Witness Bumpas Cove Landfill Litigation (1976-1984) - Was utilized as an expert witness during the many lawsuits that arose from the operation of the landfill and the ultimate closure. Acted as an expert witness on numerous occasions for the State of Tennessee and the Environmental Protection Agency on the actual operation and monitoring of the landfill as well as the ultimate closure.

Site Closure Plan, ITT North Electric (1981) - Was Project Engineer for insuring that closure plan was submitted to the State of Tennessee for several sludge-holding areas at ITT North Electric in Gray, Tennessee. The ultimate responsibility was to first identify the areas of concern and then submit a comprehensive closure plan for both special and hazardous industrial waste sites at ITT North Electric. This project was successfully completed, the site was closed, and all reports and activities were approved by the Tennessee Department of Public Health, Solid Waste Division.

Bumpas Cove Landfill (1975-1981) - Was Project Engineer for the closure of the Bumpas Cove Landfill in Erwin, Tennessee. This landfill was the major landfill for municipal and industrial waste for Upper East Tennessee and Southwest Virginia. The project consisted of originally designing the landfill for municipal, special industrial waste and hazardous solid waste. The closure Engineering Report was prepared with project management provided for the actual contractor who performed closure cap. In this instance, a clay cap was utilized with drainage operation, design, and closure was approved by the State of Tennessee Department of Public Health.

Design and Institution of Hazardous Solid Waste Storage Landfill, Brismet, Bristol, Tennessee (1979) - Was the Project Engineer responsible for designing a Solid Waste facility for storing sludge generated from a physical/chemical process at Brismet Industries. The sludge was delisted from a hazardous to an industrial special waste and a solid waste storage facility was designed and installed and is currently in operation. These activities were approved by the Tennessee Department of Public Health, Solid Waste Division.

Site Closure Plan Hoover Universal, Ball Bearing Division, Erwin, Tennessee, (1979) - Was the Project Engineer for insuring that the areas where special and hazardous industrial waste were buried at the facility site were closed properly. The closure was approved by the Tennessee Department of Public Health.

Consultant to Tennessee Department of Public Health and Environmental Protection Agency (1978) - Was hired as an independent consultant by the State of Tennessee Department of Public Health and the Environmental Protection Agency to insure that proper groundwater monitoring and groundwater movement studies were conducted on the Bumpas Cove site. This effort lasted from 1978 to 1982. The independent study was conducted and submitted to both EPA and the Tennessee Department of Public Health and was approved by both agencies.

MISCELLANEOUS INFORMATION

- Collegiate All American Swimmer 1960 - 1964
- National Senior Men's Swimming Record Holder 1960, 1961, and 1962
- State of Tennessee Bicycle Road Champion 1983 and 1984
- Completed Hawaiian Ironman Triathlon, February 1981, February 1982, and October 1982
- Nationally ranked Masters Swimmer in 4 events, 1970 - 1985
- 1984 World Masters Swimming Champion, Men's 200 Meter Butterfly
- 1984 Masters National United States Swimming Champion, Men's 200 Meter Butterfly
- Bend, Oregon, Cascade Falls Triathlon, 5th in Age Group 1988
- State of Tennessee, 4th Bicycle Time Trial, 8th Road Championships, 1989
- State of Tennessee Triathlon Championships, 5th 1989
- Completed 28 Marathons, 1975-1990
- Third in the Southeast International Distance Triathlon - 1990
- 81 Percentile of all Triathletes in U.S. - 1990
- Third in age group Southeastern Triathlete Championships, Tullahoma, Tennessee - 1990
- State of Tennessee Triathlete Champion, International Distance, Fort Loudon, Tennessee - 1990
- Eighth, Muncie Endurathon Triathlon, National Long Course Triathlon Championships, Muncie, Indiana, July 1999