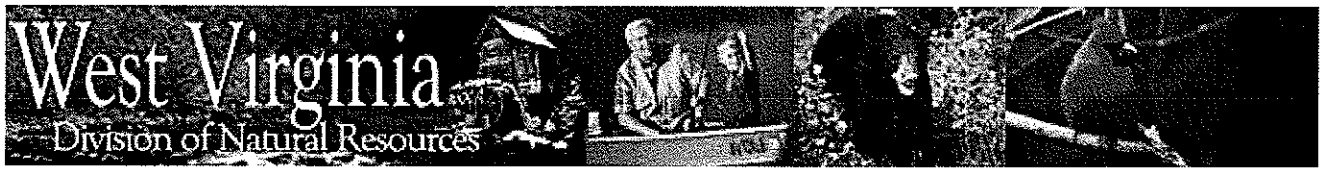
Hatch Mott MacDonald

Expression of Interest
for
Professional Engineering Services
for the
Bluestone State Park
Main Water Line Replacement

RFQ # DNR209036



State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
DNR209036	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
FRANK WHITTAKER
304-558-2316

VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE

Hatch Mott MacDonald
2601 Cranberry Square
Morgantown, WV 26508

SHIP TO
DIVISION OF NATURAL RESOURCES
PARKS & RECREATION SECTION
BUILDING 3, ROOM 719
1900 KANAWHA BOULEVARD, EAST
CHARLESTON, WV
25305-0662 304-558-2775

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
09/11/2008				

BID OPENING DATE: 10/07/2008 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		906-00-00-001		

ARCHITECT/ENGINEERING SERVICES, PROFESSIONAL

EXPRESSION OF INTEREST

THE WEST VIRGINIA PURCHASING DIVISION FOR THE AGENCY, THE WEST VIRGINIA DIVISION OF NATURAL RESOURCES, IS SOLICITING EXPRESSIONS OF INTEREST FOR ARCHITECTURAL AND ENGINEERING SERVICES FOR THE REPLACEMENT OF THE MAIN WATER LINE AT BLUESTON STATE PARK LOCATED IN HINTON, WEST VIRGINIA PER THE ATTACHED SPECIFICATIONS.

TECHNICAL QUESTIONS MUST BE SUBMITTED IN WRITING TO FRANK WHITTAKER IN THE WEST VIRGINIA PURCHASING DIVISION VIA FAX AT 304-558-4115 OR VIA EMAIL AT FRANK.M.WHITTAKER@WV.GOV. DEADLINE FOR ALL TECHNICAL QUESTIONS IS SEPTEMBER 25, 2008 AT THE CLOSE OF BUSINESS. ALL TECHNICAL QUESTIONS RECEIVED, IF ANY WILL BE ANSWERED BY ADDENDUM AFTER THE DEADLINE.

QUESTIONS CONCERNING THE PROCESS BY WHICH A VENDOR MAY SUBMIT AN EXPRESSION OF INTEREST TO THE STATE OF WEST VIRGINIA ARE NOT CONSIDERED TO BE TECHNICAL QUESTIONS AND MAY BE SUBMITTED AT ANY TIME PRIOR TO THE OPENING DATE AND IN ANY FORMAT.

EXHIBIT 10

REQUISITION NO.: .....

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
[signature]	304-212-4390	10-7-08
TITLE: Area Manager	FEIN: 16-1006700	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
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ADDENDUM ACKNOWLEDGEMENT

I HEREBY ACKNOWLEDGE RECEIPT OF THE FOLLOWING CHECKED ADDENDUM(S) AND HAVE MADE THE NECESSARY REVISIONS TO MY PROPOSAL, PLANS AND/OR SPECIFICATION, ETC.

ADDENDUM NO.'S:

NO. 1 .....

NO. 2 .....

NO. 3 .....

NO. 4 .....

NO. 5 .....

I UNDERSTAND THAT FAILURE TO CONFIRM THE RECEIPT OF THE ADDENDUM(S) MAY BE CAUSE FOR REJECTION OF BIDS.

VENDOR MUST CLEARLY UNDERSTAND THAT ANY VERBAL REPRESENTATION MADE OR ASSUMED TO BE MADE DURING ANY ORAL DISCUSSION HELD BETWEEN VENDOR'S REPRESENTATIVES AND ANY STATE PERSONNEL IS NOT BINDING. ONLY THE INFORMATION ISSUED IN WRITING AND ADDED TO THE SPECIFICATIONS BY AN OFFICIAL ADDENDUM IS BINDING.

.....
SIGNATURE

.....
COMPANY

.....

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
Timothy M. Rice	304-212-4390	10-7-08

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Area Manager	16-1006700	

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Morgantown, WV 26508

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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT

PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR EOI:

304-594-2814

CONTACT PERSON (PLEASE PRINT CLEARLY):

Timothy M. Rice

****** THIS IS THE END OF RFQ DNR209036 ****** TOTAL:

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
Timothy M. Rice	304-212-4390	10-7-08

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Area Manager	16-1006700	

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BID OPENING DATE: 10/07/2008 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

DATE

REV. 11/96

BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT MAY BE DEEMED NULL AND VOID, AND TERMINATED WITHOUT FURTHER ORDER.

NOTICE

A SIGNED EOI MUST BE SUBMITTED TO:

DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
BUILDING 15
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25305-0130

THE EOI SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE EOI MAY NOT BE CONSIDERED:

SEALED EOI

BUYER: FRANK WHITTAKER-FILE 44

EOI NO.: DNR209036

EOI OPENING DATE: OCTOBER 7, 2008

EOI OPENING TIME: 1:30 PM

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
[signature]	304-212-4390	10-7-08

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Area Manager	16-1006700	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

DNR209036

RFQ No _____

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:
West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:
West Virginia Code §21-1D-5 provides that: Any solicitation for a public improvement construction contract shall require each vendor that submits a bid for the work to submit at the same time an affidavit that the vendor has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code. A public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the West Virginia Code may take place before their work on the public improvement is begun.

ANTITRUST:
In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:
Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:
The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit **www.state.wv.us/admin/purchase/privacy** for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and is in compliance with the requirements as stated.

Vendor's Name: Hatch Mott MacDonald

Authorized Signature: _____ Date: 10-7-08

Table of Contents

Hatch Mott MacDonald

2601 Cranberry Square
Morgantown, WV 26508
T 304.212.4390 F 304.594.2814
www.hatchmott.com

October 7, 2008

Mr. Frank Whittaker, Senior Buyer
West Virginia Division of Natural Resources
Parks and Recreation Section
Purchasing Division
P.O. Box 50130
Charleston, WV 25305-0130

RE: RFQ # DNR209036
Expression of Interest
Bluestone State Park – Main Water Line Replacement

Dear Mr. Whittaker:

Hatch Mott MacDonald (HMM) is pleased to submit this proposal to provide design and mapping services for the West Virginia Division of Natural Resources. This project's focus on water line design and related services is a principal area of expertise within our firm.

With a lineage stretching back over a century; involvement in the design and construction of the most ambitious infrastructure projects; and a multi-disciplined staff with comprehensive engineering skills, HMM possesses the practical knowledge and experience needed to meet the technical challenges of any given project. Our approach is strictly client-focused – with a corporate commitment to engineering excellence, HMM provides services for all aspects of engineering projects, from feasibility studies and surveys through design, to project and program management, construction management and supervision, start-up and operations.

This Expression of Interest submittal relates specifically to water design capabilities, a core competency of HMM. We have completed water projects of this description across the country with projects into the millions of dollars. Our many years of infrastructure design has provided considerable water system design experience available from throughout the company for this project. A variety of project briefs have been included in this submittal to demonstrate how HMM has successfully completed projects similar to this project as well as larger and more complex water-related projects.

In addition, HMM recently hired Jim Fetty to our water/wastewater group. Mr. Fetty is a Registered Professional Engineer in West Virginia with 25 years of direct municipal engineering experience, most recently as the City Engineer of Fairmont, WV.

Having successfully completed projects across a wide range of sizes and complexities has demonstrated that we have the experience to provide the appropriate project management

approach to each of our projects. HMM corporately maintains a strong QA/QC philosophy for all the work we do illustrated by the fact that we are ISO 9001:2000 certified.

HMM opened its Morgantown office in 2006 and already has a total staff of over 32 people. Our in-house capabilities include civil, mechanical, and mining engineers, CAD designers, geologists, environmental scientists, biologists, and other field staff. This office is strategically located to be able to easily service this project. In addition to HMM's highly qualified staff, we have invested significant resources to make state-of-art technology and tools available to our staff. We have over 15 Trimble GPS units that are used by our field staff on a regular basis to support other clients. We have also invested in the large format plotters and scanners to give our staff cutting edge technology to support all of our projects and to provide the highest quality deliverables possible

We appreciate the opportunity to submit this expression of interest and look forward to establishing a successful working relationship. Please contact myself or another member of our staff with any additional questions you may have.

Very truly yours,

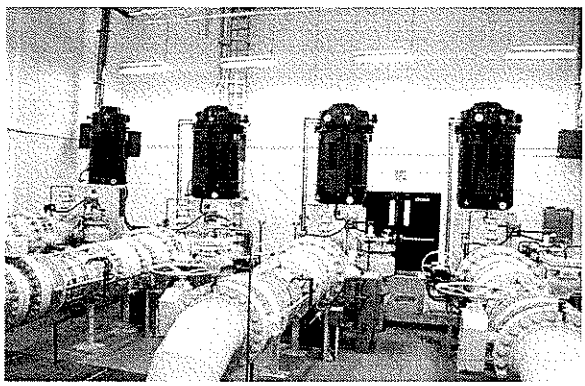
Hatch Mott MacDonald

Richard L. Steinhart, PE
Vice President
T 412.497.2910 F 412.497.2940
richard.steinhart@hatchmott.com

Timothy M. Rice
Senior Project Manager
T 304.212.4388 F 304.594.2814
timothy.rice@hatchomott.com

Water Supply Management

HMM has demonstrated a unique combination of talent and experience in meeting hydraulic and water supply engineering challenges for over 60 years. The firm has demonstrated particular strength and developed broad experience in water system planning, hydraulic analysis, design, rehabilitation and implementation We can provide a full range of water supply management services including hydraulic analyses, planning and feasibility studies, preliminary and final designs, preparation of contract drawings and specifications, construction cost estimates, time schedule outlines, bid analyses, complete resident engineering services during project construction and development of operation and maintenance manuals, as well as start-up assistance and operator training

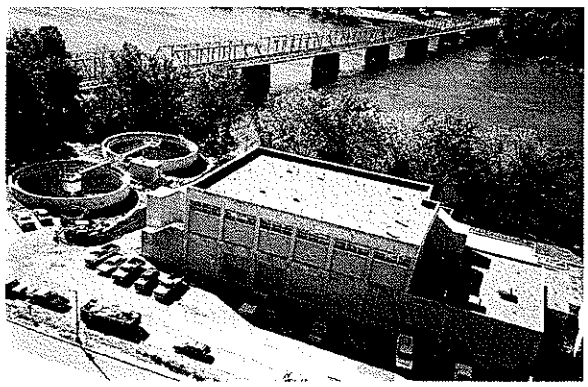


Planning

- Master Planning for Water Supply & Treatment
- Resource Management
- Resource Inventories
- Grant & Loan Application Assistance

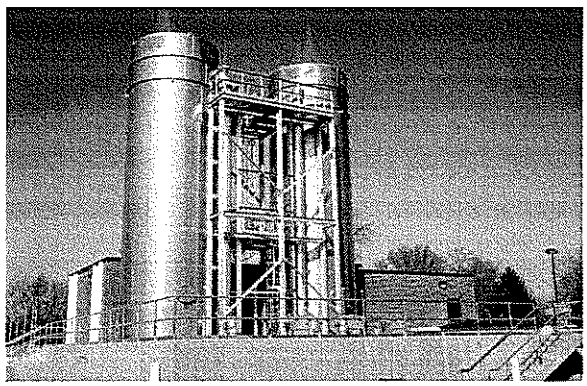
Construction Services

- Field Services
- Liaison Representation
- Construction Management
- Contract Administration



Investigative Studies

- Hydraulic Analysis
- System Pressure & Fire Flow Analysis
- Water Quality Treatability
- Rate Studies
- Feasibility Studies
- Valuations
- Expert Testimony



Design

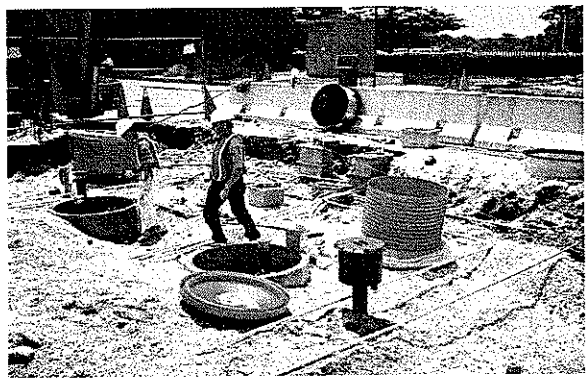
- Water Supply
- Water Treatment
- Air Stripping
- Pumping Stations
- Transmission & Distribution Pipelines
- Storage Facilities
- Rehabilitation
- Treatment Plant Optimization & Management

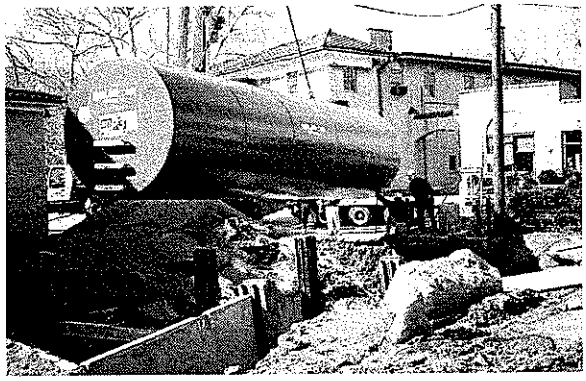
Storage Tank Management

HMM provides storage tank management through a highly trained staff of professional geologists and engineers This staff can investigate, analyze and make recommendations to our clients on tank management plans, tank upgrades and/or new tank designs All staff are familiar with current state and USEPA rules and regulations and can expertly assist our clients in compliance with current standards. Our design team is experienced in double-walled steel or fiberglass tanks as well as tank upgrades in compliance with the regulations.

Evaluation of Existing Tank Systems

- Registration, Permitting & Release Reporting
- Integrity Testing
- Abandonment In-Place
- Removals & Disposals
- Upgrades & Modifications per Federal Regulations



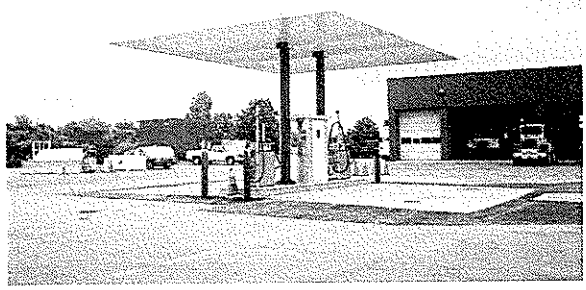


Design of New Tank Systems

- Corrosion Protection Systems
- Double-Wall Steel to 20,000 Gallons
- Fiberglass to 6,000 Gallons
- Vault or Below Ground Installations
- Above Ground Concrete
- Dispensing Units for Motor Fuel
- Multi-fuel Tank Partitioning for Gas & Diesel
- Instrumented Leak Detection Systems
- Canopies & Islands
- Specialized #6 Heating Oil Design
- Specialized Aviation Gasoline Designs
- Bid Plans & Specifications
- State & Local Construction Code Permitting
- Construction Management
- System Start-up
- Fuel & Fleet Management Systems

Tank Management Plans

- Evaluation of Existing Systems through Data Searches, Interview & Site Surveys
- Determination of Compliance/Non Compliance with Federal/State Regulations
- Determination of Future System Needs
- Determination of Tank Upgradability
- Scheduling Removals/Abandonment/ Replacements
- Cost Estimating
- Recommendation of Sequenced Compliance

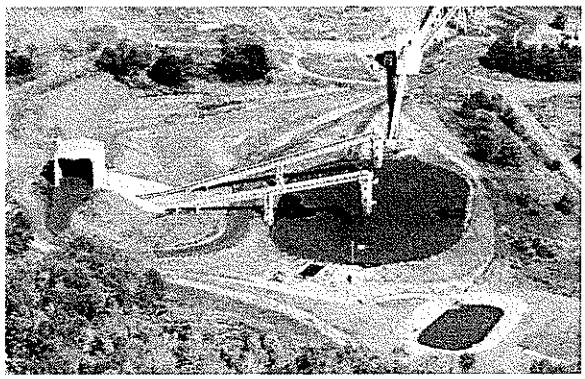


Municipal Engineering Services/ Public Works Management

As a result of the practical experience developed during more than six decades of engineering consultation, and through the utilization of the talents of staff experienced in engineering, planning and public works management, HMM can draw upon a vast depth of resources to provide consulting services for its public clients, particularly in the Public Works Area. HMM's multiple office locations, coupled with the diverse capabilities of the firm's experienced staff of certified public works managers, allow HMM to provide the Public Works Management service needed to meet the full range of the day-to-day demands of local government

Master Planning, Design, Budget & Implementation

- Municipal Improvements
- Drainage & Flood Control Facilities
- Wastewater Collection, Pumping & Treatment Facilities
- Roadway Construction, Resurfacing & Reconstruction
- Intersection & Signalization Improvements
- Water Supply Treatment, Storage & Distribution Systems
- Beach Erosion Control, Marine & Coastal
- Structures & Flood Zone Management
- Parks, Golf Courses & other Recreational Facilities
- Solid Waste Management & Recycling
- Building Design Services
- Land Surveying
- Tax Map Revisions & Street Address Map Revisions
- Energy Audits



Advisory Consultation

- Governing Body
- Planning Board
- Board of Adjustment
- Board of Health
- Liaison to Municipal Departments, Boards & Commissions
- Liaison to County, State & Federal Agencies
- Liaison to Financial Institutions
- Liaison to Legal Division & Expert Testimony
- Public Participation Programs

Public Works Consultation

- Underground Storage Tanks
- Sewage Collection, Pumping & Treatment Facilities
- Water Distribution, Supply, Storage, Treatment & Pumping Facilities
- Streets & Roads
- Stormwater Collection, Detention & Retention Facilities
- Solid Waste & Recycling
- Vehicles & Equipment
- Snow & Ice Removal
- Emergency - Crisis Planning
- Complaint Processing
- Construction Phase Engineering
- Survey
- GPS/GIS Plans

Parks & Recreation

- Capital Inventory
- Park Maintenance Program
- Field Utilization Surveys

Municipal Engineering Services/ Public Works Management (cont.)

Street Management Program

- Pavement Management Programs
- Maintenance & Repair Programs
- Preparation of Street Cleaning Programs

Snow Plowing and Ice Control

- Comprehensive Snow Plowing Plans
- Ice Control Programs
- Equipment

Stormwater System Maintenance

- Cleaning Programs
- Routing Maintenance Programs
- Planning for Managing & Upgrading

Sanitary Sewer System Maintenance

- Routine Cleaning Programs
- TV Inspection
- Manpower Training

Fleet Management

- Planning that Addresses Ownership, Use, Maintenance, Repair & Replacement

Facility Management Programs

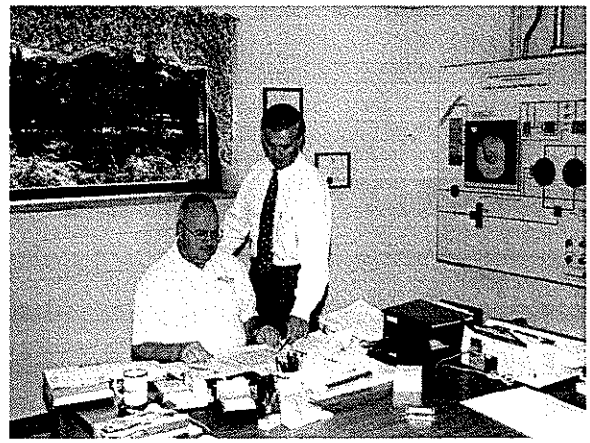
- Review Staff Capabilities Relative to Facility Maintenance, Upkeep & Cleaning

Capital Budgeting and Planning

- Review of Existing Capital Plans
- Preparation of Single or Multi-Year Capital Budgets
- Review of Financing Options

Public Works Management

- Perform Management Review of Existing Operations
- Prepare Plans for Staffing & Operational Improvements
- Budget Review & Recommendations



Mining Environmental Services

HMM offers a full spectrum of mining and mining-related environmental and design engineering services. Successfully completed projects range from reserve analyses, permitting and feasibility studies to complex mining and reclamation plans for surface and underground mining installation, prep plants and refuse handling facilities. Versatility is demonstrated by proven ability to work with large and small operators. Personnel are accustomed to communicating effectively with both multi-department international companies and sole proprietors.

Surface Mining

- Surface Mining Permits
- Auger Mining Permits
- Feasibility Studies
- Land Reclamation & Remediation
- Permit Transfers
- Pre-Blast Surveys
- Acid Mine Discharge (AMD) Remediation

Underground Mining

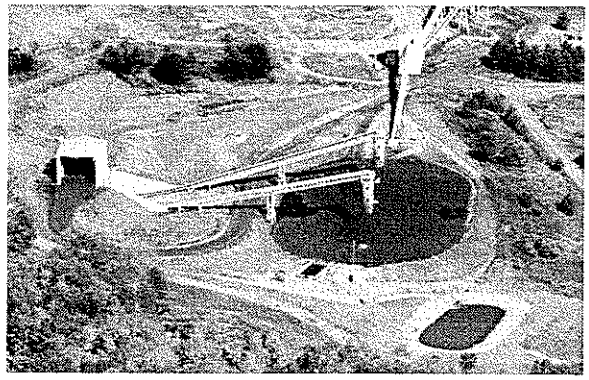
- Deep Mine Permits
- Mine Design & Mapping
- Ventilation Plans
- Subsidence Plans
- Surface Support Plans
- Air Shaft Design & Coordination
- Incidental Boundary Revisions (IBR)
- Pre-Subsidence Surveys

Support Facilities

- Preparation Plant Permits
- Coal Yard & Loadout Permits
- Refuse Pile Reprocessing Permits
- Site Planning
- Air Quality Permits
- Coal Refuse/Fly Ash Permits
- Coal Refuse/Fresh Water Impoundments
- Portal Facilities Design & Construction Management

Mine Planning

- Geological Exploration
- Reserve Studies
- Economic Evaluations
- Aerial Mapping
- Drilling
- Environmental Site Assessment



Professional Surveying

- Underground Coal Mine Surveys
- Stockpile Volumetric Surveys
- Construction Surveys
- Boundary Retracement
- Topographic Surveys
- Horizontal & Vertical Control Networks
- GIS/GPS Surveys

Operations Support

- Small Operator Assistance Program (SOAP) Preparation
- Thermal-graphic Equipment Analyses
- Machine & Equipment Appraisal & Analyses
- Conveyor System Analyses
- Electrical System Analyses

Ecological Services

Hatch Mott MacDonald provides a wide range of scientific and environmental expertise needed to successfully address complex environmental problems and to design practical, cost-effective solutions. HMM is committed to assisting its clients by guiding projects through both the regulatory process and the construction phase utilizing cost effective design and engineering while protecting and enhancing the environment. We have provided ecological services to many types of clients including public and private utilities, state and municipal authorities and agencies, commercial site developers, energy companies, residential and other private property owners, municipalities and institutions. Our scientists and field technicians have the necessary technical expertise required to design and execute ecologically-focused surveys and studies and the capability to set a strategic course of action for projects to be successfully licensed and permitted at all regulatory levels

Regulatory Compliance

- Agency Consultation and Coordination
- Ecological Resources Policy Development
- Environmental Audits
- Environmental Compliance Inspection
- Environmental Impact Statements and Assessments
- Environmental Monitoring
- Environmental Risk Assessment
- Expert Testimony and Litigation Support
- Federal, State and Local Permitting

Environmental Technology

- Bioengineering
- Bioremediation and Phytoremediation
- Engineered Wetlands for Water Treatment
- Ecological Restoration

Ecological Resource Surveys/Studies

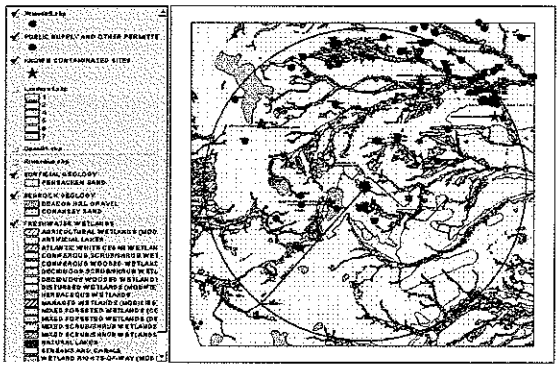
- Biota and Ecosystem Baseline Surveys
- Ecological Resource Management
- Ecological Risk Assessment
- Habitat Evaluation and Assessment
- Rare, Threatened and Endangered Species Assessment
- Soils, Sediments and Water Quality Investigations
- Wetland Delineation and Assessment
- Wetland Mitigation, Replication and Monitoring

Other Related Services

- Erosion and Sedimentation Control Plans
- GPS Survey
- GIS Applications
- Stormwater Management Plans
- Vegetation Management Plans
- Landscape Planting Plans

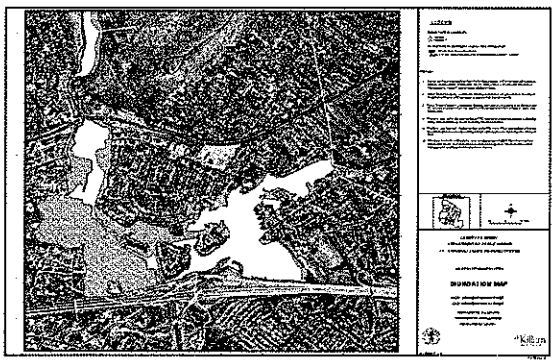
Geographic Information Systems

Over the last decade, HMM has responded to its clients' growing needs for Geographical Information System (GIS) through investments in software, hardware and employee training. The ability of GIS to integrate central databases with mapping that can be shared throughout an organization, is making this information technology a standard for government agencies, utilities and private companies. HMM provides a full range of GIS services in the areas of: water/wastewater utility, stormwater utility, municipal government, hydrology and hydraulics, and natural resources.



Software Applications

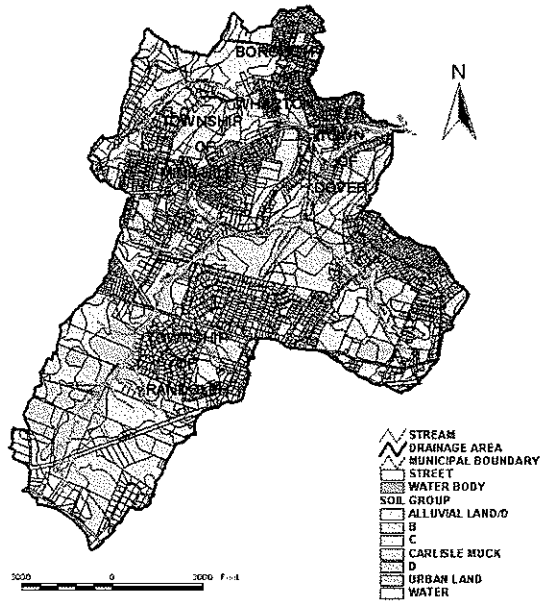
- ARC/INFO©
- ArcView©
- ArcCAD
- ArcFM
- AutoCAD/AutoCAD Map
- Microstation



Software Capabilities

- Infrastructure Modeling
- Document Management
- Hydrologic/Hydraulic Modeling
- Groundwater Modeling
- Coordinate Geometry (COGO)
- Geographical Positioning Systems (GPS)
- Digital Elevation/Terrain Modeling
- Integration of Third Party Modeling Software
- Internet/Intranet

Major Soil Grouping in Jackson Brook Drainage Area

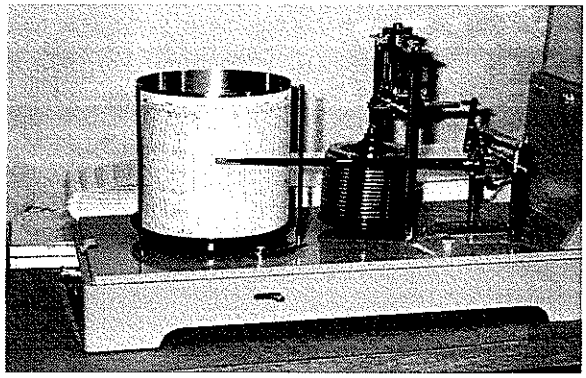


Hardware Resources

- Hewlett-Packard 1055 & 755 Design Jet Plotters
- Dell Precision Workstation (750 MHz Processors with 256K RAM)
- Network through a 6300 Dell PowerEdge Server
- RAID-5 Array for Data Storage
- XEROX 8830 Scanners & Printers

Hydrogeological Services

HMM's hydrogeological specialists are employed on a wide range of projects, from small urban properties to entire watersheds. The majority of our staff holds advanced degrees and are registered professionals. They evaluate and develop groundwater resources; delineate contamination and predict impacts on human and ecological receptors; provide the technical basis for the design of subsurface wastewater disposal, construction dewatering and aquifer remediation systems; generate hydrogeologic models, frame computer simulations and perform statistical analyses for risk assessments and resource prospecting; provide full technical assistance in permitting in all these areas; provide peer review for the work of outside hydrogeologists; advise legal counsel and provide expert testimony



Groundwater Resources

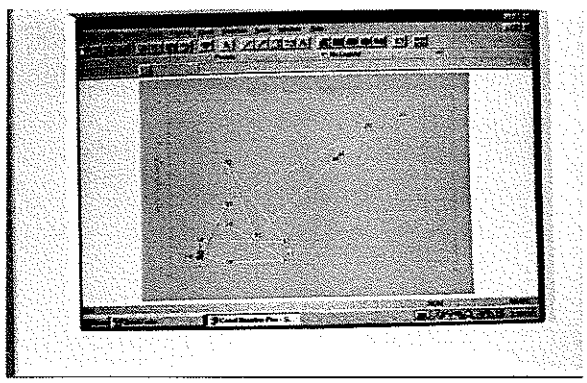
- Resource Evaluations
- Water Allocation Permits
- Well-Head Protection Area Delineation
- Diversion Impact Assessments

Dewatering

- Dewatering System Design
- Temporary Water Allocation Permits
- Dewatering Permits-by-Rule

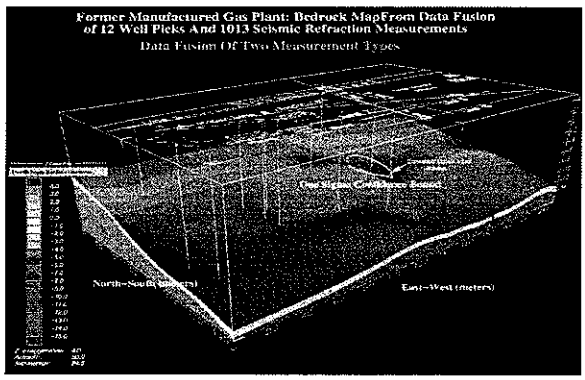
Discharge to Groundwater

- Hydraulic Mounding Analysis
- Discharge to Groundwater Permits
- Dilution Modeling



Remedial Design

- Plume Control
- Treated Wastewater Disposal System Design
- Contaminant Fate & Transport Modeling
- Technical Support for Natural Remediation
- Aquifer Reclassification
- Ground Water Chemistry
- Expert Testimony
- Peer Review



Landfill Investigations

- Leachate Generation & Control Modeling
- Landfill Gas Venting System Design
- Aquifer Impact Assessments

Aquifer Investigations

- Pumping Test Design & Analysis
- Aquifer Modeling
- Simulation of Groundwater Flow
- Aquifer/Surface Water Interaction Analyses

Environmental Site Assessment and Remediation

For nearly two decades, HMM has performed Phase I/Phase II environmental site assessments at hundreds of sites. They have consulted with multi-national and local buyers of property, assisting them with their due diligence efforts prior to acquisition of new companies or properties. On properties where contamination is present in excess of acceptable levels, HMM has designed and implemented remediation measures. Such remediation projects have been completed under a variety of environmental programs, including CERCLA (Superfund), RCRA Corrective Action, ISRA, Pennsylvania Act 2 and other state Brownfield programs. Projects have been completed on numerous sites that have soil and/or groundwater contaminated with chlorinated solvents, petroleum from leaking storage tanks, heavy metals, PCBs, and other organic compounds. Our design engineers are specialists in groundwater collection and treatment, waste removal and facility closure design, and our field staff is fully equipped and instrumented, and appropriately trained and medically monitored.

Environmental Site Assessments

- Phase I Site Assessments (ASTM)
- Transaction Screening Assessments
- Phase II Site Investigations
- Geophysical Surveys
- Monitoring Well Installations/Borings
- Soil, Air & Water Sampling
- Waste Sampling & Characterization
- Groundwater Flow Modeling
- Contaminant Transport Modeling
- QA/QC Plans

Remedial Design

- Feasibility Studies / Alternatives Analysis
- Physical/Chemical Treatment
- Biological Treatment
- Thermal Treatment
- Recovery Well Designs
- Soil Vapor Extraction
- Air Sparging
- Hydraulic Containment
- Closure Plans
- Pilot & Demonstration Programs
- Cost Estimating
- Risk Based Corrective Action
- Natural Remediation Compliance Plans
- Permitting

Site Remediation

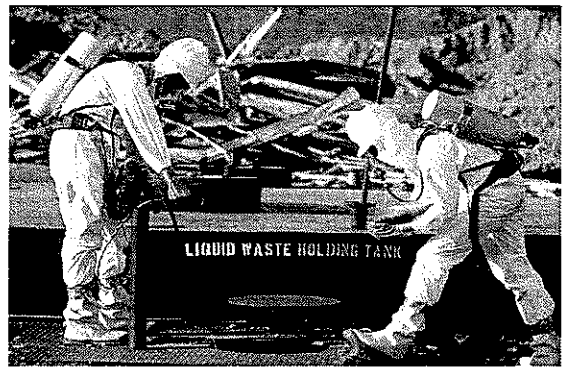
- Contract Administration
- Construction Oversight Services
- System Operations & Maintenance
- Closure Reporting
- Post-Remediation Monitoring
- Expert Testimony

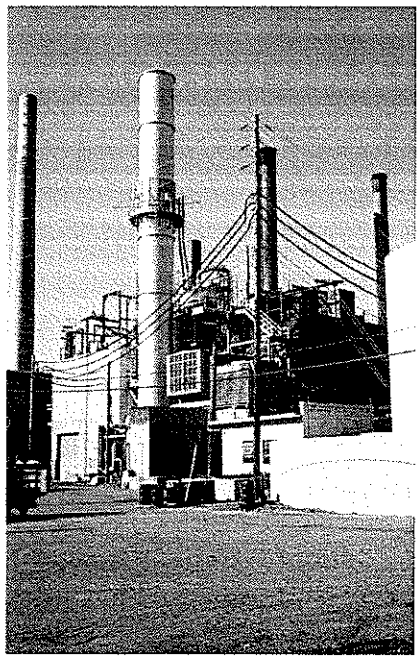
Environmental Compliance Services

Effective management of ongoing environmental compliance issues is often difficult, especially as many companies continue to cutback on non-production personnel. As a result, many EH&S managers find themselves overloaded with multiple tasks. HMM can be a valuable resource that EH&S managers can use to more effectively and efficiently manage their company's environmental obligations, stay up-to-date with current state and federal regulatory trends, identify areas where cost-effective waste reduction measures can be implemented, and receive an objective third-party review of the company's environmental compliance level and/or liabilities. HMM can add value to the company's bottom line and help the management team to refocus resources on product quality and customer service, while staying abreast of regulatory changes and compliance issues.

Periodic Reporting

- Annual SARA Reports (312/313)
- Annual Air Emission Reports
- Monthly DMR Sampling / Reports
- POTW Pretreatment Sampling / Reports
- Hazardous Waste Biennial Reports
- Residual Waste Biennial Reports
- Chemical Analysis of Wastes
- Source Reduction Strategies
- Storage Tank Registrations / Inspections





Contingency Planning

- Environmental Compliance Audits
- SPCC Plan Preparation / Recertification
- PPC Plan Preparation / Recertification
- Environmental Emergency Response Plans
- Storm Water Pollution Prevention Plans
- Hazard Communication Plans
- Risk Management Plans
- Training

Wastewater Management

- NPDES Part I/ Part II Permit Applications
- POTW Permit Applications
- Storm Water Runoff Permit Applications
- Treatment Plant Troubleshooting
- Toxicity Reduction Evaluations

Air Quality

- RFD Applications
- Plan Approval Applications
- Title V Permit Applications
- PSD / Permit Modifications
- System Testing / Balancing

Pipeline Services

HMM has demonstrated experience in virtually all aspects of the natural gas transmission pipeline industry from routine operation and maintenance related matters to design and construction. The firm has successfully completed a wide variety of projects ranging from relatively small scopes of work through major multi-state construction projects. It is this understanding and our extensive resources that enable HMM to quickly and effectively respond to clients' needs, regardless of project size or scope. Our unique geographic office locations further enable us to quickly respond to the needs of the interstate natural gas pipeline industry. Our offices are located in the vicinity of many strategic pipeline hubs. HMM is unique in the industry in its ability to provide our clients with a wide variety of services including: surveying, planning, design, construction phase services and environmental compliance. As a result of our experience, we also understand the importance of close communication throughout any project undertaken.

Project Management

- Feasibility Studies
- Schedule Control
- Project Organization & Staffing
- Alignment & Progress Meetings
- Project Status Reports
- Scope Change Management

Pipeline Engineering

- Field Engineering
- Construction Work Space
- Route Selection & Realignments
- Horizontal Directional Drilling
- Road & Highway Crossings
- Wetland & Waterbody Crossings

Pipeline Surveying

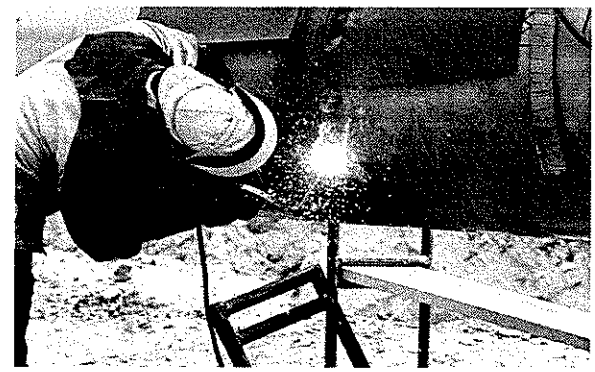
- Preliminary Survey/Alignment
- Aerial Photography & GPS
- Topographic Surveys & Profiles
- Fee Property Surveys
- Existing Conditions Surveys
- Construction Re-Stake
- Record Plan Survey

Construction Services

- Construction Management
- Construction Engineering/Survey
- Resident Observation

Environmental/Cultural Resources

- Agency Consultation & Coordination
- Field Investigations & Surveys
- Wetland Delineation
- Endangered & Threatened Species
- Cultural Resources
- Erosion & Sediment Control
- Revegetation & Maintenance
- Wetland/Water Body Construction Procedures
- Stormwater Management Plans
- SPCC & Mitigation Plans
- Air Quality Monitoring & Permitting
- Federal, State & Local Permitting
- FERC Applications & Coordination



Pipeline Drafting

- Alignment Sheets
- Topographic Maps/Aerial Photographs
- Permit Application Drawings
- Land & Condemnation Plats
- Graphics & Presentation Drawings
- Record Plans

Operation and Maintenance Services

- Pipeline Location & Staking
- Anomaly & Dent Location
- Exposed Pipe Remediation
- Surveying, Drafting, Design, Engineering, Environmental & Permitting

Hatch Mott MacDonald

Timothy M. Rice

Education
BS, Civil Engineering, West Virginia University, 1982

Years in Practice - 29

Certifications
EIT-West Virginia State Board of Registration

Natural Stream Channel Design-Levels I through IV

Experience Summary

Mr. Rice is experienced in project management, coordination and supervision for permitting, design, drafting, surveying and drilling projects. His expertise is in reclamation design; mining permits; design of acid mine drainage abatement plans; water resources studies; pre/post mining surveys; hydraulic and hydrological analysis; pre-blast surveys; slope stability analysis; geotechnical design; phase I environmental audits; storm water management analysis and design; civil site designs; and commercial and residential inspections.

Selected Project Experience

Water Resources

Stream Mitigation/Restoration Project, Confidential Client, Greene County, PA
Project Manager responsible for coordination and oversight of field and office activities associated with the mitigation of approximately 13,000 lineal feet of streams affected by longwall mining. Responsibilities included mitigation planning, mitigation plans, construction management, and augmentation plans. This project utilized shallow low-pressure grouting and minimal stream modifications necessary to improve flow characteristics and improve stream stability.

Impoundment Mitigation/Restoration Project, Confidential Client, Wetzel County, WV
Project Manager responsible for coordination and oversight of field and offices activities associated with the mitigation of an existing private impoundment affected by longwall mining. This project included dewatering of the existing impoundment, shallow low-pressure grouting within the dewatered area, and placement of a bentonite liner on the bottom of the impoundment.

Stream Restoration, J.F. Allen Company, Bowden, WV
Project Engineer responsible for WVDEP permitting associated with a stream restoration plan utilizing natural stream design techniques.

Superior Modular Site, Cabot Oil & Gas, WV
Project Engineer responsible for US Army Corps of Engineers 401 permitting, WV Public Lands permit and WVDNR Stream Enhancement plan utilizing Natural Stream Design Techniques

Decker's Creek Watershed Study, WVDEP, Monongalia and Preston County, WV
Project Manager responsible for a comprehensive study of the watershed to determine if improvements can produce a sustainable fishery. Graphic Information Systems (GIS), stream invertebrate data, water quality data, and in-stream limestone sand test sites were used to complete the investigation. The Decker's Creek Watershed has a 60 square mile drainage area impacted by both abandoned surface and abandoned deep mines causing the upper reaches of the stream to be net acidic, with elevated concentrations of iron.

Spruce Hollow AML, Frostburg, Maryland
Evaluation of existing flood problems and design recommendations for channel improvements. Project included HEC-RAS studies, open channel hydraulics and flood plain studies.

Moundsville Water Supply Study, WVDEP, Wood County, WV
Project Manager responsible for an investigative study of the well field for the City of Moundsville, situated along the Ohio River. Increasing levels of manganese contamination were deteriorating the quality of this aquifer. A site investigation study was performed to determine the location and effects of mining activities on the local groundwater aquifers. Existing mine maps, geologic information, and background data were reviewed.

Geotechnical investigations and aquifer testing were performed to determine the location, depth and extent of the potential contaminants

Blackwater River Beaver Creek Treatment Project, WVDEP, Tucker County, WV
Project Manager responsible for the rehabilitation of an existing concrete dam and installation of rotating drums and limestone slurry treatment facility on the Blackwater River

This was a cooperative project with WVDEP and WVDNR, and has been recognized by "Trout Unlimited" and "Outdoor Life". This project has successfully transformed a formally dead section of the Blackwater River into a high quality trout fishery and was recognized by the US Dept of Interior, Office of Surface Mining, as the 1999 Appalachian Region Award Winner.

Shallmar Limestone Doser, MDBOM, Garrett County, MD
Project Manager responsible for the design of an AquaFix doser treating AMD runoff from a reclaimed surface mine discharging to the Potomac River basin. Design included silo, foundation, and maintenance provisions for this water-driven doser.

Brushy Fork Waterline, WVDEP, Harrison County, WV
Project Manager for the hydrologic study of a mine impacted watershed and the design of a public waterline extension to serve the rural community. Study included documentary, field assessment and laboratory review of conditions to determine eligibility.

Permitting

Alberter Surface Mine, Hoffman Mining, Inc., Paint Township, Somerset County, PA
Project Manager responsible for PADEP permit revisions and post mining land use changes

Coal Refuse Disposal Area, Crow's Nest Synfuels, L.P., Hemfield Township, Westmoreland County, PA
Project manager responsible for the reclamation plan and associated PADEP and MSHA permit revisions

Surface Mining Permit, Laurel Aggregates, Inc., Spring Township, Fayette County, PA
Project Manager responsible for PADEP permitting of a 120-acre non-coal surface mining permit, to include modules 12, 13, 14, 19, 20, 21 and 23

Abandoned Mine Lands & Reclamation

Thomas Mine Subsidence Stabilization, WVDEP, Thomas, WV
Project Manager responsible for reclamation design and mine stabilization design. This project is now in its fourth phase. To date, approximately 120 houses and/or structures have been stabilized, and an estimated 150 will be stabilized once the project is complete. A nearby-reclaimed surface mine was directing surface water runoff into the mines causing an accelerated deterioration of the coal pillars within the mine and reducing water quality.

Jackson Mountain Mine Fire, Maryland Bureau of Mines, Allegany County, MD
Project Manager responsible for investigation and design of an abatement plan for this deep mine fire. The fire was located along the outcrop of the Pittsburgh Coal seam. The fire had been burning for several years and was progressing towards an existing county road and gas line. An investigative study was used to determine the location and progression of this fire using infrared photography and in-place electronic temperature monitoring devices. A cutoff trench was designed to stop the progression of the fire in the direction of the gas line and roadway.

MD Bureau of Mines Statewide Contract, Various Locations throughout Maryland
Project Manager of various design projects and emergency response programs. Responsibilities included directing drilling investigations, AMD studies, landslide stabilization, stream reconstruction and subsidence stabilization

WVDEP Statewide AML Program, Various Locations throughout West Virginia
Project Manager for more than 50 design projects throughout the state of West Virginia. Assignments included remediation, refuse sites, impoundments, water supply replacement, etc Projects included an OSM National Award-Winner and several Appalachian Regional Award-Winners.

Taylor Creek Impoundment, WVDEP Clay County, WV
Project Manager responsible for coal refuse pile stabilization, burning refuse extinguishment and stabilization, slope stability analysis, de-water plan and hydraulic analysis. This project included a 120-acre burning refuse pile and a 24-acre impoundment. This site involved the reclamation and extinguishment of the burning pile, dewatering of the impoundment, subsurface investigation of burning material to depths of approximately 110 feet and the design and reconstruction of approximately 3,400 feet of Taylor Creek

This project was recognized by the US Department of Interior, Office of Surface Mining, as the 2004 OSM National Award Winner and the 1999 West Virginia Mining and Reclamation Association Award Winner.

Hatch Mott MacDonald

Jeffrey L. Law

Education
B.S. Mining Engineering, 1983, West Virginia University, Morgantown WV

A.A. Mining Engineering, 1980, Potomac State College, Keyser WV

Years in Practice - 25

Experience Summary

Mr. Law has experience in project management, coordination and supervision for construction and design of various mining related projects. His expertise is in mine subsidence remediation and design; mine facility layout and design; reclamation design; mining permits; design of acid mine drainage abatement plans; pre/post mining surveys; hydraulic and hydrological analysis; pre-blast surveys; slope stability analysis; geotechnical design; storm water management analysis and design; civil site designs; and commercial and residential inspections.

Selected Project Experience

Mine Subsidence

Stream Mitigation/Restoration Project, Confidential Client, Greene County, PA, 2006-current
Field Operations Manager for the coordination and supervision of staff and contractors conducting stream mitigation for the effects of longwall mining. Mitigation uses various techniques of shallow, low pressure grouting to enhance flow characteristics. Over five miles of channel have been restored to date.

Ohio Mine Subsidence Insurance Underwriting Association, Board of Risk Insurance Management, Statewide, WV,
Performed in excess of 1300 mine subsidence investigations using visual, geotechnical, and surveying methods. Provided recommendations for the stabilization and protection of the insured's property. Served as technical liaison with ODNR, WVDEP, and OSM during all phases of construction or abatement

Fletcher-Bright Ohio, Cambridge, OH
Project manager responsible for mine subsidence stabilization design, specifications and methods, bidding process, and construction supervision for a Super Wal-Mart and plaza. Foundation problems were found during pad construction and required design, state approvals, injection of 17,000 cubic yards of grout to be completed in 45 days

Ohio Department of Natural Resources, AML-Emergency Program, Statewide, OH
Project manager for over 75 subsidence related projects ranging from single-family homes to entire neighborhoods. Responsible for design and implementation generally on a fast-track design schedule of less than one week.

West Virginia Department of Environmental Protection, AML Program, Statewide, WV
Project manager responsible for mine subsidence stabilization plans for large neighborhood in Thomas, WV. Construction costs currently exceed 10 million for the stabilization of over 150 structures and public roadways. Performed hydrological analysis to determine potential problems if mine pool became elevated due to grout injection

Rushton Mine, Pennsylvania Mines Corporation, Oceola Mills, PA
Project manager responsible for the design and implementation of pressure grouting a large stream channel using barge mounted drill rigs and injecting the stream bottom to prevent flow losses into an abandoned deep mine. Flow reduction of 90% was obtained and significant treatment cost savings were achieved.

Majestic Mine, Wayne National Forrest, Nelsonville, OH
Project manager for the design of a geosynthetic liner for 1500 feet of stream channel experiencing total loss of flow to a subsidence feature. The flow loss passed through an abandoned deep mine and the acid load acquired destroyed the receiving stream below the

mine discharge Prevention of the flow loss dramatically improved the quality of the stream. Some aspects of natural stream restoration were used

Georges Creek Restoration Project and Route 36 Subsidence Stabilization Project, MD Bureau of Mines, Ocean, MD
Project manager for the design of a synthetic liner to prevent loss of stream flow into the Pittsburgh coal seam and associated workings Coordination of work efforts with COE was required Route 36 was a State roadway located less than 30 feet above abandoned mine workings. A grout injection design was developed for MDBOM and MDDOH.

Three Sisters Resort, Norwest Consultants, Canmore, Alberta, Canada
Project engineer responsible for evaluation of 4,700 acre commercial/residential development. Evaluated critical subsidence prone areas and developed remediation protocol for various development plans. Performed first conventional grouting of steeply dipped coal seams in Alberta

University High School (NEW), Monongalia County Board Of Education, Morgantown, WV
Project manager for the site feasibility evaluation The site required stabilization of abandoned deep mines within the school facility area. A grout plan was developed and supervision of mitigation activities was provided

Various School Districts, WV and OH
Project manager for the review of potential mining or karst issues for proposed school sites. Locations included Rock Hill Schools, Jackson County Schools, Wellston Schools, Cadiz Schools of OH and South Jefferson H.S. of WV. Site selection recommendations were presented and mitigation plans were provided where required

Drury Inn and Convention Center, Drury Corporation, O'Fallon, IL
Project manager for the design and supervision of a grout stabilization plan for a seven-story hotel and conference center. Design included a geotechnical mat because of a saturated sand condition above the supporting bedrock formation.

Abandoned Mine Lands and Reclamation

Chickwan Landslide Stabilization Project, ODNR, Adena, OH
Project manager for the design and construction of a 300,000 cubic yard landslide at an abandoned coal refuse site. Design concept used a geotextile reinforced rock toe buttress because of saturated conditions on the stream floodplain located at the base of the slope. Design included numerous curtain and chimney drains to dewater the regraded material.

Whiskey Run and Beaver Creek Watershed Study, ODNR, OH
Project manager for the hydrological evaluation of two large watersheds. Developed plans and designs to prevent frequent flooding caused by mining in the watershed. HEC-RAS analysis determined areas of flow problems Plans included culvert replacement and additions, bridge replacement, and upland diversion installation to control runoff quantities

Mt. Davis Mine Drainage, Delta Mining, Somerset County, PA
Project manager responsible for design and installation of treatment system for post-mining discharges high in iron and manganese. System used a series of anoxic drains and multi-cell wetlands to reduce metals concentrations to NPDES limitations. This system replaced a system previously designed using anhydrous ammonia or caustic soda.

Blue Bell Mine Fire, ODNR, Cambridge, OH
Project manager for the extinguishment of a mine fire in an abandoned refuse pile. Extraction and quenching methods were used. Several deep mine entries were sealed using both wet and dry seal designs. The edge of the refuse pile encroached into a wetland area

Shallmar Refuse Pile and Doser Project, MDBOM, Shallmar, MD
Project manager for the design of a water-powered, lime doser to treat an AMD waste stream prior to entering the Potomac River. This 50-ton doser was designed to be water driven because of remote location and operational cost considerations. Design improvements were based on previous work performed on the Vindex, Kempton and Laurel Run facilities. The project was the 2006 Category II AML winner awarded by OSM.

Taylor Creek Impoundment, WVDEP, Clay County, WV
Project Engineer for the multi-million dollar reclamation project involving the dewatering of a 24 acre impoundment, extinguishment and regrading of over a million cubic yards of burning refuse, and the reconstruction of 3,400 feet of Taylor Creek. This project was the 2004 OSM National Award winner and is the largest reclamation project constructed in a single phase in WV.

Rohr Road/Bull Run Water Replacement Project, WVDEP, Masontown, WV
Project manager for the evaluation, design recommendations, and hydrologic study for this rural community suffering the loss of water supplies due to mining. Performed water studies, geologic profiles, hydraulic analysis, and public meetings with homeowners. Cost analysis and design recommendations were presented for WVDEP and Federal grant monies.

Trap Run Mine Drainage, WVDEP, Buckhannon, WV
Project manager for the installation of multiple bio-remediation wells to treat and monitor the effectiveness of a soy-based remediation project

Pauline Mine, ODNR, Bannock, OH
Project manager responsible for design, archeological assessment, and hydrological study. This project had historical buildings, highwall elimination, an underdrain system, and mine seals.

Ellesmere Avenue, ODNR, North Canton, OH
Project Manager and Project Engineer for this multi-phased subsidence investigation within a residential neighborhood. Designed a stabilization plan and supervised the construction

Civil Design

Vale Summit Landfill, Alleghany County Dept. of Public Works, Frostburg, MD,
Project manager for the design of a post-closure liner and cap system for an abandoned municipal landfill. The design used a 60-mil HDPE synthetic liner and required a methane gas collection system to be constructed. Performed quality control inspection during the thermal fusion and gas collection pipe installation processes

Route 250 Extension, Quicksall Associates and ODOT, Harrison County, OH
Project manager to review geotechnical concerns for a large highway project. The proposed road alignment was to pass through several areas of extensive mining. Road construction specifications were developed based upon the various deep mining or surface mining limitations. Project used multiple drill rigs and GPS survey crews. Wetland areas and prime farmland areas were also encountered.

The Fort, Kessler and Spiker, McHenry, MD
Project manager for commercial development at Deep Creek Lake. Commercial plaza included stormwater management devices, utility design, a 24 ft. diameter precast-post

tensioned sanitary reservoir, and parking lots for 12 commercial sites. Performed lot subdivision surveys, obtained all county and state permits, and provided specific lot design requirements

State Route 172, ODOT, East Canton, OH
Project manager for geotechnical evaluation and design recommendations for section of roadway damaged by mine subsidence. Developed drilling plan for evaluation of risk and extents, designed grout injection plan and "land bridge" structures for mitigation

Permitting

Various Quarries, Fairfax Stone Inc., Oakland, MD
Project manager for the permitting of several limestone quarries in MD and WV. Duties included the development of mining plans, probable hydrologic impact analysis, blasting plan review, erosion and sedimentation control, and reclamation plans.

Monongahela Resources Inc., Chartiers, PA
Project manager for the permitting and re-opening of a closed preparation plant along the Monongahela River. Permits involved a barge loading facility, preparation plant, and slope entry for access to available coal reserves Project required full modification of existing facilities to meet new regulatory requirements.

Miscellaneous

- Managed the daily operations of four drill crews including project proposals, scheduling, supplies, personnel management, safety, and regulatory compliance.
- Project lead for various tasks including initial evaluations and assessments, client relations, cost and timeline proposals, material cost estimates, pre and post construction meetings, public hearings, and state overview.
- Participated in marketing activities for national conventions, state trade shows, job fairs, and public outreach Served key design roles in nationally recognized AML projects Conducted technical presentations at state and regional conventions.

Hatch Mott MacDonald

Paul J. Paparella, PE, PP

Education
MS, Civil Engineering, New Jersey Institute of Technology, 1985

BS, Civil Engineering, New Jersey Institute of Technology, 1982

Registrations
Professional Engineer #GE31231, NJ, 1986

Professional Planner #LI05252, NJ, 1994

Professional Engineer #PE071414, PA, 2004

Professional Engineer #078305, NY, 2000

Professional Engineer #EN-027496, MO, 1995

Professional Engineer 39314, MA, 1996

Professional Engineer 13778, IA, 1996

Professional Engineer E-67296, OH, 2002

Professional Engineer C-64930, CA, 2003

Professional Engineer 12447, DE, 2003

Professional Engineer #28547, MD, 2003

Professional Engineer #038473, VA, 2003

OSHA Confined Space Entry

Years in Practice - 26

Memberships
American Society of Civil Engineers
American Water Works Association

Experience Summary

Mr. Paparella began his career as an Assistant Engineer at Hatch Mott MacDonald (HMM) in 1982. Since that time, his responsibilities have progressively increased to his current role at the management level

Mr Paparella's work has been primarily in the water supply area. He has experience in the planning, analysis, design, permitting, construction phase engineering, start-up, testing, and O&M of all types of water works facilities.

Mr. Paparella has been the Project Manager for major water system planning studies, and for the design of pump stations, transmission systems, distribution systems, storage tanks, and treatment plants. He has also performed the detailed process and site design for many water system facilities, and has designed the instrumentation and control systems for pump stations, treatment plants, and other facilities.

Mr Paparella has extensive experience in the hydraulic analysis of water systems, including distribution system network analysis and surge analysis in transmission systems

Mr. Paparella has also been involved in a number of wastewater collection system, pump station, and force main projects

Selected Project Experience

Water System Valuation, City of Newark, Essex County, NJ
Project Director and Technical Supervisor for the preparation of an inventory, condition assessment, and present value estimate of all infrastructure in the Newark Water System. The valuation included five major supply reservoirs, an 80 MGD treatment plant, over 600 miles of aqueducts and water mains, and five pump stations totaling 120 MGD capacity (2008)

Swimming River Pipeline Study, NJ American Water, Monmouth County, NJ
Project Director for an evaluation of alternatives to rehabilitate or replace a 10,000-foot long, 36-inch diameter gravity-flow main located in environmentally sensitive tidal and freshwater wetlands with multiple river crossings. Study included condition assessment, hydraulic analysis, alternative routes, and development of alternative high lift and low lift pump station concepts Technologies considered included tunneling, micro-tunneling, directional drilling, and structural lining. (2006-2007)

Coastal North Water Supply Study, NJ American Water, Monmouth and Ocean Counties, NJ
Project Director for a study to evaluate water demands and alternatives for supply for a water system presently supplying an average demand of 46 MGD to 36 communities The study forecast demands for 5, 15, and 50-year horizons. Concepts were developed and evaluated for various new sources of supply, including desalinization, regional interconnections, new reservoirs, water reuse, and optimization of existing groundwater and surface water sources. (2006-2007)

Pipeline and Pump Station Valuation, North Jersey District Water Supply Commission, Essex County, NJ
Project Director for a study to evaluate the current condition of key infrastructure associated with a major regional water supply interconnection The study including identifying necessary improvements and estimating the present value of the infrastructure. The facilities included the Virginia Street Pump Station, with a design capacity of approximately 60 MGD, and 9 miles of 48-inch and 60-inch diameter pipeline. (2006)

Middletown Transmission Main Route Evaluations, NJ American Water, Monmouth County, NJ

Project Director for the evaluation of alternative routes for the construction of a new 36-inch transmission main. Seven alternatives, ranging from 40,000 lf to 46,000 lf, were evaluated. The evaluation considered a variety of factors, including traffic impacts, environmental impacts, permitting requirements, easement requirements, and construction costs. The hydraulic evaluation of the alternatives was based on a model of the distribution system to confirm the ability of each alternative to meet the objectives. Prepared construction cost estimates and implementation schedules. (2006)

Canoe Brook Reservoir Valuation, NJ American Water, Essex County, NJ
Project Director for a study to estimate the present value of an off-stream surface water reservoir system. The system includes two intakes with 110 MGD total pumping capacity, three off-stream reservoirs with 2 9 billion gallons total capacity, three relay stations with 50 MGD total pumping capacity, and 13,000 feet of 24-inch through 48-inch diameter pipelines. (2005)

Manasquan/Oak Glen Transmission Main Route Study, NJ American Water, Monmouth County, NJ
Project Director for a study of the feasibility of constructing a dedicated pipeline from the Manasquan Reservoir to the Oak Glen water treatment plant. The study included the evaluation of 13 alternative pipeline routes, varying from about 1.5 to 3 miles, with 10 MGD design capacity. Major issues impacting route feasibility included Green Acres encumbered parklands, as well as crossing of the Manasquan River, sensitive wetlands, and a railroad. The study also addressed the feasibility of modifications to the existing reservoir inlet/outlet structure versus construction of a new dedicated outlet structure. (2005)

Emergency Interconnection Study, Elizabethtown Water Co./Trenton Water Works, Mercer and Essex Counties, NJ
Project Director for the preparation of a feasibility study and, subsequently, for the detailed design of two emergency interconnections, with booster pumping facilities, between two of the largest water systems in New Jersey. Each interconnection has 5 MGD initial and 10 MGD future capacity. Study scope included hydraulic analyses of both systems, and led to the implementation of interconnections that had been discussed conceptually for decades. Also responsible for drafting agreements between the two water utility owners for the implementation, operation, and maintenance of the interconnections. (2003)

Water Systems Vulnerability Assessments, NJ
Project Director for vulnerability assessments and emergency response plan updates for several water systems including North Jersey District Water Supply Commission, City of Elizabeth, City of Trenton, City of New Brunswick, and the East Windsor Municipal Utilities Authority. These assessments considered all critical elements of the supply, treatment, transmission, and distribution systems, including interconnections. (2002-2003)

Roselle Booster Station Surge Analysis, Elizabethtown Water Co., Union County, NJ
Project Manager for surge analysis of a 20 MGD booster station that had experienced a main break following a power failure. Prepared a report on the surge potential caused by a power failure and developed recommendations for surge control devices. (2003)

Water Distribution System Analysis and Rehabilitation, Trenton Water Works, Mercer County, NJ
Project Manager for the development of a distribution system model, including 6,500 pipes and 4,300 junctions. Developed a capital improvements program to address distribution system deficiencies found during the analysis. Managed design of projects involving rehabilitation of over 200,000 lf of water mains. (2003)

Belleville Pump Station Feasibility Study, North Jersey District Water Supply Commission (NJDSWC), Essex County, NJ
Project Director for a feasibility study for a pump station, which would increase the capacity of the existing Elizabethtown/Newark/NJDWSC interconnection. The study was undertaken in

response to an Administrative Order issued by the NJDEP during the 2002 drought emergency, with the objective of increasing the capacity for transfer of water from the Raritan Basin to the Passaic Basin. During the same drought emergency, also responsible for coordination of the testing of the Virginia Street Pump Station and development of a plan to place the station into operation to maximize transfer through the interconnection. (2002)

System Reliability and Emergency Response Study, Elizabethtown Water Co., Mercer and Essex Counties, NJ
Project Director for a comprehensive evaluation of the reliability of the distribution system of an investor-owned water utility serving a population of approximately one million people. Study scope included zone-by-zone analysis of demands, supply, pumping, and storage capacity, and review of all wholesale and emergency interconnections. Recommendations included various interconnection projects, including major new emergency interconnections with Trenton and Newark (2002)

Water System Emergency Response Plan, Freehold Township, Monmouth County, NJ
Project Manager for the preparation of and updates to the Emergency Response Plan for a municipal water system including 10 wells, three treatment plants, and five tanks.

Open Finished Water Reservoir Study, Passaic Valley Water Commission, Passaic County, NJ
Project Manager for the evaluation of alternatives and development of a recommended plan to eliminate uncovered storage of finished water at three existing reservoirs totaling 250 MG. The recommended plan included a total of five new tanks (2002)

Commonwealth System Demand and Distribution System Analysis, NJ-American Water Co., Morris, Somerset, and Passaic Counties, NJ
Project Director for studies involving demand analyses, demand forecasting, distribution system modeling and analyses, and development of system improvements plans for the Commonwealth system, which supplies 34 MGD to 72,000 customers. The project also included the water company's Little Falls, Frenchtown, Washington- Oxford, and Belvidere systems.

48-inch Main Valuation Study, Bayonne Municipal Utilities Authority, Hudson County, NJ
Project Manager for field inspection, inventory, and evaluation of the condition of the existing 48-inch transmission main system. The system includes 12 miles of 30-inch diameter through 48-inch diameter transmission mains delivering an average of 10.5 MGD from the North Jersey District Water Supply Commission to the Authority. The system includes several large interconnections with the Passaic Valley Water Commission, Kearny, and Jersey City. The project included test pits and detailed field inspection, including pipe thickness analysis, coating evaluation, and corrosion. The study included the development of present worth estimates and rehabilitation recommendations (2001)

Open Finished Water Reservoir Study, City of Newark, Essex County, NJ
Project Manager for the evaluation of alternatives and development of a recommended plan to eliminate uncovered storage of finished water at an existing 680 MG reservoir. The recommended plan included four new tanks. (2000)

Open Finished Water Reservoir Study, City of Trenton, Mercer County, NJ
Project Manager for the evaluation of alternatives and development of a recommended plan to eliminate uncovered storage of finished water at an existing 100 MG reservoir. The study developed alternative solutions included tanks, a floating cover, and a rigid cover (2000)

Water System Integration Study, Essex County Utilities Authority, Cedar Grove, NJ
The project consisted of an evaluation of the condition and capacity of a groundwater supply system serving a County hospital and jail. Also developed a plan to improve the system and to integrate it with an adjacent municipal water system. (1999)

WaterSource Project, NJ-American Water Co. Northern Division, Essex and Morris Counties, NJ
Surge analysis for a 25 MGD water pumping and transmission system.

Morris County Connection, Passaic Valley Water Commission, Passaic County, NJ
Surge analysis for a 25 MGD water transmission and pumping system, including approximately 74,000 feet of 36- inch transmission main

Water System Rehabilitation Study, City of Newark, Essex County, NJ
Project Engineer for a comprehensive study of the 100 MGD transmission system in order to develop a program to rehabilitate and upgrade the system to provide a continued reliable operation well into the future. The study involved computer modeling of the transmission system, and included a detailed evaluation of the condition of the existing storage, interconnection, and chlorination facilities (1987)

Water Accountability Study, Caldwell Borough, Essex County, NJ
Water accountability study for a 1 MGD water distribution system

Water System Evaluation, Department of the Navy Northern Division, Lakehurst, NJ
Evaluation of the water distribution system at the Naval Air Engineering Center

Water Accountability Study, Verona Township, Essex County, NJ
Water accountability study for a 2 MGD water distribution system.

Water Accountability Study, Monmouth Consolidated Water Company, Monmouth County, NJ
Water accountability study for a 30 MGD water distribution system.

Water System Study, South Orange Township, Essex County, NJ
Comprehensive hydraulic analysis of the entire water distribution system. The study dealt primarily with evaluation of fire protection, undersized mains, and dead end mains. The study included extensive field flow testing

Water System Modeling, NJ-American Water Co. Western Division, Camden County, NJ
Modeling of three distribution systems, including tanks, pumps, and pressure regulators. The models used the University of Kentucky Hardy-Cross program and included a total of 2,700 pipes. Development of a long-range planning study for integration of the three systems, meeting future demands, and the replacement of numerous well stations with supply from a major regional surface water system.

Water System Modeling, NJ-American Water Co. Northern Division, Essex County, NJ
Modeling of water distribution system, analysis of the existing system, and development of recommendations for meeting future demands and for transmitting 12 MGD of supply from a new regional source to the portions of the system where additional supply was needed.

System Analysis, K. Hovnanian Companies, Franklin, NJ
Hydraulic analysis and Basis of Design report for a 2 MGD water booster pump station and a 5 MGD storage tank.

Coastal North Water Supply Study, NJ American Water, Monmouth and Ocean Counties, NJ
Project Director for a study to evaluate water demands and alternatives for supply for a water system presently supplying an average demand of 46 MGD to 36 communities. The study forecast demands for 5, 15, and 50-year horizons. Concepts were developed and evaluated for various new sources of supply, including desalinization, regional interconnections, new reservoirs, water reuse, and optimization of existing groundwater and surface water sources (2006-2007)

Water System Master Plan, Confidential Pharmaceutical Manufacturer, Confidential Site, NJ
Project Manager for the preparation of a long-term plan to provide potable, non-potable, and fire protection water supply, treatment, pumping, distribution, and storage systems for a research and development campus. (2006)

System Planning Study, Mount Holly Water Company, Burlington and Ocean Counties, NJ
Project Director for a study involving supply and demand analyses, storage analyses, and development of integration concepts for four water systems. (2003)

Distribution System Master Plan, Passaic Valley Water Commission, Passaic County, NJ
Project Manager for a comprehensive master plan of an 85 MGD water system. The scope included demand analysis, forecasting and evaluation of all elements of the distribution infrastructure, and preparation of a recommended capital improvements program. Included was the development of a transmission system emergency response plan. (2002)

Water System Master Plan, City of Newark, Essex County, NJ
Project Manager for a comprehensive master plan of the water supply, transmission, and distribution system. Study scope included evaluation of all of the City's water system interconnections, and hydraulic modeling of the distribution system. The project also included evaluation of alternatives and development of a recommended plan to eliminate uncovered storage of finished water at an existing 680 MG reservoir. (2000)

Morris County Municipal Utilities Authority Interconnection Study, NJ-American Water Company, Morris County, NJ
Project Manager for a study involving the evaluation of alternatives and development of design concepts to implement an interconnection between the Authority and the water company's Chester and Mount Olive area systems. (1998)

Planning Study for Water Systems, NJ-American Water Company, Mount Olive, NJ
Project Manager for a study involving supply and demand analyses, storage and distribution analyses, interconnections with adjacent systems, and development of a long-range plan to integrate several small systems. (1998)

Water System Planning and Improvements, Freehold Township, Monmouth County, NJ
Updated the Township's Water System Master Plan, which included demand projections, computer Hardy-Cross analyses, and development of recommendations to provide sufficient supply, storage, and transmission facilities to serve growth in the system. Review of the design of water systems for a number of proposed developments in the Township. (1997)

Water Distribution System Planning Study, Ridgewood Village, Bergen County, NJ
Preparation of a comprehensive planning study addressing supply, storage, pumping, and distribution for a municipal water system supplying an average of 7 MGD to four towns. (1997)

Water System Planning Study, Franklin Township Planning Board, Somerset County, NJ
Preparation of a comprehensive planning study addressing demand forecasts, supply alternatives, and facilities planning for the developing southern half of the Township. (1996)

Water Supply Plan, Freehold Township, Monmouth County, NJ
Planning, research, aquifer testing, technical analysis, and report preparation for a comprehensive alternative water supply plan and groundwater diversion rights applications.

Water System Improvements Program, Freehold Township, Monmouth County, NJ
Feasibility studies, computer modeling, demand projections, diversion rights applications, and preliminary Basis of Design reports for a water system improvement program including wells, treatment plant expansion, and transmission mains.

Water Master Plan, City of Orange, Essex County, NJ
Hydraulic analysis and flow testing as part of a comprehensive water supply and distribution system master plan.

Water Master Plan, Freehold Township, Monmouth County, NJ
Hydraulic analysis of a 2 MGD water distribution system as part of a comprehensive water system master plan.

Water Quality Evaluation, Verona Township, Essex County, NJ
Comprehensive water quality and hydraulic evaluation for a 2 MGD water distribution system

Water System Study, City of New Brunswick, Middlesex County, NJ
Comprehensive study of the City's water supply, transmission, treatment, pumping, distribution, and storage systems. Preparation of a 5-year Master Plan for rehabilitation and improvements to the system.

Water System Study, City of Orange, Essex County, NJ
Comprehensive study of the supply, transmission, treatment, and distribution systems. Field tests and computer modeling of the transmission and distribution systems.

Water Distribution System Study, Verona Township, Essex County, NJ
Computer Hardy-Cross analyses, water main flow testing, water quality analyses, and development of recommendations to improve the system to eliminate hydraulic deficiencies and to reduce water quality problems. (1984)

Westwood Booster Station, United Water, Bergen County, NJ
Project Manager for the study, design, and construction phases of a new 21 MGD underground water booster pumping station. The project includes four vertical turbine can-style pumps, rated at 7 MGD each, with 350 HP motors and variable frequency drives. (2008-present)

Ramapo Pump Station Intake Evaluation, North Jersey District Water Supply Commission, Pompton Lakes, NJ
Performed technical review and analyses of an operational problem at a 150 MGD raw water pump station resulting from reduced water levels at the pump station intake. Developed recommendations to mitigate the problem. (2008)

Short Hills Station Improvements Study, NJ American Water, Springfield, NJ
Project Director for an evaluation of the condition and capacity of an existing water pumping station. The station includes two high lift pumps and three booster pumps with a total capacity of approximately 5 MGD. The study resulted in recommendations for replacements of pumps, electrical service, and motor controls, and upgrades of various appurtenant facilities, including replacement of a gas chlorine system with a sodium hypochlorite system. (2007)

Cleveland Water Department, Fairmount Pump Station Rehabilitation, Cuyahuga County, OH
Provided technical advice and design review for pump and piping systems and hydraulic analyses for rehabilitation of a pump station. The station included seven high lift, horizontal centrifugal, potable water pumps with a combined capacity of 130 MGD and motors up to 1,750 HP. Improvements included pump analysis and rehabilitation, new pumps, and replacement of valves up to 42-inch diameter. (2006-2007)

Berry Street Pump Station and Interconnection, Franklin Township, Somerset County, NJ
Project Manager for the planning and design of a 3.0 MGD water booster pumping station utilizing horizontal split case pumps and variable speed drives. Project includes 16-inch water main extensions and a wholesale water supply interconnection with an adjacent municipal water system. (2006-2007)

Shark River Pump Station, New Jersey American Water, Neptune, NJ
Project Manager and lead engineer for the evaluation of a 12 MGD raw water intake and pump station. The study included an analysis of sump hydraulics, alternative types of pumps, and the electrical system. The study also included the development of design concepts to increase capacity to 18 MGD. Project Director for the subsequent design phase and construction support services for the recommended improvements. Improvements included new vertical turbine pumps, traveling screen, motor control center including variable speed drives, valve replacement, and appurtenant equipment. (2005-2007)

Woodbridge and Potters Booster Station Improvements, New Jersey American Water, Middlesex County, NJ
Project Director for the study, design, and construction administration of improvements to two booster stations, each with capacities of approximately 40 to 50 MGD. Work included an assessment of pump and foundation failures and design of various mechanical, electrical, and structural upgrades. (2005-2007)

Thompson Avenue Booster Station, New Jersey American Water, Bridgewater, NJ
Project Director for the feasibility study and alternatives analysis to upgrade an existing 6 MGD booster station to 18 MGD. The recommended design concept included vertical turbine can-style booster pumps with variable speed drives and dual standby generators in a new building. (2006)

Franklin Park Booster Station, Franklin Township, Somerset County, NJ
Project Manager for the planning, design, and construction engineering for a 3.5 MGD water booster pumping station utilizing horizontal split case pumps. (1999-2002)

Scotts Corner Booster Station, New Jersey American Water, South Brunswick, NJ
Project Manager for the design and construction administration of an 8.4 MGD interconnection booster station with rechlorination facilities and standby generator. (1998-1999)

King George Booster Station, Elizabethtown Water Co., Green Brook, NJ
Project Manager for design, permitting, and construction administration for a new 4 MGD water booster station with vertical turbine pumps and standby power. (1996-1998)

Talmadge Road Booster Station, Elizabethtown Water Co., Edison, NJ
Project Manager for design, permitting, and construction administration for a new 14 MGD booster station to replace the existing station. Station includes horizontal centrifugal pumps, standby power, and a sodium hypochlorite system (1996-1998)

Route 518 Booster Station, Franklin Township, Somerset County, NJ
Project Manager for the design of a 0.3 MGD water booster pump station, utilizing end-suction centrifugal pumps in a prefabricated underground station. Project also included 9,000 feet of 10-inch water mains. (1992)

Pumping System Evaluation, City of Rahway, Union County, NJ
Study of a 10 MGD low and high lift pumping system, including evaluation of demands, hydraulics, energy efficiency, and mechanical condition of existing equipment.

Source of Supply Project, MO-American Water Co. St. Charles District, St. Charles County, MO
Design and construction phase services for a 30 MGD booster pumping station, including hydraulic analyses, permitting, instrumentation, and telemetry design.

Morris County Connection Pump Station, Passaic Valley Water Commission, Morris County, NJ
Preliminary and final design for a 25 MGD pumping station, including four 1,000 HP vertical turbine pumps

Pump Station Rehabilitation, City of New Brunswick, Middlesex County, NJ
Design and construction phase services for rehabilitation of a 20 MGD high lift pumping system

Fire Pump Station, Bell Communications Research, Chester, NJ
Design of fire pump station

Emergency Pump Station, City of New Brunswick, Middlesex County, NJ
Planning, hydraulic analysis, and preliminary design of emergency high lift pumping station

Water Pumping Stations, City of New Brunswick, Middlesex County, NJ
Planning, hydraulic analysis, energy analysis, design, and construction phase services for the rehabilitation, expansion, and automation of two 16 MGD raw water pumping stations.

Pump Station Improvements, City of East Orange, Essex County, NJ
Design of improvements to a 14 MGD pumping station, which included the installation of two new pumps, interior and site piping and valves, and modifications to a chlorination system.

Wayne Pump Station, City of Newark, Essex County, NJ
Design and construction administration for a 25 MGD water booster pumping station including 3 horizontal pumps totaling 1,300 HP, computer Hardy-Cross analyses, pump selection, site, mechanical, and
Instrumentation/Control design, preparation of plans and specifications, and coordination of structural, architectural, electrical, and heating and ventilation designs

Diamond Hill Booster Station, NJ-American Water Co., Berkeley Heights, NJ
Design and construction administration of improvements to the existing 12 MGD station, including new generator, electrical system, instrumentation/Control/SCADA system, and chemical feed systems Prepared the site plan application and provided Planning Board testimony

Chatham Pump Station, NJ-American Water Co., Morris County, NJ
Design of a 12 MGD pump station including new building, variable speed pumps, and SCADA system. Preparation of site plan application The project also included extensive wetlands permitting.

Water Distribution System Improvements, NJ American Water, Summit, NJ
Project Manager for the design and construction phases for the rehabilitation and replacement of a water distribution main The project includes 33,000 feet of cleaning and cement lining and 5,000 feet of water main replacements (2008)

Water Transmission Main Across New York Harbor, New York Economic Development Corporation and the New York City Department of Environmental Protection, Brooklyn and Staten Island, NY
Project Manager for the study and design of a new 72-inch diameter pipeline to be constructed a distance of 1 7 miles across the New York Harbor Work included development of design concepts and a comprehensive evaluation of alternative methods to construct the sub-aqueous pipeline, including dredged trench and tunneling methods. Final design, incorporating a 12-foot diameter sub-aqueous, soft ground tunnel, is approximately 70% complete The project also includes approximately 4,000 feet of 48-inch through 72-inch diameter water mains on land. (2006-2007)

Water Transmission Main Relocations, Route 46/Route 3, Passaic County, NJ
Project Manager for the development of design concepts to relocate major water transmission mains in connection with a highway improvement project. Project was performed cooperatively for three of the State's largest water systems, including the City of Newark, Passaic Valley Water Commission, and New Jersey American Water Conceptual plans, construction sequencing, and

cost estimates were developed for relocation of pipelines up to 60-inch diameter, multiple interconnections between systems, and a booster pumping station. (2003-2004)

Eastern Transmission Main Reinforcements Phase II, Elizabethtown Water Co., Middlesex County, NJ
Project Manager for alternative studies, final design, and construction administration of approximately 9,000 feet of 72-inch transmission main. This segment of the pipeline crosses a river, a historic canal, a State Park, and contaminated sites via a 10-foot diameter rock tunnel (2003-2004)

Eastern Transmission Main Reinforcements Phase I, Elizabethtown Water Co., Somerset County, NJ
Project Manager for the final design and construction administration of approximately 15,800 feet of 72-inch transmission mains located in both commercial areas and densely developed residential areas. (2002-2003)

Eastern Transmission Main Reinforcements, Elizabethtown Water Co., Somerset and Middlesex Counties, NJ
Project Manager for an alignment study for approximately 40,000 lf of 72-inch transmission main intended to be implemented in several phases. Study considered hydraulics, costs, environmental and community impacts, scheduling, and other factors. (2001)

Water and Sewer Main Replacement, Philadelphia Water Department, Philadelphia, PA
Project manager and design supervision for several water and sewer main replacement projects performed under a multi-year term contract.

Surge Tanks, Washington Suburban Sanitary Commission, Montgomery County, MD
Project Director for the design and construction support services for a project to control pressure surges in the transmission system of a water utility serving over 1 million people. The design includes two 38-foot diameter hydro-pneumatic surge suppression tanks with a piping, valves, and control systems connected to the main discharge line at the 200 MGD Potomac Water Treatment Plant.

Water Transmission Main Improvements, Verona Township, Essex County, NJ
A series of projects including water main extensions and cleaning and cement mortar lining of 6-inch through 12- inch diameter water mains. Design, construction administration, and construction inspection for eight individual construction projects

Commercial Avenue Water Main Extension, City of New Brunswick, Middlesex County, NJ
Survey, design, permit applications, and construction administration for a 3,000-foot, 12-inch diameter ductile iron water main.

Jersey Avenue to Easton Avenue Water Transmission Main, City of New Brunswick, Middlesex County, NJ
Survey, design, and permit applications for a 6,000-foot, 16-inch diameter ductile iron water transmission main.

Colony House Water Main Extension, City of New Brunswick, Middlesex County, NJ
Survey, design, and permit applications for 1,000-foot, 8-inch diameter ductile iron water main.

Freehold Township, Water Main Extensions (Contracts 53, 54, and 55), Monmouth County, NJ
Survey, design, and permit applications for 15,000-feet of 12-inch and 16-inch water mains

WaterSource Project Transmission Mains, NJ-American Water Co., Essex and Morris Counties, NJ
Route analysis, design, plans and specifications, permit applications, and construction

administration for 20-inch through 36-inch diameter water transmission mains, totaling approximately 25 miles, and several automated interconnection stations

Franklin Park Water Transmission Main, Franklin Township, Somerset County, NJ
Survey, design, permit application, and construction administration services for a 10-mile, 12-inch through 42-inch diameter water transmission main, including a meter chamber and a control valve chamber

Stone Hill Road Water Main Extension, Freehold Township, Monmouth County, NJ
Design and permit applications for a 4,000-foot, 12-inch diameter water main extension

Elton's Corner Water and Sewer Extensions, Freehold Township, Monmouth County, NJ
Design of a 5,400-foot, 16-inch diameter water main extension and a 6-inch diameter sanitary force main

East Freehold Water Main Extension, Freehold Township, Monmouth County, NJ
Design of 14,000 feet of water distribution main extensions

Special Pipeline Crossings, NJ-American Water Co., Monmouth County, NJ
Design of 12 major highway, railroad, and waterway crossings for 16-inch and 20-inch water transmission mains including a 600 lf bridge attachment at Deal Lake and 120 feet of pile-supported crossing at the Shark River Projects also involved extensive NJDEP and US Army Corps of Engineering permitting processes

Emergency Interconnection Design, Elizabethtown Water Co. and Trenton Water Works, Mercer County, NJ
Project Director for the design of two emergency interconnections, with booster pumping facilities, between two of the largest water systems in New Jersey Each interconnection has 5 MGD initial and 10 MGD future capacity (2003-2004)

Water Transmission System Improvements, City of Newark, Essex County, NJ
Design and construction administration of the rehabilitation of key portions of the City's 100 MGD water transmission system, including the Belleville Reservoir Complex, Cedar Grove Reservoir Complex, Valley Road Chlorination Station, and Pequannock Aqueducts Computer Hardy-Cross analyses of the City's water system, design of a buried 200,000 gallon tank and valve chamber, replacement of large buried piping and valves, and cleaning and lining of transmission mains The design work also included rehabilitation and automation of the chlorination station treating 60 MGD, and rehabilitation of structures and facilities associated with a 670 MG reservoir

Tri-County Water Supply Project, NJ-American Water Co., Burlington and Camden Counties, NJ
Project Manager for planning, hydraulic analyses, and detailed design of numerous interconnections from a new regional pipeline to existing distribution systems

Glen Avenue Tank and Booster Pump Station, Ridgewood Village, Midland Park, NJ
Project Manager for the design and construction administration for the demolition of an existing tank, and replacement with a new dual compartment standpipe with a ground-level section containing 580,000 gallons and an elevated section containing 500,000 gallons. The project also included an underground booster pumping station and water main extensions

Neptune Tank and Booster Station, NJ-American Water Co., Monmouth County, NJ
Preliminary and final design of a 2 MG ground-level storage tank and a 3 MGD pumping station. Preparation of permit and site plan applications and testimony at Planning Board hearing

Water Storage Facility, Elizabethtown Water Co., Princeton, NJ
Evaluation of alternatives and preparation of preliminary design for an 11 to 19 MG water storage

tank and a booster pumping station. Preparation of a Basis of Design report. Preparation of conceptual, preliminary, and final site plan submittals. Provided testimony at Planning Board hearings.

Holding Tank, Garden State Water Co., Monmouth County, NJ
Design of a 50,000 gallon backwash holding tank.

Brandon Farms Water Storage Tank, K. Hovnanian Companies, Hopewell, NJ
Planning, design, and construction phase services for a 600,000 gallon elevated water storage tank. Performed the hydraulic analysis of the distribution system to optimize tank design parameters. Preparation of site plan applications. Evaluation of alternative sites and design concepts. Final design and construction administration. The project served to provide additional water to augment the potable water supply and as a source of water for fire protection.

Middle Road Tank and Booster Station, IA-American Water Co., Bettendorf, IA
Hydraulic analysis and design for a 1.25 MG underground prestressed concrete water storage tank.

Canoe Brook Water Treatment Plant Residuals Evaluation, NJ American Water, Essex County, NJ
Project Manager for a study to assess quantity and quality of water treatment plant residuals discharged over a 20-year period to a holding basin, and evaluation of alternatives for ultimate disposal of the residuals. (2007)

New York Economic Development Corporation and the New York City Department of Environmental Protection, Water Transmission Main Re-Chlorination Station, Brooklyn and Staten Island, NY
Project Manager for the design of a new re-chlorination station, as part of a larger project involving a new 72-inch diameter pipeline to be constructed a distance of 1.7 miles across the New York Harbor. The station is designed to treat a maximum flow of 150 MGD utilizing sodium hypochlorite. The facilities include flow metering, bulk storage tanks, booster pumps, vacuum eductor chemical feeders, automated controls, and standby power. The equipment is housed primarily in an underground structure, with an above-grade building for the electrical and control systems. (2006-2007)

Water System Preliminary Design, Confidential Pharmaceutical Manufacturer, Confidential Site, NJ
Project Director for the conceptual and schematic design phases of water supply, treatment, pumping, distribution, and storage facilities for a research and development campus. Facilities include wells, a surface water intake, potable and non-potable treatment processes including membrane filtration and aeration, high lift pumps, booster pumps, fire pumps, reinforced concrete clearwells, and bolted steel storage tanks. (2006-2007)

Canoe Brook Water Treatment Plant Alum Tank Replacement, New Jersey American Water, Essex County, NJ
Project Manager for a condition assessment, alternatives analysis, design, and construction of the rehabilitation of an 11,000 gallon steel chemical storage tank. (2005-2006)

Membrane Filtration Plant, City of New Brunswick, Middlesex County, NJ
Project Director for the design of a new 8 MGD membrane filtration plant at an existing 18 MGD surface water treatment facility. The project also included a new 24 MGD high lift pump station, new electrical service and distribution systems for the entire plant, and standby power for the entire plant. (2003-2005)

Mansfield Water Supply Facilities, New Jersey American Water, Burlington County, NJ
Project Manager for the planning, design, permitting, and construction administration of a new groundwater supply facility, initially providing 4 MGD capacity with four wells, a treatment plant

for iron and manganese removal, a 2 MG water storage tank, and a residuals storage and dewatering system. Subsequently served as Project Director for a 3 MGD expansion of the facility (1995-1996; 2003-2004)

Mansfield Farms Water System, K. Hovnanian Companies, Mansfield, NJ
Preparation of the preliminary design and basis of design report for a water supply, storage, distribution, and treatment system. The system includes two production wells, a 1 MGD iron removal plant, and an elevated storage tank. Design, plans, and specifications for the drilling of test/production wells, observation wells, and a pumping test program. Construction management and supervision of pumping test. Preparation of diversion rights application

Canal Road Water Treatment Plant Expansion, Elizabethtown Water Co., Somerset County, NJ
Project Manager, serving as Owner's Representative, for the review and evaluation of design/build proposals for a 40 MGD expansion of an existing 40 MGD surface water treatment plant. After design/build bids were rejected, continued as Project Manager for study, design, and construction administration of alternative improvements, implemented under a conventional design/bid/build method, for a 20 MGD expansion of the plant (2000-2001).

Jackson Mill Road Water Treatment Plant Expansion, Freehold Township, Monmouth County, NJ
Project Manager for the design and construction phase services for the wells and chemical feed facilities for a 2.4 MGD expansion to an existing treatment plant. This included the process and mechanical design of the lime, potassium permanganate, polymer, sodium hypochlorite, and fluoride chemical feed systems.

Water Filtration System, City of New Brunswick, Middlesex County, NJ
Design and construction management of the rehabilitation and automation of a 16 MGD gravity filtration system.

Water System Improvements, City of New Brunswick, Middlesex County, NJ
Design of several projects, including the rehabilitation and automation of the 12 MGD gravity filter and 6 MGD pressure filter piping and control systems, rehabilitation, expansion, and automation of two 16 MGD raw water pumping stations, rehabilitation of a water storage tank, and rehabilitation of a 20 MGD high lift pumping system. Provided construction administration and shop drawing review.

Strathmere Well Station, NJ-American Water Co., Linwood, NJ
Design of a triple-cased 800 foot deep well with submersible pump. Developed pumping test plan. Design of chemical feed equipment, booster pumping system, and instrumentation/control. Prepared plans, specifications, design report, and permit applications. Provided construction phase services.

Wells 11, 12, and 13, Freehold Township, Monmouth County, NJ
Design, plans, and specifications for three new production wells, one observation well, redevelopment of an existing well, and modification of an existing well station. Preparation of pumping test plans, diversion rights applications, and supporting technical documentation. Construction phase services for wells and supervision of pumping tests. Design and construction phase services of well stations and water treatment plant expansion and improvements.

Well Pump Replacement, City of East Orange, Essex County, NJ
Design and construction phase services of well pump replacement project

Carr Well Field Improvements, Ridgewood Village, Bergen County, NJ
Design of rehabilitation and upgrades to an existing well field, including retrofitting of five wells and modification of the well field's instrumentation and control system

Sewer System Comprehensive Planning Study, New Jersey American Water, Lakewood, NJ
Principle-in-Charge for the development of a comprehensive planning study to identify short-term and long-term capital improvements for a 3 MGD sewer system serving a population of 30,000. The work included customer and demand projection, GPS field survey, GIS database development, assessment and computer modeling analysis of the sewer system, and alternative analysis and capital improvements plan recommendations. (2005)

Water Allocation Permit Modification, NJ American Water, Somerset County, NJ
Project Manager for the preparation of an application to the NJ Department of Environmental Protection for an increase in permitted water allocation from the Raritan and Millstone Rivers. Services included preparation of an engineering report describing the existing and proposed diversions, and presenting demand analyses and demand projections justifying the need for more allocation. The report also included various other technical data and information required under New Jersey's water allocation regulations. The application was approved, granting the Water Company rights to an average diversion rate of 163 MGD, one of the largest permitted diversions in New Jersey. (2001)

Water Distribution System Hydraulic Analysis, Long Island American Water, Nassau County, NY
Project Manager for the hydraulic analysis of a water distribution system supplying an average of 30 MGD to 52,000 customers. The project included development and calibration of a model containing 244 miles of water mains from 6-inch through 24-inch diameter, and use of the model to identify system deficiencies and develop an improvements plan. (2001)

Perth Amboy Distribution System Planning Study, Utility Service Affiliates, Middlesex County, NJ
Project Manager for the comprehensive hydraulic analysis of 100-year old distribution system supplying an average of 5 MGD to the City. The study included hydraulic modeling with a major emphasis on improving fire flows and pressures. A comprehensive plan was developed to re-configure existing pressure zone boundaries, add elevated storage tanks, and upgrade and expand an existing booster pumping station. (2000)

Hydraulic Analysis, District of Columbia Water and Sewer Authority, Washington, DC
Supervision and review of various hydraulic analysis assignments as part of a water distribution system program management contract.

Water Supply Feasibility Study, Nutley Township, Essex County, NJ
Feasibility study and hydraulic evaluation of proposed implementation of a new bulk water supply for a 3 MGD distribution system.

Sanitary Force Main, New Castle County, New Castle County, DE
Project Manager for design and permitting of approximately 4,300 lf of 42-inch diameter PCCP force main as part of a project to increase system capacity by replacement of an existing pump station. (2005)

Hopewell/Trenton Sewer Project, City of Trenton, Mercer County, NJ
Project Manager for planning, design, and permitting for a sewer system improvement project to provide wastewater treatment capacity to a portion of Hopewell Township. The project included approximately 20,000 feet of parallel 8-inch and 14-inch force mains. (1997-1998)

Wastewater System Evaluation, Department of the Navy Northern Division, Lakehurst, NJ
Evaluation of sewage pumping systems at the Naval Air Engineering Center.

Wastewater Pump Station Rehabilitation, Scotch Plains Township, Union County, NJ
Project Manager for planning, design, and construction administration for rehabilitation and upgrade of five municipal wastewater pumping stations

Expert Testimony

Neptune Township Planning Board
Berkeley Heights Planning Board
Bernardsville Borough Planning Board
Chatham Township Zoning Board
Midland Park Zoning Board
New Jersey BPU/Office of Administrative Law
Green Brook Township Planning Board
South Brunswick Township Planning Board

Presentations

"Using a Workshop Approach to Evaluate Construction Methodology," presented at the Distribution Systems Symposium of the American Water Works Association, New Jersey Section, 2007

"Truth and Consequences - Getting the Most for Your Risk Reduction Dollars," presented to the American Water Works Association, Chesapeake Section, 2003

"Alternatives for Eliminating Uncovered Storage of Finished Water in Distribution Systems," presented to the American Water Works Association, New Jersey Section, 2001

"Pumping System Hydraulics and Surge Control," presented to the American Water Works Association, New Jersey Section, 1999

"Permits, Projects, and Politics of Water Distribution Systems," presented to the American Water Works Association, New Jersey Section, 1990

"Water Distribution System Design," presented to the New Jersey Society of Municipal Engineers, 1988, 1989

Education
BS, Civil Engineering, Lehigh University, 1988

Registrations
Professional Engineer #GE37431, NJ, 1993

Professional Engineer #C-64939, CA, 2003

Professional Engineer #28215, MD, 2003

OSHA Hazardous Waste Site Operations, 2003

Years in Practice - 20

Memberships
American Water Works Association

Experience Summary

Mr. Altland joined Hatch Mott MacDonald's (HMM) Water Division in 1988. Since then, he has been involved in various water supply and distribution projects such as transmission mains, pump stations, and master plan studies. He has been involved in all project stages from design to construction.

As part of the design and study of pumping stations and distribution systems, Mr. Altland has developed expertise in the use of Steady-state computer analysis and the Surge transient analysis computer model. Typical surge analyses have included power failures at booster stations that pump to gradients with elevation differences of 800 to 1,000 feet. Mr. Altland is also familiar with other types of surge transients, such as valve closure, and has applied his experience with surge and pressure transients to several projects. He has been extensively involved in the preparation of a comprehensive computer model for the New Jersey-American Water Company, which involved modeling the distribution system and preparing recommendations for improvements to meet anticipated future supply and demand conditions.

Mr. Altland has also been involved in the detailed design and permitting and provided construction phase engineering for many pumping stations with capacities up to 25 MGD. His responsibilities have included analysis and engineering for surge suppression systems.

Selected Project Experience

Roselle Booster Station Surge Analysis, New Jersey American Water, Union County, NJ
Project Manager for the hydraulic analysis of surges at this 20 MGD booster station that had experienced a main break following a power failure. Prepared a report on the surge potential caused by a power failure and developed recommmendations for surge control devices.

West Jersey Water System Planning Study, NJ-American Water Co., Mount Olive, NJ
Project Engineer for a detailed system analysis, including supply, storage, and demand analysis, Cybernet hydraulic model analysis, and development of a long-term recommended improvements program.

Brookwood-Musconetcong Water System Planning Study, NJ-American Water Co., Byram, NJ
Project Engineer for a detailed system analysis, including supply, storage, and demand analysis, Cybernet hydraulic model analysis, and development of a long-term recommended improvements program.

Mount Olive Regionalization Study, NJ-American Water Co., Morris County, NJ
Project Engineer for a regional integration plan of several water systems spread throughout the Township.

St. Joseph 2000 Source of Supply Surge Analysis, MO-American Water Co., St. Joseph, MO
Performed a surge analysis on both the raw and finished water mains of a new source of supply. The raw water system analysis included 30 MGD pumping capacity and 34,500 lf of 36-inch diameter raw water mains. The finished water analysis included 30 MGD pumping capacity and approximately 20,000 feet of 36-inch diameter finished water mains.

Society Hill at Somerset, K. Hovnanian Companies, Somerset County, NJ
Performed a series of fire flow tests for the development as part of an overall analysis of the water system.

Transient Analysis of WaterSource Project, NJ-American Water Co., Essex and Morris Counties, NJ
Created a model of the WaterSource project water mains consisting of approximately 18 miles of 24-inch, 30-inch, and 36-inch pipelines and three pump stations. The model was used to perform

transient (surge) analysis for different operating scenarios, including opening and closing in-line transmission main valves and pump station startup and shutdown. The analyses included identification of potential problems due to pressure transients in the WaterSource project system and modeling surge control devices to reduce the effects of the transient

Tri-County Water Supply Project Surge Analysis, NJ-American Water Co., Burlington, Camden and Gloucester Counties, NJ
Created a transient analysis computer model of the Tri-County pipeline and pumping stations consisting of approximately 33 miles of 16-inch through 54-inch pipeline and a 40 MGD pumping station. The model was used to evaluate the effects of pressure surges created by a power failure at the pumping station. Surge control devices to limit the effects of the surges were evaluated, and a set of recommendations for surge control were developed

Distribution System Modeling, NJ-American Water Co., Burlington and Camden Counties, NJ
Prepared and calibrated computer models for hydraulic analysis of the Haddon, Camden, and Burlington systems. The computer models included approximately 2,500 pipes in sizes ranging from 6-inch to 54-inch diameters and 42 tanks and pumping stations. Subsequent modeling involved a comprehensive study of future supply and demand conditions and the preparation of a plan of recommended improvements to address deficiencies in the system under future conditions.

Commonwealth System Demand and Distribution System Analysis, NJ-American Water Co., Morris and Somerset Counties, NJ
Project Manager for several projects. Most recently responsible for development of current and projected peak daily demands for the various service gradients within the Water Company's Commonwealth System for use by the Water Company in planning future facilities. In earlier projects, updated an existing model of the Water Company's Baltusrol and Knollcroft service gradients. Recommendations for regional transmission main improvements were developed based upon the modeled results. The project also included the development of a computer model of the Water Company's Hills System and integrating the model into the existing Baltusrol and Knollcroft models, which was used to analyze various improvements to bring additional supply through existing bulk purchase interconnections into the Hills

Distribution System Analysis, Long Island Water Corporation, Nassau County, NY
Project Engineer for the development and analysis of a distribution system model for a 30 MGD system with 244 miles of pipe.

Water Distribution System Rehabilitation Program, Trenton Water Works, Mercer County, NJ
Project Manager for the development of a distribution system model for the Trenton System, serving Trenton and portions of Hamilton, Ewing, and Lawrence Townships, including 6,500 pipes and 4,300 junctions. Developed, designed, and managed the on-going construction of a $12 million capital improvements program to address distribution system deficiencies found during analysis of the system.

Trenton Emergency Interconnection Study, Elizabethtown Water Co., Trenton, NJ
Project Engineer for a study of recommendations to interconnect the two purveyors with an initial capacity of 10 MGD and an ultimate capacity of 20 MGD

Short Hills System Initial Distribution System Evaluation (IDSE) Modeling, New Jersey American Water, Essex, Morris, and Somerset Counties, NJ
Project Manager for the detailed hydraulic modeling, calibration, and analysis of the 36,000-pipe system. Extended period simulation modeling was used to determine water age in the distribution system as part of the IDSE Modeling.

Elizabethtown System Initial Distribution System Evaluation (IDSE) Modeling, New Jersey American Water, Somerset, Mercer, and Hunterdon Counties, NJ

Project Manager for the detailed hydraulic modeling, calibration, and analysis of the 68,000-pipe system. Extended period simulation modeling was used to determine water age in the distribution system as part of the IDSE Modeling.

Washington-Oxford System Initial Distribution System Evaluation (IDSE) Modeling, New Jersey American Water, Warren County, NJ
Project Manager for the detailed hydraulic modeling, calibration, and analysis of the 1,500-pipe system. Extended period simulation modeling was used to determine water age in the distribution system as part of the IDSE Modeling.

Water System Master Plan, City of New Brunswick, Middlesex County, NJ
Assisted in a distribution system study which included the evaluation of the hydraulic adequacy of the system by examining probable deficient areas and conducting coefficient and fire flow tests, evaluation of their results, and preparing recommendations to eliminate the distribution system deficiencies as part of a Master Plan Report

Water System Capital Improvements, Washington Suburban Sanitary Commission, Potomac, MD
Project Manager for the design and construction services for a $7 million capital improvement project including two 38-foot diameter surge control pressure vessels and an emergency backwash supply system.

Trenton Water Works/Elizabethtown Water Co. Emergency Interconnection, Mercer County, NJ
Project Manager for the hydraulic analysis and feasibility study of proposed interconnections with booster pumping facilities with an ultimate total two-way capacity of 20 MGD. The study also included a recommended water main and booster pump station capital improvements program. Project Manager for the design of Trenton Water Works' portion of the water main extensions and booster pump station.

Water System Improvements, Freehold Township, Monmouth County, NJ
Primary responsibilities include the review of the design of water systems for proposed developments in the Township by evaluating their impact on the existing water system through Hardy Cross computer modeling. Also involved in the design and construction of water system improvements, including conversion of gas chlorination systems to sodium hypochlorite and construction of water treatment plant improvements. Involved in the yearly preparation of a water system capital improvements program update

Deptford Township Municipal Utilities Authority Interconnection Modeling, NJ-American Water Co., Gloucester County, NJ
Developed a computer model of the water distribution system in order to investigate the possibility of "wheeling" water from the Tri-County pipeline through the Township's distribution system to other purveyors. Potential impacts to the Township's distribution system were investigated.

Tri-County Water Supply Project, Haddon and Burlington System Interconnection, NJ-American Water Co., Burlington and Camden Counties, NJ
Design of eight flow-controlled metered interconnections between the Tri-County Pipeline and the Haddon and Burlington Distribution Systems. Included the site, hydraulic, mechanical, and SCADA instrumentation design, and local and state permitting. Also performed start-up and testing of interconnections and other instrumentation systems

Church Road Interconnection, NJ-American Water Co., Mount Laurel, NJ
Design of a water main extension and packaged booster pumping station to serve a bulk sales interconnection. Duties included hydraulic, mechanical, and instrumentation design. Also involved in inspection and start-up and testing of the pump station.

Manasquan-Ocean County Pipeline, NJ-American Water Co., Monmouth and Ocean Counties, NJ
Designed emergency interconnections and flow-controlled gravity interconnection for two regional pipeline projects. Gravity interconnection design also included rechlorination facilities and SCADA instrumentation and control improvements at four well stations.

Non-NJ-American Water Co. (NJAWC) Interconnections, NJ-American Water Co., Burlington, Camden, and Gloucester Counties, NJ
Project Engineer for the design of eight flow-controlled gravity interconnections and seven booster-pumped interconnections between the Tri-County Pipeline and bulk purchase purveyors. Design included site, hydraulic, mechanical, and instrumentation design. Also performed start-up testing services for all of the interconnections.

West Jersey System Improvements, NJ-American Water Co., Mount Olive, NJ
Project Engineer for the design of interim chemical feed facilities and electrical improvements at two well stations.

Lakewood Municipal Utilities Authority (MUA) Interconnection, NJ-American Water Co. (NJAWC), Ocean County, NJ
Project engineer for the design of the transmission main and meter chamber to interconnect NJAWC with Lakewood MUA.

Water System Rehabilitation, City of Newark, Essex County, NJ
Assisted in the preparation of final construction plans and specifications for the rehabilitation and upgrade of the Cedar Grove, Valley Road, and Belleville facilities based on the results of a comprehensive study which was performed to develop a comprehensive program to rehabilitate and upgrade the system to provide a continued, reliable operation well into the future.

Water Distribution System Improvements, NJ American Water, Summit, NJ
Deputy Project Manager for the design and construction phases for the rehabilitation and replacement of a water distribution main. The project includes 33,000 feet of cleaning and cement lining and 5,000 feet of water main replacements. (2008)

Willow Road Transmission Main, New Jersey American Water, Montgomery Township, NJ
Project Manager for the design, permitting, and construction administration of 2,000 lf of 60-inch diameter transmission main.

Bridgeport Road Transmission Main, Elizabethtown Water Co., Somerset County, NJ
Project Engineer for the design of approximately 9,000 feet of 60-inch diameter transmission main.

Chester Source of Supply, NJ-American Water Co., Morris County, NJ
Project Engineer for the design, bid, and construction administration of 14,000 feet of 12-inch diameter transmission main between Mount Olive and Chester Borough.

Howell to Monmouth Transmission Main, NJ-American Water Co., Monmouth County, NJ
Project Manager for the design, permitting, and construction phases of a 10-mile, 30-inch diameter transmission main to connect two seperate public water supply systems.

St. Charles District, Source of Supply Transmission Main and Booster Station Surge Analysis, MO-American Water Co., St. Charles County, MO
Performed a surge analysis and prepared recommendations for surge control devices as part of the final design of the booster station and transmission main.

Water Main Replacement, City of Newark, Essex County, NJ
Assisted in the design and construction engineering of the replacement of a 24-inch water main in a pipe gallery in Weequahic Park. Assisted in field survey measurements, design, and preparation

of plans and specifications Construction engineering duties included shop drawing review, periodic field inspections, witnessing of testing, and coordination between the owner and contractor

Pipeline Crossings, NJ-American Water Co. Eastern Division, Monmouth County, NJ
Assisted in the design of several pipeline crossings of bridges, streams, and railroads Duties included the design of water mains as well as the preparation of state, local, and other necessary permits.

Franklin Park Transmission Main, Franklin Township, Somerset County, NJ
Involved in the design of an approximately 10-mile long water transmission main consisting of approximately seven miles of 42-inch main and approximately three miles of 24-inch and 16-inch transmission main Construction engineering duties included shop drawing review, preparation of monthly estimates, and coordination between the owner and contractor

Eastern Transmission Main Reinforcements Phase II, Elizabethtown Water Co., Middlesex County, NJ
Project Engineer for the design of approximately 9,000 feet of 72-inch transmission mains including a crossing of the Raritan River

2001 Distribution System Improvements, Trenton Water Works, Mercer County, NJ
Project Engineer for the design of cleaning and lining rehabilitation of approximately 150,000 feet of unlined cast iron mains

Howell Well No. 5 Replacement, New Jersey American Water, Monmouth County, NJ
Project Manager for the design, permitting, and construction administration for the replacement of an existing production well that was failing, and restoring the well and its chemical treatment facilities to their original capacity.

Goffle Well Treatment Facility, Ridgewood Village, Bergen County, NJ
Project Engineer for the design of a cartridge membrane filter system for treatment of groundwater under the influence of surface water in accordance with the Surface Water Treatment Rule The facility's treatment capacity is 300 gpm.

Mansfield Water Supply Facilities, New Jersey American Water, Mansfield, NJ
This project included the design of four production wells and three observation wells to be used as an alternative source of supply to an area under groundwater diversion restrictions In addition to the design and construction of the wells, a hydrogeological test plan and an alternative site analysis of potential well sizes were prepared

Jackson Mill Road Well Station, Freehold Township, Monmouth County, NJ
Construction engineering for the construction of two well stations and installation of well pumps and other improvements, including the installation of an additional pressure filter.

Sodium Hypochlorite Facilities at Well Stations, NJ-American Water Co., Various Sites, NJ
Responsibilities included the process, mechanical, and instrumentation design of improvements to sodium hypochlorite facilities at seven well stations in order to bring them into compliance with water company standards The project also included the design of chemical feed facilities for calcium sequestering at two of the well stations.

Westwood Booster Station, United Water, Bergen County, NJ
Deputy Project Manager for the study, design, and construction phases of a new 21 MGD underground water booster pumping station. The project includes four vertical turbine can-style pumps, rated at 7 MGD each, with 350 HP motors and variable frequency drives. (2008-present)

King George Road Booster Station, Elizabethtown Water Co., Union County, NJ
Project Engineer for the surge analysis of a booster station and transmission system to address concerns regarding excessive surge pressures at the stations Recommended improvements that were made during final construction included modification of the pump discharge motorized valve, operator closing speed, and conversion of an existing relief valve to a surge anticipator valve.

Scotts Corner Road Booster Station, Elizabethtown Water Co., South Brunswick, NJ
Project Engineer for the design, bid, and construction phases of a bulk sale booster pumping station with an ultimate peak capacity of 8 4 MGD.

Wayne Pump Station Reconstruction, City of Newark, Essex County, NJ
Assisted in all phases of the project from mechanical and site design through construction engineering, shop drawing reviews, field inspection, and start-up and testing.

Basking Ridge Pump Station Improvements, NJ-American Water Co., Basking Ridge, NJ
Assisted in the replacement of three existing booster pumps with three new booster pumps to increase station capacity The project also involved improvements to an existing sodium hypochlorite rechlorination system in order to bring it into compliance with water company standards. Responsibilities included hydraulic, process, and mechanical design as well as construction engineering

Morris County Connection Pump Station, Passaic Valley Water Commission, Little Falls, NJ
As part of the preliminary design of the 25 MGD pump station, a surge analysis using a computer model of the pump station and approximately 17 miles of the 36-inch diameter transmission main was performed The scope of the study included the analysis of the creation and propagation of pressure surges in the transmission system, the ability of the existing surge control devices in the system to keep the magnitude of the surge pressures within the design capabilities of the pipeline, and the use of additional surge control devices to provide further control of surge pressures as necessary.

Allen Road and Long Hill Booster Station, NJ-American Water Co., Morris and Somerset Counties, NJ
Project Engineer for the design of a 2 0 MGD and a 4.6 MGD prefabricated underground booster station, complete with variable frequency drives, instrumentation and control, and remote telemetry.

ITC South Booster Station, Mount Olive Township-NJ-American Water Co., Morris County, NJ
Project Engineer for the design and construction of an 1,800 gpm booster station to serve a new development.

Belleville Reservoir Rehabilitation, City of Newark, Essex County, NJ
Assisted in the design and construction engineering of the reservoir rehabilitation project, which consisted of upgrading interconnections between the five water systems that come together at the site Duties included shop drawing reviews, field inspection, start-up and testing, and preparation of record plans and operation and maintenance manuals.

Storage Tank and Pumping Station, NJ-American Water Co., Monmouth County, NJ
Assisted in the design of a 2.0 MG ground-level steel storage tank and 6.0 MGD pumping station Duties included hydraulic analysis and design, mechanical design, and preparation of necessary state, county, and local permits

Water Storage Facility, Elizabethtown Water Co., Princeton, NJ
Assisted in the preparation of site plans, reports, and applications to the regional planning board for a 15.0 MG buried reinforced-concrete storage tank.

Middle Road Tank and Booster Station, IA-American Water Co., Bettendorf, IA
Project Engineer for hydraulic analysis, detailed site design, and construction services for a 1.25 MG underground prestressed concrete water tank, a booster station, and a generator building.

Brandon Farms Elevated Storage Tank, K. Hovnanian Companies, Hopewell Township, NJ
Provided project engineering for the start-up and testing of a 600,000 gallon elevated water tank. The dual purpose of the project was to augment the potable water supply for this development and serve as a source of water for fire protection.

Koenig Lane Water Treatment Plant Rehabilitation, Freehold Township, Monmouth County, NJ
Project Engineer for the design of the rehabilitation of a 2.3 MGD groundwater iron and manganese removal treatment facility. The project included the rehabilitation of the existing filter building and the construction of a new 1,500 square foot building addition containing new chemical feed facilities, new electrical equipment, and a new instrumentation and control system.

Barrier Island Fluoridation Facilities, NJ-American Water Co., Ocean County, NJ
Project Engineer for the design and construction phases of fluoridation facilities at three well stations.

Jumping Brook Chlorine Scrubber, NJ-American Water Co., Neptune, NJ
Project Engineer for the design, bid, and construction phases of an emergency chlorine vapor scrubber at a surface water treatment plant which utilizes one-ton gas cylinders for chlorination.

Valley Road Metering Rechlorination Station, City of Newark, Essex County, NJ
Assisted in the design of a sodium hypochlorite chlorination facility with the capacity to treat approximately 70.0 MGD on one of Newark's primary transmission mains. Duties included design of hypochlorite feed and storage systems, design of the instrumentation system, and the preparation of plans, specifications, and permit applications.

Point Ivy Treatment Plant Improvements, Freehold Township, Monmouth County, NJ
Construction engineering for the construction of a backwash holding tank and chlorine contact detention tank.

Sodium Hypochlorite Conversion, City of New Brunswick, Middlesex County, NJ
Assisted in the conversion of the existing gas chlorination system at the City's water treatment plant to sodium hypochlorite. Responsibilities included the process and mechanical design of the chemical feed system.

Jackson Mill Road Water Treatment Plant Expansion, Freehold Township, Monmouth County, NJ
Assisted in the design of the wells and chemical feed facilities for a 2.4 MGD expansion to an existing treatment plant. This included the process and mechanical design of the lime, potassium permanganate, polymer, sodium hypochlorite, and fluoride chemical feed systems.

Mansfield Water Supply Facilities, New Jersey American Water, Mansfield, NJ
Project Engineer for the design of a 4.0 MGD groundwater supply facility which included wells, treatment facilities, wastewater handling facilities, a 2 MG water storage standpipe, and a 200,000 gallon backwash tank.

Presentations

"System Hydraulics and Water Quality," presented at the "Distribution Systems and Water Quality, The Road Ahead" Seminar of the American Water Works Association, New Jersey Section, 2006

"Improving the Project Delivery Schedule of the 72-Inch Transmission Main," presented at the Spring Conference of the American Water Works Association, New Jersey Section, 2005

"Technical Challenges and Permitting Hurdles Tackled by Water Tunnel Team," presented at the Spring Conference of the American Water Works Association, New Jersey Section, 2004

"Lessons Learned at Valley Road - 10 Years of Sodium Hypochlorite Service," presented to the American Water Works Association, New Jersey Section, 2003

"Can't Stand the Pressure-Case Studies of Surge Control Devices," presented to the American Water Works Association, New Jersey Section, 2001

Hatch Mott MacDonald

James W. Fetty, Jr., PE

Education
B.S. Civil Engineering, 1982, West Virginia University, Morgantown WV

Years in Practice - 25

Experience Summary

Mr. Fetty has experience in project management, coordination and supervision for construction and design of various waterline and sanitary and storm sewer projects. His experience as City Engineer and Sanitary Sewer Board Engineer for the City of Fairmont (Fairmont, WV) includes the development and management of water and sewer Geographic Information Systems (GIS), project management of waterline installation and replacement projects, and project management/engineering of sanitary and storm sewer projects.

- Sanitary Sewer Board Engineer – City of Fairmont
  - Development and management of SSB GIS
  - Project Manager of SSB Combined Sewer Overflow Program
  - Project Manager of $6 million Sanitary Sewer Upgrade Project

- City Engineer – City of Fairmont
  - Project Manager for various Storm Sewer System Projects
  - Development and management of Water GIS
  - Planning and design of Water Dept. Capital Improvements
    - Including engineering and management on waterline installation and waterline replacement projects

- Branch Office Manager – Eastern Utilities Specialists, Inc.
  - Branch Manager for Fairmont, WV office
  - Supervision of Field Crews for SSES consultant work for Municipal clients
  - Analyzed data and prepared reports with recommendations

- Staff Engineer – Eastern Utilities Specialists, Inc.
  - Performed sewer system evaluation surveys for municipal clients.
  - Crew leader for SSES field work
  - Performed field mapping investigations

Hatch Mott MacDonald

Julie A. Berardinelli, PE

Education
MEng, Environmental Engineering, The Pennsylvania State University, 2006

BS, Civil Engineering, Bucknell University, 1995

Registrations
Professional Engineer #44141, NJ, 2003

Hazardous Waste Site Operations OSHA Certification, 1997

Years in Practice - 10

Experience Summary

Since joining Hatch Mott MacDonald (HMM) in 1998, Ms. Berardinelli has been a member of both the Water Supply Management Division and the Wastewater Management Division. She has developed an increasing range of experience in the area of water supply and wastewater engineering. She has been involved in the design, preparation of plans and specifications, permitting, and construction phase engineering for a variety of projects. She has also represented HMM at public meetings.

Ms. Berardinelli's design experience includes water treatment plants, water system master plans, water distribution mains, water pump stations, sanitary sewer force mains, sanitary sewer pump stations, wastewater treatment plants, and low-pressure sewer systems. She has conducted bench-scale treatability tests and performed wastewater characterizations.

Selected Project Experience

Mohave District Comprehensive Planning Study, Arizona American Water, Mohave County, CA
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands. The study identified water system demands for a 10-year study period using buildout estimates as well as planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials. Duties included the review and analysis of existing demand data and future demand analyses.

Lake Havasu City District Comprehensive Planning Study, Arizona American Water, Mohave County, CA
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands. The study identified water system demands for a 10-year study period using buildout estimates as well as planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials. Duties included the review and analysis of existing demand data and future demand analyses.

Larkfield District Comprehensive Planning Study, California American Water, Sonoma County, CA
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands. The study identified water system demands for a 15-year study period using planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials. Duties included the review and analysis of existing demand data and future demand analyses.

Lincoln Oaks District Comprehensive Planning Study, California American Water, Sacramento County, CA
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands. The study identified water system demands for a 15-year study period using planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials. Duties included the review and analysis of existing demand data and future demand analyses.

Antelope District Comprehensive Planning Study, California American Water, Sacramento County, CA
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands. The study identified water system demands for a 15-year study period using planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials Duties included the review and analysis of existing demand data and future demand analyses

Jefferson City District Comprehensive Planning Study, Missouri American Water, Cole County, MO
Responsible for developing current and projected water demands within the Water Company's system for the preparation of a comprehensive water system master plan to ensure the water system will meet its short- and long-term water system demands The study identified water system demands for a 15-year study period using planning documents, building development history, proposed residential, commercial, institutional, and industrial developments, wholesale customer water demands, and discussions with local planning officials. Duties included the review and analysis of existing demand data and future demand analyses.

Water Main Rehabilitation, District of Columbia Water and Sewer Authority, Washington, DC
Designed a PVC alternative for 16-inch through 24-inch water main rehabilitation along a portion of D and E Streets Updated construction specifications, including alternative bid forms, were also developed.

Morgan East Reservoir, City of Cleveland, Cuyahoga County, OH
Designed the process/mechanical portion for the construction of a new 2-cell, 15 MG baffled reservoir at the Morgan Water Treatment Plant. The project included evaluation of 15, 16, and 18 MGD reservoirs, the design of reservoir baffles, 114-inch diameter influent piping, 96-inch effluent piping, reservoir drain pump station, foundation drain pump station utilizing an existing junction chamber, 60-inch overflow conduit, rehabilitation of the existing wash water tank, 48-inch wash water tank piping, site drainage, and site work.

Sandspring Well Station, Southeast Morris County Municipal Utilities Authority (SMCMUA), Morris County, NJ
Evaluated the feasibility of Ultraviolet (UV) disinfection for inactivation of coliform bacteria in groundwater. Selected and assisted with the design of the UV treatment unit layout and bypass piping for the 600 gpm well station, which pumps intermittently to the SMCMUA distribution system.

Plant No. 5 Rehabilitation, Long Island American Water, Nassau County, NY
Prepared mechanical portion of the design for the rehabilitation of the Plant No. 5 Filter Plant including replacement of 48 filter valves, motor operators, and associated piping. Coordinated the mechanical, architectural, electrical, and instrumentation and control portions of the plans and specifications to meet the accelerated deadline of the project. Prepared permit applications.

Morris Delair Water Treatment Plant, City of Camden, Camden County, NJ
Evaluated the feasibility of Ultraviolet (UV) disinfection as an alternative to membrane filtration. A low pressure-high output UV reactor with bypass piping was recommended as the most economically suitable option for the 18 MGD treatment capacity, given the energy requirements.

Water Treatment Plant, Hackettstown Municipal Utilities Authority, Warren County, NJ
Prepared a feasibility study for the utilization of ultraviolet reactors to create a multiple barrier system to further protect the surface water supply from *Giardia, Cryptosporidium,* and coliform

bacteria and to reduce the amount of chlorine currently added for disinfection at the 1.0 MGD plant.

Water and Wastewater Feasibility Study, Wetlands Delineation, River Forest Country Club, Freeport, PA
Assisted in the completion of a feasibility study for the private development of approximately 200 acres in and around an existing 27-hole golf course and country club. Planning-phase work included wetlands delineation and study of water treatment and distribution and wastewater collection, conveyance, and treatment alternatives. The development involved up to 400 EDUs of commercial and residential single and multi-family dwellings.

Sewer Feasibility Study, Jefferson Township, Morris County, NJ
Assisted in the preparation of a feasibility study for the Musconetcong River Drainage Basin. Evaluated technically feasible alternatives for wastewater disposal for the areas surrounding Lake Hopatcong and Lake Shawnee. The feasibility study recommended approximately 132,000 lf of gravity sewer, 86,000 lf of low-pressure sewer, 20,000 lf of force main, and seven pumping stations for approximately 3,300 EDUs.

Industrial Discharge Sewer Permitting, City of Parker, Armstrong County, PA
Worked with the City's wastewater treatment plant operator and an industrial water discharger. The industrial waste permit was updated based on monitored characteristics of industrial wastewater discharge from tanker truck cleaning operations. Helped to determine if problems at the treatment plant were a result of this discharge.

Stormwater Permits Compliance, LTV Steel, Pittsburgh, PA
Prepared quarterly National Pollutant Discharge Elimination System (NPDES) compliance forms for stormwater compliance. Performed an evaluation of the existing outfalls for plant process flows to the permitted discharge location.

Wittmer Road Sewer System, McCandless Township Sanitary Authority, Allegheny County, PA
Assisted in the permitting for the replacement and partial paralleling of 12,000 lf of collector and interceptor sewer with approximately 2,800 lf through wetlands. The project included construction, wetlands, and highway occupancy permitting, as well as rights-of-way.

Act 203 Plan, Western Butler County Authority, Butler County, PA
Prepared an updated Act 203 Plan. The plan was updated to reflect current replacement costs, water consumption, and inflation based on 1997 usage.

Act 537 Plan, Winfield Township, Union County, PA
Completed a Socio-Economic Justification (SEC) for the high quality, trout-stocked Little Buffalo Creek watershed in order to determine the best practicable treatment technology. Completed the associated comprehensive sewerage and treatment plan for the Cabot and Marwood areas of the Township, which involves sewage and wastewater treatment to address documented on-lot system malfunctions.

Wastewater Pump Station, Hopatcong Borough, Sussex County, NJ
Assisted in the design and permitting of three wastewater pumping stations. Odor control via carbon absorption and bioxide treatment will be provided at each pump station, in addition to sewage grinders and flow metering.

Radabaugh Pump Station HVAC Improvements, Hempfield Township Municipal Authority, Westmoreland County, PA
Prepared contract documents for a Stage 2 HVAC improvement project at the Radabaugh Pump Station.

Pump Station and Force Main Design, McCandless Township Sanitary Authority, Franklin Park, PA
Assisted in the design and permitting of a pump station and force main to serve a 550-student elementary school so that the North Allegheny School District may decommission its package wastewater treatment plant and export its sewage to the Authority's collection system for treatment

Herman Pump Station Replacement, Western Butler County Authority, Zelienople, PA
Lead Engineer for the design of a packaged pump station, flow metering, force main modification, and stand-by power generator system which will replace an ejector station. Design accommodated an elevated flood plain and construction along stream, roadway, and industry. Flow monitoring was performed to determine peak hourly flow conditions.

Wastewater Treatment Plant Upgrade, Franklin Township Municipal Sanitary Authority, Murrysville, PA
Prepared permitting and Design Engineer's Report for the 75,000 gallon capacity egg-shaped anaerobic digester for the 4.2 MGD treatment plant. This project includes Class A biosolids pre-pasteurization, septage receiving/pretreatment facilities, sand filter hypochlorite/bisulfite treatment, sludge screening, digester gas storage, sludge storage pads, service water treatment using diatomaceous earth filtration, and digestion equipment renovations.

Wastewater Treatment Plant Upgrade/Expansion, Western Butler County Authority, Zelienople, PA
Provided construction phase administration services for the upgrade and expansion of the 1.5 MGD activated sludge plant, increasing capacity to 2.2 MGD and providing excess flow facilities. The project included modification and addition of various unit processes such as excess flow pumping and storage, comminution, raw sewage pumping, mechanical screening, grit removal, turbine aeration, clarification, sand filtration, chlorination/dechlorination, flood pumping, aerobic digester sludge stabilization and sludge storage, mechanical press sludge dewatering, general renovation, and asbestos abatement

Wastewater Treatment Plant Upgrade/Expansion, Canonsburg-Houston Joint Authority, Washington County, PA
Assisted in the study of the raw sewage pump station and wastewater treatment plant relative to wet weather flow capture, conveyance, storage, and treatment. Design included 13,500 lf of gravity sewer and existing sewer rehabilitation, raw sewage pump station upgrade/expansion, and wastewater treatment plant upgrade and expansion.

Plant Upgrade/Expansion, Western Butler County Authority, Butler County, PA
Assisted in the engineering analysis and permitting for a 2.2 MGD conventional activated sludge plant upgrade and expansion project.

Sanitary Sewer Collection System, Hopatcong Borough, Sussex County, NJ
Assisted in the design and permitting of three contracts for the overall sanitary sewer collection system, including the Hopatcong Center, Lakeside Boulevard East, and Hopatcong Heights areas of the Borough. Design included approximately 43,000 lf of gravity sewer, 13,500 lf of low-pressure sewer, and 6,500 lf of force main.

Sewage Facilities Project Design, Coolspring-Jackson Lake Latonka Joint Authority, Lake Latonka, PA
Lead Engineer for the design of approximately 80,000 lf of low-pressure sewer system. This design included 500 simplex and duplex grinder pump units throughout the lake community's collection system, a force main to the plant site, and a 0.150 MGD extended aeration plant with headworks, aeration tanks, clarifiers, ultraviolet (UV) disinfection units, plant water system, flow metering, sludge stabilization, sludge drying beds, sludge transfer/drain pump station, and control building with laboratory and garage.

Route 19 South Interceptor Extension, Western Butler County Authority, Zelienople, PA
Assisted in the design of a 14,000 lf interceptor sewer extending from the existing 2.2 MGD treatment plant along Glade Run and Route 19 to Interstate 79. Expanded planning modules were prepared to address environmental planning requirements. The project involved sewering existing residential areas to allow industrial and commercial expansion along the Route 19 corridor

Sewerage System Design, West Salem Township Municipal Sewage Authority, Mercer County, PA
Assisted in the design of the sewerage system used to convey sewage from the Township to the Greenville Borough system. Based on planning review, approximately 46,500 lf of PVC gravity sewer line and 8,000 lf of force main will be installed to serve the residents. Two sewage pumping stations were constructed. Approximately 20 homes were provided sewage service by use of grinder pumps and 2,000 lf of small diameter low-pressure sewer. The overall project, funded by RUS (FmHA), included study, design, permitting, bidding, and construction phases.

Sewer Replacement, Brockway Borough, Jefferson County, PA
Completed contract documents and specifications for 1,000 lf of sewer replacement on Second Avenue, Green Way, and Hillview Avenue.

Pressure Sewer System, McCandless Township Sanitary Authority, Allegheny County, PA
Assisted in the design and related bidding/construction services of a force main and individual grinder pump units to serve 10 homes along Old Babcock Boulevard to allow homeowners to discontinue use of malfunctioning individual on-lot septic systems

Sanitary Line Extension, Breakneck Creek Regional Authority, Butler County, PA
Prepared contract documents for sanitary sewer line extension project for the construction of 5,400 lf of sanitary sewer line and appurtenances and preparation of Sewage Facilities Planning Modules for regulatory agency

Sanitary Line Extension, Breakneck Creek Regional Authority, Butler County, PA
Prepared contract documents for sanitary sewer line extension project for the construction of 730 lf of 6-inch and 8-inch diameter sewer line and appurtenances.

Sanitary Line Extension Project, Breakneck Creek Regional Authority, Butler County, PA
Prepared contract documents for sanitary line extension project for the construction of 1,300 lf of 8-inch diameter sewer line and appurtenances

Developer's Sewer Reviews, McCandless Township Sanitary Authority (MTSA), Allegheny County, PA
Review of developer drawings for conformance to MTSA standards for ultimate approval by the Authority

Corrective Action Plan (CAP) Reporting, Upper Shenango Valley Water Pollution Control Authority (USVWPCA), Mercer County, PA
Prepared quarterly and final CAP reports for USVWPCA which included analyzing infiltration/inflow removal and general improvements to the sewer system.

Watershed Management Area (WMA) Planning, North Jersey District Water Supply Commission, Passaic County, NJ
Assisted in the development of watershed characterization with respect to wastewater treatment facilities and loading. Prepared an inventory of domestic wastewater facilities in WMA 3, 4, and 6. Conducted investigations to determine the type and level of treatment provided and design capacity of wastewater plants. Prepared section of the reports pertaining to point sources of pollutants.

Industrial Wastewater Treatment Study, LTV Steel-Warren Coke, Warren, OH
Performed treatability tests on industrial wastewater for elimination of filamentous organisms Studied the effects of chlorine, peroxide, aluminum, and polymer addition on settleability of mixed liquor and kill rate of filaments

Operations Manual, Allegheny County Sanitary Authority (ALCOSAN), Allegheny County, PA
Development of an Operations Manual and Electronic Operations Manual for ALCOSAN's Access Shafts Project. Electronic Operations Manual is integrated with ALCOSAN's existing Electronic Operations Manuals

Water System Improvements O&M Manual, Zelienople Borough, Butler County, PA
Prepared Operations and Maintenance Manual for water system improvement project, describing systems and operating procedures for new and renovated systems to bring the system into compliance with new and more stringent operating parameters imposed by regulatory agencies

Hatch Mott MacDonald

Installation of New Water Lines
IFB #DACA1-85-D-0019

Location
Fort Dix, NJ

Client
United States Army Training Center and Fort Dix

Reference
Gerard T. Whittle
Chief
609.562.5949

Hatch Mott MacDonald (HMM) was retained by the Department of the Army to provide design plans and specifications for a 35,000 linear foot expansion and reinforcement of the Fort Dix water distribution system. The project interconnected the main water distribution serving the cantonment area with a previously isolated water system at range headquarters. Additional extension and interconnections were designed to reinforce fire flows in other portions of the base

Engineering services provided included alignment selection field surveys, and preparation of plans and specifications.

Design included various special details including stream, railroad and roadway crossings. The design recognized the need to maintain service during construction and connection to existing mains

Hatch Mott MacDonald

American Water Master Agreement- Pipelines

Location
Various

Client
American Water Company and subsidiaries

Project Type
Water mains and sewers

Services
Route assessments
Surveys
Designs
Permitting
Construction support
Resident observation

Duration
December 2004 – Ongoing

Construction Cost
N/A

Project Description

American Water Company is a major investor-owned utility company providing water and wastewater service in numerous states. The company has operating subsidiaries in the various states, known as New Jersey American Water, Maryland American Water, etc. American Water has ongoing capital improvements programs throughout its systems, and typically engages consulting firms to provide engineering services for most of its projects

In 2004, American Water began a nationwide alliance program with selected engineering consultants. Hatch Mott MacDonald (HMM) is one of these consultants, and has been working under a Master Services agreement with American since December 2004. HMM had also worked for American Water for many years prior to the Master Agreement.

HMM Role

Since commencement of the Master Services agreement, HMM has received numerous Task Order assignments for work in New Jersey, Pennsylvania, Missouri, California, Arizona, and other locations. While these Task Orders encompass a wide range of projects, a number of them have been for water main, gravity sewers, and force main projects. On these projects, HMM's services typically include surveying, soils borings, preparation of plans and specifications, permitting, cost estimating, and construction administration. Some of these pipeline projects also involve evaluation of alternative routes, and resident observation of construction

Project Highlights

Pipeline projects undertaken to date under the Master Services Agreement include:

- Ocean City Sewer Replacements: 20,000 LF of collection sewer replacement in Ocean City, NJ
- Pleasantville Transmission: 39,000 LF of 12-inch through 24-inch water transmission mains in Egg Harbor, NJ
- Highlands-Sea Bright Transmission Main: 16-inch water main with major river crossing in Sea Bright, NJ
- Brookhill Force Main: 3,000 LF of 8-inch sanitary force main in Lakewood, NJ.
- East End Relief Sewer: 6,000 LF of 18-inch and 24-inch gravity sewer and 2,200 LF of water main in Lakewood, NJ
- Swimming River-Newman Springs Pipeline: evaluation of alternatives to rehabilitate or replace 11,000 LF of 36-inch water main in Monmouth County, NJ
- Camden County High Service/Winslow Interconnection: 52,000 LF of 20-inch and 24-inch water transmission main in Camden County, NJ
- Bridgepoint Road transmission main: 2,200 LF of 60-inch water transmission main in Montgomery, NJ
- East Rockaway & Baldwin Transmission: 13,500 LF of 20-inch water main in Long Island, NY
- Scranton/Chinchilla Transfer: 8,000 LF of 12-inch through 20-inch water mains in Scranton, PA
- Middletown Transmission: Alternative route evaluations for 44,000 LF of 36-inch water transmission main in Monmouth County, NJ
- Tea Street Water Main: 1,000 LF of 36-inch water transmission main in Bound Brook, NJ

Hatch Mott MacDonald

Water Main Relay and Sewer Reconstruction Capital Programs

Location
Philadelphia, PA

Client
City of Philadelphia
Philadelphia Water Department

Reference
Michael Lavery, PE
Manager, Design Branch
Water/Sewer Section
215 685 6280

Services
Field Location Surveys
Base Mapping Development
Contract Plans and Specifications
Construction Cost Estimates

Hatch Mott MacDonald (HMM) has been providing "on-call" design services for the Philadelphia Water Department since 1997 for various water, sanitary sewer and storm sewer rehabilitation projects

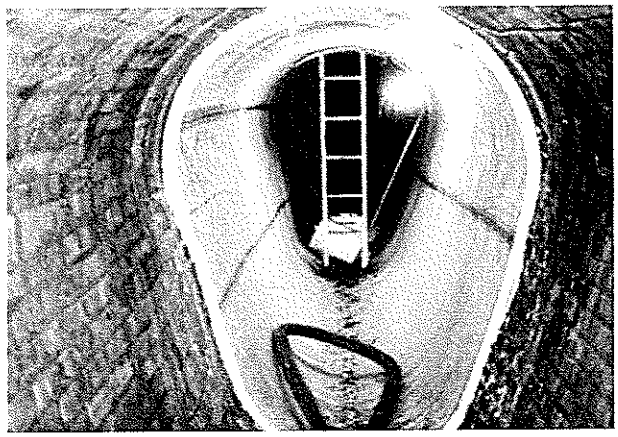
To date, HMM has designed approximately 14,600 linear feet of replacement water mains in various portions of the City, and approximately 26,960 linear feet of sanitary sewer replacement, under twelve separate assignments. Replacement water mains have ranged from 8-inch to 16-inch in diameter. For the most part, the sewers which have been replaced are old 3' by 2' egg-shaped brick sewers The approximate construction value of the water and sewer replacements is $12,500,000

HMM has also designed in-place rehabilitation using cured-in-place liners of approximately 6,000 linear feet of old brick sewers. The sewers rehabilitated with trenchless methods are primarily in very high traffic areas, such as Center City Philadelphia. Sewer diameters ranged from 12-inch to 48-inch, with a construction value of approximately $1,800,000

Typical services included under water and sewer replacement task orders include field location surveys, development of base mapping in accordance with City of Philadelphia standards, and detailed design and preparation of contract plans and specifications Construction cost estimates are also developed for all designed improvements.

In addition to water and sewer replacement and rehabilitation, HMM has also completed or is currently designing a number of special projects for the Water Department, including:

- Installation of an automated inflatable rubber dam in an 11-foot diameter combined sewer outfall, for the storage of flow during rain events Project included structural, mechanical and electrical design of a control building and modifications to the outfall Estimated construction value of the work is $3,500,000
- Design of modifications to six combined sewer regulating chambers, including the construction of new pre-cast and cast-in-place concrete structures and installation of slide gates, on sewers ranging in size from 36" to 12' by 12' Total construction cost of the improvements is $1,700,000
- Design of modifications to a combined sewer regulating chamber involving the installation of a hydraulically actuated sluice gate Project includes structural, mechanical and electrical design of a new control building Estimated construction value is $450,000
- Development of a detailed construction cost estimate for a 16 5-foot diameter, 3,500' long storm water relief tunnel



Hatch Mott MacDonald

Stream Mitigation and Remediation Project

Location
Greene and Washington Counties, PA

Client
Confidential Coal Client

Services
- Augmentation Work Plans
- Grout Injection Work Plans
- Subsurface Investigation Plans
- Stream Surveying
- Flow Monitoring
- Surface and Groundwater Monitoring
- GIS Mapping
- Hydrologic Modeling
- Channel Design
- Report Preparation
- Construction Inspection

Project Description

Hatch Mott MacDonald was retained by a private coal client to assist in the mitigation and remediation of over 13,000 lineal feet of streams that have been affected by longwall mining

Work included surface and groundwater monitoring, hydrologic modeling, and subsurface investigations to determine minimum base flows for development of augmentation plans Geologic conditions were then used to prepare a mitigation plan and develop a grout injection design for remediating the loss segments of the affected streams This grout injection design consisted of a shallow, low-pressure injection of portland and bentonite to seal fractures and reduce water loss. Stream surveying of the remediation sites and control streams were used to establish a stable stream geometry that would effectively carry bankfull flows. Trimble GPS units and GIS software was used to develop maps showing the flow advancement downstream as construction progressed

HMM performed the construction inspection and construction management of the project. This work included full-time inspection, evaluation of contractor performance and work product, and approval of contractor quantities

Hatch Mott MacDonald

Engineering Program Management Services for the Water Distribution System

Location
Washington, DC

Client
District of Columbia Water and Sewer Authority

Reference
Roger L. Gans, PE
Manager, Planning & Design
202 787 2452

Curtis Cochrane
Program Management
202 787 2366

Project Duration
September 2001 – January 2004
(Hydraulic Modeling and Interconnection Evaluation Study)

Project Cost
Total $21 million
Hydraulic Modeling and Interconnection Study
$350,000

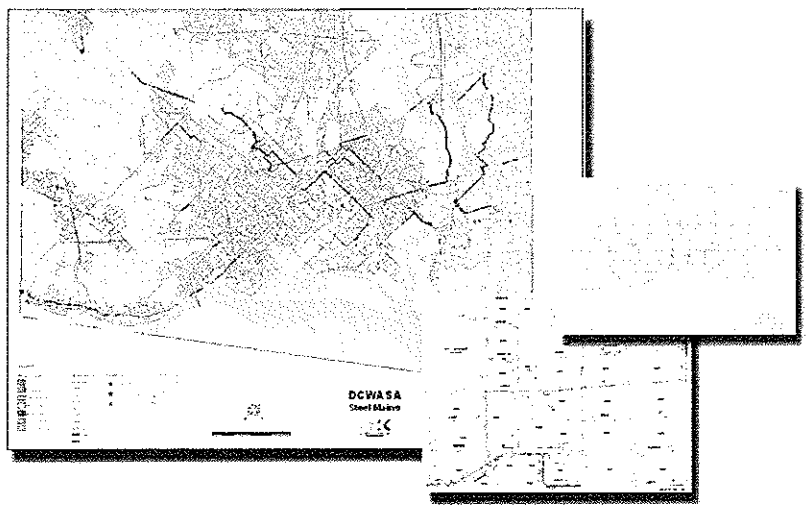
The District of Columbia Water and Sewer Authority (DCWASA) provides domestic and fire protection service to the District of Columbia serving a population in excess of 500,000 people. DCWASA is responsible for the retail distribution of water and with an average daily demand of approximately 135 million gallons per day (MGD). The water system is comprised of approximately 1,300 miles of mains in seven pressure zones. Storage for system equalization and fire protection is provided in 9 storage reservoirs and tanks. DCWASA also maintains and operates four pump stations and approximately 36,000 valves and 8,700 hydrants.

The Joint Venture Team of Hatch Mott MacDonald (HMM) and Michael Baker, Jr. is providing overall program management of the water distribution system including planning, engineering design and engineering design management services, Master Plan and Operations review and update in support of DCWASA's on-going capital improvement program. The capital improvement program (CIP) budget for the next 20 years is in excess of $500 million.

The Joint Venture Team is providing on-site management assistance as well as off-site support assisting DCWASA in implementing the CIP. In addition to assisting DCWASA with the implementation of the CIP, the Joint Venture team is also undertaking a comprehensive pipe condition assessment program of the entire distribution system; updating and expanding DCWASA's hydraulic model to include all distribution mains and incorporate water quality functionality in response to terrorist threats; providing resident inspection services for high profile water main rehabilitation projects in Georgetown; as well as providing DCWASA with assistance with day-to-day engineering tasks.

HMM developed water distribution hydraulic models that included all pipes within the water system for the various gradient zones. These models were georeferenced to the Maryland State Plane Coordinate System to provide planning level accuracy for use and overlay with other GIS datasets. The development of the models included extensive quality control for the data conversion through the cross-referencing of detailed system maps to verify the accuracy of the AutoCAD basemap. Calibration of the models was developed through an extensive review of available SCADA information, previous hydrants flow tests, historical pipe coefficient test data, pipe materials data coupled with date of installation and additional field flow tests. The models are used on a daily basis to perform hydraulic analyses to support planning and construction activities, including: valve replacement projects; pump station rehabilitation projects; tank siting; main replacement; and fire protection analysis.

HMM assisted DCWASA in the selection of the modeling software, WaterCAD by Haestad Methods, and is providing a training manual and onsite training to DC WASA staff.



An additional effort by HMM included the development of an internal web page that serves out GIS data using ESRI's ArcIMS. The GIS web page includes many GIS data sets that are used to improve data sharing and the analysis of distribution system conditions, including:

- Input and output from hydraulic modeling assignments;
- Locations of closed/broken valves;
- Pipe material and condition inventory;
- Topographic data;
- Street centerlines with geocoding capabilities;
- Hot links to scans of distribution maps; and
- Other environmental datasets

DCWASA is interconnected with the Washington Suburban Sanitary Commission (WSSC) system at 15 locations. As part of HMM's services, an evaluation of the interconnections was undertaken to determine which interconnections should be maintained in service and upgraded to improve the overall reliability of WASA's system. The evaluation included coordinating meetings with both utilities; hydraulic analysis to determine which interconnections provide the greatest hydraulic benefit; and review of water quality concerns associated with blending chloraminated water (DCWASA) with free chlorine system water (WSSC). The study concluded that WASA should upgrade and rehabilitate 5 interconnections, including new metering facilities. HMM assisted WASA with the development of a scope of work and negotiated design services for these improvements.

Hatch Mott MacDonald

Impoundment Mitigation and Restoration Project

Location
Wetzel County, WV

Client
Confidential Coal Client

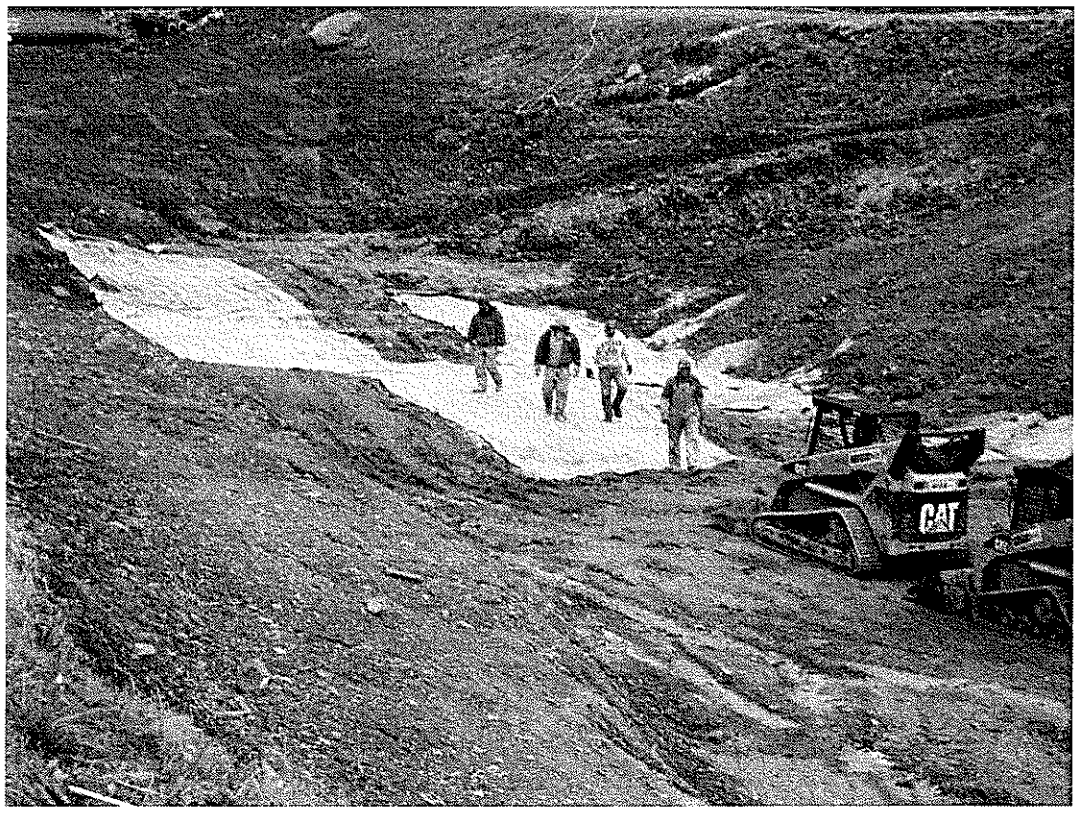
Services
- Grout Injection Work Plans
- Subsurface Investigation
- Surveying
- Utility camera survey
- GIS Mapping
- Liner Design
- Cost Analysis
- Construction Inspection

Project Description

Hatch Mott MacDonald was retained by a private coal client to assist in the mitigation and remediation of an existing private impoundment that had been affected by longwall mining

Work included investigation of subsurface data, groundwater monitoring, hydrologic modeling, and flow loss analysis. Hatch Mott MacDonald developd a combination grout injection plan and geosynthetic liner design. This grout injection plan consisted of a shallow, low-pressure injection of a mixture of Portland cement and bentonite to seal fractures and reduce water loss. The geosynthetic liner design utilized an impermeable bentonite mat at select locations within the pond bottom. A utility camera was used to observe infiltration and leakage of the pipe principal spillway

HMM performed the construction inspection and construction management of the project. This work included full-time inspection, evaluation of contractor performance and work product, and approval of contractor quantities.



Hatch Mott MacDonald

72" Eastern Transmission Reinforcements, Phase III

Location
South Bound Brook, Somerset County, New Jersey

Client
Elizabethtown Water Company

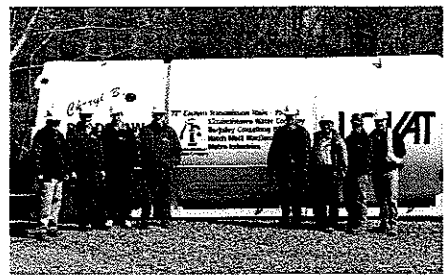
Project Type
Water Transmission Main with Tunneled River Crossing

Services
Design, Construction Engineering and Construction Management Services for trench, tunnel, and pipeline to carry water transmission main and environmental mitigation

Duration
Design:
April 2003 to Dec 2003
Construction:
Jan 2004 to July 2004

Construction Cost
$7.5 million

Project Description



To improve its water supply system the Elizabethtown Water Company strengthened its Eastern Transmission Main by extending a 72-inch main from South Bound Brook to Middlesex Borough in NJ, passing beneath the historical Delaware and Raritan (D&R) Canal and the Raritan River in tunnel. The 1200ft long tunnel was bored using a 102inch diameter LOVAT TBM from the 50 ft deep, 32 ft diameter West Shaft in South Bound Brook to the 40ft deep, 14ft diameter East Shaft in Middlesex County. At both shaft locations open cut trenches connect the new water main to the existing mains using restrained joint PCC pipes.

Ground conditions encountered during tunneling consisted of fractured and weathered shale varying from very poor to moderately strong. Water inflows of up to 30gpm from discrete sources were encountered with an overall inflow into the tunnel of 140gpm. No advance grouting or probing was undertaken to control the groundwater as the TBM was fitted with doors to control water. The tunnel was lined throughout with fully lagged steel arch ribs at 5ft centers and the 72 inch cement lined steel pipe was installed and grouted using cellular foam grout upon completion of tunneling.

Due to environmental concerns contact grouting of the liner plates at the west shaft and the sheet piles at the east shaft was undertaken to eliminate the possibility of groundwater movement. In addition at the West shaft asbestos was removed prior to construction and at the East Shaft arsenic in the groundwater meant that all water pumped from the underground works passed through decontamination filters and settlement tanks prior to discharge. Benzene and chlorinated solvents present in the groundwater also posed concerns and regular monitoring was undertaken.

The project was let under a two-stage Target Cost contract within an informal partnering arrangement to allow for fast-track completion of design and allow timely decision making to be made at the lowest responsible level during the construction phase. As a result of this arrangement the project team was able to recover a 2.5month delay on a 9-month schedule caused by late possession of worksites to ensure completion of the project by the original contract end date.

HMM Role

Prior to construction HMM conducted a geotechnical and environmental investigation program to determine the subsurface conditions for the trench and tunnel design and to write all Bid Documents.

HMM undertook the design of trench, shaft and tunnel including preparation of contract drawings, specifications and Geotechnical Baseline Report for Bid. The initial tunnel design was a 10-foot by 10-foot horseshoe shaped cross-section excavated by roadheader from East to West shaft. Upon review of the Bid Document and as part of the two-stage process, the Contractor proposed to construct the tunnel by TBM and to drive from West to East. The Contractor then prepared the GBR-construction (GBR-Con) prior to negotiation of the Target Cost of Construction. Follow-up work included review of the Contractor's pre-construction design submissions, including: shaft and tunnel support systems, approval of the GBR (Con), preparation of revised construction drawings taking into account Contractor's use of TBM, preparation of revised specifications etc.

During construction HMM provided Construction Management and Engineering services including: monitoring of construction activities to ensure the Contractor's compliance with both his methods and Specification and Drawings, on site resolution of technical, design and schedule issues related to construction activities, quality control checking, review of Contractor's submissions, assistance with payment issues, monitoring of progress against schedule and advising the Client of schedule problems and solutions for acceleration.