

STORMWATER & SURFACE WATER ENGINEERING SERVICES

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THE IMPORTANCE OF STORMWATER MANAGEMENT



INNOVATIVE SOLUTIONS

Stormwater-runoff volume has risen significantly in the last 100 years due to urbanization and increases in impervious surfaces. This increased volume can result in downstream flooding, streambank erosion, habitat damage, combined sewer overflows, decreases in manufacturing plant operational times, and many other serious issues.

The increase in runoff due to reduction in natural stormwater infiltration results in more direct discharges to surface water bodies, creating water-quality issues across all types of land uses. Federal, state, and local governments have become more diligent about using Best Management Practices (BMPs), green infrastructure, developing stormwater taxes, and stormwater permit compliance monitoring.

Montrose Environmental (Montrose), has been at the forefront of the development and use of innovative stormwater management engineering solutions for more than two decades, for industrial, commercial, residential, institutional, and environmental sectors. A comprehensive list of our services is provided at the end of this Statement of Qualifications. Geotechnical Investigations

Infiltration Testing

Erosion & Sedimentation Control Plans

> Best Management Practice Plans

Stormwater Master Planning

NPDES Stormwater Permitting

Grading Plans

Pavement Designs

Infrastructure Design/ Retrofitting

Stormwater Pollution Prevention Plans

Biofiltration Design

Secondary Containment Design

Residual Waste Impoundment Design

Hazardous Waste Impoundment Design

Landfill Design

Hydraulic Modeling

Dam Engineering

Stormwater Treatment Design

Stormwater Facility Inspections

Floodplain Map Amendments

Stream Encroachment Permitting



STORMWATER MANAGEMENT SECTORS SERVED

INDUSTRIAL/MANUFACTURING

Stormwater management can require significant capital and operational costs, and raise compliance issues for both operating and closed facilities. Many industrial facilities require an Industrial Stormwater National Pollutant Discharge Elimination System (NPDES) permit or demonstration of non-exposure. Montrose has assisted clients with new NPDES permits, renewals, infrastructure design/retrofits, development of stormwater treatment strategies, reductions, and treatment. Our industrial facility engineering team has also designed new retrofits of surface impoundments, residual and hazardous waste units, secondary containment systems, and storage systems. We've also supported pipeline companies with stream crossing permits.

COMMERCIAL/RESIDENTIAL/INSTITUTIONAL

Our design team combines civil engineering and landscape architecture to effectively meet the unique stormwater management needs at brownfield sites, medical/educational facilities, and corporate campuses. These innovative design concepts, which blend function and aesthetics to create places designed around people, have helped our clients meet corporate goals and achieve various levels of LEED® certification and sustainability.

WATERSHED/DAM

Development sites along large and small bodies of water need to be considered in accordance with United States Army Corps of Engineers (USACE) requirements. This often requires regional watershed hydraulic modeling to evaluate potential impacts to floodplains and limits to developable land. Montrose also utilizes watershed modeling to analyze dam spillway requirements, retrofits, and hazard classifications. It's also a critical tool for determining the need for flood hazard insurance, stream bank protection, and restoration.

SUPERFUND SITES

The remediation of Superfund Sites can include a wide variety of stormwater and surface-water design needs. Montrose has been involved with multiple stream channel and marsh remediations that have required temporary channel relocation, erosion/sediment control design, channel habitat restoration, and long-term monitoring. Detailed design plans, construction sequencing, and specifications have been developed at many sites across the country. Montrose has also designed the grading plans, stormwater infrastructure, and soil management plans for many landfill and capping projects at Superfund Sites.



FORMER NAVY YARD BROWNFIELD REDEVELOPMENT PHILADELPHIA, PENNSYLVANIA



URBAN Outfitters selected the former Philadelphia Navy Yard for its corporate headquarters location and has been progressively renovating the historic 100+ year-old buildings and surrounding grounds for its various retail brands since 2006. Many of the pre-existing man-made features and utilities were incorporated into the new designs in ways that meet new city, state and federal regulations. Geotechnical testing was performed to identify areas which could be used for infiltration. Montrose's civil engineers and landscape architects developed a creative and dispersed system of infiltration basins and extended detention basins beneath the hardscape and landscape design which matched the historic and urban nature of the site. Since the entire site was also within the 100-year floodplain of the Delaware River, a Flood Certification Survey was required to determine the appropriate floor elevations for each renovated building (11 buildings to date).











GALAXY/SPECTRON SUPERFUND SITE ELKTON, MARYLAND



This former solvent recycling site had soil, bedrock, groundwater, stream sediments, and surface water contaminated with a wide range of volatile and semi-volatile organic compounds, including Dense Non-Aqueous Phase Liquids (DNAPLs). The initial removal action was required to mitigate contamination

discharging into the neighboring creek. Montrose developed the concept and detailed engineering design for a stream isolation and groundwater collection system to prevent continuing degradation of surface water quality. Pre-design investigations included an assessment of vertical groundwater gradients in the creek, geophysical surveys, mass flux determinations, and structural evaluations of the upstream 100+ year old dam. Extensive hydrologic modeling of the contributing 20+ square mile watershed and hydraulic modeling of the creek, dam and adjacent mill race were also performed as part of the design. The final design included an innovative stream isolation and surface water management system; integrated pool, run and riffle zones for aquatic habitat restoration; a sub-channel collection system relying on natural groundwater gradients to create capture, and a groundwater treatment and discharge system. Habitat restoration involved the design and installation of fish ladders around historic dam structures above and below the site. Detailed construction specifications and sequencing were developed to address the need to re-route the creek during construction. The constructed remedy has been in operation for over 20 years and survived regular high-flow events, including several hurricane and remnant hurricane storm events.







INDUSTRIAL MANUFACTURING FACILITY SOUTHERN, CALIFORNIA



An industrial client applying for an RCRA Part B permit was required by the California Department of Toxic Substances Control to upgrade its entire stormwater management network to include secondary containment. Montrose worked with the facility to develop designs for both interim and final measures and provided construction oversight for replacement of 3,000 linear feet of piping and manholes on the 15-acre property. Interim measures

included temporary stormwater management and extensive pre-

excavation soil sampling; final measures included removal and abandonment in-place of existing piping and installation of custom double-walled piping, trench drains, inlets, and manholes with leak detection. The design included evaluation of existing conditions, extensive hydraulic modeling of proposed conditions to determine runoff rates and evaluate piping capacity to avoid over-topping,





and additional perimeter

controls to prevent run-off from leaving the facility. Construction procedures and sequencing were developed to prevent dust generation from contaminated soils and maintain the stormwater network as a functioning system for the facility during the work. The implementation of the entire project was performed under intense regulatory oversight due to concerns associated with the potential airborne release of contamination during construction.





PETROLEUM TANK FARM, SOUTHEASTERN, PENNSYLVANIA



Stormwater at a 50-year-old, 150-acre petroleum storage tank terminal with 12 aboveground storage tanks was creating drainage problems for multiple adjacent residential properties. The natural stormwater drainage within the terminal had been highly modified by a network of diversions, secondary containment features, stormwater ponds, and oil-water separators prior to discharge through one

of three NPDES-permitted outfalls. Montrose used HydroCAD to perform a detailed inspection of the existing drainage system and stormwater hydraulic modeling of various storm events (1-, 2-, 10-, 25-, 50- and 100-year storms). HydroCAD was ideally suited to the site conditions due to its ability to incorporate the controlled surface detention structures (ponds and dikes) and extensive convenience piping. We identified the causes of the off-site flooding and subsequently designed both physical and operational changes to alleviate the flooding that were approved by the local township.









FORMER CHEMICAL MANUFACTURING BROWNFIELD REDEVELOPMENT, PENNSYLVANIA



The Waterside development is a great example of a successful transformation of a Brownfield site into a new mixed-use development with residential units as well as commercial and retail buildings. This 40-acre property on the Delaware River, formerly an industrial chemical manufacturing plant, is being redeveloped from an underused, environmentally damaged site to one of the first waterfront greenway projects envisioned by Township and County planners. The site is part of an overall plan to revitalize an industrial core area and take advantage of easy access to Philadelphia and New Jersey. Montrose provided survey, civil engineering, landscape architecture, and geotechnical engineering services. We coordinated with PaDEP for approval of a number of innovative stormwater design features, as part of the Individual NPDES permit required for the project such as water quality basins adjacent to the 9-acre riverfront park, special water quality inlets to remove pollutants, and a special vapor barrier design to provide extra safety for certain units. The stormwater and site design also incorporated protected, restored and created wetlands; preservation of significant trees; a new pathway system with timber bridges; seating; and native trees, shrubs, grasses, and ground cover.



FORMER SECONDARY LEAD SMELTER FACILITY, INDIANA

A former RCRA interim status facility was undergoing corrective action, including: decontamination and demolition of a former lead acid battery recycling facility (including all of its original furnaces and air pollution control equipment), remediation and consolidation of impacted soil and sediment (with non-recyclable demolition debris) into an on-site waste containment cell, and re-grading to enhance the site for future redevelopment. Site restrictions such as very flat grades



and shallow groundwater resulted in an original stormwater management system that relied on multiple pump stations, treatment system with on-site personnel. Montrose's experienced civil-environmental engineers designed effective final site-grading and stormwater management systems that eliminated the need for stormwater pumping and treatment and significantly reduced long-term operation and maintenance costs.



E N V I R O N M E N TA L

SPECIALTY CHEMICAL MANUFACTURING FACILITY STORMWATER INFRASTRUCTURE UPGRADES, GEORGIA

This chemical manufacturing facility was required to collect and treat stormwater runoff. An unlined stormwater pond was utilized to manage collected stormwater awaiting treatment, but it was undersized and regularly overflowed. The owner was also concerned that a potential chemical release could enter the retention pond and infiltrate into the groundwater. Montrose was retained to increase the storage capacity and upgrade the pond with a geomembrane liner system. Working within a number of vertical and horizontal site restrictions Montrose was able increase the storage volume from less than a 25-year storm event to greater than a 100-year storm event. The design also included modification of the original inflow and outflow structures without the need for liner penetrations. Design deliverables included a detailed sequence of construction, and construction specifications for re-grading, liner installation, erosion and sedimentation controls, and modification of existing drainage structures.









SAP AMERICA HEADQUARTERS EXPANSION - SITE DESIGN AND STORMWATER, PENNSYLVANIA



The original development of the SAP America Headquarters involved the construction of a 200,000-SF office building and a parking garage on a 100-acre property. The new project involved the expansion of these facilities to include an additional 200,000-SF office building and an expanded parking garage. SAP America directed the design team, which included FXFOWLE Architects, Advanced GeoServices, and Wallace Roberts & Todd, to develop a building and site design that would use the latest sustainable design methodologies and technologies.

Montrose was involved with a range of unique site-related and stormwater design elements on the project, many important parts for the overall LEED® Platinum certification. We successfully demonstrated that the project site design met LEED® point requirements through a layout that maximized open space on the site and minimized disturbance of natural features. The building and connector building were designed with a green roof; the drainage would be collected and directed to a cistern for reuse



irrigating the new landscaping around the building. The stormwater peak discharge rates and volume of runoff were reduced by introducing drainage to the groundwater through the installation of infiltration beds within the previously installed conventional stormwater management basin. Lawn areas were converted to natural meadow (where possible) to help reduce runoff and the amount of irrigation required. Montrose also provided the geotechnical testing for the geothermal heating system for the building.





LAKE AKIBA DAM - WATERSHED MODELING AND SPILLWAY UPGRADE, NORTHEASTERN PENNSYLVANIA



The Lake Akiba Dam is a 360-foot long and 17-foot high earthen embankment with a concrete corewall and concrete/ masonry spillway, located along a tributary to Appenzell Creek in Jackson Township, Pennsylvania. Lake Akiba, the reservoir behind the dam, is used for recreational purposes by the Pocono Valley Resort and Conference Center.

The Pennsylvania Department of Environmental Protection

(PaDEP) notified the dam's owner, Keystone Industries, that the

spillway capacity was insufficient to pass the required design storm (the 0.81 Probable Maximum Flood (PMF) event) without over-topping the earthen embankment. The capacity of the existing spillway is about 0.18 PMF. Montrose was engaged to review the existing hydrologic study of the watershed and dam breach analysis, and to evaluate



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potential options to modify the dam/spillway

in order to safely pass the required design storm.

Services Included: PaDEP file review; review of the existing

hydrologic/hydraulic calculations; development of a detailed hydrologic model of the upstream watershed; evaluation of potential improvement options; and development of a conceptual design of these potential options. The potential improvement options included a labyrinth spillway and over-topping protection



(articulated concrete block (ACB) and roller compacted concrete (RCC)).

The plans submitted to PaDEP included the design of RCC over-topping protection that would safely pass the required design storm, as well as improvements to the existing spillway and downstream flow conditions.









STORMWATER/SURFACE WATER EXPERTS



PAUL G. STRATMAN P.E., P.G.

Industrial Stormwater Expert

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Paul Stratman, P.E. is an expert in the investigation and remediation of inorganic contamination associated with battery sites, secondary lead smelters, and Superfund sites. Paul has advised capital investment firms on environmental matters associated with bankruptcy issues, acquisitions, and investments. He has led multiple stormwater engineering projects on industrial facilities that required both new and retrofitting of collection, containment, and treatment infrastructure. Paul's engineering experience also includes the siting, design, construction, and closure of municipal, residual, and hazardous waste landfills and surface impoundments; permitting and design of hazardous waste facilities; preparing and implementing environmental and geotechnical investigations; design and implementation of plans for stabilizing and remediating contaminated sites; facility closure and decommissioning; and installation and testing of geosynthetic materials. In addition to his technical experience, he has served as chairman of a community advisory panel, testified at public hearings, negotiated with regulators and consulted to Financial Advisors and Institutions. He is a licensed engineer in 22 states.



VERONICA E. FOSTER P.E.

Industrial & Municipal Stormwater Expert vfoster@montrose-env.com 🔀 856.354.2273 🗞

Veronica Foster, a Professional Engineer registered in NJ, DE, PA, and MD, has been managing and supervising civil and environmental engineering projects for over 30 years. She started in the engineering field as a board-draftsman for a land-development engineering firm while attending college, and has experience with traditional civil engineering (commercial and residential development); water supply and treatment (leading our GPM Associates division); solid waste (municipal waste, construction demolition and debris, incinerated municipal waste, and coal combustion residuals) landfill design, permitting, construction, operation, and closure; wastewater process design engineering and permitting; environmental permitting (air, stormwater, wetlands, etc.) and compliance; and environmental remediation and restoration on state and USEPA jurisdictional sites. She is a licensed engineer in four states.



JENNIFER W. DIJOSEPH P.E.

Industrial Stormwater Expert

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Jennifer DiJoseph is a senior engineer responsible for investigation, analysis, design, cost estimating, permitting, and construction oversight of environmental and geotechnical projects. She has over 20 years of experience in stormwater analysis and design; remediation of contaminated sites; landfill and impoundment design, permitting, and closure; geosynthetics; facility compliance; facility closure; and permitting for industrial and hazardous waste facilities including RCRA Part B Hazardous Waste permits and NPDES permits for industrial discharge and construction. She provides support to operating facilities for environmental compliance, permitting, and emergency response planning. Jennifer has designed, permitted and overseen construction of facility upgrades including RCRA-permitted hazardous waste units and facility stormwater systems. Jennifer routinely works with responsible parties, property owners, and regulatory agencies to identify creative and costeffective solutions. She is a licensed engineer in 6 states.



TODD D. TROTMAN P.E., LEED®

Watershed Modeling/ Geotechnical Expert ttrotman@montrose-env.com I 610.840.9144 &

Todd Trotman is a senior engineer with expertise in geotechnical engineering and watershed modeling associated with the rehabilitation of existing earthen dams - particularly those with inadequately-sized spillways. Rehabilitation projects have included upstream watershed modeling to determine the Spillway Design Flood (SDF) and downstream inundation studies (incremental dam break analysis) to assist in the determination of the appropriate hazard classification for the dam. The upstream watershed modeling has included detailed studies to determine a realistic SDF. In order to safely pass the SDF for these earthen dams, Todd has performed the hydraulic design of new concrete spillways (including energy dissipation) as well as over-topping protection including articulating concrete block (ACBs) and roller compacted concrete (RCC). The design of these elements has also included geotechnical investigations via test borings/piezometer installation to characterize the subsurface conditions and to perform embankment stability, uplift, and settlement calculations. He is a licensed engineer in 7 states. 13

STORMWATER/SURFACE WATER EXPERTS





DANIEL T. WRIGHT P.E.

Civil Engineering Stormwater Expert

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Daniel Wright, P.E. serves as the Director of the Site Design Services group of Montrose as well as the Township Engineer and Zoning Officer for Charlestown Township. He leads the 20-person Land Development Services group, comprised of Civil Engineers, Geotechnical Engineers, and Landscape Architects. He uses his experience managing large private and public land development projects over a 35-year career to support his role as an expert witness on a variety of projects in the Philadelphia area. Dan has been an industry leader in providing innovative and sustainable stormwater management designs on his projects. He is in the process of developing the Township-wide Municipal Separate Storm Sewer System (MS4) program for Charlestown Township, which evaluates adverse impacts to the Township's stormwater system and provides improvements to address these adverse impacts. He specializes in creating engineering designs that are cost-effective as well as meeting the client's aesthetic vision. Daniel is a licensed engineer in Pennsylvania and Delaware.



FRANCIS E. GREENE P.E.

Civil Engineering/Stormwater Expert Floodplain Modeling Expert fgreene@montrose-env.com 🔀 610.840.9130 &

Francis Greene has been working in the engineering industry since 1994 and has expertise in managing projects for all aspects of the site development life cycle, including site layout, grading, stormwater management and collection system design, watershed hydrology and modeling, floodplain modeling, CLOMR/LOMR applications, HECRAS modeling, NPDES permits, planning modules, and infiltration and detention basin design, as well as walking clients through the permitting approval process, including working with local, state, and federal agencies. He has experience designing for residential, commercial, institutional, and municipal projects, and is proficient in multiple hydrologic, and hydraulic, and CAD software. Francis is currently working on three floodplain modeling projects to determine the impact of development within the study areas.



MICHAEL J. GLADNICK RLA

Landscape Architecture Stormwater Expert

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Michael Gladnick is a Registered Landscape Architect with bachelors degrees in Landscape Architecture and Civil Engineering and more than 40 years of professional experience. He combines his skills as both a land planner and civil engineer to create stormwater management facilities that blend into the landscape. He has been the lead designer on several large projects, including Urban Outfitters headquarters at the Philadelphia Naval Shipyard, SEI Corporate Headquarters, Swarthmore College Science Center, and Boothwyn Elementary School. Michael has also been the lead for developing stormwater management designs for multiple logistic/ distribution centers greater than 1,000,000 sf. His projects have received two Montgomery County (PA) Planning Commission's Outstanding Land Development Awards, the Philadelphia Water Department's Storm Water Management Best Practices Award, the American Society of Landscape Architects' Design Honor Award, and the Urban Land Institute's Global Award for Excellence.



RANDALL R. PATRY P.E.

Civil Engineering Stormwater Expert rpatry@montrose-env.com 🔀 610.840.9119 🗞

Randall Patry has been working in the civil engineering field since 2000, designing residential and commercial land developments. Randy has designed stormwater best management practices and collection systems such as infiltration practices, biofiltration systems, stormwater reuse systems, floodplain mitigation systems, and low-impact developments, and has performed anti-degradation analysis. He also has expertise in site grading, parking lot design, erosion and sedimentation control design, floodplain analysis, hydraulic and hydrologic analysis of streams, impoundments, and lakes. Randy also has experience ensuring project compliance with local, county, state, and federal regulations, and obtaining permits for single family, multi-family, townhouse, condominium, age-restricted communities, and commercial buildings. He has been performing municipal engineering since 2005 to ensure proposed development projects comply with municipal ordinances. Randy is also trained in the efficient utilization of hydrologic and hydraulic programs and CAD software.

Schematic BMP Planning

Infiltration Testing

Alternative BMP Analysis

Stormwater Management Design

Stormwater Management and Best Management Practices (BMPs) Plans

Erosion & Sedimentation Control Plans

> NPDES Stormwater Discharge Permit Applications

> > Monitoring

Maintenance

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STORMWATER BEST MANAGEMENT PRACTICES (BMPs)

Proper management of stormwater is an issue for every development project. With increasing scrutiny over how stormwater affects a site, our clients are faced with mounting costs relating to stormwater design. They turn to us for practical, cost-effective solutions.

Montrose has been working on stormwater designs for decades. We've been a leader and advocate of Best Management Practices - long before the latest standards were adopted by PADEP and other state agencies.

We understand that each site is unique and needs to be evaluated to find the most appropriate solution. Drawing upon our civil engineering and landscape architecture practices, and looking past the traditional engineering control

designs, we strive to create designs that not only incorporate the site's features but also use landscape design to create innovative solutions that are both natural and that minimize the need for additional unsightly and costly engineering interventions.

These innovations include underground cisterns, rain gardens, porous pavement, infiltration beds that double as general landscaping, underground infiltration basins, roof collection systems, water channels that are incorporated into building designs, vegetated swales, wetlands for forbays, and wetland mitigation.

Ultimately, we strive to create designs that blend man-made structures into the natural landscape to provide the necessary engineering controls.





Irrigation Vault



LEED® Platinum Green Roof Building

Water Channels



Vegetated Swale

Stormwater Facility Management/ Maintenance Plans

Expand Stormwater Pollution Prevention Plans (SP3)

Stormwater Facility Inspection Compliance

Stormwater Facility Inspection Forms and Logs

Stormwater Facility Inspection Training

Reviews of past municipal permits for site-specific requirements

Stormwater BMP Design

Stormwater BMP Documentation

Soil testing criteria review

Infiltration basin design

Deed review for easements and restrictions

Local municipal ordinance compliance

Retrofit facility design

Low impact development techniques

Stormwater runoff rates and volume computation design and verification

Landscaping and vegetation review and enhancement

Professional Engineer annual maintenance plan review



STORMWATER FACILITY INSPECTIONS

Federal roll-out of National Pollution Discharge Elimination System (NPDES) for Municipal Separate Storm Sewer Systems (MS4) gives municipalities the authority to require large contributors to their storm sewers to comply with stormwater Best Management Practices (BMPs). This can include:

- Installation of silt sacks in storm inlets
- Annual removal of sediment in stormwater ponds and tilling of soils in the bottom of the ponds
- Routine inspection of site systems during and/or after significant storm events to identify locations of concentrated flow and increased erosion potential
- Installation of BMPs promoting infiltration and filtration, including (but not limited to):
 - Rock filters
 - Pervious pavement
 - Grass filter strips
 - Landscaped rain gardens
 - Check dams to slow runoff
 - Rain barrels



The goal is to increase infiltration of surface water to the groundwater - reducing runoff which can cause erosion and overwhelm municipal storm sewers and nearby

streams, potentially causing flooding to downstream neighbors.

Many of these requirements are new in 2019, depending on the state/jurisdiction and the size of the facility. Documentation is essential, as many municipalities request copies as proof that the stormwater program is being implemented.

NEW REQUIREMENTS

Montrose can help you comply with stormwater facilities inspections on developed properties. Specific construction techniques and BMPs have been incorporated in land development approval processes. Each property also had a Stormwater Facility Maintenance Plan, which include inspection requirements.

Purchased or leased facilities may have a Stormwater Management Plan that requires a yearly inspection by a professional engineer. Many times these plans are recorded with the property deed. Many leases require the facility operator to comply with all rules and regulations while occupying the property. Sometimes these stormwater maintenance plans are difficult to locate and many property management firms may have neglected to provide the plans to a new tenant.

HOW CAN WE HELP

Montrose has experienced professional engineers knowledgeable in municipal engineering, stormwater design, and land development. We'll help obtain the original plans or create a new inspection format based on the stormwater features observed on the site, referencing state regulatory stormwater management guidance manuals. Stormwater facility inspection is usually required to be completed by June 30 each year.

Stormwater Facility Management/ Maintenance Plans

Expand Stormwater Pollution Prevention Plans (SP3)

Stormwater Facility Inspection Compliance

Stormwater Facility Inspection Forms and Logs

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STORMWATER FACILITY INSPECTIONS

BMP EXAMPLES



Rock filter directing flow into landscape flower bed to promote infiltration

Infiltration landscape bed





Biofiltration, vegetated swales and rain gardens





ENVIRONMENTAL

- Site Characterization
- Feasibility Studies
- Vapor Intrusion Investigation & Mitigation
- Historic Fill Assessments
- Remedial Design (Plans & Specifications)
- Remedial Construction Monitoring
- Brownfields Redevelopment
- Groundwater Modeling
- In-Situ Groundwater Restoration
- Innovative Capping Solutions
- Sediment Management
- Pilot Studies
- Operations & Maintenance
- Spill Response Planning
- Facility Support (e.g., SWPPP, PPC, SPCC)

GEOTECHNICAL

- Subsurface Investigations
- Foundation Evaluations
- Feasibility Studies
- Construction Monitoring
- Forensic Engineering Studies
- Sinkhole Investigations/Remediation
- Soil Stabilization/Ground Improvement
- Earthworks Studies
- Surcharge Design/Management

CIVIL ENGINEERING/SITE DESIGN

- Land Planning
- Site Engineering/Permitting
- Landscape Architecture
- Opportunity & Constraint Studies
- Yield Analysis
- Zoning/Land Development Applications
- Wetlands/Floodplain Delineation
- Hydrologic/Hydraulic Modeling (HEC1/HEC RAS)

WATER/WASTEWATER

- Water Collection & Treatment
- Water Supply/Treatment/Distribution
- On-Site Wastewater Disposal Systems
- Wastewater Collection & Treatment
- Sewage Disposal Permit Applications
- Part I NPDES Permits
- Part II Construction Permits
- Water Quality Permits
- Erosion & Sedimentation Control Permitting
- GIS Mapping
- Stakeholder Engagement
- Water & Sewer Collection Utility Operations & Management
- Licensed Operators
- Oxidation Treat-ability Studies
- 4-Log Virus Inactivation Design & Permitting

- Due Diligence Support
- Stakeholder Engagement
- Compliance Auditing
- Permitting Support
- Phase I/II Environmental Assessments
- Wetlands (Studies, Permitting, Mitigation)
- Data Management & Validation
- Waste Classification
- Soil Reuse Plans, incl. Beneficial Reuse
- Soil Management Programs
- Coal Combustion Residual (CCR) Closure & Management
- Determination & Certificate of Authority
- Licensed Site Remediation Professionals (LSRP) Services
- Dredging Plans
- Geographic Information System (GIS)
- Geophysical Studies
- Slope Stability Analysis
- Best Management Practice Infiltration Studies
- Retaining Wall Design/Specifications
- Pavement Design/Rehabilitation
- Geosynthetic Design
- Dam Inspections
- Dam Safety Evaluations
- Streambank Restoration
- Slurry Wall Design
- Stormwater Management
- Environmental/Community Impact Studies
- Open Space Planning/Park Design
- Waterfront Permitting
- Streetscape Design
- Permitting Documentation
- Municipal Engineering
- Hydrologic Studies
- Corps of Engineers & State Joint Permit
- General Permits for Discharges of Stormwater
- Feasibility Studies
- Construction Cost Estimating
- Alternative Cost Analysis
- Water Re-Use Options
- Performance Evaluations
- Water Conservation Planning
- Operations Consulting
- Valuation Studies
- Cost of Service Studies
- Financing Assistance
- Privatization Options
 Construction Surveillan
- Construction Surveillance & InspectionCivil Engineering

18



WHO WE ARE

60⁺ OFFICES, 1,300⁺ EMPLOYEES, 5,000⁺ CLIENTS

Headquartered in Irvine, California, Montrose is a high-growth environmental services company with more than 50 locations and 1,200 employees in North America.

As one of the largest companies focused on environmental solutions, we support government and commercial organizations with a diverse range of services. Our expertise covers everything from comprehensive air measurement and laboratory services to regulatory compliance, permitting, engineering, and remediation.

While we have a broad range of capabilities, we understand each client's needs are unique. That's why we use our expertise to offer specialized services – everything from engineering, designing and building anaerobic digesters to landfill gas-to-energy development, tribal gaming environmental studies, preparing CEQA and NEPA documentation and more.

Our local presence, national scale, and collaborative nature ensures your project gets the personalized attention it deserves. If it's related to the environment, we've got a solution near you.

