

STATEMENT OF QUALIFICATIONS



National Waterways Program





At Apex, we are committed to the success of industries that use our nation's waterways and its infrastructure and dedicated to enhancing those waterways on behalf of our communities.

Our Waterways services—which span marine infrastructure, resiliency and coastal engineering, ports and harbors services, supply chain planning and readiness, inland waterways, scientific diving services, and offshore energy and wind—yield cost savings and efficiencies. We credit those results to our technical expertise, quick response times, professional performance, high-quality results, and cost efficiency.

Established in 1988, Apex is a national multidisciplinary consulting, engineering, and field services firm with a robust portfolio of capabilities in water resources, environmental services, health & safety, construction

management, transportation, and compliance & assurance. Rated #16 as an *ENR* All-Environmental firm and #68 in the top 200 overall, we are known for our technical expertise, rapid response, operational integrity, and exceptional client satisfaction. We operate in all 50 states and maintain a highly capable and diverse team of scientists, engineers, technicians, and information management specialists.



- National Reach
- Local Knowledge
- Comprehensive, Turnkey Services
- Innovative Thinking and Solutions
- Practical, Efficient, Creative Professionals



Waterways Technical Services

Apex is an innovator, widely recognized for superior technical standards and performance. We partner with our clients to create forward-thinking, comprehensive, and cost-effective solutions.

Program and Project Management

Apex develops and implements strategies that align with our clients' goals and desired outcomes to meet project-specific scopes, budgets, and schedules. Our project managers, engineers, and technical specialists are supported by our corporate-level senior managers to ensure efficient and quality management of our clients' projects and client satisfaction.

Our internal management processes and in-house support staff, accounting tools, and tracking systems enable us to develop "right-sized" approaches and solutions and quickly identify and mitigate potential risks.

First in the Nation

Apex was the lead design firm for the first-in-the-nation marine terminal constructed to support the offshore wind industry. Our team conducted in-person site visits to existing facilities in Europe and interviewed owners to gain a deep understanding of the strategic planning, engineering, logistical requirements, technical considerations, and marine energy infrastructure challenges. It was a pleasure to share our industry-specific insight and design, engineering, and surveying experience to facilitate a coastal milestone.

Vision

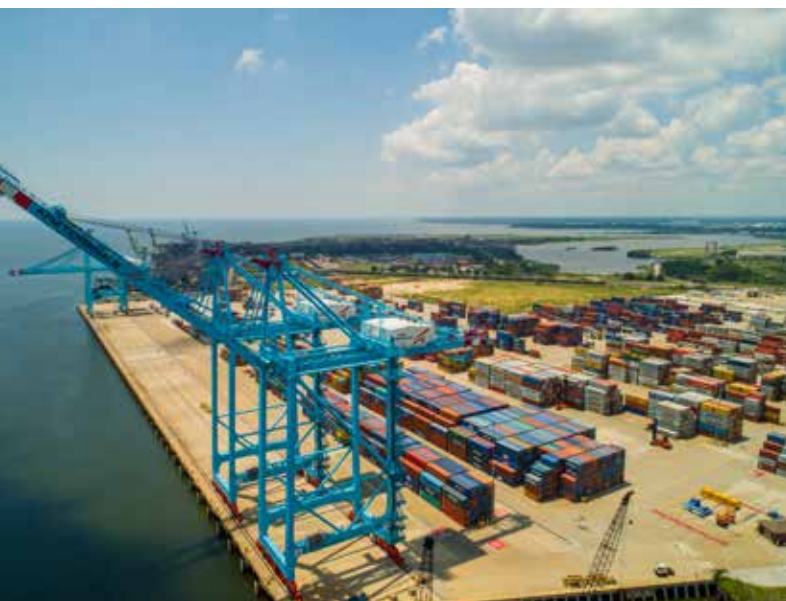
We know that your success begins with our ability to adopt a shared project vision. We build on that vision throughout the process—from strategic and cooperative planning, engineering and design, and construction management and oversight to acting as the Owners' Representative with a focused attention to quality assurance/quality control (QA/QC) and H&S.





Representative Waterways Services

- Geophysical and hydrographic surveys
 - › Multi-beam—inshore and offshore
 - › Side-scan, sub-bottom, magnetometer—inshore and offshore
- Sediment sampling and analyses
- Sediment management planning and design
- Permitting/environmental impact studies (EIS)
- Resource studies
- Regulatory reviews and negotiations
- Essential fish habitat studies
- Resource avoidance and mitigation concept evaluations
- Planning and readiness reviews and port evaluations
- Supply chain studies
- Onshore studies
 - › Linear project support and surveys, design, and construction support
 - › Environmental assessment and remedial activities—impacted land
- Inshore and shoreline studies
 - › Routes assessments
 - › Impacts and regulatory negotiations
 - › Public outreach
 - › Surveys and data collection
- Engineering studies and engineering design
 - › Infrastructure buildout
 - › Navigational access
 - › Dredge planning
 - › Sediment management and disposal
 - › Capping
 - › Restoration
 - › Beach nourishment
 - › Erosion prevention including armoring
 - › Stormwater management
 - › Streamflow assessments and management
 - › Dam and impoundment assessments
 - › Shoreline infrastructure (e.g., transfer points, marine terminals, marinas, etc.)
- Construction planning, engineering, and oversight
 - › Plans and specifications, cost estimating, and schedule tracking
 - › Labor and union issues support
 - › Contract development and reviews, contractor bid processes, and contractor submittal evaluations
- Construction monitoring for quality, accuracy, and compliance of contract plans and specifications, Owner's Representative, pre- and post-construction surveys:
 - › In-field monitoring for resource avoidance and protection
 - › In-field monitoring for regulatory compliance
- H&S support and monitoring





Marine Infrastructure Design and Engineering

Apex offers a broad spectrum of coastal engineering, oceanography, and marine geology services focused on evaluating and designing marine infrastructure and monitoring shoreline and coastal processes. Our support ranges from geophysical, geotechnical, and environmental investigations to engineering feasibility, preliminary, and final designs.

Representative Services

- Civil engineering
- Pier and harbor facility design
- Major port infrastructure and marine terminal facility design
- Port infrastructure assessments
- Geotechnical and waterways evaluations
- Structures evaluation, design, and rehabilitation
- Sediment transport/erosion and accretion studies
- Shoreline feature protection, shoreline structures, and sea walls



Project Spotlight: New Bedford Marine Commerce Terminal, Massachusetts

- Fast-track design and construction schedule
- Unique permitting aspects
- Design challenges
- Natural and cultural resource concerns
- Multi-party stakeholder process
- 450K cubic yards of dredging
- 200K cubic yards of filling
- 1,200 linear feet of bulkhead installation
- Development of large freight and equipment handling facilities





Marine Geophysical and Bathymetric Survey Services

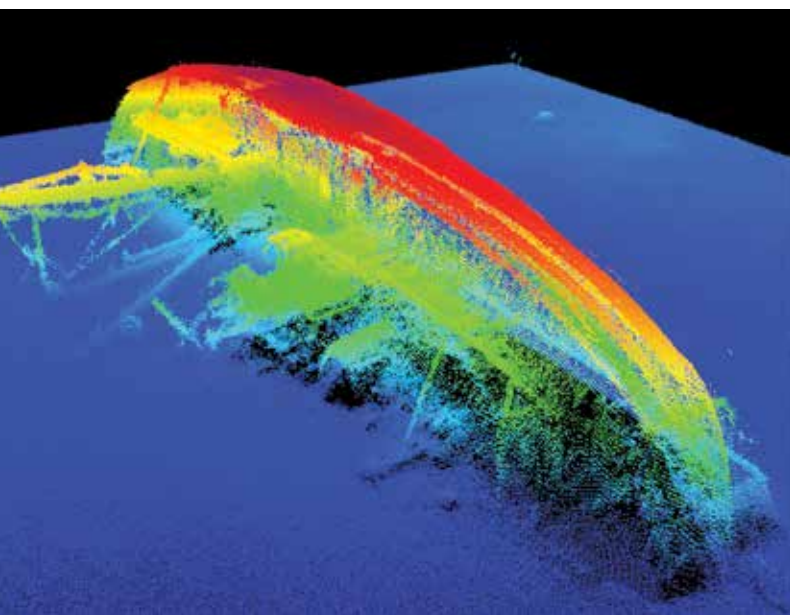
Apex uses cutting-edge technology and equipment to survey coastal waterways, inland ponds, reservoirs, streams, and river crossings. Multibeam data is collected at sufficient density to provide 200% bottom coverage in water depths greater than 10 feet. For shallower waterways (less than four feet), we conduct single beam surveys with a system that can be mounted on a wide variety of vessels and crafts. We have conducted bathymetric surveys across the country, on both coasts, and throughout interior waterways.

Our geophysical surveys are designed to support maritime/coastal investigations with a myriad of technical equipment and marine systems at our disposal. Our equipment includes survey and vessels from our own fleet and arrangements with multiple vessel owners and teaming partners at various ports along the east and west coasts. In addition, we use remotely operated vehicle (ROV) technology to enhance geophysical survey investigation and sampling procedures in challenging locations.

Our computer and data collection capabilities include interpretation, management, mapping, and presentation services. By using the latest technologies, we're able to design the most effective project-specific integrated systems. As a result, we can pair decimeter accurate data collection with real-time precision position, attitude, and heading data.

Representative Services

- Bathymetric surveys
- Side-scan sonar
- Hazard and utility location services
- Archeological surveys
- Geological support studies
- Sludge thickness mapping
- Bedrock and sediment mapping
- Sub-bottom profiling
- Remote sensing/imaging



Natural and Cultural Resources

Working in close collaboration with our clients, we help them identify environmental constraints, assess potential compliance options, and develop efficient and cost-effective strategies to achieve compliance, including evaluating avoidance, minimization, and permitting opportunities. Apex is continually generating and implementing unique solutions that are customized to suit the varying compliance needs for our clients' projects.

Maintaining an informed understanding of the current regulatory requirements, our team expertly navigates applicable permitting and approval processes, including agency and inter-agency coordination and consultations.



Construction Design, Procurement, Management, and Oversight

Our capabilities range from overall project management and oversight for marine and waterways projects to specific support functions of construction, remediation, and dredging projects.

Representative Services

- Project management
- Owner representation
- QA/QC for construction activities
- H&S oversight
- Contractor pay items
- Recordkeeping and reporting
- Bathymetric and sub-bottom surveys
- Dredge accuracy monitoring during and post-construction

Through our ongoing experience with heavy marine construction projects and linear marine projects, including marine and seabed infrastructure projects, we have acquired an in-depth understanding of the complexities of ocean and marine construction environments. Our hands-on experience includes geophysical surveys and sediment sampling conducted by in-house staff, equipment, and vessels. This, combined with the technical capabilities of our engineering professionals and specialists, has earned Apex industry-wide recognition for our existing conditions analyses and sea anomaly/potential hazards identification expertise.

We routinely provide design and procurement services in conjunction with our engineering and oversight services, incorporating collected data and engineering evaluations into each project design. We add final designs to the bid specifications to further detail project parameter requirements and our client's terms and conditions. We assemble the necessary documents and manage the procurement process from pre-bid meeting coordination and bid receipts to contractor bid evaluation and contractor selection.

Resident Engineering

Apex provides resident engineering services for a wide variety of construction projects for government, commercial, and industrial clients. We serve as an on-site Owner's Representative to oversee subcontractors and ensure that all phases of the project are performed expeditiously and in accordance with permits and specifications.

Health & Safety

The most important consideration throughout all project planning, approach, and execution activities is the protection of on-site personnel, potential off-site receptors, and the environment. With that priority in mind, we develop and implement professional technical reviews and implementation of detailed H&S criteria, practices, and procedures to ensure proper control of and protection against the unique safety, chemical, physical, and biological hazards each project entails. Apex H&S trained personnel adhere to the most current federal, state, and local laws, regulations, and requirements at each project site to ensure that all H&S provisions are followed by all team members, subcontractors, suppliers, and support personnel.





Harbor Development, Planning, and Management Services

Addressing both short-term priorities and long-term objectives, our innovative development and planning services include:

Evaluating Industrial Ports related to repositioning/ accommodating offshore wind development and industrial redevelopment.

Maintaining Economic Viability of ports while accommodating multiple marine and commercial uses.

Providing Engineering and Environmental Support for economic redevelopment plans and revitalizing economically depressed areas with cost-effective remediation and rehabilitation planning.

Facilitating Development by identifying a matrix of potential mitigation sites within the port and surrounding areas. After pre-selected sites are vetted through a Harbor Master Plan, we mitigate regulatory concerns associated with future port development projects and help streamline the project approval process for future development plans.

Evaluating Contaminated Sediment Solutions and addressing the rapidly changing technology and regulations. We help ensure that Harbor Master Plans

are responsive to the needs of the port and provide a flexible framework and implementable solutions that leave room for expansion.

Evaluating and Designing Dredging Programs that enable efficient use and future adjustment, modification, or potential expansion of port usage.

Port Readiness and Supply Chain Assessments

Through our long history of US port and harbor infrastructure design/evaluation work and carefully cultivated relationships with European wind energy developers, we are well-positioned to ensure the successful development of major marine or coastal infrastructure projects.

Our work includes infrastructure evaluations; harbor infrastructure reviews; detailed engineering evaluations (including bulkhead and quayside design, utilities and appurtenances design, and dredge design); harbor management plans; economic/supply chain assessments; and site design, permitting, engineering, and construction oversight.

Getting US Ports Industry-Ready

- Coordination between project developers, component manufacturers, shipping agents, installation contractors, and stakeholders
- Gap analysis for services and infrastructure required and “out-of-the-box” solutions
- Supply chain analysis and through-put capacity focusing on maximum efficiency
- Local and regional existing marine infrastructure and services assessment
- Multi-modal transportation and interconnectivity: shipping channels, railroad, and roadway access
- Sufficient lay-down space for components and equipment storage
- Navigation and channel studies: access and potential dredging requirements, design, and sediment disposal options
- Load capacity requirements for planned and future projects requiring larger components and equipment
- Cost and schedule for new or upgraded port infrastructure or equipment
- Regulatory environment including interface with permitting process parallel to design process, data collection schedule, and lead times



Resiliency and Sustainability

We deliver resiliency and sustainability projects as part of national and local initiatives that address climate change and resulting sea-level rise in coastal areas.

Apex, in its role as the US Coastal Engineering Firm within the Interboro Team, was awarded a contract by the United States Department of Housing and Urban Development (HUD) Rebuild by Design (RBD). This project stemmed from President Obama's Hurricane Sandy Rebuilding Task Force and HUD to address structural and environmental vulnerabilities and develop fundable solutions to better protect residents from future climate events. We worked closely with multiple organizations, agencies, and stakeholders to develop resiliency strategies and innovative permitting strategies with major regulatory authorities including the New York State Department of Environmental Conservation (NYSDEC) and the United States Army Corps of Engineers (USACE).

Apex factors in sea level rise and climate change into all of its coastal infrastructure designs to help counter the changing weather and storm conditions that are occurring more frequently.

Comprehensive Planning Process

We understand that there is no single solution that will solve water-related problems. Our team looks at each system holistically to develop comprehensive plans from short-term and long-term strategies and spur local and regional change. We use a series of targeted processes to help decision-makers understand the full range of issues, concerns, and possible solutions.



Sea levels are rising at an unprecedented rate. According to NASA, “by the end of the century, scientists expect seas to rise by as much as four feet—enough to swamp many coastal areas.”



Dredging Services

Over the last 25+ years, Apex has provided environmental services related to dredging and dredge material management, both in coastal and inland applications. Our innovative solutions for dredge material management include Confined Aquatic Disposal (CAD), CAD cell design, CAD cell construction, dredge design, surveys, mapping, sampling, and analysis. Our team has designed confined disposal facilities (CDFs) for multiple locations such as the New Bedford Marine Commerce Terminal in Massachusetts where we designed and supervised a complicated series of successful measures to protect marine resources and create suitable habitats for sensitive marine species.

Representative Services

- Dredge engineering design
- Dredge monitoring and oversight
- Disposal alternatives analyses
- Waterways planning
- Beach nourishment
- Contractor procurement
- Water quality sampling/monitoring
- Sediment (contaminated and non-contaminated) suspension monitoring
- Turbidity and current measurements
- Biota sampling and analyses
- Marine mammal monitoring
- Silt curtain and containment system monitoring
- Excavation depth and footprint monitoring
- QA/QC for dredge specifications
- Recordkeeping and reporting
- Dredge depth and footprint monitoring
- Bathymetric and sub-bottom surveying for monitoring during dredging and for pre- and post-dredge surveys



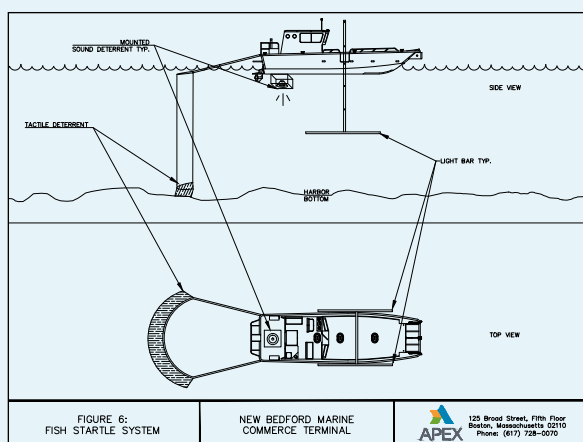


Environmental Sampling, Monitoring, and Compliance

Our teams are as adept at navigating the regulatory framework as they are well-versed in the federal and state regulatory requirements, standards, and practices for soil and sediment characterization; ground/surface water testing; and analysis. By owning and maintaining our own fleet of vessels and sampling equipment, we can provide the right size vessels and appropriate equipment for each project's needs and accessibility.

Representative Services

- Water quality sampling and monitoring current, wind, and wave studies
- Marine biotic sampling and monitoring
- Bottom sediment sampling and analysis
- Remote sensing site characterization
- Phase I and Phase II Environmental Site Assessments (ESAs)
- Sampling and analysis programs, compliance audits, permitting, and EIS
- Wetlands delineation



Fish Exclusion and Deterrent System

Our innovative technology and procedures helped our client obtain Environmental Protection Agency (EPA) permit approval for critical project activities.

We designed a series of engineering measures and processes that, together with pre- and post-construction monitoring, satisfied the EPA's concerns.

Our system has been proven to reduce the impact of construction activities to fish in areas vulnerable to disturbance during spawning or before eggs have hatched.



Scientific Diving Services



Our scientists and engineers are also experienced and capable divers who provide services ranging from investigations, monitoring, engineering and design to construction/implementation, oversight, and QA/QC services.

Apex has provided QA diving inspections for a public agency with several drinking water reservoirs and continues to provide the field verification of invasive plant removals within a coordinated schedule for a selected Diver Assisted Suction Harvesting (DASH) contractor.

Our divers were tasked with providing follow-up services to inspect for the target invasive aquatic plants: Eurasian watermilfoil (*Myriophyllum spicatum*), Variable watermilfoil (*Myriophyllum heterophyllum*) and Fanwort (*Cabomba caroliniana*).

Our dive team is committed to providing our clients with a full range of services to meet their needs. For example, our team went beyond an initial QA dive scope to inspect two bridges in the Wachusett Reservoir in Massachusetts. They generated an underwater video of the submerged portions of the bridges and performed a side-scan sonar survey of the footings of each bridge to further assess the condition of the structures.

We have performed numerous underwater surveys to inspect and document existing underwater such as a gate house within a reservoir and submerged pipelines with underwater video camera documentation in various water depths and conditions. As part of maintenance dredging project, our team has also performed investigative dive services to verify and remove a small object in a navigational channel that could have had a limiting effect on the channel depth certification.





Inland Waterway Services

Apex provides innovative solutions for lake/pond dredge programs designed for ecological restoration, which frequently include improvements to roadways and stormwater drainage systems in the area. Our extensive experience spans the design, permitting, and oversight of dredging projects as well as contaminated and non-contaminated dredge sediment (e.g., beneficial reuse of non-contaminated sediment, landfill daily cover, and disposal).

Our projects have included planning and design services for drinking water supply reservoirs, associated bodies of water, and their retaining structures, bathymetric surveys of reservoirs throughout the US to calculate and verify storage capacities with detailed information regarding the associated intake structures, Phase I dam inspections and evaluations, and the design and rehabilitation oversight of issues identified during inspections.

Our team has successfully completed dredge and construction engineering projects involving feasibility studies, ecological evaluations, engineering design,



permitting, specifications, and management oversight for many municipalities. What sets Apex apart from its competitors is that we have the in-house capabilities to implement designs and upgrades for the ponds and lakes we service. Nationwide, we have delivered creative solutions to improve pond ecology and health.





Information Management Services

Marine engineering and survey projects are data-intensive endeavors. Careful and efficient data collection, storage, management, and transfer are critical components of a successful project. Our survey teams, engineers, and management are committed to the completeness, accuracy, and consistency of our project data. To ensure those outcomes, we employ an efficient and effective QA/QC process that delivers quality project data and reporting capabilities, while reducing risk.

Environmental Management Information System (EMIS)

ARTEMISSM, Apex's award winning EMIS, is scalable, flexible, and customized to fit the exact needs of our clients. It streamlines day-to-day project workflows and helps our clients track, manage, schedule, and maintain their assets. In addition to meeting their environmental compliance requirements, ARTEMIS drives cost efficiencies and unparalleled data quality.

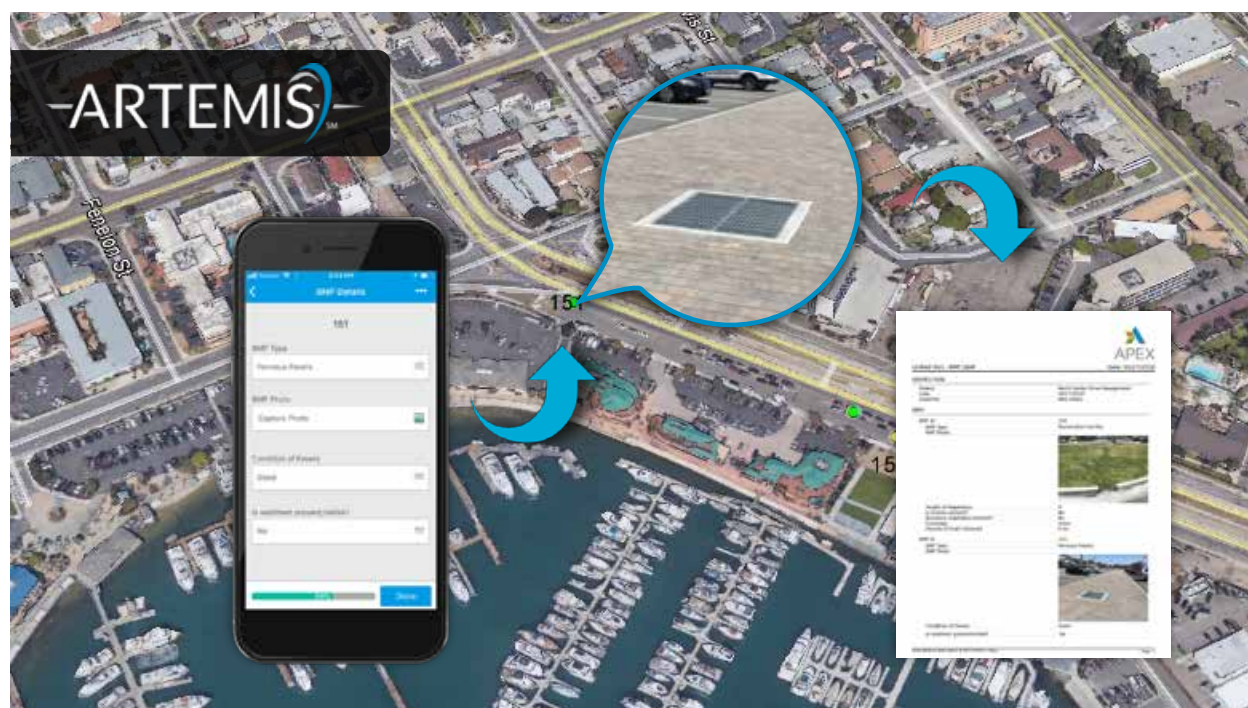
Geographic Information Systems (GIS)

Using the ARTEMIS GIS module, project teams can quickly see the spatial relationship of field activities and asset locations, aiding both planning and analysis. Apex subscribes to the Esri suite of software to deliver state-of-the-art mapping and analysis tools such as ArcGIS Desktop, 3D Analyst, Geostatistical Analysis,

ArcGIS Server, as well as mobile GIS collection tools. Using ArcGIS Server, we host GIS web interfaces for our clients, providing GIS functionality to the non-GIS user through a private and secure interface.

CAD and Design Programs

Apex employs the latest software including AutoCAD Civil 3D, 2013 Hypack Max Microstation J, Hypack Sweep, Intergraph Storm and Sanitary SelectCAD, and InRoads. Hosted by Apex through the Microsoft Azure cloud environment (with a password-protected internet site), users can easily access their data in real-time.





Representative Projects

Environmental Services • Port of Portland, OR



For over a decade, Apex has provided a myriad of services including Phase I and II ESAs; underground storage tank (UST) investigations and decommissioning; cleanups, remedial action designs, and cost estimating; risk-based site closures; risk assessments, engineering and construction support; remedial construction; cost recovery; strategic site management; remedial investigation/feasibility studies (RI/FS); soil, groundwater, and stormwater source control; stormwater

maintenance; waste management; upland/in-water environmental liability estimates; technical support for the Portland Harbor Superfund Site allocation; and aviation-related environmental support.

Within the Portland Harbor Superfund Site, our projects include investigations at the port marine terminals for RI/FS, source control evaluations (including stormwater, groundwater, and riverbank erosion), and implementation of source control measures. These port facilities had been used as shipyards, lumber milling/wood product manufacturing, cooperage, grain storage and milling, dry and liquid products importing/exporting, bulk fuel storage/transport, and equipment or vehicle storage.

Apex has also provided broader strategic management including environmental liability forecasting and technical support (e.g., historical analyses of former site uses and submittal evaluations of other parties) for a private party allocation. This multi-year process clarified 100+ parties' share of the harbor sediment remediation.

Columbia Slough Sediment Investigation and Remediation • Oregon Department of Environmental Quality (DEQ) Portland, OR



Apex performed extensive sediment investigation and remediation services within the Columbia Slough system under DEQ's Columbia Slough Sediment Program. Our staff collected nearly 1,000 bulk sediment and porewater samples, including full- or partial-channel

sediment characterization of over four lineal miles of the 19-mile Columbia Slough system waterway, as well as within numerous side channels, inlets, and ponds. The investigations were conducted in support of contaminated sediment delineation within Columbia Slough priority characterization areas, as well as in support of remedial action design, construction, and post-construction monitoring.

In addition to sediment investigation services, Apex provided remedial action services for Columbia Slough Sediment Program projects, including alternative evaluations, design, permitting, pilot studies, construction implementation, and post-construction monitoring for numerous sediment cleanup activities. At the Portland



Willamette Inlet site in the Whitaker Slough, Apex designed a remedial action to address metals impacted sediments, including preparation of a Remedial Design/ Remedial Action Work Plan and drawings/specifications, reviewed and approved by the DEQ. The remedial action included removal of contaminated sediment and capping of residuals using clean sediment from elsewhere in the waterway. Apex collected confirmation samples and evaluated data to verify compliance with cleanup objectives. Apex filled all roles of construction management, including identifying and resolving changed conditions, verifying removal depths and cap placement, collecting compliance samples, and coordinating all aspects of the construction project. Apex successfully interacted with Oregon DEQ (owner) and Multnomah County Drainage District (MCDD) (as DEQ's contractor) to complete the project on schedule and within budget.

Apex has performed remedial design and remedial action implementation for two Lower Columbia Slough sites. For the Pacific Carbide Cleanup Site, Apex performed

a detailed alternatives evaluation to assess dredging, capping, and carbon amendment options for remedial action at this area of highly concentrated polychlorinated biphenyl (PCB) impacts. At the Pacific Meats Cleanup Site, Apex conducted an activated carbon amendment remedial action. In addition to serving as the site remedy, the project was a pilot study to assess the viability of activated carbon amendment as a remedy for PCB-contaminated sediment areas elsewhere within the Columbia Slough system. Apex conducted preliminary characterization, remedial action design, baseline sampling, contractor procurement, implementation oversight, and post-construction monitoring/reporting. We also obtained all necessary permits for this in-water project, including City of Portland Bureau of Development Services (BDS), Oregon Department of State Lands (DSL), and U.S. Army Corps of Engineers (USACE) removal-fill permits. The project was completed within the permit in-water work window and below the preliminary engineering cost estimate.

On-Call Environmental and Geotechnical Services • Multnomah County Drainage District (MCDD) Multnomah County, OR



For over ten years, Apex has provided MCDD with environmental services including permitting, sampling, and final disposition of sediments from 31 miles of drainage facilities. We have collected hundreds of sediment samples and completed dredge material evaluation for over 200,000 cubic yards of MCDD ditch sediment.

Geotechnical services provided include evaluation of geologic and seismic conditions; preparation of foundation design recommendations; coordination

and oversight of geotechnical evaluations; preparation of geotechnical engineering reports; and geotechnical support for levee systems, embankments, stormwater infrastructure, dredging projects, bridges, and pump stations. Ditch conditions within MCDD range from small limited access channels in residential areas to larger developed waterways in commercial and industrial developments. Apex has prepared sampling plans and access strategies that account for the specific location of each ditch and the community in which it was based. The sampling plans include a detailed analysis of previous site data, assessment of the best sampling method and location for each ditch, and compliance with the previously prepared Environmental Management and Testing Plan. The evaluations considered potential risk for multiple scenarios including disposal and re-use options for dredge material, potential impacts to ecological receptors of the final leave surface and mitigation options for addressing the ecological risks.



Remediation and Restoration Oversight • Port of Los Angeles, CA



Since 2002, Apex has provided a variety of environmental services to the Port of Los Angeles' Harbor Department through a series of contract agreements.

We have developed remedial strategies, reviewed and critiqued remedial approaches developed by others, and implemented and provided oversight of the restoration of impacted port sites. Our work included complex environmental projects such as preparing a comprehensive conceptual remedial action plan (RAP) for a 10-acre industrial parcel heavily-contaminated with volatile organic compounds and lubricating oils; overseeing the removal of hazardous waste and materials from a former boat works (a project cited by the city's HazMat project lead as one of the fastest, most effective cleanups he's witnessed); and identifying, analyzing, and

addressing environmental impacts related to a site slated to become a community park. For the latter project, Apex uncovered an undocumented UST, removed that UST and five others, excavated 1,500 cubic yards of heavily petroleum-impacted soil, and shipped the soil to a recycling center for processing. We also helped prepare the property for future redevelopment through our public participation efforts, developed California Environmental Quality Act (CEQA)-required plans, prepared documents required for litigation measures, and self-performed the excavation of over 10K tons of contaminated soil from one of the project sites.

For a current port project, Apex is planning to implement the final RAP at a site where approximately 15K tons of metal, PCB, and total petroleum hydrocarbons (TPH)-contaminated soil will be removed. Our work was critical for the port's industrial development, which will lead to economic expansion and job creation in an underserved community.

"The Port of Los Angeles would like to sincerely thank Apex for their expeditious response to our need for cost evaluation for the Southwest Marine Remediation work.... Your care and interest in this project on behalf of the Port is acknowledged and very appreciated...you are an invaluable part of this team."

Shirin Sadrpour
Site Restoration Supervisor
Port of Los Angeles

Site Assessment and Remediation • Port of Long Beach, CA



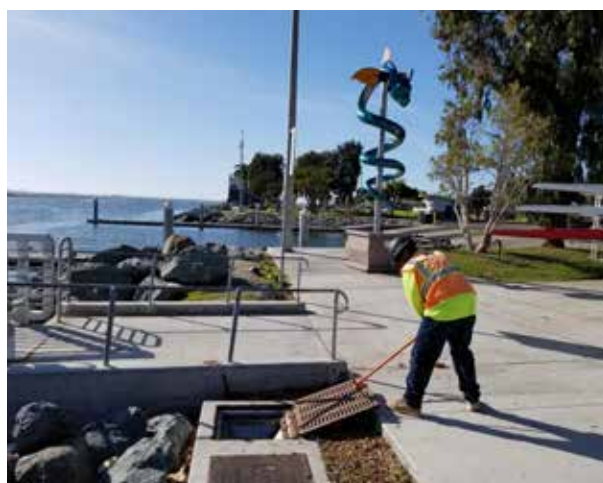
During Apex's multiple on-call contract cycles with the Port of Long Beach, we have provided services on nearly 30 separate task orders with increasing value. One of those projects was the 120-acre Pier A West/Area 2 site which was built on dredged sediments in an area historically used for oil exploration operations since the 1930s. Between 1948 and 1970, liquid wastes (e.g., drilling mud, solvents, spent catalysts, paint sludge, and other liquids) were reportedly deposited into 19 shallow, below-ground, clay-lined impoundments (sumps) on the site. The port had conducted an



Interim/Source Removal Action under the direction of the Los Angeles Regional Water Quality Control Board that included the removal of the sumps and large-scale site re-grading. Previous investigations revealed the presence of groundwater contaminants beneath the sump locations. As part of the Interim/Source Removal Action, the existing groundwater monitoring wells were removed, and Apex installed well clusters and installed, surveyed, and sampled 53 wells. The drilling

required detailed field observations, drilling techniques to ensure proper screen placement, and a final reliable set of monitoring point harbor regions. Additional projects included soil sampling by direct-push drilling at locations associated with a Metro track modification, and wharf repair. Apex's work in the Long Beach harbor has had positive impacts on the community, advancing the port's environmental justice goals.

Structural Pollutant Control Best Management Practice (BMP) Inspections and Maintenance San Diego Unified Port District • San Diego, CA



Apex provides BMP inspection, cleaning and maintenance for 170 BMPs at 14 San Diego Unified Port District-owned facilities throughout the Port Tidelands. The District's trash capture devices include storm drain inlet filters from various manufacturers, pervious pavements, proprietary devices such as Continuous Deflection Systems (CDS) units or modular wetland systems, bio-retention facilities, and media filters installed throughout the Port, including roadways, sidewalks, parks, and District marine terminals.

Some of these BMPs comply with the Water Quality Control Plan for Ocean Waters of California to Control Trash (Ocean Plan) and Part 1 Trash Provisions of the Water

Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE Plan). These BMPs are designed to treat different pollutant types and must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Inspection and maintenance services of these structural BMPs complies with several overlapping permits and documents currently in place, including Regional Water Quality Control Board (Order No. R9-2013-0001), the Municipal Storm Water Permit (Municipal Permit), the District's standard urban storm water mitigation plan (SUSMP), the BMP Operations and Maintenance Plan (O&M Plan), and BMP Design manual.

Apex is currently executing the following scope of work:

- Maintaining compliance with the San Diego Regional MS4 Permit;
- Monitoring adherence to the District's BMP Operations and Maintenance Plan (O&M Plan);
- Conducting routine inspections of the stormwater treatment control BMPs and identifying maintenance and/or cleaning needs;
- Implementing the BMP maintenance program routine work, restoration work, and rehabilitation work; and,
- Documenting and reporting the results of the inspections, maintenance and cleaning activity.



Stormwater Compliance, Inspection and Maintenance of Temporary BMPs for District Properties Chula Vista Waterfront Stormwater Pollution Prevention Program (SWPPP) • San Diego Unified Port District



Apex provides stormwater compliance, installation, inspection and maintenance of temporary BMPs for District properties pending redevelopment along the San Diego Harbor waterfront.

The District is currently in the planning and design phases of the Chula Vista Bayfront (CVB) which will convert 535 acres of vacant and former industrial use land to park space, open space, trails, bicycle path, convention center, hotels, restaurants, retail, and mixed-use commercial/marine-related office use and parking space. Early site preparation has included rough grading, and import/placement of inert soil (which will continue in upcoming years). Currently, four sites, located in the Chula Vista Marina (Site 2 and Site 3) and in the San Diego Bay National Wildlife Refuge (6A and 6B) have been terminated under the State of California's Construction General Permit (CGP) and stabilized with hydroseeding, sediment and erosion control BMPs; a Long-Term Maintenance Plan (LTMP) has been developed and implemented, which references the California Storm Water Quality Association (CASQA) BMPs.

Apex is providing the District construction BMP support services including inspection and maintenance of temporary BMPs including retention ponds, silt fence, wattle, rock bags, and stabilized construction entrances, thereby maintaining construction stormwater compliance after each of the land disturbance (fill) activities associated with ongoing grading work have been completed. The CVB project sites will remain under

LTMPs until the future developer takes control and manages stormwater under a separate CGP and SWPPP.

Our inspection and maintenance of these structural BMPs complies with several overlapping permits and documents currently in place, including the District's Jurisdictional Runoff Management Program (JRMP) and the 2018 Stormwater Quality Management Plan (SWQMP) for Priority Development Projects (PDP). The Apex team project works with the District to implement LTMPs, repair and replacement of sediment and erosion control BMPs, and provide CGP support, as needed, initiating the most efficient and effective BMP maintenance program possible.

Our services on this project include:

- Inspection and documenting in accordance with the LTMP schedules;
- BMP and Site maintenance and repair work in accordance with LTMP schedules;
- Removing trash, sediment and debris to restore BMP efficiency repair damage, as-needed;
- SWPPP development and maintenance;
- SMARTS access and data input;
- Permit registration documents preparation and data input;
- QSD/QSP-led construction site weekly, pre-storm and post-storm inspections;
- Quarterly and Annual (SMARTS) reporting;
- As-needed SWPPP Amendments and BMP modifications;
- On-call BMP workforce support to coincide with soil import and earthwork grading activities;
- Final stabilization and Water Balance and NOT documentation;
- LTMP development and maintenance; and
- BMP design, deployment and maintenance.



Pond Dredge and Dam Assessment • Otis and Sandisville, MA

Owl Lake is a dammed impoundment of Benton Brook in Berkshire County, Massachusetts, which covers 23 acres within the Farmington River Basin requiring dredging.

Apex designed an approach to dredge 2.2 acres of the lake after lake drawdown. The main focus of the dredging effort was to remove 2-2.5 feet of soft sediment off the top of the entire dredge footprint, yielding approximately 10,000 cubic yards of materials.



Dredging was designed to have a four-fold beneficial effect of:

- Increasing water depths in the target area which restores water carrying capacity, reopens the area to recreational boating and swimming, and increases lake storage volume.
- Increasing water depths and positively altering the photodynamics of the water column, which limits eutrophication of the lake and the progressive spread of rooted vegetation into the main body of the lake. This, in turn, improves the capacity of the lake bottom by providing a breeding habitat and food for fisheries.
- Removing nutrient loaded sediments, which helps reduce the potential internal recycling of nutrient reserves in lake-bottom sediments that perpetuate algal blooms. This should improve overall water quality.
- Increasing sediment storage capacity, which provides a designed reserve capacity for future sediment loadings entering the lake system from the three stream inputs spilling into the target area.

In addition to the dredge design, we provided full design and permitting as well as a Phase I dam inspection and evaluation which noted some issues with the lower level outlet. Our team then designed and oversaw the rehabilitation of the lower level outlet to address the problem.



Sediment Dredging and Disposal • New Bedford, MA

Due to lack of maintenance and repair of the harbor and port facilities for over 40 years, the City of New Bedford was faced with the threat of closing this top-grossing fishing port. Providing a cost-effective alternative, Apex implemented a plan for dredging and disposal sediment that decreased cleanup costs from \$200-400 per cubic yard to \$75 per cubic yard—saving the city nearly \$49M. Apex's success on the project is evidenced by the commercial expansion of the port which is now a regular stop for a major cruise line.



Harbor Management Plan • Bridgeport, CT

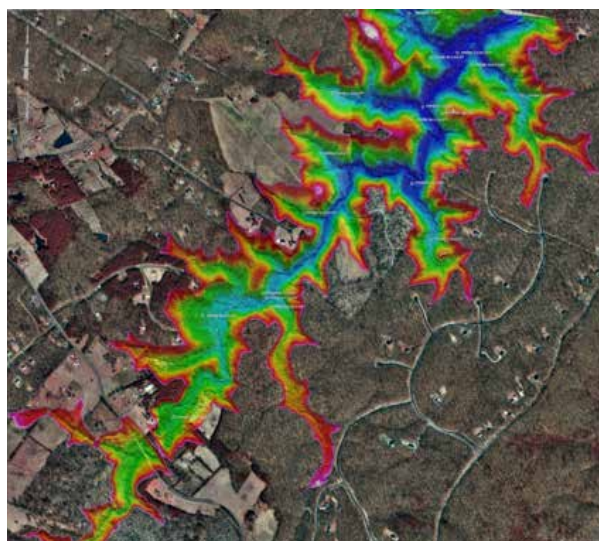
In conjunction with Urban Harbors Institute, Apex helped the City of Bridgeport update and revise their harbor management plan. We updated the existing harbor inventory of natural and marine resources, physical features, marine uses, and owner/operators to incorporate changes over a five-year period. Our team developed a conceptual model for a future Dredged Materials Management Plan (DMMP) and identified historic marine structures and harbor buildings for preservation within the harbor management plan. Apex facilitated communication between the harbor stakeholders, including several municipal/state agencies and marine operators to ensure the plan's implementation paved the path forward for future expansion and development.



Hydrographic Survey • Spotsylvania County, VA

Apex conducted a precision multibeam bathymetric survey of the Hunting Run Reservoir, a part of the Spotsylvania County reservoir system that was constructed and filled between 2002 and 2004. It currently serves as a storage reservoir fed primarily through a pump fed system which transfers water from the nearby Rapidan River (a tributary of the Rappahannock River).

We conducted the survey to provide the County with an accurate bathymetric map of the reservoir to use as a basis for future development plans. Using the survey data, we produced a computer-based model that verified the reservoir's storage capacity, previously estimated using data collected prior to construction of the dam.





Apex National Waterways Division Contacts

Brian Pine • *Northeast Region Manager*

Phone: (412) 829-9650

E-mail: brian.pine@apexcoss.com

John Glabach • *Vice President, Central Region Manager*

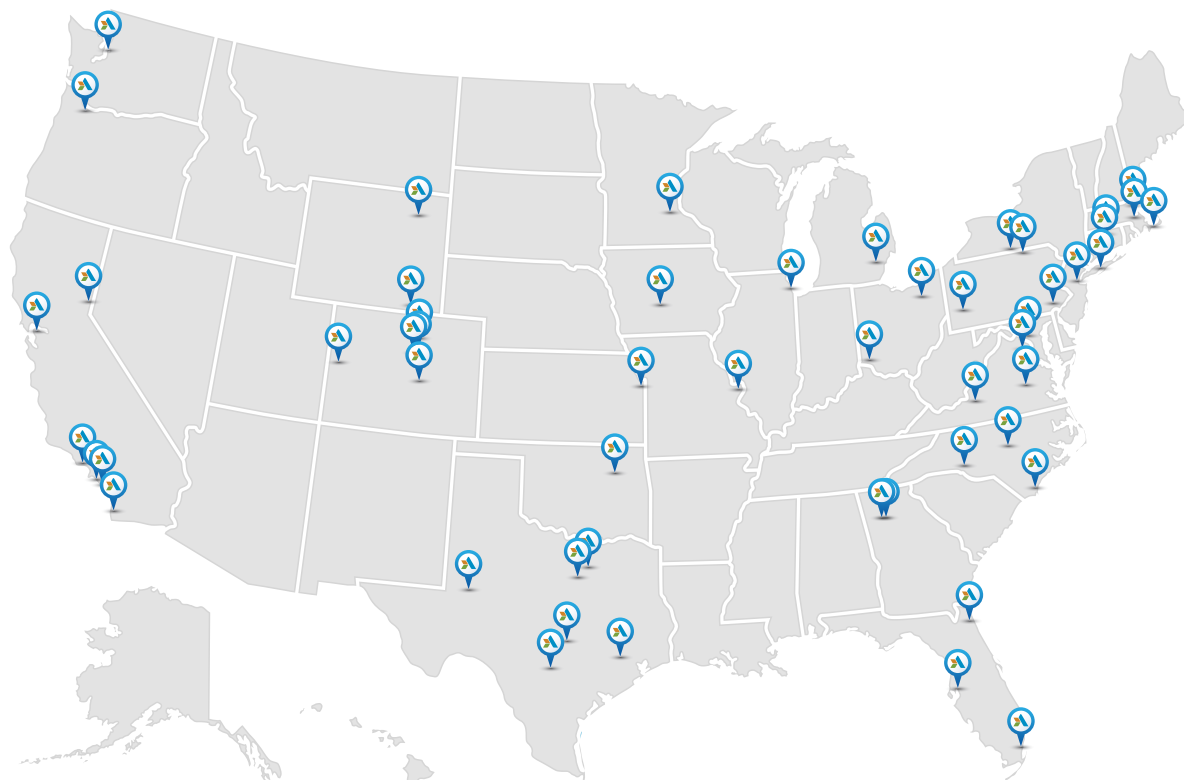
Phone: (303) 487-1020 x2404

E-mail: john.glabach@apexcoss.com

Herb Clough • *Vice President, West Region Manager*

Phone: (503) 924-4704 x1912

E-mail: hclough@apexcoss.com





www.apexcoss.com

info@apexcoss.com • (800) 733-2739

