



**Earthology** is an environmental consulting firm, with expertise in science, engineering, hydrology, governmental regulations, planning, GIS, project management, and other environmental fields. We are a team of experts specializing in complex, joint federal and state large-scale restoration projects involving multiple agencies and stakeholders with various federal, state, and local regulatory requirements. We are experienced in the federal and state planning process, determining project schedules, and assessing short and long-term ecological benefits. Our managers were all active participants in Comprehensive Everglades Restoration Plan projects and have experience working as a team while representing state or federal agencies. Our expertise includes developing water resource infrastructure projects, ecosystem restoration and monitoring, storm water treatment area development and improvements, water storage and conveyance capacity improvement projects, and managing biological resources including threatened and endangered species. Our engineers and hydrologic and hydraulic modelers have developed, identified, screened, and evaluated site-specific restoration alternatives and assessed the performance of the restoration project through various monitoring and control programs. Earthology can offer our clients experienced managers that can handle the most complex projects that require innovative thinking and state-of-the-art habitat and environmental analyses. We take pride in our high quality work and collaboration with our clients to provide environmentally sound solutions to project goals.

**Team Expertise:**

- NEPA Documentation and Processes
- Ecological and Biological Assessments
- ESA Section 7 and 10 Consultations
- Habitat Management
- Hydrological and Hydraulic Modeling
- Stormwater Assessment
- Wetland and Systemwide Assessment
- Seagrass Mapping & Assessments
- Hydrodynamic Studies
- Coastal Floodplain Mapping
- Hydrogeology: CERCLA/RCRA
- Land/Fire/Forest Management
- Systemwide Restoration Planning
- Listed Species Surveys & Monitoring
- Soil Surveys & Assessments
- Climate Change Science
- Water and Nutrient Budgets
- Ecological/Water Quality/Hydrological Monitoring
- Lake Regulation Schedules

Recent project Title	Firm/Personnel Role
Picayune Strand Restoration Project – Southwest Protection Features – Environmental Monitoring (2022 - Ongoing)	This is current contract with the U.S. Army Corps of Engineers, where we are collecting stage and flow, water, sediment, and fish tissue samples on the Picayune Strand Restoration Project (PSRP). We are providing all personnel, equipment, supplies, facilities, transportation, tools, materials, supervision, and other items to perform the monitoring and data analysis services. This data collection effort will provide hydrologic, ecological, and water quality monitoring to support adaptive monitoring and adaptive management of the Southwest Protection Feature (SWPF) levee and additional conveyance features.
L-63N,C38S,and L63S Continuous Coring, C38N and C38S Treatment System - Specialized Hydrogeological Services (2022 - Ongoing)	We are currently providing hydrogeological and engineering construction services associated with the construction of the Upper Floridan aquifer (UFA), Avon Park Permeable Zone (APPZ), and Surficial aquifer monitoring well (SAMW), and aquifer testing at the L-63N site. Our services include daily construction oversight, data collection, Florida Department of Environmental Protection (FDEP) Underground Injection Control (UIC) report and permit compliance activities and providing updates to the South Florida Water Management District.
C-44 Pump Station and Stormwater Treatment Area construction (2019 - 2020)	We performed construction monitoring services for the South Florida Water Management District, including: 1) stormwater monitoring, reporting and compliance inspections; and 2) application for renewal of the NPDES permit (FY 2016).
DeBary Bayou Restoration Planning Project (2019)	We assessed hydrologic and water quality impacts from an existing transportation corridor through DeBary Bayou wetlands and Lake Monroe (Sanford, FL). We developed a conceptual model for restoration of the entire system for The Public Trust Environmental Legal Institute of Florida (a non-profit organization).
Event Mean Concentration Geostatistical Modeling (2019)	We developed a geostatistical model of event mean concentrations for total nitrogen and total phosphorus in surface water for the St Johns River Water Management District. This model used various raster data extrapolated from derived land use values over a 50-year Period of Record to delineate “hot spots” of nutrient pollution to help focus future monitoring efforts.
U.S. Forest Service Region 5 - Beckwourth District - Rare Species Botanical Survey (2018)	We completed botanical surveys of rare species and flowering plants within 3,000 acres of the Haskell Basin in California. We also assessed invasive plant species, conducted sub-basin comparisons, and determined biomass within special wetland habitats.

**Federal Certifications:**

- SBA 8(a)
- WOSB
- EDWOSB

**Florida State Certifications:**

- SBE - OSD
- WMBE - OSB
- DBE - FDOT
- SBE-SFWMD

**County Certifications:**

- SWMBE - Palm Beach County (PBC)
- SBE & W/MBE - School District PBC
- SDSB - Broward College
- CCNA - PBC Category 1.07

**NAICS Code(s):** 541620, 514330, 541715, 541990, 561410, 541690

**Cage Code:** 7UDJ4

**DUNS Number:** 080617922

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**Team Qualifications:**

- Civil/Water Resource Engineer
- Environmental Engineer
- Coastal/Oceanographic Engineer
- NEPA/Regulatory Expert
- Wetlands and Terrestrial Ecologist
- Water Quality Specialist
- Soil Scientist/Chemist
- Landscape Hydrologist
- Ecological and Water Quality Modeler
- Climate Change Scientist
- Limnologist
- Wildlife Biologist
- Environmental Scientist
- Environmental Planner
- Stormwater/Wastewater Scientist
- Hydrogeologist CERCLA/RCRA Expert
- GIS/Database Manager
- Hydroecologist
- Land/Vegetation/Fire Manager



## NEPA Processes & Documentation

Our team has experts in NEPA processes, schedules, and documentation such as Environmental Impact Statements and Assessments, Biological Assessments, Wetland Mitigation Plans, Contamination Screening Reports, and Noise and Cumulative Impacts Analyses. We have drafted Statement of Findings Reports/ Record of Decisions and Public Notices and Notice of Intent (NOI) in the Federal Register. We also have drafted and overseen Land Use Change Requests from the USEPA for state and federal projects. Our team members have decades of experience evaluating listed species and their habitat for Section 7 and Section 10 consultations and biological opinions, and drafting and issuing Section 404 and 10 Permits.

## Regulatory Expertise

Our team's regulatory expertise include state and federal permit acquisition for most types of in-water works. Our team has experience evaluating and issuing Department of the Army (DA) permit applications, water regulations, and with applications and re-applications of NPDES permits in and for various counties, cities, private water-controlled districts, state, federally owned and managed facilities and infrastructure.

## Coastal/Marine Sciences

Our expertise includes wave and hydrodynamic studies, shore protection (including natural and nature-based), beach nourishments, sea level rise, numerical modeling, feasibility studies, design of traditional and innovative shore protection structures and coastal flood plain mapping. Additionally, our marine biologists and ecologists have decades of experience with seagrass mapping and assessment, artificial reef survey mapping, hardbottom impacts assessment, and post construction monitoring.

## GIS and Database Management

Our GIS experts specialize in environmental data collection and analysis and have experience in complex and large scale programs and corresponding projects. As Data Stewards, our GIS experts have managed large datasets and submitted them to federal, state, and local agencies. These include wetland data, species locational and monitoring data, satellite tagging data, acoustical data, field survey GIS/GPS data, CADD data, and a variety of surface and groundwater monitoring data for hydrological and ecological modeling.

## Hydrologic/Water Quality Modeling

The modeling experts on our team have experience in sediment transport and water quality models including HEC suite, SWMM, CH3D, WQSP, and CEQUAL-ICM. We have developed code algorithms for MSE model, RSM model calibration/validation using PEST, and have successfully implemented these models in basins and sub-basins. Our Project Engineers and scientists have managed and directed various hydrology, hydraulic and water resources projects including the Florida Bay Study, the Lower West Coast Surficial Aquifer System Model, the Lower Kissimmee Basin Model, the Flow Program Re-Engineering Project, and the Florida Everglades restoration projects and plans.

## Fire/Forest Management

Our Land/Forest/Fire managers have managed large and small tracts of natural areas, preserves, and wildlife management projects for federal, state, and county governments. They have experience with vegetative assessment, silviculture, forest and fuel load management, land lease management, and conducting prescribed burns.

## Wetland Delineation

Our wetland scientists have over three decades of experience in conducting wetland delineations and determining the extent of the federal jurisdiction using various GIS datasets such as, NRCS soil data, vegetation and habitat mapping data, NWI data, LIDAR data and aerial imagery, field surveys using the Corps of Engineers Wetlands Delineation Manual (1987), photointerpretation and ground truthing methodologies to determine the extent of wetland boundaries, transitional zones, federal jurisdiction, sub-surface connectivity between wetlands and assess the quality of the wetlands.

## Water Quality Treatment

Our experts have experience in various aspects of water quality treatment and technology programs, large-scale research and monitoring projects, development of water and nutrient budgets, project management, interagency coordination preparing water quality and turbidity monitoring reports, and developing wetland and ecological monitoring plans, and periodic and annual status reports.

## Stormwater Systems

Our team members have decades of experience with Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP) Permits, mandating the control and removal of excess phosphorus from surface water within several basins of Florida, that flows into Everglades National Park. Our experience with the FDEP NPDES program includes consulting on the implementation of appropriate pollution prevention techniques to minimize erosion and sedimentation and properly manage stormwater during the construction of water infrastructure projects; these include STAs, canals, pump stations, reservoirs, flow equalization basins, and impoundments.

## Habitat Assessment

We have assessed habitats to determine the status of restoration projects, the quality and health of the habitat, its functionality, biodiversity, and connectivity to surrounding habitat, and its protection of endangered and threatened species. These assessments included ongoing weekly interagency meetings to recommend hydrologic management goals. We have evaluated impacts of waterway channelization and the benefits of large scale restoration projects that cross multiple watersheds and water conservation areas.

## Water Management Schedules

Our team members have provided ecological evaluations to USACE hydrologists and modelers to develop the Lake Okeechobee Regulation Schedule. We have extensive experience in evaluating effects of multi-decadal hydrological simulations on Everglades ecosystems to determine preferred restoration alternatives and ongoing ecosystem and hydrological management expertise.

## Conservation Easements

Our experts have decades of experience with land and vegetative assessments, permitting for conservation easements with various local, state and federal regulatory entities, and experience with land and forestry management to prepare the land for a conservation easement of either wetlands or listed species. We can provide our clients with experts who have experience with inter-agency coordination to successfully negotiate a conservation easement project.