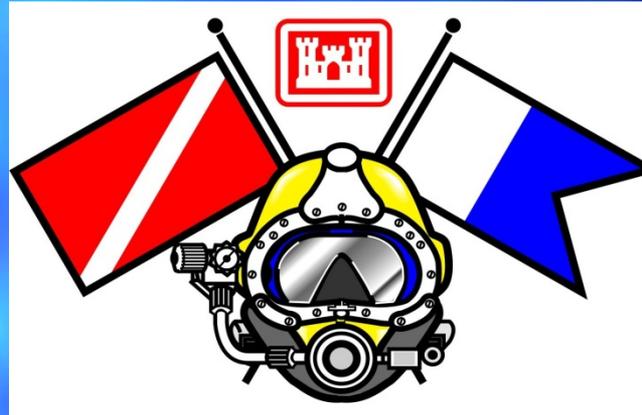


USACE Technical Dive Team



Shanon A. Chader, P.E.
Diver/Dive Supervisor/Alternate Dive Coordinator

Michael G. Draganac
Diver/Dive Supervisor



**US Army Corps
of Engineers**
Buffalo District



Overview

- Dive Team Members
- Dive Training/Safety Regulations
- In-house Dive Operations
- Typical Projects Supported
- OCONUS Projects Supported
- In-house Dive Advantages



Dive Team Members

- Ed Gawarecki - Dive Coordinator, Diver/Supervisor/Inspector
- Shanon A. Chader, P.E. - Alternate Dive Coordinator, Diver/Supervisor/Inspector
- Marty Crosson - Alternate Dive Coordinator, Diver/Supervisor/Inspector
- **Keith Hall – Safety Officer**
- **Bill Pioli – Safety Officer**
- Adam W. Hamm, P.E. - Diver/Supervisor/Inspector
- Dave Bala, E.I.T. - Diver/Supervisor/Inspector
- John Winkelman, P.E. - Dive Coordinator, Diver/Supervisor/Inspector (New England District)
- Byron R. Rupp- Diver/Supervisor/Inspector (New England District)
- Steve England, P.E. - Diver/Supervisor/Inspector (Philadelphia District)
- Derek Burleigh - Diver/Supervisor/Inspector (Philadelphia District)
- Andrew Hannes – Diver/Supervisor/Inspector
- Michael Draganac – Diver/Supervisor/Inspector
- Weston P. Cross – Diver/Supervisor/Inspector

Dive Training for Dive Team Members

- Initial Diving Safety PROSPECT Course
- Initial Dive Inspector PROSPECT Course – Non-Divers
- Diving Safety/Inspector Refresher PROSPECT Course, Required every four Years
- Dive Safety Administration Class for DDC, ADC, and SOHO Dive Representatives
- First Aid and CPR Training, DAN O₂
- Several team members have been certified for underwater cutting/welding
- Six team members are NHI Certified Underwater Bridge Inspectors.
- 4 Team members are certified above water bridge inspectors.
- Dive Tender Training (developed by our Dive Team)
- Confined Space
- Lock-Out/Tag-Out

Training Required for Personnel Performing Oversight

- Per EM 385-1-1, Section 30
- Dive Coordinator and Assistant Coordinator are required to take the Diver/Supervisor PROSPECT course
- Safety and Occupational Health Office Dive Safety Representative is required to take the Diver/Supervisor or Inspector PROSPECT course
- Non-Diving Inspectors are required to take the Inspector PROSPECT course

Safety Regulations and Requirements

- In-house Dive Operations Covered by EM 385-1-1 Section 30 and ER 385-1-86
- Contractor Dive Operations Covered by EM 385-1-1, Section 30
- District Dive Coordinator is Responsible to the Commander for Diving Operations Safety
- Safety Office is integral to Dive Team and Provides Oversight

In-house Dive Operations

- SCUBA Operations
 - SCUBA – AGA mask operations
 - SAS (Surface Air Supply) Operations
 - Video Camera with Video Recording
 - Engineering Inspections – Quality Assurance and Structure Condition
 - Biological and Benthic Assessment capabilities
 - Light to Moderate Work Dives Performed
 - Approx. \$8500/day depending on the site location

Typical Projects Supported

- Black Rock Lock Debris Clearing
- Black Rock Lock Inspections/repairs
- Pre-design and Post Construction Site Investigations
- Mt. Morris Dam Inspections – exterior
- Mt. Morris Dam Inspections – interior culverts
- Hammond/Cowanesque Lakes - Pennsylvania
- Stamford Hurricane Barrier
- Sault Ste. Marie Locks
- Contractor Dive Oversight
- Ship Hull Inspection
- Breakwater Inspections
- Zebra Mussel data collection
- Project Condition Inspections
- Plant & Biological surveys (benthic assessments)
- Pt. Pleasant – existing timber structure removal
- Other Corps FRM project dam inspections

Typical Projects Supported

- Bridge Inspections
 - 4 Team members are certified inspectors, 2 will be trained this FY.
- IMCOM Work for ERDC
- Redstone Arsenal – Waterfront/Dock Inspections
- Fort McNair – Waterfront/Seawall Inspection
- Pier 8 – Busan, Korea
- Naha Port, Okinawa, Japan.
- Camp Darby, Livorno, Italy
- Akizuki, Japan – Ammunition Depot
- Kure, Japan – Pier 6
- Hiro, Japan – Ammunition Storage
- Dam Inspections
 - Blue Marsh
 - Walter
- Summit Bridge – Middleton, DE
- Woonsocket Bridge



Mount Morris Dam



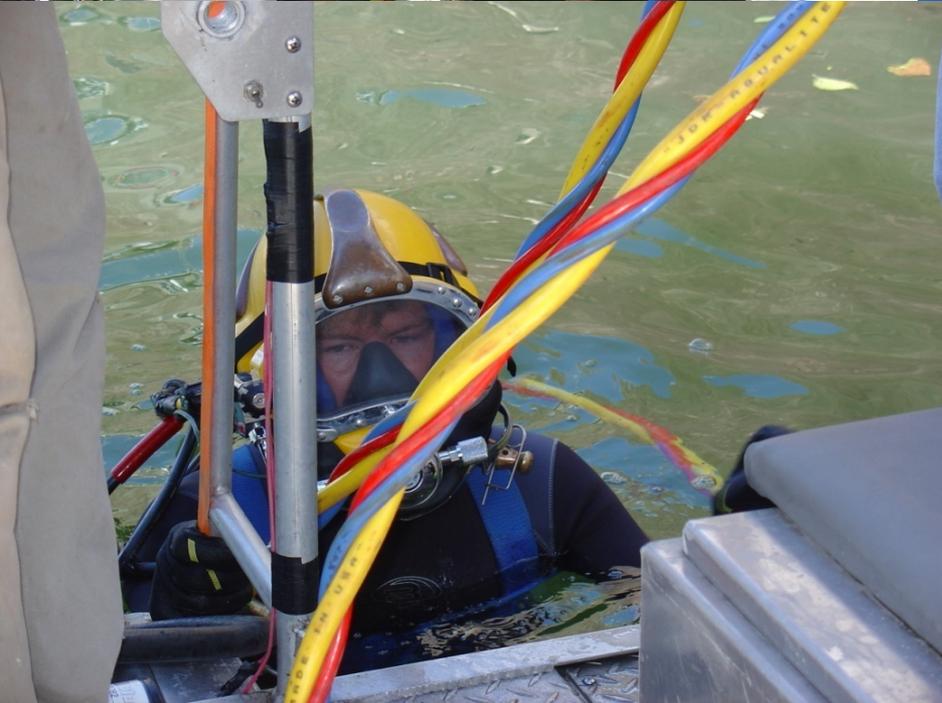
Mt. Morris Dam

- Exterior inspection of concrete surface.
- Inspection of concrete apron and dragon teeth (slow outflow)
- Inspection of wing walls for deterioration and undermining.
- Interior inspection of concrete culverts.
- Interior inspection of steel gate structures.

Stamford Hurricane Barrier



- Exterior inspection of steel surface.
- Inspection of concrete pedestals
- Inspection of surrounding area



Soo Lock Dives

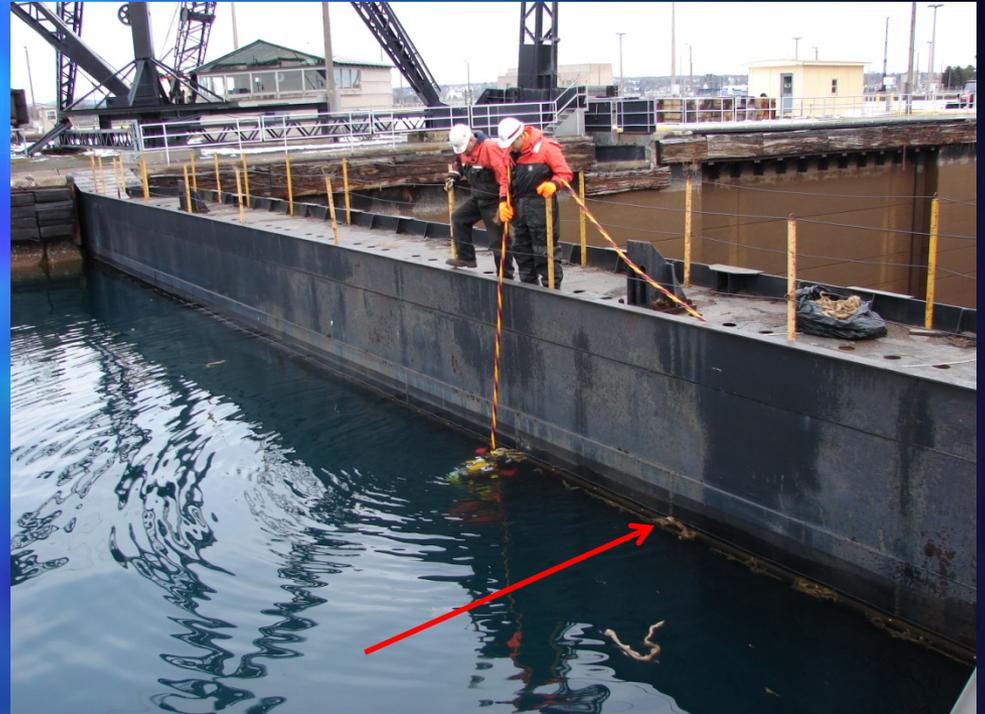
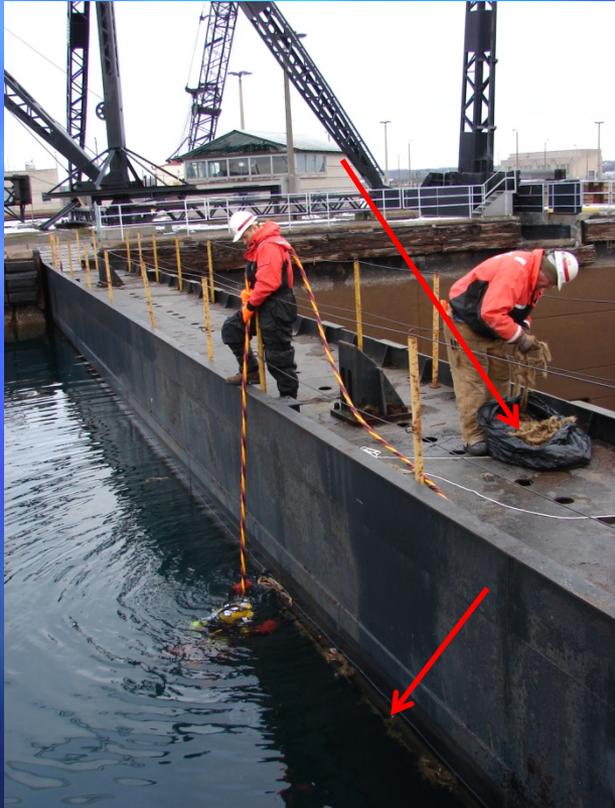


Soo Lock Dives

- Inspection of the gates.
- Inspection concrete gate sills.
- Inspection of gate pockets for debris.
- Debris removal to allow proper gate use.
- Inspection of stop logs.
- Pack gates to dewater chamber.



Soo Lock Dives



Soo Lock Dives



Before



After

Soo Lock Dives

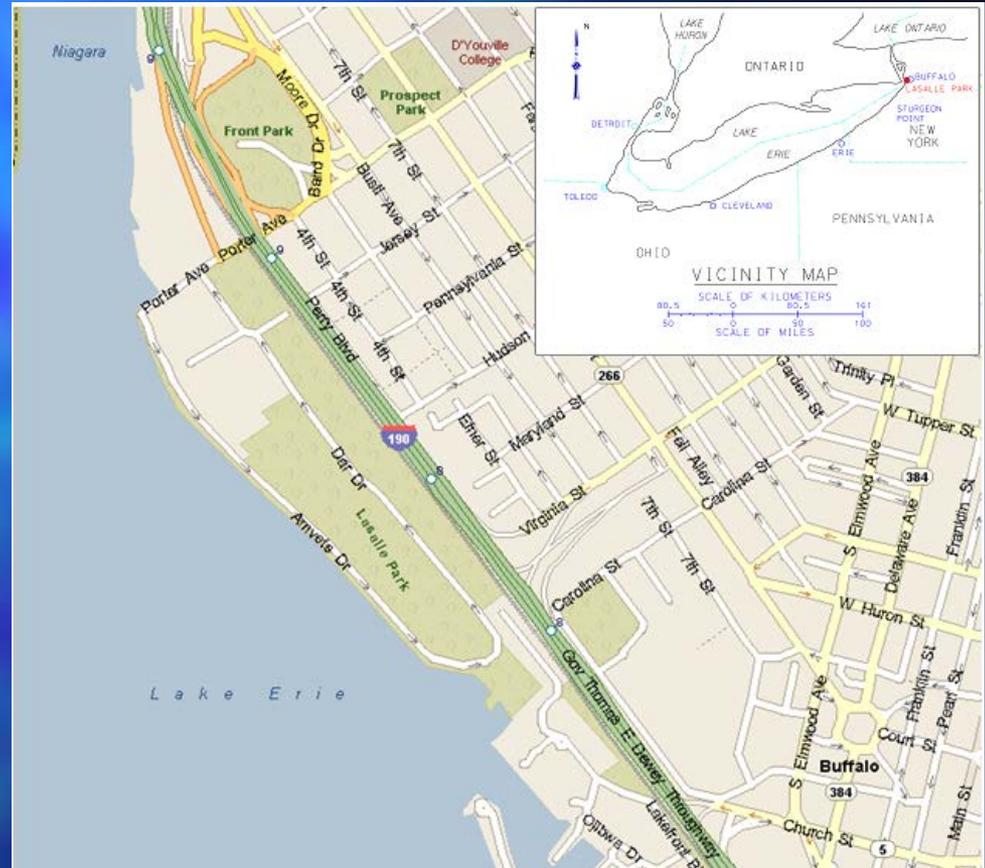


Underwater Structure Inspection – Buffalo



LaSalle Park Dives

- Inspection of timber crib walls.
- Inspection of timber piles supported wall.
- Inspection concrete cap.
- Inspection of adjacent shorelines.
- Prepared Inspection Report

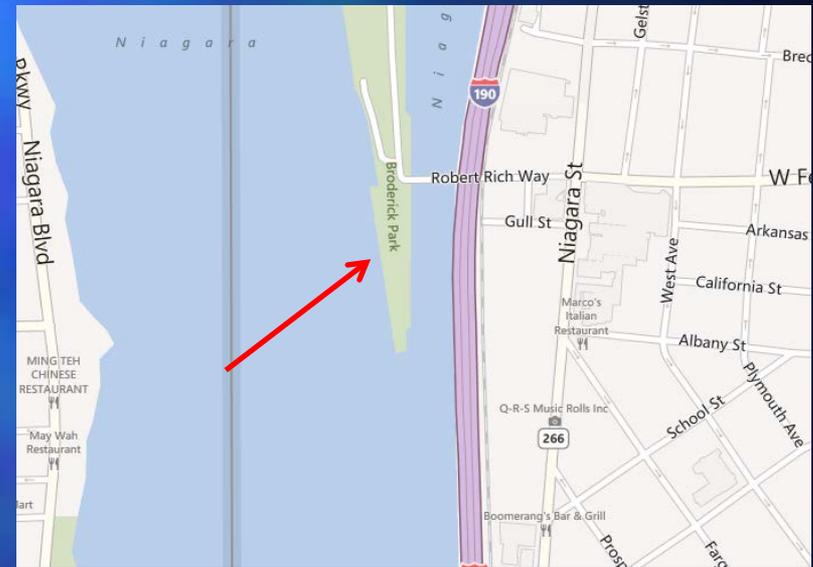


Lasalle Park Dives

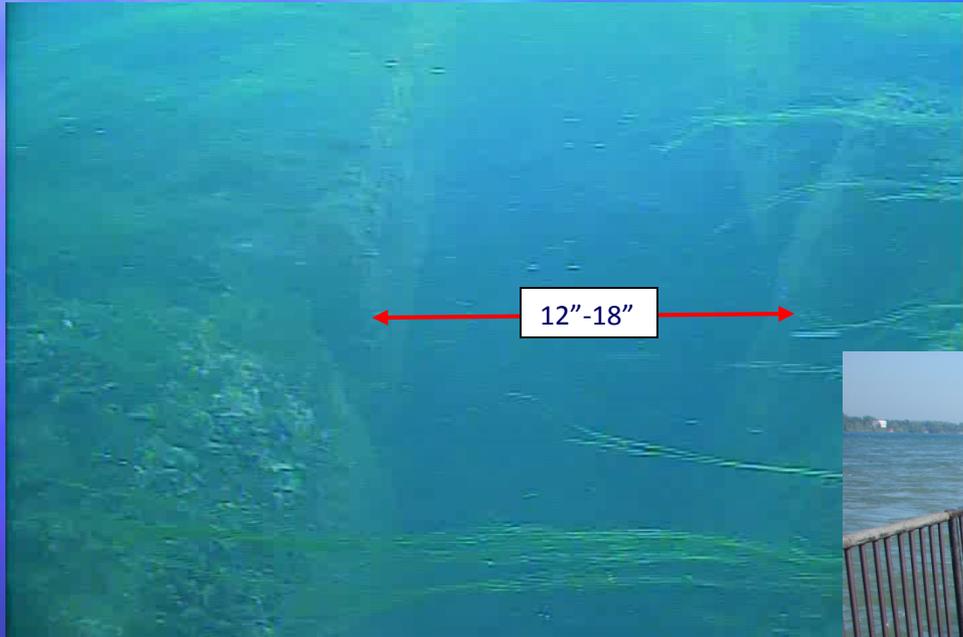


Broderick Park Dives

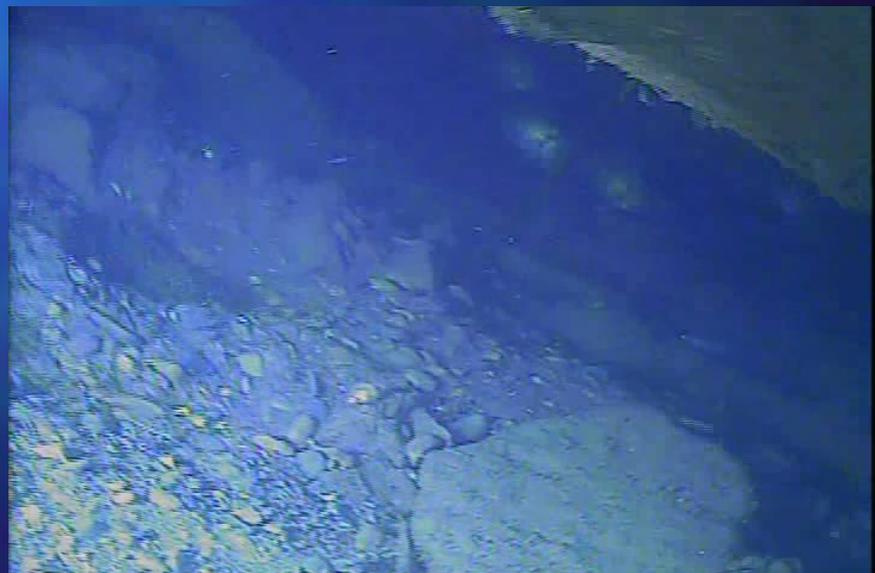
- Inspection of timber crib walls.
- Inspection of steel sheet pile wall.
- Inspection of concrete cap.
- Inspection of adjacent banklines.
- Aquatic Habitat Assessment
- Prepared Inspection Report



Broderick Park Dives



Broderick Park Dives



Black Rock Lock



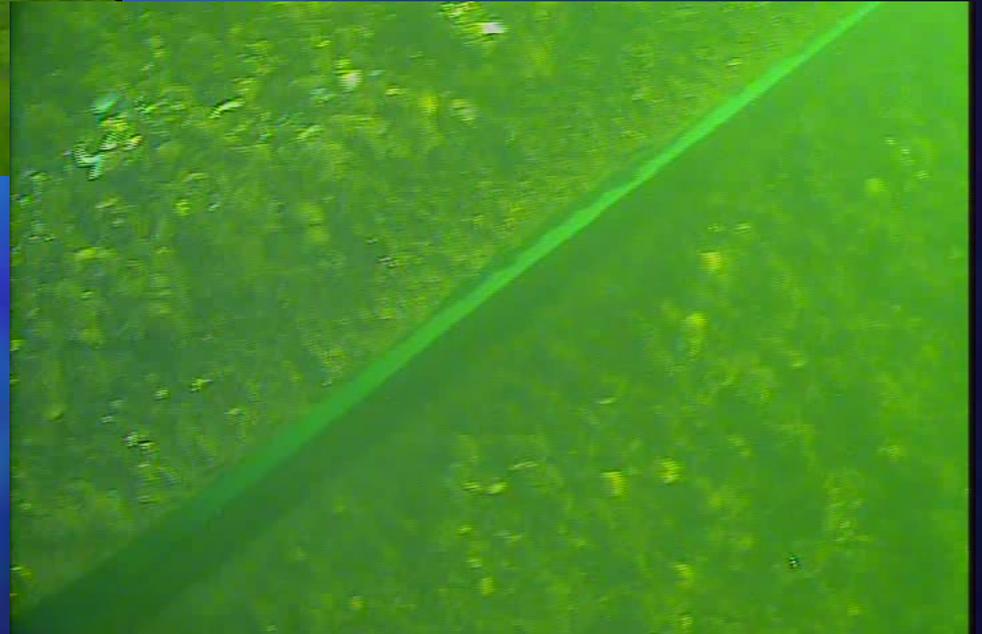
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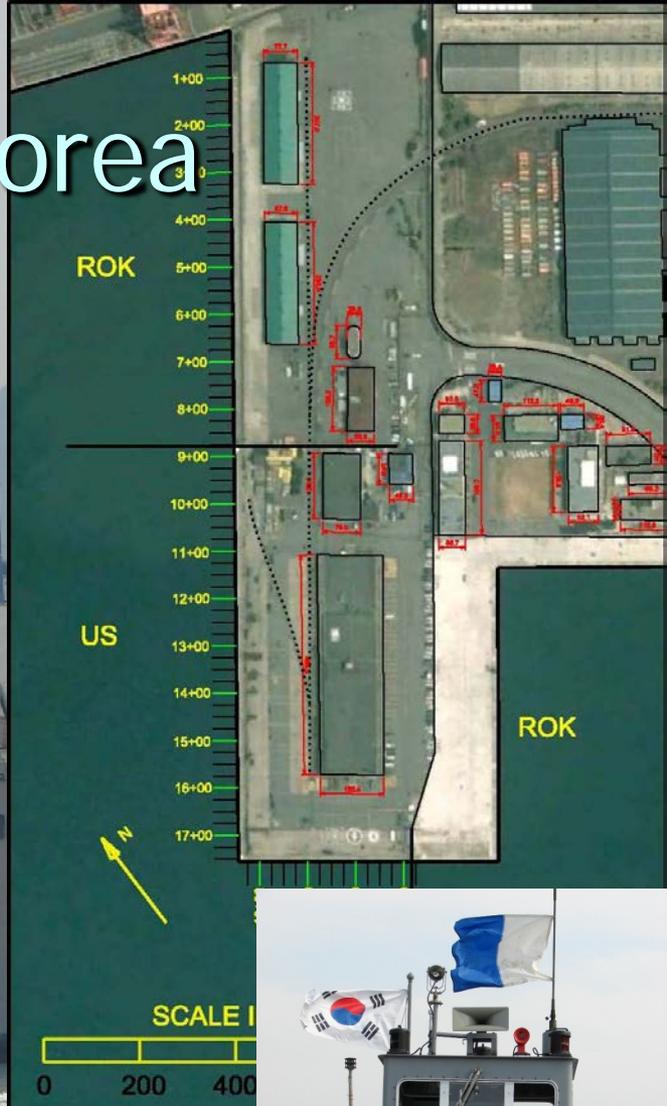
Black Rock Lock Dives

- Inspection of concrete surface.
- Inspection of the steel gates.
- Inspection concrete gate sills.
- Removal of debris.

Black Rock Lock Dives



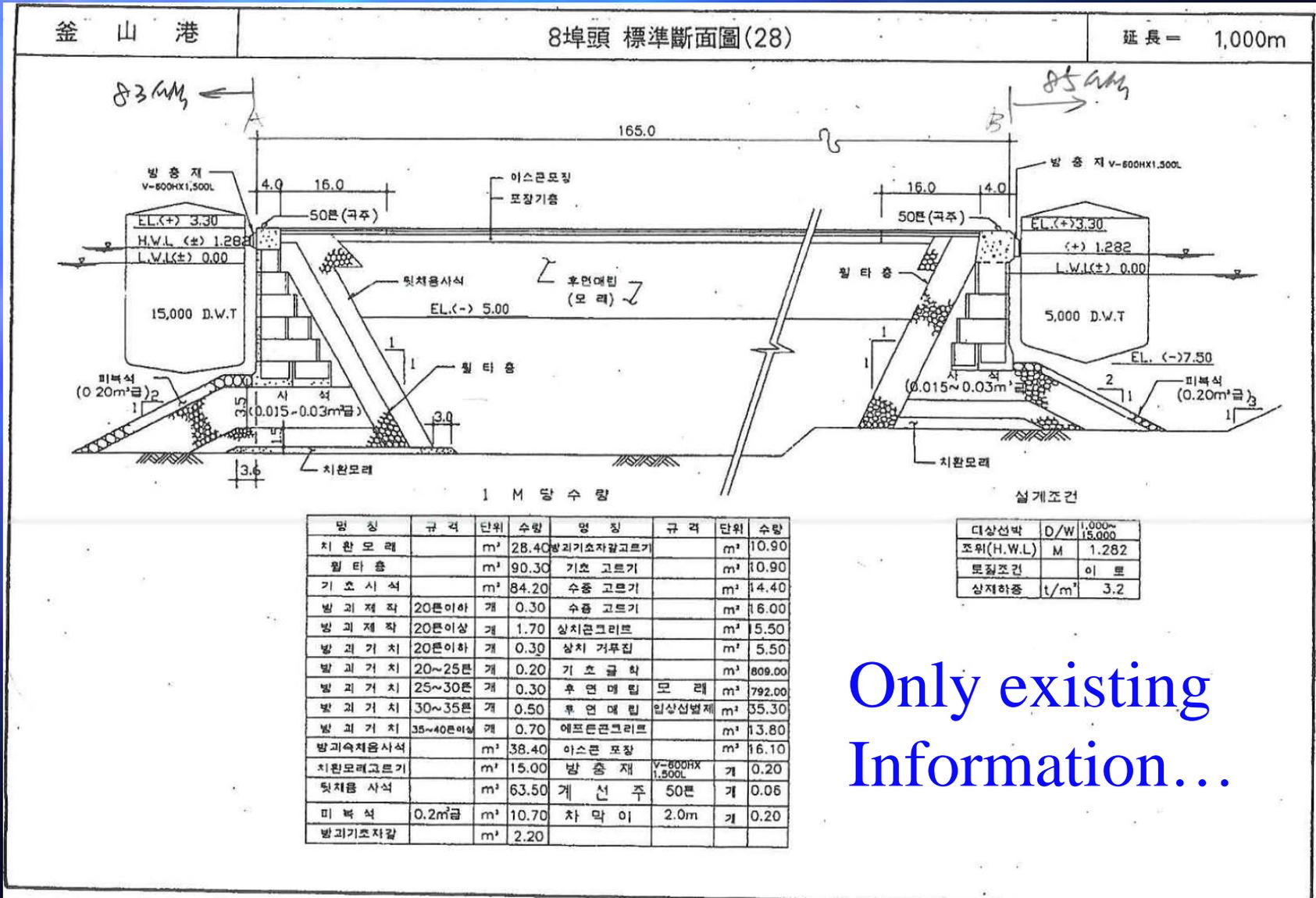
Pier 8 - Busan, Korea



Busan Dives

- Perform an information search on site for existing drawings, data, pictures, etc.
- Above water inspection of facilities and components:
 - Concrete
 - Guard Towers
 - Fenders
 - Bollards
 - Toe of structure.
- Under water inspection of concrete block surface.
- Concrete block contact/voids.
- Prepared Post Inspection Letter and outbrief.
- Prepare Detailed Inspection Report with repair alternatives and ballpark cost estimates.

Busan Dives

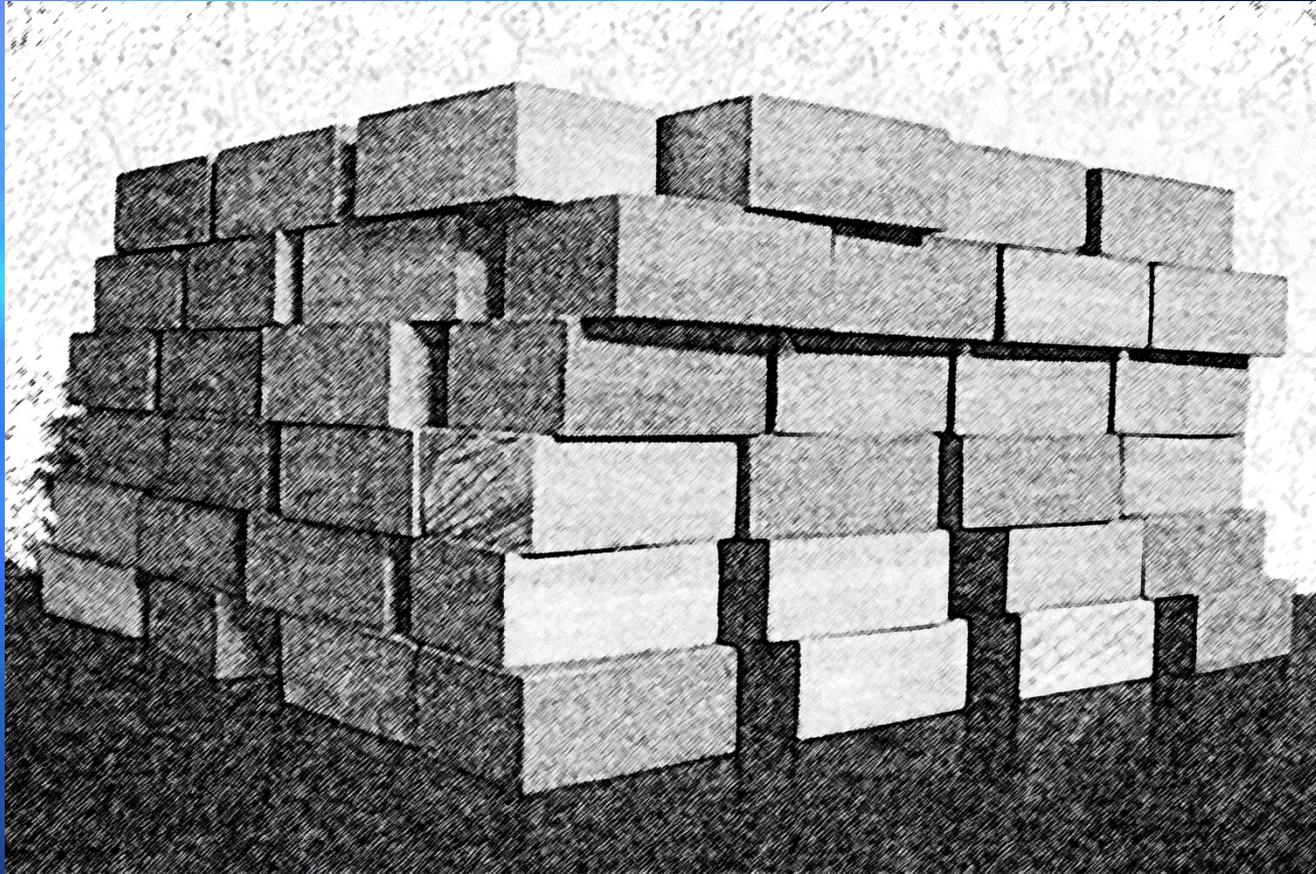


Only existing Information...

Busan Dives

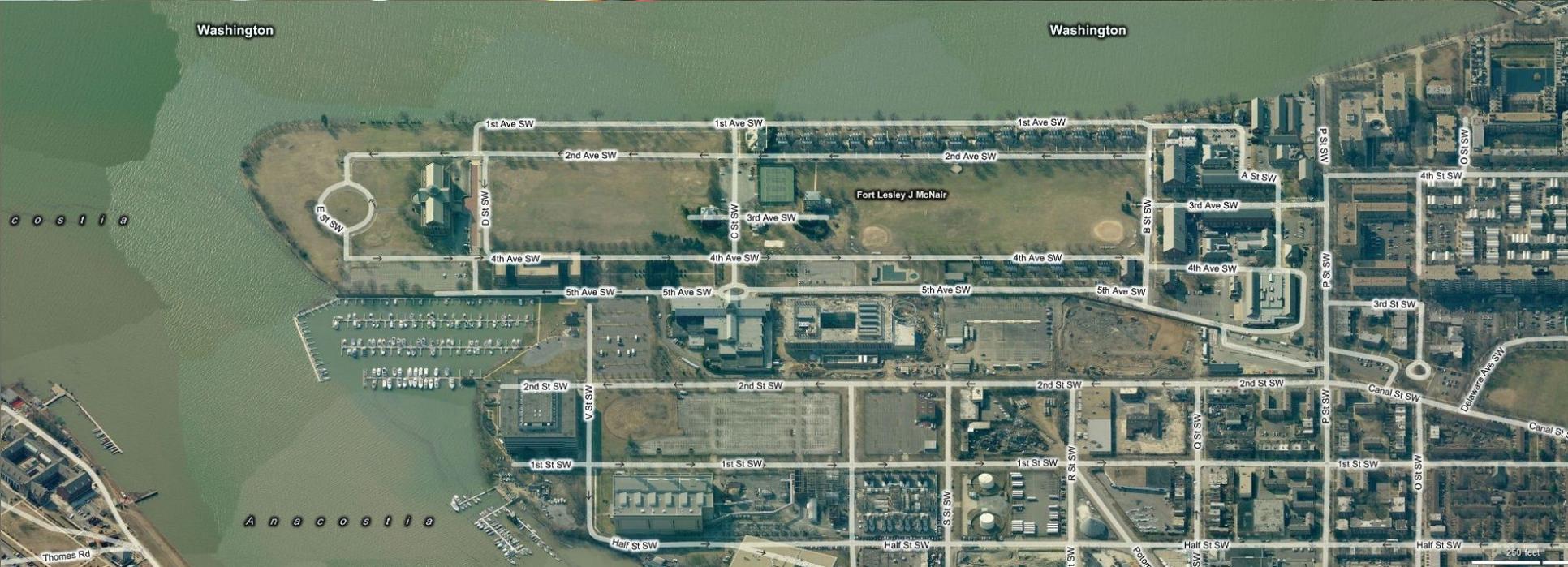


Busan Dives



Conceptual representation of concrete block structure.

Fort McNair, Washington D.C.



Fort McNair Dives

- Inspection of masonry gravity wall.
- Inspection of concrete cap.
- Inspection outfalls.
- Inspection of adjacent banks.
- Inspection of precast concrete fascia.
- Prepare Post Inspection Letter and outbrief.
- Prepare Detailed Inspection Report with repair alternatives and ballpark cost estimates.

Fort McNair Dives



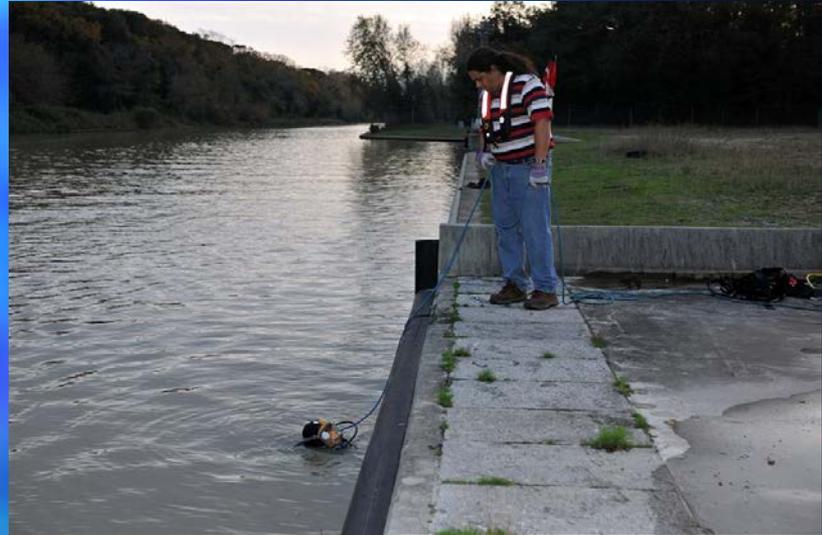
Camp Darby, Italy



Camp Darby Dives

- Inspection of steel sheet pile wall.
- Inspection of concrete cap.
- Inspection of adjacent bank.
- Prepare Post Inspection Letter and outbrief.
- Prepare Detailed Inspection Report with repair alternatives and ballpark cost estimates.
- Dealing with wild boars.

Camp Darby Dives



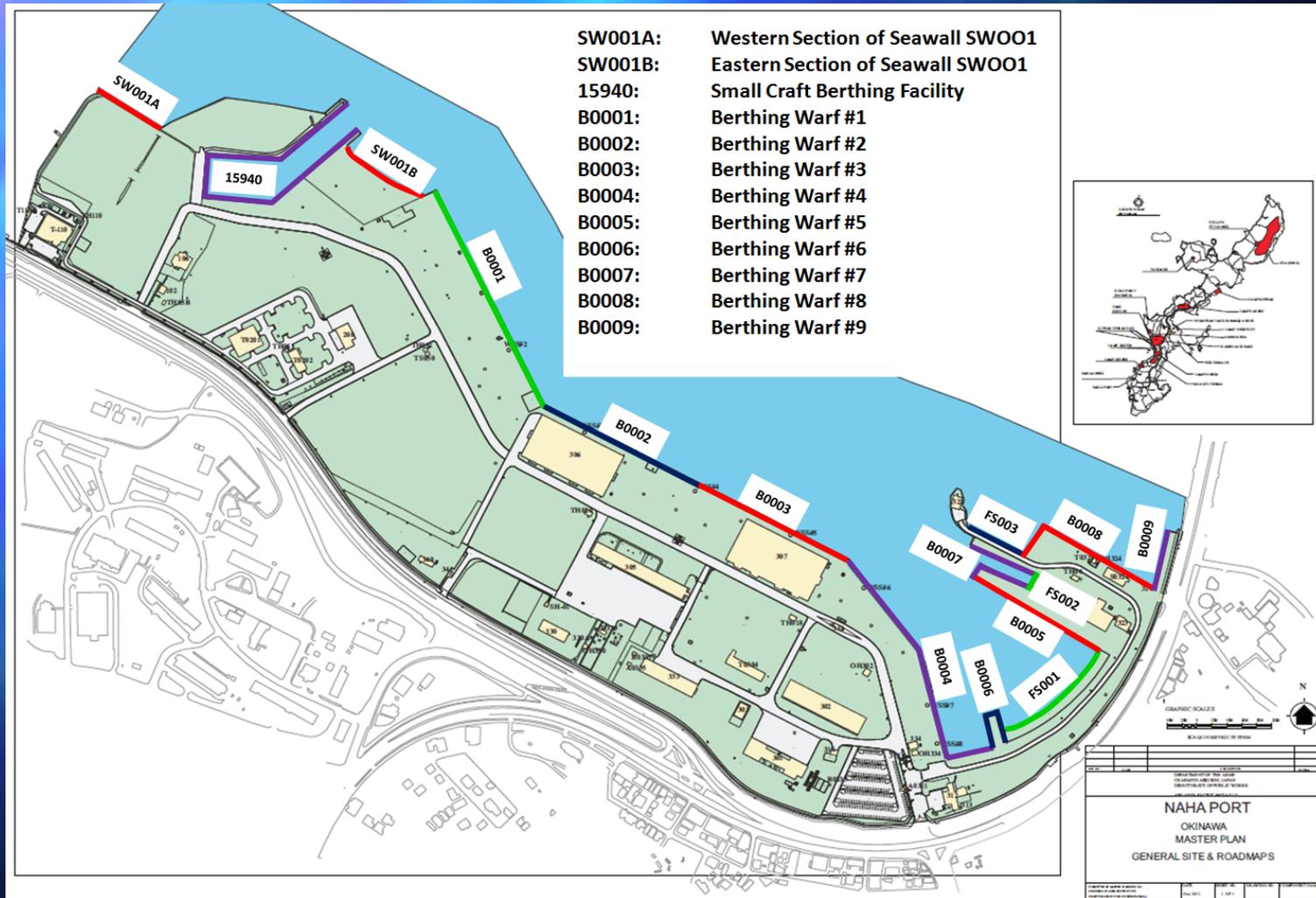
Naha Port – Okinawa, Japan



Naha Port Dives

- Inspection of steel pile walls.
- Inspection of concrete ramps.
- Inspection rubblemound seawalls.
- Inspection of adjacent banks.
- Interior miscellaneous items (bollards, cleats, fenders, etc).
- Prepare Post Inspection Letter and outbrief
- Prepare Detailed Inspection Report with repair alternatives and ballpark cost estimates
- Deal with Cat. 5 Typhoon SAMBA

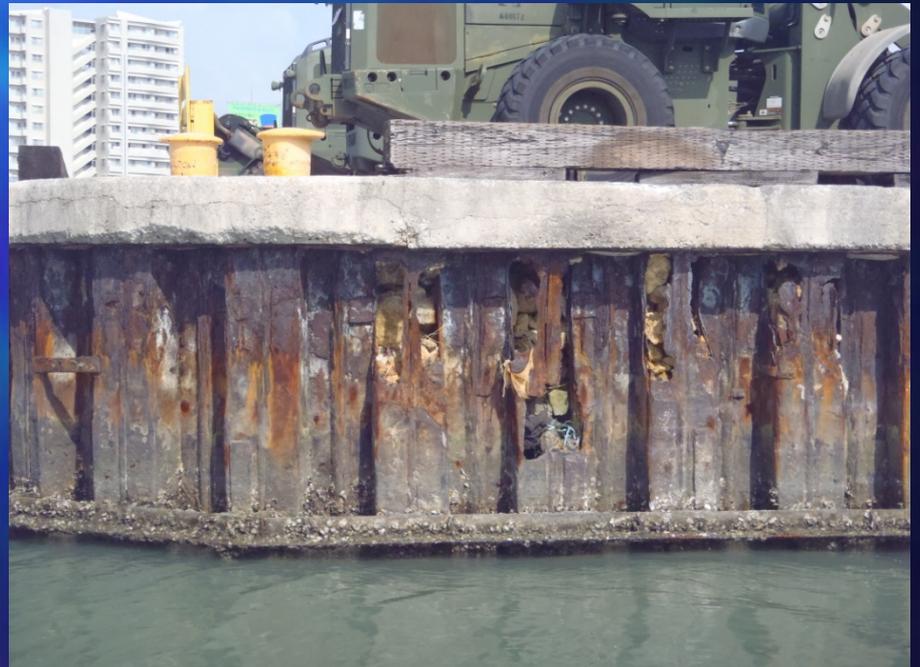
Naha Port Dives



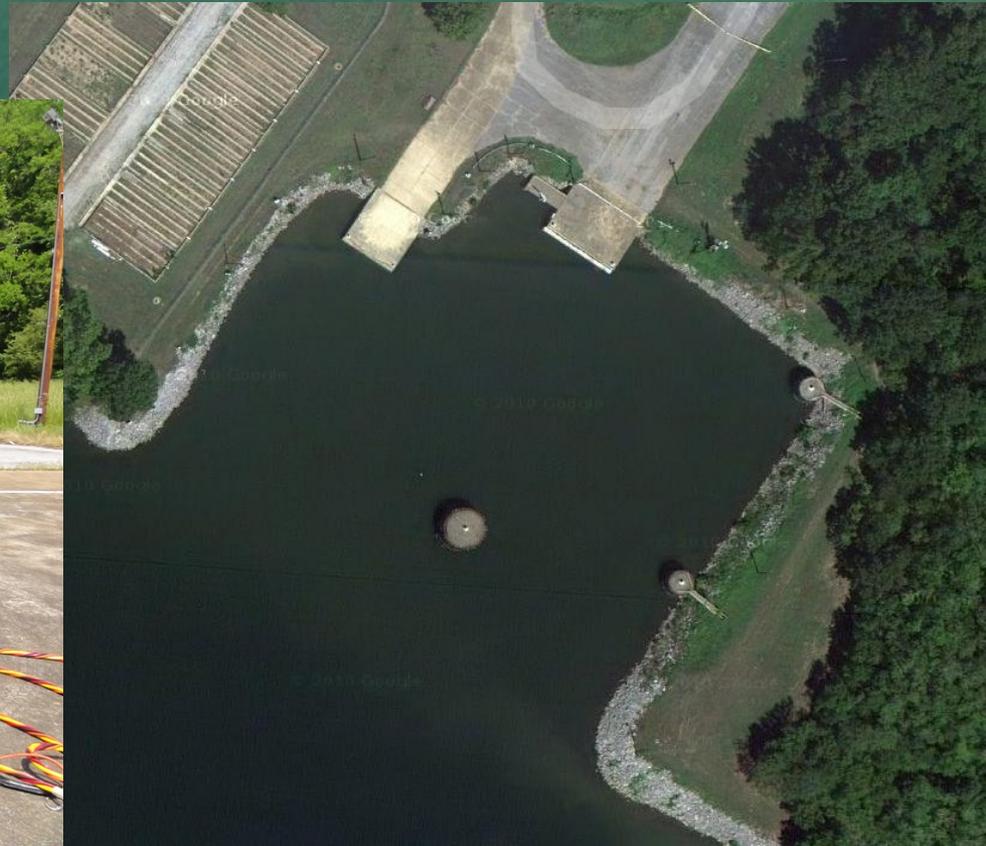
Naha Port Dives



Naha Port Dives



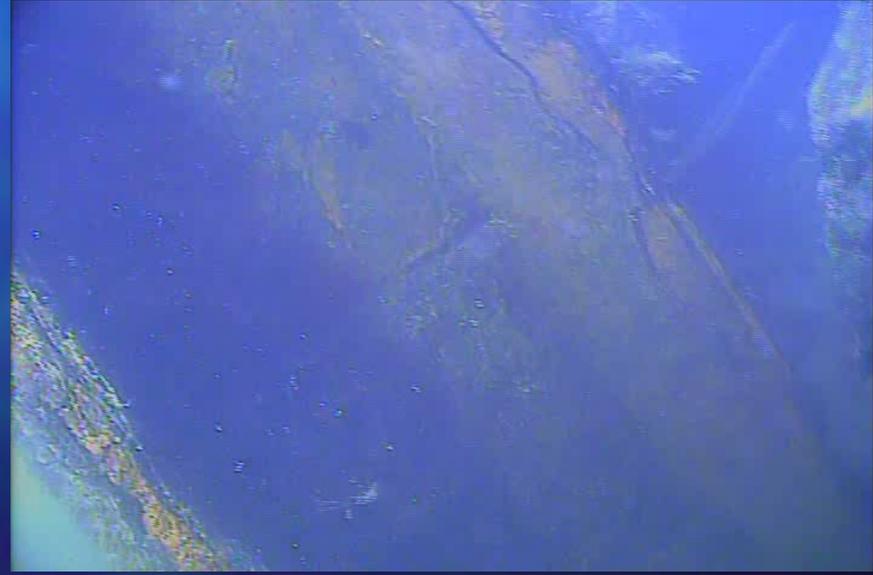
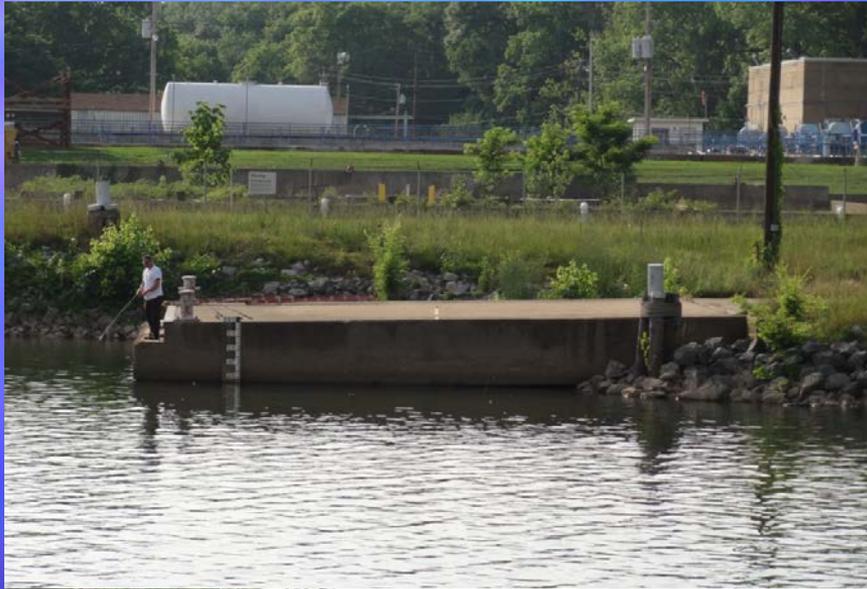
Redstone Arsenal – Huntsville, AL



Redstone Arsenal Dives

- Inspection of concrete docks.
- Inspection of the steel sheet pile cell dolphins.
- Inspection steel encased concrete pile supported wharf wall. Prepare Post Inspection Letter and outbrief.
- Prepare Detailed Inspection Report with repair alternatives and ballpark cost estimates.
- Deal with alligators (not really – just really big spiders).

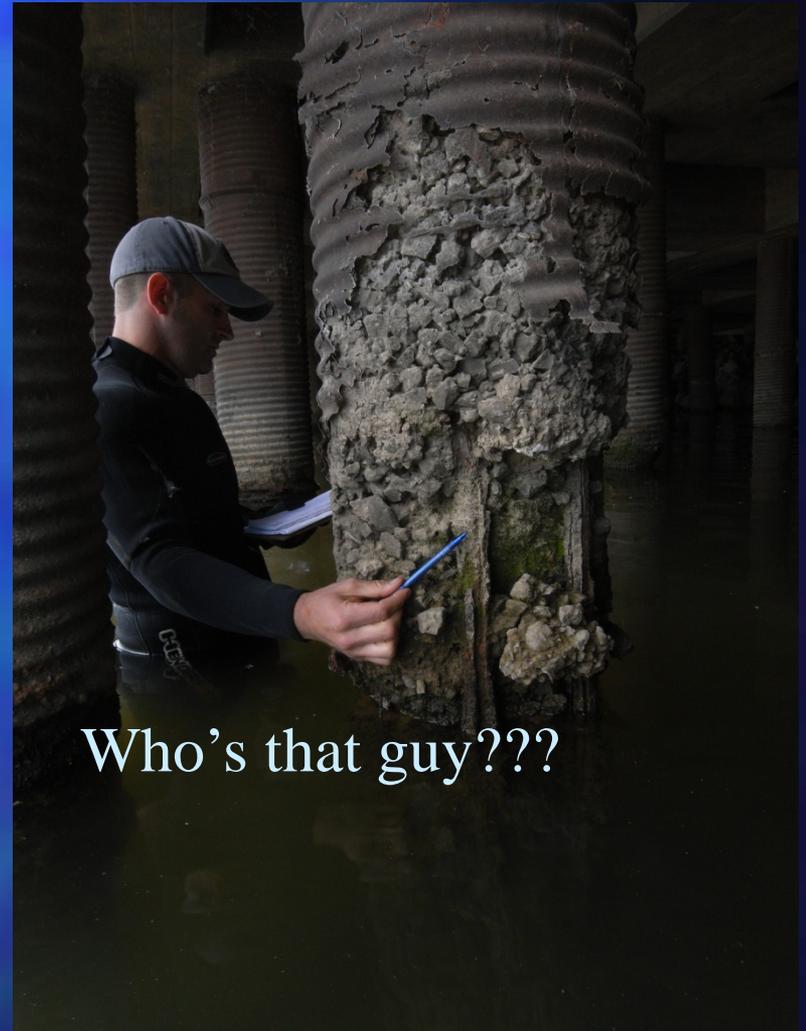
Redstone Arsenal Dives



Redstone Arsenal Dives



Redstone Arsenal Dives



Who's that guy???

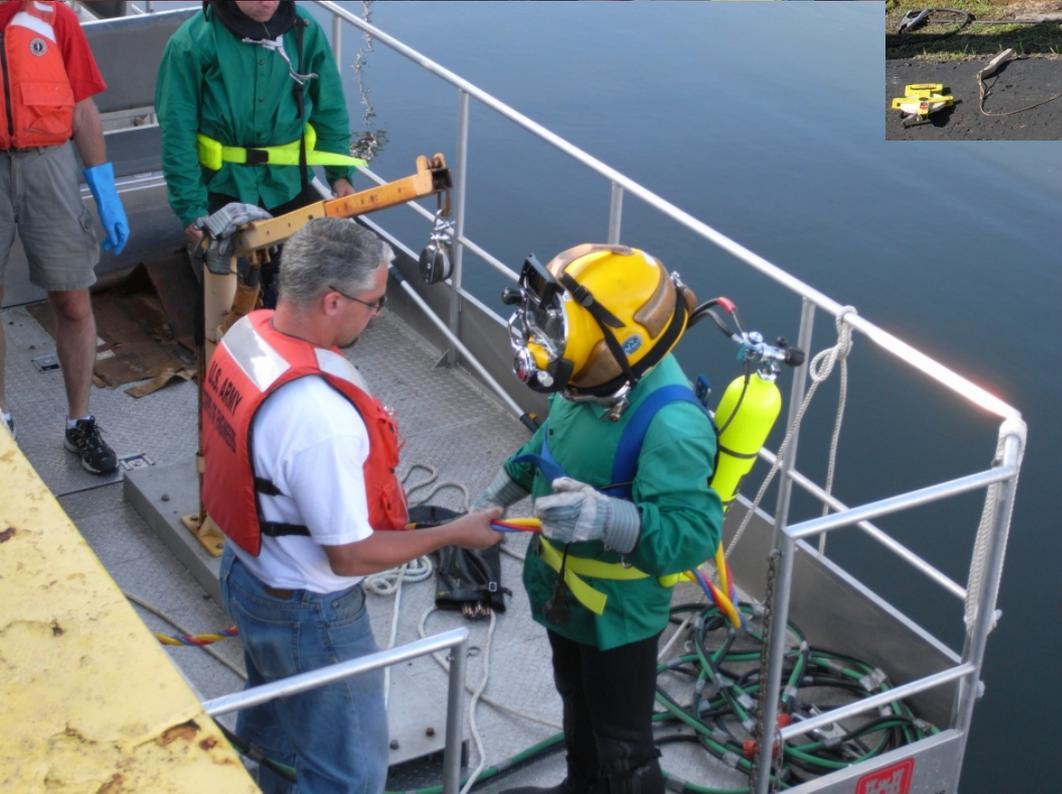
Redstone Arsenal Dives



Redstone Arsenal Dives



Underwater Welding/Cutting



In-house Diving Advantages

- Personnel Familiar with the Lock Structure and Operations
- Proximity to the Lock Allows for Quick Response
- Technical Experts Get First Hand Inspection of Projects During the Design Phase
- Technical Experts can perform the post construction inspections for quality control
- Easier Control of Dive Safety
- Easily adapt to changing schedules
- In-water engineers can perform inspection of distressed project features and perform design based on first hand knowledge

Dive Team Support for Contract Operations

- Arrange Training for Dive Inspectors
- Write Specifications for Contract Dive Operations
- Review Submittals Required for Contract Dive Operations
- Provide On-site Dive Inspectors Experienced in Dive Operations

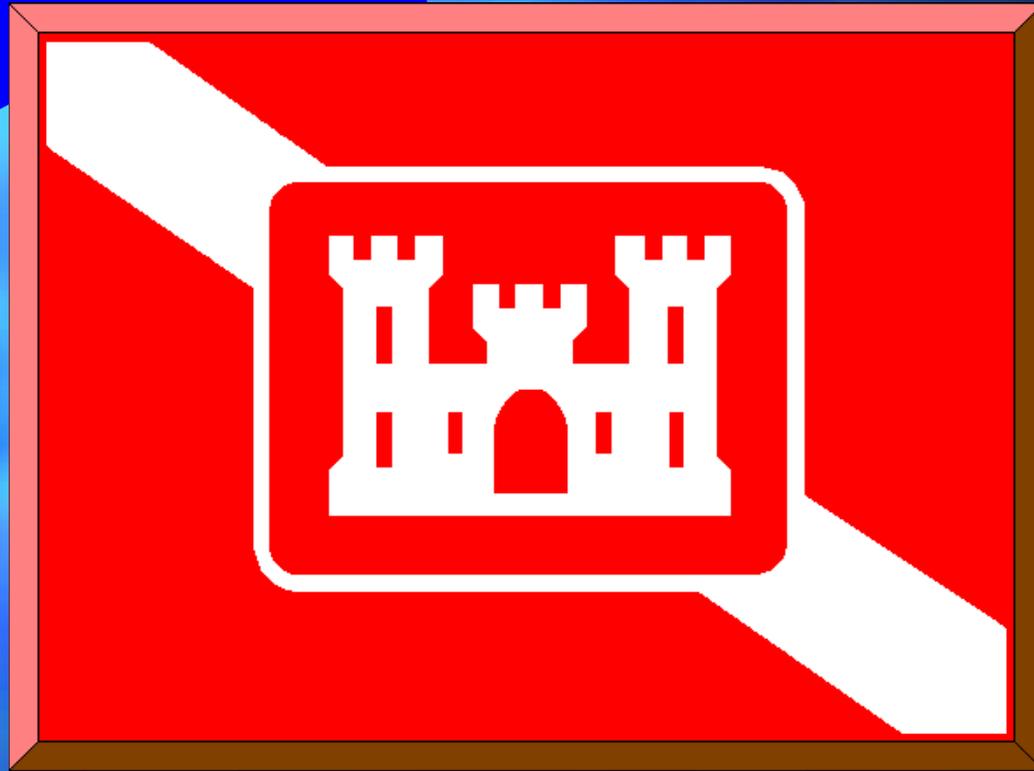
Equipment

- Pontoon Boat
- Generators
- Compressor/tank for SAS
- Surface Air Supply equipment
- Surface communications
- New SCUBA and AGA gear
- Underwater video capabilities
- Underwater photo capabilities
- Side Scan Sonar
- Cold/Warm water diving capability

Buffalo District Dive Team

w/Detroit, Philadelphia, and New England District Divers

- Highly Trained/Competent/Safe/Efficient Dive Team Personnel
- Team member backgrounds include:
 - 3 Coastal Engineers (2 P.E.'s)
 - Structural Engineer (1 P.E.)
 - Mechanical Engineer
 - Civil Engineer (1 E.I.T., 1 P.E.)
 - Construction (1 E.I.T.)
 - Environmental (Biologists - 2)
 - Geology – (2)
 - Safety (2)
 - Planning
- Integral component of many Corps Projects



Corps of Engineers Divers
“We Dive the World”