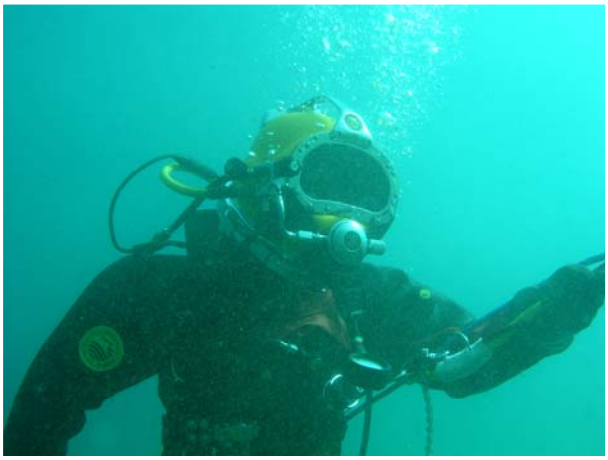
Environmental Protection Agency
National Dive Safety Program

2009 Annual Report



August 2010

Executive Summary

The U. S. Environmental Protection Agency (EPA) conducts a wide range of diving activities in support of regional and national programs. Diving is conducted in rivers, lakes, harbors, and the open ocean in support of monitoring, research, and emergency response efforts. The EPA administers diving activities under guidelines established through the EPA Diving Safety Management Program, and in compliance with the Occupational Safety and Health Administration (OSHA) regulations. This report is in response the requirements of EPA's Diving Safety Policy.

The EPA's National Diving Safety Program conducted 1567 dives in 2009, involving nine EPA dive units and 67 divers. The report describes how the program is administered nationally, and what activities each EPA dive unit undertakes.

Questions regarding this report, or about the EPA Diving Safety Program, should be directed to:

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Environmental Protection Agency
National Dive Safety Program

2009 Annual Report

Introduction

This report is provided to the Environmental Protection Agency's (EPA) Safety, Health, and Environmental Management Division (SHEMD), in accordance with EPA's Dive Safety Policy. This policy and EPA's Diving Safety Manual can be viewed on line at the SHEMD site: URL: http://intranet.epa.gov/oaintran/shemd/divmanuals/index.htm.

This report is a summary of the EPA's National Diving Safety Program (NDSP) activities from October 1, 2008 through September 30, 2009. The annual reports from EPA Unit Dive Officer's (UDO) are the basis for the information contained in this report. Copies of each UDO's Annual Report are available upon request.

The EPA's NDSP conducted 1567 dives in FY 2009 (Figure 1), involving nine EPA dive units, with 67 divers (Figure 2). These dives were conducted in a variety of water bodies that include lakes, rivers, harbors, and the open ocean. The population of EPA divers fluctuates annually, based on the number of divers that are currently qualified in the program. Qualification is based on medical compliance, diving proficiency, and other regulatory requirements. No serious injuries or accidents were reported by the dive units.

Overview

EPA's NDSP is represented nationally by nine regional dive units, each under the supervision of a Unit Dive Officer. The dive units are located in (1) Region 1 (Boston Headquarters and the Narragansett Lab); (2) Emergency Response Team - Edison, NJ, (ERT); (3) Region 3 Headquarters - Philadelphia, PA; (4) Region 4 - Atlanta Headquarters, Atlanta, GA (ATL); (5) Region 4 - Athens Lab, Athens, GA (ATH); (6) Gulf Ecology Division (GED) - Gulf Breeze, FL.; (7) Region 6 - Dallas, Texas; (8) Region 10 Headquarters - Seattle,WA.; and (9) the Western Ecology Division Lab (WED), in Corvallis, OR.

Highlights of activities from each dive unit are provided in Attachment 1.

Figure 1

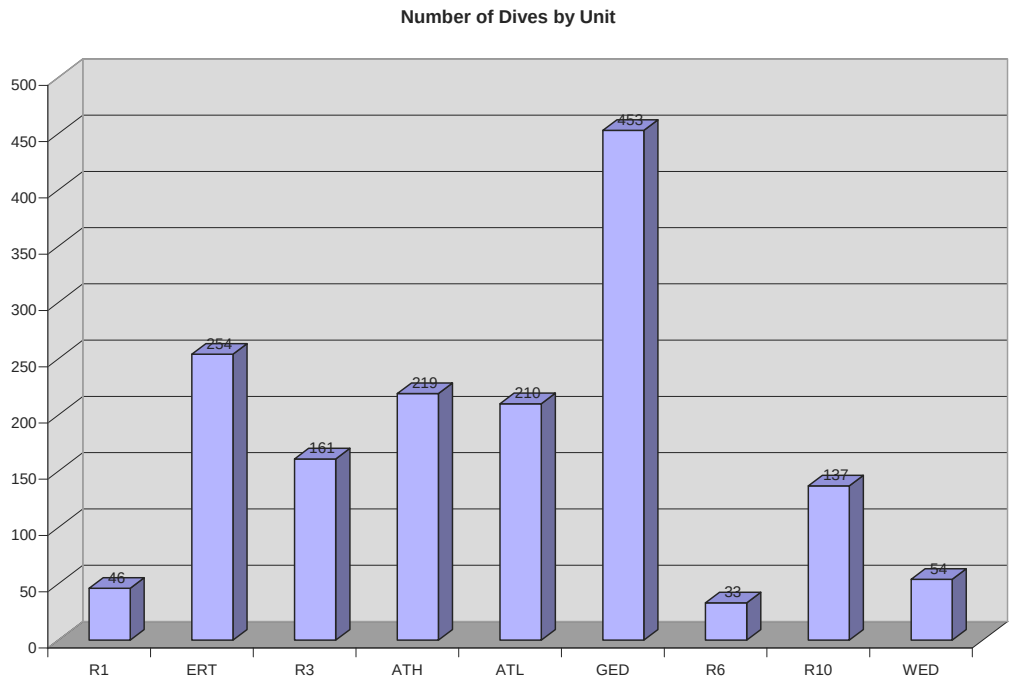
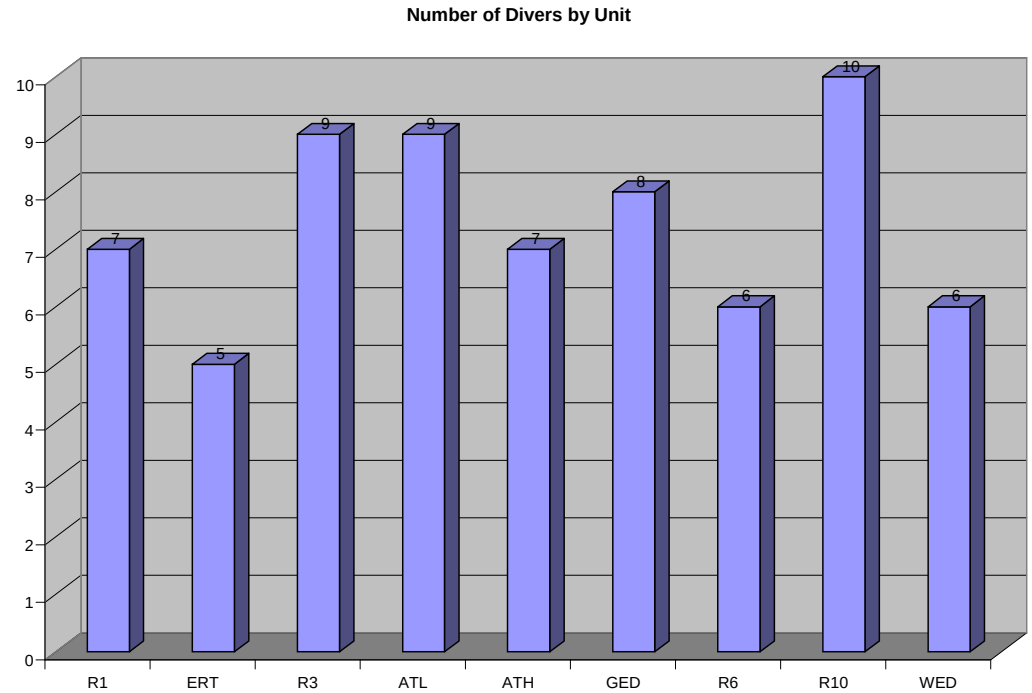


Figure 2



2009 EPA Diving Safety Board Meeting

The 2009 EPA Diving Safety Board meeting was held at the National Oceanographic and Atmospheric Administration facility at Key West, Florida, November 16-20, 2009. All dive units were represented. Agenda items included:

- Discussion of NOAA fatality in Dry Tortugas, and policy implications to NOAA and the scientific diving community;
- Safety, Health, and Environmental Management Division managers (Division Director, Branch Chief, and DSB rep) led discussions on dive program elements, including risk management, training, and medical surveillance;
- Discussion on "Scientific Exemption" clause as it applies to EPA;
- Revisions to the EPA Diving Safety Manual;
- Review of training needs; and
- Approval of Unit Diving officers at the Western Ecology Division, in Corvallis, OR, and EPA Region 10 Headquarters, in Seattle, WA.

Training

The Gulf Breeze Diver Training Center conducted its annual Diver Training Program on May 12-16, 2009. Forty-two EPA personnel were involved in training or instructing. Seventeen certifications were given for Scientific Diver. Four Divemasters were also certified. The program offered training in the use of dry suits, AGA masks, EXO-26 mask, Superlite-27 diver's helmet, surface-supplied air and NITROX , surface communications, wireless communications, U/W sonar, lift bags, U/W metal detector, U/W search and recovery, use of U/W tools, Diving Accident Management, and oxygen enriched air certification. EPA divers gained experience by working as operational diver instructors during the water exercises. Some of the more experienced divers lectured on their areas of experience.

Reciprocity:

EPA participates in joint diving activities with a variety of outside organizations. These can include other Federal and State agencies, universities, and private sector organizations. To facilitate these operations and to ensure safety, formal Reciprocity Agreements are established with these entities, based upon approved standards. These agreements are maintained for the calendar year, and can be renewed annually as needed. In 2009, EPA established Reciprocity Agreements with:

- U. S. Department of Commerce, National Oceanic and Atmospheric Administration
- U. S. Fish and Wildlife Service
- U. S. National Park Service
- State of Alaska, Department of Fish and Game
- State of Florida, Department of Environmental Protection
- University of Georgia

- Georgia Aquarium
- Scientific Diving International
- Mote Marine Laboratory
- University of Puerto Rico – Mayaguez
- Oregon State University
- University of North Carolina – Wilmington
- The Nature Conservancy

Program Collaboration and Support

Review of U.S. Antarctic Scientific Diving Program

In 2009, Kennard Potts was asked to participate in a review the National Science Foundation's United States Antarctic Program (USAP) Scientific Diving Program. As with EPA, the USAP conducts diving operations under the "Scientific Diving Exemption". This review was conducted under the scope of scientific diving as defined by the OSHA regulations.

The review considered policy and program management and aspects of operations and training. This external review was derived from two activities: (1) attendance at the annual meeting of the USAP Scientific Diving Control Board (SDCB) and (2) a site visit to McMurdo Station, Antarctica, to observe diving operations, interview divers and support staff, and assess emergency procedures/hyperbaric chamber treatment facilities. The annual meeting of the SDCB was held in Washington, DC, at the Smithsonian Institution on July 27, 2009. The on-site review of dive operations was conducted at McMurdo Sound Station, Antarctica and three dive sites near McMurdo Station, during October 19 - November 2, 2009.

Observation of multiple dives at three dive sites near McMurdo Station comprised the on-site review of dive operations. Additionally, a visit was made to a remote dive site at near McMurdo, called Lake Louise. The McMurdo Station dive locker and associated facilities were also evaluated, as was the hyperbaric chamber attached to the McMurdo medical clinic.

This evaluation considers three areas of interest:
1. Policy and Management,
2. Operational Aspects and,
3. Training

The final report was submitted to the National Science Foundation in December 2009.

Attachment 1

Dive Unit Highlights

Regional Units

1. Region 1 – Region 1 Dive Unit Boston Headquarters and the Atlantic Ecology Division (AED-Narragansett Lab)

A. Diving Activities:

Diving Operations:

- Monitoring eelgrass beds
- Monitoring for invasive species of tunicates
- Proficiency dives
- Video taping of invasive marine tunicates
- Collecting and measuring of eelgrass shoots
- Assessing invasive marine tunicates on coastal ponds
- Training

Locations:

- Nahant Bay, MA.
- Gloucester Harbor, MA.
- Halls Lake, VT
- Narragansett Bay, RI.
- Martha's Vineyard, MA., (Lagoon Pond, Lake Tashmoo, Menemsha Pond, Sengekontaket Pond, Katama Pond),
- Gulf Breeze, FL.
- Nantucket Sound, MA

B. Dive Statistics

(AED= Atlantic Ecology Division, Narragansett Lab)
(R1= R1 Headquarters, Boston, MA.)

Work:	29 (24 R1 & 5AED)
Training:	12 (5 R1 & 7 AED)
Proficiency:	5 (3 R1 & 2 AED)
TOTAL	46

C. Diving Accidents, Injuries, or Incidents

None

D. Review of Unit Diving Personnel

Eight EPA divers on roster, including five divmasters:
Eight Scientific Divers (4 at AED, 4 at Region 1)
Five Divemasters (2 at AED, 3 at Region 1)

2. Edison Emergency Response Team Dive Unit

The Environmental Response Dive Team (ERDT) conducted 254 dives in 2009. This total includes data from sponsored EPA divers in Regions II, VIII, and IX. The sponsored divers are divers who conduct work or training dives with ERDT, but do not have a dive team in their respective regions.

A. Diving Activities:

- Cooper Lake, Bridgeport, NJ – ERDT located and sampled groundwater seepage zones in Lake Cooper, adjacent to the Chemical Leaman Cooper Lake Superfund Site.
- Marine Corps Base, Quantico, VA - ERDT supported a (in-situ) bioaccumulation study of DDT and other organic sediment contaminants in the Potomac River, near the U.S. Marine Corps Base, in Quantico, Virginia.
- Center Valley Quarry, Allentown, PA – ERDT collected evidence for an EPA On Scene Coordinator (OSC) on drums in a quarry where mining was conducted years ago. Eight drums were located; a label was removed and provided to the On Scene Coordinator for further analysis.
- Raritan Bay Slag, Laurence Harbor, NJ – Assessment of Laurence Harbor seawall for contamination from metal slag from blast furnace bottoms deposited along seafront in the 1960's and 1970's. Region 2 and ERT confirmed elevated levels of antimony, arsenic, and copper.
- EPA Study of Coral Reefs in the U.S. Virgin Islands – ERDT assisted EPA Region 2 and ORD's Gulf Ecology Division with a coral condition survey in St. John's and St. Thomas, U.S. Virgin Islands.
- Beach Monitoring, Milwaukee, Wisconsin – ERDT assisted ORD Athens in the recovery of scientific instrumentation on a project ORD was conducting.
- Freshwater Mussel Study, Bolton Landing, NY – ERDT continued the support of a multi-year study of three species of freshwater mussels.

B. Dive Statistics

Working Dives	189
Training Dives	40
Proficiency	25
TOTAL	254

C. Diving Accidents, Injuries, or Incidents

None

D. Diving Personnel

The ERDT has five divers, including five divemasters.
Additionally, ERDT is supporting four divers from Regions 2, 8, 9, and RERT.

3. Region 3 Dive Unit

A. Dive Activities

- EPA Diver Training Week at the Gulf Breeze Ecology Division, Gulf Breeze, Florida - During the week of May 11, 2009, two divers attended the annual training and assisted with training of the working divers and divemasters.
- Artificial Reef Survey of Subway Cars off Rehoboth, DE – Region 3 dive team inspected the condition of New York City Subway cars sunk as an artificial reef 16 nautical miles off the coast of Delaware.
- Hard Bottom Survey in Delaware Bay – Region 3 Dive Team participated in a survey of the Delaware Bay hard bottom reefs in support of a Regionally Applied Research Effort (RARE) grant for the Delaware Estuary Benthic Inventory (DEBI) project.
- Allegheny and Monongahela Rivers in Western Pennsylvania - Region 3 Dive Team and a US Fish and Wildlife diver/malacologist completed a freshwater mussel survey of four sites on the Allegheny and Monongahela Rivers in Western Pennsylvania.

B. Dive Statistics

Work dives	88
Training/Proficiency	73
TOTAL	161

C. Diving Accidents, Injuries, or Incidents

None

D. Diving Personnel

Nine Members on team, including six Divemasters

4. Atlanta - Region 4 Dive Unit

A. Dive Activities and Location:

- Marietta, GA - Used indoor pool for training
- Lake Hartwell, GA – U.S. Army Corps of Engineers cove facility used for proficiency and training/audit.
- Tampa ODMDS, FL - Ocean Disposal Dump Site (ODMDS), 18 nmi offshore of Tampa, FL.
- Flower Gardens Banks NMS – 100 nmi south of Galveston, TX in the western Gulf of Mexico.
- South Florida (middle Keys to Ft. Lauderdale, FL) – Assessment of various vessels sunk as artificial reefs, to document the presence of invasive species.

B Dive Statistics:

Work:	192
Training:	6
Proficiency:	12
TOTAL	210

C. Diving Accidents, Injuries, or Incidents

None

D. Diving Personnel

Team has nine members, including three Divemasters.

5. Athens – Region 4 Dive Unit

A. Dive Activities

- Sediment oxygen demand/nutrient studies: Sediment oxygen demand (SOD) rates are determined through the deployment of aluminum chambers over the bottom sediments. Samples from this study are analyzed for methane, ammonia and sulfides.

- Ocean Dredged Material Disposal Sites: Divers are responsible for collecting sediment cores for laboratory analysis and benthic macroinvertebrate analysis, as well as taking bottom photographs and recording observations.

- Deploy/retrieve instruments: Deployment and retrieval of current meters Ocean Dredged Material Disposal Sites (ODMDS). A lift bag was utilized for the deployment and retrieval process.

  Location of diving operations/water body:

  Florida – Estuaries and offshore
  Georgia – Lakes
  South Carolina - Offshore
  Mississippi – Estuary

B. Dive Statistics:

Work:	199
Training:	8
Proficiency:	12
TOTAL	219

C. Diving Accidents, Injuries, or Incidents

None

D. Diving Personnel

There are a total of seven divers on the Athens Dive Team, including two divemasters.

6. Gulf Ecology Division, Gulf Breeze Dive Unit (GED)

A. Dive Activities

GED carried out several scientific diving operations. The multiple dive projects included Coral Reef Biocriteria surveys, Acoustic Doppler current profiler data download and service, and inspection and service of seawater intakes for the GED lab. The GED dive team accounted for a total of 453 individual dives in 2009. Many of these dives were performed in collaboration with other EPA units and were included in the total number of dives.

Training Dives:

GED divers made inspection dives around the GED west dock to search and remove any hazards. Ladders were removed, cleaned, and reinstalled. Barnacles, oysters, and fishing gear were removed from the pilings. Dives were made in order to test equipment (Superlite- 27, wireless, hard wire, EXO-26, a multitude of Aga masks and regulators) during the year.

Coral Condition Survey:

EPA Divers collected coral reef condition data and photographed corals off St. Thomas, St. John, and the Dry Tortugas. All of these operations were in collaboration with other units within EPA's Diving Program. The Program's overall goal is to estimate biological conditions of coral populations, and to understand associations between coral reefs, reef fish, soft corals, and other macro-biota

Divers completed the following:

- Located underwater stations.
- Enumerated the number and species of coral colonies located along a 25 meter transect.
- Estimated class size for each coral colony along the transects.
- Enumerated reef fish and calculated the available biomass.
- Characterization of Octocorals, gorgonians, macroinvertebrates, and substrates were performed.
- Photographed representative samples of each class size for computerized determination of surface area and living tissue.
- Conducted disease and bleaching surveys.
- Assessed the percentage of living/dead, size class, imaging, disease frequency, bleaching and numbers of coral colonies via transect surveys.
- Mapped and videotaped the sites and diseased corals.

ADCP (Acoustic Doppler Current Profiler) Deployment and Service:

GED divers assisted in the deployment of an environmental monitoring buoy, water quality sondes, and ADCP in Escambia Bay under zero visibility conditions. The ADCP was retrieved, downloaded, cleaned, and returned to the station on a bimonthly basis.

Assistance to other Regions and Agencies:

GED divers assisted in the scientific endeavors of Region 4 on the Tampa ODMDS site. They also assisted The Nature Conservancy with coral surveys in the Dry Tortugas.

Locations:

Diving operations were conducted in the Gulf of Mexico, inshore waters near Pensacola, Florida, Tampa, Florida, and the U.S. Virgin Islands of St. Thomas and St. John.

B. Dive Statistics

Total number of dives reported: 453

C. Diving Accidents, Injuries, and Incidents

None

D. Diving personnel

There are eight GED divers, including six Divemasters

7. Region 6 – Dallas, TX

A. Dive Activities

The Region 6 dive team cooperated with the Regional Superfund Division in the planning of a regional disaster exercise in Oklahoma. The exercise was conducted in November 2008, and consisted of deployment of field resources to the site of a simulated tornado. Several issues that would require the evaluation of underwater locations were considered by the regional dive team. Region 6 coordinated with ERT and arranged for their participation and the inclusion of ERT surveillance equipment, including the ROV and sonar equipment. The dive team was prepared for the exercise when a real hurricane intervened, and the entire exercise was cancelled.

Region 6 divers were invited to assist the Region 4 program on two separate occasions. Two Region 6 divers deployed with Region 4 onboard the OSV Bold on the November 13, 2008 to survey the Tampa Banks, and on the May 15, 2009 survey to the Flower Garden Reef survey. Heavy weather precluded any diving activity whatsoever during the November survey. Heavy weather severely impacted the Flower Garden survey as well. Only four dives were performed by Region 6 divers during the Flower Garden survey. Diver activities included surveying the reef for the presence of invasive species of orange cup corals. Operations were conducted from rigid hull inflatable boats deployed from the OSV Bold

ORD requested assistance in disassembling scientific monitoring equipment off the coast of Miami in October of 2008. Region 6 supplied a team member to assist in the operation, which was successfully completed on October 9, 2008.

Pollutants: No pollutants present. All dives conducted in offshore ocean waters.
Hazards: Occasional minor entanglement hazards.

Location of diving operations/water body

Offshore – Miami, Florida
Offshore – Flower Garden Banks, Gulf of Mexico
North Texas Lakes for training exercises

B. Dive Statistics

Work:	6
Training:	27
TOTAL	33

C. Diving Accidents, Injuries, and Incidents

None

D. Diving personnel

There are three active divers including one Divemaster. Three divers are on inactive status.

8. Region 10 Dive Unit-Seattle, WA

A. Dive Activities:

During FY09, Region 10 had eight work diving "events", consisting of 11 separate diving mobilizations. There were four dive training activities and three projects performed in support of Superfund remediation sites. Five projects were related to natural resource, water, or habitat quality issues. Five events employed tether diving. Region 10 had 63 work dives and 39 training dives, for a total of 137 dives (including requalification and proficiency dives).

During FY2009, Region 10 (R10) had the following work projects:

- Squaxin Passage, South Puget Sound, WA - October 2008: The team performed an Acoustic Doppler Current Profile meter (ADCP) search and recovery for Washington State Department of Ecology (WDOE).

- Mouth of Duwamish River, Elliot Bay, WA – February 2008: Assisted the RPM by determining whether solid phase microextraction (SPMEs) sampling devices can be deployed to the desired depth in the sediment beneath the existing cap, in areas identified by the Army Corp of Engineers.

- Dive support was provided for the Washington State Department of Natural Resources. Region 10 divers performed reconnaissance and information collection on abandoned vessels in Sinclair Inlet, WA, in February 2008. The survey determined potential threats to habitat and the release of hazardous material.

- Region 10 conducted a Superfund site habitat assessment at an old log handling and treatment facility at Quendall Terminal, at the south end of Lake Washington, WA, during April and May 2009. The assessment characterized the benthic habitat, noting wood and other debris in areas of a known groundwater plume and creosote contamination. Divers used seepage meters to detect groundwater upwelling. A video documentation looked for invasive species, such as milfoil.

- Region 10 performed a study on the exposure and effects of complex mixtures (PCBs and PAHs) in the estuarine environment, at Lower Duwamish River Waterway, WA. Sediment, surface water, and groundwater samples were collected.

- The Region 10 Dive unit characterized the hard-bottom habitat identified during the June 2008 OSV BOLD sidescan surveys on ocean dredged material disposal site, in the Pacific Ocean, off the Chetco River, Brookings, OR, during August 2009.

- The Washington Department of Ecology requested assistance to recover a Hydrolab unit that was lost in 75’ of water at Pierre Lake, WA, in September 2009.

Training:

- Nov. 2008 - The team practiced standard dive skills at the NOAA training facility. Skill sets involved buoyancy, dry suit blow-up, test of splits fins, wireless communications proficiency, compass use, safe ascent and descent.

A rescue drill was also conducted. Requalification dives for three divers were also performed.

- Jan. 2009 – The team practiced with scientific data collection gear, wireless communications, and diver rescue drills, at the NOAA training facility. Diver rescue drills included bringing an unresponsive diver from the bottom to the surface, diver tow to the dive platform, securing on a backboard after gear removal, O2 administration, AED usage, standard emergency contact procedures throughout the drills.

- Feb. 2009 –Divers tested and performed troubleshooting for our OTS wireless communication equipment at the Underwater Sports pool.

- June 2009 – The team practiced video and wireless communications at the NOAA training facility. One member completed specific work/science dive skill tasks for EPA certification as a scientific diver.

- First aid training was held in October 2008, for all divers and boat operators.

- Two divers attended the week-long diver rescue course at the Catalina Hyperbaric Chamber in October 2008.

- Sean Sheldrake completed a NOAA refresher on his ship-board medic/DMT training in January 2009.

- Several divers and boat operators took an expanded version of the Washington State Boat Operators' course that is accredited and accepted by the USCG.

- In February 2009, Region 10 divers took the DAN O2 administration and diver malady course taught by our in-house DAN instructor. This course included a CPR/AED refresher.

- Sean Sheldrake also participated in Gulf Breeze dive training as the lead Divemaster instructor.

- Region 10 continued its AAUS presence this year by presenting a paper on diver exposure in polluted water.

Additional training needed:

In 2010, the usual refreshers for CPR/AED and first aid, and eight hour health and safety are required annually (or biannually) for some first aid courses. In addition, surface supply training is planned. Though most R10 divers have extensive surface supply experience, a course will be offered to ensure our newer divers start with the same base of knowledge.

Location of diving operations

Work dives were conducted in Washington State: Puget Sound: Duwamish River, Sinclair Inlet, Squaxin Passage; Lake Washington; Pierre Lake; Oregon State (Pacific Ocean off Newport and Brookings).

B. Dive Statistics

Work Dives	63
Training	39
Proficiency	35
TOTAL	137

C. Diving Accidents, Injuries, and Incidents

One diver suffered a smashed finger topside. He declined further medical treatment. Another diver suffered pulled muscles during the EPA dive training. This was diagnosed as not being DCS issue. The diver was treated for the muscle pull and continued training.

D. Diving Personnel

There are a total of ten divers, including five Divemasters.

9. Western Ecology Division (WED): Corvallis, OR

A. Dive Activities

Dive activities during 2008-2009 consisted of proficiency, training (freshwater) and working dives to study eelgrass beds, collect samples, and test out new equipment. Working dives included photographs of a prototype fish trap, collecting eelgrass samples; maintaining underwater data logging equipment; and collecting whole eelgrass plants. Proficiency dives were performed as needed. Four WED divers completed a NAUI Rescue Diver training course. One WED diver is involved with the Oregon Coast Aquarium and conducts dives to help with aquarium maintenance on a monthly basis.

Locations of work dive operations: Yaquina Bay, Oregon

WED lost a dive team member due to a heart attack at work. Pete Eldridge died in his office on October 7th after resuscitation attempts were unsuccessful. The event was especially tragic since the day he passed away, Pete had spent the morning undergoing his annual dive exam in Corvallis. After returning to Newport (~ 1 hr drive from Corvallis), he complained of chest pains, and went to a second physician who concluded the pains were insignificant and probably the result of indigestion. Late in the afternoon on the same day, Pete returned to his office and subsequently collapsed.

This incident was particularly disturbing since regular dive exams were unable to identify Pete's heart condition, even on the day he passed away. The WED dive program is considering having divers undergo a regular stress EKG instead of a resting EKG to help identify potential cardiac problems in the future. WED is interested in learning more about the specifics of what other programs do, so they can avoid another tragedy of this sort.

Training:

Two WED divers became certified as oxygen Instructors by DAN, and can provide the dive team with oxygen administration refresher training on a regular basis. In addition, two divers have been trained as instructors for First Aid/CPR and marine life injuries, as well as AED use and protection against blood borne pathogens.

B. Dive Statistics:

Work Dives	10
Training	0
Proficiency	44
TOTAL	54

C. Diving Accidents, Injuries, and Incidents

None

E. Diving Personnel

The WED unit consists of six divers, including five Divemasters

In Memoriam

Donald Wade Lawhorn (August 24, 1938 - May 31, 2010)

The EPA dive community lost one of the founders of the dive safety program in 2010. Don Lawhorn was an active participant in the development of the EPA diving program and a member of the first joint training session aboard the EPA Ocean Survey Vessel – Peter W. Anderson, in 1980. He contributed to the program's development until retirement.

Don served in several positions during his dive career: Scientific Diver, Divemaster, and member of the EPA Dive Safety Board. He was elected as Chairman of the EPA Dive Safety Board in 1988 and served in that position until 1993. Don served in the U. S. Coast Guard, active and reserve, from 1979 through 1996. Don worked at the EPA Athens Laboratory and retired in 1995.

Don died Monday, May 31, 2010, while at St. Mary's Hospice in Athens, Georgia, after a prolonged battle with cancer.

Peter M. Eldridge (March 19, 1946 – October 7, 2008)

Pete was a member of the Western Ecology Division lab dive team, in Newport, Oregon.

Pete was born in West Hartford, Connecticut, and followed a lifetime of study and work in marine science. He received a BA in Biology and Chemistry at Southampton College, Southampton, NY, a MS in marine science from Long Island University, and a Doctorate in biological oceanography from the College of William and Mary, in Virginia.

Pete's professional work experience led him to Lockheed Ocean Sciences Laboratory, Scripps Institute of Oceanography, the Virginia Institute of Marine Science, the College of William and Mary, Texas A&M University, Dalhousie University and the Texas Parks and Wildlife Department. In 1998, he accepted a position with the U.S. Environmental Protection Agency at Hatfield Marine Science Center, where he worked as a coastal ecologist. As an ecological modeler, his primary research focus was on the flow pathways of carbon and nitrogen through marine and estuarine food webs. He also modeled seagrass ecosystems and geochemical processes in sediments. Pete loved the Ocean and had a passion for being outdoors especially if it involved being on a boat.

Pete was a sport diver for many years and was certified as an EPA Scientific Diver in 2003. Pete died suddenly on October 7, 2008.