

Environmental Protection Agency National Dive Safety Program

2019 Annual Report



Executive Summary

The U.S. Environmental Protection Agency (EPA) conducts a wide range of diving activities for regional and national programs. Diving is conducted in rivers, lakes, harbors, and the open ocean to support monitoring, research, and Superfund site investigations. 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 has been developed in response to the requirements of EPA's Diving Safety Policy.

The EPA's National Diving Safety Program conducted 914 scientific, training and proficiency dives in FY2019, involving nine EPA dive units and 62 divers. This is a reduction from 1203 dives in 2018. The number of dives conducted annually will vary from year to year due to the variable number of requested dive projects. This 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: Mel Parsons, Chairman, USEPA Diving Safety Program, parsons.mel@epa.gov, Sean Sheldrake, the EPA Dive Training Director, sheldrake.sean@epa.gov, or Scott Grossman, the EPA Dive Technical Director grossman.scott@epa.gov.

Introduction

This report is provided to the Environmental Protection Agency's (EPA) Safety and Sustainability Division (formerly SHMED) in accordance with EPA's Dive Safety Policy. This policy and EPA's Diving Safety Manual (DSM), April, 2016, v1.3, can be viewed online at: <https://www.epa.gov/diving/epas-diving-safety-program>. The EPA Diving Safety Board (DSB) has spent many hours over the past year discussing and voting on revisions to the DSM, which when finalized, will include a new light working or commercial diving category, in order to cover dives that may not meet the OSHA Scientific Diving Exemption.

This report is a summary of the EPA's National Diving Safety Program (NDSP) activities from October 1, 2018, through September 31, 2019. The annual reports from EPA Unit Dive Officers (UDOs) serve as the basis for the information contained in this report. Each UDO's Annual Report is available upon request.

Overview

The EPA's NDSP conducted 914 scientific, training and proficiency dives in FY 2019 (Figures 1 and 2), involving nine EPA dive units, and a total of 62 divers (Figure 3). Dives conducted at EPA's National Dive Training are not included in the total dive number to avoid double counting dives. EPA dives were conducted in a variety of water bodies that include lakes, rivers, harbors, and the open ocean. Several EPA dive units volunteer at local aquariums and log a significant number of off-duty proficiency dives in this manner. R3, R4, Atlanta, PESD and R10 all log a significant number of off-duty proficiency dives. These off-duty dives are not counted in EPA's total dive numbers. The population of qualified EPA divers fluctuates annually. Qualification is based on medical compliance, diving proficiency, and other regulatory requirements. No serious injuries or accidents were reported by the dive units for the FY2019 operational year.

Figure 1: Total EPA On-Duty Dives

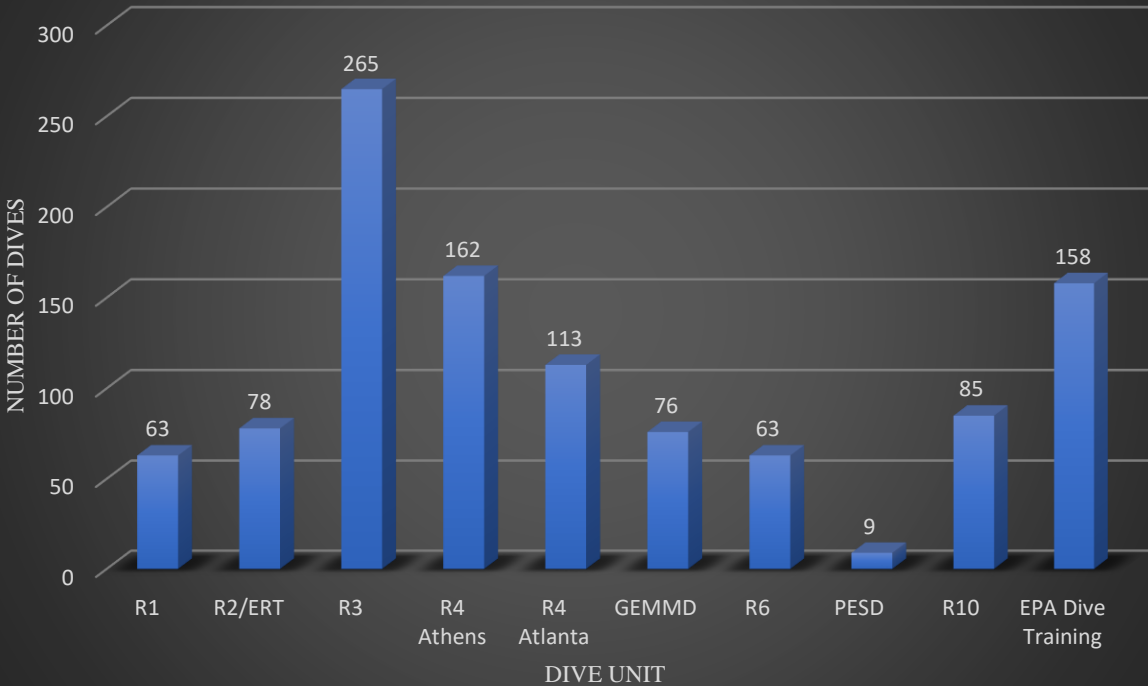


Figure 2: Type of EPA Dives by Unit

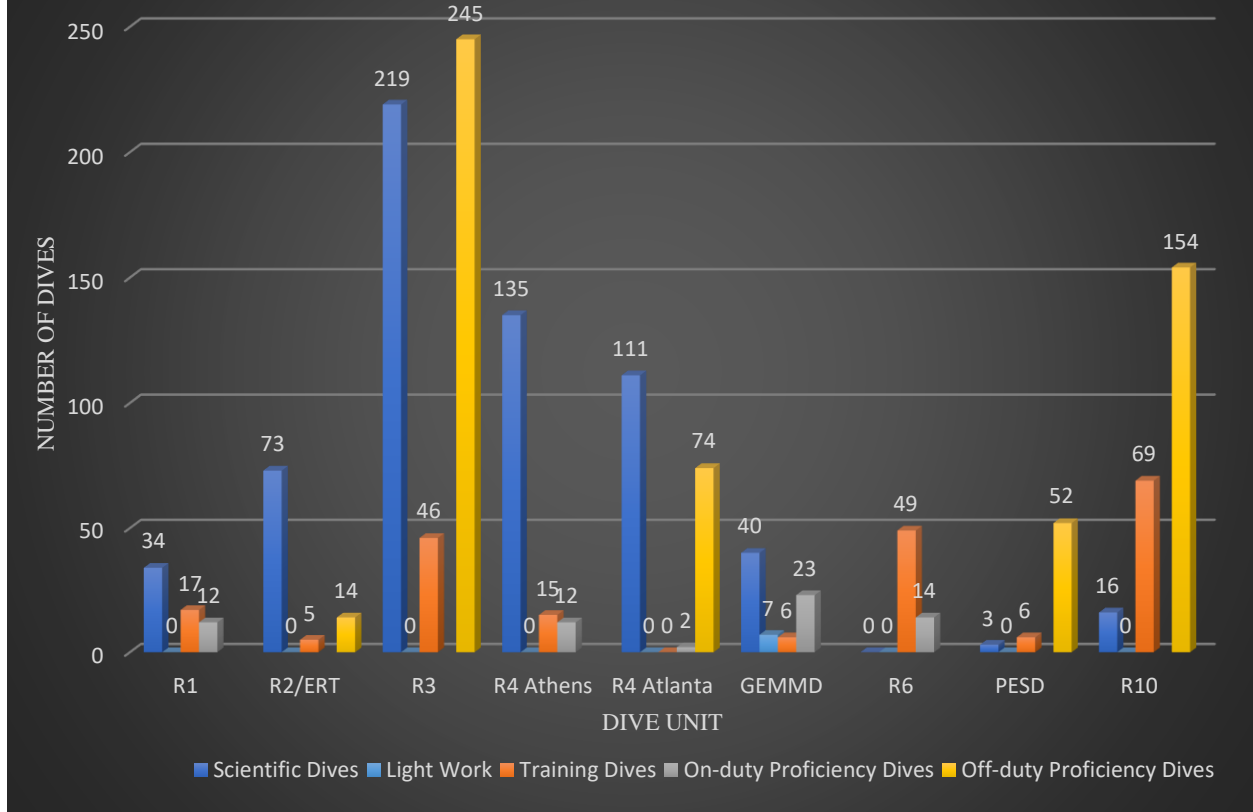
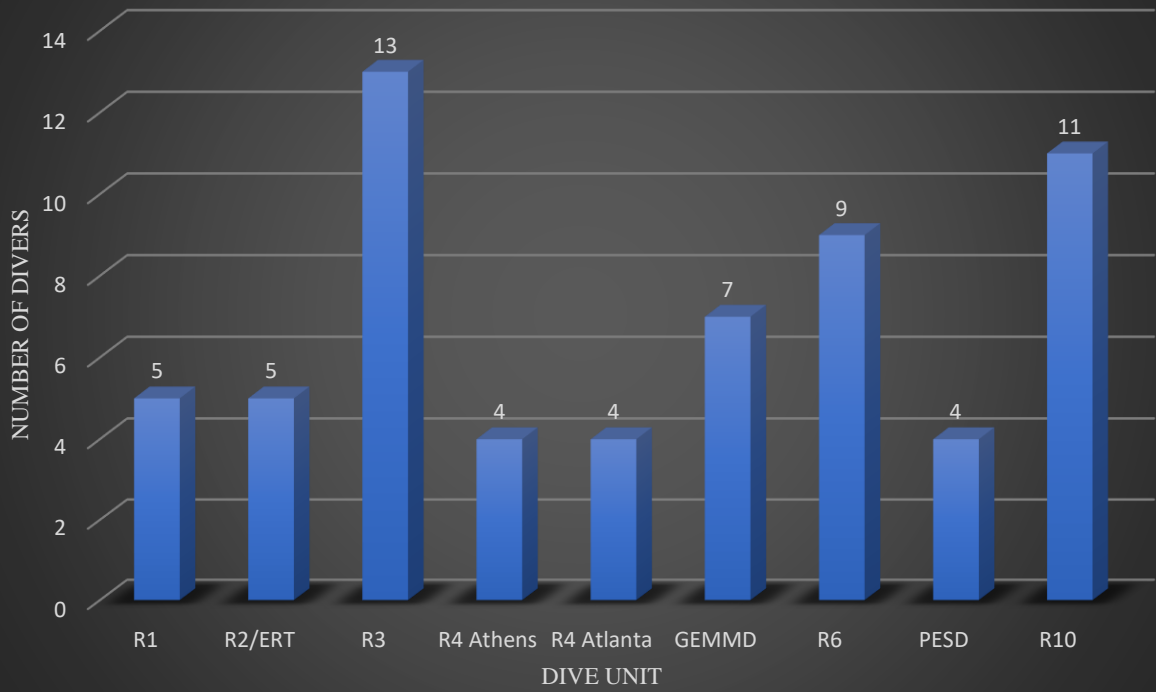


Figure 3: Number of EPA Divers by Unit



EPA has scientific divers based in 9 offices around the country. See the map or contact list below to find the Dive Officer for each unit.

Dive Units by EPA Region



- **Boston, MA** (EPA Region 1), [Eric Nelson](mailto:nelson.ericp@epa.gov) (nelson.ericp@epa.gov), Unit Diving Officer
- **Edison, NJ** (EPA Region 2), [Scott Grossman](mailto:grossman.scott@epa.gov) (grossman.scott@epa.gov), 732-452-6407, Unit Diving Officer
- **Philadelphia, PA** (EPA Region 3), [Steve Donohue](mailto:donohue.steven@epa.gov) (donohue.steven@epa.gov), Unit Diving Officer
- **Atlanta, GA** (EPA Region 4), [Tara Houda](mailto:houda.tara@epa.gov) (houda.tara@epa.gov), Unit Diving Officer
- **Athens, GA** (EPA Region 4), [Mel Parsons](mailto:parsons.mel@epa.gov) (parsons.mel@epa.gov), Chair, Diving Safety Board
- **Sabine Island, Florida** (Office of Research and Development, Gulf Ecosystem Measurement and Modeling Division), [Cheryl Hankins](mailto:hankins.cheryl@epa.gov) (hankins.cheryl@epa.gov), 850-934-9340, Diver Training Center
- **Dallas, TX** (Region 6), [Ashley Howard](mailto:howard.ashleya@epa.gov) (howard.ashleya@epa.gov), Unit Diving Officer
- **Newport, OR** (Office of Research and Development, Pacific Ecological Systems Division), [T Chris Mochon-Collura](mailto:mochoncollura.tchris@epa.gov) (mochoncollura.tchris@epa.gov), Unit Diving Officer
- **Seattle, WA** (Region 10), [Sean Sheldrake](mailto:sheldrake.sean@epa.gov) (sheldrake.sean@epa.gov), Unit Diving Officer

Following are the individual annual dive reports from each unit as well as the annual dive training report.

US EPA R1 New England Dive Unit

**ANNUAL REPORT
October 1, 2018 - September 30, 2019 (FY-19)**



The US EPA's New England Dive Unit is comprised of divers from the Atlantic Ecology Division (AED) Laboratory in Narragansett, Rhode Island, and the Region 1 Office in Boston,

Massachusetts. The following is a summary of diving operations, purchases and training in FY-19.

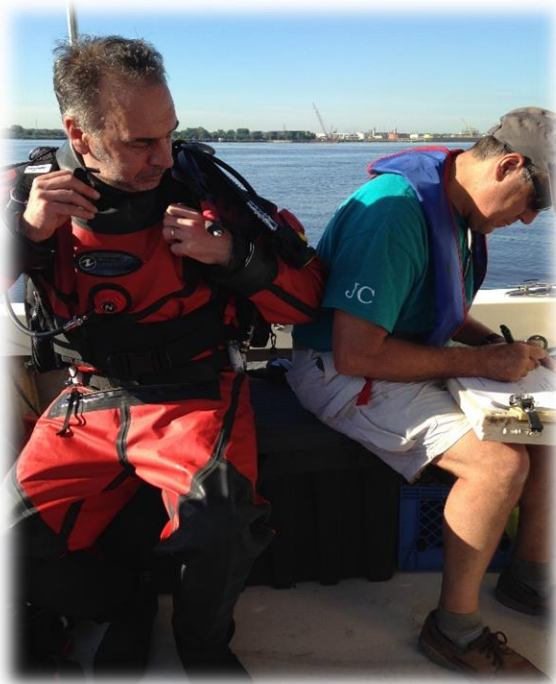
A: DIVING ACTIVITIES

In FY19, the New England Dive Unit continued to focus on supporting ongoing research related to understanding seagrass ecology, the role seagrass serves in sequestering carbon, and efforts to enhance the success in restoring seagrass habitat. For a second year, the Unit collected plant samples and shoot density data to ground truth a new assessment technique designed to predict seagrass abundance, as measured by biomass and leaf area, using high resolution satellite images. Other work included supporting efforts to restore historic seagrass habitat and participating in the State of Maine’s new Rapid Assessment Survey program for marine invasive species.

1. Diving Operations and Locations

For all dives listed, no pollution exposure was expected.

- **October 2018** – Attempted to recover temperature monitor (Hobo) in Nahant, MA in support of Blue Carbon Study. Hobo was not recovered.
- **May 2019** - Conducted requalifying dives, gear check, diver fitness assessments, and searched for Hobo in Nahant, MA following the suspension of diving activities during the months of November through April.
- **June 2019** – Conducted training with new dry suits and completed boat-based



diving accident scenario in Gloucester Harbor, MA.

- Supported Region 3 with two divers on establishing SAV survey techniques in the lower Delaware River, Philadelphia, PA.

- **July 2019** - Collected eelgrass reproductive shoots in Manchester Harbor, MA and Newport, RI, and relocated them in dispersion bags to unvegetated areas of the same embayments to assess seed germination success and survival.

- Conducted training dives at Fort Wetherill, Narragansett Bay, RI.

- Collected plants and shoot density measurements with MA Division of Marine Fisheries in Buzzards Bay, Falmouth, MA in

support of a RARE study that compared diver-collected data with high resolution satellite data.



- **August 2019** – Collected scrape samples and photos as part of Maine’s new Rapid Assessment Survey of marine invasive species conducted in Portland Harbor, ME.
- **September 2019** – Deployed and recovered sediment traps, Hobos, and GoPro cameras. Also, collected sediment and plant samples, and took shoot density

measurements for a project working in collaboration with Massachusetts Institute of Technology (MIT.) This project is an effort to measure how particle deposition will vary at small scales in seagrass meadows. This has application to better understanding carbon sequestration by seagrasses.

- Searched (without success) for a data sonde that had been collecting water quality data in Little Narragansett Bay, Rhode Island.

2. Diving Statistics

	<u># Dives</u>	<u>Bottom Time (min)</u>	<u>Exposure Days</u>
Scientific:	34	2,322	22
Training:	<u>17</u>	<u>604</u>	<u>12</u>
Total:	51	2,926	34
Proficiency/off duty:	<u>12</u>	<u>442</u>	<u>9</u>
Total:	63	3,368	43

**B. DIVING ACCIDENTS,
INJURIES, OR
INCIDENTS**

None reported.



C. DIVE TRAINING

1. Training Received in FY19:

	Region 1	AED
CPR/AED*, Neuro*	5 divers	0 divers
First Aid*	5 divers	0 divers
Emergency O2 Administration*	5 divers	0 divers
Nitrox	0 divers	0 divers
EPA Divemaster training	0 divers	0 divers
Scientific Diver	0 divers	0 divers
Advanced Operations	0 divers	0 divers

2. Training Needed in FY20

CPR/AED	0 divers	0 divers
First Aid	0 divers	0 divers
Emergency O2 Administration	0 divers	0 divers
Nitrox	0 divers	0 divers
Scientific Diver	0 divers	0 divers
Divemaster	0 divers	0 divers
Advanced Operations	1+ divers	0 divers

* All covered in DAN's Diving First Aid for Professional Divers (DFA Pro) course.

D. DIVE EQUIPMENT

1. **Same as last year?** No (Region 1)
Yes (AED)

2. **New:** 2 DUI dry suit ensembles with rock boots, undergarment and fins, 5 Spare Air tanks and gages, 2 ScubaPro BCDs, 2 tourniquets for in-water application, 1 handheld GPS.

3. **Equipment problems:** 1 old Viking dry suit taken out of service.

4. **Equipment needed:** 1 wet suit (7mm)

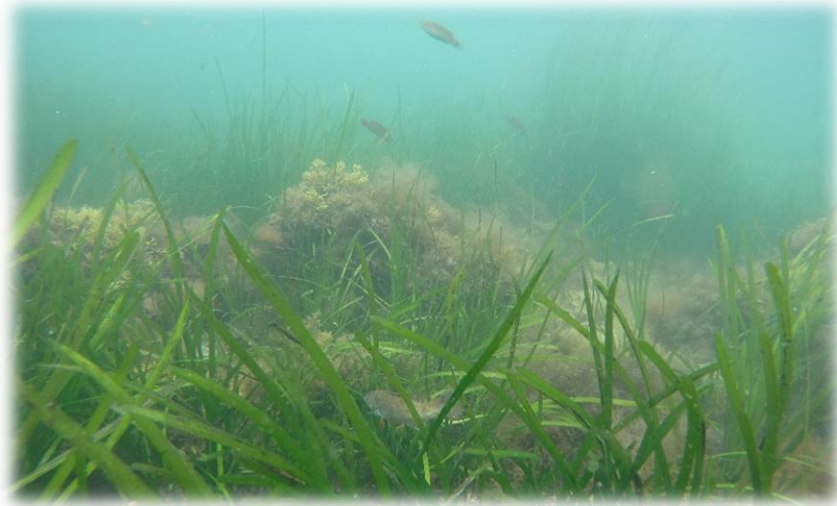


E. REVIEW OF UNIT DIVING PERSONNEL

	Diver	EPA Certification
Region 1:	1. Jean Brochi	Divemaster
	2. Phil Colarusso	Alternate UDO, Divemaster
	3. Brent England	Scientific Diver
	4. Eric Nelson	Unit Diving Officer
	5. Chuck Protzmann*	Divemaster
AED:	1. Marty Chintala**	Alternate UDO, Divemaster
	2. David Katz**	Scientific Diver

Notes:

* Chuck was not able to dive in FY19 due to a shoulder injury sustained during a snow mobile accident last winter. Now fully mended and ready to dive, Chuck is awaiting medical clearance from FOH, and snow.
 ** Both AED divers are currently in inactive status.



F. RESOURCES SPENT ON THE NATIONAL DIVE PROGRAM

1. Time expenditures	Hours
Assistance with Diver Training Course	32
Review of documents	8
Performing action items	0
Preparation for and attendance at meetings	0
Technical assistance to other units	8
Annual meetings	<u>16</u>
	64
2. Fiscal (monetary) Expenditures	Costs
Equipment maintenance and repair	\$1,484
New equipment	\$8,656
2 DUI dry suit ensembles	
5 Spare Air tanks and pressure gages	
1 handheld GPS	
2 ScubaPro BCDs	
Supplies	\$ 518
Assist at EPA Diver Training	<u>\$1,674</u>
Total	\$12,332



G. NOTEWORTHY ITEMS



* EPA's Safety and Sustainability Division (SSD) conducted a three-day safety audit of the New England Dive Unit from July 10-12, 2018 (FY-18). The audit report was finalized and sent to Region 1 in December 2018 (FY-19). While no findings were identified in the report, several recommendations made by the audit team and included in the report were discussed by the Diving Safety Board for possible adoption.

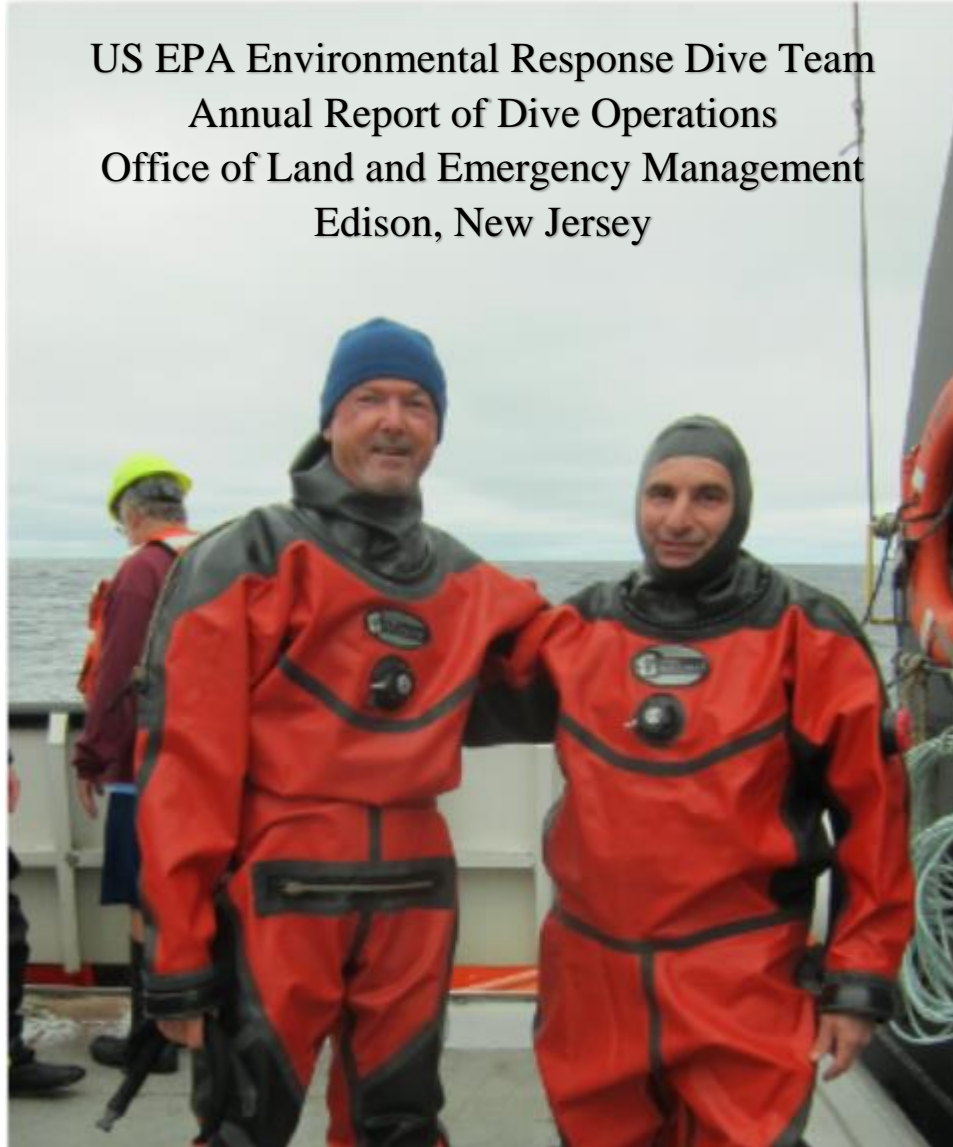
* The AED laboratory's dive team has been in inactive status since FY15 due to a lack of dive work and no identified needs for the foreseeable future. The team is now limited to two divers (Marty Chintala and David Katz) who have both expressed interest in maintaining their status as inactive divers should the need for dive support at the lab change.

* The New England Dive Unit renewed its diving reciprocity agreement with the Massachusetts Division of Marine Fisheries (MA DMF). This agreement allowed for two days (four dives) of joint operations in FY19. Region 1 expects additional diving opportunities with MA DMF on projects of mutual interest to our agencies in 2020.

* The New England Dive Unit relies on boat support from the Field Services Branch of the Region 1 Lab and the AED Lab for much of its dive work. We appreciate the professionalism and attention to safety that is consistently demonstrated by the boat operators and thank them for their assistance.



US EPA Environmental Response Dive Team
Annual Report of Dive Operations
Office of Land and Emergency Management
Edison, New Jersey



Fiscal Year 2019 - October 2018 through September 2019

Prepared by: Scott Grossman, Unit Diving Officer (UDO)

A. DIVING ACTIVITIES

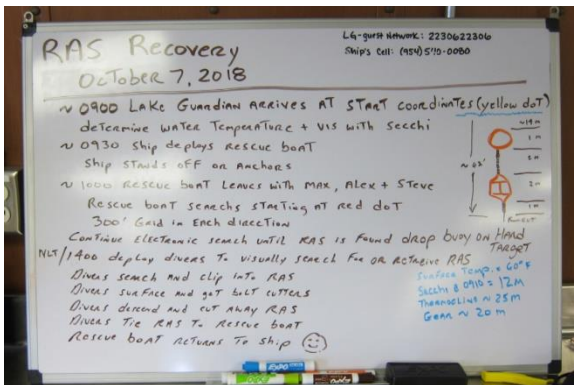
The Environmental Protection Agency (EPA) Environmental Response Dive Team (ERDT) is based out of Edison, New Jersey (NJ) as a field office of the Office and Land and Emergency Management (OLEM) Office of Superfund Remediation and Technology Innovation (OSRTI). The ERDT conducts dive operations across the country and while focused on Superfund sites and contaminated water diving, the ERDT also support a wide range of non-contaminated water scientific dive operations.

The numbers of the ERDT divers have been significantly reduced in Fiscal Year 2019 (FY19) due to the retirement of the ERDT Unit Dive Officer (UDO) Alan Humphrey, and ERT Dive Master Buddy Lobue, and the transfer of ERDT Diver Chris Gallo to a non-dive position in EPA Region 2. Due to the loss of personnel from the ERDT, most of our dive projects for FY19 required support from US EPA Mid-Atlantic Region 3 Scientific Dive Unit (SDU). Without the exceptional support from the Region 3 SDU, the ERDT would not have been able to complete all requested dive projects.

The combined total for ERDT and Region 3 SDU personnel on ERDT projects for the year were 142 scientific dives consisting of 3,161 minutes of bottom time and 55 exposure days. The total just for ERDT divers alone for the year were 73 scientific dives (1,660 minutes of bottom time & 29 exposure days), 5 training dives (211 minutes of bottom time & 5 exposure days) and 14 off-duty proficiency dives (624 minutes of bottom time & 7 exposure days).

Scientific Diving Operations:

Remote Access Sampler Recovery Operations, Lake Huron, MI



As part of EPA’s Mission in the Great Lakes, the Research Vessel (R/V) Lake Guardian conducts a variety of water quality testing under the direction of the Great Lakes National Program Office (GLNPO). Two remote sampling arrays or Remote Access Samplers (RAS) were moored in Lake Huron at depths around 40 feet. When these units failed to release, ERDT was contacted to assist with the location and retrieval of these units. A very short time window as available prior to the R/V Lake Guardian concluding operations for the season. Due to poor weather/sea conditions and the limited time window, the search time was limited to less than one day of survey time. Accurate coordinates of the deployment locations were collected and most of the survey time was spent with small vessel operation searching for the arrays with single beam sonar (depth sounders). Based on the best data available, ERDT divers were able to make one dive in about 50 feet of water to search for the units, but they were not located within the area. Operations were aborted after the first dive due to deteriorating weather and sea conditions. Divers and Dive Masters from the Region 3 SDU assisted with this project.



Bayonne Dry Dock and Repair Sampling, Bayonne, New Jersey



The ERDT was requested to collect sediment samples outside the caisson doors at the Bayonne Dry Dock and Repair facility to assess possible site related impacts to the Upper New York Bay. ERDT conducted two dives off the EPA Biglane in depths up to 40 feet using a single diver on surface supplied air wearing a full-face mask and dry suit mated with dry gloves. Following collection, the sediment samples were turned over to the Region 2 NPDES Investigators to be submitted for analytical analyses (PCBs and metals).



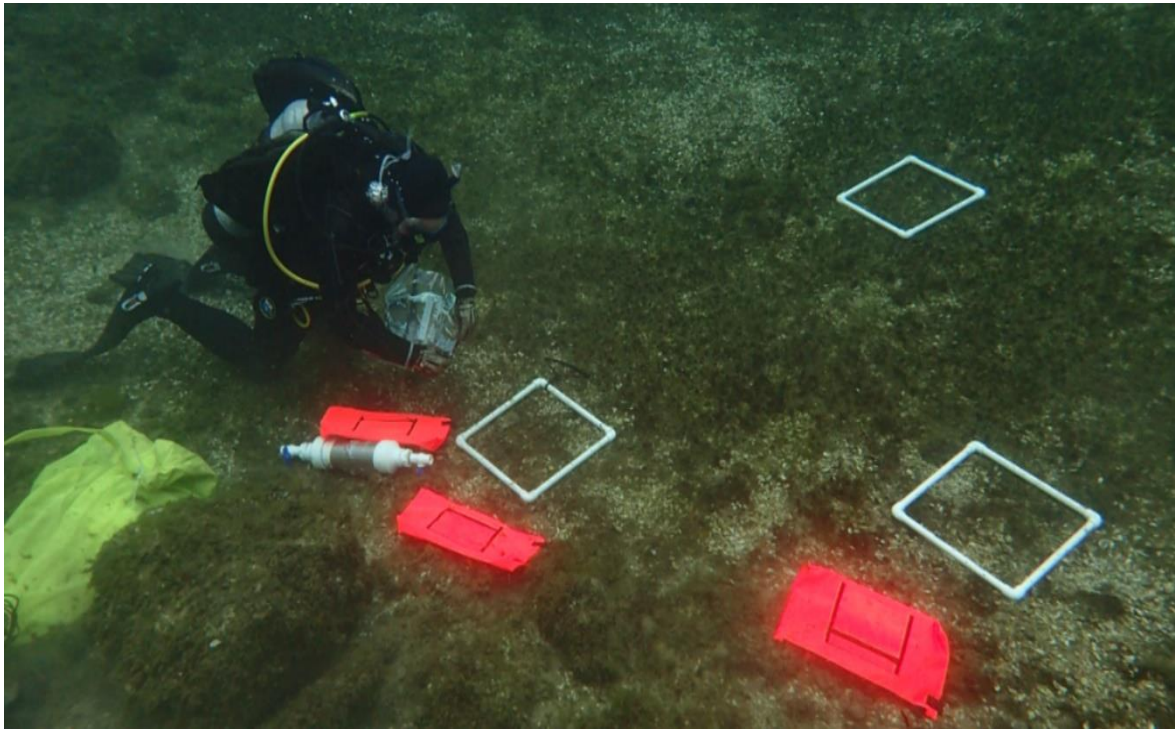
Lake Ontario Comparative Science and Monitoring Initiative Dive Operations, Lake Ontario, NY

At the request of EPA Region 5 Great Lakes Program Office and EPA Region 2, ERT is participating in the 2019 Comparative Science and Monitoring Initiative in the Great Lakes Region for a second year. Multiple Federal, State, and Academic parties are involved in this Biological Monitoring related to water quality, nutrient loading, and the relationship between invasive species *Dreissena polymorpha* (zebra mussels) and *Cladophora* (a filamentous green

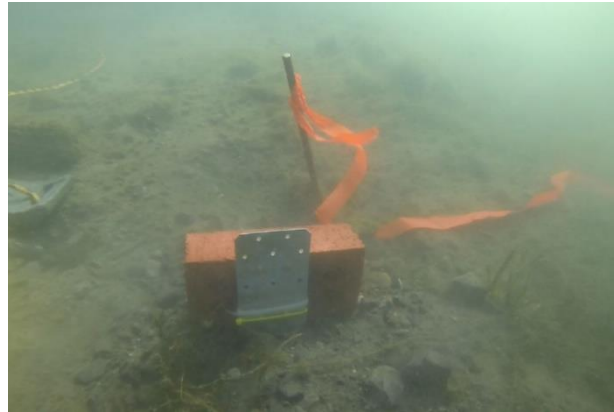
algae). This is also part of a cross-border activity in cooperation with Environment Canada, which is conducting similar scientific dives on the Canadian side of the Great Lakes. Nuisance growth of *Cladophora* has been documented in the Great Lakes since the 1930s. It was nuisance algae when the Great Lakes Water Quality Agreement was first implemented, but control of nutrients reduced the concern for its growth. However, *Cladophora*'s biomass has increased steadily through the past decade due to increased water clarity caused by zebra mussels. *Cladophora*'s impact is most felt through beach fouling.

For 2019, ERDT performed four weeks of dive operations between May and August, including one week installing instruments and three weeks of data collection. Data collection included video documentation, collection of benthic invertebrates and water samples, deployment and retrieval water quality monitoring instruments and documentation of diver observations/habitat assessments. Dives were conducted in Lake Ontario at depths up to 60 feet with water temperatures ranging from the upper 30's to the lower 70's. Visibility was generally good, but during some of the events at some of the stations visibility was limited to less than a couple of feet. Over the four weeks on this project, a total of 104 dives were made consisting of 2,424 minutes of bottom time. Divers and Dive Masters from the Region 3 SDU assisted with this project during all four mobilizations.

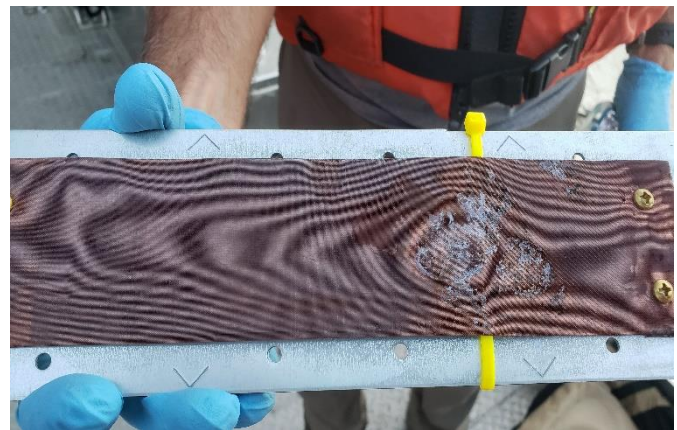
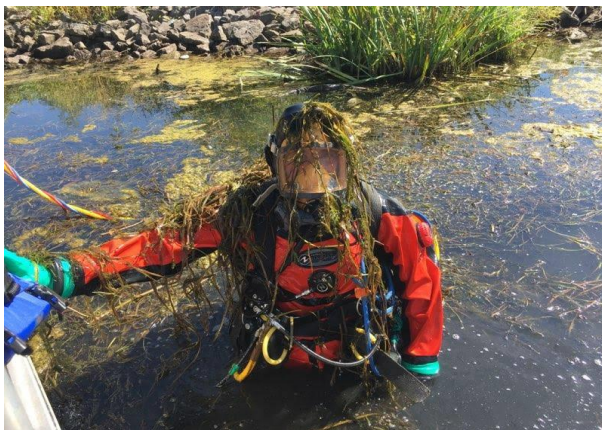




RACER Trust (former GM Massena Powertrain Plant), Massena, NY.



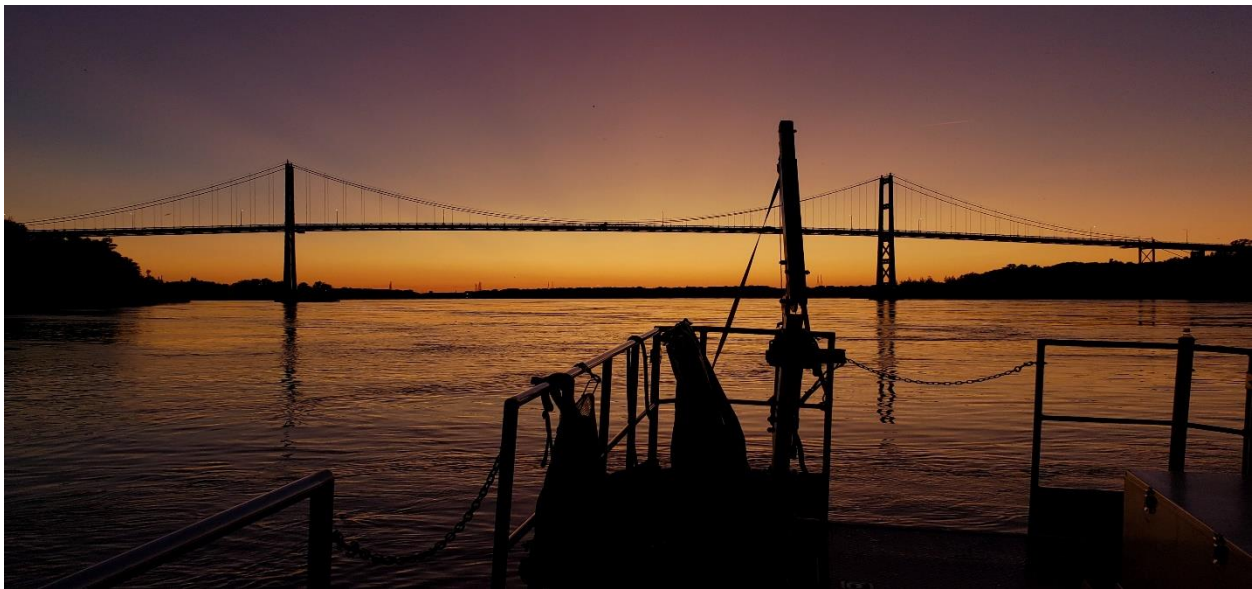
The former General Motors (GM) Massena Powertrain Plant, now known as RACER Trust, was an industrial and manufacturing site from the late 1950s until the early 2000's. During its die casting process, GM used hydraulic fluids containing polychlorinated biphenyls (PCBs). As a result of the manufacturing process on the site, the St. Lawrence River adjacent to the site was contaminated with PCBs. Removal and partial capping of sediments was performed in 1995 in the river adjacent to the site. Following this action, fish were periodically collected adjacent to the site and analyzed for PCBs. In 2016, elevated concentrations of PCBs were detected in the fish tissue samples and the Remedial Project Manager (RPM) requested assistance from the Environmental Response Team (ERT) to assess the source of these PCBs. Working with RACER Trust and their environmental consultant, ERT has continued to provide project support which has previously included a diver cap inspection. To assess potential PCBs sources, a side-wide passive sampler investigation was developed. As part of the support on this project, ERDT divers installed 33 passive samplers at the site. The passive samplers were installed in the upper 6 inches of sediment and in the surface water at the surface water/sediment interface so both matrices could be assessed. Divers were dressed in dry suits with full face masks and mated dry gloves and utilized surface supplied air. Dives were conducted off of the ERT Pontoon vessel in depths up to 20 feet although a number of the samplers were installed in depths of less than 5 feet. A total of 29 dives were made consisting of 462 minutes of bottom time. Divers and Dive Masters from the Region 3 SDU assisted with this project during all four mobilizations.



Detroit River CID Investigation, Trenton, MI



The ERDT was contacted by EPA Region 5 Criminal Investigation Division (CID) to conduct an underwater search for bagged asbestos construction debris or other potential hazardous material that may have been illegally dumped in the Trenton Channel of the Detroit River from the McLouth Steel Plant. Divers dressed in dry suits with full face masks and mated dry gloves conducted dives from a Michigan State Police (MSP) vessel. Divers were line tended and searched over a mile of shoreline. Although no targets were located, the divers were able to eliminate the areas searched from having any illegally disposed of hazardous materials. Limited current, and visibility ranging from around 3 to 5 feet allowed the divers to search about a mile of shoreline in 12 dives over a period of 2 days. Only the first day of the project was in FY19 the second day was in FY20.



B. DIVE STATISTICS

Table 1. ERDT Dive Statistics (including dive support from EPA Region 3 SDU divers)

Project	Average Depth (fsw)	Date	Dive Type	Dives	Bottom Time (minutes)	Exposure Days
Lake Huron RAS Search on Lake Guardian	52	9/2018	Scientific	2	72	2
Bayonne Dry Dock Site	37	10/2018	Scientific	2	43	1
May Lake Ontario CSMI Study	21	5/2019	Scientific	10	142	5
June Lake Ontario CSMI Study	33	6/2019	Scientific	34	676	14
July Lake Ontario CSMI Study	30	7/2019	Scientific	30	868	12
August Lake Ontario CSMI Study	29	8/2019	Scientific	30	738	12
Racer Trust Passive Sampler Deployment	7	10/2019	Scientific	29	462	7
Detroit River CID Dive Support	30	10/2019	Scientific	5	160	2
Pool Training Dive YMCA Pool	7	4/2019	Training	2	16	2
Pool Training Dive Underwater Phantaseas	8	5/2019	Training	3	195	3
Subtotal Scientific Dives				142	3,161	55
Subtotal Off-Duty Proficiency Dives				14	624	7
Subtotal Training Dives				5	211	5
TOTAL DIVES				161	3,996	67



Table 2. ERDT Dive Statistics (including only ERDT dives)

Project	Average Depth (fsw)	Date	Dive Type	Dives	Bottom Time (minutes)	Exposure Days
Lake Huron RAS Search on Lake Guardian	52	9/2018	Scientific	2	72	2
Bayonne Dry Dock Site	37	10/2018	Scientific	2	43	1
May Lake Ontario CSMI Study	21	5/2019	Scientific	2	30	1
June Lake Ontario CSMI Study	33	6/2019	Scientific	17	324	7
July Lake Ontario CSMI Study	30	7/2019	Scientific	22	675	9
August Lake Ontario CSMI Study	29	8/2019	Scientific	12	273	6
Racer Trust Passive Sampler Deployment	7	10/2019	Scientific	16	243	3
Detroit River CID Dive Support	30	10/2019	Scientific	0	0	0
Pool Training/Requalification Dive YMCA Pool	7	4/2019	Training	2	16	2
Pool Training/Requalification Dive Underwater Phantaseas	8	5/2019	Training	3	195	3
<i>Subtotal Scientific Dives</i>				73	1,660	29
<i>Subtotal Off-Duty Proficiency Dives</i>				14	624	7
<i>Subtotal Training Dives</i>				5	211	5
TOTAL DIVES				92	2,495	41

C. DIVING INJURIES

There were no diving accidents, injuries or incidents experienced by the ERDT in FY19.

D. DIVE TRAINING

In May 2019, ERT divers made pool requalification dives using SCUBA and full-face mask. Due to a busy scientific dive schedule and the ERDT being very limited on personnel, no additional training dives were able to be scheduled in FY19.

Members of the ERDT were provided 8-hour OSHA HAZWOPER Refresher, First Aid, CPR/AED and Oxygen Administration training.

In FY20 all divers must complete 8-hour OSHA HAZWOPER Refresher Training and one new ERDT member (Katelyn Amraen) will complete OSHA 40-hour HAZWOPER Training.

E. DIVING EQUIPMENT

Current Equipment Inventory

ERDT primary equipment is:

- 1) Self-Contained Underwater Breathing Apparatus (SCUBA) Tanks (24)
- 2) Pony Bottles (8)
- 3) Dive Regulators (first and second stage) (14)
- 4) Buoyancy Compensating Devices (BCDs) (8)
- 5) Whites Dry Suits (7)
- 6) Full Face Masks (10)
- 7) Communication Ropes (Comropes) (2)
- 8) Kirby Morgan (KM) Surface Supply Control Box
- 9) Communication Boxes (2)
- 10) Surface Supply Dive Umbilicals, 150 feet & 300 feet
- 11) Superlight 17 Helmets (2)
- 12) MS 1000 Vector Scanning Sonar (1)
- 13) Outland 1000 Remotely Operated Underwater Vehicle (ROV) (1)

During FY19, ERT did annual maintenance on dive equipment (regulators, BCs, dry suits, surface supplied, AGAs, computers), and the 41-foot Biglane dive/survey vessel.

Primary purchases were:

- 1) Replacement hoses for all regulators and pressure gages.
- 2) Replacement AIR2 regulators for all BCDs (8)
- 3) An Enviro Hybrid Whites Dry Suit
- 4) Avanti Quattro Fins (5 sets)
- 5) 200' Comrope with banana plugs
- 6) Whites Enviro Hybrid Dry Suit
- 7) XS Scuba Deluxe Cylinder Equalizer (2)
- 8) Zeagle Ranger BCD (2)

Needed Equipment

ERDT is currently evaluating our equipment inventory to determine what items may need to be removed from inventory and replaced/upgraded.

F. REVIEW OF DIVING PERSONNEL

Presently, the ERDT has five full-time members, including four dive masters.

Katelyn Amraen	Scientific Diver
Steve Blaze	Dive master
Scott Grossman	Dive master/UDO
Rich Henry	Dive master
Jon McBurney	Dive master

G. TIME SPENT ON THE NATIONAL DIVE PROGRAM AND RELATED COSTS

Assistance with EPA Diver Training Course	Five days
Preparation for and Attendance at Meetings	Nine Days
Dive Plan Review	Two days
DSB Technical Director Duties	Three days
Attendance at EPA Diver Training Course and the EPA Diving Safety Board Meeting	\$5,000

**US EPA MID-ATLANTIC REGION 3
SCIENTIFIC DIVE UNIT
ANNUAL REPORT OF DIVE OPERATIONS**

**Fiscal Year 2019 - October 2018 through September 2019
Prepared by: Steven J. Donohue, Unit Diving Officer (UDO)**

A. BACKGROUND AND SUPPORT OF AGENCY GOALS

The US EPA Mid-Atlantic Region 3 Scientific Dive Unit (SDU) is a program within the Field Services Branch in the Laboratory Services and Applied Sciences Division (LSASD). This Annual Report of Dive Operation for the SDU (Report) describes the activities and accomplishments of Philadelphia and Wheeling based Region 3 divers for Fiscal Year 2019. SDU scientists and engineers include representatives from the following offices and divisions; Air and Radiation Division (ARD), Enforcement and Compliance Assurance Division (ECAD), Land, Chemicals and Redevelopment Division (LCRD), LSASD and Superfund and Emergency Management Division (SEMD).

The SDU helped contribute to the EPA 2019 Strategic Plan goal of protecting America's waters and working toward a sustainable future by assisting external and internal customers including:

- Region 3 SEMD with completing a freshwater mussel bioassay at the Big John Salvage Superfund Site
- Office of Research and Development (ORD) with deploying methane monitoring equipment in Ohio
- Pennsylvania Department of Environmental Protection (PADEP), Pennsylvania Fish and Boat Commission (PAFBC), and US Fish and Wildlife Service (USFWS) with conducting freshwater mussel collection and surveys
- Environmental Response Team (ERT) and EPA Region 2 with the Lake Ontario Cooperative Science Monitoring Initiative
- ERT and Region 2 Superfund Program with PCB passive sampler deployment at the Racer Trust Site in Massena NY
- Region 3 Laboratory Services and Applied Sciences Division with Submerged Aquatic Vegetation (SAV) surveying on the Delaware River
- West Virginia Department of Natural Resources (WVDNR) with the retrieval of scientific equipment and data in the Ohio River
- ERT and the Criminal Investigation Division (CID) with searching for possible asbestos containing material in the Detroit River.

In addition, the SDU completed training dives to maintain readiness, practice skills, maintain proficiency and satisfy program requirements.

The SDU conducted dives and cross trained with Region 1 and ERT in FY 2019. Region 3

cross-funded Region 1 to travel and assist on development of our SAV survey method. ERT/Region 2 provided cross funding for Region 3 divers to assist them in several dive operations as described above. Cross funding travel can be invaluable in sharing resources and enhancing uniformity, safety and the capability within our EPA Diving Program.



Brad White in the Delaware River June 2019

B. DIVING ACTIVITIES

Below is a summary of metrics and analysis of SDU activities in FY 2019, followed by a description of each activity. Table 1 and 2 provides summary data for each scientific and training dive, respectively, including the location, purpose, depth, conditions, breathing gas, number of dives, hyperbaric exposure days, and total and average bottom time for dives conducted by the SDU. Additional detail on each SDU activity is available in the site-specific Dive and Safety Plan (completed prior to diving) and the Operation Report (completed following diving). Figures 1 and 2 show the number and percentage of Scientific, Training and Personal Proficiency Dives and Hyperbaric Exposure Days.

Summary

In FY 2019 the SDU completed 219 scientific dives and 46 training dives during 20 separate operations for 9 different external and internal customers. Region 3 Scientific Divers collectively spent over 100 hours underwater during our scientific and training dives in FY 2019. This is over double the “bottom time” that was logged in FY 2018. The average of 29 minutes per dive is also slightly higher than the 24-minute average dive time from last year.

Tasks completed by scientific divers in FY 2019 included: running transect lines and collecting and reporting observations and data to the surface, obtaining scrape samples of epibenthic organisms and algae, locating and servicing cameras and water quality monitors deployed underwater, deploying and retrieving cages filled with juvenile freshwater mussels for a bioassay, deploying passive sediment samplers and raising and lowering an air monitoring tower and documenting underwater conditions with HD still and video cameras.

Dives were conducted in freshwater environments ranging from the Great Lakes, tidal and

controlled rivers, a quarry, and saltwater bays. No open ocean dives were conducted this year.

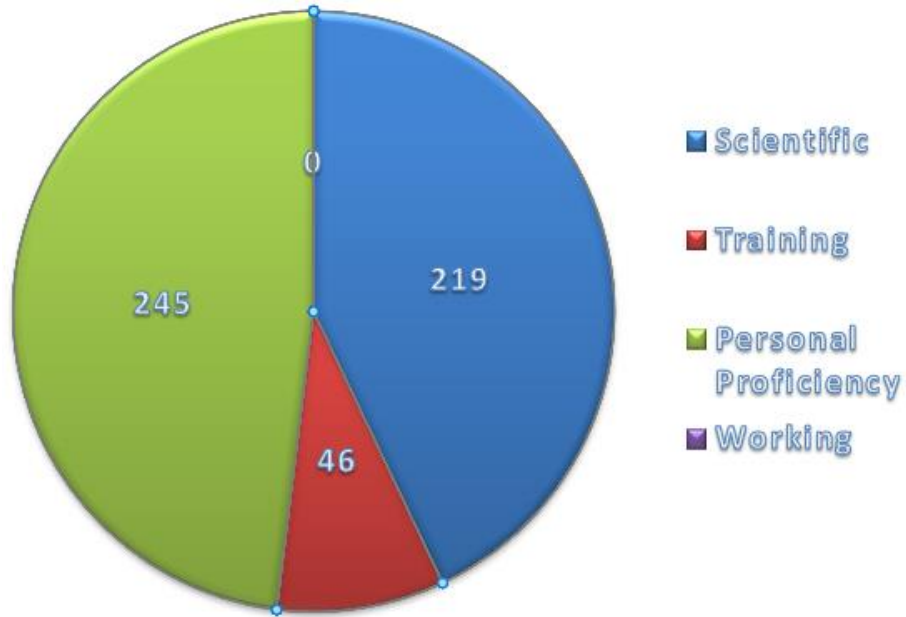


Figure 1 Scientific, Training, and Proficiency Dives for SDU in FY 2019

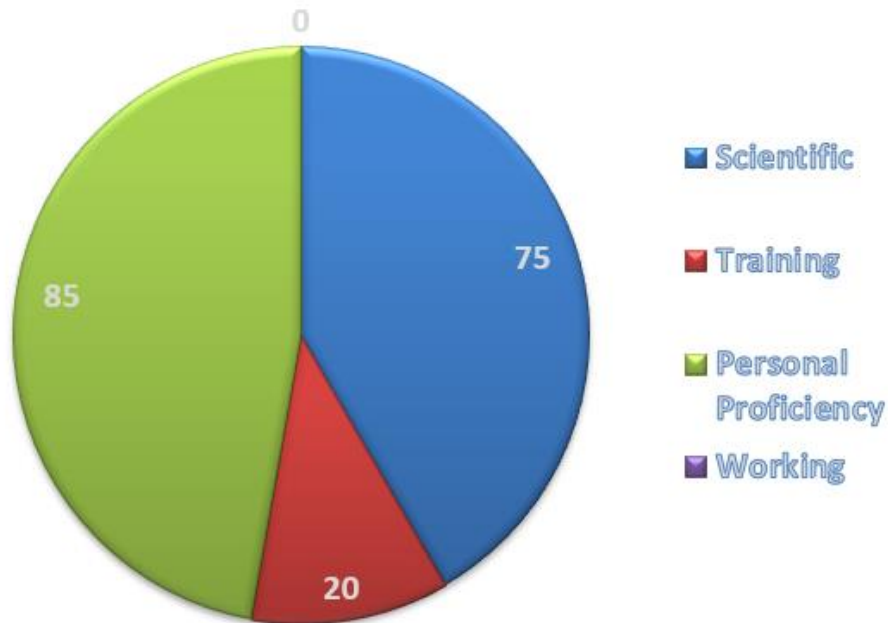


Figure 2 Hyperbaric Exposure Days for SDU in FY 2019

Notes: Scientific Dives are performed for scientific, research, or educational purposes. Training Dives are done on government time and at government expense. Personal Proficiency Dives are done on personal time and at personal expense in order to enhance or maintain proficiency. Divers may have used government dive equipment during personal proficiency Dives. A hyperbaric exposure day is defined as any day a diver is exposed to greater than ambient pressure due to diving.

More than half (8 of 13) divers completed at least one proficiency dive on their own time. Three of our divers completed proficiency/working dives at the Adventure Aquarium in FY 2019. Aquarium diving is considered a commercial dive operation subject to OSHA requirements. Duties include participating in a public dive show and doing cleaning and maintenance diving. There are multiple benefits to SDU participation as volunteer divers including improved proficiency, regular repetitive dives, and familiarization with the requirements of diving in a commercial dive operation. The SDU hopes to continue to expand our relationship with the Aquarium so that more SDU divers may participate in proficiency diving at the aquarium.

The Region 3 UDO participated as a trainer/mentor for the EPA National Scientific Diver Training Program in May of 2019. The UDO completed 18 dives during the training week, as a safety diver and with Region 6 to video/document their sampling methodology. Region 3 had two Dive Master candidates participate and successfully complete the class this year. The SDU also participated in all Diving Safety Board meetings via conference call. There were no changes to SDU personnel in FY 2019, i.e. no divers were added, and no current divers retired or separated from the SDU.

The SDU continued and expanded the level of support provided to ERT in FY 2019. SDU sent divers in May, June, July, and August to assist ERT/Region 2 with an international project with Canada studying water quality and sampling benthic organisms in Lake Ontario. In September, the SDU provided two divers for an ERT project at a Superfund Site on the Saint Lawrence Seaway in upstate NY to help deploy passive PCB samplers. In September, the Region 3 SDU mobilized two divers to Detroit to support an ERT/CID investigation of possible disposal of asbestos containing materials in the Detroit River.



Retrieving Divers with a Tag Line in the Delaware River June 2019

Table 1 Data Summary for SDU Scientific Dives in FY 2019

Lead	Location	Purpose & Customer	Date	Depth in Feet	Conditions	Breathing Gas	Names of Diver and (#) of dives	Total # of Dives	Total # Hyperbaric Exposure Days	Total Bottom Time in Minutes	Dive Master
FY 2019 R3-1	Monongahela River, West Virginia	FW Mussel Bioassay Eight Week Growth and Mortality Check for Big John Salvage Superfund Site	10/12/2018	13	Freshwater River Impounded by Locks	Air	Light (11) Adamiec (9) and Borusk (2)	22	3	362	White
FY 2019 R3-2	Monongahela River, West Virginia	FW Mussel Bioassay Ten Week Growth and Mortality Check for Big John Salvage Superfund Site	10/25/2018	15	Freshwater River Impounded by Locks	Air	Donohue (4), Doyle (5), Ettema (2) and Light (7)	18	4	226	Borsuk
FY 2019 R3-3	Lake Acton, Ohio	ORD EC Tower Lowering	11/15/2018	4	Freshwater lake	Air	Light (1) and White (1)	2	2	48	Borsuk
FY 2019 R3-5	Lake Acton, Ohio	ORD EC Tower Raising	3/19/2019	5	Freshwater lake	Air	Light (2) and White (2)	4	2	211	Light Supervised by Borsuk
FY 2019 R3-6	Allegheny River, NW Pennsylvania	Salamander Mussel Collection with USFWS and PADEP	5/6/2019	10	Freshwater River Impounded by Locks	Air	Light (1) Johnson (1) Doyle (2) Newman (2)	6	4	260	Borsuk
FY 2019 R3-6	Allegheny River, NW Pennsylvania	Salamander Mussel Collection with USFWS and PADEP	5/7/2019	18	Freshwater River Impounded by Locks	Air	Borsuk (2), Ettema (2), Johnson (4), Light (3), Doyle (6), and White (6)	23	6	584	Borsuk
FY 2019 R3-6	Allegheny River, NW Pennsylvania	Salamander Mussel Collection with USFWS and PADEP	5/8/2019	18	Freshwater River Impounded by Locks	Air	Adamiec (3), Eller (3), Ettema (2), Light (2) and Newman (3)	13	5	666	Borsuk
ERT	Lake Ontario, Lockport New York	Cladophora Study for Region 2 and ERT	5/29/2019	21	Freshwater lake	Air	White (3) and Eller (3)	6	2	82	Grossman
ERT	Lake Ontario, Irondequoit New York	Cladophora Study for Region 2 and ERT	5/30/2019	21	Freshwater lake	Air	Eller (2)	2	1	15	Grossman
ERT	Lake Ontario, Stony Island New York	Cladophora Study for Region 2 and ERT	5/30/2019	21	Freshwater lake	Air	White (1)	1	1	13	Grossman
FY 2019 R3-8	Monongahela River, West Virginia	FW Mussel Bioassay Final Check and Retrieval for Big John Salvage Superfund Site	5/30/2019	20	Freshwater River Impounded by Locks	Air	Light (6) and Doyle (6)	12	2	218	Borsuk
	Lake Ontario, Lockport New York	Cladophora Study for Region 2 and ERT	6/17/2019	57	Freshwater lake	Air	Adamiec (1)	1	1	44	Grossman
ERT	Lake Ontario, Lockport New York	Cladophora Study for Region 2 and ERT	6/18/2019	10 to 34	Freshwater lake	Air	Adamiec (1) and Light (3)	4	2	76	Grossman and McBurney
ERT	Lake Ontario, Irondequoit New York	Cladophora Study for Region 2 and ERT	6/18/2019	21	Freshwater lake	Air	Adamiec (3)	3	1*	55	Grossman
ERT	Lake Ontario, Irondequoit New York	Cladophora Study for Region 2 and ERT	6/19/2019	10 to 61	Freshwater lake	Air	Light (4)	4	1	69	McBurney
ERT	Lake Ontario, Stony Island New York	Cladophora Study for Region 2 and ERT	6/19/2019	20	Freshwater lake	Air	Adamiec (1)	1	1	40	Grossman
ERT	Lake Ontario, Stony Island New York	Cladophora Study for Region 2 and ERT	6/20/2019	60	Freshwater lake	Air	Doyle (2) and Light (2)	4	2	68	Grossman
FY 2019 R3-9	Delaware River	SAV Suneys for Field Services Branch	6/27/2019	10	Tidal River	Air	Donohue, White, Colarusso, and Nelson	4	4	154	Donohue

Table 1 Data Summary for SDU Scientific Dives in FY 2019 continued...

Lead	Location	Purpose & Customer	Date	Depth in Feet	Conditions	Breathing Gas	Names of Diver and (#) of dives	Total # of Dives	Total # Hyperbaric	Total Bottom Time in	Dive Master
FY 2019 R3-10	Delaware River, Florence Bend	PADEP FW Mussels	7/11/2019	41	Tidal River	Air	Adamiec (4) and Light (4)	8	2	170	White/Doyle
FY 2019 R3-10	Delaware River, Florence Bend	PADEP FW Mussels	7/12/2019	33	Tidal River	Air	Doyle (3) and White (3)	6	2	156	White/Light
ERT	Lake Ontario, Lockport New York	Cladophora Study for Region 2 and ERT	7/22/2019	58	Freshwater lake	Air	Borsuk	3	1	66	Grossman
ERT	Lake Ontario, Irondequoit New York	Cladophora Study for Region 2 and ERT	7/23/2019	55	Freshwater lake	Air	Borsuk	3	1	43	Grossman
ERT	Lake Ontario, Stony Island	Cladophora Study for Region 2 and ERT	7/25/2019	22	Freshwater lake	Air	Borsuk	2	1	71	Grossman
FY 2019 R3-12	Delaware River, Florence Bend	PADEP FW Mussels	8/19/2019	30	Tidal River	Air	Doyle (3) and Adamiec (3)	6	2	86	White/Doyle
ERT	Lake Ontario, Lockport New York	Cladophora Study for Region 2 and ERT	8/19/2019	56	Freshwater lake	Air	Donohue (5) and Ettema (5)	10	2	280	McBurnie
ERT	Lake Ontario, Irondequoit New York	Cladophora Study for Region 2 and ERT	8/20/2019	58	Freshwater lake	Air	Donohue (3)	3	1	50	McBurnie
ERT	Lake Ontario, Stony Island New York	Cladophora Study for Region 2 and ERT	8/21/2019	50	Freshwater lake	Air	Donohue (3) and Ettema (3)	6	2	115	McBurnie
FY 2019 R3-13	Ohio River, Gallipolis, OH	WVDNR Scientific Data and Equipment Recovery	9/11/2019	40	River	Air	Light (2) Newman (2)	4	2	118	Light
FY 2019 R3-14	Delaware River, Near Tincum and Petty Island	SAV Survey for Field Services Branch	9/17 and 18/2019	6	Tidal River	Air	Light (2), Doyle (4), Eller (1), Chase (3), and Newman (2)	12	7	400	Light
ERT	Saint Lawrence Seaway Massena NY	ERT Passive Sampler Deploiment at Racer Trust Superfund Site	week of 9/16/2019		River	Air	Donohue (10), Borsuk (4)	14	4	224	Grossman
	Ohio River	USFWS	9/24 and 9/25/19	24	River	Air	Light (5), Borsuk (2)	7	3	333	Clayton
ERT	Detroit River, in Detroit Michigan	CID/ERT Asbestos Search	week of 9/30/2019			Air	Light (3) and Eller (2)	5	2	160	Grossman
2019 Totals								219	75	6381	
									Hours UW	106.4	
									Avg. Dive in Min.	29	

Table 2 Data Summary for SDU Training Dives in FY 2019

Lead	Location	Purpose & Customer	Date	Depth in Feet	Conditions	Breathing Gas	Names of Diver and (#) of dives	Total # of Dives	Total # Hyperbaric Exposure Days	Total Bottom Time in Minutes	Dive Master
FY2019-R3-4	Moundsville WV	Training	3/2/2019	9	Indoor Pool	Air	Borsuk (1) and Light (1)	2	2	60	Borsuk
GED	GED	Scientific Diver and Dive Master Training	5/14/2019	12	Saltwater Tidal Bay	Air	Donohue (5)	5	1	73	Henry, Gannon, Light and Doyle
GED	GED	Scientific Diver and Dive Master Training	5/15/2019	12	Saltwater Tidal Bay	Air	Donohue (2), Doyle (1), Light (1)	7	3	40	Gannon and Howard
GED	GED	Scientific Diver and Dive Master Training	5/16/2019	12	Saltwater Tidal Bay	Air	Donohue (6)	6	1	133	Gannon
FY 2019 R3-7	Dutch Springs Quarry	Re-qualification and Equipment Testing	5/22/2019	28-69	Freshwater Quarry	Air	Adamiec (2), Amraen (3), Borsuk (2), Doyle (2), Donohue (3), Eller (2), Forren (2), Light (2), Newman (2) and White (2)	22	10	488	White and Borsuk
FY 2019 R3-11	Friendship Lake, OH	Re-qualification and Equipment Testing	8/7/2019	45	Freshwater lake	Air	Brosuk, Ettema, Light	4	3	124	Borsuk
								46	20		

Chronologic Description of FY 2019 Dive Operations

EPA R3 SDU –FY-2019-01 - Big John Salvage Superfund Site - The SDU completed dives on October 12, 2018 at four locations on the mainstem of the Monongahela River. The divers retrieved and replaced deployed caged juvenile freshwater mussels to evaluate the toxicity of the contaminated sediment in the Monongahela River adjacent to the Big John Salvage Superfund site, near Fairmont, WV. The bioassay is being done at the request of Region 3 SEMD BTAG and with support from the WVDNR and USFWS. The USFWS provided the mussels that the SDU deployed in areas of known PAH-impacted sediment in addition to an upgradient background location. This study will function as a pre-dredging baseline and findings are expected to assist in the development of the post-dredging monitoring plan. The growth rate and mortality of the mussels has been checked at week 2, 6 and 8. The week 4 check was canceled due to conditions on the river. Divers and equipment from the Wheeling and Philadelphia Office were mobilized to support this study.

Monongahela River Superfund Site Fresh Water Mussel Bioassay



EPA R3 SDU –FY-2019-02 – Big John Salvage Superfund Site - On October 25, 2018, the Region 3 SDU completed the last dives for 2018 at four locations on the mainstem of the Monongahela River adjacent to the Big John Salvage Superfund Site. After the mortality check on October 25, the mussels were returned to the river and secured for overwintering. Divers and equipment from Wheeling and Philadelphia mobilized to support this study.

EPA R3 SDU –FY-2019-03 – ORD Lake Acton Methane Emission Study - On November 15, 2018 the Region 3 SDU assisted ORD Cincinnati with methane study equipment. At the request of EPA ORD Laboratory in Cincinnati, SDU deployed divers from Wheeling and Philadelphia to assist with preparing a scientific-equipment tower for winter lake conditions. Earlier this year, SDU and ORD staff assembled and deployed an aluminum tower used to suspend methane-emissions monitoring equipment over Acton Lake, near Cincinnati, OH. During the recent site visit, the tower was lowered to the lake bottom to prevent damage from winter ice build-up on the lake. Divers and surface personnel worked in 32-degree air temperature and 37-degree water temperature with 1-2 feet of underwater visibility to partially disassemble the tower and attach surface markers.

EPA R3 SDU –FY-2019-04 – Wheeling Pool Training - On March 2, 2019 Wheeling-based members of the Region 3 SDU conducted a training dive in a pool in Moundsville, WV.

Acton Lake Methane Emission Tower Project



EPA R3 SDU –FY-2019-05 – ORD Lake Acton Methane Emission Study - On March 19, 2019 the Region 3 SDU raised EPA's ORD Laboratory in Cincinnati Monitoring Tower in Acton Lake in southwestern Ohio. ORD requested dive assistance from Region 3 with the installation and lowering of an aluminum tower in the lake, which took place in April and November 2018. The tower was installed to hold monitoring equipment to measure methane emissions from lake sediments and mounted in the middle of the lake. The SDU conducted dives and provided topside assistance for several tasks, including raising the lightweight aluminum tower from the bottom where it was set in previous dives to prevent ice damage over the winter. The new location in the middle of the lake has increased the percentage of time data is useable from 25% to 75%, as well as providing more and better nighttime and CO₂ data.

EPA R3 SDU –FY-2019-06 – Allegheny River Salamander Mussels Sampling - On May 6, 7, and 8, 2019 the Region 3 SDU partnered with the USFWS, PADEP, and the PAFBC to recover Salamander mussels (*Simpsonaias ambigua*) on Allegheny River in Northwest Pennsylvania. The mussels are currently under review for listing under the Endangered Species Act (ESA). The objective was to collect mussels that would be used as brood stock at the White Sulfur Springs National Fish Hatchery and offspring would then be re-introduced at locations within the Ohio River Islands National Wildlife Refuge in PA and WV as well as several sites within Dunkard Creek in southwestern PA. Unfortunately, only one salamander mussel was found due to poor habitat in the sections where dives were conducted.



Allegheny River PADEP, USFWS, Salamander Mussel Project



2019 Scientific Diver Training - On May 13-17, 2019 the UDO and two scientific divers from the Region 3 SDU participated in at the Annual Scientific Diver Training held at the Gulf Ecology Division Laboratory in Gulf Breeze Florida. The two SDU divers attended and successfully completed the Dive Master Class and the Region 3 UDO participated in the training as a trainer, mentor, videographer and safety diver.

EPA R3 SDU –FY-2019-07 – Quarry Training - On May 22, 2019 scientific divers from Philadelphia, Wheeling, and HQ mobilized to Dutch Springs Quarry (Bethlehem, PA) for equipment checkout and requalification/training dives. All divers performed two or three dives after they completed equipment setup and checks with their assigned dive buddy. All required SDU safety equipment (AED, first aid/trauma kits, backboard, oxygen kit, and diver recall) were deployed prior to diving. During diving operations, a diving medical emergency drill was conducted and included a diver rescue tow, removal of the diver from the water, an initial diver assessment, oxygen delivery, and simulated 911/Divers Alert Network notification.

Lake Ontario Cooperative Science Monitoring Initiative – From May 28-31, 2019 2 scientific divers from the SDU Region 3 scientific divers supported the Lake Ontario Cooperative Science Monitoring Initiative, Region 2 and the ERT with its study of water quality and sampling of benthic organisms near Olcott, Irondequoit, and Sackets Harbor, NY. For the initial deployment for 2019, SDU divers completed 9 dives in 4 Hyperbaric Exposure Days. At each site, divers deployed water quality monitoring instrument packages and collected water and benthic samples at depth. Videos of overall bottom conditions were also taken.

Lake Ontario ERT Region 2 Support for Cooperative Science and Monitoring Initiative



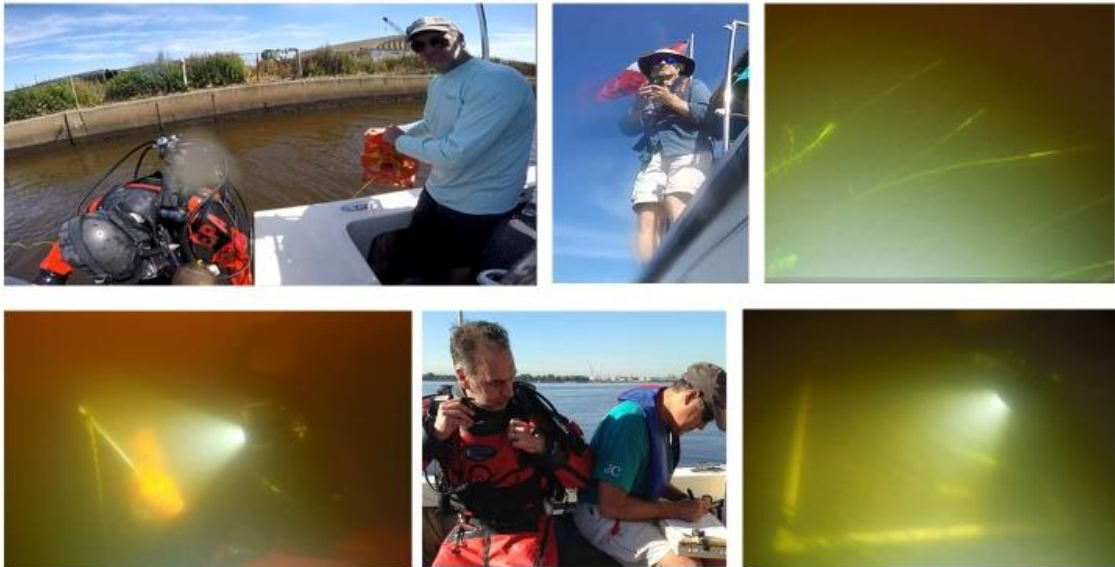
EPA R3 SDU –FY-2019-08 – Big John Salvage Site - On May 30, 2019 scientific divers retrieved deployed caged juvenile freshwater mussels from four locations at the Big John Salvage Site on the mainstem of the Monongahela River. The mussels were deployed in FY 2018 to evaluate the toxicity of PAH-contaminated sediment adjacent to the site. This final recovery concluded a 7-month bioassay study performed at the request of the SEMD's BTAG, and with support from the WVDNR and USFWS. The USFWS provided the mussels that the SDU deployed in areas of known contamination, as well as in an upstream background location.

Lake Ontario Cooperative Science Monitoring Initiative – From June 17-20, 3 scientific divers from the SDU supported the Lake Ontario Cooperative Science Monitoring Initiative, Region 2 and the ERT with its study of water quality and sampling of benthic organisms near Olcott, Irondequoit, and Sackets Harbor, NY. For this first check after deployment, SDU divers completed 17 dives in 8 Hyperbaric Exposure Days. At each site, divers deployed water quality monitoring instrument packages and collected water and benthic samples at depth. Videos of overall bottom conditions were also taken.

EPA R3 SDU –FY-2019-09 - SAV Method Development and Cross Training with Region 1 - On June 27 the SDU, with support from Region 1 Scientist/divers, conducted dive operations at a site located just downstream of the Walt Whitman Bridge on the Pennsylvania side of the Delaware River. The purpose of the diving was to test alternate protocols to document the in-situ condition of the submerged aquatic vegetation (SAV) in the Delaware Estuary. Region 3 requested and provided travel support to cross train with Region 1 due to their over twenty years of experience conducting SAV studies in New England waters. Teams of two divers (one from Region 3 and 1 from Region 1) dove at two locations. At each location data was collected from 4 radial transects starting from a center point. Data including; the name and number of species present, percent cover and height range. A de-briefing meeting with the entire survey team conducted following

the diving resulted in a conceptual plan for future studies.

Delaware River Region 3 and 1 Cross Training Submerged Aquatic Vegetation Survey



EPA R3 SDU –FY-2019-10 – PADEP FW Mussels Survey - On July 11 and 12, 2019 the SDU supported a PADEP study of freshwater mussels on the Delaware River. PADEP's Coastal Programs Office (CPO) has been utilizing side scan sonar to map areas of potential freshwater mussel beds within the Delaware River. The CPO requested the EPA dive operations to ground-verify the sonar data. Over a two-day period, the divers completed requested transects, providing valuable information to our state partners.

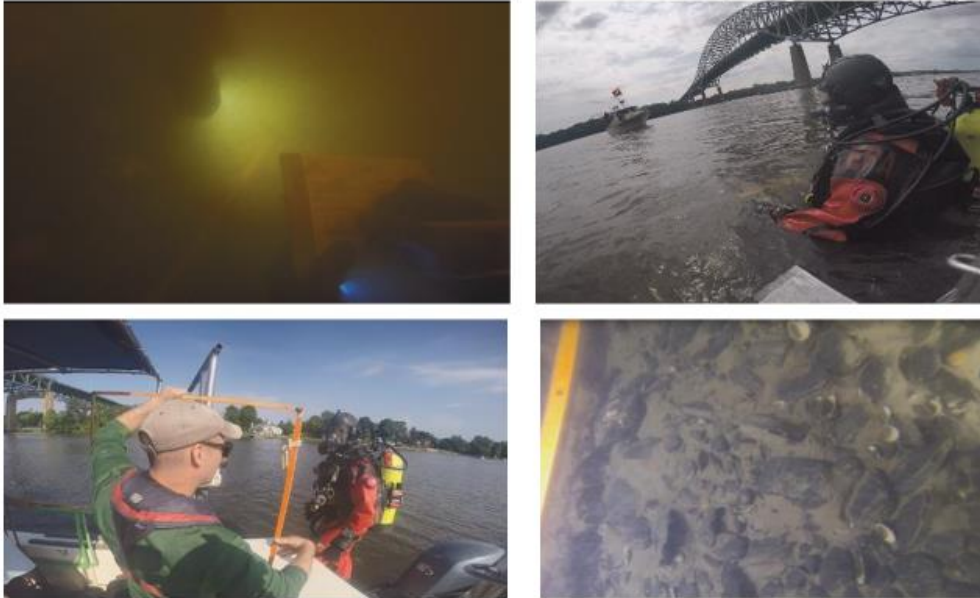
Lake Ontario Cooperative Science Monitoring Initiative – From July 22 to 25, 1 scientific diver from the SDU, supported the Lake Ontario Cooperative Science Monitoring Initiative, Region 2 and the ERT with its study of water quality and sampling of benthic organisms near Olcott, Irondequoit, and Sackets Harbor, NY. For this second check after deployment, the diver completed 8 dives in 3 Hyperbaric Exposure Days.

EPA R3 SDU –FY-2019-11 – Wheeling Lake Training - On August 7, 2019 two Wheeling-based divers conducted a training dive at Friendship Lake to check out dry suit repairs and improve their buoyancy control before planned dives the following week on Lake Ontario and the Delaware River.

EPA R3 SDU –FY-2019-12 PADEP FW Mussels Survey – On August 19, 2019, the SDU completed transects to supports PADEP CPO study of freshwater mussels on the Delaware River. EPA boat operators and divers mobilized, using an EPA vessel, to assist PADEP in completing a quantitative freshwater mussel survey on the Delaware River near Bristol, PA. This was the third and final day of diving for this project. PADEP has been mapping freshwater mussel beds using sidescan sonar. In this reach of the river, the substrate is primarily rock (boulder, cobble, rock) and PADEP was concerned their interpretation of the sonar imaging may not accurately reflect

actual mussel densities. PADEP requested that the SDU visually determine the density of freshwater mussels, determine substrate type, and capture video from transects determined by PADEP. PADEP will compare the data collected by the SDU to the sonar imaging. The SDU provided a comprehensive operations report to PADEP that includes quantitative and video data.

Delaware River PADEP Fresh Water Mussel Survey



Lake Ontario Cooperative Science Monitoring Initiative – From August 19-21, 2 scientific divers from the SDU supported the Lake Ontario Cooperative Science Monitoring Initiative, Region 2 and the ERT with its study of water quality and sampling of benthic organisms near Olcott, Irondequoit, and Sackets Harbor, NY. For this final check and gear retrieval, SDU divers completed 19 dives in 5 Hyperbaric Exposure Days.

EPA R3 SDU –FY-2019-13 – Ohio River WVDNR Data Recovery - On September 11, 2019 Philadelphia and Wheeling-based divers mobilized to Gallipolis, OH and the Robert C. Byrd Pool at River Mile 273.7 in the Ohio River to assist the WVDNR in recovering an acoustic monitoring receiver that was being used to study the movement patterns of blue catfish (*Ictalurus furcatus*) in the river. WVDNR personnel contacted the SDU and requested assistance after they were unable to retrieve the acoustic receiver. This effort was unsuccessful but provided information that would be useful in a successful dive operation in early FY 2020.

Racer Trust Massena NY Superfund Site - During the week of September 15, 2019 two SDU divers mobilized to support the ERT in the installation of 38 passive pore water PCB samplers in the Saint Lawrence Seaway adjacent to the Racer Trust Superfund Site in Massena, NY. The samplers will remain anchored to the river bed until they come to equilibrium with the surrounding sediment and pore water in five to six weeks. The SDU is scheduled to support retrieval of the samplers in late fall. Dives were conducted with full face masks and surface supplied air with divers fully encapsulated in dry suits.

EPA R3 SDU –FY-2019-14 – Delaware River SAV - On September 17 and 18, 2019 SDU scientific divers mobilized to two locations on the Delaware River to support the Field Services Branch (LSASD/FSB) and State and Watershed Partnerships Section (WD/SWPS) SAV survey of the tidal Delaware River. The SDU completed ten quantitative dive transects at five sites near Petty and Tinicum Islands. The transects were completed to ground truth previously collected hydroacoustic data.

ERT/CID Detroit River Asbestos Search - On September 30, 2019 two Region 3 SDU diver mobilized to Detroit to assist ERT and CID with a dive survey looking into reported illegal disposal of asbestos materials in the River.

C. DIVING ACCIDENTS, INJURIES, OR INCIDENTS

Describe all accidents, injuries, and incidents: There were no diving accidents, injuries or incidents experienced by the SDU in FY 2019.

D. DIVE TRAINING

1. Describe the type of training conducted/received, and list the name, office, and level of certification for each trainee.

Region 3 sent two scientific divers to attend the Dive Master class at the National EPA Diver Training that was held in May in Gulf Breeze, Florida. David Light and Nathan Doyle both successfully completed the class. Dave achieved his 100 dives in August and was designated as a Dive Master.

The entire Region 3 SDU participated in and successfully completed the DAN First Aid for Professional Divers Course in FY 2019.

As described above, Regional Office based divers completed spring training dives on May 22, 2019 at a local quarry. Wheeling completed training dives on March 2, 2019 at a local pool and on August 7, 2019 at a nearby lake.

2. List any training needed for FY2020.
 - a. Divers must complete 8-hour field safety training in FY 2020.
 - b. The three SDU Divers who have not completed the 40-hour Hazardous Site Worker training class will be encouraged to take this training.
 - c. The Region hopes to select one or possibly two trainees and send them to the Annual Scientific Diver Training Class in FY2020.
 - d. The Region may also send one dive master candidate to the training in FY 2020

E. DIVE EQUIPMENT

1. Same as last year? Yes _____ No X

a. If no, list and note the equipment that is new or removed from service.

New Items:

Three new HAZMAT capable dry suits were purchased for divers Mike Eller, David Light, and Leah Ettema.

As a result of suggestions received during our recent dive audit, the SDU also purchased new folding back boards for Philadelphia and Wheeling. Wheeling purchased an Oxygen kit, first aid and trauma kit and other safety gear. This enhanced logistics and allowed Wheeling to run concurrent dive operations with the Philadelphia Office in FY 2019.

Using the specifications and a vendor provided by Region 1, the SDU purchased a hoisting net for recovery of a diver onto our dive platform.

Removed from Service:

Several Suunto computers failed and were taken out of service this year. This has been an ongoing problem in the dive community. Region 3 will be sending all our computer to an authorized Suunto vendor over the winter for service, and determination of any warranty or replacement that may be available as a result of settlement of a class action suit.

2. New Equipment Needed

Two of our Wheeling-based divers who participate in ocean dives currently have a wireless air integrated primary dive computer but no backup air integrated dive computer. Based on available budget and in order to have uniformity of equipment across all regional divers the SDU will assess whether to purchase additional computers for these two divers.

The Wheeling Office needs HD video capability and we will potentially purchase GoPro cameras and/or housings for digital still cameras. The Philadelphia Office had a GoPro unit fail in FY 2019 and we will likely replace this unit.

Depending on funding the SDU may replace some or all of its BCDs to have uniformity and hazmat capability for this piece of gear.

The SDU will likely purchase the Emergency Gas Supply (EGS) system developed by Region 4 Athens. This system is not only cost effective but will enhance safety by providing ease of use, quick disconnects and uniformity across regions in EGS equipment.

F. REVIEW OF UNIT DIVING PERSONNEL

Table 2 below contains the names, division and current certification for Philadelphia and Wheeling-based members of the SDU at the end of the Fiscal Year.

Table 2 SDU Personnel in FY 2019

Name	Certification	Division	Title
Jim Adamiec	Scientific Diver	ARD	Life Scientist
John Armstead	Dive Master	LCRD	Env. Scientist
Frank Borsuk	Dive Master/AUDO	LSAS	Biologist
Kelley Chase	Dive Master	SEMD	Env. Scientist
Steve Donohue	Unit Dive Officer	LSAS	Env. Scientist
Nathan Doyle	Scientific Diver	SEMD	Physical Scientist
Mike Eller	Scientific Diver	ECAD	Env. Scientist
Leah Ettema	Scientific Diver	LSAS	Life Scientist
John Forren	Scientific Diver	LSAS	Env. Scientist
Jennifer Fulton	Scientific Diver	LSAS	Aquatic Biologist
David Light	Dive Master/AUDO	LSAS	Physical Scientist
Eric Newman	Dive Master	SEMD	Env. Engineer
Brad White	Dive Master/AUDO	SEMD	Env. Scientist

G. TIME SPENT ON THE NATIONAL PROGRAM

1. Time expenditures.

<u>Activity</u> (Description)	<u>Time</u>
Assistance with Diver Training Course	5 days
Review of Documents (revision to DSM, emails)	5 days
Performing Action Items (e.g., Response to Dive Audit)	0 day
Preparation for and Attendance at Meetings (Annual DSB Meeting)	3 days

Technical Assistance to Other Units	0 days
Other	0 days

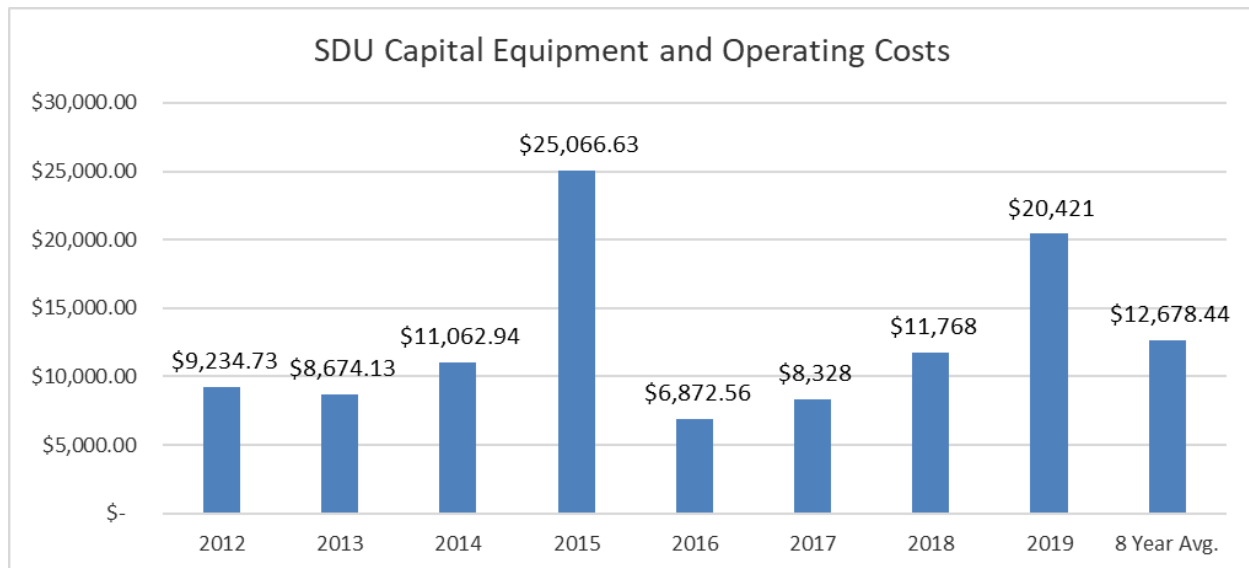
2. Fiscal (monetary) expenditures:

Cost of Travel Spent on the National Program
(list by trip)

UDO participating in DSB Meeting/Call and Training	\$2,160.00
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H. FY 2019 BUDGET

Purchases of new equipment, the cost to operate and maintain the SDU tanks and equipment, and training costs in FY 2019 were \$18,715. Annual operating costs include the cost for new equipment and supplies, required annual maintenance for regulators, and tanks for both the Philadelphia and Wheeling locations and entrance fees at the training venue (quarry). This also includes the cost of filling tanks with air/nitrox as well as miscellaneous supplies. This does not include any travel costs and employees time. The SDU had one operation that involved overnight travel in FY 2019, the Salamander mussels Allegheny River Sampling, that was not paid for by cross funding by another Region or ORD.



I. FY 2020 PLANS

In FY 2020 the SDU plans to continue to foster strong partnerships internally, as well as with other federal agencies, states, and other organizations by conducting monitoring and assessment of our Mid-Atlantic rivers, estuaries, and coastal waters.

R4 ATHENS DIVE UNIT

ANNUAL REPORT OF UNIT DIVE TRAINING AND OPERATIONS 2019

Diving Unit: Region 4 Athens, GA
Mel Parsons, UDO

Time Period: 11/01/18-12/31/19

A. DIVING ACTIVITIES

The EPA R4, Athens Dive Team logged 162 dives with 68 exposure days and had a total bottom time of 5,199 minutes over the past year. Dives were performed primarily conducting surveys to determine dredged material sediment impacts to coral, working with NOAA, FL DEP and R4 Atlanta. Other dives were for Sediment Oxygen Demand (SOD) Studies and training dives.

1. Description/type of diving operations

- a. Ocean Dredged Material Disposal Sites (ODMDS) – 108 Dives, 32 Exposure Days and 3,800 minutes underwater.

No dives were conducted specifically at ODMDS sites this year, but the 108 dives listed above were logged in conjunction with a study to establish a baseline of sedimentation impacts to coral reefs, adjacent to previous as well as planned, dredging activities at the Port Everglades (82 dives) and Port of Miami (26 dives) entrance channels. These projects were conducted at the request of NOAA National Marine Fisheries (NMF). The Miami entrance channel was dredged in 2015, without proper oversight for protection of adjacent coral reefs, resulting in fine sediment smothering acres of live coral heads. Port Everglades is the port at Fort Lauderdale, FL and is planning to deepen their entrance channel and port in the near future. In addition, the Port of Miami wants to conduct additional dredging. Therefore, NMF requested EPA's assistance in establishing baseline sediment conditions on adjacent reefs prior to dredging.

The projects were joint projects, coordinated between NMF in W. Palm Beach, FL, Wade Lehmann of the R4 Atlanta Dive Team and R4 Athens. R4 Athens provided their 28' Parker pilot house vessel as the dive platform and R4 Athens coordinated and oversaw all dive activities. NMF and Florida DEP were diving under EPA's Diving Safety Manual guidelines. NMF and Athens provided all tanks. In addition to the 108 dives conducted by the Athens Dive Team and the 109 dives conducted by Atlanta Dive Team, R4 Athens oversaw an additional 122 dives conducted by NOAA NMF and FL DEP. As reported in the Atlanta dive report, a total of 339 dives were conducted with 96 Dive Days and divers spent 12,060 minutes underwater!



Buddy Breathing



Transect Video



Transect Line



Sediment Sampling



Large Ship Traffic



Scorpion Fish

- b. Sediment oxygen demand/nutrient flux studies – 23 Dives, 16 Exposure Days and 640 minutes:

Sediment Oxygen Demand (SOD)/Nutrient Flux studies were conducted at Big Wills Creek in AL and in Lake Wateree, SC.



SOD Site Lake Wateree, SC



Dry hood and FFM for SOD

- c. Training Dives – 15 Dives, 9 Exposure Days 311 minutes:

Training dives were conducted at Lake Jocassee, SC and Lake Hartwell, GA

- d. Proficiency Dives – 12 Dives, 9 Exposure Days, 222 minutes:

Proficiency dives were conducted at Lake Hartwell, GA

2. **Location of diving operations/water body**

Florida – Offshore, Fort Lauderdale, Miami and Marathon

Georgia – Lake Hartwell

South Carolina – Lake Jocassee, Fishing Creek Reservoir and Lake Wateree

Alabama – Big Wills Creek

3. Dive Statistics

R4 ATHENS 2019 DIVE STATISTICS			
	DIVES	EXPOSURE DAYS	MINUTES
SCIENTIFIC	135	50	4666
WORK	0	0	0
TRAINING	15	9	311
PROFICIENCY	12	9	222
TOTAL	162	68	5199

B. DIVING ACCIDENTS

No accidents this year.

C. DIVING SAFETY AUDIT

No findings on our Dive Safety Audit.

D. DIVE TRAINING

Jon McMahan attended Dive Master Training this year.

E. DIVING EQUIPMENT

All dive equipment was serviced and passed inspection.

Tanks: 12 – 100 ft³, 16 - 80 ft³, 10 - 63 ft³, 4 - 19 ft³, 4 -13 ft³, 4 - 6 ft³

1 KM Superlight 27 w/tri valve exhaust w/wireless and hardwire/wireless comms

1 Amron two diver dive control console w/150' light umbilical

1 Amron two diver com box

Regulators: 2 Zeagle 50D/w ZX second

3 Zeagle Flathead 7

2 Zeagle Flathead 8

3 Genesis GS 2000

Computers: 2 Suunto Cobra

5 Suunto Gekos

2 Suunto ZOOP NOVOs

5 Aqualung Brotula BCs

AGAs: ~~7 /w silicone skirts~~ 4 with comms – AGAs have been decommissioned

OTS Wireless communications for 6 FFM and 1 surface unit
 6 OTS Buddy Phones to replace SSB Comms
 6 OTS Guardian FFM w/OTS Wireless Comms
 Gates Dry Suits w/attached Superlight neck yoke: 1
 Viking Dry Suit w/attached Superlight neck yoke: 1
 Viking Dry Suits w/ latex hoods: 13
 Whites HazMat Dry Suits: 2
 Olympus TG-3 14 MP digital camera w/Olympus U/W housing and strobe
 Olympus 8080, 8 MP digital camera w/Olympus U/W housing
 GoPro Hero 4 Black w/UW strobes
 2 Dacor dive scooters
 Parker 25' and 28' Pilot House Boats for dive ops.

F. REVIEW OF DIVING PERSONNEL

There are 4 divers on the EPA Region 4 Athens Dive. The dive team currently has 4 divemasters.

NAME	AGE	SEX	CERTIFICATION LEVEL
Nate Barlet	31	M	Dive Trainee – Leaving R4 for HQ
Jon McMahan	37	M	Divemaster
Mel Parsons	61	M	UDO/Divemaster
John Ruiz	54	M	Divemaster
Greg White	33	M	Divemaster

Changes in personnel

Nate Barlet has accepted a position in HQ and is leaving R4.

G. TIME SPENT OF THE NATIONAL DIVE PROGRAM

<u>ACTIVITY</u> (describe)	<u>TIME</u>
Assistance with Diver Training Course	20 days
Review of Documents (EPA Dive Manual v1.2)	5

Performing Action Items	2
Preparation for and Attendance of DSB Meeting	5
Technical Assistance to Other Units	1
Equipment Servicing	\$ 5000.00
Equipment Purchases	\$ 2000.00
Other	0
<u>COST OF TRAVEL SPENT ON NATIONAL PROGRAM</u>	
(list by trip)	
Attend Diver Training/Diving Safety Board Meeting/GED Training	\$ 1830.00

**REGION 4 ATLANTA DIVE UNIT
ANNUAL REPORT
OF
DIVE TRAINING AND OPERATIONS**

**U.S. EPA
Atlanta Region 4
Dive Unit**



10/01/2018 through 09/30/2019

Submitted by

Tara Levine Houda, Unit Dive Officer

The US EPA's Atlanta Dive Unit is comprised of divers from the Atlanta EPA office. Historically this Unit has been made up of divers from across the Divisions and has supported a variety of programs, including Ocean Dredge Material Disposal Sites (ODMDS), TMDLs, current meters, Sediment Oxygen Demand (SOD), criminal enforcement, emergency response, permitting, artificial reefs, Superfund, and civil enforcement. The Unit has also provided partnership support to the Florida artificial reef program, Florida Department of the Environmental Protection (FDEP), U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), Gray's Reef National Marine Sanctuary, Florida Keys National Marine Sanctuary, Georgia Tech, Georgia Southern University, Broward County FL, EPA ORD development of Rapid Bioassessment protocol, and other EPA Regions. This year analysis of our historical diving trends was conducted and found that our dives numbers tend to have a 5-year cycle. The cyclical pattern has been 2-3 years with 35-219 science dives followed by 1-2 years of under 20 science dives. In FY16 the Atlanta Unit reported the greatest number of Science dives (101) and total dives (197) of any of the units that year. It has long been understood that the number of dives is a direct result of the types of projects schedules for the given year but taking the time to look at the pattern has been interesting. The following is a summary of dive operations and training in FY19.

A. Diving Activities

1. One diver participated in a Coral Protocol Assessment (5/2/19) with EPA Athens Unit divers in Marathon, FL.

Atlanta divers collaborated with NOAA Fisheries on a project to assess sediment impacts from dredging of the Port Everglades (6/4/19-6/11/19) and Miami (7/30/19-8/6/19) shipping channels. This project will help to assess impacts and identify natural background sedimentation on Florida reefs. Three Atlanta divers, dove with NOAA, FDEP, and EPA Athens divers on two 10-day projects. Sediment depth, characterization, sampling and impacts were documented along transects. For the 8 multi-agency divers that participated on the Miami portion of this project, 6,075 minutes and 171 dives were logged. For all 9 multi-agency divers that participated in the Port Everglades portion, 5,985 minutes and 168 dives were logged. Collaboration with non-EPA divers enabled these 339 dives.

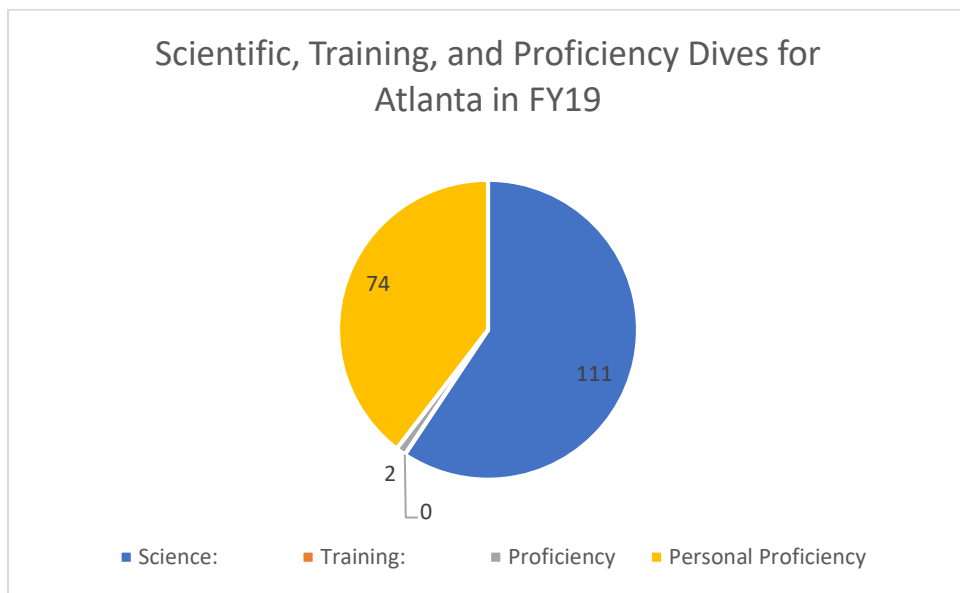
The Atlanta Dive Unit and Athens Dive Units had Safety Audits this year. The Atlanta UDO was divemaster for Athens divers as part of the Safety Audit. The closing conference of the Safety Audit indicated that no findings were identified, and a few minor recommendations were made. We are awaiting receiving the official report.

Proficiency – Due to medical status, two divers were unavailable for diving during various points in the year. This year three of our divers participated in personal proficiency diving to maintain their proficiency. Three divers are or were involved with the Georgia Aquarium and conducts several volunteer dives on their personal time to help with aquarium maintenance on a monthly basis. One diver is involved with the Coral Restoration Foundation and conducted several volunteer dives on their personal time to help with coral restoration.

2. Dive locations for scientific diving this year:
Florida, Marathon
Florida, Port Everglades (Broward County)
Florida, Miami

3. Dive Statistics:
 These dives were logged by 3 of our 5 divers.

Number of Dives		Total Dive Time (min.)	Number of Exposure Days	
Science:	111	3,928	Science:	33
Training:	0	0	Training:	0
Proficiency*:	2	35	Proficiency ⁺ :	1
Totals	113	3,963		
* Additionally, 74 personal proficiency (off-duty) dives were conducted.				
⁺ All proficiency, including off-duty exposure days.				



B. Diving Accidents, Injuries, or Incidences

One diver experienced an ear infection during an EPA diving project that was treated, but reoccurred when she returned to the water and required a second round of treatment. The incident was reported to the regional safety officer.

C. Dive Training

- Due to lack of travel funds, the Atlanta UDO did not participate in the 2019 Gulf Breeze EPA diver training course.
- Several members of the unit participated in HAZWOPER refresher courses.

- A training dive was planned for the last day of our Miami field project, but due to the diver ear infection, it was unable to be conducted.

D. Dive Equipment

Regulators: **11** Atomic Z2 regulators (1st and 2nd stages) w/ Sea Elite octo.

BC's: **6** – Sea Elite Profile Hybrid; **1** - Mares Dragonfly; **1** – Sea Elite (no model available); **2** – Zeagle Ranger; **1** SeaQuest Black Diamond; **1** – Dacor Falcon; **1** – Sherwood Luna; **1** – ScubaPro X-Tek.

Computers: **6** Suunto Gekko, **1** Suunto Zoop, **2** Suunto Vyper dive computers

Drysuit(s): **0** (transferred **1** Viking modified to fit smaller female divers and **2** custom fit drysuits with 1 set of accessories to LSASD Athens Unit to be shared between Athens and Atlanta divers)

U/w digital camera: GoPro Hero 4 Black Adventure Video Camera with GoBe700 dual Lights package. Olympus TG-3 and TG-5 U/W cameras with PT-056 housing and Sea&Sea YS-03 U/W strobe.

MiniOx I Oxygen Analyzer: sensors with backup sensor

2 OTS DRS-100B: diver recall system

Marine Trauma Kit (Practical Trauma), Inventory of the First Aid Kit was conducted in 2018, and a purchase request was submitted, but the items have not yet been ordered.

AED

Oxygen Kit: OSV Bold single cylinder kit not in use and out of service. DAN O2 dual J Kit with MTV valve, 2 non-rebreather masks and 1 orinasal resuscitation mask (<https://www.diversalertnetwork.org/dive-store/?id=33>)

E. Review of Unit Diving Personnel

One employee, Lena Weiss, left the EPA in July 2019. Two divers did not maintain medical clearance for the duration of the year. Wade Lehmann has been cleared to be a fully qualified Divemaster. One potential candidate has been identified and has the support of his management.

<u>Diver Name</u>	<u>Age</u>	<u>Sex</u>	<u>Certification Level</u>
Tara Houda	35	Female	Divemaster, UDO
Chris McArthur	50	Male	Divemaster
Rosemary Hall	43	Female	Divemaster
Wade Lehmann	46	Male	Divemaster

F. Time Spent on the National Dive Program

1. Time Expenditures

<u>ACTIVITY</u>	<u>TIME</u>
Assistance with Diver Training Course	0
Review of Documents	
Dive Plans	2
Dive Reports	2
Manual review/updating	4
Performing Action Items	
Action Item Follow-through	40
Preparation for and Attendance at Meetings (UDO)	
Annual Reports	8
Meeting participation	24
Technical Assistance to Other Units	0

2. Fiscal Expenditures

Cost of Travel Spent on National Program during FY19

Travel to Training Course	\$0
DSB Meeting	\$432
Emergency Oxygen Administration Training	\$0
Gear	\$200
Gear Maintenance	\$1,188
Total	<u>\$1,820</u>

ORD GULF ECOSYSTEM MEASUREMENT & MODELING DIVISION ANNUAL REPORT OF DIVE TRAINING AND OPERATIONS

Diving Unit: EPA GEMMD (Gulf Ecosystem Measurement & Modeling Division)
Cheryl Hankins, UDO
Peggy Harris, Alt UDO

Time Period: FY2019

A. DIVING ACTIVITIES

[Gulf Ecosystem Measurement and Modeling Division](#) (GEMMD), formerly Gulf Ecology Division, dive unit had one scientific diving event in FY19. Additionally, the dive unit provided support in the maintenance of the seawater delivery system which supplies water to the laboratory housing a variety of fish and invertebrates. Training and proficiency dives were also conducted throughout the year.

1. Describe each type of diving operation; include pollutant exposure (use separate sheet, if necessary).
 - a. Scientific – National Coral Reef Monitoring Program (NCRMP). GEMMD assisted NOAA with the annual NCRMP survey in St. Croix, U.S. Virgin Islands. Habitat assessments were performed around the entire island. This was a NOAA planned and operated mission, therefore diving was conducted off NOAA small boats and all diving was conducted under NOAA guidelines and overseen by a NOAA divemaster.



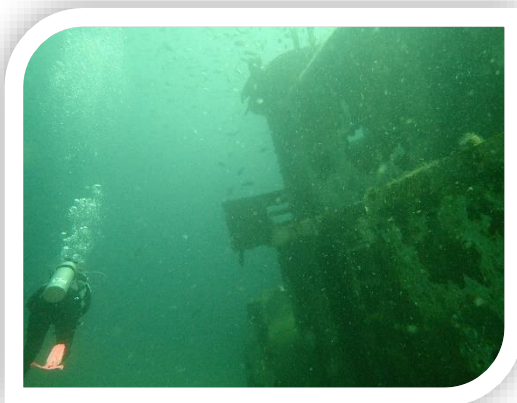
Divers conducting coral demographic and line point intercept surveys in St. Croix, USVI.

- b. Commercial – All dive plans in FY19 involving assessment and maintenance of GEMMD's seawater delivery system were categorized as commercial to ensure compliance with safe diving operations. The seawater system delivers filtered seawater to research organisms in the wet laboratory. Clean seawater is critical for the health of the research organisms and the quality of the research being conducted. In addition to the scientific observations of

biofouling organisms on and around the filter intakes, light hand tools such as mallets and snips/shears were used to clear the intakes. After clarification by EPA Diving Safety Board, the use of light hand tools is permitted under the exemptions for Scientific Diving, therefore, future inspections of GEMMD’s seawater delivery system will be conducted as scientific dives.

c. Training – Rescue drills were performed at GEMMD on the west dock. Divers mimicked rescuing an unconscious diver and bringing onto the dock to provide first aid treatment. Additional training was provided to a diver in training on deploying inflatable signaling device, hand signals, and compass bearings.

d. Proficiency – Multiple proficiency dives were completed off the west dock to maintain familiarization with dive equipment. In preparation for the NCRMP survey, deep-water dives were performed on two wrecks in the Gulf of Mexico.



Ocean Wind wreck dive off the coast of Pensacola in the Gulf of Mexico

2. Locations of diving operations (list each state and type of water body).
 St. Croix, USVI – Caribbean Sea
 Florida – Gulf of Mexico and Santa Rosa Sound

3. Dive Statistics:

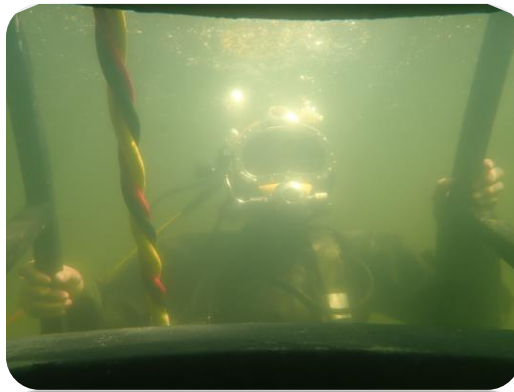
Type of Dive	Number of Dives	Number of Minutes	Number of Hours	Number of Exposure Days
Scientific	40	1138	19.0	10
Commercial	7	275	4.6	7
Proficiency	23	405	6.8	7
Training	6	91	1.5	5
Total	76	1909	31.8	30

B. DIVING ACCIDENTS, INJURIES, OR INCIDENTS

No accidents, injuries, or incidents to report.

C. DIVE TRAINING

1. Describe the type of training conducted/received, and list the name, office, and level of certification for each trainee.
Elizabeth Moso (ORD, GEMMD) successfully completed EPA Scientific Diver training. She is currently listed as a GEMMD diver-in-training.



E. Moso conducting her first surface supply dive during EPA Scientific Diver training

2. List any training needed. None known at this time.

D. DIVE EQUIPMENT

1. Same as last year. Yes _____ No _____
2. If no, list and note the equipment that is new or removed from service.
Most of the dive equipment remained the same, however, a few pieces of equipment are new. GEMMD purchased two new manually triggered ventilators (MTV-100s) to replace outdated ventilators. Additionally, the oxygen hoses on the existing MTVs were replaced with new hoses. Two safe seconds (Air2) were also purchased to exchange outdated Air2s for two divers' primary gear.
The surface supply umbilical hoses were upgraded this year. Region 9 donated their used umbilical hoses after purchasing new hoses.
3. Describe any important equipment problems: n/a
4. Equipment needed: n/a

E. REVIEW OF UNIT DIVING PERSONNEL

Name	Certification Level
Beddick, David	Scientific Diver
Fisher, Bill	Scientific Diver
Hankins, Cheryl	UDO
Harris, Peggy	Divemaster/Alt UDO
Moso, Elizabeth	Scientific Diver (in training)
Nestlerode, Janet	Divemaster
Santavy, Deborah	Divemaster*
Wilkinson, Sherry	Divemaster

*As of June 2019, Santavy is not on dive team

F. TIME SPENT ON THE NATIONAL DIVE PROGRAM

1. Time expenditures.

<u>ACTIVITY (Describe)</u>	<u>TIME</u>
Assistance with Diver Training Course	15 days
Review of Documents	
• Dive Plans	1 day
• Dive Safety Manual updates	4 days
Performing Action Items (Identify, e.g. Prep for & Audit of Dive ops)	3 days
Preparation for and Attendance at Meetings Dive Safety Board meeting	10 days
Technical Assistance to Other Units	0 days
Other	0 days

2. Fiscal (monetary) expenditures:

Equipment Servicing	\$1035
Equipment Purchases	\$2300

COST OF TRAVEL SPENT ON NATIONAL PROGRAM (list by trip)

Attend Diver Training/Diving Safety Board Meeting: \$0.00

2019 EPA DIVER TRAINING ANNUAL REPORT

The 2019 EPA scientific diver training course was conducted May 13-17 at the ORD Gulf Ecology Division (GED) Laboratory and EPA Dive Training Center. Eight scientific dive candidates and four divemaster candidates attended the course this year.



The scientific divers were:

David Crane – Tennessee Wildlife Resources Agency
Angela Hays – US-EPA R6
Scott Heidel – Pennsylvania DEP
Richard Markland – Tennessee Wildlife Resources Agency
Elizabeth Moso – US-EPA Gulf Breeze Lab (GEMMD)
Mark Nicholas – Escambia County Marine Resources Division
Dustin Shull – Pennsylvania DEP
Rebecca Whiteash – Pennsylvania DEP

The divemasters were:

Joe Campbell – Tennessee Wildlife Resources Agency
Nathan Doyle – US-EPA R3 Philadelphia

David Light – US-EPA R3 Wheeling
Jon McMahan – US-EPA R4 Athens Lab
All course participants passed and did a great job.

In attendance for instruction and assistance with the course were:

Mel Parsons – EPA Diving Safety Board (DSB) Chairman and R4 Athens UDO
Sean Sheldrake – EPA DSB Training Director, Divemaster Trainer and R10 UDO
Scott Grossman – EPA DSB Technical Director, Blackout Mask Lead, ERT/R2 UDO
Eric Nelson – Director of Scenarios, R1 UDO
Cheryl Hankins – GED Representative, GED UDO
Steve Donohue – R3 UDO
Rich Henry – US-EPA ERT
Dan Marelli – Lead Scientific Diving Instructor, Scientific Diving International
Lyle Becker – Surface Supply Diving Instructor, Scientific Diving International
Alan Humphrey – Equipment manager, Scientific Diving International
Van Kozak – Equipment manager, Scientific Diving International
Amy Brower – Photographer, Equipment assistance, Scientific Diving International
Allen Pyburn – TN DWR, Underwater project deployment, Equipment assistance
Bobby Brown – TN DWR, Underwater project deployment, Equipment assistance

In addition to sending a candidate to the course, Region 6 sent nearly all of their divers to the course to serve as safety divers and conduct additional training for team members.

R6 Participants:

Ashley Howard – R6 UDO
Nick Gannon – R6 Alternate UDO
David Robertson - R6 Diver and general assistance
John Penland – R6 Diver and general assistance
Selena Medrano - R6 Diver and general assistance
Laura Hunt - R6 Diver and general assistance

Logan Campbell participated in dock exercises on Thursday.

A total of 158 dives with 3960 minutes underwater were conducted at the course in 2019. However, 61 of those dives were conducted by the R6 dive team and other divers assisting with the course, including, setup/breakdown of equipment and the DM surface supply dive. In addition, safety diver dives were recorded with trainee dives. Due to the nature of the many divers, divelogs and inconsistency in dive recording, it became difficult to break out all of the various dives. In the 2019 dive stats table below, they are broken down by dive team, including safety divers, the R6 divers and all others, labeled general.

Diver Training dives are not included in the overall EPA diving stats due to each individual dive unit recording their diver's dives as part of their unit dives.

Below are statistics for this year's course compared to 2016 and 2017 and 2018. The differences in total dives and dive minutes are a reflection of the number of divers in each class – eight in 2019, nine in 2018, eleven in 2017 and sixteen in 2016. In addition, the R6 and safety divers participating this year increased the total number of dives substantially.

Dive Course 2016 Stats							
	Prep	Breakdown	Team Alpha	Team Bravo	Team Charlie	Team Delta	Total
No. of Dives	9	3	40	43	36	30	161
Dive Days	9	3	16	21	16	16	81
Dive Minutes	388	50	1211	1650	1460	1160	5919

Dive Course 2017 Stats						
	Prep	Breakdown	Team Alpha	Team Bravo	Team Charlie	Total
No. of Dives	12		30	45	30	117
Dive Days	7		12	16	16	51
Dive Minutes	161		707	1317	963	3148

Dive Course 2018 Stats						
	Prep	Breakdown	Team Alpha	Team Bravo	Team Charlie	Total
No. of Dives	10	3	35	37	35	120
Dive Days	4	3	20	21	17	65
Dive Minutes	210	125	1119	969	629	3052

Dive Course 2019 Stats							
	General	R6	Team Alpha*	Team Bravo*	Team Charlie*	Team Delta*	Total
No. of Dives	33	55	18	18	18	16	158
Dive Days	18	28	8	8	8	8	78
Dive Minutes	727	1128	380	620	540	565	3960

* Includes safety diver dives





USEPA REGION 6 ANNUAL REPORT OF DIVE OPERATIONS AND TRAINING

Region 6 Diving Unit: EPA Region 6 (Dallas office and Houston Laboratory)

Reporting Period - FY19: October 1, 2018 – September 30, 2019



R6 Dive Team - Scientific Diver Training (May 2019)



R6 Dive Team - Scientific Diver Training (May 2019)



R6 Diver takes notes during sampling training. (May 2019)



R6 Divers at Lake Travis Cleanup Service Project (September 2019)



R6 Divers at Lake Travis Cleanup Service Project (September 2019)

A. DIVING ACTIVITIES

The Region 6 Dive Team continued to develop its capabilities to serve Region 6 with Scientific Dive Team support. A permanent R6 Unit Dive Officer (UDO) was approved by the EPA Dive Safety Board (DSB). One new Scientific Diver completed the 2019 EPA Scientific Diving training class. Six existing team divers also attended and assisted in the annual training, including participation in various rescue drills. For FY 2019, the Region 6 Dive Team conducted 49 training dives and 14 proficiency dives: 63 total dives, 16 hrs. + 55 min. bottom time, 26 exposure days.

Dive Team Service Event:

The Region 6 Dive Team was recognized in the September Regional Newsletter, distributed by the Regional Administrator, for their participation in the Lake Travis Cleanup Service Event in September 2019.

R6 Dive Team Lake Travis Cleanup



R6 Dive Team Volunteers (L to R): Nick Gannon, Ashley Howard, David Robertson, Selena Medrano, Laura Hunt.

Members of the EPA Region 6 Dive Team volunteered to use their diving skills to remove underwater trash as part of the Lake Travis Cleanup service event on September 15, 2019. Lake Travis is a drinking water source for thousands of residents in the Austin area. Each year, volunteers gather to collect an average of 5 tons of trash from the bottom of Lake Travis and many Travis County Parks around the lake, while also helping to raise public awareness of the importance of Lake Travis and the Highland Lakes to the community. The Lake Travis Cleanup is the largest scuba diving, shoreline, and watercraft cleanup in Texas.

B. DIVE STATISTICS

Dive	Total Number of Dives	Total Dive Time (hrs. / min.)	Number Exposure Days
Scientific dives	0	N/A	0
Training dives	49	16 hrs. 1 min.	21
Proficiency dives	14	3 hrs. 55 min.	5
Working dives	0	N/A	0
Total	63	19 hrs. 56 min.	26

C. DIVING INJURIES

There were no diving injuries or incidents during FY2019.

D. DIVE TRAINING and DIVER RECRUITMENT

Per previous direction from R6 management, an ongoing recruitment effort was continued to add members to the R6 Dive Team. One candidate, previously in trainee status, successfully completed the 2019 EPA Scientific Diver Training course. Another candidate remains a trainee diver.

The annual Scientific Diver training was held in Gulf Breeze, FL in May 2019. Along with the one diver going through certification, six current team members attended and assisted during the training.

Internal dive unit training sessions were held at Scuba Toys Dive Shop (pool) in Dallas TX. The training focused on the following: dry suit and full-face mask familiarity and proficiency along with underwater navigation. The training session concluded with an in-water rescue drill with use of backboard.

In 2020, the usual refreshers for first aid, CPR/AED and 8-hour health and safety are required annually (or biannually) for some first aid courses. Also, the whole unit participates in HAZWOPER refreshers due to the polluted water nature of the majority of R6 diving support.

R6 divers continue to have difficulty maintaining proficiency by diving at bimonthly intervals, and overall the need to dive has lessened over the last few years due to a shift in projects. Management still supports diving operations and divers are requalified as needed.

The R6 team continues to accept new diver applications, and may seek approval for one additional diver in FY2020. We will use dive experience, management support, and any potential projects that the diver will bring to the team as the main criteria when selecting from applicants.

E. DIVING EQUIPMENT

Current Equipment Inventory - Primary dive team equipment includes: Scuba tanks (9), Pony bottles (2), Regulators (6), BCDs (6), Dry Suits (5), Full Face Masks (5), One 2-way communication system with OTS Aqua-Com control box and 300 ft. umbilical line.

Safety Equipment: Backboard, AED, Emergency Oxygen with 2 regulators, First Aid kit, Dive Flag.

Equipment Needs: Female (small) dry suits, various hoses lengths, two redundant air supply set-ups, additional face masks and full sets of equipment for new divers (as funding allows).

F. REVIEW OF DIVING PERSONNEL

Presently, the Region 6 Dive Team has nine members and two support members:

Ashley Howard	UDO / Divemaster
Nick Gannon	Divemaster
Valmichael Leos	Scientific Diver
John Penland	Scientific Diver
Laura Hunt	Scientific Diver
Selena Medrano	Scientific Diver
David Robertson	Scientific Diver
Angela Hays	Scientific Diver
Stephanie Meyers	R6 Trainee Diver
Chris Villareal	R6 Management Liaison
Scott Grossman	Technical Assistance (ERT-NJ / UDO)

G. TIME SPENT ON THE REGION 6 DIVE PROGRAM AND RELATED COSTS

Scientific Diving field activities	0 days
EPA Diver Training Course	35 days
Bi-annual DSB meetings and conference calls	6 days
Dive Plan(s) preparation	2 days
Equipment maintenance, cleaning and upkeep	4 days
Recordkeeping (dive logs, medical, training)	2 days
Reporting (site specific and annual reports)	5 days
Cost of attendance at EPA Diver Training course	\$ 11,500
Equipment maintenance costs	\$ 1,614

H. FY 2019 TEAM OUTLOOK

The Region 6 dive team continues to look for opportunities to support R6 Superfund, Water, and Enforcement divisional activities. There is some discussion with the EPA R4 dive unit regarding Soil Oxygen Demand (SOD) projects. Discussions have also been initiated with federal agency partners within the dive community for inter-agency participation under MOUs. Additionally, a potential new diver has proposed a project regarding brine water disposal on offshore drilling rigs. The team will

continue to explore these options in FY2020.

The ongoing San Jacinto Waste Pit Superfund Site was heavily involved in sampling for the remedial design during FY19, so the annual routine cap inspection was not completed. In FY19 the UDO also became a Remedial Project Manager for this Site, bringing the experience gained from annual dive team inspections and previous sampling events. The UDO participated in a probing event after a tropical storm to assess if dive team assistance was needed, but the cap was determined to be intact. This project remains a priority in the region, and dive team support is routinely considered.

R6 is tentatively scheduled to be audited by HQ-SHEMP in April 2020.

FY 2020 training may include sending divers to EPA Scientific Diver training or team participation in Advanced Dive Operations training, depending on the Dive Safety Board (DSB) program offerings.

**ORD PACIFIC ECOLOGICAL SYSTEMS DIVISION
ANNUAL REPORT OF DIVE TRAINING AND OPERATIONS**

Diving Unit: **Pacific Ecological Systems Division**
ORD/Center for Public Health and Environmental Assessment

Time Period: **Oct. 2018 – Sept. 2019**

A. DIVING ACTIVITIES

1. Dive activities during FY 2019 consisted of work, training and proficiency dives.

One diver is involved with the Oregon Coast Aquarium and conducted a number of dives to help with aquarium maintenance on a monthly basis.

2. Location of work dive operations: OSU Cove, Yaquina Bay, Newport, OR
3. WED divers continue to have difficulty maintaining proficiency by diving at bimonthly intervals, and overall the need to dive has lessened over the last few years due to a shift in projects. Management still supports diving operations at the division and divers are requalified as needed.
4. Dive Statistics:

Dive	Total Number of Dives	Total Dive Time (min.)	Number of Exposure Days
Working dives	3	114	1
Training dives	6	220	1
Proficiency dives	52	2472	23
Total	61	2806 min. (46.7 hrs.)	25

5. Dive Audit:

Tentatively scheduled for 2 – 4 June 2020.

(Last external audit - completed in July 2011.)

B. DIVING ACCIDENTS, INJURIES, OR INCIDENTS

None

C. DIVE TRAINING

Andersen, Kaldy and Reichman were 're-qualified' by Mochon Collura following extended absences from diving.

All divers completed DAN DFA Pro training in early 2019 (one in Feb. and four in April)

Mochon Collura completed 40-hr HAZWOPER training in May to dive with R10 at potentially polluted water sites. Planning for ops in Sept./Oct. 2020.

All divers, except Johnson, trained with Spare Air cylinders in anticipation of future commercial ops. Also trained with underwater pinger/pinger locator.

D. DIVE EQUIPMENT/MAINTENANCE

Date	Diver	Item	Cost
11-April-19	Team	Cylinder VIS (8)	\$120.00
11-April-19	Team	Reg. and BC annual insp. (several hoses replaced)	\$545.00
16-April-19	Kaldy	Dry suit seals	\$120.00
23-April-19	Team	Spare Air, 3 cu. ft. (4)	\$1074.93
8-May-19	Team	O2 reg insp. and service (2)	\$185.90
10-May-19	Team	O2 cylinder hydro and fill (2)	\$87.50
22-July-19	Reichman	Dry suit zipper replacement	\$295.00
April/May 19	Team	Medical Monitoring	\$3009.00
June-19	Mochon Collura	Hazmat dry suit	Paid for by R10
		Total (w/o med mon)	\$2428.33

E. REVIEW OF DIVER PERSONNEL

Diver	Certification	Sex	Status
Chris Andersen	Divemaster	Male	Qualified
Mark Johnson	Divemaster, Alt. UDO	Male	Inactive, OK to DM*
Jim Kaldy	Scientific Diver	Male	Qualified
T Chris Mochon Collura	Divemaster, UDO	Male	Qualified
Jay Reichman	Divemaster	Male	Qualified

*Voted on and approved by DSB on 9 May 2019

F. TIME SPENT ON NATIONAL DIVE PROGRAM

1. Time Expenditures:	hrs.
Assistance with Diver Training	0
Dive Program Audit	0
Review of Documents	10
Performing Action Items	8
Preparation for and Attendance at Meetings	16
Technical Assistance to other Units	0
2. Fiscal (monetary) expenditures	
DSB Meeting	\$0.00
Training at GED	\$0.00
Diver Physicals	\$3009.00
New Gear	\$1074.93
Gear Maintenance	\$938.40
Gear Repair	\$415.00

**US-EPA REGION 10 DIVE UNIT
ANNUAL REPORT OF UNIT DIVE TRAINING AND OPERATIONS**

Diving Unit: [EPA Region 10](#)

Time Period: FY 2019

DIVING ACTIVITIES

1. Describe each type of diving operation.

During FY 2019, the Region 10 (R10) dive unit had six scientific work diving events. There were also four formal training events to practice critical rescue and scientific data collection techniques. Of the six work diving events, one was in support of the Superfund and Emergency Management Division (SEMD), which is less than most years past (as work is episodic, it's worth noting that FY 2020 is expected to have several weeks of Superfund five-year review work). Five work diving events were related to Water Division (WD) support of an arsenic impact study at Killarney Lake. One of these work projects this year involved use of free swimming SCUBA, five were via tethered SCUBA, and none were surface supplied. Training was conducted to maintain proficiency with all the diving modes, rescue, sampling, and underwater photography. Region 10 had **16** work dives and **69** training dives. Training dives were significant in number primarily from training new diver, Rachel Stephenson in September, 2019. Overall, R10 had a total of **239** dives. While this is far less than in past years, it is important to note that training will prepare the unit for a busy 2020 field season. During FY2019, R10 had the following work projects:

1. Wyckoff Superfund Site cap and buoy inspection. Divers investigated buoys designed to protect the cap meant to address creosote and other contamination at the Wyckoff/Eagle Harbor Superfund Site, as well as inspected the surrounding cap area.



Figure: Divers photo document buoy and bottom conditions necessary to protect the Superfund cap.

2. Killarney Lake arsenic study with University of Washington. Sponsored by WD, this study is designed to determine the fate and transport of elevated levels of arsenic near the former Ruston smelter. It is likely that project data will be used to inform nearby residents about their potential exposure to contaminants.

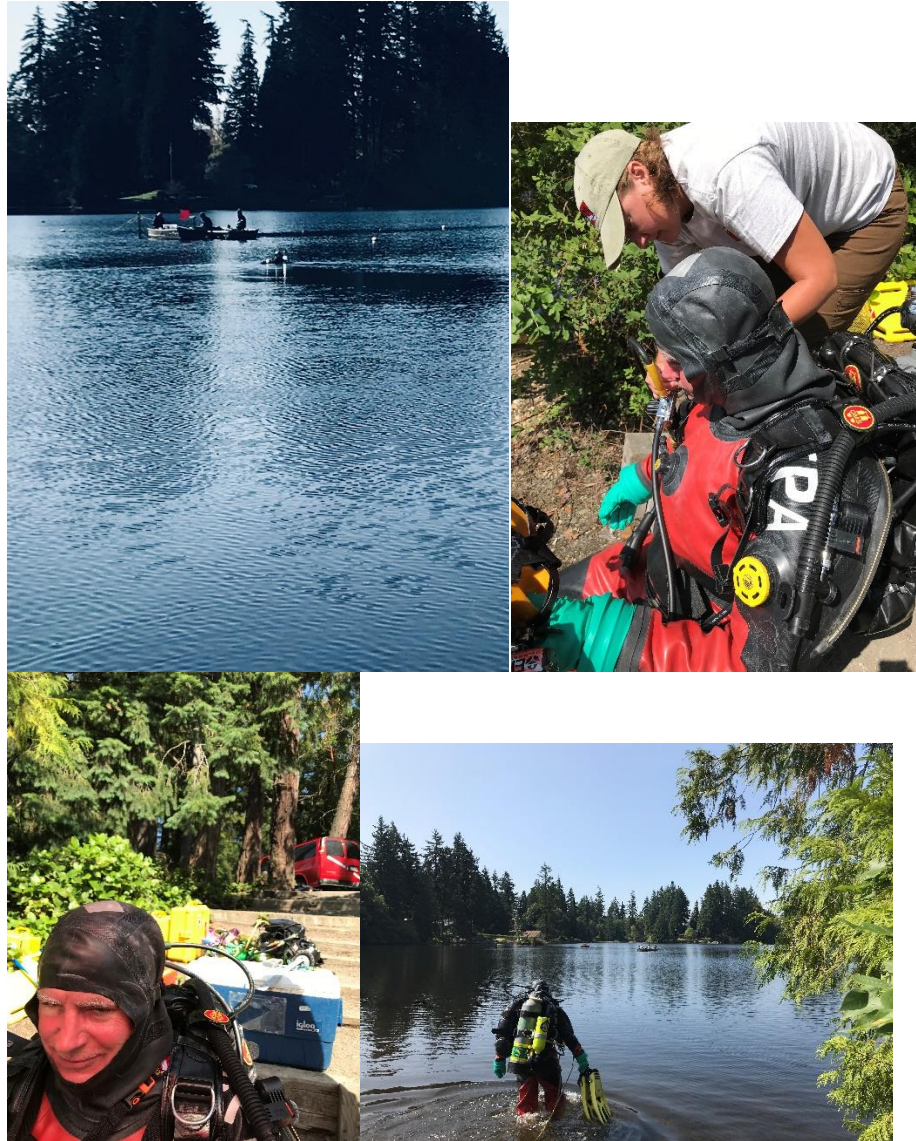


Figure: Deputy Rob Rau dresses in on shore, then walks out (bottom right) to sufficient depth to put his fins on and complete instrument recovery (top left)

For more EPA scientific diving project information, see:

<https://www.epa.gov/scientific-diving> and
www.facebook.com/EPADivers

Training projects included (no pollutant exposure expected):

1. Rescue training at the Manchester Lab campus- January and March 2019 (March was a surface supply training refresher with outside trainer, Dan Marelli).
2. NOAA dive training, Sept. 2019- one dive unit member, Rachel Stephenson, received training at the NOAA Sandpoint campus over three weeks to build critical team capacity: Rachel Stephenson (scientific diving)
3. American Association of Underwater Sciences (AAUS) dive safety training- October

2018 for Schulze, Sheldrake, and Leefers to learn and share invaluable dive safety officer information. The tethered diving workshop was a resounding success and critical safety information was shared by all involved.

Projects deferred to others or cancelled.

The dive unit remains in high demand to conduct scientific surveys and provide Health and Safety Plan (HASP) review for contracted scientific diving operations. 2019 updates: Wallowa lake drum recovery was deferred to contractors though utilized assistance from Schulze for on-site dive safety.

2. Location of diving operations (list each state and type of water body).

Scientific work and training dives were conducted in the Puget Sound and Killarney Lake in Washington.

3. Dive Statistics.

<u>Number of Dives</u>	<u>Minutes</u>	
Work	16	199
Training	69	1901
Other (off-duty/ proficiency)	154	5986
Total Dives	239	
Total Dive time (minutes)		8086

<u>Number of Diving (exposure) Days</u>	<u>(=sum divers/days)</u>
Work	12
Training	59
Other	8 (NOAA training plus 7
	<u>Divemaster/assist only days topside) (Non diving</u>
	<u>(hyperbaric exposure training in chambers/Tending</u>
	<u>Assist/Non diving DM/+ OD = Off Duty)</u>
Total	79

DIVING ACCIDENTS, INJURIES, OR INCIDENTS

1. Description of all accidents, injuries, and incidents (use separate page if necessary and include copies of applicable forms, e.g., EPA Form 1440-9, CA-1, or CA-2).

No injuries reported. All Region 10 divers receive training during annual HAZWOPER refreshers which covers reporting processes, including form CA-1, or worker's compensation claims.

None.

DIVE TRAINING

1. Describe the type of training conducted/received, and list the name, office and level of certification for each trainee (use separate page if necessary).

Approximately \$4400 was spent on dive training with FY 19 funds from the dive budget and from OMP.

Divers are current for basic first aid, CPR, AED, Oxygen Administration, neuro examinations, and the annual 8-hour HAZWOPER refresher. Most training was sponsored by our Dive unit and field operations. Schulze provided field neurological exam/oxygen administration training to the unit in February 2019, saving travel and overall cost(\$300). CPR/AED/First Aid training conducted by Schulze is expected in December, 2019.

HAZWOPER 40-hour training was conducted for Rachel Stephenson in 2019.

The Unit Diving Officer (also the program Training Director) led the 2019 diver training at the ORD-GED lab again this past May, including leading the divemaster course. It is expected the class will be conducted again in 2020.

The Unit Diving Officer and two deputies attended AAUS in 2018 to learn a great deal from interacting with Diving Safety Officers (DSOs) at universities as well as government institutions, and teach tethered SCUBA (\$650 plus travel). The UDO and 2 deputies plan to attend the 2019 fall conference at the beginning of October and provide a variety of safety classes including tethered scuba and contaminated water diving.

2. List any training needed.

In 2020, the usual refreshers for first aid, CPR/AED and 8-hour health and safety are required annually (or biannually) for some first aid courses.

For CPR/AED/First Aid, a customized [DAN](#) training is planned for the team for 2019 by in-house instructor Schulze, saving cost and travel in December. Also, the whole unit participated in HAZWOPER refreshers due to the polluted water nature of the majority of R10 diving support in 2019. The entire unit will attend again in 2020.

R10 will be renewing 2-day wilderness first aid in October 2020 with NOLS.

R10 will seek to continue its presence at AAUS conferences to benefit the dive community with EPA dive program knowledge, as well as learn from others in matters of both scientific method and safety.

For additional details on R10 Dive Training, see:
<https://www.epa.gov/diving/diver-training>

For additional details on R10 Dive Publications, see:
<https://www.epa.gov/diving/diving-publications>

DIVE EQUIPMENT

R10's budget in 2019 included a service budget of approximately \$7,200 (same as 2018) and \$13,200 for supplies (same as 2018). This year, capital equipment purchases were used for the purchase of 2.75 diver suits (Schulze, Leefers, a portion of Stephenson's backup suit).

In service:

1. 2 suits per diver that has completed dive training (current or pending manufacture) for continuity of dive operations
2. 1 surface supplied diving control box, 3-300 foot umbilicals; 70 cubic feet (cf) Faber steel emergency gas supply (EGS) bottles in service, 2-50 cf EGS bottles (tagged out), 2 EGS regulators/manifold blocks
3. Tethered /free swimming SCUBA contaminated water diving regulators (4 sets) plus 4-200 foot (2 of which are at the lab) tethers, 4 300 foot tethers (SEA-DOC), 3 complete surface tending MK7 units
4. 5 still camera rigs (one assigned to Anne Christopher at OOO) – 3 SeaLife (2 on order), 2 Canon still cameras (Solas assigned to each Canon)
5. 2 Verizon hotspots (one assigned to Schulze, one checkout)
6. 4 GoPro assemblies with two assigned Sola lights.
7. 4 Solas with full face mask mounts; 3 Solas set up for wrist attachment
8. 6 in service AGAs, 8 new in inventory/spares.
9. 2 BCDs per diver (for contaminated water diving and off duty proficiency diving flexibility).
10. One non-polluted water regulator per diver (12)
11. 4 S17k suits (shared with ERT); 1 S17k helmet (ERT) for upcoming training dive
12. 2 complete first aid/AED/O2 kits with 2 MTV valves per kit (one in Seattle, one at the Manchester Lab); 2 E tanks aboard Monitor, 2 spare D tanks at DOC
13. 2 backboards assigned to Monitor and Wooldive, one in dive ops for non-EPA vessel trips
14. 2 DRS 100B OTS diver recall units, one located in DOC; one Manchester Lab
15. 4 nitrox analyzers (1 in DOC, 1 in the dive van, 1 on Monitor, 1 at the Lab)
16. 40 steel 120 nitrox tanks; 2 AL 80 in service for testing (1) and rescue tank for a trapped diver (2); 6 AL 80s tagged out
17. 2 reserve air supply systems for NOAA training
18. 1 carbon monoxide detector for air quality testing at remote locations
19. 2-13 CF, 2-19 CF, 4-30 CF EGS bottles

REVIEW OF DIVING PERSONNEL

<u>Name</u>	<u>Certification Level</u>
1. <u>Sean Sheldrake</u>	<u>Regional Diving Officer, Divemaster, Training Director</u>
2. <u>Chad Schulze</u>	<u>Divemaster, UDO Alternate</u>
3. <u>Lisa Macchio</u>	<u>Divemaster*</u>
4. <u>Rob Rau</u>	<u>Divemaster, UDO Alternate</u>
5. <u>Kristin Leefers</u>	<u>Divemaster, UDO Alternate</u>
6. <u>Adam Baron</u>	<u>Scientific Diver**</u>
7. <u>Anne Christopher</u>	<u>Scientific Diver (Portland, OR based)</u>
8. <u>Brent Richmond</u>	<u>Scientific Diver (Lab/Kitsap Peninsula based)</u>
9. <u>Ian Ainoa</u>	<u>Scientific Diver</u>
10. <u>Annie Whitley</u>	<u>Scientific Diver</u>
11. <u>Rachel Stephenson</u>	<u>Scientific Diver (*pending imminent Macchio retirement)</u>

**All divers in the dive unit are qualified to undertake light commercial dives, as needed, to achieve EPA's mission.

R10's operations with collateral duty divers are very dependent on a sufficient number of personnel to maintain a regional dive unit capable of meeting the highest priority program needs. 10-12 divers are an ideal size for the nominal workload asked of the dive unit over the past decade, on average.

For more information:

<https://www.epa.gov/scientific-diving>

<https://archive.epa.gov/region10/diving/web/html/>

TIME SPENT ON THE NATIONAL DIVE PROGRAM

<u>ACTIVITY (identify and describe)</u>	<u>TIME (hours)</u>
<u>Leading EPA Diver Training Course (1), including providing the lead instructor the divemaster class (lesson prep: 30, class time 40)</u>	<u>70</u>
<u>Outreach on behalf of EPA dive program (Facebook, “It’s all about Science” blogs, design of new OneEPA dive program web page, Flickr).</u>	<u>75</u>
<u>Performing Action Items</u>	
<u>(Meeting Minutes/review and comment on DSM revisions, equipment recall notices) 2019-2020 include updates to the manual to include commercial diving</u>	<u>50</u>
<u>Technical assistance to other units, Regions, other state & federal agencies</u>	<u>30</u>
<u>Other activities:</u>	
<u>-Preparation for and dive team meetings</u>	<u>20</u>
<u>-All team members that participated in various public outreach, education events, including two Earth Day events for 350+ children.</u>	<u>20</u>
<u>-Preparation for training events</u>	<u>30</u>
<u>-Development of polluted water protocols & SOPs, sampling techniques</u>	<u>25</u>



Figure: Screen shot of the EPA Divers Facebook page

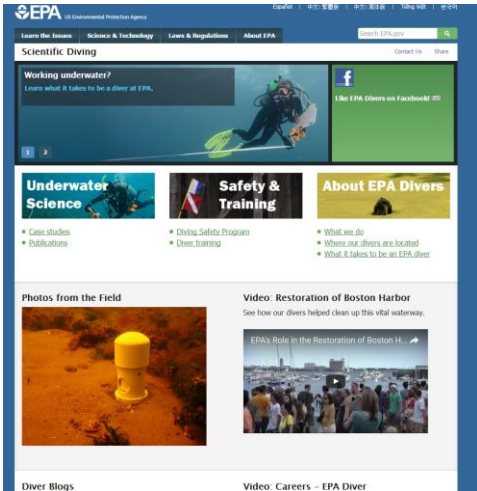


Figure: 2016 rollout of the new national dive program page, maintained by R10

COST OF TRAVEL FOR NATIONAL PROGRAM COST

List by trip: \$2000 (for trip in FY 16)

1X for GED/ DSB & Dive training

AAUS course/dive program representation \$5500

