10. Swift Water - Level 1 Ops

10.1 Introduction

This course is designed to provide information and hands on training to students/team members who may need to respond to a swift water call where no water entry is practical or possible. As defined by NFPA 1006/1670 guideline "water moving at a rate greater than 1 knot [1.85km/hr. (1.15 mph or 1.69 ft/sec)]". Swift water is typically found in high hills, mountain areas or in flash flood areas designed for moving water away and represents water in a natural setting moving downhill. With large scale flooding now common in rural and urban environments, moving water may be swift and the need for safe and effective training programs are in demand.

The purpose of the ERDI Swift Water program is to provide necessary skills and knowledge in performing life saving operations in swift water, and the importance of understanding the dangers of moving water such as strainers and hydraulics.

10.2 Level 1 Student Prerequisites

1. 18 years old
2. Should be a member of a Emergency First Response group
3. Must be a good swimmer, in good health and comfortable working in the water
4. CPR / AED / O2 / First aid certified

10.3 Qualifications of Graduates

1. Swift Water Level 1:
    a. Awareness, Operational and Technician Level courses are for emergency response personnel who may be first on the scene of a swift water emergency. First responders at the awareness level are expected to recognize the presence of hazardous conditions, protect themselves, secure the area, and call for additional resources, activate an emergency plan, assess conditions and attempt a reach or throw rescue.

10.4 Who May Teach

1. Any active ERDI Instructor who is qualified to teach the ERDI Swift Water Level 1 program. To become qualified to teach this program an ERDI Instructor must have completed a program involving level 1 swift water operations, or have gone to an ERDI IT who is qualified to conduct the ERDI Level 1Swift Water Instructor program.
2. The ERD Swift Water Instructor must also:
    a. Taken a minimum of 3 swift water rescue courses,
    b. Have taken 1- 40 Hour Ropes Course (rigging and lifting with Mechanical Advantages - Litter Care) including Level I and II instruction
    c. Be able to teach first aid, O2, AED, CPR
    d. Be part of a swift water rescue team

10.5 Administrative Requirements

1. Have the students complete the:
    a. *ERDI Liability Release and Express Assumption of Risk* Form
    b. *ERDI Medical History* Form
2. Communicate the schedule of the course to the students
3. Ensure that the students have the required equipment

Certification

1. Upon successful completion of an ERDI course the instructor must issue the appropriate ERDI certification by submitting the *ERDI Diver Registration* form to ERDI Headquarters or registering the students online through member's area of the ERDI website. Awareness level will receive a certificate upon completion if the online course was taken or a certificate can be requested if a traditional course was taken. Operations and Technician levels will receive a certification card and wall certificate

10.6 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training

Confined / Controlled water

1. A maximum of 6 students per ERDI Instructor
2. ERDI Instructors have the option of adding 2 more students with the assistance of a qualified ERDI Supervisor
3. The maximum number of students an ERD Instructor may have in confined / controlled water is 10 with active ERDI Supervisors

Open water

1. The maximum of responders for Level 1 swift water should not exceed 6 in water participants per instructor; however it is the instructor's discretion to reduce this number as conditions dictate.

10.7 Level 1 Swift Water Course Structure and Duration

Course Structure

1. ERDI allows instructors to structure courses according to the number of students participating and their skill level.

Duration

Awareness

1. Classroom and briefing: Approximately 4 hours

Operations

1. Confined / Controlled water: Approximately 4 hours

Technician

1. Open water: Approximately 8 hours
2. Open water exposures (required): Two open water exposures are required with complete briefs and debriefs by the instructor.

10.8 Required Equipment

The student must have the following equipment during all water training:

1. USCG approved type V PFD or instructor approved suit and PFD (minimum USCG type III specific to swift water)
2. Throw Ropes
3. First aid kit, O and AED available
4. Water proofed cell phone and or working radio capable of 911 communication
5. Improvised rescue items
6. Minimum of 1 cutting tool
7. Gloves
8. Spare clothes, towel, hat, sunscreen, food, water

The ERDI Swift Water Instructor must have the following equipment:

1. Same equipment as student with visual marks identifying as instructor
2. Throw Ropes
3. Personal swift water fins
4. Mask and Snorkel
5. PFD must be of tethered swimmer design
6. Emergency first aid and oxygen and AED available on site (May use guest agency's resources)
7. Boogie board, rope/line, carabineers
8. Spare equipment to allow for damage/loss while training

10.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

Incident Command

1. Standard operating procedures (SOPs) / standard operating guidelines (SOGs)
2. Pre-planning
3. Mutual aid
4. Scene set up and control

Environment

1. Impact of Weather
2. Water, Currents
3. Types of Swift Water, Characteristics and Traits
4. Tidal Areas, Rivers, Lakes
5. Hazards, including Low Head Dams, Strainers, Culverts, Delta P Changes
6. Pollutants Caused by Rising Water Including:
    a. Petroleum products
    b. Septic systems
    c. Farm run-off
    d. Other temporary hazardous chemical or pathological exposures
7. Types of Swift Water Rescues
    a. TALK
    b. REACH
    c. ROW
    d. THROW
    e. GO
    f. HELO
8. Implementing REACH Rescue
9. Risk Benefit Analysis
    a. Are the right team members on scene?
    b. Are the right numbers of team members on scene?
    c. Is the proper equipment on scene?
    d. Does the experience of the team match the requirements of the rescue?
10. Equipment
    a. Reach tools
        i. Stick
        ii. Board
        iii. Pike Pole
        iv. ANY makeshift item that will work
11. Throw tools (should float)
    a. Rescue can or buoy
    b. Life-Safer or Rescue Disc
    c. Throw Rope
    d. ANY makeshift item that will work
12. Skills
    a. Rope Skills
        i. Rapid assessment of need and deployment
        ii. Ability to throw past victim in the water
        iii. Static Belay
        iv. Dynamic Belay

Victims

1. Human
    a. Conscious / Active
    b. Passive
    c. Unconscious
2. Animal
    a. Domestic/Farm
    b. Team capabilities
3. Hypothermia / Hyperthermia
    a. Effects on victims and rescuers
    b. Heat loss/gain factors
    c. Signs and symptoms
    d. Proper patient handling/treatment

Operations

1. Assignments/Roles of Team Members
    a. Incident commander
    b. Spotter
        i. Up stream
        ii. Down stream
    c. Primary rescue team
    d. Backup rescue team
2. Incident Command
    a. Standard operating procedures (SOPs) / standard operating guidelines (SOGs)
    b. Pre-planning
    c. Mutual aid
    d. Scene set up and control
    e. Tender Operations

Equipment

1. USCG approved type V PFD or instructor approved suit and vest (minimum USCG type III specific to swift water)
2. Live bait or swift water harness system
3. Throw ropes
4. First aid kit, O2 and AED Available
5. Water proofed cell phone and or working radio capable of 911 communication
6. Improvised rescue items
7. Minimum 1 cutting tool

8. Gloves
9. Spare clothes, towel, hat, sunscreen, food, water
10. Victim extraction / transport
    a. Private means
    b. ALS / BLS unit
    c. Helo
11. Rescue Sled
    a. Features
    b. Placement for victim extrication/transport
        i. Land
        ii. Helicopter

Rescue Techniques

1. Scene Size Up
2. Communicating with Victim if Possible
3. Talk, Reach, Throw, Go or Helo, Decision Making Process
4. Dynamic and Static Throw Rope Belay
5. Downstream Lines / Catch Lines
6. Victim Rescue
    a. Approach
    b. Swift water scene assessment
    c. Rescuer positioning, victim
    d. Victim assessment, extrication and transport
7. Self-Rescue Techniques

10.10 Required Skill Performance and Graduation Requirements

Confined Water Training

Confined water training is not required for the basic swift water course unless teaching advanced skills and/or the instructor feels that current open water conditions are unsafe for the skill to be mastered. The swift water course cannot be completed except in moving open water.

1. 500 metres /548 yard continuous forward stroke swim –no swim aids, in less than 14 minutes
2. 15 minute survival tread with last two minutes holding hands out of the water

Open Water Training

The Instructor, with the following considerations, must carefully choose a swift water training site: The body of water should be similar to what the team will respond to.

1. Swimming pools are not considered an open/swift water environment
2. Water and air temperature, including the need for shade and drinking water
3. Water access
4. Thermal protection appropriate for the conditions above and below water
5. Appropriate equipment for training
6. Appropriately apply ICS
7. Demonstrate ICS
8. A complete briefing that includes:
    a. Team safety, go or no-go, when to abort the call
    b. Emergency action plans if rescuer becomes a victim
    c. The operation site
    d. Water conditions
    e. Skills to be performed: self-rescue
    f. River hazards and entry/exit(s) to be used
    g. Emergency and safety procedures
    h. Ropes/lines, knots, tying points, carabineers
    i. Cell or satellite phone in a waterproof container or bag
    j. If working in a remote location, a hand held GPS is recommended
9. Appropriate usage of PFD's type I-V
    a. Usage
    b. Checking participants vest for fit and proper threading
10. Throw ropes
    a. Consistently throw a bag approximately 15 metres / 50 feet
    b. Consistently throw a bag, over hand or side arm, approximately 12 metres / 40 feet to a simulated victim in water
    c. Coil and make second throw to simulated victim in approximately 20 seconds
    d. Demonstrate effectively re-stuffing throw bag
    e. Demonstrate proper rope care
11. Demonstrate swimming a strainer
    a. Swimming techniques – defensive to super aggressive techniques
    b. Approach to the strainer
    c. Movement over the strainer
    d. Understand point positive commands

12. Flip an unconscious victim
    a. Demonstrate proper methods
    b. Package patient consistent with EMS protocols
13. Using litter flotation
    a. Demonstrate In-water packaging using a basket litter
    b. Demonstrate In-water packaging using a backboard
    c. Provide Cervical Spine Management techniques
    d. Provide Airway Management techniques
14. Demonstrate the use of Live Bait or releasable Type V PFD technologies
    a. Demonstrate requisite knowledge of water entry
    b. Head- up water rescue entry
    c. Swiftwater leaping rescue entry
    d. Safety Considerations
    e. Rescuer belaying techniques
    f. Swimming techniques
15. Peel out procedures using secondary motorized boat
    a. Demonstrate a two-boat tether system
    b. Demonstrate operator's ability to maneuver motorized boat
    c. Use of power turns
16. Knots and Hitches
    a. Figure 8
        i. Follow through
        ii. On a bight
    b. Bowline
    c. Sheet Bend
    d. Prusick knot
    e. Barrel knot
    f. Water knot
    g. Munter hitch
    h. Clove hitch
17. Knot usage
    a. Identify strengths and limitations of each knot/hitch
    b. Identify proper knot/hitch to use for a given situation
18. Anchors
    a. Create one and two point anchor systems
19. Tension Diagonal System
    a. Demonstrate proper set up
    b. Use of communication
        i. Whistle, hand signals, radios

20. Construct a simple Mechanical Advantage 3:1 and a simple 5:1 Mechanical Advantage
    a. Demonstrate requisite knowledge of Mechanical Advantages
    b. Identify Hardware. i.e. Pulleys, breaking systems
    c. Identify the Mechanical Advantage using T methods
21. Construct a highline system
    a. Demonstrate requisite knowledge of highline
    b. Construct on land and overwater
    c. Anchor loading
    d. Vector Angles
22. Using a highline rope system
    a. Tether a boat for upstream and downstream movement
    b. Construct moveable control lines for river left and river right boat movements
    c. Understand proper boat placement in water
    d. Utilize proper communication techniques
23. A complete debriefing includes:
    a. Performance of team members as a whole
    b. Areas that need improvement
    c. Question and answers

During all swift water training there will be a qualified and dedicated safety officer assigned who will be present and equipped to respond to an in-water emergency at all times. During any in-water training, OSHA regulations, NFPA 1006 and 1670 standards must be followed. Any regional regulatory or legal requirements that apply to the location will also be followed, whichever is more stringent. Must also adhere to any department or office SOG/SOP's during training.