

Section 4.11 Watercraft and Dredging

1. Scope

This section sets forth the safety requirements for Bureau of Reclamation watercraft and dredging activities. These include requirements for equipment as well as inspections, training, certification, and various operating activities.

2. General Requirements

Ensure that all watercraft and dredges are operated in compliance with this section, as well as applicable U.S. Coast Guard (USCG), Department of the Interior Department Manual (485 DM 22), and U.S. Army Corp of Engineers Dredging Operations Technical Support programs.

3. Responsibilities

a. Reclamation Watercraft Safety Working Group

- Shall appoint a Reclamation Watercraft Working Group member as the Reclamation Watercraft Safety Coordinator.
- Shall submit requests for Personal Flotation Device (PFD) deviations to the Policy and Programs Director.
- Shall identify courses that are approved for use in completing the Motorboat Operator Certification Course (MOCC) refresher training education module.

b. Reclamation Water Safety Coordinator

- Shall serve as the watercraft safety program point of contact for Reclamation and facilitate watercraft safety activities and operator training.
- Shall successfully complete MOCC and Motorboat Operator Instructor Certification Course (MOICC) training.
- Shall serve as the Reclamation representative on the Department of the Interior (Interior) Watercraft Safety Working Group.

c. Regional Watercraft Program Coordinators/Lead Instructors

- Shall serve as members of the Reclamation Watercraft Safety Working Group.
- Shall successfully complete MOCC and MOICC training.
- Shall coordinate/instruct MOCC training for their respective regions.
- Shall report/track regional MOCC training/refresher information to the Reclamation Watercraft Safety Coordinator. All watercraft/dredge training records shall be kept in the Interior learning management system.

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d. Regional Safety Managers

- Shall designate an MOCC instructor to serve as Regional Watercraft Program Coordinator/Lead Instructor.
- Shall submit requests for PFD deviations to the Policy and Programs Director.

e. First-Line Supervisors

- Shall establish protocols to ensure that all personnel and volunteers meet the following requirements:
 - conduct watercraft and dredging operations in a safe manner and in compliance with this section,
 - maintain equipment in compliance with this section and with existing policies and procedures, and
 - operators have the skills needed for conditions in which they are expected to operate watercraft and dredges.
- Shall ensure that employees who operate and work in watercraft and dredges have training in watercraft operations appropriate for the size/type of watercraft used; geographic, climatic, and physical nature of the operations; and operational tasks being performed.
- Shall review the float plan (for watercraft operations), job hazard analysis (JHA), and/or conduct the safety briefing (for dredge operations) developed by the watercraft/dredge operators prior to operation.
- Shall provide the safety and survival equipment identified on the float plan, JHA, and/or during safety briefing.

f. Watercraft/Dredge Operators

- Shall successfully complete the training as stated in this section and required by 485 DM 22.
- Shall conduct watercraft and dredging operations in a safe manner and in compliance with this section.
- Shall ensure that personnel maintain equipment in compliance with this section and existing policies and procedures.
- Shall prepare the float plan, JHA, and/or safety briefing for first-line supervisor review/approval prior to watercraft/dredge operations.
- Shall conduct onsite risk assessment with crew, checking equipment, weather, and site conditions prior to watercraft/dredge operations.
- Shall conduct a review of the float plan, JHA, and/or safety plan with watercraft/dredge occupants directly before the watercraft/dredge activity commences.

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- Shall ensure safety of the crew members and other onboard personnel and operate the watercraft/dredge in compliance with this section and existing policies, guidelines, and training.
- Shall report any accident, injury, property damage, or near-miss incident that occurs during the watercraft/dredging operation to the first-line supervisor.

4. Training Requirements

a. Initial

Reclamation employees and others who operate Reclamation-owned watercraft or dredges must first be trained and certified to operate watercraft in accordance with this section and with 485 DM 22. Non-Reclamation personnel who operate government watercraft for Reclamation activities must be qualified in accordance with USCG, State, and local regulations.

- **MOCC Training.** Reclamation employees must successfully complete Interior’s MOCC training before operating motorboats. Anyone operating motorboats/dredges for which Reclamation is responsible (e.g., Reclamation-owned, borrowed, rented or leased) must successfully complete MOCC training. Reclamation employees can complete MOCC training through any Interior agency. MOCC training is valid for five years.
- **Preparation for MOCC.** In preparation for taking the MOCC or an MOCC module, Reclamation employees may practice elementary operating skills under the onboard supervision of an MOCC instructor.
- **Training Substitute.** Operators may substitute similar watercraft training for the MOCC if it meets or exceeds the MOCC standard. Operators must submit requests for substitutions to the Reclamation Watercraft Safety Working Group for approval.
- **USCG Licensing.** Reclamation employees operating watercraft normally subject to USCG licensing regulations (e.g., watercraft longer than 65 feet) will be trained and licensed in accordance with the requirements in 46 CFR 25.

b. Non-Motorized Watercraft

Operators of non-motorized watercraft are exempt from MOCC completion. However, first-line supervisors must ensure operators are provided with practical operator safety training pertinent to the watercraft (e.g., raft, kayak) and environmental conditions in which the watercraft is operated. Appropriate training includes, but is not limited to, the non-motorized module of the MOCC.

c. MOCC Instructors

Reclamation employees who serve as MOCC instructors must successfully complete both the MOCC and MOICC as outlined in Interior’s MOCC Instructor Manual.

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d. Dredge and Related Equipment Inspectors

Employees who inspect dredges and related equipment must have a certificate, license, or professional standing, as well as extensive knowledge, training, and experience in solving problems related to the work.

e. Recertification

- Watercraft/Dredge Operators. Must successfully complete MOCC recertification every five years in accordance with 485 DM 22.
- MOCC Instructors. Must participate in providing instructions in at least one MOCC every three years to maintain instructor certification. MOCC instructors who do not meet this requirement must successfully complete the MOICC prior to conducting MOCC training.

f. Proficiency Qualification

In addition to ensuring that operators successfully complete MOCC training, first-line supervisors must ensure they receive training on the specific watercraft in the environmental conditions and in the area that they will be operating.

g. Recordkeeping

Ensure all records are maintained in accordance with Reclamation Manual Directives and Standards, Information Management (RCD 05-01) and all watercraft/dredge training records shall be kept in the Interior official repository.

5. Hazard Identification, Assessment, and Safety Measures

a. Entering Water

There may be times when the watercraft operator needs to enter the water (e.g., when an object is wrapped around the watercraft prop or to remove the boat from a sandbar). The operator shall ensure that the JHA addresses this possibility. When entering the water, observe and address the following:

- place watercraft controls in gear to guard against accidental starting of the motor,
- remove the key from the ignition,
- display an orange flag to alert others to the fact that someone is in the water,
- turn off all generators, and
- ensure that no sources of carbon monoxide are present.

6. Pre-job Briefing and Planning Requirements

a. Float Plans

Prior to using a watercraft, the operator must provide a float plan to their first-line supervisor. The float plan must include the following information:

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- watercraft information (vessel make/model or local identifier),
- emergency equipment onboard,
- personnel onboard,
- activity and purpose of the trip,
- planned route,
- point of departure,
- expected time of departure,
- route,
- expected time of return,
- means of communication (e.g., Very High Frequency (VHF) radio, cell phone) and contact schedule,
- description of vehicle(s) left at launch site, and
- plan of action if overdue.

b. Safety Plans for Dredging Operations

Prepare a comprehensive safety plan for each dredging operation. Make the plan location specific and include provisions for communications and emergency response.

c. Job Hazard Analysis

Prepare a JHA for watercraft and dredging operations. Review the JHA with all employees involved with the watercraft/dredge operation prior to starting the work, at the beginning of each work shift, and anytime the JHA is modified. The first-line supervisor must approve and sign the JHA.

7. Hazardous Environmental Conditions (Weather/Other)

a. Weather

The watercraft/dredge operator shall monitor the National Weather Service warnings (e.g., small watercraft advisories) when planning watercraft/dredging operations. The operator shall re-evaluate and terminate operations, if determined appropriate, for all watercraft/dredge operations during high winds, high flows on a river, or other weather conditions which may adversely affect watercraft/dredge operations.

b. Lightning

The watercraft/dredge operator shall terminate or reschedule watercraft/dredging operations when lightning is present. Seek shelter off the water.

8. Personal Protective Equipment (PPE)

a. PFD Use During Watercraft/Dredging Activities

Equip watercraft with one USCG-approved PFD for each occupant, and one USCG-approved throwable device onboard the watercraft. Wear a PFD whenever onboard a watercraft or

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working around bodies of water where a drowning hazard exists. Employees must wear and maintain PFDs as directed by the manufacturer's instructions (e.g., properly zipped, tied, latched). PFDs must be worn as the outermost layer. Personnel using floating pipelines as accessways or working on the pipeline must wear a USCG-approved PFD.

- **Design.** The PFD will be either “international orange” or “fluorescent yellow-green” and will have at least 31 square inches (200 square centimeters) of retroreflective material attached to both the front and the back, in the upper quadrants of the PFD. If the PFD is reversible, retroreflective material will be attached to each of its reversible sides. In accordance with 46 CFR 25.25-13, each PFD shall be equipped with a beacon securely attached to the front shoulder when onboard watercraft being operated in coastal waters, the ocean, sea, or Great Lakes.
- **Inspection and Replacement.** Before each use, the operator shall visually inspect each PFD for defects that will compromise its strength or buoyancy. Check the PFD for rips, tears, sun damage, or holes, and ensure that seams and fabric straps are in satisfactory condition. There must be no signs of waterlogging, mildew, or shrinkage of the buoyant materials. Metal or plastic hardware used to secure the PFD on the wearer must not be broken, deformed, or weakened by corrosion. Webbing or straps used to secure the PFD on the wearer must not be ripped, torn, or separated from the attachment point on the PFD. If any defects are found, do not use the PFD and replace the device immediately. Follow the PFD manufacturer's recommended timeframe for removal from service.
- **Auto-Inflatable PFDs.** The regional watercraft coordinator must authorize the selection of USCG-approved auto-inflating PFDs. Additionally, users must visually inspect the PFD before each use to ensure that the inflator mechanism is armed and in good condition. Type III PFDs are manually inflatable with automatic backup. Users should always manually inflate the PFD and not wait for automatic inflation. The bladder must not leak, and the user must be familiar with its use and operation. Auto-inflating PFDs must be maintained and inspected based on the manufacturer's recommendations. At the beginning of the boating season, inflate each inflatable PFD to ensure the CO2 cylinder, bobbin, and all other parts are in good working order. First line supervisors shall designate an employee to complete this inspection every two to three months if the vests are worn regularly, or if the boating location is hot and humid, since the inflation mechanism may be subject to corrosion. Auto-inflating PFDs are sensitive to damage and must be stored appropriately so functionality is not compromised.

b. Cold Weather PPE

Cold weather PPE (e.g., USCG-approved exposure suits and/or immersion suits) will be worn when the sum of air and water temperatures is less than 100 degrees Fahrenheit. The watercraft operator may make an exception to this requirement if determining that the risks associated with wearing cold weather PPE (e.g., crew performance degradation, thermal stress)

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are offset by the benefits of not wearing cold weather PPE. Prior to use, personnel will be trained in the use of this equipment.

9. Other Safety Equipment

Equip all watercraft and dredges with adequate safety equipment to meet USCG requirements and to address any hazards that operators may encounter during normal operations. The following equipment must be available on all motorized watercraft and considered for all non-motorized watercraft:

- visual distress signals (e.g., orange distress flag, distress light, three day/night red flares),
- sound producing device, and
- re-entry ladder or other means of assisting someone with getting back into the watercraft (e.g., cavitation plate).

a. Flame Arrestors

Equip gasoline engines, except for outboard types, with a USCG-approved backfire flame arrestor. Make sure the arrestor is attached to the air intake with a flame-tight connection. It must be kept clean and in serviceable condition.

b. Fire Extinguishers

- Less than 26 feet in Length. For watercraft less than 26 feet in length, at least one USCG-approved fire extinguisher, rated B-1 or greater, must be carried onboard.
- 26 feet up to 40 feet. For watercraft from 26 feet to 40 feet in length, either one Type B-2 or two Type B-1 extinguishers must be carried onboard.
- 40 feet up to 65 feet. For watercraft from 40 feet to 65 feet in length, either one Type B-2 and one Type B-1 or three Type B-1 fire extinguishers must be carried onboard.
- Greater than 65 Feet. Watercraft that are 65 ft or greater in length must carry enough fire extinguishers to meet USCG requirements.
- Watercraft with Powerplants in Confined Locations. Watercraft with gasoline or liquid petroleum gas powerplants located in a compartment or confined location must have a fixed carbon dioxide (or equivalent) fire-extinguishing system meeting the requirements of 46 CFR 25.30-15.
- Inspection. Portable fire extinguishers shall be maintained and inspected monthly if possible, but at a minimum prior to each vessel use in accordance with Reclamation Safety and Health Standards (RSHS) Section 1.09, Fire Protection and Prevention.

c. Navigation Lights

Watercraft and dredges must be equipped with navigation lights required by USCG. Operators must display navigation lights between sunset and sunrise and any other time of reduced visibility (e.g., fog, haze, rain).

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d. Pipeline Marking

Dredge pipelines that float or are supported on trestles must display appropriate lights at night and when visibility is restricted, in accordance with USCG regulations and 33 CFR 88.15.

10. Safe Practices

a. Watercraft Inspection

Inspect all watercraft and equipment according to applicable USCG regulations and other jurisdictional entities before placing them in service.

- Preventing the Spread of Aquatic Invasive Species
 - Clean any visible mud, plants, fish, or animals from the watercraft before transporting equipment. Any items found shall be disposed of properly.
 - Drain all water holding compartments including ballast tanks, live wells, and bilge areas.
 - Dry all boats, trailers, and equipment which is the most effective way to prevent the spread of invasive species.

b. Watercraft/Dredge Loading

Ensure watercraft/dredge has enough room, freeboard, and stability to safely carry the cargo and passengers, based on the watercraft's capacity plate, under various weather and water conditions. Document this information on the JHA.

c. Watercraft Ventilation

Watercraft with installed inboard gasoline engines must have powered ventilation systems to remove gasoline vapors from the vessel.

d. Watercraft Fuel for Barges

Store fuel in USCG-approved, marine-specific, containers. Fuel lines must be equipped with a valve to cut off fuel flow. In addition, the operator must close the valve if the watercraft will not be used for a period of eight hours or longer.

e. Kill Switch

Open cabin launches or motorboats will be equipped with kill (dead man) switches when there is a risk that the watercraft operator can be thrown overboard or away from the controls, except in rare instances when doing so increases the risk to personnel (e.g., operating upstream from a significant hazard, operating in extremely rough water, or performing a rescue). If a kill switch tether increases the risk to personnel, use a non-direct/wireless kill switch during the watercraft operation. When the use of a kill switch during a specific watercraft/dredge operation is determined to pose a greater hazard than not using a kill switch, and using a non-direct/wireless kill switch is not feasible, the watercraft operator must identify measures to prevent injuries associated with the operation on the JHA.

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f. Watercraft Inspections

The local fleet manager shall ensure that a qualified/competent technician/mechanic inspects watercraft and their trailers at least annually. Document trailer inspections on Reclamation Form 7-1776B and watercraft inspections on Reclamation Form 7-1776C (see 28.13 References for intranet link to forms).

g. Dredge and Related Equipment Inspections

A qualified person must inspect dredges and related equipment before they are entered into service, and at least annually thereafter, to ensure that they are in safe operating condition. The inspector must be trained and certified in accordance with paragraph 4.11.4.d, Dredge and Related Equipment Inspectors. Inspections must be documented and accessible to personnel.

h. Maintenance and Repair of Dredges and Related Equipment

Employees must raise the ladder (or drag arm) above the water line and secure it before performing repairs or maintenance work on the pump, suction, or discharge lines below the water line or within the hull, in addition to the normal process of securing hoisting machinery. Set blank or block plates in suction or discharge lines as appropriate. See also RSHS Section 1.13, Control of Hazardous Energy (Lockout/Tagout).

i. Submerged Dredge Pipelines

- Crossings. Where a pipeline crosses a navigation channel or other area subject to boat traffic, submerged pipeline must rest on the channel bottom. The top of the pipeline and any anchor securing the pipe must be no higher than the maximum draft or traffic expected in the vicinity of the pipe.
- Submerged Pipeline. When buoyant or semi-buoyant pipeline is used, the dredge operator must ensure that the pipeline remains fully submerged and on the bottom. When raising the pipeline, warn boat traffic of the pipeline hazard. Mark the entire length of the pipeline as required by USCG.
- Marking. Mark the entire location of the submerged pipeline with signs, buoys, lights, or flags as required by USCG and as approved by the authority having jurisdiction. Unless otherwise specified by USCG, submerged pipelines require special markings and must have a USCG-approved flashing yellow light.
 - Indicators. Dredge Operators must place indicators, such as signs or buoys that state “DANGER SUBMERGED PIPELINE” at the beginning and end of the pipeline. In addition, indicators are required in areas where the charted depth reduces by more than 10 percent, and, at a minimum, every 1,000 feet (304.8 meters) to clearly warn of the pipeline length and course.
 - Anchoring. If barges or other vessels are used to anchor the beginning and/or end of the submerged pipeline, they must be lighted in accordance with 33 CFR 88.13.
 - Navigation Channels. Within a navigation channel, each end of the pipeline must be identified with a regulatory marker buoy.

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- Increased Depth. Lengths of submerged pipeline located outside of the navigation channel, which reduce the charted depth by more than 10 percent, must be identified with high visibility buoys marked with 360-degree visibility retro-reflective tape (e.g., orange neoprene buoys) placed at an interval not to exceed 500 feet (152.4 meters) to clearly show the pipeline length and course.
- Inspections. Conduct routine (e.g., daily or weekly) inspections of the submerged pipe to ensure anchorage.
- Removal. Remove all anchors and related materials when removing the submerged pipe.

j. Floating Pipeline

Clearly mark floating pipelines, including rubber discharge hoses. Do not allow pipelines to fluctuate between the water surface and the channel bottom or to lie partially submerged. If floating pipelines are used as accessways, equip them with a walkway and handrail on one side.

k. Dredge Design

Design dredges to ensure that a failure or rupture of any of the dredge pump components (including dredge pipe) will not cause the dredge to sink.

- Dredge Pumps. Any dredge with a dredge pump below the water line must have a bilge alarm or automatically shut down in the event of a pump leak.
- Fall Protection. Provide guardrails, bulwarks, and self-closing gates for deck openings, elevated surfaces, and other locations where a person may slip or fall. Guardrails and self-closing gates must comply with the requirements for standard guardrails in accordance with RSHS Section 1.11, Walking and Working Surfaces, and 29 CFR 1910.29(b)(13).

l. Walking and Working Surfaces

- Anti-Slip Surfaces. Provide anti-slip surfaces on all working decks, stair treads, vessel ladders, and other walking or working surfaces that may become wet during operations.
- Obstructions. Remove obstructions in walking and working surfaces when possible. Where obstructions cannot be removed, post appropriate warning signs, or distinctively mark them in accordance with RSHS Section 1.08, Signs, Signals and Barricades, and American National Standards Institute (ANSI) Z535.1.
- Gangways. Where the distance between the vessel and docks or landings exceeds 18 inches horizontal or 12 inches vertical, provide gangways. Gangways must be at least 22 inches wide, with standard railings, and be able to support 250 pounds (with a safety factor of 4:1) at its midpoint.

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m. Relocation of Dredges and Related Equipment

A qualified person must directly supervise any mobilization, demobilization, or relocation of dredges, support barges, and other support equipment.

11. Communication Requirements

a. Equipment

Always carry at least one communication device, whether that is a cell phone, a satellite phone, or a VHF marine radio. If the device is not waterproof, place it in a waterproof container that will float with the device inside. Make test call from chosen communication equipment with local or responding entity to work location in order to facilitate familiarity and signal coverage. An emergency position indicator radio beacon or personal locator beacon that has global positioning system capability shall be used in the following situations:

- boating operations on large bodies of water,
- work requiring overnight boat operations,
- work on water in remote areas where other communication devices are non-functional, and
- work on water areas where signal coverage is weak or unavailable.

b. Public Notification of Dredging Operations

Issue public notices where dredging activity may pose hazards to navigation or to the public.

▲ RSHS Appendix A: Definitions

RSHS Appendix A ([Definitions](#)) is available to print at:

<https://www.usbr.gov/safety/rshs/index.html>.

▲ RSHS Appendix B: Additional References and Citations

RSHS Appendix B ([Additional References and Citations](#)) is available to print at:

<https://www.usbr.gov/safety/rshs/index.html>.