

FOND DU LAC BAND OF LAKE SUPERIOR CHIPPEWA

ORDINANCE #07/94

FOND DU LAC CEDED TERRITORY
ELECTROFISHING SAFETY CODE

Adopted on April 25, 1994 by Resolution #1153/94 of the Fond du Lac
Reservation Business Committee

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1.1 Authority. The Fond du Lac Band of Chippewa, by and through the inherent powers and authorities of the lawfully elected governing body known as the Fond du Lac Reservation Business Committee, through the written laws of the Band and through the rights retained under the Treaty of September 30, 1854 between the Fond du Lac Band of Lake Superior Chippewa and the United States of America, does hereby authorize the following Electrofishing Safety Code, enacted pursuant to Resolution #1153/94, dated April 25, 1994, which shall govern electrofishing activities in all parts of the Ceded Territory, which falls within the jurisdiction of the Fond du Lac Reservation Business Committee.

This code may be subject to revision by the Fond du Lac Reservation Business Committee upon its own motion or upon recommendation by Ceded Territory biologists. Any amendment or revision shall be by resolution and shall be effective thirty (30) days after enactment of the resolution, unless specifically provided otherwise by Reservation Business Committee resolution.

1.2 Purpose. To ensure the safe conduct of electrofishing operations by establishing competency requirements for electrofishing operations. This code also provides guidelines for the safe construction, modification, and operation of electrofishing equipment.

1.3 Scope. The provisions of this code apply to all activities by Fond du Lac Reservation employees using electricity produced by gasoline powered generators/alternators or batteries to sample animals in aquatic habitats.

1.4 Policy. The Fond du Lac Reservation Business Committee recognizes the electrofishing operation as a hazardous activity for which skilled training is required.

It is, therefore, Fond du Lac Reservation policy that all personnel serving as electrofishing team leaders demonstrate knowledge of the principles and techniques of electrofishing. Team leaders will be considered knowledgeable of the principles and techniques of electrofishing upon satisfactory completion of the United States Fish and Wildlife Service training course, Principles and Techniques of Electrofishing. In lieu of course completion, Fond du Lac personnel may satisfactorily demonstrate working knowledge of electrofishing and safety.

1.5 Definitions.

- A. Anode. The positive electrode.
- B. Bonding. The permanent joining of metallic parts to form an electrically conductive path which assures electrical continuity, with the capacity to safely conduct current.
- C. Branch circuit. The circuit conductors between the final overcurrent device protecting the circuit and the electrical load(s).
- D. Cathode. The negative electrode.
- E. Circuit breakers. A device designed to open and close a circuit by a non-automatic means, and to open the circuit automatically on the predetermined overcurrent without damage to itself when properly applied within its rating.
- F. Deadman switch. A switch which requires constant pressure to supply electrical current to the circuit.
- G. Electrofishing. The use of electricity to provide a sufficient electrical stimulus in fish to permit easy capture by netting.
- H. Electrofishing team leader. The individual in charge of the electrofishing operation. Only persons demonstrating knowledge of the principles and techniques of electrofishing in accordance with 1.6A can serve as electrofishing team leaders.
- I. Ground. A conductive connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.
- J. Isolation transformer. A transformer inserted into a system to separate one section of the system from undesired influences with other sections.
- K. Netter. The individual who nets the captured fish during electrofishing operations.
- L. Power control circuit. The circuit which interconnects and adjusts the power from the pulsator or generator to the electrodes.
- M. Raintight. Constructed or protected so that exposure to a beating rain will not result in the entrance of water.
- N. Variable voltage pulsator electroshocker. The device used to deliver the pulsed electric current.

- O. Watertight. Constructed so that moisture will not enter the enclosure.
- P. Weatherproof. Constructed or protected so that exposure to the weather will not interfere with successful operation.

1.6 Responsibilities.

A. Electrofishing team leader. Only individuals demonstrating knowledge of electrofishing techniques can serve as electrofishing team leaders. Team leaders will be considered knowledgeable of the principles and techniques of electrofishing upon satisfactory completion of the United States Fish and Wildlife Service course, Principles and Techniques of Electrofishing. In lieu of course completion, Fond du Lac personnel may satisfactorily demonstrate working knowledge of electrofishing and safety. Training and education for electrofishing will otherwise be in accordance with section 1.7. As the individuals in charge of electrofishing operations, team leaders will do the following:

- (1) Identify hazardous conditions associated with proposed electrofishing operations, determine measures to protect electrofishing team members, and appropriately brief team members (see section 1.7B).
- (2) Ensure that employees have and utilize the proper safety equipment.
- (3) Ensure adequate warning is provided to the public to avoid public exposure to the potential hazards of electrofishing operations.
- (4) Ensure precautions are taken to avoid harm to pets, domestic animals, or wildlife.
- (5) Ensure that all electrofishing operations cease and all crew members go ashore in the event of a thunderstorm.
- (6) Ensure that only those persons necessary to conduct a safe and efficient operation, and observers being trained, engage in each electrofishing operation.
- (7) Ensure the availability of a well-equipped, water-tight first aid kit. Questions concerning the contents of the first aid kit may be directed to the Head of the Fisheries Section of the Fond du Lac Ceded Territory.

(8) The team leader should review the electrofishing considerations checklist found in Exhibit 1, and ensure the addition of specialized items to the checklist that pertain to his/her operation.

B. Project leader. Ensure compliance with the provisions of this code.

C. Employee. Report all potential work hazards, accidents, incidents, and job related illnesses and injuries to his/her supervisor immediately.

1.7 Training and education.

A. Team leader training and education will cover the areas identified below.

(1) The basic principles of electricity and transmission of current in water.

(2) The basic concept and design guidelines for electrofishing equipment.

(3) Electrofishing equipment and the equipment's capabilities, limitations, and safety features.

(4) The safety precautions to employ while using electrofishing equipment.

(5) The team leader must have a current certification in cardiopulmonary resuscitation (CPR) training and first aid. Completion of the course, Principles and Techniques of Electrofishing, offered by the United States Fish and Wildlife Service, will serve to satisfy competency for factors 1, 2, 3, and 4. Otherwise, the team leader will have to demonstrate knowledge in factors 1, 2, 3, and 4. A certificate from the Red Cross or other recognized institution will certify CPR and first aid training.

B. All members of the electrofishing crew will be briefed in the following areas:

(1) Hazards involved in electrofishing.

(2) Safe operation of electrofishing equipment.

(3) Basic emergency procedures for drowning, unconsciousness, and electrical shock.

(4) All members of the electrofishing crew will also be knowledgeable of defensive driving techniques, including towing and backing of boat trailers if an electrofishing boat is used, and safe boating operations.

1.8 Electrical equipment: specifications and operation.

A. General.

- (1) Isolation transformer. AC voltage from the generator will be isolated from ground either by removing the ground strap from the generator case or by adding an isolation transformer.
- (2) Voltage. Rated voltages of insulation of conductors used to deliver output current from the pulsator to the electrodes must exceed the maximum potential voltage of the pulsator or generator by the next higher rating as follows:

Pulsator/generator Minimum insulation rating of conductor

0 - 249	250 volts
250 - 599	600 volts
600 - 899	900 volts
900 - 12,999	13,000 volts

- (3) Conductor size. Conductor size (i.e., current carrying wire) will be approved for rated amperage of equipment as follows:

Maximum amperage Minimum conductor size

10	16 AWG
15	14 AWG
20	12 AWG
30	10 AWG

- (4) Conductor type.
 - (a) Conductors will be of the stranded type for flexibility and be suitable for use in dampness.
 - (b) All conductors in the boat will be enclosed in conduit or liquid-tight, flexible conduit; however, appropriate heavy duty rubber cord can be used where flexibility is desired.
 - (c) Connectors used in association with flexible cords will be of the locking, waterproof type.
- (5) Connections.
 - (a) Splices in wiring will not be permitted. If connections are necessary, the rating of the connector must be the same or greater than the wire.

- (b) All equipment will be turned off before making any connections or replacing parts.
- (6) Junction boxes. Junction boxes will be cast iron, cast aluminum, fiberglass, plastic, or rubber. All types must either be weatherproof or raintight depending on use. All junction boxes with switching equipment must be weatherproof. Junction boxes without switches may be raintight.
- (7) Circuit breakers.
 - (a) Power output conductors from the generator or alternator will include a circuit breaker or fuse to provide branch circuit protection.
 - (b) Circuit breaker or fuses used for providing branch circuit protection will be enclosed in a weatherproof enclosure or cabinet described in the National Electric Code, Article 373-2, which states the following:

"In damp or wet locations, cabinets and output boxes of the surface type will be so placed or equipped so as to prevent moisture or water from entering and accumulating within the cabinet or output box and will be mounted so that there is at least $\frac{1}{4}$ -inch air space between the enclosure and the wall or other supporting surface. Cabinets or output boxes installed in wet locations will be weatherproof."
- (8) Electrodes and net handles. Net handles will be constructed of a non-conductive material and will be of sufficient length to avoid hand contact with the water.
- (9) Noise. Noise levels will be maintained within the acceptable exposure of 85 dba for an 8-hour exposure. Personal protective measures, such as use of earplugs will be allowed providing they do not interfere with communication. The purchase of sound powered headphones is recommended. This type of headphone shuts out generator and motor noise and provides clear communication between the netters and equipment operator.
- (10) Exhaust from power source. The exhaust from gasoline powered engines and generator alternators will be directed away from the equipment operator. Exposed hot pipes will be enclosed in protective screening to reduce the potential of burn exposure to crew members. The use of galvanized pipe for exhaust is discouraged due to the potential release

of toxic gases that are produced under extreme heating conditions.

- (11) Fuel storage. Gasoline will be stored and transported in approved containers. Such containers, if metal, when used for storage on metal hull boats will be grounded.
- (12) Refueling. To refuel the generator/alternator, all equipment will be turned off. Hot surfaces will be allowed to cool. It is recommended that all tanks be filled prior to each operation to avoid the potential for explosion or fire while refueling hot gasoline engines.
- (13) Instruction sheets. Instruction sheets for boat, equipment, and operational procedures will be enclosed in waterproof plastic and be readily available for reference at all times during the electrofishing operation.
- (14) Preventive maintenance.
 - (a) All equipment used in electrofishing will be scheduled for an annual preventive maintenance inspection. In addition, all equipment will be inspected prior to each use.
 - (b) Any equipment deficiency which may present a safety hazard will be corrected before each field operation or when equipment damage occurs during actual use.

B. Portable electroshockers.

- (1) Electrodes.
 - (a) Electrode handles will be constructed of a nonconductive material and be long enough to avoid hand contact with the water.
 - (b) The positive electrode (anode) used with portable electroshockers will be equipped with a pressure switch that breaks the electric current upon release.
- (2) Netter position. Netters will work beside or behind the individual with the electrofishing equipment to ensure the electrical field is well in front of both workers.
- (3) Standard safety equipment.
 - (a) All persons using portable electroshockers will wear rubber footwear which will insulate

the wearer from electrical shock. All footwear will be equipped with nonslip soles.

- (b) Rubber linesmen gloves, rated to the voltage being used in the electrofishing operation, will be worn. These gloves will be inspected for punctures before each use and will be replaced at adequate intervals.
- (c) Polaroid sunglasses will be worn when there is glare.

(4) Portable electric power source.

- (a) Batteries used as electrical power sources for backpack electroshockers will be of the gel type that will not leak when tipped or overturned.
- (b) Backpacks will be equipped with a quick release belt (hip) and shoulder straps.

(5) Power control.

- (a) The operator will have a switch to the pulsator or power control unit so that the electricity can be turned off quickly in an emergency.
- (b) All equipment must be equipped with a tilt switch that breaks the circuit if the operator falls. The switch must be of the type that has to be manually reset after the operator has regained his/her footing.

(6) Personal flotation devices. All persons will wear U.S. Coast Guard approved personal flotation devices (Type II) (i.e., life jackets or float coats) when operating in waters that are deep, high velocity, or turbid, to prevent drowning.

Note: Flotation devices constructed of materials such as ensolite are not bulky and are light weight. This material used in float coats can provide some protection against loss of body heat if the person accidentally falls into cold water.

(7) Hazard awareness. All persons will be aware of the hazards involved in using portable electroshockers in running waters such as slippery surfaces, swift water currents, deep areas, and obstacles such as logs or similar objects.

C. Electrofishing boats.

- (1) Design.
 - (a) Electrofishing boats will provide adequate flotation and freeboard clearance consistent with equipment, cargo, and passenger weight when being operated. The boat will be equipped to meet U.S. Coast Guard regulations.
 - (b) The boat deck will be painted with a nonslip or skid resistant coating.
- (2) Clear working space. General boat housekeeping must provide adequate working space to conduct safe operations. Care will be exercised to prevent clutter that may result in safety hazards.
- (3) Boat inspection before each use. The boat and equipment will be visually inspected for safety by the supervisor or operator in charge prior to each use. Significant deficiencies, which could result in employee injury, will be corrected prior to operation or use of the equipment.
- (4) Controls for electrical equipment.
 - (a) Electrical amp-volt meters will be installed to provide adequate monitoring of boat electrical power equipment.
 - (b) The boat operator will be able to operate an electrical control or switch to cut the power in case of an accident.
 - (c) The netter will have a deadman switch connected to the power control circuit from the pulsator or generator source. This allows the current between the electrodes to be broken in case of an accident.
 - (d) Power control circuits will not exceed 24 volts.
- (5) Grounding/bonding. All metal surfaces within a metal boat will be electrically connected, grounded, and bonded to the boat hull to eliminate differences in electrical potential that may result in electrical shock. The metal boat may also be used as a cathode.

To avoid possible electrolysis problems when the metal hull is being used as a cathode, zinc strips should be attached to the hull as "sacrificial anodes". The electrolysis will occur on the zinc strips which will preserve the integrity of the hull.

- (6) Battery enclosure. An acid proof, nonmetallic enclosure and holder will be provided for wet cell batteries.
- (7) Conductor protection. All conductors may be installed in a common raceway (conduit) provided each conductor installed is continuous (without connectors, breaks, or splicing), and is independently and correctly installed. All low voltage (24 volts or less) circuits will be contained in separate raceways from those containing high voltage conductors.
- (8) Auxiliary circuits. Lighting and other auxiliary circuits should not exceed 24 volts. Note: 110 volt lamps may be used if the lamp is shielded with a nonconductive cage.
- (9) Lighting.
 - (a) When the boat is to be operated at night, adequate on-board lighting (12-24 volts) will be provided for working areas.
 - (b) Adequate lighting will also be provided while electrofishing to avoid safety hazards such as striking logs, rocks, and overhead tree branches.
- (10) Safety rails. Safety rails will be provided around the outside of the netting area and will be at least 42 inches high and be constructed of at least $\frac{3}{4}$ -inch diameter heavy-walled steel pipe or $1\frac{1}{2}$ -inch heavy wall aluminum pipe. Rails will be so designed to withstand a 200-pound side thrust. The work deck will be covered with a nonskid material and sloped to allow drainage. The high gunnels of wooden draft boats are satisfactory as safety rails.
- (11) Fire extinguisher. Each boat will be equipped with at least one 5-pound type ABC fire extinguisher mounted in a holder for easy access to the boat operator and away from high fire potential sources.
- (12) Personal floatation devices. All occupants will wear U.S. Coast Guard approved personal floatation devices at all times. Life vests that meet the requirements of Type II are designed to turn an unconscious person in the water from a face downward position to a vertical or slightly backward position. Float coats may provide some protection against the loss of body heat if the person were to accidentally fall into cold water.

(13) Standard safety equipment.

- (a) Hip boots will be worn so they can be easily removed in case the boat capsizes.
- (b) Rubber chest waders will also be worn when necessary in order to remain dry as protection against electrical shock.
- (c) Rubber gloves will be worn that are rated above the voltage being used. These will be inspected before each use and replaced at adequate intervals.
- (d) Polaroid-type sunglasses will be worn to reduce glare from the water.

(14) Color coding / labeling of significant hazards. To ensure visibility, the color red will be used to identify fire extinguishers, safety cans, and stop buttons for electrical equipment. The color fluorescent orange will be used to identify all other safety switches.

We do hereby certify that the foregoing Ordinance #07/94 was duly presented and adopted by Resolution #1153/94, by a vote of 4 for, 0 against, 0 silent, with a quorum of 5 being present at a Special Meeting of the Fond du Lac Reservation Business Committee held on April 25, 1994, in Duluth, Minnesota.


Robert B. Peacock, Chairman


Peter J. Defoe, Sec./Treas.

Fond du Lac Reservation Business Committee

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RESOLUTION #1153/94



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Robert B. Peacock

Secretary/Treasurer
Peter J. Defoe

Dist. I Councilman
Clifton Rabideaux

Dist. II Councilman
Daryold Blacketter

Dist. III Councilman
George Dupuis

Executive Director
I. Jean Mulder

The Fond du Lac Reservation Business Committee, on behalf of the Fond du Lac Band of Lake Superior Chippewa, hereby enacts the following Resolution:

WHEREAS, the Fond du Lac Reservation is a sovereignty, created by the Treaty of September 30, 1854, 10 Stat. 1109, as the perpetual home of the Fond du Lac Band of Lake Superior Chippewa, which possesses the inherent jurisdiction and authority to exercise regulatory control within the boundaries of the Fond du Lac Reservation; and

WHEREAS, it is the sovereign obligation of the Fond du Lac Reservation Business Committee, as the Governing Body of the Fond du Lac Band, under the Indian Reorganization Act, 25 U.S.C. § 461 et seq., and in accordance with the Indian Self-Determination Act, 25 U.S.C. § 450 et seq., to assume the responsibilities of Self-Government; and

WHEREAS, the Fond du Lac Reservation Business Committee has determined it to be in the best interests of the Fond du Lac Band to adopt a code governing the electrofishing activities in all parts of the Ceded Territory, which falls within the jurisdiction of the Fond du Lac Reservation Business Committee; and

WHEREAS, the Reservation Business Committee has reviewed the proposed "Fond du Lac Ceded Territory Electrofishing Safety Code," and finds its to be acceptable and in the best interests of the Fond du Lac Band.

NOW THEREFORE BE IT RESOLVED, that the Fond du Lac Reservation Business Committee, the lawfully elected governing body of the Fond du Lac Band of Chippewa, through the written laws of the Band and through the rights retained under the Treaty of September 30, 1854 between the Fond du Lac Band of Lake Superior Chippewa and the United States of America, does hereby enact Ordinance #07/94, entitled "Fond du Lac Ceded Territory Electrofishing Safety Code," to become effective immediately.

We do hereby certify that the foregoing Resolution was duly presented and acted upon by a vote of 4 for, 0 against, 0 silent, with a quorum of 5 being present at a Special Meeting of the Fond du Lac Reservation Business Committee held on April 25, 1994, in Duluth, Minnesota.


Robert B. Peacock, Chairman


Peter J. Defoe, Sec./Treas.