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Marquette Biological Station
1095 Cornerstone Dr.
Marquette, Michigan 49855
U.S.A.

and

U.S. Fish and Wildlife Service
Ludington Biological Station
5050 Commerce Drive
Ludington, Michigan 49431
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and

Fisheries and Oceans Canada
Sea Lamprey Control Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Canada

TECHNICAL OPERATING PROCEDURE

PROCEDURE TITLE:

Procedures for Monitoring Drinking Water Supplies for Contamination by Lampricides

APPLICABILITY:

Procedures apply to measurements of lampricide concentration in drinking water supplies which may be subject to contamination during and following applications of TFM and Bayluscide.

PRINCIPLE:

Water intakes of a small number of communities, institutions, agricultural operations, and individuals within communities may draw water from sources that receive treatment with lampricides.

In effort to ensure lampricides do not reach drinking water, the Sea Lamprey Control partners will notify provincial (including conservation authorities), state, and local municipalities of upcoming lampricide applications (AOP:007.x). Municipalities most familiar with individual water intakes must assess the capabilities of the system (e.g. hydrologic isolation of the intake, reservoir capacity) and determine whether additional measures are required to protect the drinking water source. When available, historical intake monitoring results can be used to assess the potential for drinking water contamination. When system capabilities and historical monitoring are insufficient to establish a low potential of contamination, provincial, state, tribal, and municipal agencies may require Sea Lamprey Control partners to conduct analyses of water samples from specified water intakes within communities following treatment of nearby streams or assessment of nearby offshore areas. For example, this requirement may be stipulated in the MDEQ Certification of Approval which is issued annually to Sea Lamprey Control.

In addition, private residents along various rivers being treated with lampricides have expressed concerns regarding lampricides entering their domestic drinking water supply and have requested monitoring of their

shore wells. In the event a landowner requests well monitoring, the treatment supervisor will contact the program chemist and UMESC to develop a well monitoring plan and arrange for sample analysis.

SAMPLE COLLECTION AND PRESERVATION:

Hand Sampling at large water intake facilities

Employees at the water intake facilities collect water samples daily. Sampling schedules are flexible, but a minimum of one sample is collected per day. Samples are collected in labeled, new, disposable, glass culture tubes or bottles, and are refrigerated until analyzed. If water undergoes filtration to remove contamination, samples of both filtered and raw water may be collected. Samples are collected for a period of time stipulated in the permit. The sampling begins prior to the treatment and continues daily for the length of time specified in the permit. If the facility does not have a carbon filtration system, samples are analyzed daily and contamination is reported immediately to the facility manager.

Automated Sampling

Automatic water samplers may be used to collect water samples (IOP:002.x; TOP:022.x). The bottles are cleaned and rinsed with acetone before use and the intake line on the sampler is purged. The automatic samplers are set to collect one sample each day beginning prior to treatment. Sampling continues for a minimum of one week or a maximum time period defined by the permit. When sampling is complete subsamples may be transferred from the glass bottles into labeled glass culture tubes. The culture tubes are capped and refrigerated until analyzed.

Hand sampling of shore wells

Samples will be taken from shore wells prior to treatment to determine any background interference and analyzed using either a spectrophotometer or high performance liquid chromatography system. The shore wells will be monitored during and after lampricide treatments to determine if the lampricide has entered into the shore well.

EQUIPMENT REQUIRED:

Spectrophotometer or high performance liquid chromatography system
Automatic water sampler (optional)

POTENTIAL INTERFERENCES:

Unidentified contaminants which elute from the chromatography column at the same retention time as the compound of interest.

SAFETY:

No special precautions

DISPOSAL:

No special requirements

REAGENTS:

Reagents used in analyses by spectrophotometry (IOP:012B.x) or high performance liquid chromatography (IOP:015.x).

PROCEDURES:

Water samples are analyzed by spectrophotometry (IOP:012B.x) or high performance liquid chromatography (IOP:015.x). Concentrations of TFM are determined by standard analysis procedures (TOP:018.x) and concentrations of niclosamide are also measured by standard analysis procedures (TOP:021.x).

Analytical results are communicated to drinking water treatment facility staff or shore well users as quickly as possible. A report is prepared annually for the Michigan Department of Natural Resources and Environment, Surface Water Assessment Section, Water Bureau, the Michigan Department of Public Health, or other regulatory permitting agency. Other state, tribal, or provincial reports are submitted as required. Lampricide detections in treated drinking water are reported to the Chemical Review Manager for the lampricides in the Pesticide Re-evaluation Division of U.S. EPA's Office of Pesticide Programs by U.S. Geological Survey Upper Midwest Environmental Science Center (USGS UMESC) as described in AOP:007.x. Reports include types of sampling conducted, dates and times of sample collections, and results of analyses.

REFERENCES:

None

This procedure has been reviewed and approved by the undersigned representatives of the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada.

REVIEWED/APPROVED JESSICA BARBER Digitally signed by JESSICA BARBER Date: 2026.04.09 16:22:07 -04'00' DATE_____

Field Supervisor (U.S.)

REVIEWED/APPROVED VanKempen, Tonia Digitally signed by VanKempen, Tonia DN: C=CA, O=GC, OU=DFO-MPO, CN="VanKempen, Tonia" Reason: I am the author of this document Location: Date: 2026.04.09 11:26:22-04'00' Foxit PDF Editor Version: 13.2.0 DATE_____

Program Manager (Canada)