

## Rapid Response Plan Following Detection of Dreissenid Mussels in Lake DeSmet, Wyoming

Sheridan Regional Fisheries Management Crew, Wyoming Game and Fish Department, 700 Valley View, Sheridan, WY 82801

---

### SUMMARY

Lake DeSmet is a 3,400 surface acre reservoir (at full pool) located about 7 miles northwest of Buffalo, WY. The reservoir is owned by Johnson County and the fishery is managed by the Wyoming Game and Fish Department.

The boating season typically begins at ice-off in March and runs through November or early December. The vast majority of boating use is from residents (87%) from the surrounding communities of Buffalo, Sheridan and Gillette. Anglers (75%), typically with simple fishing vessels, make up the majority of the boats. There are three concrete boat ramps at Lake DeSmet and shore launching, other than small watercraft that can be carried, is very rare.

Upon an initial detection of dreissenid mussels in Lake DeSmet, the goal would be to minimize the risk of spreading mussels to other waters while awaiting follow up sampling results. During this six-week period, the Monument boat ramp would be closed and all boating traffic directed to the two Mikesell Potts boat ramps. This will ensure inspection of all boats leaving Lake DeSmet with a single check station instead of two, cutting personnel needs in half. Current regional personnel will operate this check station from ½ hour before sunrise to ½ hour after sunset. We anticipate we will need 4-6 people to sufficiently operate the check station. Nightly boat ramp and shore launching closures are recommended to ensure all boats are inspected.

Depending on follow up sampling results, the reservoir could remain Suspect or be elevated to Positive or Infested status. All three possibilities would entail a longer-term response which will require hiring a contract biologist and six seasonal inspectors to operate the check station. Check stations will continue to inspect and decontaminate every watercraft leaving Lake DeSmet to minimize the risk of spreading mussels to other waters.

Startup costs of exit inspections following initial detection will be assimilated through regional personnel and equipment. As the program progresses, costs increase dramatically with the purchase of signs, pickup truck, decontamination units, office trailer and construction of an upgraded check station at Mikesell Potts. Initial (first year) construction and operating costs to contain dreissenid mussels in Lake DeSmet are estimated at \$319,000 to \$352,000 depending on status level. Annual operating costs after the initial year are estimated at approximately \$200,000.

## INTRODUCTION

Zebra (*Dreissena polymorpha*) and quagga (*Dreissena bugensis*) mussels are aquatic invasive species (AIS) that have far-reaching negative impacts on natural resources, water infrastructure, recreation, and can be attributed to significant economic loss. Zebra mussels are native to the Black and Caspian seas and were first discovered in the Great Lakes in 1988. Quagga mussels are native to the Dnieper River Drainage in Ukraine and were first found in the Great Lakes in 1989. Since their initial introductions, these species have spread across most of the United States, and have been detected in Wyoming's neighboring states of Nebraska, South Dakota, Montana, Colorado, and Utah. The close proximity of zebra and quagga mussels to Wyoming elevates the threat of introduction and increases the need for plans to contain them if detected.

Currently, Wyoming's AIS program is focused on outreach, watercraft inspection and monitoring, with the overall goal of keeping invasive species such as zebra and quagga mussels out of the state. Wyoming law requires inspection of all watercraft entering the state and the Wyoming Game and Fish Department (WGFD) currently maintains 14 inspection stations (primarily at Department of Transportation Ports of Entry) that intercept incoming watercraft and inspect them for the presence of AIS. The WGFD AIS program also conducts inspections at various waters by roving personnel and at regional offices. Annual monitoring for a variety of AIS, including zebra and quagga mussels, is conducted on priority waters throughout Wyoming and an outreach program is in place to educate the public about the threats of AIS and what they can do to prevent their spread.

If zebra or quagga mussels are detected in a Wyoming water, immediate action will be necessary to prevent their spread to other waters. This rapid response plan is a water-specific plan that outlines the steps needed to quickly mobilize personnel and equipment to provide exit inspections and, if necessary, decontaminations of all boats leaving the affected water. This plan will be initiated when zebra or quagga mussel veligers (larvae) or adults are detected in a sample from Fremont Lake and are verified by independent experts and genetic analysis. At that point, the lake will enter Short-term Suspect Status. This coincides with the period of time necessary to conduct additional sampling and testing necessary to verify whether zebra or quagga mussels are present (up to six weeks). If follow-up sampling does not detect zebra or quagga mussels, the water will enter Long-term Suspect Status and monthly monitoring will be initiated. If zebra or quagga mussels are not detected for three years, the water will once again be considered negative. Conversely, if two sampling events within a 12-month period detect zebra or quagga mussels, the water will enter Positive Status and will not be considered negative again unless mussels are not detected in monthly monitoring for five years. Finally, a water will enter Infested Status when evidence shows a recruiting and reproducing population of zebra or quagga mussels is established. At this point, eradication of mussels is highly unlikely and containment efforts will be necessary for the foreseeable future.

This plan provides guidance for the initial response to detection of dreissenid mussels at each of these four status levels and is intended to be implemented quickly and act as the guiding document for initial decision making following detection. It is not intended as a long-term containment plan, but will outline the action necessary to provide short-term containment while a long-term containment and monitoring plan is developed.

## CONFIRMATION OF DREISSENIID MUSSELS

Sampling of Wyoming waters is conducted annually in accordance with the “Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual” (WGFD 2019). High priority waters are sampled twice per season (June or July, and September or October), and lower priority waters are sampled once per season in September or October. To determine whether Wyoming waters contain evidence of AIS, specimens of adult or juvenile crayfish, snails, mollusks, plants, etc. are collected during routine sampling and any specimen suspected of being AIS must be positively identified by at least two independent experts. Only samples collected by the WGFD may be used to change the classification of a water. Samples collected by a third party will be used as a notification of a possible detection which must be confirmed by a WGFD sample.

To meet the minimum criteria for detection of dreissenid mussels, an adult or juvenile specimen must be verified by two independent experts and confirmed by DNA, or a veliger (larval form) must be identified and verified using cross-polarized light microscopy by two independent experts and confirmed by DNA analysis (PCR and gene sequencing).

Based on sampling results, waters are given certain classifications related to their dreissenid mussel status:

A water body that has not been sampled for aquatic invasive species is classified as *Unknown/Not Tested*. A water body at which sampling is ongoing and nothing has been detected (or nothing has been detected within the time frames for de-listing) is classified as *Negative*. Currently, all waters in Wyoming are classified as either *Unknown/Not Tested*, or *Negative*.

A water body classified as *Inconclusive* has not met the minimum criteria for detection but evidence of dreissenids has been documented. For example, evidence of a mussel veliger is detected via microscopy but cannot be confirmed by DNA analysis. This is a temporary classification and additional sampling of this water will be conducted to determine whether the water body is classified as negative (no detections in subsequent sample) or suspect (verified detection in subsequent sample).

A water body classified as *Suspect* indicates a water at which one sample has been verified by visual confirmation (visual identification of adult or microscopy identification of veliger) and this sample was confirmed as dreissenid by DNA analysis (PCR and gene sequencing). In this scenario, additional sampling will be conducted to determine whether another sample taken within 12 months detects evidence of dreissenids. If a subsequent sample does detect dreissenids, this water will then be classified as *Positive*.

A water body classified as *Positive* indicates a water at which two or more sampling events within a 12-month period meet the minimum criteria for detection. For example, samples from two different sampling events are verified by both visual identification (including microscopy) and DNA confirmation (PCR and gene sequencing).

In many cases, a water classified as *Positive* will ultimately become *Infested* which is a water body with an established (recruiting and reproducing) population of dreissenid mussels. For example, lakes Mead and Powell are considered infested waters as they have large populations of reproducing dreissenids and mussels are readily evident on the shoreline and submerged materials such as docks, buoys, etc.

In some instances, the classification of a water body can be downgraded over time. The exact reasons why dreissenids are detected at a water once, then not again in subsequent

sampling, or are detected in a water classified as *Positive* but never establish a population, remains largely unknown.

A water body initially classified as *Inconclusive* can be de-listed to *Negative* status after one year of negative testing results including at least one sample taken in the same month of subsequent year as the initial positive sample (to account for seasonal environment variability). The time frame for de-listing a water body extends from there with a water body initially classified as *Suspect* requiring three years of negative testing to re-classify to *Negative*, a *Positive* water body requiring five years of negative testing to re-classify to *Negative*, and an *Infested* water body requiring a successful eradication or extirpation event and a minimum of five years of negative testing results post-eradication event to re-classify to *Negative*.

## **WATER DESCRIPTION**

Lake DeSmet is an off channel reservoir located about 7 miles northwest of Buffalo, WY. The land surrounding the reservoir to above the high water mark is owned by Johnson County. Johnson County, along with Wyoming Game and Fish Department, manage the recreation use at Lake DeSmet. There are no marinas on the water at DeSmet but the Lake Stop provides fuel, lodging, storage, RV hookups and groceries about ½ mile from the reservoir. Several private residences have been built along the western shoreline in the last decade.

Water stored in Lake DeSmet is mainly used for agriculture although typically less than 10,000 acre-feet are annually delivered for agriculture uses. There are significant industrial water rights in Lake DeSmet that have yet to be put to wide scale use. Johnson County fills large water trucks directly from the reservoir for use on road projects and other uses.

Historically, DeSmet was a playa lake that has been artificially raised several times to its current full pool elevation of 4,620 feet. At full pool, Lake DeSmet is 3,400 surface acres, stores 235,000 acre-feet of water and has about 18 miles of shoreline. Lake DeSmet is approximately 5.5 miles long by 1 mile wide and depths averaging about 70 feet with the deepest area 120 feet. Water is diverted from Piney Creek and flows through a tunnel or through Leiter Ditch to fill Lake DeSmet and outflows are sent via a small ditch to Piney Creek.

### ***Boating Season***

The boating season at Lake DeSmet generally runs from ice-off in March into late November or early December. Anglers make up the majority of boating use because water temperatures are cold. Non-angling boating has become more popular in recent years but is typically limited to the warmest months (July and August). From January 1, 2018 through November 11, 2019, a total of 859 watercraft were inspected that were bound for Lake DeSmet. Of those, 54 (6%) were high risk inspections and 1 decontamination was conducted.

### ***Access Areas***

There are four public access sites including the North Dam, Monument (Game and Fish owned), Mikesell Potts and South Dam (Figure 1). Access to Lake DeSmet from Interstate 90 includes Piney Creek Road (North Dam), Shell Creek Road (Monument) and Lake DeSmet Road (Mikesell Potts and South Dam).



Figure 1. Public use areas at Lake DeSmet

Boat ramps are located at the Monument access area and two ramps in Mikesell Potts including the Barkey Draw ramp and Boat Dock Bay ramp. There are a few (<10) private docks at Lake DeSmet but no private boat ramps. Shore launching of small watercraft may occur at the Mikesell Potts and Monument areas but is not common.

### ***Residency and Watercraft Used***

Based on January 1, 2018 through November 11, 2019 inspection data, the majority of boater use at Lake DeSmet is resident boaters (87%), with most from nearby Buffalo, Sheridan

and Gillette. Of the non-resident boaters, most were from Montana (54%) followed by South Dakota (15%) and North Dakota (15%). A big draw every year is the Lion's Club Memorial Day Derby but no other major fishing tournaments annually occur on Lake DeSmet.

Most watercraft are simple angling boats, with typical V-hull, one outboard motor (63%) and a few live wells. During the hot summer months, a few ballast/wakeboarding boats use Lake DeSmet. Motorized boat use (87%) dominates over non-motorized use (13%).

## **RAPID RESPONSE – SHORT-TERM SUSPECT STATUS**

In the event that a sample from Lake DeSmet is confirmed positive for dreissenid mussels, Lake DeSmet will be considered Short-term Suspect (defined above). After the initial detection, follow-up sampling will occur and results will take approximately six weeks to be reported. During that time, it will be necessary to minimize the risk of spreading mussels to other waters. Within one week, resources will need to be in place to perform required clean, drain, dry exit inspections of all boats leaving the reservoir and decontamination of undrainable areas, such as ballast tanks and motors. All watercraft leaving Lake DeSmet will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

At Short-term Suspect Status, there will not be time to hire personnel or purchase equipment. Therefore, the initial response will rely on existing personnel and equipment. Immediately after initial detection, job announcements and requisitions will be prepared so personnel can be hired and equipment can be purchased as quickly as possible once follow-up results are available.

### ***Communication Plan***

Upon the initial detection of dreissenid mussels, WGFD's AIS Coordinator will begin the administrative communication chain outlined in the WGFD Administrative Rapid Response Plan (WGFD 2020). Initial contacts in the administrative communication chain include the AIS Coordinator contacting the Communications Director, the Regional Fisheries Supervisor, and the Fish Division Chief, who contacts the WGFD Director. On the regional level, the Sheridan Regional Fisheries Supervisor will begin the regional communication chain to disseminate information about the detection to internal and external partners and stakeholders (Figure 2). Internal WGFD contacts include Regional Fish Division personnel, the Regional Wildlife Supervisor, the Regional Habitat and Access Coordinator and the Regional I&E Specialist. The Regional Wildlife Supervisor will then contact the Buffalo Game Warden as well as local Wildlife and Terrestrial Habitat biologists.

The Sheridan Regional Fisheries Supervisor or biologists will also contact key stakeholders, including Johnson County, Lake DeSmet Advisory Board, Lower Clear Creek Irrigation District and Montana AIS personnel. They will also contact the Lake Stop Marina. Boater contacts made through the Wyoming AIS inspection stations will be used as a primary notification and education outlet during this time period. The AIS Coordinator will also contact and coordinate with WGFD communication personnel, including Regional I&E (see Public Outreach, below), and regional stakeholders (Western Regional Panel, federal partners, etc.).

Key information to convey to internal and external partners and stakeholders should include the name of the affected water, which species was collected, who collected the sample, where the sample was collected, which agency/expert analyzed the sample, any relevant information about the sample, who to contact for more information, a brief description of containment protocols that will be put in place, and any critical changes for the public. Every effort should be made to quickly contact all partners and stakeholders prior to beginning public outreach efforts. The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made to initiate outreach efforts.

Contact information for key individuals can be found in Appendix A.

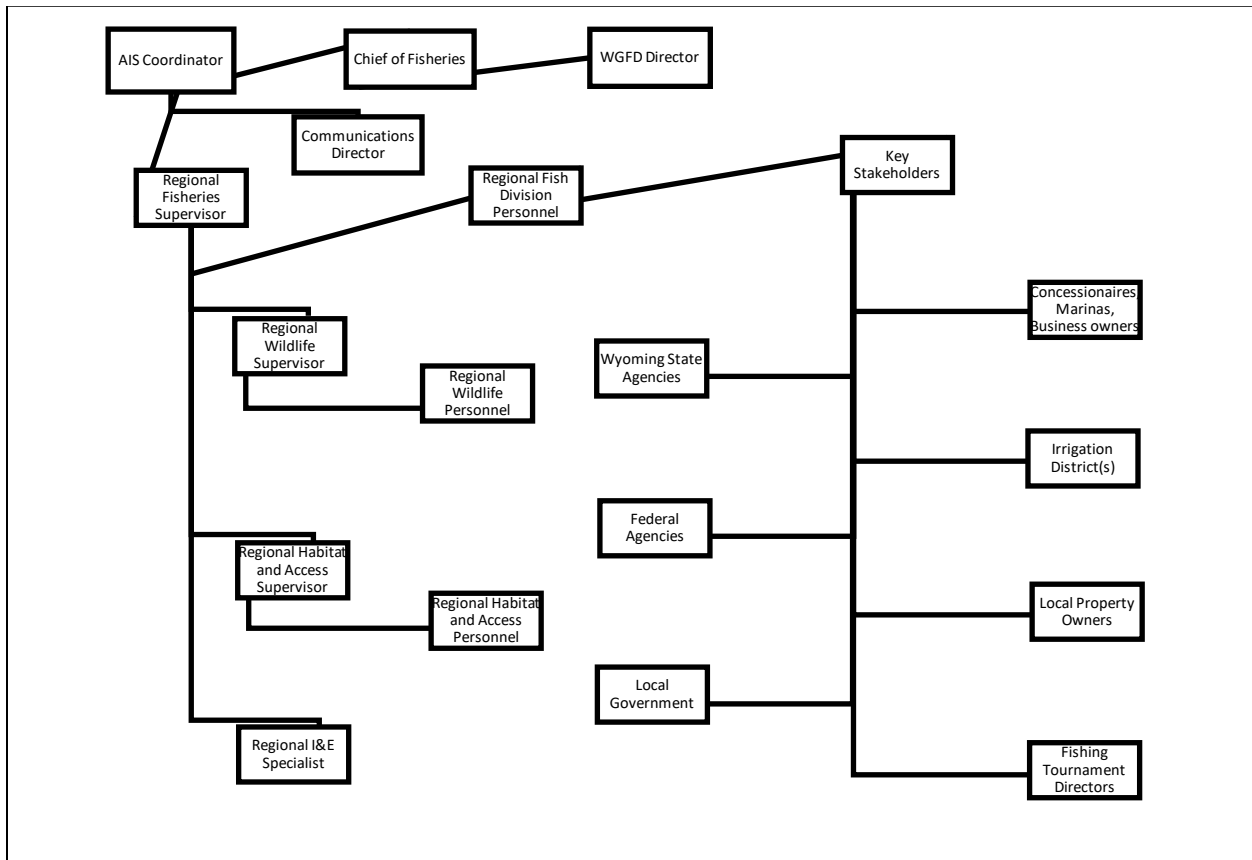


FIGURE 2. Communication chain for dissemination of information on the local and regional level following a dreissenid mussel detection in a Wyoming water.

The focus of this plan is on containing invasive mussels through inspection and decontamination of exiting watercraft. Consideration should be given to other potential vectors that could spread invasive mussels (e.g., aircraft used to combat wildfires, commercial water hauling equipment) and communication and coordination should occur with these entities to ensure containment. Current information on preventing the spread of aquatic invasive species in firefighting and water hauling equipment can be found on the WGFD website at <https://wgfd.wyo.gov/Fishing-and-Boating/Aquatic-Invasive-Species-Prevention/AIS-Construction-and-Fire>.

## **Closures**

Closing the Monument boat ramp is recommended during Short-term Suspect Status. The ramp will be completely closed by locking a cable across the top of the ramp. Signs will be installed to direct boaters to the Mikesell Potts area. This will allow us to operate one check station instead of two and reduce our personnel needs during the 6 week Short-term Suspect Status period in half. The Mikesell Potts boat ramps are less than 3.5 miles from the Monument ramp so the additional distance for the public is negligible. Also, the Mikesell Potts ramps are useable in any wind direction while it is almost impossible to launch and load at the Monument ramp during a strong southerly wind. A prohibition of all shore launching is recommended since vehicles that launch on shore instead of an established boat ramp may not encounter our decontamination station. Night closure is recommended at this status level to ensure every boat leaving DeSmet receives an exit inspection. In coordination with Johnson County, boat ramps at Boat Dock Bay and Barkey Draw will be closed with a cable and signs at the end of boating day. Boat ramps at Lake DeSmet will be open ½ hour before sunrise to ½ hour after sunset. If a boat is not off the water by ½ hour after sunset, it will remain on the water until the ramps open the following morning.

## **Check Station**

One check station will be located inside the entrance to Mikesell Potts (Figure 3). Location of the check station and future construction will be coordinated closely with Johnson County. This location will intercept all boats leaving the two open boat ramps. Check station hours of operation will progress with day length and will be operated from ½ hour before to ½ hour after sunset.





Figure 3. Check station location, Lake DeSmet.

### **Staffing Plan**

The check station will need to be staffed by a minimum of two inspectors at any given time (4 total each day). Staffing levels will depend on time of year and anticipated boating traffic, but could require 4-6 individuals per week based on a 40 hour work week. Personnel staffing the check station during Short-term Suspect Status will be regional personnel including regional fish personnel, wardens, warden trainees, wildlife management, habitat and access and associated technicians. Additional staffing could be requested from other regions and statewide roving personnel.

### **Supplies and Equipment**

Four trailered decontamination units are available in the Sheridan Region. Two need to stay at Keyhole and Beulah, but the other two can be deployed to Lake DeSmet for this 6 week period. Water supply to fill the decontamination units is available from wells at the Mikesell Potts area. Signs will need to be made to inform boaters shore launching is prohibited, they need to stop at the exit check stations and hours of operation. Signs can be made locally in Sheridan.

With Lake DeSmet only 30 miles from the Sheridan Regional office, we do not anticipate that housing will be needed. If inspectors staying in a camp trailer greatly increases effectiveness, we will station a camper in the Mikesell Potts area.

### ***Public Outreach***

The AIS Administrative Rapid Response Plan outlines the general public outreach plan for suspect, positive or infested determinations for Wyoming waters (WGFD 2020). Following an initial sample testing positive for dreissenid mussels, the AIS Coordinator will contact the Communication Director at WGFD Cheyenne Headquarters. Prior to initiating the public outreach plan, key partners and stakeholders should be contacted according to the Communication Plan (above). The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made. The Communications Director will then initiate the Communications Plan. A statewide press release will be sent out and information will be posted on the AIS website and any necessary social media. The AIS Coordinator, Regional Fisheries Supervisor and Regional AIS Specialist will collaborate with the Sheridan Regional I&E Specialist to relay information about Short-term Suspect Status at Lake DeSmet through media outlets (newspapers, radio, etc.). Regional Information and Education personnel will coordinate all communications efforts with the Communications Director.

## **RAPID RESPONSE – LONG-TERM SUSPECT STATUS**

If initial follow-up sampling does not yield a positive result, Lake DeSmet would enter Long-term Suspect Status (defined above) and remain at this level for up to three years if no additional positive samples are found. The goal during this period is still to minimize the risk of spreading mussels to other waters. During the first year (from initial detection through the following boating season), we will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry exit inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. All watercraft leaving Lake DeSmet will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

If there is no confirmation of dreissenid mussel presence after the first full boating season, efforts will switch in years two and three to a lower level response, with a goal of contacting a significant number of boaters, but placing more responsibility on boaters to obtain an exit inspection. Inspectors will still conduct clean, drain, dry exit inspections on boats leaving the water and decontaminate ballast tanks and other undrainable areas. If feasible, they will continue to flush all motors. If not, they will drain outboards motors and only flush inboard/outboard and inboard motors as these motor types are difficult to drain completely. Public outreach will increase via multiple outlets to highlight the potential threat at the suspect water.

### ***Communication Plan***

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Sheridan Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Sheridan Region and key stakeholders (Appendix A) of follow-up sampling results.

### ***Closures***

Closing the Monument boat ramp is recommended during Long-term Suspect Status. The ramp will be completely closed by locking a cable across the top of the ramp. Signs will be installed to direct boaters to the Mikesell Potts area. This will allow us to operate one check station instead of two and reduce our personnel needs during Long-term Suspect Status. The Mikesell Potts boat ramps are less than 3.5 miles from the Monument ramp so the additional distance for the public is negligible. Also, the Mikesell Potts ramps are useable in any wind direction while it is almost impossible to launch and load at the Monument ramp during a strong southerly wind. A prohibition of all shore launching is recommended since vehicles that launch from shore instead of established boat ramps may not encounter our decontamination station. A night closure is recommended at this status level to ensure every boat leaving Lake DeSmet receives an exit inspection. In coordination with Johnson County, boat ramps at Boat Dock Bay and Barkey Draw will be closed with a cable and signs at the end of the boating day. Boat ramps at Lake DeSmet will be open ½ hour before sunrise to ½ hour after sunset. If a boat is not off the water by ½ hour after sunset, it will remain on the water until the ramps open the following morning. During year 1 of Long-term Suspect Status, we will be able to assess the number of

night boaters (likely all anglers). This will help determine whether to keep night closures or lift them in years 2 and 3 of Long-term Suspect Status.

### ***Check Station***

During years 1 through 3 of Long-term Suspect Status, the number and location of the one exit inspection station will remain the same as for Short-term Suspect Status. The check station will be located inside the entrance to the Mikesell Potts area (Figure 3). Location of the check station and construction will be coordinated closely with Johnson County. This location will intercept all boats leaving the two open boat ramps. Check station hours of operation will progress with day length and will be operated from ½ hour before to ½ hour after sunset. The check station would open April 1 and close November 30. Check station hours may be adjusted in years 2 and 3 based on patterns observed in year 1.

### ***Local Boater Program***

A local boater program (detailed in the Administrative Rapid Response Plan; WGFD 2020) will be very applicable at Lake DeSmet. Approximately 87% of boater inspections are resident boats with a majority of those residents from nearby communities. The local boating public would likely be appreciative of such a program. A local boater program would minimize staffing levels, and reduce wear and tear on equipment (fewer decontaminations). We should strongly consider pursuing a local boater program during year 1 of Long-term Suspect Status, realizing that implementation would likely occur by year 2. Given the high cost estimate for year 1 of Long-term Suspect Status, prompt implementation of a local boater program should be strongly considered.

### ***Staffing Plan***

The check station will be staffed by a minimum of two inspectors at any given time (four total each day). Staffing levels will depend on time of year and anticipated boating traffic, but could require 4-6 individuals per week based on a 40 hour work week. Personnel staffing the check station during Long-term Suspect Status will be a contract biologist and six inspectors. Additional staffing could be requested from other regions and statewide roving personnel. Appendix B details the anticipated staffing budget for Long-term Suspect Status.

### ***Supplies and Equipment***

Four trailered decontamination units are available in the Sheridan Region. Two need to stay at Keyhole and Beulah, but the other two can be deployed to Lake DeSmet following Short-term Suspect Status. For years 1-3, we will budget for two additional decontamination units to be used at Lake DeSmet. Water supply to fill the decontamination units is available from wells at the Mikesell Potts area. We will budget for an office trailer, ¾ ton pickup truck, trailer and two stock tanks to haul water from the well site to the check station. The pickup truck will also be used to haul the decontamination unit and office trailer. A trash pump will be used to transfer water from the stock tanks to the decontamination unit. Signs will need to be made to inform

boaters they need to stop at the exit check stations and hours of operation. Signs can be made locally in Sheridan.

A three year commitment for the decontamination station warrants an office trailer on site for crew safety and comfort. Because power is not currently available at the check station, generators will be purchased to power the trailer. In addition to the office trailer, we would closely coordinate with the Johnson County Road and Bridge Department to improve the road and drainage at the check station site at an anticipated cost of \$25,000. Water and power hookups are anticipated not to exceed \$10,000.

With Lake DeSmet only 30 miles from the Sheridan Regional Office, we do not anticipate housing will be needed. If inspectors staying in a camp trailer greatly increases effectiveness, we will station a camper in the Mikesell Potts area.

### ***Public Outreach***

At Long-term Suspect Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Sheridan Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Long-term Suspect Status on Lake DeSmet.

## **RAPID RESPONSE – POSITIVE STATUS**

Lake DeSmet will be considered positive for dreissenid mussels if two or more sampling events within a 12-month period meet the minimum criteria for detection (defined above). Lake DeSmet will remain at Positive Status for five consecutive years of negative sample results, at which time it will be downgraded to Negative Status. Alternatively, if an established population of mussels is detected during that five years, it will be upgraded to Infested Status.

The goal during Positive Status is still to minimize the risk of spreading mussels to other waters. We will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. If live mussels are found on any boats during exit inspections, they will be fully decontaminated and consideration will be given to upgrading Lake DeSmet to Infested Status. All watercraft leaving Lake DeSmet will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Seals will be red in color to designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

### ***Communication Plan***

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Sheridan Region internal communication chain outlined in the Short-term Suspect Status section (above) will be used to inform the Sheridan Region and key stakeholders of changes in status level.

## **Closures**

Continuing the closure of the Monument boat ramp is recommended during Positive Status. This will allow us to operate one check station instead of two and reduce our personnel needs during Positive Status. Continued prohibition of all shore launching is recommended since vehicles that launch from shore may not encounter our decontamination station. Night closure is recommended to ensure every boat leaving Lake DeSmet receives an exit inspection. In coordination with Johnson County, boat ramps at Boat Dock Bay and Barkey Draw will be closed with a cable and signs at the end of the boating day. Boat ramps at Lake DeSmet will be open ½ hour before sunrise to ½ hour after sunset. If a boat is not off the water by ½ hour after sunset, it will remain on the water until the ramps open the following morning.

## **Check Station**

During Positive Status, the one exit inspection station will remain the same as for Long-term Suspect Status (Figure 3). This location will intercept all boats leaving the two open boat ramps (Boat Dock Bay and Barkey Draw). Check station hours of operation will progress with day length and will be operated from ½ hour before to ½ hour after sunset. The check station would open April 1 and close November 30.

## **Local Boater Program**

A local boater program (detailed in the Administrative Rapid Response Plan; WGFD 2020) will be very applicable at Lake DeSmet. Approximately 87% of boater inspections are resident boats with a majority of those residents from nearby communities. The local boating public would likely be appreciative of such a program. A local boater program would minimize staffing levels, and reduce wear and tear on equipment (fewer decontaminations).

## **Staffing Plan**

The check station will be staffed by a minimum of two inspectors at any given time (four total each day). Staffing levels will depend on time of year and anticipated boating traffic, but could require 4-6 individuals per week based on a 40 hour work week. Personnel staffing the check station during Positive Status will be a contract biologist and six inspectors. Additional staffing could be requested from other regions and statewide roving personnel. Appendix B details the anticipated staffing budget for Positive Status.

## **Supplies and Equipment**

We do not expect any additional supplies or equipment from what was detailed in Long-term Suspect Status.

## **Public Outreach**

At Positive Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Sheridan Regional

I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Positive Status on Lake DeSmet.

## **RAPID RESPONSE – INFESTED STATUS**

Lake DeSmet will be considered Infested if an established (recruiting or reproducing) population of dreissenid mussels is identified. Lake DeSmet will remain at Infested Status until methods for complete eradication are discovered and implemented. Based on the best available technology and science at the time of this publication, it is expected that Lake DeSmet would remain in Infested Status in perpetuity.

The goal during Infested Status is still to minimize the risk of spreading mussels to other waters. We will need to provide the capacity to contact all boaters coming off the water, conduct exit inspections, and ensure all boats leaving have undergone a full decontamination. All watercraft leaving Lake DeSmet will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

### ***Communication Plan***

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Sheridan Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Sheridan Region and key stakeholders of changes in status level.

### ***Closures***

Continuing the closure of the Monument boat ramp is recommended during Infested Status. This will allow us to operate one check station instead of two and reduce our personnel needs during Infested Status. Continued prohibition of all shore launching is recommended since vehicles that launch on shore may not encounter our decontamination station. Night closure is recommended to ensure every boat leaving Lake DeSmet receives an exit inspection. In coordination with Johnson County, boat ramps at Boat Dock Bay and Barkey Draw will be closed with a cable and signs at the end of boating day. Boat ramps at Lake DeSmet will be open ½ hour before sunrise to ½ hour after sunset. If a boat is not off the water by ½ hour after sunset, it will remain on the water until the ramps open the following morning.

### ***Check Station***

During Infested Status, the number and location of one exit inspection station will remain the same as for Long-term Suspect Status (Figure 3). This location will intercept all boats leaving the two open boat ramps (Boat Dock Bay and Barkey Draw). Check station hours of operation will progress with day length and will be operated from ½ hour before to ½ hour after sunset. The check station would open April 1 (earlier if ice conditions allow) and close November 30.

### ***Local Boater Program***

A local boater program (detailed in the Administrative Rapid Response Plan; WGFD 2020) will be very applicable at Lake DeSmet. Approximately 87% of boater inspections are resident boats with a majority of those residents from nearby communities. The local boating public would likely be appreciative of such a program. A local boater program would minimize staffing levels, and reduce wear and tear on equipment (fewer decontaminations).

### ***Staffing Plan***

The check station will need to be staffed by a minimum of two inspectors per day (four total each day). Staffing levels will depend on time of year and anticipated boating traffic, but could require 4-6 individuals per week based on a 40 hour work week. Personnel staffing the check station during Positive Status will be a contract biologist and six inspectors. Additional staffing could be requested from other regions and statewide roving personnel. Appendix B details the anticipated staffing budget for Infested Status.

### ***Supplies and Equipment***

We do not expect any additional supplies or equipment from what was detailed in Long-term Suspect Status.

### ***Public Outreach***

At Infested Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Sheridan Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with Infested Status on Lake DeSmet.

## **REFERENCES**

- WGFD. 2019. Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual. Wyoming Game and Fish Department, Cheyenne, WY.
- WGFD. 2020. Wyoming Game and Fish Department Administrative Dreissenid Mussel Rapid Response Plan. Wyoming Game and Fish Department, Cheyenne, WY.



## APPENDIX A: KEY CONTACTS

		Phone	Email
<b><u>Wyoming Game &amp; Fish Department</u></b>			
Josh Leonard	Aquatic Invasive Species Coordinator	307-721-1374	joshua.leonard@wyo.gov
Paul Mavrakis	Sheridan Region Fisheries Supervisor	307-675-5478	paul.mavrakis@wyo.gov
Craig Smith	Sheridan Region Wildlife Supervisor	307-675-5470	craig.smith1@wyo.gov
Reed Moore	Sheridan Region AIS Specialist	307-675-5482	reed.moore@wyo.gov
Gordon Edwards	Sheridan Region Fisheries Biologist	307-675-5479	gordon.edwards@wyo.gov
Andrew Nikirk	Sheridan Region Fisheries Biologist	307-675-5480	andrew.nikirk@wyo.gov
Jim Seeman	Buffalo Game Warden	307-684-5223	jim.seeman@wyo.gov
Christina Schmidt	Information & Education Specialist	307-675-5481	christina.schmidt@wyo.gov
Seth Roseberry	Habitat and Access Coordinator	307-675-5477	seth.roseberry@wyo.gov
<b><u>Johnson County</u></b>			
Cheryl Benner	Administrative Assistant	307-684-2262	cbenner@johnsoncowy.us
Scott Pehringer	Supervisor- JN Co. Road & Bridge	307-684-2262	spehringer@johnsoncowy.us
<b><u>MT AIS</u></b>			
Thomas Woolf	AIS Bureau Chief	406-444-1230	Thomas.Woolf@mt.gov
Sean Flynn	Eastern MT AIS Supervisor	406-230-1745	Sean.Flynn@mt.gov
<b><u>Lake DeSmet Advisory Board (LDAB)</u></b>			
Mike Whitaker	LDAB Chairman	307-684-2262	mwhitaker@johnsoncounty.us

## APPENDIX B: ANNUAL BUDGETS ASSOCIATED WITH EACH STATUS LEVEL

### SHORT-TERM SUSPECT STATUS

<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Camp Groceries (person days)	168	\$24	\$4,032
	<b>Subtotal</b>			<b>\$4,032</b>
<b>Supplies</b>	<b>Description</b>	<b># of units</b>	<b>Cost/unit</b>	<b>Total Cost</b>
	Check station signs	10	\$100	\$1,000
	<b>Subtotal</b>			<b>\$1,000</b>
	<b>Total</b>			<b>\$5,032</b>

**LONG-TERM SUSPECT STATUS YEAR 1**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 10 months	10	\$4,543	\$45,430
	Technician 1, 8 months	8	\$2,863	\$22,904
	Technician 2, 8 months	8	\$2,863	\$22,904
	Technician 3, 8 months	8	\$2,863	\$22,904
	Technician 4, 8 months	8	\$2,863	\$22,904
	Technician 5, 6 months	6	\$2,863	\$17,178
	Technician 6, 6 months	6	\$2,863	\$17,178
	Outside help for busy times	1	\$4,553	\$4,553
	<b>Subtotal</b>			<b>\$175,955</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Purchase 3/4 ton pickup	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	9	\$500	\$4,500
	State Motor Pool Sedan 2	5	\$500	\$2,500
	<b>Subtotal</b>			<b>\$40,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Per Diem for outside help	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$4,710</b>
<b>Supplies</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	Construction of new road	1	\$25,000	\$25,000
	Power and water hook ups	1	\$10,000	\$10,000
	16-foot utility trailer, 10,000lb rating	1	\$4,000	\$4,000
	550 gal plastic ag tank	2	\$450	\$900
	2-inch trash pump	1	\$300	\$300
	Office Trailer	1	\$20,000	\$20,000
	Generator 2-pack with parallel	2	\$1,900	\$3,800
	Decon Unit with attachments	2	\$12,500	\$25,000
	Misc supplies 231 - 239 series			\$5,000
	Check Station signs	6	\$650	\$3,900
	<b>Subtotal</b>			<b>\$97,900</b>
	<b>Total</b>			<b>\$318,565</b>

**LONG TERM SUSPECT STATUS YEARS 2-3**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 10 months	10	\$4,543	\$45,430
	Technician 1, 8 months	8	\$2,863	\$22,904
	Technician 2, 8 months	8	\$2,863	\$22,904
	Technician 3, 8 months	8	\$2,863	\$22,904
	Technician 4, 8 months	8	\$2,863	\$22,904
	Technician 5, 6 months	6	\$2,863	\$17,178
	Technician 6, 6 months	6	\$2,863	\$17,178
	Outside help for busy times	1	\$4,553	\$4,553
	<b>Subtotal</b>			<b>\$175,955</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	State Motor Pool Sedan 1	9	\$500	\$4,500
	State Motor Pool Sedan 2	5	\$500	\$2,500
	<b>Subtotal</b>			<b>\$7,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Camp Groceries (person days)	480	\$24	\$11,520
	Per Diem	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$16,230</b>
<b>Supplies</b>	<b>Description</b>	<b># of units</b>	<b>Cost/unit</b>	<b>Total Cost</b>
	misc supplies 231-239			\$2,500
	<b>Subtotal</b>			<b>\$2,500</b>
	<b>TOTAL</b>			<b>\$201,685</b>

## POSITIVE STATUS

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 10 months	10	\$4,543	\$45,430
	Technician 1, 8 months	8	\$2,863	\$22,904
	Technician 2, 8 months	8	\$2,863	\$22,904
	Technician 3, 8 months	8	\$2,863	\$22,904
	Technician 4, 8 months	8	\$2,863	\$22,904
	Technician 5, 6 months	6	\$2,863	\$17,178
	Technician 6, 6 months	6	\$2,863	\$17,178
	Outside help for busy times	1	\$4,553	\$4,553
	<b>Subtotal</b>			<b>\$175,955</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Purchase 3/4 ton pickup <sup>a</sup>	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	9	\$500	\$4,500
	State Motor Pool Sedan 2	5	\$500	\$2,500
	<b>Subtotal</b>			<b>\$40,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Camp Groceries (person days)	480	\$24	\$11,520
	Per Diem for outside help	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$16,230</b>
<b>Supplies</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	Construction of new road <sup>a</sup>	1	\$25,000	\$25,000
	Power and water hook ups <sup>a</sup>	1	\$10,000	\$10,000
	16-foot utility trailer, 10,000lb rating <sup>a</sup>	1	\$4,000	\$4,000
	550 gal plastic ag tank <sup>a</sup>	2	\$450	\$900
	2-inch trash pump <sup>a</sup>	1	\$300	\$300
	Office Trailer <sup>a</sup>	1	\$20,000	\$20,000
	Generator 2-pack with parallel <sup>a</sup>	2	\$1,900	\$3,800
	Decon Unit with attachments <sup>a</sup>	2	\$12,500	\$25,000
	Misc supplies 231 - 239 series			\$5,000
	Check Station signs <sup>a</sup>	6	\$650	\$3,900
	<b>Subtotal</b>			<b>\$97,900</b>
	<b>Total</b>			<b>\$330,085</b>

<sup>a</sup> These items will not need to be purchased if transitioning from Long-term Suspect Status.

## INFESTED STATUS

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 10 months	10	\$4,543	\$45,430
	Technician, 8 months x 4	32	\$2,863	\$91,616
	Technician, 6 months x 2	12	\$2,863	\$34,356
	Outside help for busy times	1	\$4,553	\$4,553
	<b>Subtotal</b>			<b>\$175,955</b>
Vehicle	Description	# of Months	Cost/Month	Total Cost
	Purchase 3/4 ton pickup <sup>a</sup>	1	\$33,000	\$33,000
	State Motor Pool Sedan 1	9	\$500	\$4,500
	State Motor Pool Sedan 2	5	\$500	\$2,500
	<b>Subtotal</b>			<b>\$40,000</b>
Travel	Description	# of Days	Cost/Day	Total Cost
	Per Diem for outside help	60	\$157	\$9,420
	<b>Subtotal</b>			<b>\$9,420</b>
Supplies	Description	# of Units	Cost/Unit	Total Cost
	Construction of new road <sup>a</sup>	1	\$25,000	\$25,000
	Power and water hook ups <sup>a</sup>	1	\$10,000	\$10,000
	16-foot utility trailer, 10,000lb rating <sup>a</sup>	1	\$4,000	\$4,000
	550 gal plastic ag tank <sup>a</sup>	2	\$450	\$900
	2-inch trash pump <sup>a</sup>	1	\$300	\$300
	Office trailer <sup>a</sup>	1	\$20,000	\$20,000
	Decon unit with attachments <sup>b</sup>	4	\$12,500	\$50,000
	Generator 2-pack with parallel <sup>a</sup>	2	\$1,900	\$3,800
	Misc supplies 231 - 239 series			\$5,000
	Check Station signs <sup>a</sup>	6	\$650	\$3,900
	<b>Subtotal</b>			<b>\$122,900</b>
Utilities	Description	# of Units	Cost/Unit	Total Cost
	Power Hookup	1	\$4,000	\$4,000
	<b>Subtotal</b>			<b>\$4,000</b>
	<b>Total</b>			<b>\$352,275</b>

<sup>a</sup> Will not need to be purchased if transitioning from Suspect or Positive status.

<sup>b</sup> - Only two units will need to be purchased if transitioning from Suspect or Positive status