MEMORANDUM OF UNDERSTANDING (MOU)
BETWEEN THE
MICHIGAN DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
AND THE
MICHIGAN DEPARTMENT OF NATURAL RESOURCES (COOPERATORS)
AND THE
UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)
VETERINARY SERVICES

ARTICLE 1 – PURPOSE

The purpose of this MOU is to outline and agree on the requirements for split state status regarding the risk of bovine tuberculosis (bTB), namely, Modified Accredited status and Accredited Free status pursuant to Title 9, Code of Federal Regulations (CFR) Part 77, and the Tuberculosis Eradication Program's Uniform Methods and Rules, Effective January 1, 2005, (UM&R). It outlines an agreed upon framework for implementing and assessing strategies to address bTB in both livestock and wildlife in Michigan with the objective of achieving Accredited Free status.

ARTICLE 2 – BACKGROUND

In October 2004, the Michigan Department of Agriculture and Rural Development (MDARD) submitted an application for split state status using the criteria established by the United States Department of Agriculture (USDA) for recognition of a zone or region with distinct bovine tuberculosis status, as delineated in 9 CFR 77.3 *et seq*.

Bovine tuberculosis regulations as delineated in 9 CFR 77.4(a)(3) require, in pertinent parts, that a State must enter an MOU with APHIS in which the state agrees to adhere to any condition for zone recognition particular to that request within the National Tuberculosis Eradication Program.

In 2009, 2011, 2014, 2016 and 2019 MOUs were signed by MDARD, the Michigan Department of Natural Resources (MDNR), and USDA APHIS Veterinary Services (VS), which established criteria for maintenance of an Accredited Free Zone (AFZ), Modified Accredited Zone (MAZ) and Modified Accredited Advanced Zone (MAAZ) for bTB in Michigan. Pursuant to the CFR, the MOUs were executed by the State of Michigan in order to agree on conditions for maintaining and advancing zones based on disease risk, and to continue progression toward the ultimate goal of eradicating bovine tuberculosis from the northern portion of Lower Michigan. Michigan obtained AFZ status for all counties except Alcona, Alpena, Montmorency, and Oscoda on September 10, 2014.

ARTICLE 3 – AUTHORITIES

APHIS' authority to control and/or eradicate bTB exists under the Animal Health Protection Act, in section 10411 (7 USC 8310) and in 10409 (7 USC 8308). This Act provides, among other things, the authority for USDA to cooperate with States or political subdivisions thereof, domestic or international associations or organizations, Indian Tribes, and individuals, to improve livestock and to control or eradicate any communicable diseases of livestock.

MDARD and MDNR's authorities exist under Michigan's Animal Industry Act, P.A. 466 of 1988, as amended; the Natural Resources and Environmental Protection Act, P.A. 451 of 1994, as amended; and the Privately Owned Cervidae Producers Marketing Act, P.A. 190 of 2000, as amended.

ARTICLE 4 - MUTUAL AGREEMENT

It is mutually agreed upon that the cattle, bison, and cervid rules and regulations of the National Tuberculosis Eradication Program will be followed, including VS Memos, VS Notices, VS Guidance Documents, pertinent parts of the Code of Federal Regulations; the Uniform Methods and Rules, January 1, 2005, including any future revisions; and the Cervidae Uniform Methods and Rules, January 1999, including any future revisions.

ARTICLE 5 - COOPERATOR RESPONSIBILITES

Michigan Department of Agriculture and Rural Development (MDARD) is responsible for the following provisions:

A) Modified Accredited Zone (MAZ) Counties of Alcona, Alpena, Montmorency, and Oscoda

1. Annual whole herd testing of all cattle herds except freezer beef herds. Whole herd testing will include all cattle 12 months of age and older, and all non-natural additions of any age. All MAZ cattle 15 days of age and older tested for bTB are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag at the time of testing.
2. Requiring official electronic identification for any live cattle and bison moved from premises in the MAZ and retrieving information concerning animal identification and animal movement within 48 hours upon request or as needed. All MAZ cattle 15 days of age and older except cattle moved from freezer beef herds to custom slaughter plants are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag prior to movement.
3. All cattle moved from a premises in the MAZ must comply with the following:
    a. Cattle 60 days of age and older to be moved to any premises other than a USDA Food and Safety Inspection Service (FSIS) approved or custom slaughter plant must originate from a herd that has a Verified Wildlife Risk Mitigation (WRM) or Enhanced Wildlife Biosecurity (EWB) Plan and must comply with one of the following prior to movement:
        i. Originate directly from a bovine tuberculosis accredited free herd, or
        ii. Originate from a herd that has completed a negative whole herd bovine tuberculosis test within 12 months prior to movement, and completes a negative bovine tuberculosis test within 60 days prior to movement, or
        iii. If a steer or spayed heifer completes a negative bovine tuberculosis test within 60 days prior to movement.
    b. Cattle less than 60 days of age to be moved to any premises other than a USDA FSIS approved or custom slaughter plant must originate from a herd that has been determined to have a Verified WRM or EWB Plan and originate from a herd that has completed a negative whole herd bovine tuberculosis test within 12 months prior to movement.

4. MDARD will maintain and enforce a certificate system to track intrazonal and interzonal movements of live cattle from farm of origin to slaughter or next premises destination from the MAZ. This certificate system shall be substantially the same as CFR (77.12) requirements for interstate movements. All individual cattle and bison data as specified in 9 CFR, 86.1 Definitions, Interstate Certificate of Veterinary Inspection (ICVI), will be included on the certificate. The certificate must accompany the cattle and bison upon movement across a zonal boundary except as exempted below:

    a. Cattle moving directly to slaughter from the first livestock market can move on the market invoice listing the individual animal back tags, until MDARD and APHIS can develop and implement an alternative certificate system that does not impede the flow of commerce.

    b. This requirement does not apply to cattle moving to the federally approved livestock market Northern Michigan Livestock Exchange (NMLE) located in Gaylord, MI because the tuberculosis test status of all incoming animals is verified on-site. The invoice generated by NMLE meets this requirement provided it contains the same information required on a movement certificate (excluding the seller's name, address, and animal age) along with individual animal weights.

5. Movements of cattle and bison from the MAZ will be monitored in Michigan-licensed livestock auctions on sale days to confirm that the cattle and bison are officially identified, tested, and permitted, as required, and through other methods as necessary to ensure compliance with requirements. Market coverage by MDARD and/or APHIS staff will be based on the likelihood of MAZ animals being sold in each market. The following markets will have routine and continuous coverage on sale days: Northern Michigan Livestock Exchange in Gaylord, and United Producers, Inc in St. Louis and Cass City. Other markets will be monitored as needed to verify compliance with applicable laws.

6. MDARD will utilize State authority to randomly intercept and inspect vehicles that are transporting livestock on public roads within Michigan for compliance with State and Federal split state status requirements and this MOU. MDARD will maintain an agreement with a law enforcement agency for an average of 10 hours of patrols per week, which includes at least one stop per three days when averaged over each calendar year, conducting stops and inspections pertaining to vehicles that may be transporting cattle between zones within Michigan to ensure that they are being moved in compliance with testing, official identification, and movement certificate requirements.

7. When an affected herd is detected, an epidemiologic investigation will be initiated. If whole genome sequence (WGS) and epidemiologic investigation determines the likely source of infection, additional 6-4A trace investigations will not be assigned unless requested by APHIS. When WGS and epidemiologic investigation indicates the infection was either a result of exposure to local free-ranging cervid species or a result of movement of cattle from a known affected herd, this information, in conjunction with testing history and other relevant information, will be used by MDARD and local APHIS staff to determine the appropriate 6-4B investigations to be assigned.

B) MAZ Buffer Area - Portions of Otsego, Crawford, Roscommon, Ogemaw, Cheboygan, and Iosco Counties approximating, but not less than, 10 miles from the border of the MAZ as described in Attachment A, page 15.

1. Surveillance will consist of whole herd testing of all cattle herds in calendar year 2023 and every three years thereafter. Whole herd testing will include all cattle 12 months of age and older and all non-natural additions of any age. All cattle that are required to test must be tested once every three years. MDARD will have the discretion to test all herds every third year or test one-third of the herds each year.
2. When an affected herd is detected, an epidemiologic investigation will be initiated. If WGS and epidemiologic investigation determines the likely source of infection, additional 6-4A trace investigations will not be assigned unless requested by APHIS. When WGS and epidemiologic investigation indicates the infection was either a result of exposure to local free-ranging cervid species or a result of movement of cattle from a known affected herd, this information, in conjunction with testing history and other relevant information, will be used by MDARD and local APHIS staff to determine the appropriate 6-4B investigations to be assigned.

C) Presque Isle

1. All Presque Isle County cattle 15 days of age and older except cattle moved from freezer beef herds to custom slaughter plants are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag prior to movement. All Presque Isle County cattle 15 days of age and older tested for bTB are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag at the time of testing.
2. All cattle herds, except freezer beef herds, will receive an annual whole herd test until December 31, 2023. Testing will include all cattle 12 months of age and older and all non-natural additions of any age.
3. After December 31, 2023, the following adjustments will be made:
    a. If a bTB affected cattle herd is identified prior to or following December 31, 2023:
        i. If the WGS of the infection and epidemiologic investigation suggests evidence of infection from local free-ranging cervid species and does not reveal evidence of infection through the movement of cattle, annual whole herd surveillance testing will continue to be conducted for three years from the time of the identification, unless renegotiated. The specific area of the county to be included within annual whole herd surveillance testing will be determined following evaluation of the situation and discussion between MDARD and APHIS.
        ii. If the WGS of the infection and epidemiologic investigation suggests evidence of infection due to movement of cattle, see part b below.
    b. If no additional bTB affected cattle herds are identified prior to December 31, 2023, or if the affected herds have a WGS and epidemiologic investigation results consistent with infection through the movement of cattle regardless of date identified, a new surveillance area (PI Buffer Zone) will be defined which contains an area approximating, but no smaller than, 10 miles from the border of the MAZ.
        i. Surveillance in the PI Buffer Zone of Presque Isle County will include whole herd testing of each cattle herd, except freezer beef herds, on an annual basis. Whole herd testing will include all cattle 12 months of age and older and all non-natural additions of any age.

ii. Surveillance in the remainder of Presque Isle County not including the PI Buffer Zone will include whole herd testing of each cattle herd, except freezer beef herds, every 3 years. Whole herd testing will include all cattle 12 months of age and older and all non-natural additions of any age.

c. Any cattle herd in an area which requires annual surveillance testing and which maintains biosecurity practices equivalent to those required in the EWB Area of the MAZ, including targeted deer removal, and receives a negative whole herd tuberculosis test not less than 6 months after implementation will receive a whole herd tuberculosis test every 3 years.

d. Any cattle herd in an area which requires whole herd surveillance testing every 3 years and which maintains practices equivalent to those required in the EWB Area of the MAZ, including targeted deer removal, and receives a negative whole herd tuberculosis test not less than 6 months after implementation will be exempt from surveillance testing.

4. All cattle moved from a premises in Presque Isle County must comply with the following:

   a. Cattle 60 days of age and older to be moved to any premises other than a USDA FSIS approved or custom slaughter plant must originate from a herd that has a Verified WRM or EWB Plan and must comply with one of the following prior to movement:

      i. Originate directly from a bovine tuberculosis accredited free herd, or

      ii. Originate from a herd that has completed a negative whole herd bovine tuberculosis test within 12 months prior to movement and completes a negative bovine tuberculosis test within 60 days prior to movement, or

      iii. If a steer or spayed heifer completes a negative bovine tuberculosis test within 60 days prior to movement, or

      iv. Cattle from herds verified as meeting the requirements of the EWB Plan after December 31, 2023, or that are in the surveillance area designated under Article 5 MDARD Item C3bii above, will not be subject to testing prior to movement.

   b. Cattle less than 60 days of age to be moved to any premises other than a USDA FSIS approved or custom slaughter plant must originate from a herd that has been determined to have a Verified WRM or EWB Plan and originate from a herd that is compliant with all applicable surveillance testing.

5. MDARD will maintain and enforce a certificate system to track intrazonal and interzonal movements of live cattle from farm of origin to slaughter or next premises destination from Presque Isle County as outlined under Article 5 MDARD Item A4 above. If the PI Buffer Zone is established, this system can be discontinued for Presque Isle County outside of the PI Buffer Zone.

6. Movements of cattle and bison from Presque Isle County will be monitored in Michigan-licensed livestock auctions on sale days to confirm that the cattle and bison are officially identified, tested, and permitted, as required, and through other methods as necessary to ensure compliance with requirements as outlined under Article 5 MDARD Item A5 above. If the PI Buffer Zone is established, this monitoring can be discontinued for Presque Isle County outside of the PI Buffer Zone.

7. MDARD will utilize State authority to randomly intercept and inspect vehicles that are transporting livestock on public roads within Michigan for compliance with State and Federal split state status requirements and this MOU as outlined in Article 5 MDARD Item A6. above. If the PI Buffer Zone is established, this monitoring can be discontinued for Presque Isle County outside of the PI Buffer Zone.
8. When an affected herd is detected, an epidemiologic investigation will be initiated. If WGS and epidemiologic investigation determines the likely source of infection, additional 6-4A trace investigations will not be assigned unless requested by APHIS. When WGS and epidemiologic investigation indicates the infection was either a result of exposure to local free-ranging cervid species or a result of movement of cattle from a known affected herd, this information, in conjunction with testing history and other relevant information, will be used by MDARD and local APHIS staff to determine the appropriate 6-4B investigations to be assigned.

D) Reporting

MDARD will report various data points via VS Form 6-38 including narratives in the annual bTB report (AFZ) and semiannual bTB report (MAZ) as detailed in Appendix 2, pages 16-17.

E) General Provisions

1. MDARD will quarantine all premises that contain animals suspicious for the presence of *M. bovis* as outlined in the 2005 Uniform Methods and Rules. On a case-by-case basis, APHIS may approve movement of animals from a quarantined premises where animal welfare or other concerns related to quarantined animals exist.

   All bTB affected herds in Michigan must be quarantined until depopulated or until a test-and-removal program as specified by APHIS is completed. Herds designated as bTB affected with a WGS consistent with infection by local transmission from free-ranging cervid species will be required to participate in the targeted deer removal program for 5 years unless otherwise specified by an approved herd plan.
2. Circle testing will be performed as outlined below.
   a. If a bTB affected cattle herd is identified all fenceline contact herds will be tested. Additional area testing beyond fenceline contact herds will not be required around bTB affected cattle herds unless determined to be necessary by MDARD and APHIS.
   b. If a bTB infected free-ranging deer is identified herd testing will be conducted as follows:
      i. No additional testing is required for herds located within the MAZ.
      ii. Outside the MAZ all cattle herds within a 10-mile radius will receive a whole herd bTB test of all cattle 12 months of age and older, and all non-natural additions of any age, within 12 months unless they meet one of the following:
         1. The herd has received a negative whole herd bTB test within the previous 12 months.
         2. The herd has been verified to maintain biosecurity practices equivalent to those required in the Enhanced Wildlife Biosecurity Area of the MAZ, including targeted deer removal.

3. The herd owner has documented negative bTB surveillance of free-ranging cervids harvested from their property at a level acceptable to MDARD and APHIS through the following:
    a. Seasonal hunting license(s), and/or
    b. Disease Control Permits, and/or
    c. Participation in the Hunter Access Program.

3. MDARD and APHIS will continue to collaborate with USDA APHIS Wildlife Services (APHIS WS, as APHIS WS' resources allow), university and agency-based researchers, and representatives of livestock producers to increase the biosecurity of herds in the highest risk area of the MAZ. This effort is designed to change the long-term cattle raising practices that may lead to an increased risk of bTB infecting herds from surrounding deer populations.
4. MDARD will manage and maintain an EWB Plan for cattle herds located in the highest risk area of the MAZ located in and around Deer Management Unit (DMU) 452. All herds in this Enhanced Wildlife Biosecurity area must have 1) a completed herd assessment, 2) an agreement allowing APHIS WS access to conduct targeted deer removal, without inhibiting it, on their farm, and 3) implemented all High-Risk Enhanced Wildlife Biosecurity recommendations. All three parameters must be met or the herd will not be considered as EWB verified and will not be eligible to move live cattle other than directly to slaughter.
5. MDARD, APHIS, or APHIS WS personnel will conduct inspections of each herd participating in either the EWB or WRM Plans on a bi-annual basis.
6. MDARD will complete herd inventory reconciliation for any whole herd test performed in the MAZ and the section of Presque Isle County that requires annual whole herd testing by regulatory or accredited veterinarians. Herd inventory reconciliation ensures accountability by comparing herd inventories between two herd tests. Herd inventory reconciliation includes ID collection, ID matching to previous herd test inventory and identifying any new or missing identification devices in the herd inventory. Herds with animals that cannot be accounted for by current databases, owner records or other methods will be assigned to the compliance unit for investigation and resolution. Reconciliation of herd tests will be completed within 60 days.
7. All testing for quarantine release or testing of high-risk herds will be performed by regulatory veterinarians only. High-risk herds shall consist of:
    a. 60-day whole-herd retests after the removal of a reactor animal.
    b. Herds under test and remove herd plans.
    c. Herds with a history of lesions suggestive of bTB.
    d. Newly assembled herds on premises where a herd has been depopulated because of bTB.
    e. Herds in contact with affected herds, e.g., fenceline contact.
    f. 6-4A herds (trace-ins).
    g. 6-4B herds (trace-outs).
    h. 6-35 herds (slaughter traces)
    i. Other herds of high interest as defined through collaboration with APHIS and the Cattle Health Program.
8. Herd Plans for bTB affected herds will be developed and submitted to APHIS for review following receipt of APHIS official modeling results and discussions with herd owners. Herd

plans will be developed in consultation with the owner prior to the initiating activities of a test and remove herd plan or a depopulation herd plan.

Michigan Department of Natural Resources (MDNR) is responsible for the following provisions:

MDNR will develop and implement a Wildlife Disease Management Plan that will contain the following activities. See Appendix 4, page 18, for complete citations referenced within the following MDNR sections.

A) Targeted Surveillance

MDNR will conduct targeted surveillance for bTB in free-ranging white-tailed deer within Deer Management Units (DMU) 452 and 487 (Figure 1). Targeted surveillance is defined as testing of free-ranging cervids resulting from deliberate MDNR actions to gather samples, including out-of-season take, active promotion of testing of hunter-harvested deer, mandatory testing of all elk, voluntary testing of deer taken under Hunter Access Program participation, Deer Management Assistance permits, Crop Damage Permits, and Disease Control Permits.

An agent-based model integrating surveillance and other pertinent data (e.g., Ramsey et al. 2016) will be used to determine the number of deer by sex and age demographic to be sampled within DMUs 452 and 487. To predict bTB concentration areas within DMUs 452 and 487, habitat (Felix et al. 2004), epidemiological (Miller et al. 2007) and other pertinent data will be used in conjunction with a Force of Infection model (USDA 2021; Figure 2). Identified bTB concentration areas will be used to focus surveillance efforts to maximize detection of bTB positive deer and prevention actions. Resulting models will be used to determine geographic variation in deer densities and bTB risk in juxtaposition to cattle farms. This will inform where deer removal strategies should be prioritized. Models will be developed and updated as data and resources allow. If available resources prohibit the use of the models, the default targeted and passive surveillance numbers of free-ranging deer will be as noted in Table 1 below:

Table 1.

Zone	County*	DNR priority	Goal
MAZ	Alcona	1	1200
	Alpena		
	Montmorency		
	Oscoda		
AFZ	**Cheboygan**	5	300
	Otsego	4	300
	Crawford	5	300
	Roscommon	4	300
	Ogemaw	3	300
	Iosco	3	300
	Presque Isle	2	500
TOTAL			**3500**
*Counties in bold are those MDNR would like APHIS WS to put extra effort in deer reduction and surveillance under this strategy			

Should passive surveillance (see below) detect bTB positive deer outside DMUs 452 and 487, the best available modeling data will be used to inform APHIS WS of where to spatially focus targeted surveillance. Approval will be provided to APHIS WS to conduct surveillance.

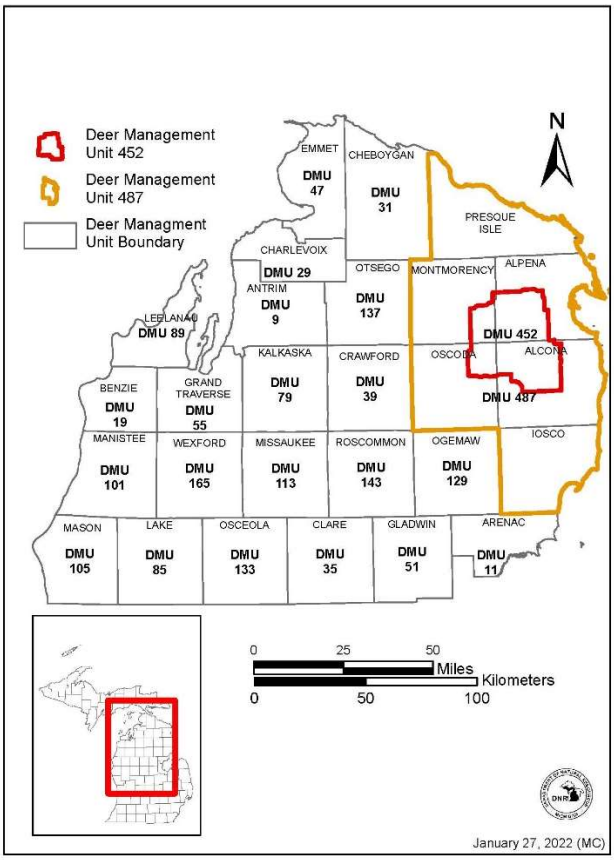

Figure 1. MDNR Deer Management Units, including DMUs 452 and 487 in northeast Michigan where targeted surveillance and prevention actions for bTB will be focused.

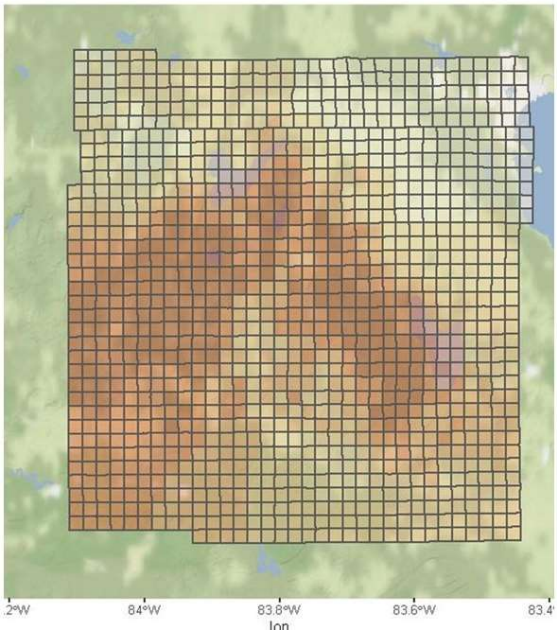

Figure 2. Example of spatially predicted bTB incidence in deer (all ages) in the core outbreak area estimated from a Force of Infection model. Darker the brown is greater probability of incidence. D. O'Brien, unpublished data.

B) Passive Surveillance

Passive surveillance is defined as testing of free-ranging cervids voluntarily submitted to MDNR by the public as a part of ongoing statewide monitoring of wildlife health. Other than being promoted through MDNR public education efforts, passive surveillance does not entail active effort on the part of the agency to acquire samples. MDNR will use passive surveillance in DMUs where bTB has been documented, but probability of incidence is too low to predict using geostatistical modeling (D. O'Brien, MDNR, personal communication). Animals submitted to the Wildlife Disease laboratory for chronic wasting disease surveillance will be screened for bTB whenever possible.

C) Prevention Strategies

MDNR will conduct or assist with the following:

1. Targeted deer management efforts (e.g., baiting ban; Rudolph et al. 2006, Ramsey et al. 2016) in DMUs 452 and 487 on a local scale to prevent transmission of bTB between deer and cattle.
2. Provide APHIS WS with approval to conduct targeted removal of deer on cattle farms within identified bTB concentration areas in DMUs 452 and 487.
3. Maintain a simple process for cattle producers and adjacent landowners to obtain no-cost disease control permits valid for harvesting deer year-round in DMUs 452 and 487.
4. Work with collaborators to continue conducting research concerning the epidemiology of bTB and potential intervention strategies, including targeted removal, vaccination (Cosgrove et al. 2012, Ramsey et al. 2016, VerCauteren et al. 2018), and non-lethal methods (e.g., livestock protection dogs; Gehring et al. 2010). Incorporate relevant research findings into existing surveillance and disease reduction activities as resources allow.

D) Outreach and Education

MDNR will conduct or assist with the following:

1. Educate hunters to look for tuberculosis lesions through information in the MDNR's Hunting and Trapping Guide.
2. Continue employment of a full-time Bovine Tuberculosis Coordinator to work with hunt clubs, landowners, and other cooperators in DMUs 452 and 487 to increase efforts to reduce (*sensu* Ramsey et al. 2014) bTB from the deer herd. This includes working with deer management cooperatives to increase the harvest of deer in DMUs 452 and 487.
3. Promote the use of non-lethal strategies (Gehring et al. 2010) to cattle producers when possible.
4. Continue to assign conservation officers to enforce feeding and baiting ban regulations.
5. Promote the Hunter Access Program to all landowners in DMUs 452 and 487 to incentivize increased deer harvest. This program compensates private landowners for allowing hunters access to their properties.

E) Reporting

MDNR will report various data points via VS Form 6-38 narratives in the annual bTB report as detailed in Appendix 3, page 17.

ARTICLE 6 –APHIS RESPONSIBILITIES

USDA APHIS VS is responsible for the following:

1. Provide expertise in epidemiology, diagnostic support, risk assessment, and testing.
2. Provide assistance with improving slaughter surveillance at Federal slaughter establishments, including assisting MDARD with obtaining cattle movement data from other States.
3. Assist with indemnity payments as funding allows for diagnostic suspect (as applicable), reactor, exposed, or depopulation in the following:
    a. High-risk herds as described in Article 5 MDARD Item E7.
    b. Cattle in herds undergoing whole herd surveillance testing, movement testing, or testing in circles related to the finding of bTB in wildlife or cattle.
    c. Cattle and bison that are positive to the caudal fold and/or gamma interferon tuberculin test during the assessment and removal phase, and positive to the comparative cervical testing during the verification phase of testing in herds undergoing a test and remove herd management plan.
4. Assisting with payments for animal and specimen transportation fees, laboratory analysis, data storage, and management support. APHIS will assume responsibility for timely appraisal and payment for animals indemnified with federal funds.
5. Assisting the Cooperator with cattle and bison movement monitoring and compliance investigations involving movement of cattle between zones and interstate through the activities of USDA APHIS Investigative and Enforcement Services officers.
6. Assisting APHIS WS with wildlife-risk management activities on farms located within the MAZ, Cheboygan, and Presque Isle Counties.
7. Providing support for acquisition and development for electronic identification, hardware, and software in accordance with Animal Disease Traceability and USDA regulations. Provide data entry assistance necessary to monitor tuberculosis testing and animal movements within the MAZ, between zones, and assist with fulfilling reporting requirements of split state status and this MOU.
8. Reviewing the progress of the bTB eradication activities covered under the split state status and this MOU and reporting recommendations to the Cooperators.
9. Supporting implementation of the Wildlife Risk Mitigation and the Enhanced Wildlife Biosecurity plans.
10. APHIS will conduct annual reviews of the bTB eradication program in Michigan to determine compliance with this MOU and all other applicable regulations.
11. Designate in writing the Cooperators APHIS' Authorized Departmental Officer's Designated Representative (ADODR)/Program Manager (PM) who shall be responsible for collaboratively administering the activities conducted under this MOU**.** Should this individual be temporarily detailed to another position or on extended absence, a letter will be issued to the Cooperators by the APHIS signatory official to appoint a temporary ADODR/PM.

ARTICLE 7 – STATUS

The requirements and agreements of the MOU must be in place and the prevalence rates in cattle and bison for each zone in compliance with requirements of the *CFR* to maintain status. If it is determined that the conditions of this MOU or any other applicable regulations are not being met after conducting a program review, APHIS will withdraw Michigan's split state status and reclassify the entire State of Michigan in accordance with the CFR and the state's overall herd prevalence. At any time there are concerns by any party to this MOU concerning the prevalence of bTB in the AFZ, buffer area or MAZ cattle or bison herds, conditions of this MOU may be discussed and amendments made as agreed upon by all parties.

To be eligible to apply for advancement from modified accredited to modified accredited advanced status, the MAZ must demonstrate to the Administrator that it complies with the provisions of the Uniform Methods and Rules--Bovine Tuberculosis Eradication, Effective January 1, 2005, and that tuberculosis has been found in one or fewer cattle and/or bison herds for each of the most recent two years.

Progress toward both preventing the spread of tuberculosis among and reducing the disease from wildlife through a successful Wildlife Disease Management Plan, will be monitored utilizing trends over time in three indices within Deer Management Unit (DMU) 452:

1) apparent prevalence and incidence in deer of all ages other than fawns,

2) apparent prevalence and incidence in yearling deer (ages 1 and 1.5 years), and

3) age-specific force of infection.

Reporting of these indices will be included in the annual bovine tuberculosis report. Other trend indices may be added to or substituted for these as mutually considered appropriate by MDNR and APHIS. For purposes of this MOU, trends will be assessed over the five-year period including and preceding the most recent deer hunting season. For the purposes of this MOU, statistical trends in prevalence will be assessed using a two-tailed Cochran-Armitage Test for Trend.

The Wildlife Disease Management Plan must be reviewed by MDNR annually and a new plan jointly developed between the MDNR and USDA when needed. If two or more of the Wildlife Disease Management Plan indices noted above demonstrate a statistically significant increasing trend over the preceding five-year period for three consecutive reporting years, USDA will conduct an evaluation and initiate discussions with MDARD and MDNR regarding approaches to either modify the zone boundaries or implement additional actions.

ARTICLE 8 – STATEMENT OF NO FINANCIAL OBLIGATION

Signature of this MOU does not constitute a financial obligation on the part of APHIS. Each signatory party is to use and manage its own funds in carrying out the purpose of this MOU. Transfers of funds or items of value are not authorized under this MOU.

ARTICLE 9 - LIMITATIONS OF COMMITMENT

This MOU, and any continuation thereof, shall be contingent upon available funds appropriated by each party's funding source. The USDA receives its funds through appropriations from the Congress of the United States. It is understood and agreed that any monies allocated for purposes

covered by this MOU shall be expended in accordance with its terms and in the manner prescribed by the fiscal regulations and/or administrative policies of the party making the funds available. If fiscal resources are to transfer, a separate agreement must be developed by the parties.

Cooperator (MDARD and MDNR) funds are subject to and contingent upon, available funding from the Michigan Legislature and/or Executive branches. Funds may be limited, discontinued, or eliminated if the Legislature fails to appropriate sufficient funds, or if an Executive Order, directive, or departmental decision limits, discontinues, or eliminates the ability of the Cooperator to utilize appropriated funding.

This MOU and any continuation thereof shall be contingent upon the availability of funds appropriated by the Congress of the United States. It is understood and agreed that any monies allocated for purposes covered by this MOU shall be expended in accordance with its terms and the manner prescribed by the fiscal regulations and/or administrative policies of the party making the funds available. If fiscal resources are to transfer, a separate agreement must be developed by the parties.

ARTICLE 10 - CONGRESSIONAL RESTRICTION

Pursuant to 41 USC 6306, no member of or delegate to Congress shall be permitted to share any or part of this MOU or to any benefit to arise there from.

ARTICLE 11 – NON-DISCRIMINATION CLAUSE

The United States Department of Agriculture prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where application, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. Not all prohibited bases apply to all programs.

ARTICLE 12 – LIABILITIES

USDA will hold the Cooperator harmless from any liability arising from the negligent act or omission of the USDA officer or employee acting within the scope of his or her employment to the extent compensation is available pursuant to the Federal Tort Claims Act (FTCA), except for negligent actions or omissions of the Cooperator, its employees, agents or subcontractors, and employees or agents of the subcontractor(s). Such relief shall be provided pursuant to the procedures set forth in the FTCA and applicable regulations.

The United States of America will not be held liable for any property damage or personal injury resulting from the use of federally owned real estate and personal property loaned to the Cooperator under this MOU. The Cooperator assumes responsibility for any and all property damage and personal injury resulting from the use of said real and personal property and further agrees to save and hold harmless the United States of America from any and all claims for such property damage and personal injury. The Cooperator further agrees to reimburse the United States of America by and through USDA for any property damage to any Federally-owned real

and personal property, less normal wear and tear, which may occur through the use of said property under this MOU.

ARTICLE 13 – EFFECTIVE DATE AND DURATION

Upon signature of this MOU, the State of Michigan MDARD and MDNR agree to the conditions for split state status for bTB as defined in 9 CFR Part 77 and described within. This MOU is effective following the date of signature and will continue in effect through April 15, 2025. Both parties acknowledge that a signed MOU is required for maintenance of split state status and that in the absence of a current MOU split state status may be rescinded by USDA.

ARTICLE 14 – AMENDMENTS AND TERMINATION

This MOU may be amended at any time by mutual agreement of the parties in writing. This MOU may be terminated by either party upon sixty (60) days written notice to the other party.

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
VETERINARY SERVICES

BY: _____ _____
Rosemary Sifford — Date
Deputy Administrator
Veterinary Services

MICHIGAN DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

BY: Gary McDowell 4/15/2022
Gary McDowell — Date
Director

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

BY: Daniel Eichinger 4/15/2022
Daniel Eichinger — Date
Director

Attachment A: MAZ Buffer Zone Area 01/03/2022 – UPDATED June 27, 2022

Otsego County:
Central Part Corwith Township 32N 02W sections 01-04, 09-16, 21-28, 33-36.
Entirety of East Part Corwith Township 32N 01W
Dover Township 31N 02W sections 01-04, 09-16, 21-28, 33-36
Entirety of Charlton Township 29N 01W, 30N 01W, and 31N 01W
North Part Chester Township 30N 02W sections 01-05, 08-17, 20-29, 32-36
South Part Chester Township 29N 02W sections 01-05, 08-17, 20-29, 32-36

Crawford County:
Northwest Part Lovells Township 28N 02W sections 01-05, 08-17, 20-29, 32-36
Entirety of Northeast Part Lovells Township 28N 01W
Entirety of Southeast Part Lovells Township 27N 01W
Northeast Part Grayling Township 27N 02W sections 01-05, 08-17, 20-29, 32-36
Southeast Part Grayling Township 26N 02W sections 01-05, 08-17, 20-29, 32-36
Entirety of North Part Branch Township 26N 01W
Entirety of Southeast Part Branch Township 25N 01W
West Part Branch Township 25N 02W sections 01-05, 08-17, 20-29, 32-36

Roscommon County:
Entirety of Au Sable Township 24N 01W
North Part Higgins Township 24N 02W sections 01-05, 08-16, 21-28, 34-36
South Part Higgins Township 23N 02W sections 01, 02, 11, 12
North Part Richfield Township 23N 01W sections 01-18, 20-24

Ogemaw County:
Entirety of Northwest Part Foster Township 24N 01E
Entirety of Northeast Part Foster/West Part Rose Township 24N 02E
South Part Foster Township 23N 01E sections 01-30
Entirety of East Part Rose Township 24N 03E
Entirety of Goodar Township 24N 04E
Klacking Township 23N 02E sections 01-30
Cummings Township 23N 03E sections 01-24
Hill Township 23N 04E sections 01-24

Iosco County:
Entirety of Oscoda Township 24N 06E, 24N 07E, 24N 08E, and 24N 09E
Entirety of North Part Plainfield Township 24N 05
Southwest Part Plainfield Township 23N 05E sections 01-24
Southeast Part Plainfield Township 23N 06E sections 01-24
East Part Wilbur Township 23N 08E sections 01-24
West Part Wilbur Township 23N 07E sections 01-24
AuSable Township 23N 09E sections 03-10, 15-22

Cheboygan County:
Entirety of Ellis Township 34N 02W
Entirety of Forest Township 33N 01E and 34N 01E
Entirety of Nunda Township 33N 01W and 33N 02W
Entirety of Walker Township 34N 01W

Appendices (4)

1. Definitions:

a. "Cattle" means all live bovine (genus *Bos*) animals, bovine-like animals (genus *Bison*) also commonly referred to as American buffalo or bison, and any cross of these species unless otherwise specifically provided.
b. "Enhanced Wildlife Biosecurity (EWB) Plan" means a written plan developed following an Enhanced Wildlife Biosecurity assessment implemented to address all recommendations of the Enhanced Wildlife Biosecurity report categorized as high risk and approved by MDARD.
c. "Fenceline Contact" means a cattle herd that shares a common fence with an adjacent herd or has less than 30 feet of separation from another herd with no impenetrable barrier to prevent contact between animals.
d. "Freezer Beef Herd" means a cattle herd approved by the Director of MDARD that passes an annual inspection verifying the herd is comprised of 6 or fewer head in which all non-neutered cattle are of the same gender, no breeding of cattle occurs, no cattle are moved to any other premises, and all cattle are raised only for personal consumption.
e. "Hunter Access Program" means a program offered by MDNR to incentivize public participation in hunting and achievement of wildlife management goals by compensating private landowners for allowing hunters access to their properties. Heads from harvested deer may be voluntarily submitted by the hunters for bTB testing.
f. "Targeted Deer Removal" means a program where APHIS WS receives written permission from a herd owner to enter a premises to evaluate the premises for the presence of deer and to remove any deer that are determined by APHIS WS to pose a bTB risk to cattle.
g. "Verified Wildlife Risk Mitigation (WRM) Plan" means a written plan that contains structural and management requirements intended to reduce the risk that a herd will become infected with bTB, that has been approved by MDARD.

2. MDARD Reporting:

a. The number of exposed cattle identified by disposition as follows (Annual report only):
    i. Number of exposed identified,
    ii. Slaughtered,
    iii. Necropsied with results,
    iv. Tested,
    v. Traced out of state, and
    vi. Other.
b. Number of stops conducted by law enforcement as follows:
    i. Number of traffic stops,
    ii. Number of violations identified, and
    iii. Actions taken because of identified violations.
c. Mitigations taken due to wildlife bTB reservoir within both the Wildlife Risk Mitigation (WRM) Plan and the Enhanced Wildlife Biosecurity (EWB) Plan as follows:
    i. Total number of farms in area,
    ii. Number of farms participating in each plan,

iii. Number of warning letters issued for non-compliance,
iv. Number of days between notification and correction of problems,
v. Number of farms which have been removed due to non-compliance, and
vi. Number of days between notification and removal for non-compliance.

d. Targeted deer removal program as follows:
   i. Number of active cattle herds in EWB,
   ii. Number of enrolled farms,
   iii. Number of visits conducted in enrolled farms, and
   iv. Number of deer removed during targeted deer removal efforts.
e. Surveillance testing as follows:
   i. Number of herds tested in MAZ,
   ii. Number of herds tested in circles,
   iii. Number of herds tested for 6-4A source traces,
   iv. Number of herds tested for 6-4B exposed traces, and
   v. Number of herds tested for 6-35 slaughter traces.

3. MDNR Reporting:

a. Number of deer tested and percentage of the surveillance target for bTB samples in DMUs 452 and 487 per calendar year. Surveillance targets will be developed based on the agent-based and force of infection models. If the models are unable to be used and default surveillance targets are used as identified in Article 5 MDNR A Table 1, the number of deer tested by county and percentage of surveillance target reached will be reported.
b. Number of deer tested for bTB through passive surveillance outside of DMUs 452 and 487 per calendar year, including samples initially submitted to the Wildlife Disease Lab for Chronic Wasting Disease surveillance.
c. Location of each bTB positive free-ranging deer identified by county and township.
d. A summary of efforts to work with deer management cooperatives and promote deer herd health checks on hunt clubs in DMUs 452 and 487.
e. A summary of feeding and baiting ban enforcement activities by conservation officers in DMUs 452 and 487.
f. Number of landowners and number of acres enrolled in the Hunter Access Program in DMUs 452 and 487.
g. Summary of efforts to develop and implement intervention strategies, including targeted removal of deer and pertinent research.
h. Number cattle producers receiving no-cost disease control permits in DMUs 452 and 487, total number of permits issued, and number of deer harvested through use of the disease control permits.
i. Apparent incidence of bTB in DMUs 452 and 487 in deer of all ages (other than fawns in the current year) and the trend over the preceding 5 years.
j. Apparent incidence of bTB in DMUs 452 and 487 in yearling deer (ages 1 and 1.5 years) in the current year and the trend over the preceding 5 years.
k. Age-specific force of infection in DMUs 452 and 487 in the current year and the trend over the preceding 5 years.

4. MDNR Literature Cited:

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Felix, AB, H Campa III, KF Millenbah, SR Winterstein, WE Moritz. 2004. Development of landscape-scale habitat-potential models for forest wildlife planning and management. Wildlife Society Bulletin 32: 795–806.

Gehring, TM, KC VerCauteren, ML Provost, AC Cellar. 2010. Utility of livestock-protection dogs for deterring wildlife from cattle farms. Wildlife Research 37: 715-721.

Ramsey, DSL, DJ O'Brien, MK Cosgrove, BA Rudolph, AB Locher, SM Schmitt. 2014. Forecasting eradication of bovine tuberculosis in Michigan white-tailed deer. Journal of Wildlife Management 78: 240–254.

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Miller, RA, JB Kaneene, SM. Schmitt, DP Lusch, SD Fitzgerald. 2007. Spatial analysis of *Mycobacterium bovis* infection in white-tailed deer (*Odocoileus virginianus*) in Michigan, USA. Preventive Veterinary Medicine Volume 82: 111–122.

Rudolph, BA, SJ Riley, GJ Hickling, BJ Frawley, MS Garner, SR Winterstein. 2006. Regulating hunter baiting for white-tailed deer in Michigan: biological and social considerations. Wildlife Society Bulletin 34: 314–321.

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VerCauteren, KC, MJ Lavelle, H Campa III. 2018. Persistent spillback of bovine tuberculosis from white-tailed deer to cattle in Michigan, USA: status, strategies, and needs. Frontiers in Veterinary Science 5:301.