Pesticide Discharge Management Plan (PDMP)

for:

Ohio EPA – NPDES General Permit OHG870003
October 18, 2022 – October 17, 2027

Permitted Discharger:

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Contents

INTRODUCTION:

The mission of the Toledo Area Sanitary District (TASD) is to provide the citizens of Lucas County with mosquito control for a safe and quality environment. As such, this mission coincides with the intent of the NPDES General Permit (OHG870003), which is to utilize pesticides in an environmentally responsible way, as part of an integrated pest management approach, that will result in reduced pesticide discharges to the surface waters of Ohio.

In recognition of its dedication to integrated pest management principles in its operations, TASD has been recognized as an individual partner in the United States Environmental Protection Agency's (USEPA) Pesticide Environmental Stewardship Program under the auspices of the American Mosquito Control Association. Amongst elite national company, inclusion in this program demonstrates that on a daily basis TASD is a responsible pesticide applicator and operates in a model fashion to conduct mosquito control while limiting environmental impacts: a tangible national recognition showing commitment to the principles and intentions of the Ohio NPDES General Permit.

Through all aspects of its operations, TASD intends to limit the need for pesticide applications through community education and breeding source reduction efforts. However, when treatment thresholds are reached, calculated and precise pesticide applications occur. To further mitigate environmental impacts from these pesticide applications on surface waters, TASD only uses USEPA registered and Ohio Department of Agriculture (ODA) approved pesticides. In the Joint Statement on Mosquito Control in the United States from the U.S. Environmental Protection Agency and the U.S. Centers for Disease Control and Prevention (CDC), (February, 2024 – updated August 9, 2023 from https://www.epa.gov/mosquitocontrol/joint-statement-mosquito-control-united-states#main-content) it is asserted that, **"*All insecticides used in the U.S. for public health use have been approved and registered by the EPA following the review of many scientific studies. The EPA has assessed these chemicals and found that, when used according to label directions, they do not pose unreasonable risk to public health and the environment*."** Therefore, by definition and through each control products' EPA registration, when used properly, mosquito adulticides and larvicides comply with the duty to mitigate the reasonable likelihood of affecting human health, the environment, or surface waters.

TASD pesticide applications are covered under the requirements of the General Permit and guided by its Pesticide Discharge Management Plan (PDMP). The applications do not meet the defined conditions requiring a Notice of Intent to obtain an individual permit. To ensure this remains the case, during its annual review of this PDMP, TASD consults the OEPA Division of Surface Water website at epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/antidegradation to check Ohio's Antidegradation Rule [OAC 3745-1-05] for Outstanding National Resource Waters or Superior High Quality Waters. In Lucas County, the Maumee River (River Mile 108.1 – River Mile 15.05) is designated as outstanding state waters based on exceptional recreational values. To protect these waters from

pesticide exposure and to avoid the need for its own individual NPDES permit, TASD does not apply adulticides as a point source discharge within 300 feet of the Maumee River within these designated River Miles.

As the pesticide applications conducted by TASD are considered a "discharge" according to NPDES and the General Permit, the usage of the word discharge in the PDMP refers to the application of any pesticide into the environment for larval or adult mosquito control.

While not directly addressed as recordkeeping in this PDMP, many of the measures, best management practices, and schedules are in place to address components of the record keeping requirements of the NPDES General Permit (OHG870003). TASD complies with the elements described in Part 4. D. (pages 14-16 of 42) in several ways. All records related to NPDES permit compliance are kept on file at TASD for a minimum of three years past the permit expiration. All pesticide applications are targeting mosquitoes and all records refer to mosquito control activities. All of the waters potentially impacted in each treatment area are found within the watershed assessment units discussed in this document and located in the Hydrologic Unit Code (HUC) identifiers 04100001, 04100009, 04100010, and 04120200 (Lake Erie Western Basin Shoreline). Current visual monitoring records are created and stored electronically, while historical records from previous PDMP versions may be kept on paper or electronically scanned archives. TASD follows the minimum guidance of the general permit utilizing FIFRA records and maintains all information requested in Part 4.D. 4 & 5 of the general permit, including a pest management log (which contains duplicative information of the records required under FIFRA and the OAC 901:5-11-10.)

Within the scope of its duty to comply with the conditions of the General Permit, TASD conducts an annual internal review of its PDMP. It has also created a compliance team of employees who routinely monitor record keeping throughout the application season and assist in the annual review of the PDMP. The compliance team is comprised of Paul Bauman (General Manager/Biologist), Jacob Sublett (Biologist/Assistant General Manager), Arianna Armentrout (Office Clerk), Mark Nye (Operations Manager), and Ben White (Operations Manager).

TASD files an annual report with the Ohio EPA summarizing pesticide use for each mosquito season. Copies of the annual reports are maintained by the District and filed with NPDES compliance documents. The blank Annual Report Form can be found at https://epa.ohio.gov/divisions-and-offices/surface-water/permitting/pesticide-application-discharges--general-permit.

TASD Pesticide Discharge Management Plan – Part 5.B of OHG870003

Part 5. B. 2. - PDMP TEAM:

Paul Bauman, General Manager/Senior Biologist ..... Develop and revise PDMP
Jacob Sublett, Staff Biologist/Assistant General Manager .....Corrective actions
Mark Nye, Operations Manager .....Pest management of larval and pupal mosquitoes & breeding source reduction
Ben White, Operations Manager .....Pest management of adult mosquitoes & breeding source reduction

**All pesticide applications are made by TASD employees that are either trained service persons or individually licensed Ohio Department of Agriculture Pesticide Commercial Applicators. "For-hire" applicators are not used.

Part 5. B. 3. – Problem Description

a. Treatment Area Description: The treatment area of the Toledo Area Sanitary District is the entirety of Lucas County, Ohio, with exceptions to individually recorded environmentally sensitive areas on TASD service maps, owned by conservation and park entities. Individual properties owned by private citizens that "opt-out" of the treatment area are also maintained by the District and denoted on operational TASD service maps through the use of GIS software.

The treatment area of Lucas County is bordered to the north by Michigan, to the west by Fulton and Henry counties, to the south by Wood County, and to the east by Ottawa County. A large portion of the southern border of the treatment area is the Maumee River. The northeastern border is largely comprised of Lake Erie. There are 28 EPA designated watershed assessment units from Hydrologic Unit Code (HUC) identifiers 04100001, 04100009, 04100010, and 04120200 (Lake Erie Western Basin Shoreline) that are contained entirely within or cross into the borders of the treatment area that are encompassed in the TASD treatment area. A map of the treatment area broken down into TASD service maps and individual watershed assessment units can be found in Appendix A.

b. – c. Pest Management Objective & Target Pest: The TASD was founded with the objectives to control mosquitoes to reduce nuisance conditions and assist with the prevention of mosquito-borne disease transmission. As part of an integrated mosquito management approach, TASD utilizes prevention strategies, mechanical/physical methods, cultural methods, biological methods, and pesticides to help accomplish this mission.

d. Action Thresholds: For standing water, the larviciding action threshold is five mosquito larvae per dip or the persistent presence of larvae in multiple dips from different areas of a breeding water source. For catch basin treatments, the larviciding action threshold is the presence of larvae in any representative basin for each TASD service map, historically significant breeding service maps for early intervention treatments, or positive virus identification in adult *Culex* mosquitoes. Liquid larvicide treatment thresholds follow adulticide gravid trap collection thresholds (Appendix C), the discovery of larvae in cryptic breeding locations, or standing water larval thresholds. Larviciding action thresholds are recorded electronically.

Adulticiding action thresholds are identified via permanently stationed New Jersey Light Traps (NJLT) and Gravid Traps (GT) as well as other rotational traps and lesser used surveillance trap types, all of which are provided in Appendix C. NJLT-based adulticiding action thresholds are created by analyzing historical data for the determination of what

exceeds normal mosquito populations by geographic trap location. GT-based adulticiding action thresholds are determined by vector abundance for rotational trap locations (defaulting to stationary trap thresholds if site specific variables are not significant in a given year) while stationary location thresholds are determined by a logistic regression statistical model predicting the probability of West Nile Virus (WNV) presence based on time of season and vector abundance. All adulticiding action thresholds are reviewed and updated annually as more surveillance information is added to each data set and as new NJLT, GT, and other types of trapping locations are established.

Adulticiding action thresholds that trigger treatment are recorded electronically for each application and may also be determined by any one of the additional following conditions:

- Citizen report of excessive or intolerable mosquito conditions
- Identification of an invasive mosquito species
- Human case of mosquito-borne illness
- Positive virus identification in mosquito populations
- Presence of adult mosquito landing rates on field technicians in excess of one/minute
- Field observations of mosquitoes in flight and shed exuviae in water

e. Water Quality Standards: TASD does not conduct water quality testing, but relies upon monitoring reported by the Ohio Environmental Protection Agency in its Ohio's Integrated Water Quality Monitoring and Assessment Reports (epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report) as well as potential feedback from park districts and municipalities within the treatment area. TASD annually reviews information from the OEPA's Integrated Water Quality Report interactive map for any changes in water quality conditions for each watershed assessment unit within the treatment area.

Water Quality Impaired Water discharges for a pesticide or its degradants are not authorized by the Ohio NPDES General Permit. In the TASD treatment area, there are 28 EPA-designated watershed assessment units (including the Lake Erie shoreline), none of which are listed as being impaired for pesticides. (Appendix B – Pesticide Impairments for Watershed Assessment Units in Lucas County).

Pesticide discharges and other mitigation measures are not anticipated to adversely impact any waterbodies in the treatment area.

f. Data Sources: Data sources used to meet problem identification conditions are obtained from various surveillance tools/traps. Larval mosquitoes are sampled by "dipping" potential breeding water sources. New Jersey Light Traps (NJLT), Gravid Traps (GT), BG Sentinel traps, Gravid *Aedes* Traps (GAT), CDC Light Traps, resting traps, In2Care stations, oviposition cups/egg deposition surveillance, and field technician or citizen reports are utilized to identify adult mosquito pest problems.

Part 5. B. 4. – Description of Control Measures

a. No Action: This control measure occurs when larval or pupal mosquitoes are not found after several dips from different locations of a body of standing water using a mosquito "dipper", which is considered not breaching the

defined larviciding treatment threshold (Part 5.B.3.d). There is also "no action" when there is a lack of emergent adult mosquitoes and none of the defined adulticide treatment thresholds are breached (per Part 5.B.3.d).

This control measure is feasible without any cost, other than time spent on surveillance labor and materials (dippers, adult trap supplies and equipment, etc.). The control measure will have no impact on water quality, non-target organisms, or pest resistance.

b. Prevention: Prevention focuses on removing mosquito breeding habitats, which prevents both larval and adult mosquitoes. Larger breeding source reduction efforts are undertaken each fall and winter through TASD's water management/breeding source reduction program. This program includes projects such as cleaning ditches or removing blockages in local waterways and drain paths that are meant to keep water flowing properly and reduce spring-time flooding that creates mosquito breeding habitats. The TASD works with individual homeowners, land managers, and the Lucas County Engineer's office to identify areas in need. Some are multi-year projects that can have significant benefits to watersheds within the treatment area. In addition to preventing breeding grounds for mosquitoes, these projects often involve cleaning of waterways by removing rubbish and discarded debris, which leaves surface water quality conditions much improved at the completion of the projects. Additionally, TASD has adopted the BMP of erosion control by seeding finished projects and installing two-stage ditches and riparian filter zones to its projects, when possible, to alleviate flooding and directly improve surface water quality.

While there is a considerable expense to running water management/breeding source reduction projects, with labor and equipment costs, it is still a feasible way to prevent mosquito breeding habitat for years into the future by restoring the health and function of surface waters. This control measure also undoubtedly benefits non-target native aquatic organisms without negative impacts. It also does not contribute to pest resistance.

c. Mechanical/Physical Methods: Control measures that effectively alter the environment for pest (i.e. both larvae and adult mosquitoes) suitability include the breeding source reduction projects described in the Prevention control measures (Part 5. B. 4.b). In addition to these measures, TASD funds and executes a tire collection and recycling program. In this program, TASD field technicians collect discarded vehicle tires from the environment and return them to the District office for proper draining of water and recycling. These tires are notorious for breeding mosquitoes and their removal from the environment eliminates that breeding habitat for mosquitoes and has enormous environmental benefits. Thousands of tires that would otherwise deteriorate surface water quality are being recycled by TASD on an annual basis. TASD also administers an abandoned swimming pool recycling program where it disassembles and recycles above-ground swimming pools that are decrepit or no longer in use. This removes a breeding source for mosquitoes in neighborhoods and directly reduces the need for pesticides discharges impacting surface water.

Activities that involve the operation of adult mosquito surveillance traps also offer a benefit of mechanical control, to a degree. Each mosquito season, tens of thousands of adult mosquitoes can be collected and removed from the environment through the use of TASD mosquito traps, which contributes to downward population pressure, without any impact on water quality.

Many of the mechanical/physical control measures benefit water quality in ways previously discussed (Part 5. B. 4.b) and by removing discarded tires from the banks of surface waters and ditches. These types of control measures are cost-effective and feasible, having little impact on non-target organisms, and no impact on pest resistance.

d. Cultural Methods: Cultural control methods employed by TASD focus on education and outreach that promote mosquito awareness and methods of making less hospitable conditions for mosquito breeding, which overlaps with Prevention (Part 5. B. 4.b) and Mechanical/Physical Methods (Part 5. B. 4.c) and impacts both larvae and adult mosquitoes. Educating the citizens within the treatment area about how to protect themselves from mosquito bites and disease transmission as well as how to identify and eliminate mosquito breeding sources around the home and in the community is vital to the mission of TASD. To help accomplish this, several approaches are used by the TASD: small group presentations, community event displays, school classroom visits, literature production, social media promotion, media interviews and appearances, advertising messages, informative vehicle wraps, and maintenance of its own educational website. TASD shows a strong commitment to this control method and employs a Ph.D. level position, tasked with public outreach and education related to mosquito prevention, that is designated as its Education & Research Coordinator, to expand, promote, and maintain these important program components that contribute to this control method.

Education for "Homeowner mosquito control" is continually emphasized in daily interactions with the public, literature published by TASD, media interactions, and through its website. This education involves the prevention of mosquitoes around the home by the proper storage or elimination of water-holding containers, thus reducing small-scale and cryptic locations for mosquitoes to deposit eggs and develop. Another part of "Homeowner Control" is encouraging the maintenance of plants and vegetation to limit harborage areas for adult mosquitoes.

These control measures are cost efficient, when consideration is given to the long-term benefit of teaching citizens how to prevent mosquito breeding, and have no impact on water quality, non-target organisms, or pest resistance.

e. Biological Control: TASD has a larvivorous fish delivery program for homeowners with ornamental water gardens, small farm ponds, or abandoned swimming pools (ODNR Permit AA220117). In this program, TASD takes requests from citizens to stock these man-made bodies of water with fish that will consume mosquito larvae and reproduce throughout the season. TASD also maintains a historical database of delivery locations and monitors those locations for the need to replenish fish stock or collect fish to be redistributed to other locations. This program is a sustainable method of employing season-long biological control in these backyard mosquito breeding habitats. The fish are only introduced to isolated water bodies that do not have access to open surface waters, mitigating any potential surface water impacts. Additionally, TASD encourages the maintenance of suitable habitats and shelters for other organisms that can feed on adult mosquitoes, such as dragonflies or bats. While none of these predatory organisms alone can offer suitable control of mosquitoes, their contribution to downward population pressure helps the TASD mission.

These control measures have no impact on surface water quality, non-target organisms, or pest resistance. They are a feasible part of the program that is extremely cost-effective.

f. Pesticides: Larviciding and adulticiding control measures are based on pesticide applications intended to kill immature larval mosquitoes and fully developed adult mosquitoes, respectively.

i. Names and EPA Registration Numbers: All USEPA registered product labels for pesticides used by individual TASD commercial applicators or trained service persons are electronically available for reference in the field with those applicators. Additionally, product labels and Safety Data Sheets (SDS) for all inventoried pesticides are available at the District office.

Potential pesticide product choices are reviewed annually to ensure current federal registration as well as Ohio Department of Agriculture registration status. Pesticide products evaluated and potentially used by TASD within a given season are listed in the table below. Small sample quantities of other pesticide products may be evaluated on a limited research/trial basis during a season. These are typically new formulations of existing registered and approved pesticides or active ingredients. If these pesticides are adopted as options for future use by TASD, they will be added to the table.

Product Name	Active Ingredient(s)	Larvicide or Adulticide	EPA Registration Number	Ohio Product Number
Altosid Liquid Larvicide MGR	(s)-methoprene	Larvicide	2724-392	743
Altosid P35	(s)-methoprene	Larvicide	89459-95	72943
Anvil 2+2 ULV	phenothrin & PBO	Adulticide	1021-1687-8329	9616
Aquabac 200G	Bti	Larvicide	62637-3	1600
Biomist 3+15 ULV	permethrin & PBO	Adulticide	8329-33	9615
Biomist 4+4 ULV	permethrin & PBO	Adulticide	8329-35	16130
BVA 2 Mosquito Larvicide Oil	mineral oil	Larvicide	70589-1	3759
Censor Mosq. Larvicide Granule	spinosad	Larvicide	8329-80	80781
DeltaGard	deltamethrin	Adulticide	432-1534	62063
Duet Dual Action Adulticide	prallethrin, phenothrin, & PBO	Adulticide	1021-1795-8329	33248
Duplex-G	(s)-methoprene & Bti	Larvicide	89459-93	70192
Evergreen ULV (5-25) Ground	pyrethrins & PBO	Adulticide	1021-1199	71903
FourStar Bti CRG	Bti	Larvicide	85685-4	55319
FourStar MBG	Bti & Bs	Larvicide	85685-3	54406
In2Mix	pyriproxyfen	Larvicide	91720-1	72989
Natular G30	spinosad	Larvicide	8329-83	44646
Natular G30 WSP	spinosad	Larvicide	8329-91	74604
Natular SC	spinosad	Larvicide	62719-748-8329	86242
PermaSease 3-15	permethrin & PBO	Adulticide	86291-4-96263	81505
PermaSease 4-4	permethrin & PBO	Adulticide	86291-3-96263	81504
Perm-X UL 4-4	permethrin & PBO	Adulticide	89459-47	63008
Pyronyl 525 Oil Concentrate	pyrethrins & PBO	Adulticide	89459-24	65273
ReMoa Tri	fenpropathrin, abamectin, C-8910	Adulticide	73049-526	90377
Sumilarv 0.5G	pyriproxyfen	Larvicide	1021-2819	75269
Sumilarv 0.5G WSP	pyriproxyfen	Larvicide	1021-2818	82316
Summit B.t.i. Granules	Bti	Larvicide	6218-86	73028
VectoBac DT	Bti	Larvicide	73049-447	69622

Product Name	Active Ingredient(s)	Larvicide or Adulticide	EPA Registration Number	Ohio Product Number
VectoBac G	Bti	Larvicide	73049-10	3272
VectoBac GS	Bti	Larvicide	73049-10	42684
VectoBac WDG	Bti	Larvicide	73049-56	47863
VectoLex FG	Bs	Larvicide	73049-20	51600
VectoLex WSP	Bs	Larvicide	73049-20	3293
VectoLex WDG	Bs	Larvicide	73049-57	3292
VectoMax FG	Bti & Bs	Larvicide	73049-429	51729
Zenivex E4 RTU	etofenprox	Adulticide	2724-807	44087

Pesticide selections from the products in the above table are made after careful consideration is given to several factors. Cost, availability, PPE requirements, geographic location within the treatment area, target lifecycle stage of the mosquito, pest pressure, disease threats, pesticide resistance management strategies, operational handling and functionality preferences, and environmental impacts are all considered when choosing a specific pesticide for use. Institutional experience, fundamental knowledge of mosquito biology, and best management practices help shape the decisions for pesticide choice when considering all of these factors.

TASD develops a Program Plan annually that discusses the pesticides TASD plans to use for that season, including typical timing of applications and yearly schedule. In the Program Plan, TASD considers factors such as target lifecycle stage, habitat, resistance management, potential research/trial products, and use pattern application rates. TASD submits this Program Plan to the US Fish and Wildlife Service (USFWS) for review, comment, and consultation. The Program Plan is updated each year based on the efficacy of the previous year's experiences and after consideration is given to the previously discussed factors that weigh into pesticide selection and purchasing.

ii. Procedures for determining the lowest effective amount of pesticide product per application and the optimum frequency of pesticide applications to effectively control mosquitoes: Considering appropriate application rates based on equipment calibration specificity and after consultation with the Operations Managers, prior to the beginning of pesticide control measures, the General Manager determines which pesticides to apply and sets the prescribed application rates to begin the season. These decisions are then filtered down to licensed applicators or trained service persons to start treatments when a threshold is reached. Based on institutional knowledge and historical efficacy results from pesticide usage for different pest pressures and environmental conditions, TASD is able to use pesticide control measures at low to mid-USEPA label application rates. TASD applies an iterative assessment for how successful a treatment is within the season when determining application rates for similar environments with similar pest pressure as well as potential retreatments. Each treatment informs on subsequent treatments, such that pest resistance or need for alternate pesticide or higher application rates are identified in a timely manner. For adulticiding, these efficacy evaluations are conducted by the Science Division at the District in consultation with the General Manager. The application information and post treatment monitoring are tracked electronically. For larviciding applications, the efficacy evaluations are conducted routinely by the

Operations Manager, or his designee, monitored and evaluated by the biologists, and recorded electronically.

The application of these pesticides as control measures is best broken down by their intended use: larvicides and adulticides.

Larvicides

Larviciding is the primary pesticide control measure employed by TASD, starting months before adulticiding and extending beyond the completion of the adulticide application season. TASD larviciding activity is triggered by extensive early surveillance and is coupled with a heavy reliance upon the use of biopesticides that have a long history of use with demonstrated target specificity and no known human toxicity (https://www.epa.gov/mosquitocontrol/bti-mosquito-control). Biopesticides with the bacterial active ingredient of *Bacillus thuringiensis israelensis* (Bti) have been used for mosquito larval control for decades. TASD uses Bti based larvicides in transient water sources that will not persist for longer than 10-14 days. For bodies of water that may last longer than this, other active ingredient biopesticides have to be used to offer the appropriate length of control for the timeframe that the water body will exist. The extended control from other biopesticides is the result of either the bacteria recycling through the water source, using the mosquito larval cadavers as a medium, or through engineered slow-release formulations. The use of Bti active ingredient biopesticides creates no concern for resistance development and the other biopesticide products are rotated to prevent resistance development.

When considering larvicides, the optimum frequency for treatment to effectively control the pest is determined by specific product choice formulation and its approved length of effectiveness, as documented on the label, and when surveillance indicates a threshold breach for re-treatment.

Supported by the previously cited USEPA and CDC joint statement on mosquito control (Introduction), it is expected that all control measures from larviciding will have virtually no impact on water quality or non-target organisms. Larviciding is a feasible pesticide control measure because of the precision in its application of being able to apply directly to a source of immature mosquitoes that are developing in a fixed water location, but the pesticides used are the most costly in terms of price per acre treated and the manpower required to apply them.

Adulticides

The use of adulticides as a pesticide control measure serves as a supplement to larviciding and the other non-pesticide control measures previously discussed. The CDC Bottle Bioassay is used to monitor for the development of pesticide resistance. Resistance is monitored early-season, late-season, at least monthly during the season, and as needed throughout the season as a tool for evaluating the efficacy of a specific application, when mosquito specimen supplies permit.

The optimum application frequency of adulticide control measures is determined by the breach of one of the pre-determined thresholds or an application resulting in less than the desired efficacy that remains

above one of the treatment thresholds. Application frequency is monitored to ensure that no single location is exposed to an excess of active ingredient that is permissible by the FIFRA labeling within a defined daily/weekly timeframe or the season in totality.

TASD utilizes technology to assist with its best management practices (BMP) to minimize adulticide discharges to surface waters. All adulticiding applications are made with Ultra-Low Volume (ULV) cold foggers that are equipped with Smartflow regulators to ensure a pre-determined application rate is maintained in correlation with the speed of the truck applying the pesticide, adjusting product flow to account for vehicle acceleration and deceleration. TASD has also invested in the Fieldseeker Windows ULV software sold by Frontier Precision. This software allows for the pesticide applicators to view interactive treatment maps on tablets while operating the spray equipment. The software allows for virtual fencing off of sensitive habitats or waterways of concern with programmable distance buffers. It also audibly and visually alarms drivers to turn off spray equipment when passing over waterways during road applications. In addition, TASD equips each of their application trucks with New Mountain Innovations Ultra Sonic Weather Stations which automatically monitor, record, and convey weather conditions and messages to the applicator through the tablet in the truck cab. This can be set to ensure weather conditions are conducive to treatment applications and alarm the applicator when the weather conditions fall outside of those parameters. The implementation of this technology, and the BMP associated with its use, limits the opportunity for human error in the application process and allows TASD to more efficiently protect water quality and non-target organisms by not applying pesticides in excluded areas while allowing for more accurate and accountable pesticide applications.

After the review of its Program Plan each season, the USFWS authors a technical letter of assistance for TASD to identify mitigation measures to prevent impacts to the threatened and endangered species within its treatment area. Through a collaborative working relationship with USFWS it has been determined that pesticide control measures taken by TASD are not anticipated to have a negative impact on these species due to the inclusion of exclusion zones within its treatment area, BMP, pesticide selection, as well as all of its other mitigation measures in place.

Because of the BMP and technology employed by TASD, as well as being supported by the previously cited EPA and CDC joint statement on mosquito control (Introduction), it is expected that adulticiding control measures will have minimal impact on water quality and non-target organisms. Adulticiding is a feasible pesticide control measure. It is relatively inexpensive in terms of product cost per acre treated and is very efficient in its technological methods of application, however, there is a considerable expense to the maintenance and technology advancements in the BMP enacted by TASD.

iii. Document why larviciding is not the primary pesticide to effectively manage mosquitoes: TASD conducts ongoing larviciding activities during the mosquito season as breeding locations above the treatment threshold are identified throughout the pest treatment area. Once adult mosquitoes emerge, the use of adulticides is reserved for treatment of specific areas that have breached a treatment threshold. In all cases of adult mosquito control pesticide control measures, larviciding is impractical because larval control

products are applied to standing water where immature mosquitoes are developing and these mosquitoes are not the target lifecycle stage. Larviciding applications will have no impact on established adult mosquito populations. Adult mosquito populations that have met a treatment threshold require the use of adulticides for effective management and population reduction.

Part 5. B. 5. – Pest Surveillance

TASD starts pre-larvicide application surveillance of standing water, consisting of dipping at historically active mosquito breeding locations (vernal pools, woods, tires, parks), when winter snow melts and temperatures start to increase, typically in mid-to-late February. Under normal late winter/early spring conditions, typically late March, mosquito larvae have developed to an appropriate instar stage of development and are found in significant enough numbers to initiate larviciding treatments if action thresholds are met (Part 5.B.3.d). Electronic records are utilized for recording dip counts and GPS coordinates during pre-application larval surveillance. TASD utilizes the same dipping procedures to monitor mosquitoes in areas receiving treatment for post-larvicide applications. For post-application surveillance, electronic records and GPS coordinates are used for recording dip counts.

As larval development is tracked in standing water and the surveillance indicates that the emergence of adult mosquitoes is imminent, sentinel adult mosquito traps may be placed for pre-adulticiding application surveillance near areas previously treated with larvicides. Pre-adulticide application surveillance typically occurs in early May to survey for adult mosquito emergence. After several weeks of monitoring sentinel trap locations, a network of NJLT are put in place for pre-adulticide application surveillance. This mesh network of traps is designed to provide comprehensive coverage, sampling mosquito populations over TASD's entire treatment area. There are typically 25-30 NJLT set-up each season at stationary locations that are rooted in the same or nearly the same geographic locations over a long history of surveillance. At a minimum, these traps run four nights a week and are serviced daily. Occasionally the traps may run as much as seven nights per week, when pest pressure is high or more treatment efficacy information is desired. Adult mosquitoes are counted and the female mosquitoes collected are identified to species by trained seasonal lab techs and recorded electronically by the Biologists, or their seasonal staff. The electronic data is made available for viewing personnel and used in forming treatment decisions. Each NJLT is geographically linked to specific TASD service maps and used as indicators for treatment threshold as the season progresses. The service maps associated with each NJLT location are based on a two-mile flight radius from the trapping location. These traps are also used for post-application surveillance efficacy. NJLT surveillance is scaled back later in the summer/early fall to the areas with the most pest pressure or disease transmission risk until surveillance and adult mosquito control applications conclude for the season.

In addition to the season-long NJLT surveillance program that monitors mosquito populations pre and post-application, TASD will start to conduct pre-adulticide application surveillance with its network of GT when *Culex* spp. mosquitoes start to emerge in late May or early June. TASD operates around 30 GT stationary locations for pre and post-adulticide application pest surveillance from late May/early June until mosquito WNV testing and adult mosquito control applications conclude for the season. The stationary GT locations run at full capacity for at least four nights per week and are serviced daily. Surveillance points of interest for post-application purposes, high virus persistence, or pest pressure are typically operated for more nights each week and often up to seven nights a week. Female mosquito collections from stationary GT surveillance are counted and processed for WNV screening (frozen prepared for

polymerase chain reaction (PCR) testing). Vector abundance from these traps, as well as disease test results, are evaluated per the action thresholds described Part 5.B.3.d. Each stationary GT location has associated TASD service maps that are linked to it using a one-mile flight radius. Around each stationary trap location are set locations that can be used on a rotational basis to obtain more precise surveillance information within the treatment area of each stationary GT. On any given night an additional 20-30 rotational GT may be out collecting information that will be used to gauge the need for pesticide applications. The female mosquito collections from rotational GT locations are processed and handled the same as those collected from stationary locations. GT surveillance data is recorded electronically and used for vector abundance surveillance, post-application surveillance, and mosquito infection rates/virus prevalence. The electronic data is updated daily and made available to be viewed by personnel and used for making treatment decisions.

Trap Type	Treatment Radius*	Operational Timeframe†	Target Species‡	Lifecycle Target[z]
New Jersey Light Trap (NJLT)	2-mile radius from trapping location	May-Sep./Oct.	Used for population dynamics to target all species found in the treatment area with this trap. It is worth noting some species are not overtly attracted to this trap.	Host-seeking mosquitoes
Gravid Trap (GT)	1-mile radius from trapping location	May/June-Sep./Oct.	*Culex* spp.	Gravid female mosquitoes
BG2 Sentinel (BGS)	1/4th mile radius from trapping location, depending on target species' flight range	May-Sep./Oct.	Invasive species, *Aedes* spp., *Culex* spp. (if only CO_2 used as attractant gas)	Host-seeking mosquitoes (particularly anthropophilic species)
Resting Traps	1/10th mile radius from trapping location	May/June-Sep./Oct.	*Culex* spp. *Culiseta* spp.	Recently blood-fed female mosquitoes
CDC Light Trap	2-mile radius from trapping location	May-Sep./Oct.	Used for population dynamics to target all species found in the treatment area with this trap. It is worth noting some species are not overtly attracted to this trap.	Host-seeking mosquitoes
Bottle Rotator Trap	Not normally used for adulticide control measure thresholds	May-Sep.	Used to study population dynamics and peak activity times. Targets all species found in the treatment area. It is worth noting some species are not overtly attracted to this trap.	Host-seeking mosquitoes
Gravid Aedes Trap (GAT)	1/4th mile radius from trapping location	May-Sep.	Container breeding *Aedes* spp.	Gravid female mosquitoes
In2Care Trap	Dependent upon species collected	June/Aug-Sep/Oct.	Container breeding *Aedes* spp.	Gravid female mosquitoes
Oviposition Cups	Dependent upon species collected	June/Aug-Sep/Oct.	Container breeding *Aedes* spp.	Eggs from female mosquitoes that have completed a gestation cycle at least once and will be looking for another blood meal (virus transmission). Also, abundance of newly emerging mosquitoes. (oviposition index)

* These treatment areas are based on the general intended purpose of the trap, however TASD also monitors the species composition of the mosquitoes collected from these traps and can increase or decrease recommended treatment area based on the collections.

† While traps are normally used most often in the specified time below, depending on the need and environmental conditions TASD can deploy these traps outside the scheduled times.

‡ While traps are designed to target a specific species of mosquito, they can attract a variety of different species, especially when pairing traps with different types of attractants.

[z] While traps are often designed to target a specific lifecycle stage of the female mosquito, they can attract mosquitoes in a variety of different life stages, especially when pairing traps with different types of attractants.

In addition to citizen and field technician reports and testimonials, the previous table identifies additional mosquito traps employed by TASD for surveillance purposes that can help shape control decisions. These additional traps are placed in areas where further information about mosquito population composition and dynamics are needed. Locations change throughout the season and can be placed anywhere in the TASD treatment area. Depending on the target species and lifecycle stage, these traps can be used for pre-application or post-application surveillance purposes. The traps are set and left to operate over a 24-hour period or overnight, depending on the target species and its peak activity time. Collection samples are processed in the lab for species composition and screened for virus, when applicable. The trap data is recorded electronically and can be viewed by personnel and used in forming treatment decisions, if collections exceed a treatment threshold as defined in Appendix C.

Part 5. B. 6. – Schedules and Procedures

a. Spill Prevention and Response: Schedules and procedures for preventing and responding to spills and leaks.

i. Maintenance activities and performance schedules to minimize the potential for leaks, spills, and unintended/accidental release of pesticides from pesticide containers:

Larvicides - Granule larvicide applications are either made by hand with a scoop/ladle or mechanically with a backpack blower. Backpack blowers are cleaned and stored for the winter at the conclusion of the season. Prior to spring use, the machines are fully maintenanced to ensure proper function.

The application of pupicidal oil is done with a hand pumped pack sprayer. The pack sprayers are secured to trucks during transport to minimize potential movement in transport and subsequent leaks/spills. The pack sprayer itself is broken down at the conclusion of every season, cleaned, and stored for the winter. Any deteriorated or expired parts are replaced during the cleaning and storage preparation process.

TASD has implemented the sporadic use of water-dissolvable Bti or spinosad granules (WALS applications). There are two different machines involved in the application of the liquid larvicide solution. These machines are visually inspected prior to each use for any leaks or mechanical issues. Prior to use each season the chosen machine is calibrated and the droplets produced are characterized to ensure optimal application performance.

Adulticides – TASD has the capacity to apply adulticides with the use of backpack blowers or handheld ULV machines, but the primary method of application is through the use of spray trucks with mounted ULV equipment. The spray equipment used for the ULV adulticide application are routinely monitored for maintenance needs and indications of wear that could result in spills, leaks, or poor performance.

The maintenance and inspection schedules for adulticiding application equipment are summarized in the following table:

Timeframe	Activity
Post-season and/or Pre-season	• Change engine oil and air filter • Replace sparkplug • Clean or replace blower air filter and insecticide filter element • Grease vertical and horizontal nozzle elbow unions • Flush out insecticide system • Inspect and replace, as needed, nylon tubing • Inspect and replace, as needed, special connectors, ferrule nuts, and O-rings • Inspect electrical system • Inspect and repair broken or weakened welds, as needed. • Inspect bolts and replace, as needed • Lubricate all Roots blower bearings • Inspect and replace deteriorated rubber mounts • Clean and inspect insecticide tank for deterioration or leaks • Inspect secure attachment of ULV machine to vehicle • Additional vehicle maintenance for accident and breakdown prevention, including brakes, tires, undercarriage, truck body, and safety features such as signal lights and flashing application lights
Daily	• Visual inspection of insecticide tank • Visual inspection of insecticide lines
Weekly	• Check oil in motor • Check for loose nuts, bolts, parts on machine • Fluid top-offs • Flush lines
Pre-use & as needed through season	• Droplet tested using DCM-IV machine analysis

To assist in minimizing impacts from insecticide spills and leaks, each spray truck is equipped with a spill containment kit.

ii. Course of action or responses to any spill: Spills and leaks of granule material are minimal: loose granules can be swept up and reapplied with the original product at the treatment location or re-stocked with the product in its original or transportation packaging. Accidental spills of liquid insecticides are managed with the spill kit in each truck. Applicators are trained annually on the procedures for spill kit use that can be summarized as PPE, contain, contact, and clean-up. The step-by-step standard operating procedure (SOP) for response to an insecticide spill or leak is detailed on the Toledo Area Sanitary District Product Spill Report & SOP (Appendix D). A copy of this form is available electronically on applicator's tablets and as a paper copy in each application vehicle. In response to a leak or mechanical concern, the application equipment and associated vehicle are taken out of service until complete visual inspections are done and any necessary repairs are complete.

iii. Chain of command notification for spill: In the event of a spill the applicator will complete the Toledo Area Sanitary District Product Spill Report & SOP and follow the step-by-step procedure detailed on that form.

The applicator is responsible for signing and completing the first eight steps of the procedures on the form and the TASD management representative reviewing the report will complete the last step before signing off on the form. The report form will be kept on file with NPDES compliance documents in accordance with the TASD record retention schedule.

iv. State/Federal contacts: Spills/leaks of human health concern are reported via phone within 30 minutes of discovery to 1.800.828.9378 and followed up within 24 hours of discovery by an e-mail to OEPA NWD Office.

State and Federal Contacts	
OEPA Northwest District Office 347 North Dunbridge Road Bowling Green, Ohio 43402 419.352.8461	ODNR Division of Wildlife 2045 Morse Road, Building G Columbus, Ohio 43229 614.265.6300
ODA Division of Plant Health Pesticide & Fertilizer Regulation 8995 E. Main Street, Bldg. 23 Reynoldsburg, Ohio 43068-3399 614.728.6987 or 800.282.1955 ext.31	USFWS – Ecological Services 4625 Morse Road, Suite 104 Columbus, Ohio 43230 614.416.8993

v. Nearest emergency medical facilities:

Emergency Medical Facilities	
Toledo Hospital 2142 N. Cove Blvd. Toledo, Ohio 43606 419.291.4000	St. Vincent Medical Center 2213 Cherry Street Toledo, Ohio 43608 419.251.3232

vi. Nearest hazardous chemical responders:

Hazardous Chemical Responders	
Toledo Police Department 525 N. Erie St. Toledo, Ohio 43604 419.245.3340	Toledo Fire Department 545 N. Huron St. Toledo, Ohio 43604 419.936.3550
Midwest Environmental Control 28757 Glenwood Rd. Perrysburg, Ohio 43551 419.382.9200	

b. Adverse Incident Response Plans: The following are TASD procedures for responding to adverse incidents resulting from pesticide applications.

According to the General Permit, "adverse incident" means an incident, which you have observed upon inspection or of which you otherwise become aware, in which:

(1) A person or non-target organism may have been exposed to a pesticide residue, and
(2) The person or non-target organism suffered a toxic or adverse effect, or is reasonably likely to suffer a delayed or chronic adverse effect in the future."

i. Course of action and timing of responses to any incident resulting from pesticide applications: After confirming a report or observing an adverse incident from a pesticide discharge, the equipment utilized for the application will be taken out of service and checked for calibration and function. TASD will consult and follow the notification requirements as described in the OHG870003 NPDES General Permit Part 4.C.3. (page 12 of 42). Notification will be conducted by the Biologist or the General Manager when an adverse incident is discovered. Within 24 hours of discovering the adverse incident, TASD will notify OEPA NW District Office via email (nwdo24hournpdes@epa.ohio.gov) with an attachment of the Ohio EPA's Adverse Incident Report (https://epa.ohio.gov/divisions-and-offices/surface-water/permitting/pesticide-application-discharges--general-permit). Within 30 days after the initial discovery of an adverse incident, TASD will file a 30-Day Adverse Incident Written Report that includes all of the components outlined in Part 4.C.4.a.-r. of the OHG870003 NPDES General Permit (page 13 of 42) if any of the required information was not previously made available in its first written Adverse Incident Report submitted for notification purposes.

TASD will follow the requirements of the permit for any corrective actions that may be necessary for adverse incidents or spills/leaks as described in Part 4.C. of the OHG870003 NPDES General Permit (pages 11-14 of 42).

ii. Chain of command notification for the incident: The TASD employee that is notified of or discovers an adverse incident will immediately contact the Operations Manager and then notify the Biologist or the General Manager. The Biologist or the General Manager will conduct the required notifications to the appropriate external agencies and initiate any necessary reports and corrective actions or recommendations. If the incident requires that external agencies be notified within 30 minutes of a discovery, then it may be necessary for the employee notified or making the discovery to conduct the initial notifications, in lieu of the Biologist or General Manager.

iii. State/Federal contacts: Adverse incidents of human health concern are reported via phone within 30 minutes of discovery to 1.800.828.9378.

State and Federal Contacts	
OEPA Northwest District Office 347 North Dunbridge Road Bowling Green, Ohio 43402 419.352.8461	ODNR Division of Wildlife 2045 Morse Road, Building G Columbus, Ohio 43229 614.265.6300
ODA Division of Plant Health Pesticide & Fertilizer Regulation 8995 E. Main Street, Bldg. 23 Reynoldsburg, Ohio 43068-3399 614.728.6987 or 800.282.1955 ext.31	USFWS – Ecological Services 4625 Morse Road, Suite 104 Columbus, Ohio 43230 614.416.8993

iv. Nearest emergency medical facility:

Emergency Medical Facilities	
Toledo Hospital 2142 N. Cove Blvd. Toledo, Ohio 43606 419.291.4000	St. Vincent Medical Center 2213 Cherry Street Toledo, Ohio 43608 419.251.3232

vi. Nearest hazardous chemical responder:

Hazardous Chemical Responders		
Toledo Police Department 525 N. Erie St. Toledo, Ohio 43604 419.245.3340	Toledo Fire Department 545 N. Huron St. Toledo, Ohio 43604 419.936.3550	Midwest Environmental Control 28757 Glenwood Rd. Perrysburg, Ohio 43551 419.382.9200

c. Pesticide Monitoring Schedules and Procedures: TASD does not directly discharge to quarries, borrow pits, or ponds greater than five acres and, as such, is not required to monitor for maximum contaminant levels (MCL) as discussed in Part 3. B. 2 of the OHG870003 NPDES General Permit (page 8 of 42).

TASD monitors pesticide application and discharges consistent with the requirements listed in Part 3. C. 1, Monitoring Requirements for all Permittees, of the OHG870003 NPDES General Permit (page 9 of 42). Discussion on TASD's compliance is provided in other sections of its PDMP Part 5. B. 5. – Pest Surveillance, which describes TASD larval and adult mosquito population surveillance pre-and post-application and the record keeping for monitoring the need and effectiveness of pesticide applications. Through pest surveillance, the assessment of each treatment, the rotation of different pesticidal products as listed in Part 5. B. 4. f. i, and usage of the CDC Bottle Bioassay and semi-field/field cage trials, TASD is able to monitor and manage pest resistance. Detailed descriptions

of how TASD utilizes ULV cold foggers equipped with Smartflow regulators and multiple software packages to apply pesticide in a consistent manner according to the obligation and authority of the FIFRA label, address weather conditions during application, and the proper operation of equipment is provided under "Adulticides" in Part 5. B. 4 f. ii. Discussion on maintenance activities to minimize the potential for leaks, spills, and unintended/accidental releases of pesticides to the waters of the state is discussed in detail in Part 5. B. 6. A. i. TASD staff have continuing education requirements for licensure and regularly attend conferences and host education seminars regarding mosquito control application practices so that all applicators are equipped with the knowledge and ability to utilize sound professional judgment in their pesticide applications and monitoring.

Additional specifications of this monitoring including the, Visual Monitoring Requirements, as laid out in the OHG870003 NPDES General Permit Part 3. C. 2 are discussed below:

i. The process for determining the location of any monitoring: When determining locations for monitoring of any adverse impacts, TASD staff monitors locations of all hand-applied larviciding discharges for the function of the application equipment and proper application rates, as well as adverse impacts. Because liquid larvicides are applied from a truck, similar to adulticides, and cover a larger geographic area the visual monitoring practices locations are selected using the same criteria as adulticiding applications. Visual monitoring for adverse incidents at adulticiding application sites, are chosen by focusing on areas that have received treatment within the previous 24-hour period and contain surface waters and/or a high likelihood of non-target species richness.

Visual monitoring occurs during all post-larvicide and adulticide application pest surveillance activities.

ii. Schedule(s) and procedure(s) for any monitoring: All larvicidal applications are made with handheld equipment that can be monitored while it is in use to ensure it is functioning properly and as intended. The equipment monitoring in use for larvicides is done as part of standard practice for all applications.

Adverse impact inspections from hand-applied larviciding discharges are conducted routinely during applications and whenever a new product is being trialed (documented electronically), as well as selectively post-applications. Post-application monitoring occurs approximately 100 times a season and is recorded electronically. This visual monitoring for adverse impacts involves observation of the waters treated with larvicide for any of the conditions as defined in Part 7 of the OHG870003 NPDES General Permit.

Liquid larvicide applications are monitored after each application for adverse impacts as well as proper larvicide application. The machines are visually checked for evidence of improper function and adverse impact monitoring procedures are conducted in the same manner as adulticiding.

This PDMP includes additional discussion on the equipment and software used to confirm adulticide applications in Part 5.B.4.f.ii, as well as procedures for determining the lowest effective amount of pesticide product per application for adulticiding. For monitoring of adulticide applications, TASD uses the

implemented electronic recording technology. Pesticide usage is automatically logged every second and that usage record also includes environmental conditions, application rates, and vehicle information. The complete record is reviewed daily. The applicators utilize GPS mapping to confirm location treatment and the electronic record on GIS mapping confirms the appropriate area was treated.

After adulticiding applications, TASD lab staff regularly monitors all surveillance points for adverse incidents during the routine daily service of mosquito traps. This is denoted electronically on the NJLT and/or GT surveillance entries. Additional visual monitoring for adverse impacts is done on at least a weekly basis, if applications are made, and also recorded electronically. The visual monitoring for adverse impacts involves observation of surface waters and the surrounding environment from the selected location for any of the conditions as defined in Part 7 of the OHG870003 NPDES General Permit.

iii. The person (or position) responsible for conducting monitoring: Hand-applied larviciding applications are monitored for both adverse impacts and discharge propriety by the applicators (documented electronically). Post-application hand-applied larviciding is monitored for adverse impacts by the Operations Manager, chief supervisors, General Manager, or a biologist (documented electronically).

Liquid larvicide applications are monitored by the General Manager, biologist, or other lab staff for adverse incidents and recorded electronically. All larviciding applications and discharges are monitored by the applicator and the equipment is monitored through the maintenance activities of the Operations Managers.

Adulticide monitoring for adverse impacts is conducted by any of the following: applicators, biologists, lab staff, Operations Managers, Chief Supervisors, or the General Manager. Monitoring of adulticide application and discharges is completely automated and reviewed daily by the Adulticiding Operations Manager, General Manager, or office staff. Monitoring of the adulticiding discharge application equipment is also conducted by the Operations Manager.

iv. Procedures for documenting any incidents of observed noncompliance: All pesticide application monitoring reports are reviewed by the Biologist, General Manager, or designated office personnel to confirm compliance with pesticide label application limits, the TASD PDMP, and desired treatment as directed by the General Manager. Incidents of noncompliance or adverse effects are documented on Adverse Incident Report Forms (https://epa.ohio.gov/divisions-and-offices/surface-water/permitting/pesticide-application-discharges--general-permit) and reported as discussed in Part 5. B. 6. b. of this PDMP.

Part 5. B. 7. – Procedures for Protecting Endangered/Threatened Species

TASD has a collaborative working relationship with the USFWS. On an annual basis, TASD submits its Program Plan that outlines anticipated pesticide product choice and planned use patterns. USFWS then authors a technical letter of assistance to guide TASD operations and BMP to prevent impact to the threatened and endangered species in the treatment area. The technical letter of assistance provides instruction for application areas to avoid with any specific larvicides or adulticides and addresses TASD's cooperative efforts with other land managers in the treatment area.

The USFWS technical letter of assistance provides a summary of the threatened and endangered species within the TASD treatment area and discusses the impact of the TASD Program Plan on the species of concern. TASD and USFWS have confirmed that the TASD IMM practices and pesticide usage patterns are not anticipated to have a negative impact on listed species. Some specific activities that have been implemented through this relationship include;

- Application exclusion near Swan Creek of some chemical larvicides and adulticides to prevent impact to the Rayed Bean Mussel (*Villosa fabalis*)
- Exclusion zones identified by local environmental preserve managers to protect the Karner Blue Butterfly (*Lycaedes melissa samuelis*).

Further, USFWS has identified that adulticiding practices by TASD are not anticipated to impact the endangered and threatened bat species, Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) respectively, because of the "*selectivity of the products proposed, low toxicity of most products to mammals, and limited consumption of treated mosquitoes*" (USFWS Technical Letter of Assistance to TASD, May, 2019).

To further protect threatened and/or endangered species, prior to the start of pesticide use control measures, TASD checks the EPA's Bulletins Live! Two website for any bulletins or pesticide use limitation areas (PULA).

Additionally, prior to the initiation of pesticide use control measures each year, TASD contacts local land managers for the Metropark system, The Olander Park System, the Ohio Department of Natural Resources, and The Nature Conservancy to cooperatively work on the exclusion of environmentally sensitive areas from mosquito control operations. There is an "Application for Exclusion from TASD Services" survey form that TASD provides each land manager to assist in the identification of locations to exclude from mosquito control services for areas and species of concern. Through the use of its automated pesticide monitoring, GIS mapping software, and ULV machines, TASD is able to ensure accurate pesticide application and reduction of the potential for pesticides into the exclusion zones while consistently using the lowest effective application rates.

Collectively these efforts support TASD's commitment to causing no adverse effects to threatened and endangered species within the treatment area, including those known to be present in surface waters.

Part 5. B. 8. – Signature Requirements

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ 2-15-2024

Paul Bauman, General Manager/Senior Biologist Date

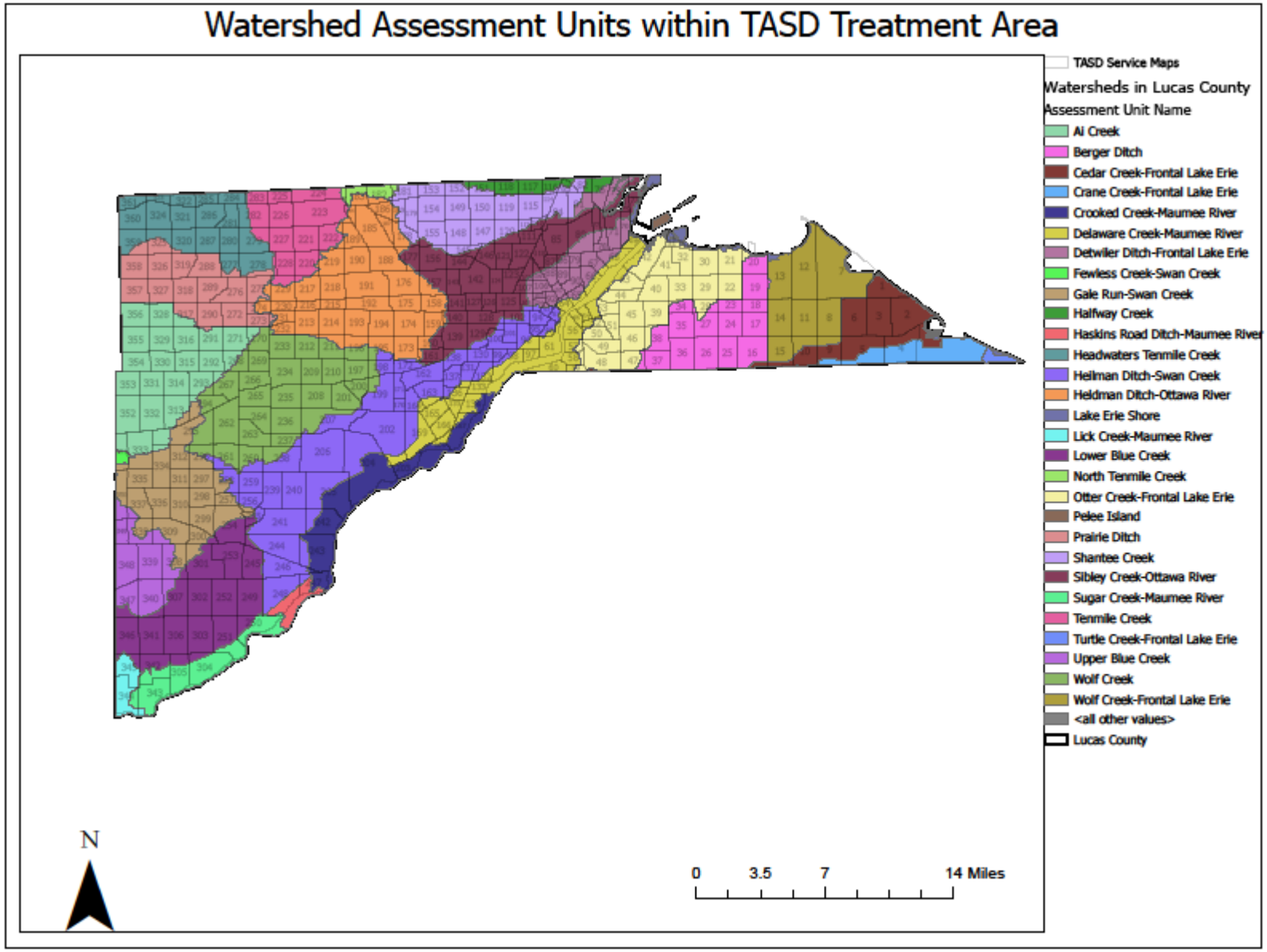
Part 5. B. 9. – PDMP Modifications

The TASD PDMP is reviewed in full and revised prior to any discharges being made each year (i.e. the corrective action deadlines in Part 4.C.2). Versions of the Plan prior to edits, but within the current permit timeframe, are kept on file. The new Plan is dated with the date of completion of the full review each season and labeled as a revision date. As operational and/or record keeping processes are modified during a mosquito control season small edits may be made to the Plan and kept on file, as well.

Part 5. B. 10. – PDMP Availability

The TASD PDMP and supporting materials (i.e. maps and documents) are kept at the District office in the office of the General Manager. An electronic copy of the PDMP and supporting materials is also stored on the TASD server and automatically backed up to cloud storage, monthly. The TASD PDMP and supporting materials are immediately available to OEPA; a State, Territorial, Tribal, or local agency governing pesticide applications, National Marine Fisheries Service (NMFS), and USFWS, or upon request.

Appendix A.


Watershed Assessment Units within TASD Treatment Area
TASD Service Maps
Watersheds in Lucas County
Assessment Unit Name
Al Creek
Berger Ditch
Cedar Creek-Frontal Lake Erie
Crane Creek-Frontal Lake Erie
Crooked Creek-Maumee River
Delaware Creek-Maumee River
Detwiler Ditch-Frontal Lake Erie
Fewless Creek-Swan Creek
Gale Run-Swan Creek
Halfway Creek
Haskins Road Ditch-Maumee River
Headwaters Tenmile Creek
Heilman Ditch-Swan Creek
Heldman Ditch-Ottawa River
Lake Erie Shore
Lick Creek-Maumee River
Lower Blue Creek
North Tenmile Creek
Otter Creek-Frontal Lake Erie
Pelee Island
Prairie Ditch
Shantee Creek
Sibley Creek-Ottawa River
Sugar Creek-Maumee River
Tenmile Creek
Turtle Creek-Frontal Lake Erie
Upper Blue Creek
Wolf Creek
Wolf Creek-Frontal Lake Erie
<all other values>
Lucas County
N
0 3.5 7 14 Miles

Appendix B –Pesticide Impairments for Watershed Assessment Units in Lucas County.

Watershed Assessment Unit	WAU ID	Pesticide Impairments
Ai Creek	04100009 07 01	None listed
Berger Ditch	04100010 07 05	None listed
Cedar Creek - Frontal Lake Erie	04100010 07 03	None listed
Crane Creek – Frontal Lake Erie	04100010 07 02	None listed
Crooked Creek - Maumee River	04100009 09 03	No information
Delaware Creek - Maumee River	04100009 09 04	None listed
Detwiler Ditch - Frontal Lake Erie	04100001 03 09	None listed
Fewless Creek - Swan Creek	04100009 07 02	None listed
Gale Run - Swan Creek	04100009 07 03	None listed
Halfway Creek	04100001 03 02	None listed
Haskins Road Ditch - Maumee River	04100009 06 03	None listed
Headwaters Tenmile Creek	04100001 03 04	None listed
Heilman Ditch - Swan Creek	04100009 08 04	None listed
Heldman Ditch - Ottawa River	04100001 03 07	None listed
Lake Erie Western Basin Shoreline	OHLE041202000201	None listed
Lick Creek - Maumee River	04100009 05 10	No information
Lower Blue Creek	04100009 08 02	None listed
North Tenmile Creek	04100001 03 05	None listed
Otter Creek - Frontal Lake Erie	04100010 07 06	None listed
Prairie Ditch	04100001 03 03	None listed
Shantee Creek	04100001 03 01	None listed
Sibley Creek - Ottawa River	04100001 03 08	None listed
Sugar Creek - Maumee River	04100009 06 02	None listed
Tenmile Creek	04100001 03 06	None listed
Turtle Creek – Frontal Lake Erie	04100010 07 01	None listed
Upper Blue Creek	04100009 08 01	None listed
Wolf Creek	04100009 08 03	None listed
Wolf Creek - Frontal Lake Erie	04100010 07 04	None listed

*Most recently available Waterbody Reports for each individual Watershed Assessment Unit kept on file with required NPDES records.

*Reference - Interactive Map of 2022 Integrated Report Information (accessed February 2, 2024)

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Female Mosquito Counts – Surveillance Trap Action Thresholds

New Jersey Light Traps

NJLT Name/Location	Action Threshold	TASD Service Map Number
Cedar Point Road	> 37	12
St. Ignatius	> 5	23
Pearson Park	N/A	35
Oregon Cemetery	> 5	40
Paschal	> 5	49
Point Place	> 5	70
Forest Cemetery	> 5	90
The Believe Center	> 5	96
Hazelhurst	> 6	121
Semoff	> 5	151
Swan Creek Metropark	> 5	162
Wildwood Rd	> 5	133
Ottawa Hills	> 5	176
Miakonda	> 14	185
Monclova	> 5	204
Wentworth	> 7	209
Sylvania	> 5	224
Crissey	> 6	229
Conrad Park	> 5	243
Whitehouse	> 5	255
Laplante	> 9	261
Kutz	> 8	304
Wickoff	> 20	315
Berkey	> 5	319
Oak Openings	N/A	334
Doran	> 19	340

- Any additionally added new NJLT locations will have an initial threshold set at >5 female mosquitoes.
- County sweep may commence when total daily trap counts exceed 250 mosquitoes with no one trap accounting for more than 25% of that daily total.
- County sweep may occur when removal of a single trap with 25% of the total for traps still results in excess of 250 mosquitoes.

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Stationary Gravid Traps Thresholds Table

Stationary gravid trap activation thresholds are met when daily female mosquito totals exceed the value indicated below for a given week, post WNV detection in the mosquito population. Prior to the detection of the West Nile virus in the mosquito population the value indicated for week 1 at a given location will act as the activation threshold.

Weeks Since Season's First Positive WNV Pool	Threshold
<1	849
2	296
3	175
4	122
5	92
6	72
7	59
8	49
9	42
10	36
11	31
12	27
13	23
14	21
15	18

Other Traps

- Rotational gravid trap collections will follow stationary trap thresholds.
- BG Sentinel Trap collections in excess of 24 female mosquitoes
- CDC Light Trap collections in excess of 49 female mosquitoes
- GAT collections in excess of 10 female mosquitoes
- Any collection of a single invasive mosquito species

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Appendix D.

Toledo Area Sanitary District
Product Spill/Leak Report & SOP

Date: _____ Time: _____

Location: _____

Product(s) spilled/leaked: _____

Description of circumstances leading to the spill/leak:

_____
_____
_____
_____
_____

Procedures to follow:

1. Apply proper personal protective equipment (PPE).
2. Contain the spill/leak using spill kit supplies in truck.
3. Attempt to contact and notify Chief Supervisor, if unavailable then contact Operations Manager, and finally General Manager if no one else is available.
4. Notify the Northwest District Office of the Ohio EPA of the spill within 30 minutes at 1-800-282-9378.
5. Notify the City of Toledo Environmental Services at 419.936.2020, if within City limits.
6. After notifying TASD management and the EPA, move on to absorption/cleanup. If the spill exceeds the cleanup capacity of the truck spill kit, consult with TASD management member contacted about the need to contract immediate cleanup with Midwest Environmental Control 419.382.9200
7. Remove all absorption/cleanup materials in spill kit bag for off-site proper disposal.
8. Upon return to office:
   - Notify the Ohio Department of Agriculture of the event at 800-282-1955 or 614-728-6987.
   - Review NPDES Compliance Plan and ensure all requirements are met.
   - Finalize this report and submit it to TASD Management.
9. Within 24 hours of event, e-mail details of the spill/leak to Northwest District Office of the Ohio EPA at nwdo24hournpdes@epa.ohio.gov

Applicator name: _____ Signature: _____

Manager: _____ Signature: _____