

# 2025 Wellhead Protection Plan

East Lansing Meridian Water & Sewer Authority



Prepared for



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Prepared by



TRI-COUNTY regional planning commission



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# List of Acronyms

<b>BMP</b>	Best Management Practices
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>EGLE</b>	Michigan Department of Environment, Great Lakes, and Energy
<b>ELMWSA</b>	East Lansing Meridian Water and Sewer Authority
<b>EPA</b>	United States Environmental Protection Agency
<b>GIS</b>	Geographic Information System
<b>GMB</b>	Groundwater Management Board
<b>ICHD</b>	Ingham County Health Department
<b>MDEQ</b>	Michigan Department of Environmental Quality
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>PCSI</b>	Potential Contamination Source Inventory
<b>Tri-County</b>	Tri-County Regional Planning Commission
<b>USGS</b>	United States Geological Survey
<b>Wells Type 1</b>	Municipal or Community Public Water Supply Well
<b>WHP</b>	Wellhead Protection
<b>WHPA</b>	Wellhead Protection Area
<b>WHPP</b>	Wellhead Protection Program
<b>WPV</b>	Wellhead Protection Viewer

# Introduction

Michigan's Wellhead Protection Program was developed under the authority of the Michigan Safe Drinking Water Act (Public Act 399 of 1976 as amended) and in response to the 1986 amendments to the Federal Safe Drinking Water Act. While the Environmental Protection Agency (EPA) required each state to have a wellhead protection program, states have the option to make it voluntary or mandatory. Michigan has chosen to make wellhead protection a voluntary program. The program is implemented locally, through the cooperation and coordination of activities by local, county, regional, state, and federal agencies.

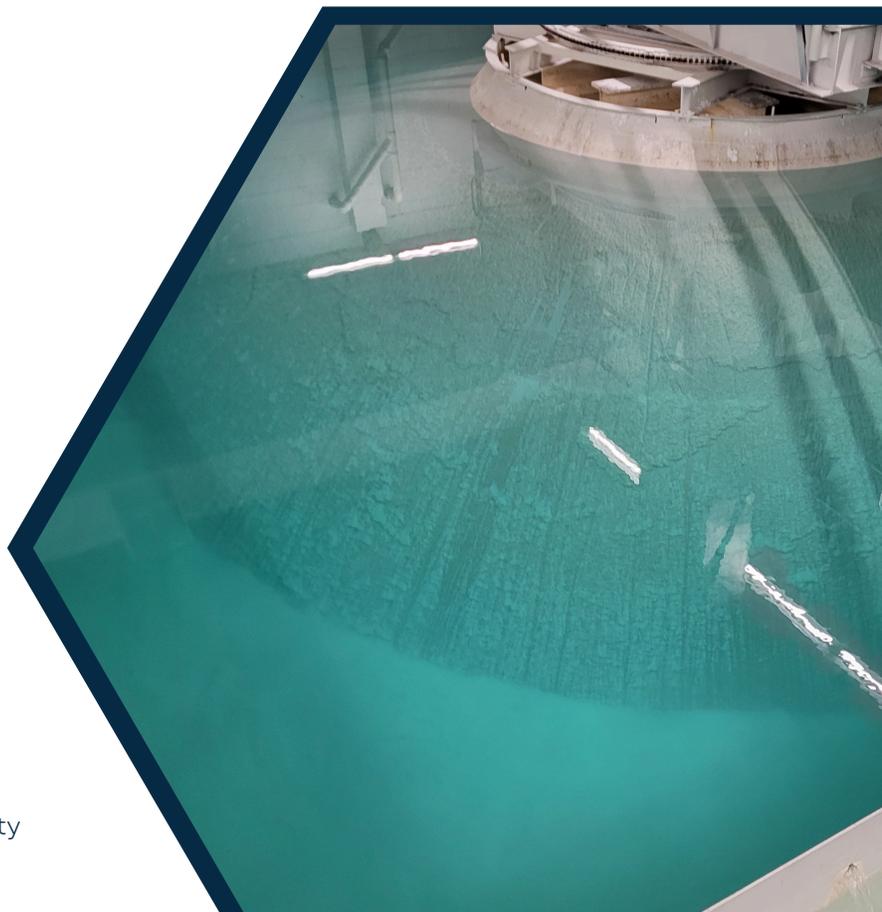
The purpose of Michigan's Wellhead Protection Program (WHPP) is to protect public water supply systems, which use groundwater, from potential sources of contamination. Delineating those areas that contribute groundwater to public water supply wells, identifying potential sources of contamination within these areas, and minimizing those threats to the public water supply systems are the primary steps in protecting the groundwater supplies.

The ten-year time-of-travel is used as a tool to prioritize the areas of highest concern. However, the team that developed this plan felt that it was important to protect all of the groundwater in the community in order to plan for the protection of future water withdrawals and private wells. Thus, the East Lansing Meridian Water & Sewer Authority's (ELMWSA) WHPP has been designed to protect all groundwater supplies within the City of East Lansing's and Meridian Township's limits.

The City of East Lansing and Meridian Township created a joint WHPP because they share, fund, and govern a joint water utility. They have a combined WHP team with representatives from both communities that continue to work together to maintain a comprehensive plan to protect local drinking water supplies.

EGLE requires updates to the WHPP every six years. This plan is an update to the previous wellhead protection plans: the original WHPP, which was approved on February 1, 2001; the update submitted to MDEQ on September 30, 2006; the second update submitted to MDEQ on September 30, 2010; and the third update submitted to MDEQ on September 7, 2018.

- The 2006 update addressed the climate of security changes that resulted from the September 11, 2001, incident.
- The 2010 update included updating the wellhead team roster, revisions to the wellhead delineation areas in accordance with the latest USGS modeling, and descriptions of means to keep the goals and management strategies current.
- The 2018 update included updating the wellhead team roster, revision to the wellhead delineation areas using the 2017 pump rates in the latest USGS modeling, additions and revisions to the inventory of potential sources of contamination, changes to the management strategies for wellhead protection, revisions and additions to the ELMWSA public participation plan, and revised language to the contingency plan section to reflect where the plan has been filed.
- The 2025 update includes updating the wellhead team roster, additions and revisions to the Wellhead Protection Viewer used for the potential contamination source inventory list, and an update of ELMWSA's management strategies and public participation plan.



# Mission

*In order to prevent groundwater pollution in the identified wellhead protection areas and communities overall, the City of East Lansing and Meridian Charter Township have developed and continue to administer a joint wellhead protection program to protect drinking water through ongoing cooperative management strategies and public education.*

# Goals

**Goal #1:** To protect the public drinking water supply by preventing the pollution and contamination of surface water and groundwater within the wellhead protection area.

**Goal #2:** To clarify the roles and duties of agencies and individuals involved in wellhead protection.

**Goal #3:** To promote inter-governmental and intra-governmental cooperation to ensure protection of water resources within the wellhead protection area.

**Goal #4:** To promote the expedient and complete cleanup of existing contamination within the wellhead protection area.

**Goal #5:** To educate the general public, property owners, and business community within the wellhead protection area about the significance of our water source and supply and the need to protect it.

**Goal #6:** To educate all residents, property owners, and businesses through the entire City of East Lansing and Meridian Township about the significance of our water source and supply and the need to protect it.

**Goal #7:** To plan and prepare for water supply emergencies.

**Goal #8:** To identify and evaluate potential and existing sources of drinking water contamination and provide recommendations to either eliminate or minimize their risk to the maximum extent practical.

**Goal #9:** To incorporate wellhead protection considerations into each community's ongoing regulatory review and planning process.

# Wellhead Protection Team

The team was created from staff members of the City of East Lansing, Meridian Township, and the East Lansing Meridian Water and Sewer Authority. Additional members were included to represent education, environmental agencies, and regional partners. This team currently meets on a quarterly basis.

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<p><b>Lauren Schnoebelen</b>  <i>Environmental Planner  Tri-County Regional Planning  Commission</i></p>	<p>Assists with wellhead protection plan development, implementation of outreach and education activities, and helps with intergovernmental coordination</p>	<p><b>Address:</b> 3135 Pine Tree Road  Suite 2C, Lansing, MI 48911  <b>Phone:</b> 517-999-8912  <b>Email:</b> <a href="mailto:lschnoebelen@mitcrpc.org">lschnoebelen@mitcrpc.org</a></p>

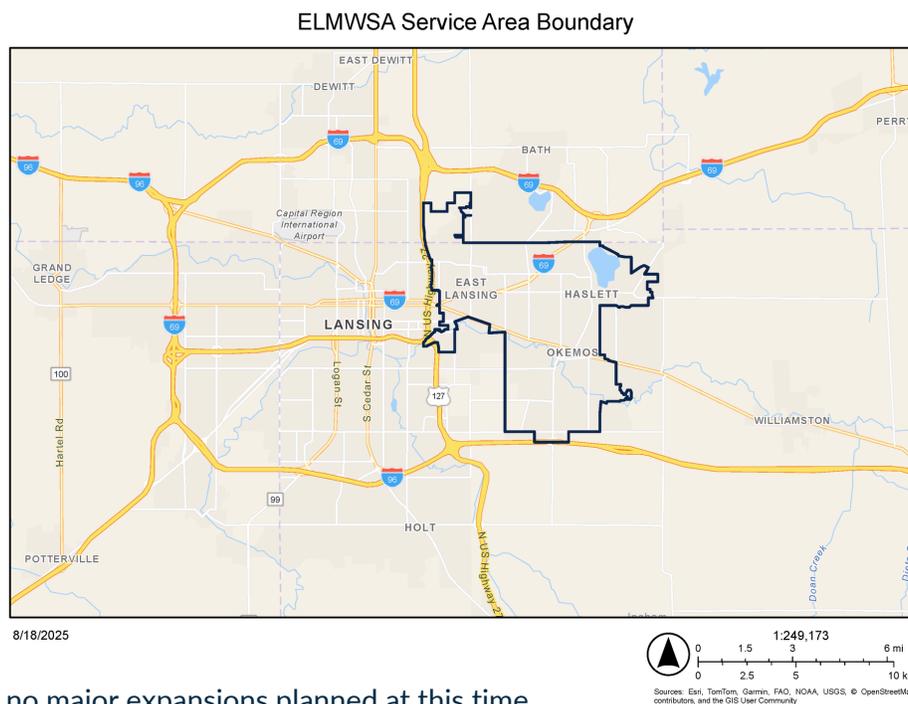
# Water Supply & Community Profile

The East Lansing Meridian Water and Sewer Authority (ELMWSA) owns and operates the water production facilities for East Lansing and Meridian Township. Each community has its own water distribution system and provides drinking water and fire protection services for its residents. ELMWSA pumps and treats the drinking water and provides it to the community water towers and distribution systems.

## Service Area

ELMWSA pumps its raw water from the Saginaw Aquifer, a water-bearing sandstone layer approximately 150 to 400 feet below the mid-Michigan region. Twenty-nine (29) active wells pump water into the water-conditioning plant, where the water is softened using a lime softening process with a soda ash addition. Phosphate, chloride, and fluoride are added to the finished water, producing a moderately hard, noncorrosive, disinfected drinking water. This water is then distributed to a total of 58,600 residents and businesses, with East Lansing servicing 33,000 and Meridian Township servicing 25,600.

Figure 1: ELMWSA Service Area Map



There are no major expansions planned at this time.

Please see the local EGLE District Office for the number of wells and capacity of each.

# Delineations for Wellhead Protection Areas

In 1996, Tri-County contracted with the U.S. Geological Survey (USGS) to perform a WHPA delineation in the nine-township area, including and surrounding the City of Lansing. The multiyear project took into account approximately 225 Type 1 wells in fourteen contiguous communities. The delineations were done for 10- and 40-year time-of-travel under 1992 pumping conditions and for 10-year time-of-travel under 1997 pumping conditions to provide decision makers with long-term planning information.

In 2009, the regional WHP teams requested that the delineation model be updated to reflect the various layers in the glacial and bedrock aquifers and to better reflect the degree of connection between the glacial and bedrock aquifers. Additionally, recharge estimates needed to be refined to reflect areas with lower recharge rates, such as paved areas. In response to this request, the model was updated to improve the representation of the groundwater-flow system in the tri-county region. The delineations using the updated 2009 model were done for 10- and 40-year time-of-travel under 2011-12 pumping conditions. Subsequent updates were completed in 2018, under 2017 pumping conditions.

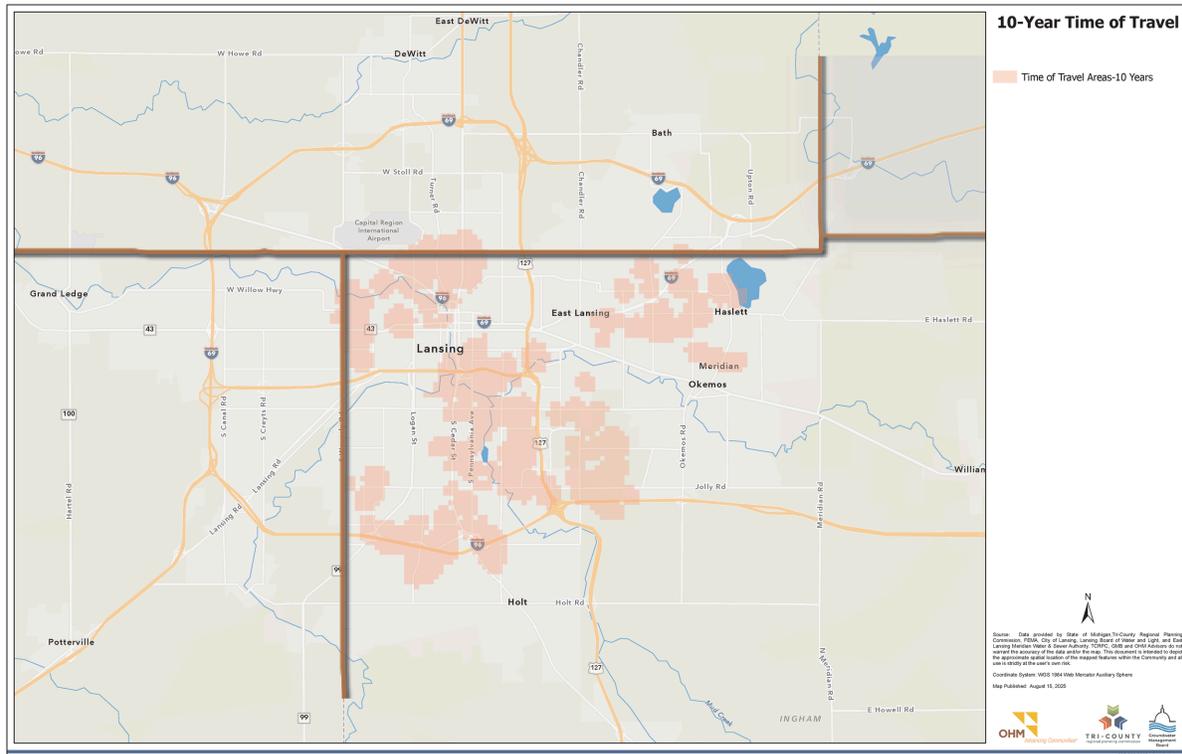
The delineations determined the 10-year contributing areas and the 10-year zone of transport around each existing bedrock well. Contributing areas refer to the land surface area from which water originates at any instant in time prior to discharging to a well. The zone of transport refers to all subsurface areas that contribute water to a well. USGS utilized the MODFLOW computer program for delineation, along with their particle-tracking program MODPATH.

As mentioned above, several different time scenarios have been run for the delineations. These different models allow for short-term and long-term planning scenarios and response times. The siting of future wells and the comparison of 10-year versus 40-year times-of-travel will help the City of East Lansing, Meridan Township, and ELMWSA plan for future expansions and, as applicable, prioritize resources to first protect the delineated areas.

The wellhead protection area maps are included as layers in the Wellhead Protection Viewer (WPV), which was updated in 2025 and described in detail in the Potential Contamination Source Inventory Section.

With the completion of this plan, the regional WHP teams are working towards the goal of identifying future approaches to updating the delineations for the region as new wells are acquired or drilled in the region. Properly managing local supplies continues to be a priority in order to support residential and industrial growth opportunities.

Figure 2: 10-Year Time-of-Travel Area



# Potential Contamination Source Inventory

A key part of a wellhead protection plan is identifying sites that could pose a risk to groundwater and cataloging them in a Potential Contaminant Source Inventory (PCSI). A PCSI is a detailed list of locations that pose a risk to groundwater resources, such as leaking storage tanks, oil and gas spills, or abandoned wells. By identifying these sites, informed land use decisions can be made which may prevent or minimize groundwater contamination, protect water quality, and avoid costly cleanup efforts.

Historically, PCSIs have been difficult to populate due to the data being drawn from multiple sources, such as county, state, and federal databases. The challenge has always been gathering the most recent information and then having the resources to maintain its accuracy. Most WHPPs contain a “snapshot” of PCSIs, which quickly become out of date soon after their publication. They are also often hard to work with since they draw information from so many places, and it can be difficult to present this information spatially.

Over the years, WHP teams across the greater Lansing region and the members of the Groundwater Management Board (GMB) have worked together to address the challenges of maintaining an updated and reliable PCSI. In 1999, a regional GIS-based wellhead protection viewer (WPV) was commissioned to bring together the data needed for a digital PCSI, which did not recognize political boundaries. For the first time, maps could be made showing selected information and allowing decision makers to clearly see these sites in relation to WHPAs. Though an effective tool, updates were costly, difficult to complete, and could only be afforded every 5-10 years.

In 2020, with funding assistance from an EGLE Source Water Protection grant, ELMWSA and Tri-County worked with OHM Advisors to improve and update the GIS-based WPV by linking it to live data sources. The new WPV was an interactive online mapping application that provided a variety of data, including well locations, time of travel areas, brownfields, and potential contamination source locations. It was a free and publicly available mapping tool that allowed communities and organizations to be better informed when making development decisions or responding to emergencies that may affect groundwater throughout the tri-county region. Following the development of this new public-facing format, Tri-County and the GMB have identified patterns in use and potential areas for improvement.

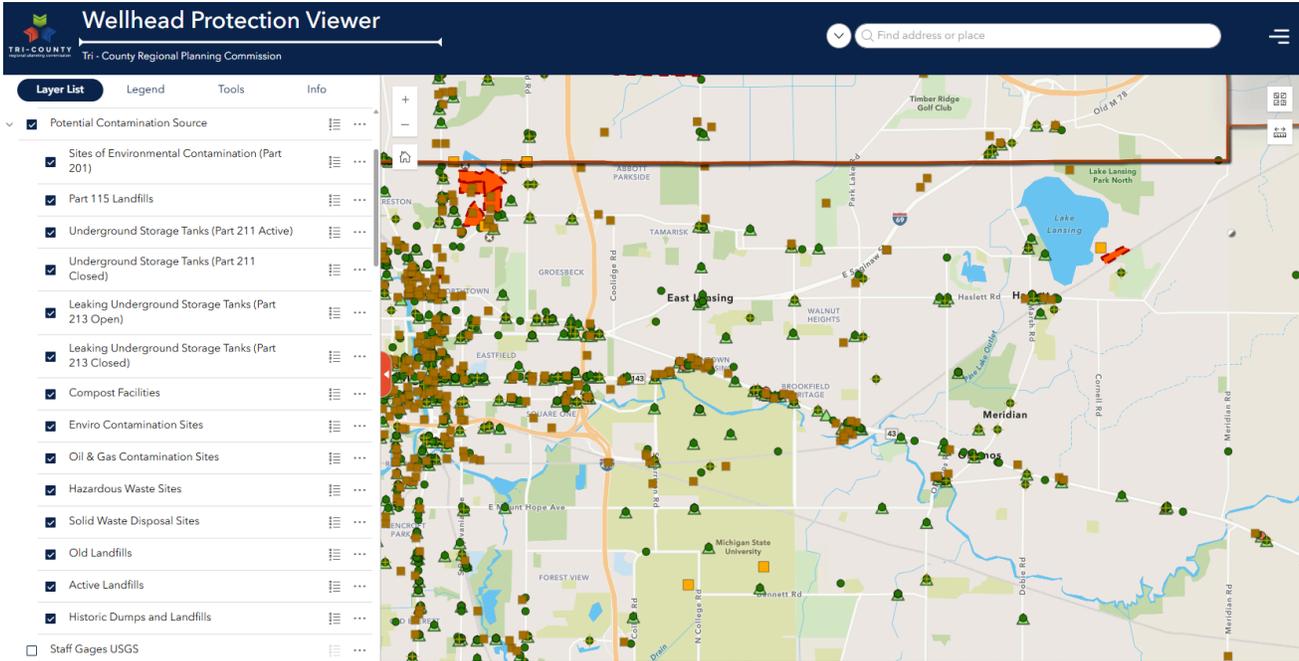
Since the last update, changes in GIS software have put the WPV at risk of decommission. To prevent losing access to this much-needed wellhead protection tool, ELMWSA and Tri-County once again worked with OHM Advisors in 2025 to transition the WPV to a new platform. With the help of an EGLE Source Water Protection grant, the latest update incorporates the most up-to-date data sources, addresses rising potential contaminants of concern like PFAS, and increases optimization for mobile use during on-site evaluation.

In its current state, the WPV allows the user to set boundaries, identify trends, analyze data, and perform site-specific queries for the seventy-five municipalities located in Clinton, Eaton, and Ingham counties. Additionally, training videos are available to aid users in the understanding and use of the WPV.

Among the layers included in the WPV is a specific category dedicated to wellhead protection, which incorporates the key sources of potential contamination identified by EGLE:

- Sites of Environmental Contamination (201 sites), Remediation and Redevelopment Division, EGLE (Part 201 of Act 451)
- Underground Storage Tank List, Remediation and Redevelopment Division, EGLE (Part 211 of Act 451)
- Leaking Underground Storage Tank Sites, Remediation and Redevelopment Division, EGLE (Part 213 of Act 451)
- Oil and Gas Contamination Sites, Oil, Gas, and Minerals Division, EGLE (Act 61)
- Hazardous Waste Generators, Materials Management Division, EGLE (Part 111 of Act 451)
- Groundwater Discharge Permits, Water Resources Division, EGLE (Part 31 of Act 451)
- Landfill/Solid Waste Disposal Site List, Materials Management Division, EGLE (Part 115 of Act 451)

Figure 3: Wellhead Protection Viewer



The WPV does not currently contain sites on the Federal National Priorities List; EPA, Region 5 (CERCLA & Superfund). However, the list is reviewed annually. The WPV, as well as the training videos, can be found on Tri-County's webpage ([mitcrpc.org/wellheadprotectionviewer](http://mitcrpc.org/wellheadprotectionviewer)). For direct access, please use the QR code below:



# Management Approaches for Local Wellhead Protection

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The overall management strategies for the City of East Lansing and Meridian Township are directed toward the mission of reducing potential risks to the drinking water supply. Specific details of the individual management strategies are, however, unique to each community's needs.

## Ongoing

1. Zoning issues may include groundwater overlay protection districts, prohibition of various land uses, special permitting, large-lot zoning, transfer of development rights to locations outside of wellhead protection areas but within the city/township limits, growth/timing controls, and performance standards.
2. Subdivision control practices focus primarily on stormwater drainage, wetlands, and floodplain requirements. Stormwater best management practices (BMPs) are currently being reviewed and enhanced under the city and township's Stormwater Phase II NPDES Permit process. These requirements are addressed during the site plan review process.
3. Health regulations are normally addressed through a variety of rules and regulations under EGLE and ICHD. Areas covered include addressing underground fuel storage systems, privately-owned wastewater treatment plants, prohibitions on certain septic cleaner additives, septic system upgrades, toxic or hazardous materials handling regulations, and private well standards (siting, permitting, installation, and abandonment).
4. Educational/incentive programs are generalized and intended to reach a broad spectrum of the community. These programs include public education, hazardous waste collection, contingency plans, groundwater monitoring, and the purchase of property rights and/or development rights to protect undeveloped properties.
5. Utilization of the Wellhead Protection Viewer/Potential Contaminant Source Inventory and the Environmental Permits Checklist during land use or infrastructure planning projects by planners, engineers, and leaders is integral in the protection of the groundwater supply.
6. The Wellhead Protection Viewer/Potential Contaminant Site Inventory identifies potential sites of contamination in regard to their relationship to the wellhead protection areas. Sites that fall within the wellhead protection areas will be given priority for cleanup efforts and funding.

7. The integration of activities, especially education and post-construction control requirements, required under each Community's Stormwater Phase II NPDES Permit, with the goals of wellhead protection incorporated.
8. Inclusion of wellhead protection updates and information as a specific section of each consumer confidence report.
9. Continuing to cooperate with surrounding communities to share information and strategies for improved wellhead protection.
10. Continuing to use information derived from the Fire Fighter's Right to Know database to ascertain which facilities within a wellhead protection area pose a threat to groundwater and should be targeted for education and remediation of contamination as appropriate.
11. The City of East Lansing's Comprehensive Plan includes several references for groundwater protection. The goal is to increase awareness so that, when land use decisions are made, water resources are taken into consideration.
12. Meridian Township's Master Plan and Climate Sustainability Plan include strategies to protect groundwater resources and recharge areas. This includes regional collaboration on groundwater protection, community outreach and education, and zoning and other land management practices.
13. With the assistance of Tri-County, conduct Wellhead and Groundwater Protection Audits to document efforts and metrics as a tool for tracking the success of wellhead/groundwater protection efforts.

## Proposed

1. Abandoned wells identified in wellhead protection areas will be given priority for permanent closure. The city and township will consider funding from the State of Michigan and/or will set aside monies for closures when available and appropriate.
2. With the assistance of Tri-County, implement an emergency response program at the county level to have emergency management coordinators notify water providers of hazardous spills that occur within their wellhead protection areas.

# Roles & Responsibilities

EGLE oversees the Michigan Wellhead Protection Program, which is voluntary. Local jurisdictions then choose to develop and implement their WHPP within EGLE's guidelines. As noted throughout this document, several agencies at the federal, state, regional, county, and local levels are responsible for overseeing programs that directly influence the WHPP goals of ELMWSA. This table assigns responsibilities and projects deadlines for those activities.

Management Strategy	Responsible Party	Project Deadline
Zoning as it pertains to groundwater issues	City Council, City Planning Commission staff, Township Board, Township Planning Commission staff	Ongoing
Subdivision control practices	City Council, City Planning Commission staff, Township Board, Township Planning Commission staff	Ongoing
Health regulations	EGLE, ICHD	Ongoing
Education/incentive programs	EGLE, USGS, ICHD, ELMWSA, Tri-County	Ongoing
Environmental Permits Checklist/Wellhead Protection Viewer	City Council, City Planning Commission staff, Township Board, Township Planning Commission staff, Tri-County staff	Ongoing
Integration of WHP with Stormwater Phase II NPDES requirements	City Council, City Planning Commission staff, Township Board, Township Planning Commission staff, Tri-County staff	Ongoing
Cooperation and coordination with surrounding communities	East Lansing staff, Meridian Township staff, ELMWSA staff, Tri-County staff	Ongoing
Sites of potential contamination	East Lansing staff, Meridian Township staff, Tri-County staff	Ongoing (data regularly updated through the WPV)
Groundwater protection audit	East Lansing staff, Meridian Township staff, Tri-County staff	Ongoing
Abandoned well closures	City Council, City Planning Commission staff, Township Board, Township Planning Commission staff, property owners	As needed. Point of sale in Ingham County will assist in identifying and properly abandoning wells.
Emergency response coordination and WHP	East Lansing staff, Meridian Township staff, ELMWSA staff, Tri-County staff	Ongoing

# Emergency Response Plan

In accordance with the state and federal requirements, the East Lansing Meridian Water and Sewer Authority has filed their Emergency Response Plan with the Michigan Department of Environment, Great Lakes, and Energy. They have also completed and certified their Risk and Resilience Assessment and Emergency Response Plan as required by the U.S. EPA under the 2018 American Water Infrastructure Act. For security reasons, it is not included in this document. The East Lansing Meridian Water and Sewer Authority, local emergency responders, and the State of Michigan have reasonable access to this document in the event of an emergency.

# Siting New Wells

In 2024, three Type 1 wells (identified as wells 30, 31, and 32) were purchased from the Lansing Board of Water & Light. Wells 30 and 31 are connected to a 16-inch transmission main that was installed in 2024 and 2025, with plans for them to be in service in 2026. A timeline for connecting well 32 has not been determined at this time. Beyond the acquisition of these wells, there are no new wells being planned for the system at this time. As these newly acquired wells come online, ELMWSA will work to update the wellhead delineation areas in the coming years based on their incorporation into the system.



# Outreach & Public Participation

The City of East Lansing and Meridian Township believe in the value of public participation as the best means to create a well-thought-out and ultimately successful final wellhead protection plan. Throughout the implementation and update process, the WHP Team has worked to encourage public participation through the following measures:

## Active

1. ELMWSA, City of East Lansing, and Meridian Township staff participate in regular Groundwater Management Board and Groundwater Technical Advisory Council meetings. The coordination of WHPPs is discussed at these meetings. **Ongoing**
2. Tri-County staff host local training sessions for wellhead protection resources, including the Wellhead Protection Viewer and the local Environmental Permits Checklist. The presentations are given to local planners, engineers, and emergency response coordinators. **Ongoing**
3. Hundreds of community members from the surrounding area attend the weeklong Michigan State University Science Festival. The GMB participates in the festival by hosting their Aquifer in a Cup activity, demonstrating to kids and adults what an aquifer is and how a well is used to bring water to the surface. **Ongoing**
4. ELMWSA staff volunteer at various functions throughout the year and also conduct periodic plant tours for area K-12 and Michigan State University students. **Ongoing**
5. The City of East Lansing, Meridian Township, and ELMWSA work with local media to keep the public informed of local groundwater issues and ongoing protection efforts. **Ongoing**
6. ELMWSA staff participate biannually in regional wellhead protection team leaders meetings, which provide an opportunity to learn more about other local WHP team activities. The successes and challenges teams face with wellhead protection are discussed, as well as sharing updates on materials produced and activities accomplished. **Ongoing**
7. ELMWSA produces a semiannual Consumer Confidence Report, which serves as an update to the community regarding the status of local water resources and ongoing efforts to protect and improve them. **Ongoing**

8. ELMWSA has purchased a groundwater model, which is available to schools and civic groups interested in learning more about their drinking water. **Completed**
9. A point-of-sale ordinance was passed by the Ingham County Board of Commissioners in June 2006, requiring inspections to be performed at properties with a well and/or septic on site. The goal of this ordinance is to identify and remediate failing systems and water supply wells. **Adopted June 2006/Ongoing**
10. ELMWSA staff work with the GMB to visit classrooms and teach students about groundwater and how to inspect their home's private well or read their Consumer Confidence Report. **Ongoing**
11. The GMB provides education about groundwater, drinking water (private and public supply), and septic systems on its social media platforms, including Facebook, X, and LinkedIn. **Ongoing**
12. The GMB attends several public events throughout the year focused on educating a wide variety of community members on the importance of groundwater protection through activities, outreach materials, and information sharing. **Ongoing**
13. Tri-County and the GMB review local ordinances, land use/master plans, and site plans to determine what, if any, actions need to be taken to ensure plans appropriately address groundwater and wellhead protection efforts. Presentations on findings, including any recommendations to strengthen groundwater and wellhead protection efforts, are given to those municipalities that participate in the ordinance review. **Ongoing**

## Historical

1. Tri-County hired a contractor to develop and present wellhead and groundwater protection information and opportunities to support local efforts to civic and business groups. Eight presentations were made to civic and business groups. **Completed**
2. The Greater Lansing Area was designated as a Groundwater Guardian Community by the Groundwater Foundation from 1995 to 2023. This program provided technical support and networking for communities dependent on groundwater for their water supply. **Completed/Program Discontinued**

3. ELMWSA staff participated in “National Earth Science Week” at Okemos High School, by providing a public community presentation about wellhead protection and groundwater. **Completed**
4. ELMWSA and City of East Lansing staff volunteered at the Children’s Water Festival, with thousands of students from East Lansing, Okemos, and Haslett schools attending. The Children’s Water Festival has since been incorporated into the Michigan State University Science Festival, with the GMB hosting their Aquifer in a Cup activity (see active strategies above). **Completed**  
  
Provided several local elementary schools with a copy of the video “Habitat H20” and the accompanying teacher’s guide. **Completed**
6. Created and executed multiple six-month local movie theatre ad campaigns to increase awareness of groundwater and wellhead protection. **Completed**  
  
Worked with neighboring communities and GEOPathway and MTO to integrate the Potential Contaminant Source Inventory data set using MapImage Viewer. The PCSI data has since been integrated into the Wellhead Protection Viewer. **Completed**
8. Worked with funding partners to disseminate the information from the Aquifer Study Updates. **Completed**
9. In collaboration with regional wellhead protection communities, ELMWSA participated in the ByProduct Synergy Pollution Prevention network. The wellhead protection communities recruited business entities identified within the PCSI 10-year time of travel to improve their green business practices. **Completed**
10. In collaboration with regional municipalities, ELMWSA created the Tri-County Water Policies and Programs Guide in 2015. The guide provided a gap analysis of the region’s groundwater protection practices, effectiveness of programming, and best management strategies. It was disseminated to communities throughout Clinton, Eaton, and Ingham counties. **Completed**
11. Seminars for local businesses and presentations at service clubs were conducted in 2005 and 2006 to provide businesses with an opportunity to learn more about groundwater, drinking water systems, and the type of potential contaminants located at their business. **Completed**