

Wellhead Protection Inventory Form

Survey Conducted by: _____ Date: _____

Instructions: The attached map illustrates property that is included in the approximate wellhead protection area (WHPA). The following table list possible land uses and their associated risk of environmental contamination. Starting with the number 1, assign a Map ID number for each **high risk (medium and low risk land use will not be tracked)** land use described in the table that is also present in or near the WHPA. Also identify the common name and address of the property on the table and mark the property's location on the attached *Wellhead Protection Inventory Map*. For example, if "Bob's Automotive Body Shop" is located within the WHPA, mark the map to identify the property location and complete the table as follows:

| Commercial/Industrial | | Map ID | Common Property Name / Address |
|-----------------------|----------------|--------|---|
| Automobiles | Body Shops (H) | #1 | <i>Bob's Body Shop, 120 Main Street</i> |

Table of Potential Land Use

| Commercial/Industrial | | Map ID | Common Property Name / Address |
|---|------------------------|--------|--------------------------------|
| Automobiles | Body Shops (High, H) | | |
| | Car Washes (Medium, M) | | |
| | Gas Stations (H) | | |
| | Repair Shops (H) | | |
| Boat Services/Repair/Refinishing (H) | | | |
| Cement/Concrete Plants (M) | | | |
| Chemical/Petroleum Processing/Storage (H) | | | |
| Dry Cleaners (H) | | | |
| Electrical/Electronic Manufacturing (H) | | | |
| Fleet/Trucking/Bus Terminals (H) | | | |
| Food Processing (M) | | | |
| Furniture Repair/Manufacturing (H) | | | |
| Hardware/Lumber/Parts Stores (M) | | | |
| Home Manufacturing (H) | | | |
| Junk/Scrap/Salvage Yards (H) | | | |
| Machine Shops (H) | | | |
| Medical/Vet Offices (M) | | | |
| Metal Plating/Finishing/Fabricating (H) | | | |
| Mines/Gravel Pits (H) | | | |
| Office Buildings/Complexes (Low, L) | | | |
| Parking Lots/Malls - >50 Spaces (H) | | | |
| Photo Processing/Printing (H) | | | |
| Plastics/Synthetics Producers (H) | | | |
| Research Laboratories (H) | | | |
| RV/Mini Storage (L) | | | |
| Wood Preserving/Treating (H) | | | |
| Wood/Pulp/Paper Processing or Mills (H) | | | |
| Others (list) | | | |
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LEGEND:

Suggested ranking of potential contaminant sources.
 H = Higher Risks M = Moderate Risks L = Lower Risks

Wellhead Protection Inventory Form (Cont.)

Table of Potential Land Use

| Agricultural/Rural | Map ID | Common Property Name / Address |
|--|---|---------------------------------------|
| Auction Lots (H) | | |
| Boarding Stables (M) | | |
| Concentrated Animal Feeding Operations (CAFOs) (H) | | |
| Crops - Irrigated | Berries, Hops, Mint, Orchards, Greenhouses, Vegetables | |
| Crops - Nonirrigated | Christmas Trees, Grains, Grass | |
| Farm Machinery Repair (H) | | |
| Grazing Animals (>5 large animals or equivalent per acre) | | |
| Homesteads - Rural | Machine Shops (H) Septic Systems (L) | |
| Lagoons/Liquid Wastes (H) | | |
| Land Application Sites (M) | | |
| Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, Others (list) | | |
| | | |
| | | |
| | | |

| Residential/Municipal | Map ID | Common Property Name / Address |
|---|---------------|---------------------------------------|
| Airports - Maintenance/Fueling Areas (H) | | |
| Apartments and Condominiums (L) | | |
| Campgrounds/RV Parks (L) | | |
| Drinking Water Treatment Plants (M) | | |
| Fire Stations (L) | | |
| Golf Courses (M) | | |
| Housing - High Density - >1 House/0.5 Acres (M) | | |
| Landfills/Dumps (H) | | |
| Motor Pools (M) | | |
| Parks (M) | | |
| Railroad Yards/Maintenance/Fueling Areas (H) | | |
| Schools (L) | | |
| Septic Systems - High Density - >1/Acre (H) | | |
| Utility Stations - Maintenance Areas (H) | | |
| Waste Transfer/Recycling Stations (M) | | |
| Wastewater Treatment Plants/Collection Stations (M) | | |
| Others (list) | | |
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* Drip - Irrigated crops, such as vineyards and some vegetables, are considered lower risk (L).

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Suggested ranking of potential contaminant sources.
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Wellhead Protection Inventory Form (Cont.)

Table of Potential Land Use

| Miscellaneous | | Map ID | Common Property Name / Address |
|--|--------------------------------|---------------|---------------------------------------|
| Above Ground Storage Tanks (M) | | | |
| Construction/Demolition Areas (M) | | | |
| Historic Gas Stations (H) | | | |
| Historic Waste Dumps/Landfills (H) | | | |
| Injection Wells/Drywells/Sumps (H) | | | |
| Managed Forests (M) | | | |
| Military Installations (H) | | | |
| Surface Water - Streams/Lakes/Rivers (L) | | | |
| Transportation | Freeways/State Highways (M) | | |
| | Railroads (M) | | |
| | Right-of-Ways - Herbicide Use | | |
| Underground Storage | Confirmed Leaking Tanks - DEQ | | |
| | Decommissioned - Inactive (L) | | |
| | Non-Regulated Tanks - <1100 | | |
| | Not Yet Upgraded or Registered | | |
| | Upgraded and/or Registered - | | |
| Wells (H) | | | |
| Random Dumpsites (M) | | | |
| Sludge Disposal Areas (M) | | | |
| Others (list) | | | |
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**City of Harbor Springs
Wellhead Protection Program Goals**

Mission Statement: Develop a successful long-term program to protect Harbor Springs' drinking water well fields and to prevent groundwater pollution in the wellhead protection areas through public education and through cooperative management by local government agencies.

Goal #1 To protect the public drinking water supply by preventing the pollution of surface and groundwater within the Wellhead Protection Areas (WHPA).

Objective is to maintain a safe drinking water supply and protect the City's infrastructure investment in the water supply by preventing pollution from entering the groundwater.

Methods: - Define the Wellhead Protection Area (WHPA)
- Inventory actual and potential contamination within the WHPA
- Ensure historical wells have been properly abandoned
- Coordinate WHP activities with County and State agencies

Goal #2 To instill a sense of ownership of the well fields and encourage the local community to recognize that wellhead protection is both worthwhile and necessary.

Objective is to develop local awareness and support for wellhead protection.

Methods: - Develop educational strategies
- Notify property owners located near the well fields

Goal #3 To clarify the roles and duties of agencies and individuals involved in wellhead protection.

Objective is to develop a WHP program that will remain effective after initial work is completed.

Methods: - Assign municipal staff
- Identify volunteers to assist with various aspects of the program

Goal #4 To promote inter-governmental and intra-governmental cooperation to assure protection of the water resources within the WHPA.

Objective is to address groundwater protection on a regional basis.

Goal #5 To promote the speedy and thorough cleanup of existing contamination within the WHPA.

Objective is to reduce the likelihood of contaminants migrating into the municipal water supply.

Methods: - Document known sites of contaminations
- Develop cleanup and priority and monitoring system

Goal #6 To plan and prepare for water supply emergencies.

Objective is to develop a plan for backup water supply in the event of a water supply emergency. Intent is also to develop a contingency plan to respond to potential natural and man-made events including hazardous material spills, vandalism, power loss etc.

Methods: - Develop program with local municipal leaders
- Define program in a written plan

Glossary of Terms

Aquifer

Permeable geologic material, such as rock, sand, or gravel, which contains water in sufficient quantities to supply a well.

Confined Aquifer

1) An aquifer overlain and underlain by impermeable layers, such as clay; or 2) an aquifer in which the groundwater is under pressure greater than atmospheric pressure and which will rise in a well above the point at which it is first encountered.

Critical Materials

Substances that are listed in Michigan's "Critical Materials Register". The Register is a list of chemicals of high environmental concern. Facilities that store critical materials on site must submit a pollution incident prevention plan to the State, and they must provide secondary containment for the materials.

Delineation

The mapping out of the area through which groundwater moves to reach a drinking water supply well(s).

Environmental Regulations

State environmental laws have been codified into one Act, the Natural Resources and Environmental Protection Act (Act 451 of 1994) (NREPA). The following "parts" deal directly with groundwater protection:

Part 201 of NREPA, Environmental Remediation Section

The State's own "Superfund" law, this section oversees the clean up of contaminated sites in Michigan. The section also provides for the listing and prioritization of contaminated sites.

Part 111 of NREPA, Hazardous Waste Management

Regulates the storage, treatment, and disposal of hazardous waste. Requires permits for facilities which store, treat, or dispose of hazardous waste. Those that generate more than 1000 kilograms/month of hazardous waste are termed "large quantity generators" (LQG). These generators must report their waste generation to the State and to the EPA, provide secondary containment for liquid wastes, and prepare emergency plans. Those generating between 100 and 1000 kilograms/month are termed "small quantity generators" (SQG). These generators must report their waste generation to the State and the EPA. Those generating under 100 kilograms/month are "conditionally-exempt small quantity generators." They must keep records of their operations.

Part 111 also regulates the siting and operation of hazardous waste landfills.

Part 115 of NREPA, Solid Waste Management

Regulates the siting and operation of solid waste landfills.

Part 31 of NREPA, Water Resources Protection

Mandates the protection and conservation of the water resources of the State, including groundwater. Regulates discharges of pollution to ground and surface water. Requires facilities handling "critical materials" to prepare spill response plans and to provide secondary containment. Requires facilities discharging polluting materials to the groundwater (through floor drains or otherwise) to obtain a groundwater discharge permit. Regulates sanitary wastewater discharges of over 10,000 gallons per day.

Part 615 of NREPA, Supervisor of Wells

Regulates the drilling and operation of oil and gas wells, and the disposal of wastes created from such operations. Well drilling, operation, closure, and waste disposal must be carried out so that damage of fresh water supplies is prevented.

Part 211 of NREPA, Underground Storage Tank Regulations

Requires annual registration of underground storage tanks and compliance with leak detection requirements. Regulates response to discovered leaking tanks.

Part 83 of NREPA, Pesticide Control

Regulates the use of pesticides for agricultural uses.

State laws not codified into NREPA:

Public Health Code (Act 368 of 1978)

Regulates construction of private water wells. Part 127 requires that wells that are abandoned be properly plugged to prevent contamination.

Michigan Safe Drinking Water Act (Act 399)

Provides for the supervision and control of public water supplies and public health protection.

Relevant Federal laws:

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Often called the "Superfund Act," it oversees and funds clean up of contaminated sites.

Underground Injection Control Program

Regulates the underground injection of toxic waste. Hazardous waste operators injecting waste into wells must obtain a permit from the EPA.

Safe Drinking Water Act (SDWA)

A Federal Act designed to protect drinking water. 1986 amendments require States to develop wellhead protection plans "to protect wellhead areas within their jurisdiction from contaminants which may have any adverse effects on the health of persons."

Superfund Amendments and Reauthorization Act (SARA), Title III, Community Right-to-Know

Requires facilities using certain amounts of hazardous substances to report their usage to the EPA and to the State. Facilities meeting certain criteria must also prepare emergency response plans.

Fire Fighter Right to Know Program

Requires Fire Fighters to survey and inspect all facilities in their community that handle hazardous substances.

Freedom of Information Act

States that all information gathered by public agencies must be made available to the public upon request.

Groundwater

Freshwater that fills the spaces between sand, gravel, and clay underground.

Groundwater Impact/Contamination

The result of the spillage or discharge of hazardous substances or polluting materials into an aquifer.

Hazardous Substance

A chemical or other material which is or may become injurious to the public health, safety, or welfare, or to the environment. You can find hazardous substances in small and large businesses, farms, and households.

Household Hazardous Waste

Products used in the household or home garage that, when used, stored, or disposed of improperly, may pose a threat of contamination to the environment.

Hydrogeology

The study of water and geology, and how the two interact.

Hydrogeologist

A person who studies hydrogeology.

Leaky Confined Aquifer

An aquifer that has a confining layer of clay over it that is noncontinuous, allowing for some recharge ("leakage") from the surface.

Secondary Containment

Providing a kind of structure around a storage tank or container so that, if there is a spill, the substance will be contained.

Site of Environmental Contamination

Sites where leakage, spillage, or other discharge of hazardous substances has contaminated the groundwater or soil; and that the State has placed on its list of contaminated sites, under the Environmental Remediation Section (Part 201) of the Natural Resources Environmental Protection Act, PA 451.

Superfund Site

A site listed as contaminated under the Federal Superfund law.

Topographic Maps

Maps produced by the U.S. Geological Survey that show roads, lakes, streams, wetlands, developed areas, municipal boundaries, elevation contours, and other features at a scale of 1:24,000.

Tritium

An isotope of water (a water molecule that has three hydrogen atoms instead of two). Atmospheric testing of nuclear weapons in the 1950's caused tritium levels in water supplies to increase. (Don't worry! Tritium is a harmless substance). Hydrogeologists test the level of tritium in water to measure the age of the water.

Unconfined Aquifer

An aquifer with the water table as its upper boundary. Because the aquifer is not under pressure, the water level in a well is the same as the water table outside the well.

Underground Injection Wells

Wells into which treated water and/or other wastes are injected for disposal.

Underground Storage Tanks

Tanks under the surface of the ground in which gasoline, fuel oil, and other substances are stored.

Water Table

The top of an unconfined aquifer where water pressure is equal to atmospheric pressure. The water table depth fluctuates with climate conditions on the land surface above and is usually gently curved, following a subdued version of the land surface topography.

Well Logs

Records that well drillers complete when they drill a residential or public drinking water well. Well logs contain information such as depth to water table, lithology, the type of well constructed, and the depth of the well.

Wellhead

The physical structure at the land surface through which groundwater is withdrawn from an aquifer.

Wellhead Protection Area (WHPA)

The surface and subsurface area surrounding a water well or well field through which contaminants are reasonably likely to move toward and reach such well or well field. The WHPA is the "catchment area" of concern for public water supplies dependent on groundwater.

Wellhead Protection Plan (WHPP)

A plan developed by a community operating a public well water supply system that details how the community will work to protect their wells from contamination.

Source: "*Wellhead Protection Community Guide*" Huron River Watershed Council, February, 1997
pg. 171 - 176.

United States Environmental Protection Agency Source Water Protection National Vision Statement¹

All interested stakeholders utilizing a variety of available tools in a coordinated fashion, establish barriers that significantly lower the risk of contaminants entering current and potential drinking water resources.

*¹USEPA Region 5 Water Division Source Water Protection 5-Year Strategy (2001 – 2005)
November 28, 2001 Draft.*