ARSENIC GUIDEBOOK

For

SMALL WATER SUPPLIES

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Arsenic Guidebook

SECTION I – INTRODUCTION

This guidebook is intended to assist water supplies that have arsenic in their drinking water by outlining a process for understanding the issue and regulations, examining their current facility conditions, evaluating the alternatives for necessary corrective actions, and making a decision on the most cost effective and practical direction to proceed.

A final Arsenic rule came out of the Environmental Protection Agency (EPA) on January 22, 2001. It set the maximum level for Arsenic in drinking water at 10 parts per billion (ppb). Sampling requirements were established by the Michigan Department of Environmental Quality (DEQ) and the deadline for compliance was established as January 23, 2006. There are approximately 300 non-transient, non-community water supplies in the State of Michigan that may exceed the 10 ppb level. These water supplies include schools, businesses and day care centers with their own wells.

Many service providers such as treatment equipment suppliers, well drillers, etc. are marketing a variety of solutions to the problem. While all of these may be viable solutions, there is a logical process that a water supply should follow to investigate the problem, evaluate alternatives, and select a corrective solution that not only is cost effective from a capital standpoint, but also considers the long-term operation and maintenance costs.

This guidebook is intended to help a water supply through this process. Since each situation is different, no one solution is applicable to all water supplies. Therefore this guidebook cannot develop the answer for any given water supply, and some water supplies certainly may need input from other sources as part of the process. However, by following the process outlined in this guidebook the user will maximize the possibility of selecting the best solution for their problem.

SECTION II – BACKGROUND ON ARSENIC

Arsenic is a naturally occurring mineral in the earth's crust. It is also a by-product of several human activities, including wood preservative operations, smelter emissions, alloys in batteries, etc. Arsenic for a long time has had the connotation of being a poison. More recently Arsenic has been identified as a cancer-causing agent. Persons can be exposed to arsenic through eating food, breathing air, contacting with the skin, and drinking water.

It is not unusual for certain foods to contain 20-149 ppb of Arsenic. 80% of U.S. drinking water supplies contain 2 ppb or less of arsenic. Only 3.6% of U.S. drinking water supplies contain greater than 10 ppb of Arsenic. Organic arsenic found in food is much less toxic than the inorganic arsenic found in water.

Health effects on humans with overexposure to Arsenic include the non-cancer effects of skin lesions, hypertension, vascular disease, cardiovascular disease, and diabetes. Cancer effects include cancers of the bladder, lung, skin, liver, kidney, and prostate. Because of this Arsenic is considered a known human carcinogen by the major international health organizations.

Since drinking water is one of the pathways for Arsenic to enter the human body, and since it has been established as a known human carcinogen, EPA has established regulations and maximum allowable levels for Arsenic in drinking water.

SECTION III – REGULATIONS

For many years, Arsenic has been regulated as a contaminant at 50 ppb for community water supplies. On June 22, 2000, EPA proposed a new maximum level for drinking water at 5 ppb. As part of a review process, they solicited comments on whether the level should be 20 ppb, 10 ppb, or 3ppb, instead of the proposed 5 ppb. The final rule ended up at 10 ppb on January 22, 2001, and, on October 21, 2001, EPA pressed forward with regulations to implement the new rule.

Through primacy, Michigan, not EPA, regulates its water supplies, Michigan DEQ established regulations based on EPA's mandate, to establish a sampling protocol to determine

which water supplies would be out of compliance. The Federal Law also established a date of January 23, 2006 for water supplies to be in compliance with the new regulation. Starting in 2004 new facilities had to meet the 10 ppb standard before serving water to the public.

Water supplies were required to sample for Arsenic starting in the first quarter of 2005. If the initial sampling result was less than 5 ppb, the water supply was to sample again in 3 years. If greater than 5ppb, or if there was one result over 10 ppb in the last 9 years, the water supply needed to sample every quarter in 2005. If the average over four quarters exceeds 10 ppb, or if any result is greater than 40 ppb, public notification is required within 30 days. In addition, the water supply will have to resolve the problem.

Water supplies who are out of compliance after January 23, 2006, may be penalized by DEQ. Certainly, water supplies that refuse to address the issue will find themselves in a precarious position.

A viable alternative to avoid being in non-compliance is for a water supply to enter into a Consent Order with DEQ. One type of order would involve agreeing to switch to bottled water for drinking water until a long-term solution is formulated. The extended deadline for compliance would be a negotiated item in the Consent Order.

Bottled water is not currently approved by EPA as a long-term solution for being in compliance. However, Michigan DEQ is allowing this option as a temporary solution if a Consent Order is executed. Michigan DEQ is attempting to convince EPA to allow bottled water as a permanent solution. If the EPA does not approve bottled water as a permanent solution, Michigan has the authority to extend the compliance date 2 years while treatment is installed.

Consent Orders also can include situations where connection to municipal water or installation of treatment is planned but cannot be completed until after January 23, 2006.

SECTION IV – FACILITY EXISTING CONDITIONS

Any analysis of a water supply problem starts with accumulating information on the existing system. Following is a list of information that should be collected on an existing water supply.

A. Water Use

A meter in the supply line from the well or wells is one way to get this data. It is advantageous to have a separate meter for each well, but piping configurations may not make this practical. Total and average water use (gallons per day) is the most important piece of information needed, but peak flows can also be important when designing treatment systems. If no metering exists, one could be installed in the main line(s) coming from the well(s). The most practical location for a meter is inside the building where the water line is above the floor, prior to any water lines teeing off the main line. The water meter should be read each day at the same time to determine use over a 24 hour period. You need data for several months, preferably a year, to establish a good average day use.

If hour meters exist for the well pumps, they could be read each day and use could be determined by multiplying the hours run each 24 hour period by the pumping rate of the pump. However, the pumping rate of the pump may not be easy to determine and may not be accurate. In the absence of a meter, the best way to determine the pumping rate of a pump is to use the pump's "pump curve", which you may or may not have in a file. The supplier of the pump should be able to get one. In order to find the pumping rate from a pump curve, the head or pressure that the pump is pumping against needs to be known. A pressure gauge on the line inside the building could provide this information.

The best recommendation is to get a water meter installed at the appropriate location on the system. There are certain criteria involved with installing a water meter concerning amount of straight pipe on either side of the meter, etc. Contact DEQ or a licensed plumber to get this information.

B. Water Chemistry

When evaluating a treatment system, it is advantageous to know what is in the water. Knowing just the arsenic level is not sufficient. A full chemical analysis should be obtained and be in the file. A summary of what parameters should be tested for is in Appendix B.

C. Well Information

General information on wells should always be an important piece of information for the file. A copy of the well log that was done can provide most of the information. Generally, the following data should be listed:

1. Date well drilled
2. Well driller name
3. Diameter of well
4. Depth of well
5. Amount of casing and type
6. Depth well is grouted
7. Length and location of screen (if a screened well)
8. Soils data of the well
9. Pump data (make, model, horsepower, size, etc.)

D. Drinking Water Fixtures

Simply count the number of drinking water fountains or other fixtures where water is drawn for consumption, including kitchen or break room sinks, in the facility. Faucets in restrooms and other areas should not be included, unless they are where consumers regularly obtain drinking water.

E. Population Served

The average number of persons served by the water supply should be recorded. Obviously, this can vary from day to day or month to month. In the case of schools, it varies greatly

form school year to summer. The number used should be an average when the facility is in normal use.

SECTION V – EVALUATION OF ALTERNATIVES

If Arsenic levels are shown to be in noncompliance with the MCL of 10 ppb, a solution needs to be determined. A logical process should be used to evaluate alternatives and find the best solution. This section discusses the possible alternatives that could exist for any given water supply and outlines the important aspects of these alternatives.

A. Municipal Water Connection

Connection to a municipal water supply can be very advantageous if determined to be available & cost effective. It totally transfers the responsibility for all aspects of water issues to the municipality. As the regulations continue to become increasingly more stringent and complicated, connecting to a municipal system would remove this burden from the small noncommunity water supply. Obviously, cost is the major factor. If the nearest connection point is miles away, it may not be feasible to connect. But if an available connection is with ½ mile to 1 mile away, it is worth considering. A number of issues in evaluating connection to a public water supply are discussed below.

1. Political Conditions – both the entity with the well and the municipal governing body must be politically in agreement with the philosophy of extending the water main. If the extension crosses a political boundary, such as a city/township line, then the key political relationship may be between two parties other than the entity with the well. Before proceeding with a detailed analysis of extending a watermain, make certain the politics are in order to accomplish such a project.
2. Capital Cost – This is probably a key analysis in the evaluation of connecting to a municipal source. You may need some input from a consulting engineer who is experienced with this type of project. The cost to extend a watermain depends on

several factors, including size of watermain, distance of the extension, and the presence of high water table or rock, both of which significantly increase the cost per foot of watermain construction. Restoration costs are also a factor and vary with the routing of the watermain (under a paved roadway versus off the payment). In the absence of rock or high water, a typical price for installation of 8 inch watermain, including valves, hydrants, etc. and some restoration might be in a range of $30 to $40 per foot, plus 20% for engineering, contingencies, etc. On this basis, a half-mile extension could be $125,000. However, it could be significantly less if the municipal crews do the installation. The key is to make sure you get an accurate cost estimate prepared.

3. Tap-In-Fees – The municipality may charge a fee to a new customer to tap into the system and you need to know how much that fee would be for your connection.
4. Rates – In order to know how much your monthly cost will be, you will have to obtain a rate schedule from the municipality and calculate a cost based on your water use data. If you do not have a water meter on your system, it may be difficult to estimate this monthly cost. However, in order to do a reasonable analysis of alternatives, you need to determine a way to best estimate your expected monthly bill.
5. Insurance Savings – Having on-site fire protection from a municipal water supply may result in a savings on your property insurance. Contact your insurance agent on this matter. In some cases, this savings is significant and therefore a factor in the cost analysis.
6. Operation and Maintenance Costs – Connecting to a municipal water supply may result in some savings to your O & M cost, such as paying for water supplies, etc. On the other hand, it may be more expensive. You may be able to retain your well system for irrigation purposes and the cost savings in doing this could be significant,

particularly if some sort of treatment is proposed to solve the Arsenic problem. In any event, O & M cost is a component in the cost analysis of alternatives.

If capital costs appear to be excessive, consideration could be given to extending a water main only sized for domestic use and not fire protection. This could reduce the line size from 8" or 12", to 4" or 6". Savings could be in the range of $4.00 to $6.00 per foot, and possibly more if plastic line were used and trenched into the ground.

B. Source Evaluation

One of the easiest solutions for solving an Arsenic problem may be found in your current source of water. If you have multiple wells, and if one or more wells is in compliance with the Arsenic regulation, it may be possible to blend the water in a fashion that results in a level of the blended water being below 10 ppb. Blending can be accomplished by running more than one well at a time and/or having a storage vessel that can be fed from multiple wells. It may take some engineering input to research the best control mechanism to achieve a successful blending process. If enough water is available from other wells, the "Arsenic" well could simply be abandoned.

Another alternative would be to investigate whether there is potential to drill a new well that is free of Arsenic. Researching well logs from the vicinity of your well can provide valuable data on the possibility of obtaining Arsenic free water. The local health department and a local certified well driller can assist you with the investigation of possible Arsenic free water.

In some cases, where a well is obtaining water from several water bearing formations, it may be possible to determine if the Arsenic is coming from only certain layers of the formation. If this is happening, it may be possible to seal off this layer or layers and obtain water from the remaining formations. There are two primary things to remember with this possibility. It takes a very sophisticated and experienced well driller to perform this work,

and there are no absolute guarantees that the process will be successful. However, it could be an alternative to explore depending on viability of other alternatives.

C. Bottled Water/Hauled Water

The use of bottled water has not yet been approved by EPA as a viable long-term option, although it may be in the future. However, it is an approved temporary solution if a facility enters into a consent order with DEQ. Several different approaches to bottled/hauled water can be considered. Bottled water dispensers can be installed in all locations where drinking water is needed. Bathroom and other faucets, from which drinking containers could be filled, need to be labeled, stating “Do Not Drink, Exceeds Arsenic Standard”. Another way to provide bottled water is in individual bottles, in coolers at strategic locations.

Another alternative is to have a storage tank on site and contract with a licensed water hauler to haul water to the facility. The system could feed the entire water plumbing system except irrigation, or a dual system of piping could be installed and have the hauled water be piped to only locations where water can be obtained for drinking. Showers are an example of locations that would not need the hauled water. In a small facility having two plumbing systems might be practical to consider, but in a larger facility, such as a large school, the cost of installing a separate piping system could be prohibitive.

If approved by EPA, the bottled or hauled water option could be a long-term viable option for some facilities.

D. Treatment Evaluation

Installing a treatment system to solve the Arsenic problem is by far the most complicated alternative to evaluate. It is extremely important to thoroughly evaluate the treatment alternatives available, since the capital cost for treatment systems can be high, and the operation and maintenance costs are long term.

The first decision to make is whether you want to retain a consulting engineer to assist you, or deal directly with vendors of Arsenic treatment equipment. The advantages of using

a consulting engineer, experienced with Arsenic treatment, is that they have no direct connection or interest in the sale of equipment. They can provide a very objective approach to the evaluation of the various treatment systems and also assist with specifications to bid out the installation of equipment, if appropriate. The disadvantage of hiring a consulting engineer is that there will be some cost involved with their work. If there is a desire to have a consulting engineer assist with the evaluation of Arsenic treatment alternatives, you will either simply hire a firm that you may be familiar and comfortable with, or you could obtain proposals from several firms. A key to soliciting good proposals is to draft a Request for Proposals (RFP) that covers the services you want and lists what you want the submittal to include. Since every project is different it is virtually impossible to include a sample RFP that would be appropriate in all cases. However, following is a list of important items to include in an RFP.

1. Where proposals are to be submitted, when they are due, how many copies are to be submitted, and any other information helpful to the firm preparing the proposal.
2. Services that the facility wants the consultant to provide.
3. Experience of the firm and personnel with Arsenic treatment technology.
4. Proposed schedule anticipated by the consultant.
5. Estimated cost to provide the services, and any assumptions used in developing the costs.

It is suggested not to use cost as the sole basis of selecting a consultant. Experience with Arsenic treatment technologies is a very important selection criterion.

If a consulting engineer is not going to be involved, then vendors of Arsenic treatment systems need to be contacted directly. You will need to furnish the vendors with some information concerning your water system. Vendors will tell you what they need in order to provide a quotation to you for the installation of equipment. Since there are several viable technologies available, it would be advantageous to talk to several different vendors. Some

vendors simply install the equipment and let the facility take total responsibility for the operation and maintenance. Other vendors can provide operational services, particularly relating to the changing of filter media, etc.

Once a particular type of system is selected a facility needs to obtain accurate cost information for this alternate.

Both capital cost and operation and maintenance cost needs to be obtained so that the treatment option can be properly compared to other viable alternatives previously discussed in this guidebook.

SECTION VI – COMPARISON OF ALTERNATIVES

Once all of the alternatives discussed in the preceding sections of this guidebook have been researched, a process to select the best alternate needs to be implemented. Some of the alternates evaluated may prove to not be feasible either due to very extreme cost or by not being technically or politically feasible. However, an alternate should not be discarded unless it has been absolutely shown to be not feasible.

Once the feasible alternatives have been determined, it is simply a matter of evaluating them to find the best alternative from a long-term standpoint. Probably the largest single factor is economics and there are two components to the economic evaluation. The first is capital cost, which is the upfront cost to construct or install whatever is necessary to implement the alternative. The second component is the operation and maintenance cost, which is an on-going, long-term cost. The proper method to evaluate this type of cost is to calculate the “present worth” of the long term O & M cost. When the capital cost and present worth of the
O & M is added together, the lowest dollar amount is usually considered the most cost-effective. If costs are close then other factors may affect the decision. For example, connection to a municipal water supply may be somewhat more expensive initially, but it may be desirable, since it relieves the facility of all the hassles associated with owning and operating a water supply, and eliminates

possible future costs with ever changing regulations, etc. If treatment is deemed to be the best alternative, then a process needs to be developed to select a vendor to provide the equipment. The alternative analysis may have verified the type of treatment that would work best on any given water supply, but that decision may still have to be made. The vendor selection process most likely will need to include the preparation of a bid package given to vendors to base their proposal on. At this point a consulting engineer may need to be retained to insure that the bid package is accurate and provides enough technical detail so that all bidders are bidding on exactly the same thing. Once bids are taken, the bids need to be evaluated to determine if all requirements of the bid has been met, and which bidder has the most cost effective proposal. If a consultant is involved, they will assist in this process.

A facility has the option to select a vendor based on discussions with each vendor along with quotes on their particular type of process. However, if a bid package is desired, which possibly may be based on a performance specification, employing a consulting engineer is worth considering, since facility personnel most likely will not have the technical expertise to develop a good bid package.

SECTION VII - PERMIT APPLICATION

It is extremely important to remember that a construction permit is required for any work done on a well, and for any work involving a treatment system employed for public health purposes. Plan review and permitting is especially critical where the treatment is needed for public health purposes. This permit is processed by the local health departments for non-community supplies and by DEQ for community supplies. The facility's health department contact should be kept informed of any efforts the water supply is engaged in regarding possible projects. By doing this, proper input can be obtained up front and possibly alleviate problems in the future. For specific permit requirements, contact your health department or DEQ contact.

SECTION VIII – SUMMARY

Having to deal with an Arsenic problem can become a complicated matter. There are many options available and determining the best direction can be a complex and technically orientated process. Following are major items of advice for anyone involved with the Arsenic issue.

- Communicate with, and involve, your local health department or DEQ contact. Make sure you don't head down a path that the regulatory agency thinks is not appropriate for your situation & that might be more costly for you.
- If many options seem available or if treatment appears to be needed, consider retaining an experienced consulting engineer to assist with the process. Vendors of equipment all think that their particular process is the best to purchase, and an independent expert may save you more money than their cost.
- If the compliance deadline of January 23, 2006 is a problem, consider a Consent Order with DEQ and get the deadline extended. Don't rush to make a decision that may not be the best decision in the long term.
- Do not turn your back on the issue and be non-responsive to the requirements. You will end up on a controversial position with DEQ and consumers and this will not result in a positive situation.

If you have any questions please feel free to contact the appropriate DEQ District staff person. (See Appendix C). You may also contact the author of this Guidebook, as listed below.

Bruce Hawkinson, P.E. – President
Lane Consulting & Development, Inc.
109 4th Avenue
Norway, MI 49870

Phone: 906-563-5174
Fax: 906-563-5598
Cell: 906-250-0247
Email: bhawkinson@norwaymi.com

You may also get information from the DEQ website @ www.michigan.gov.
Click on Water, then Drinking Water, then Noncommunity Unit.

Appendix A

Procedure Checklist

- ❑ Water Use Data
- ❑ Water Chemistry Data (see Appendix B)
- ❑ Well Information (see Section IV – C)
- ❑ Drinking Water Outlets (# of outlets)
- ❑ Population Served
- ❑ Municipal Water Connection
    - ❑ Political Conditions
    - ❑ Capital Cost
    - ❑ Tap-In-Fees
    - ❑ Rates
    - ❑ Insurance Savings
    - ❑ O & M Costs
- ❑ Source Evaluation
- ❑ Bottled Water/Hauled Water
- ❑ Treatment Evaluation
- ❑ Comparison of Alternatives
- ❑ Permit Application

APPENDIX B

WATER CHEMISTRY TESTING PARAMETERS

Parameters to be Tested for Water Quality in Arsenic Treatment Determination

Primary Parameters	***Secondary Parameters***
Total Arsenic (Arsenite, Arsenate)	Alkalinity
Chloride	Aluminum
Fluoride	Calcium
Iron	Turbidity
Magnesium	Hardness
Manganese	
Nitrate/Nitrite	
Orthophosphate	
pH	
Silica	
Sulfate	
Total Dissolved Solids (TDS)	

APPENDIX C

DEQ & LOCAL HEALTH AGENCY CONTACT DATA

Department of Environmental Quality
Water Bureau
Drinking Water & Environmental Health
ection

APPENDIX C

MAILING ADDRESSES:

Lower Peninsula
Department of Environmental Quality
Water Bureau
Drinking Water & Environmental Health
Section
Noncommunity Program
525 West Allegan, CH, 2nd Floor
P.O. Box 30273
Lansing, Michigan 48909-7773
(Street ZIP: 48933)

Upper Peninsula
Department of Environmental Quality
Water Bureau
Noncommunity Program
U.P. District Office
420 Fifth Street
Gwinn, Michigan 49841

NONCOMMUNITY PROGRAM

Lower Peninsula

Richard Overmyer, R.S., Chief - 517-241-1368 / overmyer@michigan.gov
Starr Wirth, Secretary - 517-241-1370 / wirths@michigan.gov
Dan Dettweiler, M.S., EQA - 517-241-1373 / dettweid@michigan.gov
Kevin Holdwick, P.E., 517-241-1395 / holdwick@michigan.gov
FAX: 517-241-1328

Upper Peninsula

Steven Casey, Supervisor – 906-346-8535
Deana North, Secretary - 906-346-8530
FAX: 906-346-4480

JOHN CHICKERING, R.S.
ENV. QUALITY ANALYST
PHONE: 517-241-1371
EMAIL: chickerj@michigan.gov
FAX: 517-241-1328

08 – Barry (BEDHD)
10 – Benzie (BLDHD)
20 – Crawford (#10)
23 – Eaton (BEDHD)
25 – Genesee
28 – Grand Traverse
33 – Ingham
34 – Ionia (BEDHD)
40 – Kalkaska (#10)
43 – Lake (#10)
44 – Lapeer
45 – Leelanau (BLDHD)
47 – Livingston
51 – Manistee (#10)
53 – Mason (#10)
54 – Mecosta (#10)
57 – Missaukee (#10)
62 – Newaygo (#10)
64 – Oceana (#10)
78 – Shiawassee
83 – Wexford (#10)

TRACY BOKS
ENV. QUALITY ANALYST
SAGINAW BAY DIST. OFFICE
PHONE: 989-686-8025 ext. 8383
CELL PHONE: 989-737-0919
EMAIL: bokst@michigan.gov
FAX: 989-686-0727

01 – Alcona (#2)
04 – Alpena (#4)
05 – Antrim (NWMCHA)
06 – Arenac (CMDHD)
09 – Bay
15 – Charlevoix (NWMCHA)
16 – Cheboygan (#4)
18 – Clare (CMDHD)
24 – Emmet (NWMCHA)
26 – Gladwin (CMDHD)
32 – Huron
35 – Iosco (#2)
37 – Isabella (CMDHD)
56 – Midland
60 – Montmorency (#4)
65 – Ogemaw (#2)
67 – Osceola (CMDHD)
68 – Oscoda (#2)
69 – Otsego (NWMCHA)
71 – Presque Isle (#4)
72 – Roscommon (CMDHD)
73 – Saginaw
76 – Sanilac
79 – Tuscola

CYNTHIA WEAVER
ENV. QUALITY ANALYST
GRAND RAPIDS DIST. OFFICE
PHONE:
616-356-0280
CELL PHONE: 616-299-9068
EMAIL: weaverc@michigan.gov
FAX: 616-356-0298

03 – Allegan
11 – Berrien
12 – Branch (BHSJDHD)
13 – Calhoun
14 – Cass (VBCDHD)
30 – Hillsdale (BHSJDHD)
39 – Kalamazoo
41 – Kent
61 – Muskegon
70 – Ottawa
75 – St. Joseph (BHSJDHD)
80 – Van Buren (VBCDHD)

MARK DOYLE
ENV. QUALITY ANALYST
JACKSON DIST. OFFICE
PHONE: 517-780-7923
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FAX: 517-780-7855

38 – Jackson
46 – Lenawee
50 – Macomb
58 – Monroe
63 – Oakland
74 – St. Clair
81 – Washtenaw
82 – Wayne

HOLLY GOHLKE
ENV. QUALITY ANALYST
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FAX: 517-241-1328

19 – Clinton (MMDHD)
29 – Gratiot (MMDHD)
59 – Montcalm (MMDHD)

ROB WOLFE
ENV. QUALITY ANALYST
PHONE: 906-346-8538
EMAIL:wolfer@michigan.gov
FAX: 906-346-4480

02 – Alger (LMAS)
17 – Chippewa
48 – Luce (LMAS)
49 – Mackinac (LMAS)
52 – Marquette
77 – Schoolcraft (LMAS)

KAREN BEAUCHAMP
DISTRICT ENV. ENGINEER
PHONE: 906-346-8537
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FAX: 906-346-4480

07 – Baraga (WUPD)
21 – Delta (DMDHD)
22 – Dickinson (DIDHD)
27 – Gogebic (WUPD)
31 – Houghton (WUPD)
36 – Iron (DIDHD)
42 – Keewenaw (WUPD)
55 – Menominee (DMDHD)
66 – Ontonagon (WUPD)

Noncommunity Program Coordinators by County
TYPE 2 CONTACT LIST

COUNTY	CONTACT	PHONE	FAX
ALLEGAN	Raymond Visscher	269-686-4502/ 269-673-5415	269-673-4172
BARRY-EATON DISTRICT	Harold Workman	269-945-9516 (ext 105)	269-818-0237
BAY	Joel Kwiatkowski	989-895-4107	989-895-4014
BENZIE-LEELANAU DISTRICT	Eric Johnston	231-882-2109	231-882-2204
BERRIEN	Kevin Kasischke	269-927-5657	616-927-2960
BRANCH-HILLSDALE-ST. JOSEPH COMMUNITY HEALTH AGENCY	Dee Parshall	517-437-7395 (ext 109)	517-437-0166
CALHOUN	Ryan Tetrault	269-969-6476/ 269-969-6341	269-969-0035
CASS/VANBUREN DISTRICT PUBLIC HEALTH DEPT.	Michael Laufer (also EH Director) Mick McGuire	269-621-3143 (ext 312) 269-621-3143 (ext 315)	269-621-2725 269-621-2725
CENTRAL MICHIGAN DISTRICT HEALTH DEPT. Arenac, Clare, Gladwin, Isabella, Osceola and Roscommon Counties.	Scott Jones	989-426-8985 (ext. 44)	989-426-6952
CHIPPEWA	Suzanne Lieurance	906-635-3622	906-253-1466
PUBLIC HEALTH DELTA AND-MENOMINEE COUNTIES	Mike Snyder	906-786-9692	906-786-1962
DICKINSON-IRON DISTRICT	Daren Deyaert	906-774-1868	906-774-9910

DISTRICT HEALTH DEPARTMENT #2 Alcona, Iosco, Ogemaw and Oscoda Counties.	Dave Schmidt	989-362-6183 (ext 1503)	989-343-1892
DISTRICT HEALTH DEPARTMENT #4 Alpena, Cheboygan, Montmorency, and Presque Isle Counties.	Kyle Keller	231-627-8850	231-627-9466
DISTRICT HEALTH DEPARTMENT#10 Crawford, Kalkaska, Lake, Mason, Manistee, Missaukee, Mecosta, Newaygo, Oceana, and Wexford Counties. * (primary T2 contact)	*Bryan Prielipp (MAN) Lucie Moon (WEX) Jamie Kuenzel (MEC)	231-723-3595 231-876-3821 231-592-0178	231-723-1477 231-775-5372 231-796-7864
GENESEE	Brian McKenzie	810-257-3618	810-257-3125
GRAND TRAVERSE	Eric Burt	231-995-6051	231-995-6033
HURON	Leah Braun	989-269-9721 (ext.149)	989-269-9066
INGHAM	Amy Thomas	517-887-4520	517-887-4560
IONIA	Rick Raterink	616-527-5340	269-945-4304
JACKSON	Darren Bowling	517-788-4433	517-788-4616
KALAMAZOO COUNTY HUMAN SERVICES DEPT.	Bill Speeter	269-373-5346/ 269-373-5210	269-373-5333
KENT	Richard Shafer	616-632-6924	616-632-6892
LAPEER	Stirling Garrett	810-245-5769	810-667-0283
LENAWEE	Cindy Merritt	517-264-5202	517-264-0790
LIVINGSTON COUNTY DEPARTMENT OF PUBLIC HEALTH	Margaret McCliment	517-546-9858	517-546-9853
LUCE-MACKINAC-ALGER-SCHOOLCRAFT	Ryan Whaley Darla Wood	906-387-2297 906-387-2297	906-387-2224
MACOMB	Laura Pobanz/	586-469-5236	586-469-

	Karen Bosca		6636
MARQUETTE	Larry Hill	906-475-4195	906-475-9312
MIDLAND	Nancy Atwood	989-832-6683	989-832-6628
MID-MICHIGAN DISTRICT HEALTH DEPARTMENT Clinton, Gratiot, and Montcalm Counties.	(Mr.) Kris Dorcy	989-875-1021	989-875-1049
MONROE	Maureen Pfund	734-240-7677	734-240-7683
MUSKEGON	Stefanie Freeland	231-724-1256/ 231-724-1250	231-724-1251
NORTHWEST MICHIGAN COMMUNITY HEALTH AGENCY Antrim, Charlevoix, Emmet, and Otsego.	Don Somsky F.	231-547-7640	231-547-6238
OAKLAND COUNTY HEALTH DIVISION	Michelle Mader Jeanine McClosky	248-858-1342 248-858-1332	248-452-9758
OTTAWA	Greg Pierce	616-393-5636/ 616-393-5645	616-393-5643
SAGINAW COUNTY DEPT. OF PUBLIC HEALTH	Bob Kaufmann	989-758-3832	989-758-3750
ST CLAIR	Dave Richmond Kevin Mcneill	810-987-5306	810-985-2150
SANILAC	Sue VanDyke	810-648-2150 (ext 116)	810-648-2646
SHIAWASSEE	Katie Plashek	989-743-2390	989-743-5453
TUSCOLA	Kent Singer	989-673-8114	989-673-7490
WASHTENAW COUNTY DEPARTMENT OF ENVIRONMENT AND INFRASTRUCTURE SERVICES	Denise Bernbeck	734-222-3800 (ext 2009)	734-222-3959
WAYNE	Matt Kobalarz/	734-727-7400	734-727-

	Lisa Hodgins		7421
WESTERN U.P. DISTRICT HEALTH DEPARTMENT Baraga, Gogebic, Houghton, and Ontonagon Counties.	Glen Anderson	906-482-7382	906-482-9410

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