

Lake Erie Protection Fund Agreement LEPF 97-20

Final Report: Due Dec. 31, 1999

Prepared by Rollin Havens, R.S., Environmental Administrative Assistant

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Executive Director of the Ohio Lake Erie Office

Darin Lockert, Administrative Assistant

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Dear Mrs. Lockert,

Enclosed is the final report as requested by The Lake Erie Protection Fund as stated in agreement LEPF 97-20.

Project Title: *"Implementation of a House Bill 110 Project in Ashtabula County"*

The Ashtabula County Health Department has been able to complete its primary goal of identifying, inventorying and inspecting all Semi-Public sewage disposal systems within the boundaries of the ACHD district. A secondary goal of seeking the replacement of a failing sewage system or the repair of a broken sewage system has only been partially accomplished. Another secondary goal of publishing a summary report in the Ashtabula River Remedial Action Plan Bulletin (RAP) is in progress. The article has been written and will be published in a future issue. The article is included in this report as *Appendix A*.

After surveying Ashtabula County for two years, it was determined that five hundred and thirty-three (533) properties could be classified as having Semi-Public sewage disposal systems. Seventy-three (73) of these properties are served by extended aeration package plants and the remaining four hundred and sixty (460) are served predominately by septic systems. An additional thirty to forty systems were added to the inventory in 1999 that were missed in the 1998 inventory. Most of the systems have now been inspected twice. A five drawer legal size file cabinet was purchased to hold an individual file on every Semi-Public sewage system. Included in each file are the yearly inspection reports, any engineering drawings of the system, copies of available EPA Installation Permits, correspondence to owner from either EPA or ACHD and copies of any ACHD sewage permits that were issued to the property before the existence of EPA regulations. License and registration records for each Semi-Public sewage system along with owner addresses and phone numbers are kept on a computer. Hard copies of all licenses, registrations and payment receipts are kept by the clerks.

The existence of these organized files and computer records has made it possible to respond to

complaints, do real estate consultations, and advise businessmen on new system criteria much more quickly and efficiently. *Appendix B* shows that eighty-three (83) Semi-Public owners of the five hundred and thirty-three (533) owners in the program required our service or were able to be served by this office because of this new program. Notice that one hundred and twenty-five (125) site visits were necessary to respond to all the inquiries. Our original hypothesis was that twenty percent (20%) of the Semi-Public sewage systems would need attention. The total of all our investigations and consultations has involved sixteen percent (16%) of all the systems which is slightly less than we expected. It should be noted that nine (9) new Ohio EPA approved sewage systems were brought on line during 1999. All of these new installations were monitored by ACHD. It should be noted that the ACHD would only have been able to respond to about five (5) of these situations without the support of the grant from the Lake Erie Protection Fund. This special support from LEPF has permitted ACHD to do one hundred and twenty-five (125) special site visits and over one thousand (1000) inspections in the past two years. Fees that have been assigned to the registration of Semi-Public sewage systems within the boundaries of ACHD district have been able to generate approximately thirty-four thousand dollars (\$34,000) in the past two years.. Only four (4) owners did not pay in 1998 and twenty-four owners (24) have not paid their registration fee in 1999. If the program is to continue, it will require an annual budget of approximately twenty-eight thousand dollars (\$28,000). Approximately eighteen thousand dollars (\$18,000) in registration fees will be collected in 1999. This number reflects a ten thousand dollar (\$10,000) deficit between the cost to operate the Semi-Public inspection program and the amount of fees collected.

- \$16,000 salary and benefits for a 0.4 full time equivalent sanitarian
- 7,500 salary and benefits for a 0.25 full time equivalent clerk
- 1,300 postage and office supplies
- 1,500 mileage
- 500 supply of tracer dye to check for failing systems
- 500 laboratory costs to check fecal coliform levels in streams and ditches
- 250 telephone

\$27,550

Other activities that ACHD has been able to accomplish during this two year start-up phase will be described the in following paragraphs:

The ACHD has collaborated with the Northeast District Office of the Ohio EPA approximately ten (10) times in the past two years on site visits in Ashtabula County. The ACHD has submitted to Ohio EPA approximately one thousand inspection forms. Ohio EPA has been mailing to ACHD copies of any correspondence with a Semi-Public sewage disposal system owner in Ashtabula County including Permits-to-Install (PTI's) and NPDES permits. The sanitarian in charge of the Semi-Public program at ACHD has attended two different seminars on sewage management. This seminar information coupled with the knowledge gained from Mr. Erm Gomes of the Ohio EPA during collaborative site visits has provided an excellent understanding of the theory and practical application of sewage treatment. Also the sanitarian has gained first hand experience in observing the relationship between proper sewage treatment and the aquatic environment for which the Lake Erie Protection Fund is most concerned. Also the sanitarian in

charge of the Semi-Public sewage system inspection program has attended eight (8) Grand River Partnership meetings plus one meeting held by the Ashtabula River Partnership in the past two years.

The sanitarian in charge of the Semi-Public sewage disposal system inspection program has increased the awareness level of 533 Semi-Public sewage disposal system operators for the need to properly maintain their sewage disposal systems. This was accomplished by personal visits and phone conversations which the sanitarian conducted with the Semi-Public sewage disposal system operators. Many owners have thanked the sanitarian for the help and have remarked that they appreciate that someone is looking out for the environment. Most minor repairs to broken systems were repaired within three months. In almost all cases, the repair needed was a pump repair. Of the seventeen sewage systems that have been determined to be failing, one has been replaced and two others have their Permits-to-Install. The other fourteen are in various stages of complying with Ohio EPA orders.

Fortunately, Rule 3745-1-04 F of the Waste Water Quality Standards permits the ACHD to evaluate residential sewage systems related to a high concentration of sewage in streams or ditches without a complaint. Four such areas with high fecal coliform counts were extensively studied by ACHD. It was found that five residential systems were failing. This study requires the use of tracing dye and fecal coliform testing. If the fecal coliform levels are over 5,000 per 100 ml of sample size on two consecutive samples, the home owner suspected of contributing to the problem can be required to submit to a tracer dye test of their sewage system to see if the untreated contents of their system are flowing into the stream or ditch. A summary of these fecal coliform tests can be found in *Appendix C*. So far two of these failing systems have been replaced. The four areas studied were the Hartsgrove Square area of Hartsgrove Township, the intersection of Walter Main Rd. and Rt. 20 in Geneva Township, the intersection of Myers Rd. and Rt 20 in Geneva Township and the intersection of Rt. 45 and 307 in Austinburg Township. Several other ditches in the county were tested for fecal coliform levels. These ditches, suspected of containing sewage, would be observed by the sanitarian during the course of doing Semi-Public sewage disposal system inspections. Also during the course of the Semi-Public sewage disposal system inspections, some neighboring residential systems were observed to be failing. Conversations with the residential owners resulted in seven of these systems being replaced voluntarily.

In the fall of 1998, two hundred and seventy-six (276) visual inspections were made of locations where streams or rivers pass under a highway bridge. A quick determination was made as to the nature of the eutrophication and clarity of the water. *Appendix D* shows the cursory results of this study. The water shed of the Ashtabula River was further studied for population density, agricultural activity and sewage system performance. A study of Sheffield Township which is right in the center of the Ashtabula River water shed revealed these facts. The County Planning Commission records show five hundred and ninety-seven (597) addresses in the township and sewage permit records show four hundred and sixty-two (462) permits issued since 1946. Only eleven (11) of these permits are for Semi-Public sewage systems. It was estimated by a drive-by visual inspection of Sheffield Township that ten percent (10%) of the land area is used for agriculture which requires plowing of the ground. There were no high density animal feed lots in

the township. Since 1986, there have been eighteen failing sewage systems replaced in the township which is only one or two per year. Inspections of aerator sewage systems in the past two years have revealed ten (10) of forty-one (41) systems not to be working. In almost all cases where the water of the Ashtabula River flows under a bridge, the water was found to be either cloudy or eutrophic. No definitive conclusions can be drawn from one moment in time but both the cloudy and eutrophic nature of the water is not going to be a function of sewage from a low density population of humans and animals. A more probable hypothesis is that the cloudiness and eutrophic evidence found in the river basin is result of tilling the land and applying fertilizer to the crops. Another possible significant cause of cloudiness is that more and more drainage water is being directed to the river by way of pipes. This water does not have a chance to cleanse itself by first filtering through a riparian zone. A summary of similar data for the other townships located in the Ashtabula River watershed is located in *Appendix E*.

The ACHD walked the Ashtabula River in Ashtabula Township for about two miles in the fall of 1998. No observations of environmental damage to the river were observed as a result of failing sewage systems. The water appeared to be clean.

It is very difficult to calculate or directly measure the percentage of sewage generated in Ashtabula County in one day that is reaching the environment without at least secondary treatment. Secondary treatment is defined as treatment that removes solids, permits biological activity and filters again smaller solids before being released to the environment. *Appendix F* shows that the total generated sewage per day in Ashtabula County is 14,144,100 gallons. Of the five hundred and thirty-three (533) Semi-Public sewage disposal systems that were inspected, seventeen (17) were confirmed to be failing and another five are suspected of failing for a total of twenty-two (22) possible failures. This is a confirmed failure rate of three percent (3%). If this failure rate is extrapolated to be equal to the volume of untreated sewage generated by residential and Semi-Public sewage treatment systems, the total volume of untreated sewage would be 169,000 gallons per day. ACHD records show a complaint rate of three (3) residential systems per one thousand (1,000) systems per year. See *Appendix E*. This is equal to a three-tenths of one percent (0.3%) failure rate. If this failure rate were extrapolated to be equal to the volume of untreated sewage generated by residential and Semi-Public sewage treatment systems, the total volume of untreated sewage would be 16,900 gallons per day. Since the three percent (3%) number is the result of direct observation, the true release of untreated sewage by residential and Semi-Public sewage systems is closer to the 169,000 gallons per day number.

The Ohio Environmental Protection Agency has set the following water quality standards. These can be used to gauge the impact that this 169,000 gallons of sewage per day is having on the surface waters in Ashtabula County. Drinking water cannot show any indication of fecal coliform bacteria in a laboratory test. Bathing waters are suitable for swimming where a lifeguard and or bath house facilities are present during the recreation season if the geometric mean of fecal coliform content of five samples within a thirty day period is less than 200 per 100ml or if none of the five samples exceeds 400 per 100ml. Primary contact waters are suitable for full body contact recreation, such as, but not limited to; swimming and scuba diving with minimal threat to public health as a result of water quality during the recreation season if the geometric mean of fecal coliform content of five samples within a thirty day period is less than 1000 per 100ml or if

none of the five samples exceeds 2000 per 100ml. Secondary contact waters are suitable for partial body contact recreation, such as, but not limited to; canoeing and wading with minimal threat to public health as a result of water quality during the recreation season if no more than one fecal coliform sample in ten exceeds 5000 per 100ml in a thirty day period of time.

Previous fecal coliform testing was done by Ashtabula County Health Department on the lower Ashtabula River in 1994. Cowles Creek, Grand River and Ashtabula Rivers were studied for fecal coliform levels by the Ecological Assessment Unit Division of Surface Water at Ohio EPA in 1996. The Ashtabula County Health Department also studied Coffee Creek in Austinburg Township at the intersections of St. Rts. 45 and 307 in the summer of 1999. These results are summarized in *Appendix G* and *Appendix C*. An Ohio EPA publication entitled, "Biological and Water Quality Study of The Grand River and Ashtabula River Basins including Arcola Creek, Cowles Creek and Conneaut Creek" published in January 1997 on page 87 makes this recommendation; "Because the Ashtabula River regularly becomes intermittent in late summer, it has a limited capacity to assimilate oxygen demanding pollutants originating from poorly maintained septic beds and livestock wastes. Consequently, poorly maintained sewage disposal system discharges need to be identified and remedied, and owners of livestock operations should be encouraged to participate in the ongoing programs offering technical assistance for implementing best management practices." One purpose of this study is to assess the "poorly maintained sewage disposal system filter or leach beds" in Ashtabula County and then generate some conclusions that can serve to facilitate a discussion by decision makers at the county and state levels as to the desired level of water quality and the economic feasibility of attaining the established water quality standard.

It first must be understood that drinking water quality for surface waters is impossible to attain with even unlimited resources. First, no one knows the natural level water quality in this region before civilization arrived. This area was heavily forested and supported a rich variety and number of living creatures. Therefore, there would be some natural background count of bacteria in the surface waters even without the presence of man. Previously referenced studies in this report show that currently, surface waters in Ashtabula County do not meet Bathing standards which is 200 per 100ml of fecal coliform counts but the surface water does meet the Primary Contact standards which is 1000 per 100ml of fecal coliform counts. Exceptions to this observation can be explained by the presence of a storm drain pouring untreated sewage into the stream or river. However, by the time this water has moved less than a mile downstream; the fecal coliform level is again below 1000 per 100ml of fecal coliform counts.

There are four contributors to the fecal coliform level of surface waters. First, is failing sewage treatment systems, second is discharging waters from sewage systems that discharge to a ditch which eventually drains to a river, third is the bacteria from the waste of wild animals and fourth is the bacteria from the waste of domesticated animals particularly cows and horses. The author of this report is unaware of a study which assigns a percent to each contributing factor. It would be the opinion of this author that eighty to ninety percent (80-90%) is the result of failing sewage systems.

If all the extrapolations of data presented in this report are correct, a three percent (3%) failure

rate of residential and Semi-Public sewage systems is still allowing water quality standards to be within the Primary Contact standards. The three percent (3%) failure rate is currently being managed by the ACHD by responding to complaints by citizens at minimal cost to the ACHD.

The observed benefits by this author of the House Bill 110 rule requiring the registration and inspection of Semi-Public include the following:

1. A large number of county sewage systems (533) have been inspected. This number reflects only five percent (5%) of the sewage systems in the county and only two percent (2%) of the sewage produced but it does provide enough examples to generate some valid statistical observations.
2. There is now in place a mechanism to keep new businesses from starting up a business in a facility with an inadequate sewage treatment system.
3. Five hundred and thirty-three (533) sewage disposal system owners are more aware of the maintenance requirements associated with their sewage systems.

Finally, in the opinion of the author of this report; a surface water quality standard of 500 per 100ml or less fecal coliform level could be obtained and maintained by implementing these suggestions. These implementations could be made with a minimum of additional financial resources required by ACHD. These suggestions are in no particular order.

1. All Semi-Public facilities, new and existing, that generate five hundred (500) gallons of sewage or less per day should be regulated by ACHD. This suggestion would remove 460 Semi-Public sewage system owners from the current annual registration and inspection program. These 460 systems were originally permitted under ACHD rules. The discharge from a ACHD permitted sewage system is only a minor contributor to the fecal coliform load in Ashtabula County surface waters. Also new business owners would not bear the cost of professional engineering plans and expensive, land intensive on-lot leaching sewage disposal systems required by Ohio EPA.
2. Semi-Public facilities, new and existing, that generate more than five hundred (500) gallons of sewage per day should be regulated by Ohio EPA using NPDES permits and annual inspections. The ACHD would continue to contract with Ohio EPA to do the annual registration and inspection of the seventy-three Semi-Public sewage treatment systems that generate more than 500 gallons of sewage a day. The registration fees of these 73 Semi-Public sewage systems would be enough to cover the cost to ACHD for doing the registration and inspection of these systems. The average cost of doing a Semi-Public registration and inspection is fifty-two dollars (\$52) a year.
3. Sewers should be installed in the townships of Geneva and Ashtabula where population density makes them economically feasible. The majority of the current residential sewage systems in these townships are fifty years old. Replacement of these systems will be difficult because the majority of lots are not big enough to site a new sewage system. The network of collection pipes carrying sewage to the municipal sewage treatment plants in Geneva and Ashtabula need to be repaired. It is interesting that both referenced fecal coliform studies show that both the Ashtabula River and Cowles Creek exceed Secondary Contact standards as they pass through the sewered areas of these cities. Coffee Creek as it passes through Austinburg at the intersection of St. Rts. 45 and 307 also exceeds Secondary Contact standards. A 1989 ACHD study documented a high failure rate of residential and Semi-Public sewage systems in this area.

The population density and nearby location of a county operated sewage system warrants a correction of this problem by putting sewers in the area.

4. Sanitarians at ACHD should continue to investigate ditches suspected of containing sewage using Ohio EPA Water Standard Rule 3745-1-04 F. Homeowners should be required to install an inspection port on their discharge line to a buried storm drain to make identification of failing sewage systems more definitive.

5. Repairs of all residential sewage systems and all Semi-Public sewage systems producing less than 500 gallons of sewage per day should be repaired using ACHD rules and orders should be enforced by the Ashtabula County Board of Health and the Ashtabula County Prosecutor.

6. Sanitarians at ACHD should continue to do random inspections of home aeration sewage treatment systems as ACHD records show a failure rate near forty percent (40%) for this style of sewage treatment system. See *Appendix E*.

References:

Biological and Water Quality Study of the Grand River and Ashtabula River Basins including Arcola Creek, Cowles Creek and Conneaut Creek, January 7, 1997, Ohio EPA, Ecological Assessment Unit, Division of Surface Water, P.O. Box 1049, 1800 WaterMark Dr., Columbus, Ohio 43216-1049 and Water Quality Section, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087

OEPA Technical Report Number MAS/1996-11-5

Fecal Coliform Bacterial Study of Selected Areas of the Ashtabula River, October 17, 1994, Ashtabula County Health Department, 12 W. Jefferson St., Jefferson, Ohio 44047

Expenses 1999

A. Salaries and Wages	
Sanitarian, Rollin Havens	\$ 10,000
Sanitarians, Terry Palmer, Randy Barnes, John Goold and Todd Shanks	\$ 2,075
Clerk, Carol Koivisto	\$ 6,406
Total Salaries	\$ 18,481
B. Benefits, 0.4 x \$18,481	\$ 7,392.40
C. Total Personnel Costs	\$ 25,873.40
D. Permanent Equipment, 5 Drawer legal sized file cabinet	\$ 550
E. Expendable Supplies & Equipment, Postage, copying, office supplies, and 550 file folders	\$ 1,767
F. Travel, 10,729 miles x \$0.30 per mile	\$ 3,218.70
G. Publications and Presentations	\$ 0
H. Other Costs, Fecal Coliform test lab fees and tracer dye	\$ 2,356
I. Total Other Direct Costs (D-H)	\$ 7,891.70
J. Total Direct Costs (C+I)	\$ 33,765.10
K. Indirect Costs	\$ 0
Total Costs (J+K)	\$ 33,765.10

APPENDIX A

Status of Residential
and Semi-Public
Sewage Disposal Systems
in the Lower Ashtabula
River Basin

Prepared by Rollin Havens, R.S., ACHD
December 15, 1999
for the Ashtabula River Partnership
Ashtabula River Remedial Action Plan Committee, (RAP)

Status of Residential and Semi-Public Sewage Disposal Systems in the Lower Ashtabula River Basin

Introduction

The Ashtabula County Health Department under contract with the Ohio Environmental Protection Agency and funding from the Lake Erie Protection Fund, instituted a registration and inspection program of all Semi-Public sewage disposal systems within the geographic area of the ACHD. The watershed of the Ashtabula River fits within the boundaries of the ACHD jurisdiction. Semi-Public sewage disposal systems are defined as sewage systems which serve public or commercial properties and treat less than 25,000 gallons of sewage per day. Prior to the contract between Ohio EPA and ACHD, Semi-Public sewage disposal systems were under the jurisdiction of the Ohio EPA for installation, maintenance and inspection. This new contract shifts the inspection responsibilities to ACHD. The Lake Erie Protection Fund then funded the first two years of the inspection process so that ACHD would be able to fund the inspections before they could assess inspection fees.

One part of the Lake Erie Protection Fund agreement was for the ACHD to assess the status of Semi-Public and residential sewage disposal systems in the Ashtabula River basin. ACHD has always been responsible for permitting and inspecting residential sewage disposal systems. Thus both categories of systems, Semi-Public and residential, are now being monitored by ACHD and could reasonably be evaluated by ACHD.

An Ohio EPA publication entitled, "Biological and Water Quality Study of The Grand River and Ashtabula River Basins including Arcola Creek, Cowles Creek and Conneaut Creek" published in January 1997 on page 87 makes this recommendation; "Because the Ashtabula River regularly becomes intermittent in late summer, it has a limited capacity to assimilate oxygen demanding pollutants originating from poorly maintained septic beds and livestock wastes. Consequently, poorly maintained septic discharges need to be identified and remedied, and owners of livestock operations should be encouraged to participate in the ongoing programs offering technical assistance for implementing best management practices."

The study just completed by ACHD will be able to shed some light on the status of "poorly maintained septic beds" referenced in the above article. The methodology employed in this study included both a record search and field observations. For the most part, surface water from Sheffield, Monroe, Pierpont and Ashtabula Townships drains completely into the Ashtabula River. Small parts of Plymouth and Kingsville Townships also drain into the Ashtabula River but ACHD records are not easily separated into smaller parts of a township so these small areas are not included in the data. Thus this report focuses on the Semi-Public and residential sewage disposal systems in these four townships. The chart below summarizes the essential information that can be gathered from ACHD files.

rt A

Township Name	Number of Published Street Addresses	Number of Septic Permits since 1945	Number of Septic Repairs since 1985	Number of Septic Complaints since 1986	Number of Aerators	Number of Aerators not running at time of inspection since 1997	Number of Semi-Public Systems	Number of Semi-Public Package Plants
Sheffield	597	462	18	11	41	10	11	0
Monroe	768	651	18	17	31	9	13	1
Pierpont	546	438	6	7	17	6	19	1
Ashtabula	Not Available	837	38	26	48	22	45	13

A study that was done by ACHD in 1994 ascertained the fecal coliform levels in the Ashtabula River at six different locations ranging from the mouth of the river into Lake Erie upstream to the State Road Gulf area. Fecal coliform tests can give a quantitative measure of possible contamination of the river by animal or human sewage due to pathogenic or disease causing bacteria. In this study, the ACHD utilized the Ohio EPA Public Bathing Standards, less than 200 colonies per 100 ml sample, Primary Contact Recreation Standards, less than 1000 colonies per 100 ml sample and Secondary Contact Recreation Standards, less than 5000 colonies per 100 ml of sample to establish if the Ashtabula River was safe for human contact. The conclusion of the study was that the Ashtabula River did not meet the Public Bathing Standard of the Ohio Department of Health but it did meet the Primary Recreational Standard of Ohio EPA. Sewage cannot only be a health hazard, it can also be an environmental hazard. Unfortunately, fecal coliform testing cannot distinguish between animal and human sewage. The 1994 fecal coliform study done by ACHD and the 1996 study done by Ohio EPA both establish the presence of sewage. Further quantitative studies would need to be designed to definitively prove if the sewage is human or animal or both. But one useful hypothesis can be proposed with present information which can guide a researcher in a useful direction.

Ashtabula Township is more densely populated and is older than Sheffield, Monroe and Pierpont Townships. The density of housing is about twice what Chart A shows because Ashtabula City occupies about one-half of the township area. Ashtabula City is almost entirely sewered. Thus the density in Ashtabula Township is almost four times the population density in Sheffield, Monroe and Pierpont Townships. Also agricultural activity in Ashtabula Township is limited because most available land is used for housing. Thus the presence of fecal coliform bacteria in the Ashtabula River as it passes through Ashtabula Township is probably due to human sewage rather than animal sewage. Thus the hypothesis might be that the positive fecal coliform testing is directly related to failing septic systems. It was observed in a fecal coliform test of Coffee Creek in Austinburg Township that a pipe carrying storm water carried a fecal coliform geometric mean level of 24,000 colonies per 100 ml of sample over a five week period of time. But 200 meters down the stream from where the pipe discharged into the stream, the fecal coliform level had been reduced to 2,100 colonies per 100 ml sample. These results should keep one from inferring that the fecal coliform bacteria are migrating great distances from the agricultural townships upstream from Ashtabula Township. Also to be noted from the Coffee Creek study is that the fecal coliform level in the stream right at the point of discharge was 4,100 per 100 ml of sample water. If the Ashtabula River were monitored every one hundred meters (100 m) the possibility of locating a point source would be increased. Another variable that a

researcher could use to locate a failing sewage system would be to inspect systems that are forty to fifty years old.

Fecal coliform tests were not done in Sheffield, Monroe and Pierpont Townships. But observations were made of all the tributaries of the Ashtabula River in these townships as the tributary passed under a highway bridge. The results are summarized in Chart B below. The Ashtabula River tributaries were found to be eutrophic and cloudy. The hypothesis here would be that the enrichment of the river with nutrients is more due to agricultural practices than failing sewage systems. It can be seen in Chart A that the failure rate of sewage systems in Sheffield, Monroe and Pierpont Townships is less mostly because these areas were populated after Ashtabula Township had become saturated with houses in the 1940's and 1950's. Another factor is that in the townships of Sheffield, Monroe and Pierpont; the discharging water from a sewage system travels in an open ditch before it reaches the Ashtabula River or one of its tributaries. While the sewage is in an open ditch, plants in the ditch have a chance to degrade the sewage before it reaches the river. In Ashtabula Township, most sewage systems discharge to a storm drain. This water will receive very little biological cleansing before it reaches the river.

Chart B

Sheffield	East Branch of Ashtabula River	Adams Rd. between Beckwith Rd. and Scribner Rd.	Cloudy, eutrophic	10/08/98
Sheffield	East Branch of Ashtabula River	Adams Rd. between Beckwith Rd. and Scribner Rd.	Almost dry, eutrophic	10/08/98
Sheffield	East Branch of Ashtabula River	Scribner Rd. just east of Adams Rd.	Cloudy	10/08/98
Sheffield	East Branch of Ashtabula River	Hilldom Rd. just east of Stanhope-Kelloggsville Rd.	Cloudy	10/08/98
Sheffield	East Branch of Ashtabula River	Root Rd. Covered Bridge	Cloudy	10/08/98
Sheffield	East Branch of Ashtabula River	Root Rd. just east of covered bridge	Cloudy	10/08/98
Sheffield	Mill Creek Tributary	Rt. 193 between Maple Rd. & Fink Rd.	Cloudy, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Fink Rd. & Griggs Rd.	Mostly dry	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Lillie Rd. & Sheffield-Monroe Rd.	Clean, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Sheffield Rd. between Rt. 193 & Benetka Rd.	Clean, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Sheffield Rd. between Rt. 193 & Benetka Rd.	Very cloudy, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Sheffield Rd. & Gageville-Monroe Rd.	Clean	
Sheffield	Ashtabula River	Rt. 193 between Gageville-Monroe Rd. & Plymouth Ridge Rd.	Cloudy	10/09/98
Sheffield	Ashtabula River	Stanhope-Kelloggsville Rd. between Gageville-Monroe Rd. & School St.	Cloudy	10/09/98
Sheffield	Ashtabula River	Stanhope-Kelloggsville Rd. between Gageville-Monroe Rd. & School St.	Swampy, eutrophic	10/09/98
Sheffield	Ashtabula River	Reger Rd. between Root Rd. & Monroe Center Rd.	Cloudy	10/09/98
Sheffield	Ashtabula River	Monroe Center Rd. between Reger Rd. & Rt. 7	Slightly cloudy, eutrophic	10/09/98
Sheffield	Ashtabula River Tributary	Stanhope-Kelloggsville Rd. between Root Rd. & Gageville-Monroe Rd.	Cloudy, stagnant, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Pebbles Rd.	Clean, swampy, eutrophic	10/09/98
Sheffield	Ashtabula River	Bauwin Rd. dead end	Can't see river	10/09/98
Pierpont	Ashtabula River West Branch	North Richmond Rd. just east of Stanhope-Kelloggsville Rd.	Cloudy, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Anderson Rd. just east of Stanhope-Kelloggsville Rd.	Cloudy, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Schrambling Rd. just east of Stanhope-Kelloggsville Rd.	Rock bottom, minnows, clean	10/08/98
Pierpont	Ashtabula River West Branch Tributary	Schrambling Rd. west of Rt. 7	Dry, strong manure smell	10/08/98
Pierpont	Ditch	Rt. 167 just west of Rt. 7	Cloudy	10/08/98
Pierpont	Ditch	Rt. 167 one-half mile west of Rt. 7	Very Cloudy	10/08/98
Pierpont	Ashtabula River West Branch Tributary	Rt. 167 just west of Lewis Rd.	Cloudy	10/08/98
Pierpont	Ashtabula River West Branch	Rt. 167 just east of Stanhope-Kelloggsville Rd.	Cloudy	10/08/98

point	Ashtabula River West Branch	Craine Rd. Covered Bridge	Cloudy	10/08/98
point	Ashtabula River West Branch	Craine Rd. between covered bridge and Lewis Rd.	Cloudy, eutrophic	10/08/98
point	Ashtabula River West Branch	Graham Rd. Covered Bridge	Cloudy, very eutrophic	10/08/98
point	Ashtabula River East Branch	Graham Rd. just east of Ford Rd.	Cloudy	10/08/98
point	Ashtabula River East Branch	Beckwith Rd. just west of Adams Rd.	Cloudy	10/08/98
point	Ashtabula River West Branch	Beckwith Rd. just east of Stanhope-Kelloggsville Rd.	Clear, eutrophic	10/08/98

Staff from ACHD walked the Ashtabula River in Ashtabula Township for about two miles in the fall of 1998. No observations of environmental damage to the river were observed as a result of failing sewage systems. The water appeared to be clean.

There are four contributors to the fecal coliform level of surface waters. First, is failing sewage treatment systems, second is discharging waters from sewage systems that discharge to a ditch which eventually drains to a river, third is the bacteria from the waste of wild animals and fourth is the bacteria from the waste of domesticated animals particularly cows and horses. The author of this report is unaware of a study which assigns a percent to each contributing factor. It would be the opinion of this author that eighty to ninety percent (80-90%) is the result of failing sewage systems.

If all the extrapolations of data presented in this report are correct, a three percent (3%) failure rate of residential and Semi-Public sewage systems is still allowing water quality standards to be within the Primary Contact standards. The three percent (3%) failure rate is currently being managed by the ACHD by responding to complaints by citizens at minimal cost to the ACHD.

The observed benefits by this author of the House Bill 110 rule requiring the registration and inspection of Semi-Public include the following:

1. A large number of county sewage systems (533) have been inspected. This number reflects only five percent (5%) of the sewage systems in the county and only two percent (2%) of the sewage produced but it does provide enough examples to generate some valid statistical observations. The countywide failure rate is three percent (3%) so it can be extrapolated that the failure rate of sewage systems in the Ashtabula River Basin is also three percent (3%).
2. There is now in place a mechanism to keep new businesses from starting up a business in a facility with an inadequate sewage treatment system.
3. Five hundred and thirty-three (533) sewage disposal system owners are more aware of the maintenance requirements associated with their sewage systems.

Finally, it is the opinion of the author of this report; that a surface water quality standard of 500 per 100ml or less fecal coliform level could be obtained and maintained by implementing the following suggestions. This standard would be a compromise between the Bathing standard and the Primary Contact standard. These implementations would require a minimum of additional financial resources by ACHD. These suggestions would require the lowest financial investment by home and business owners when they are required to replace their failing sewage disposal systems.

1. Any clean-up effort should begin in Ashtabula Township.
2. All Semi-Public facilities, new and existing, that generate five hundred (500) gallons of sewage or less per day should be regulated by ACHD. This suggestion would remove 460 countywide Semi-Public sewage system owners from the current annual registration and inspection program. These 460 systems were originally permitted under ACHD rules. The discharge from a ACHD permitted sewage system is only a minor contributor to the fecal coliform load in Ashtabula County surface waters. Also new business owners would not bear the cost of professional engineering plans and expensive, land intensive on-lot leaching sewage disposal systems required by Ohio EPA.
3. Semi-Public facilities, new and existing, that generate more than five hundred (500) gallons of sewage per day should be regulated by Ohio EPA using NPDES permits and annual inspections. The ACHD would continue to contract with Ohio EPA to do the annual registration and inspection of the seventy-three Semi-Public sewage treatment systems that generate more than 500 gallons of sewage a day. The registration fees of these 73 Semi-Public sewage systems would be enough to cover the cost to ACHD for doing the registration and inspection of these systems. The average cost of doing a Semi-Public registration and inspection is fifty-two dollars (\$52) a year.
4. Sewers should be installed in Ashtabula Township where the population density makes them economically feasible. The majority of the current residential sewage systems in the township are fifty years old. Replacement of these systems will be difficult because the majority of lots are not big enough to site a new sewage system. The network of collection pipes carrying sewage to the municipal sewage treatment in Ashtabula need to be repaired. It is interesting that both referenced fecal coliform studies show that fecal coliform counts in the Ashtabula River increase and exceed Secondary Contact standards as the river passes through the sewerred area of the City of Ashtabula.
5. Sanitarians at ACHD should continue to investigate ditches suspected of containing sewage using Ohio EPA Water Standard Rule 3745-1-04 F. This rule can start an investigation without a complaint if two consecutive samples from the ditch give fecal coliform readings of over 5000 per 100ml. Two examples of ditches with high fecal coliform counts in Ashtabula Township are at the corner of State Rd. and E. 52nd Street and a ditch on Aetna Rd. The Aetna Rd. ditch level was 160,000 colonies per 100 ml and the State & E. 52nd ditch was 67,500 colonies per 100 ml. These readings were made by ACHD in the summer of 1999. This sewage will eventually reach the Ashtabula River because it is confined in a pipe until it reaches the river or a tributary of the river. However even if a ditch or storm drain is found to be polluted with sewage, much effort is required to follow the waste stream backwards to the particular home. One cost efficient measure might be to require each homeowner to install an inspection port at the point of discharge from their sewage system to the storm drain. Then a whole neighborhood could be inspected for a failing system in a short period of time at a cost of about ten dollars (\$10) per inspection.
6. Repairs of all residential sewage systems and all Semi-Public sewage systems producing less

than 500 gallons of sewage per day should be repaired using ACHD rules and orders should be enforced by the Ashtabula County Board of Health and the Ashtabula County Prosecutor.

7. Sanitarians at ACHD should continue to do random inspections of home aeration sewage treatment systems as ACHD records show a non operation rate near forty percent (40%) in Ashtabula Township. See *Appendix E*.

References:

Biological and Water Quality Study of the Grand River and Ashtabula River Basins including Arcola Creek, Cowles Creek and Conneaut Creek, January 7, 1997, Ohio EPA, Ecological Assessment Unit, Division of Surface Water, P.O. Box 1049, 1800 WaterMark Dr., Columbus, Ohio 43216-1049 and Water Quality Section, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087
OEPA Technical Report Number MAS/1996-11-5

Fecal Coliform Bacterial Study of Selected Areas of the Ashtabula River, October 17, 1994, Ashtabula County Health Department, 12 W. Jefferson St., Jefferson, Ohio 44047

PENDIX B

Type of Service	Name of Semi-Public Facility	No. of Site Visits	Year
Complaint Investigation	Corner Mart	1	
Complaint Investigation	Apartments	2	
Complaint Investigation	Apartments	2	
Complaint Investigation	Mobile Home Park	1	
Complaint Investigation	Car Wash	2	
Complaint Investigation	Doctor's Office	1	
Failure	Restaurant	1	
Failure	Corner Mart	1	
Failure	Camp	4	
Failure	Motel	2	
Failure	Doctor's Office	2	
Failure	Mobile Home Park	2	
Failure	Apartments	4	
Failure	Motel	1	
Failure	Corner Mart	2	
Failure	Apartments	2	
Failure	Ambulance Barracks	2	
Failure	Business	1	
Failure	Business	2	
Failure	Apartments	2	
Failure	Ambulance Barracks	2	
Failure	School	2	
Failure	Gas Station	3	
New Business Consultation	Business	1	
New Business Consultation	Business	1	
New Business Consultation	Business	2	
New Business Consultation	Business	1	
New Business Consultation	Business	1	
New Business Consultation	Government Building	2	
New Business Consultation	Business	1	
New Business Consultation	Church	2	
New Business Consultation	Business	2	
New Business Consultation	Government Building	1	
New Business Consultation	Business	1	
New Business Consultation	Business	2	
New Business Consultation	Church	1	
New Business Consultation	Business	1	
New Business Consultation	Business	1	
New Business Consultation	Business	2	
New Business Consultation	Business	1	1998
New Inspection	Business	1	1999
New Inspection	Doctor's Office	4	1998
New Inspection	Restaurant	2	1999
New Inspection	Church	1	1999
New Inspection	Park	2	1999
New Inspection	Church	2	1999
New Inspection	Business	1	1998
New Inspection	School	1	1999
New Package Plant Inspection	Corner Mart	2	1998
New Package Plant Inspection	Business	1	1999
New Package Plant Inspection	Business	2	
Package Plant Repair Consultation	School	1	
Package Plant Repair Consultation	Mobile Home Park	1	

Package Plant Repair Consultation	Church	1
Package Plant Repair Consultation	Business	1
Package Plant Repair Consultation	Nursing Home	2
Package Plant Repair Consultation	Business	3
Package Plant Repair Consultation	Business	1
Package Plant Repair Consultation	Business	1
Package Plant Repair Consultation	Restaurant	2
Package Plant Repair Consultation	Apartments	1
Real Estate Consultation	Business	3
Real Estate Consultation	Business	1
Real Estate Consultation	Business	1
Repair Inspection	Business	1
Repair Inspection	Apartments	1
Repair Inspection	Government Building	1
Repair Inspection	Business	1
Repair Inspection	Restaurant	1
Repair Inspection	Business	2
Repair Inspection	Camp	1
Repair Inspection	Business	1
Repair Inspection	Corner Mart	1
Repair Inspection	Mobile Home Park	1
Repair Inspection	Restaurant	1
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APPENDIX D

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Township	Name of Creek	Road it Passes under	Condition of Stream	Date Inspected
Say brook	Indian Creek Tributary	Rt. 45 between Rt. 20 & New London Rd.	Clear	10/16/98
Say brook	Brook Creek Tributary	North Bend Rd. between Rt. 45 & Gerald Rd.	Clear	10/16/98
Say brook	Brook Creek Tributary	Rt. 45 between North Bend Rd. & Gore Rd.	Clear & Eutrophic	10/16/98
Say brook	Brook Creek Tributary	Rt. 45 between North Bend Rd. & Gore Rd.	Cloudy	10/16/98
Say brook	Brook Creek	Carpenter Rd. between Renko Rd. & Stowe St.	Clear & Eutrophic, no life	10/16/98
Saybrook	Brook Creek	Rt. 531 between Arcola St. & Overlook Dr.	Slightly Cloudy, no life	10/16/98
Geneva	Unnamed	Rt. 531 between Palmetto Beach & Township Park	Cloudy	10/16/98
Geneva	Cowles Creek mouth	Geneva State Park	Cloudy, no signs of life	10/16/98
Geneva	Cowles Creek Tributary	Rt. 534 just south of Rt. 531	Cloudy	10/16/98
Geneva	Cowles Creek	Rt. 534 just north of State Park Rd.	Clean, lots of minnows	10/16/98
Geneva	Unnamed	Corner of State Park Rd. & Padanaram Rd.	Cloudy	10/16/98
Geneva	Unnamed	State Park Rd. west of marina	Cloudy	10/16/98
Geneva	Unnamed mouth	Lake Erie	Cloudy	10/16/98
Geneva	Cowles Creek	Dead end on State Park Rd. with Cowles Creek	Cloudy	10/16/98
Geneva	Wheeler Creek	Lake Rd. between golf course and Driftwood	Cloudy	10/16/98
Geneva	Unnamed	Driftwood	Full of sewage and odor	10/16/98
Geneva	Arcola Creek	Countyline Rd. just south of Driftwood	Nearly dry, full of trash	10/16/98
Geneva	Arcola Creek	North Center Rd. between Countyline & Wheeler Creek Rd.	Dry	10/16/98
Geneva	Wheeler Creek	North Center Rd. between Wheeler Rd. & Padanaram Rd.	Clean and flowing	10/16/98
Geneva	Unnamed Tributary	North Center Rd. between Padanaram Rd. & Rt. 534	Dry	10/16/98
Geneva	Cowles Creek	North Center Rd. between Rt. 534 & Austin Rd.	Clean, flowing, fish	10/16/98
Geneva	Cowles Creek Tributary	New London Rd. between Austin Rd. & Myers Rd.	Almost dry, eutrophic	10/16/98
Geneva	Cowles Creek Tributary	Austin Rd. between New London Rd. & Woodside Dr.	Cloudy, very eutrophic	10/16/98
Geneva	Cowles Creek	New London Rd. between Rt. 534 & Austin Rd.	Clean, lots of fish	10/16/98
Geneva	Cowles Creek	North Ave. between Rt. 534 & N. Cedar St.	Clean, lots of fish	10/16/98
Geneva	Cowles Creek	Rt. 20 between N. Cedar St. & Forest St.	Clean and flowing	10/16/98
Saybrook	Indian Creek	Rt. 45 between Rt. 84 & Maple Ridge Golf Course	Clean, almost dry	10/16/98
Saybrook	Indian Creek Tributary	Nineveh Rd. between North Bend Rd. & Gore Rd.	Dry	10/16/98
Saybrook	Indian Creek	Nineveh Rd. between North Bend Rd. & New London Rd.	Clear, eutrophic	10/16/98
Saybrook	Indian Creek	North Bend Rd. between Nineveh Rd. & Myers Rd.	Very Cloudy, silt	10/16/98
Saybrook	Indian Creek	North Bend Rd. between Nineveh Rd. & Myers Rd.	Very Cloudy, silt	10/16/98
Saybrook	Indian Creek	North Bend Rd. between Nineveh Rd. & Myers Rd.	Slightly cloudy, eutrophic, no fish	10/16/98
Saybrook	Indian Creek	Myers Rd. between Rt. 531 & North Bend Rd.	Slightly cloudy, no fish	10/16/98
Plymouth	Ashtabula River	Indian Trail Park to Stevens Rd.	Clean, fish	
Plymouth	Ashtabula River	Olin Covered Bridge and east	Clean, fish	
Sheffield	East Branch of Ashtabula River	Adams Rd. between Beckwith Rd. and Scribner Rd.	Cloudy, eutrophic	10/08/98
Sheffield	East Branch of Ashtabula River	Adams Rd. between Beckwith Rd. and Scribner Rd.	Almost dry, eutrophic	10/08/98
Sheffield	East Branch of Ashtabula River	Scribner Rd. just east of Adams Rd.	Cloudy	10/08/98
Sheffield	East Branch of Ashtabula River	Hilldom Rd. just east of Slanhope-Kelloggsville Rd.	Cloudy	10/08/98

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Sheffield	East Branch of Ashtabula River	Root Rd. Covered Bridge	Cloudy	10/08/98
Sheffield	East Branch of Ashtabula River	Root Rd. just east of covered bridge	Cloudy	10/08/98
Sheffield	Mill Creek Tributary	Rt. 193 between Maple Rd. & Fink Rd.	Cloudy, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Fink Rd. & Griggs Rd.	Mostly dry	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Lillie Rd. & Sheffield-Monroe Rd.	Clean, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Sheffield Rd. between Rt. 193 & Benetka Rd.	Clean, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Sheffield Rd. between Rt. 193 & Benetka Rd.	Very cloudy, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Rt. 193 between Sheffield Rd. & Gageville-Monroe Rd.	Clean	10/09/98
Sheffield	Ashtabula River	Rt. 193 between Gageville-Monroe Rd. & Plymouth Ridge Rd.	Cloudy	10/09/98
Sheffield	Ashtabula River	Stanhope-Kelloggsville Rd. between Gageville-Monroe Rd. & School St.	Cloudy	10/09/98
Sheffield	Ashtabula River	Stanhope-Kelloggsville Rd. between Gageville-Monroe Rd. & School St.	Swampy, eutrophic	10/09/98
Sheffield	Ashtabula River	Reger Rd. between Root Rd. & Monroe Center Rd.	Cloudy	10/09/98
Sheffield	Ashtabula River	Monroe Center Rd. between Reger Rd. & Rt. 7	Slightly cloudy, eutrophic	10/09/98
Sheffield	Ashtabula River Tributary	Stanhope-Kelloggsville Rd. between Root Rd. & Gageville-Monroe Rd.	Cloudy, stagnant, eutrophic	10/09/98
Sheffield	Mill Creek Tributary	Pebbles Rd.	Clean, swampy, eutrophic	10/09/98
Sheffield	Ashtabula River	Bauwin Rd. dead end	Can't see river	10/09/98
Austinburg	Center Creek	Lampson Rd. just east of Rt. 45	Eutrophic, scum, dirty	10/14/98
Austinburg	Mill Creek Tributary	Forman Rd. between Allen Rd. & Mill Creek Rd.	Eutrophic, litter	10/14/98
Austinburg	Mill Creek Tributary	Mill Creek Rd. between Rt. 45 & Forman Rd.	Clear	10/14/98
Austinburg	Mill Creek Tributary	Schweitzer Rd. between Rt. 45 & Tote Rd.	Cloudy, eutrophic	10/20/98
Jefferson	Cemetery Trib of Mill Creek	Corner of Svanore St. & Walnut St.	Clear	10/14/98
Jefferson	Cemetery Trib of Mill Creek	Market St. by Cemetery	Cloudy, eutrophic	10/14/98
Jefferson	Mill Creek Tributary	Market St. just south of Rt. 46	Clear	10/14/98
Jefferson	Mill Creek Tributary	Rt. 46 between Perry Rd. & Clay St.	Cloudy, eutrophic	10/14/98
Jefferson	Mill Creek Tributary	Perry Rd. between Rt. 46 & railroad	Clear	10/14/98
Jefferson	Mill Creek	Rt. 46 between just south of Clay St.	Cloudy, eutrophic	10/14/98
Jefferson	Mill Creek	Doyle Rd. Covered Bridge	Clear & eutrophic	10/14/98
Jefferson	Mill Creek Tributary	Doyle Rd. between covered bridge & Rt. 307	Clear	10/14/98
Jefferson	Cemetery Trib of Mill Creek	Poplar St. by Fairgrounds	Very eutrophic	10/14/98
Jefferson	Mill Creek	West Dam	Clean	10/14/98
Jefferson	Cemetery Trib of Mill Creek	Hickok Rd. just south of Rt. 307	Eutrophic, scum	10/14/98
Austinburg	Center Creek	Dadeville Rd. between Clay St. & Rt. 307	Eutrophic, scum	10/14/98
Austinburg	Center Creek	Forman Rd. just south of Rt. 307	Eutrophic, scum	10/14/98
Austinburg	Mill Creek	Forman Rd. between Mill Creek Rd. & Eagleville Rd.	Clean, eutrophic	10/14/98
Austinburg	Mill Creek Tributary	Thiel Rd. just east of Eagleville Rd.	Clean, almost dry, minnows	10/14/98
Austinburg	Mill Creek Tributary	Thiel Rd. just east of Eagleville Rd.	Clean, eutrophic	10/14/98
Jefferson	Mill Creek	Rt. 167 between Garrett Rd. & Clark Rd.	Eutrophic, stagnant	10/07/98
Jefferson	Mill Creek Tributary	Clark Rd.	Clean	10/07/98
Jefferson	Mill Creek Tributary	South Denmark Rd. just south of Netcher Rd.	Clean	10/07/98
Denmark	Mill Creek	South Denmark Rd. Covered Bridge	Clean	10/07/98
Denmark	Mill Creek	Clay Rd. by South Denmark Cemetery	Clean, beaver dams	10/07/98

Denmark	Mill Creek Tributary	Clay Rd. just north of railroad	Clean	10/07/98
Denmark	Mill Creek Tributary	Netcher Rd. just east of Clay Rd.	Dry	10/07/98
Denmark	Mill Creek Tributary	Netcher Rd. just east of Clay Rd.	Dry	10/07/98
Denmark	Mill Creek Tributary	Netcher Rd. just west of Clay Rd.	Dry	10/07/98
Denmark	Mill Creek Tributary	Netcher Rd. just west of railroad	Dry	10/07/98
Denmark	Mill Creek Tributary	Netcher Rd. just east of Rt. 11	Dry	10/07/98
Denmark	Mill Creek Tributary	Clay Rd. between Netcher Rd. & Rt. 167	Very eutrophic	10/07/98
Denmark	Mill Creek Tributary	Clay Rd. just south of Rt. 167	Eutrophic	10/07/98
Denmark	Mill Creek Tributary	Rt. 167 just west of Clay Rd.	Eutrophic	10/07/98
Denmark	Mill Creek Tributary	March Rd. just south of Brown Rd.	Clean	10/07/98
Denmark	Mill Creek Tributary	Brown Rd. just south of Griggs Corners	Eutrophic	10/07/98
Denmark	Mill Creek Tributary	Maple Rd. just south of Griggs Rd.	Eutrophic	10/07/98
Sheffield	Mill Creek Tributary	Rt. 11 just south of Griggs Rd.	Clean	10/07/98
Jefferson	Mill Creek Tributary	Rt. 11 Giddings Rd. & Rt. 11 just south of Griggs Rd.	Clean	10/07/98
Jefferson	Mill Creek Tributary	Giddings Rd. Covered Bridge	Clean	10/07/98
Jefferson	Mill Creek	Rt. 307 between Black Sea Rd. & Overly Rd.	Seems ok	10/07/98
Lenox	Mill Creek Tributary	Rt. 193 just north of South Denmark Rd.	Cloudy, very eutrophic	10/07/98
Denmark	Peters Creek	South Denmark Rd. just east of Rt. 193	Clear	10/08/98
Denmark	Peters Creek Tributary	South Denmark Rd. by cemetery	Cloudy	10/08/98
Denmark	Peters Creek Tributary	Traxler Rd. between South Denmark Rd. & Netcher Rd.	Cloudy, swampy area	10/08/98
Denmark	Peters Creek	North Richmond Rd. just east of Stanhope-Kelloggsville Rd.	Cloudy, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Anderson Rd. just east of Stanhope-Kelloggsville Rd.	Cloudy, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Schrambling Rd. just east of Stanhope-Kelloggsville Rd.	Rock bottom, eutrophic, minnows, d	10/08/98
Pierpont	Ashtabula River West Branch	Schrambling Rd. west of Rt. 7	Dry, strong manure smell	10/08/98
Pierpont	Ashtabula River West Branch Trib	Rt. 167 just west of Rt. 7	Cloudy	10/08/98
Pierpont	Ditch	Rt. 167 one-half mile west of Rt. 7	Very Cloudy	10/08/98
Pierpont	Ditch	Rt. 167 just west of Lewis Rd.	Cloudy	10/08/98
Pierpont	Ashtabula River West Branch Trib	Rt. 167 just east of Stanhope-Kelloggsville Rd.	Cloudy	10/08/98
Pierpont	Ashtabula River West Branch	Craine Rd. Covered Bridge	Cloudy	10/08/98
Pierpont	Ashtabula River West Branch	Craine Rd. between covered bridge and Lewis Rd.	Cloudy, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch Trib	Graham Rd. Covered Bridge	Cloudy, very eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Graham Rd. just east of Ford Rd.	Cloudy	10/08/98
Pierpont	Ashtabula River East Branch	Beckwith Rd. just west of Adams Rd.	Cloudy	10/08/98
Pierpont	Ashtabula River East Branch	Beckwith Rd. just east of Stanhope-Kelloggsville Rd.	Clear, eutrophic	10/08/98
Pierpont	Ashtabula River West Branch	Boughner Rd. between State Rd. & Windsor-Mechanicsville Rd.	Eutrophic	10/20/98
Trumbull	Bronson Creek Tributary	Rt. 45 just south of Schweitzer Rd.	Eutrophic	10/20/98
Morgan	Mill Creek Tributary	Schweitzer Rd. just east of Windsor-Mechanicsville Rd.	Cloudy, moving water	10/20/98
Morgan	Grand River	Schweitzer Rd. just east of Windsor-Mechanicsville Rd.	Pristine clean, minnows	10/20/98
Morgan	Grand River Tributary	Schweitzer Rd. just east of Windsor-Mechanicsville Rd.	Clean, eutrophic	10/20/98
Morgan	Bronson Creek Tributary	Windsor-Mechanicsville Rd. just north of Schweitzer	Clean, eutrophic	10/20/98
Morgan	Bronson Creek	Windsor-Mechanicsville Rd. just south of Country View Dr.	Clean, eutrophic	10/20/98
Morgan	Grand River Tributary	Windsor-Mechanicsville Rd. just north of White Rd.	Clean	10/20/98

Morgan	Grand River Tributary	Windsor-Mechanicsville Rd. just south of White Rd.	Dry	10/20/98
Morgan	Grand River Tributary	Fobes Rd. just east of Windsor-Mechanicsville Rd.	Dry	10/20/98
Morgan	Grand River Tributary	Fobes Rd. just west of Grand River	Dry	10/20/98
Morgan	Grand River	Fobes Rd.	Cloudy	10/20/98
Trumbull	Trumbull Creek Tributary	Windsor-Mechanicsville Rd. just north of Riverdale Rd.	Almost dry, eutrophic	10/20/98
Trumbull	Trumbull Creek Tributary	Corner of Riverdale Rd. & Windsor-Mechanicsville Rd.	Eutrophic	10/20/98
Morgan	Trumbull Creek	Riverdale Rd. just west of Rice Rd.	Clean	10/20/98
Trumbull	Trumbull Creek Tributary	Windsor-Mechanicsville Rd. just north of Slate Rd.	Mostly dry	10/20/98
Morgan	Grand River	Riverdale Rd.	River moving good	10/20/98
Morgan	Badger Creek	Riverdale Rd. just west of Rt. 45	Eutrophic	10/20/98
Morgan	Rock Creek	Rt. 45 just south of light in Rock Creek	Eutrophic, flowing good	10/20/98
Morgan	Rock Creek	Bridge to cemetery off Footville-Richmond Rd. west of Rock Creek	Eutrophic, flowing good	10/20/98
Morgan	Grand River	Footville-Richmond Rd.	Flowing good	10/20/98
Trumbull	Trumbull Creek	Windsor-Mechanicsville Rd. just south of Slate Rd.	Clean, pristine, bass fish, no signs of	10/20/98
Trumbull	Crooked Creek	Windsor-Mechanicsville Rd. and Shaffer Rd.	Pristine, clean, minnows	10/20/98
Morgan	Grand River	Shaffer Rd.	Slow moving, cloudy	10/20/98
Morgan	Grand River Tributary	Rt. 45 just north of Shaffer Rd.	Cloudy, almost dry	10/20/98
Austinburg	Mill Creek Tributary	Forman Rd. just south of Jefferson Rd.	Eutrophic	10/14/98
Morgan	Mill Creek Tributary	Forman Rd. half mile south of Jefferson Rd.	Dry	10/14/98
Morgan	Three Brothers Creek	Forman Rd. just south of cemetery	Eutrophic, minnows	10/14/98
Morgan	Badger Run Tributary	Forman Rd. and Knowlton Rd.	Eutrophic	10/14/98
Morgan	Badger Run	Forman Rd. between Knowlton Rd. & Hayford Rd.	Dry	10/14/98
Morgan	Badger Run	Knowlton Rd. & Hayford Rd.	Dry	10/14/98
Lenox	Badger Run Tributary	Stumpville Rd. just north of Hayford Rd.	Eutrophic	10/14/98
Lenox	Badger Run Tributary	Stumpville Rd. between Chappell Rd. & Tische Rd.	Cloudy, eutrophic	10/14/98
Lenox	Three Brothers Creek	Stumpville Rd. between Tische Rd. & Footville-Richmond Rd.	Eutrophic	10/14/98
Lenox	Three Brothers Creek Tributary	Footville-Richmond Rd. between Rt. 46 & Stumpville Rd.	Eutrophic, minnows	10/14/98
Lenox	Askue Run Tributary	Rt. 307 just west of Overly Rd.	Clean	10/08/98
Lenox	Askue Run Tributary	Overly Rd. just north of Rt. 307	Clean	10/08/98
Dorset	Mill Creek Tributary	Rt. 307 between Rt. 11 & Tower Rd.	Clean	10/08/98
Dorset	Mill Creek	Tower Rd. just east of Rt. 307	Eutrophic, stagnant, duckweed	10/08/98
Dorset	Mill Creek	Clay Rd. just north of Rt. 307	Beaver dams, clean	10/08/98
Dorset	Mill Creek	Rt. 307 and Russel Rd.	Low stagnant	10/08/98
Dorset	Mill Creek Tributary	Russell Rd. between Rt. 307 & Allen-Comp Rd.	Cloudy, eutrophic	10/08/98
Dorset	Mill Creek Tributary	Rt. 193 between Rt. 307 & Allen-Comp Rd.	Cloudy, eutrophic	10/08/98
Dorset	Mill Creek Tributary	Rt. 307 between Rt. 193 & Russell Rd.	Cloudy	10/08/98
Dorset	Mill Creek Tributary	Rt. 193 between Footville-Richmond Rd. & by Dorset Comm. Center	Clean	10/08/98
Dorset	Mill Creek Tributary	Rt. 193 just south of Tower Rd.	Cloudy	10/08/98
Hartsgrove	Mud Creek	Laskey Rd. between Rt. 534 & Higley Rd.	Clear	10/05/98
Hartsgrove	Mud Creek	Higley Rd. just south of Laskey Rd.	Clear	10/05/98
Hartsgrove	Mud Creek	Windsor-Mechanicsville Rd. just south of Laskey Rd.	Clear water, minnows	10/05/98

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Hartsgrove	Mud Creek Tributary	Windsor-Mechanicsville Rd. just south of Bear Rd.	Clean, slightly eutrophic	10/05/98
Hartsgrove	Mud Creek Tributary	Windsor-Mechanicsville Rd. just south of Callender Rd.	Clean	10/05/98
Hartsgrove	Crooked Creek	Callender Rd. just east of Windsor-Mechanicsville Rd.	Muddy	10/05/98
Hartsgrove	Hoskins Creek	Hulburt Rd. just north of Meade Hollow Rd.	Pristine, flowing	10/20/98
Windsor	Hoskins Creek Tributary	Noble Rd. just south of Meade Hollow Rd.	Eutrophic	10/20/98
Hartsgrove	Mud Creek	Lasley Rd. and Ireland Rd.	Eutrophic	10/26/98
Hartsgrove	Spring Creek	Ireland Rd. & Hoffman Rd.	Clear, moving	10/26/98
Hartsgrove	Crooked Creek Tributary	Hoffman Rd. between Graham Rd. & Rt. 534	Clean, some motion, no fish	10/26/98
Rome	Crooked Creek	Callender Rd. just west of Grand River		
Rome	Grand River	Callender Rd.	Moving	10/05/98
Rome	Grand River Tributary	Callender Rd. just east of Grand River	Muddy, swampy, low flow	10/05/98
Rome	Grand River Tributary	Rt. 45 just south of Callender Rd.	Duckweed	10/05/98
Rome	Grand River Tributary	Rt. 45 just north of Ketchum Rd.	Ok	10/05/98
Rome	Grand River	Rt. 6	Muddy, eutrophic	10/05/98
Hartsgrove	Mud Creek	Windsor-Mechanicsville Rd. just south of Rt. 6	Muddy, eutrophic	10/05/98
Hartsgrove	Hoskins Creek	Meade Hollow Rd. just west of Windsor-Mechanicsville Rd.	Clean, stone bottom, minnows	10/05/98
Hartsgrove	Hoskins Creek	Windsor-Mechanicsville Rd. & Johnson Rd.	Clean, stone bottom	10/05/98
Hartsgrove	Hoskins Creek Tributary	Windsor-Mechanicsville Rd. at Windsor Twp. line	Clean	10/05/98
Rome	Grand River Tributary	Fillingham Rd. and Johnson Rd.	Cloudy, eutrophic	10/20/98
Rome	Grand River	Johnson Rd.	Cloudy	10/20/98
Windsor	Indian Creek	Noble Rd. and Montgomery Rd.	Pristine, minnows, flowing, rock bolt	10/20/98
Windsor	Hoskins Creek Tributary	Noble Rd. just south of Stoneville Rd.	Pristine	10/20/98
Windsor	Hoskins Creek Tributary	Noble Rd. just south of New Hudson Rd.	Pristine	10/20/98
Windsor	Hoskins Creek Tributary	Noble Rd. between New Hudson Rd. & Rt. 322	Dry	10/20/98
Windsor	Don Creek	South Windsor Rd. just east of Rt. 534	Clean	10/20/98
Windsor	Warners Hollow Creek	South Windsor Rd. just west of Old Plank Rd.	Polluted, oil scum, odor	10/20/98
Windsor	Hoskins Creek Tributary	Montgomery Rd. just east of Windsor-Mechanicsville Rd.	Stagnant, cloudy	10/05/98
Orwell	Grand River	Montgomery Rd.	Muddy	10/05/98
Windsor	Hoskins Creek Tributary	Windsor-Mechanicsville Rd. just north of New Hudson Rd.	Stagnant, cloudy	10/05/98
Windsor	Hoskins Creek Tributary	New Hudson Rd. just west of Windsor-Mechanicsville Rd.	Muddy	10/05/98
Orwell	Grand River	New Hudson Rd.	Muddy	10/05/98
Orwell	Grand River	Old Plank Rd.	Black color	10/05/98
Orwell	Rock Creek Tributary	Moore Rd. just east of Morris Rd.	Muddy	10/20/98
Colebrook	Rock Creek Tributary	Fee Rd. just south of Moore Rd.	Slightly cloudy	10/20/98
Wayne	Pymatuning Creek Tributary	Hayes Rd. just south of Underwood Rd.	Clean	11/19/98
Wayne	Pymatuning Creek Tributary	Hayes Rd. just north of County line	Clean, mostly dry	11/19/98
Wayne	Pymatuning Creek Tributary	Kiddle Rd. just south of Underwood Rd.	Eutrophic	11/19/98
Wayne	Pymatuning Creek	Underwood Rd. just west of Creek Rd.	Deep, pasture, eutrophic	11/19/98
Wayne	Pymatuning Creek Tributary	Hayes Rd. just north of Underwood Rd.	Rocky, dry	11/19/98
Wayne	Pymatuning Creek Tributary	Hayes Rd. just south of Rt. 322	Clean	11/19/98
Wayne	Pymatuning Creek	Rt. 322 between railroad and Creek Rd.	Eutrophic	11/19/98

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Wayne	Pymatuning Creek Tributary	Creek Road south of Rt. 322	Clean	11/19/98
Wayne	Pymatuning Creek Tributary	Underwood Rd. just east of Creek Rd.	Clean	11/19/98
Williamsfield	Pymatuning Creek Tributary	Underwood Rd. just east of Township line	Dry	11/19/98
Williamsfield	Pymatuning Creek Tributary	Underwood Rd. just west of Stanhope-Kelloggsville Rd.	Clean, flowing	11/19/98
Williamsfield	Pymatuning Creek Tributary	Stanhope-Kelloggsville Rd. just north of Underwood Rd.	Dry	11/19/98
Williamsfield	Pymatuning Creek Tributary	Stanhope-Kelloggsville Rd. between Underwood Rd. & Ford Rd.	Dry	11/19/98
Williamsfield	Pymatuning Creek Tributary	Stanhope-Kelloggsville Rd. just south of Rt. 322	Clean	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. just north of Rt. 322	Dry	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. between Rt. 322 & Slater Rd.	Eutrophic	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. just south of Slater Rd.	Dry	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. just north of Slater Rd.	Eutrophic	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. south between Slater Rd. & Woodworth Rd.	Eutrophic	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. middle between Slater Rd. & Woodworth Rd.	Clean	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. north between Slater Rd. & Woodworth Rd.	Dry	11/19/98
Wayne	Pymatuning Creek Tributary	Creek Rd. just south of Woodworth Rd.	Clean	11/19/98
Orwell	Rock Creek	Windsor Rd. just west of township line	Cloudy, Deep	11/19/98
Orwell	Shanty Creek	Windsor Rd. just east of Dodge Rd.	Very Eutrophic	11/19/98
Colebrook	Rock Creek Tributary	Fee Rd. just north of Windsor Rd.	Mostly dry	11/19/98
New Lyme	Rock Creek Tributary	Fee Rd. just north of township line	Cloudy	11/19/98
Colebrook	Rock Creek Tributary	Rt. 46 just south of Windsor Rd.	Dry	11/19/98
Colebrook	Rock Creek Tributary	Rt. 46 between Windsor Rd. & Rt. 322	Dry	11/19/98
Colebrook	Mosquito Creek	Rt. 46 just north of Rt. 322	Dry	11/19/98
Colebrook	Mosquito Creek Tributary	Easton Rd. just east of Bunker Rd.	Deep, cloudy	11/19/98
Colebrook	Mosquito Creek Tributary	Troutman Rd. just south of Easton Rd.	Clean	11/19/98
Colebrook	Mosquito Creek Tributary	Troutman Rd. between Easton Rd. & Cream Ridge Rd.	Clean	11/19/98
Colebrook	Mosquito Creek Tributary	Troutman Rd. just north of Cream Ridge Rd.	Clean	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Creek Rd. just north of Woodworth Rd.	Clean	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Creek Rd. between Woodworth Rd. & Mann Rd.	Pasture, eutrophic	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Creek Rd. just south of Mann Rd.	Clean	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Creek Rd. just north of Mann Rd.	Pasture, eutrophic	11/19/98
New Lyme	Lebanon Creek	Dodgeville Rd. just east of Lenox-New Lyme Rd.	Clean, Sloney, flowing, minnows	11/19/98
New Lyme	Lebanon Creek	Brownville Rd. just south of Dodgeville Rd.	Clean, volume, minnows, beaver act	11/19/98
New Lyme	Lebanon Creek	Institute Rd. just north of Brownville Rd.	Clean, minnows	11/19/98
New Lyme	Lebanon Creek	Fee Rd. at the intersection of Brownville Rd. & Dodgeville Rd.	Clean, rocky bottom, minnows	11/19/98
New Lyme	Lebanon Creek	Fee Rd. just north of Dodgeville Rd.	Trash & logs creating a dam	11/19/98
New Lyme	Lebanon Creek	Miller Rd. just north of Dodgeville Rd.	Clean, volume, rocks	11/19/98
Rome	Lebanon Creek & Rock Creek	Dodgeville Rd. just east of Dodge Rd.	Eutrophic, volume	11/19/98
New Lyme	Rock Creek Tributary	Parks Rd. at township line	Mostly dry	11/19/98
Colebrook	Rock Creek Tributary	Parks Rd. just south of township line	Mostly dry	11/19/98
New Lyme	Rock Creek Tributary	Rt. 46 just north of township line	Dry	11/19/98
New Lyme	Whelstone Creek	Guest Rd. south of Smith Rd.	Clean, eutrophic, minnows	11/19/98

New Lyme	Whetstone Creek Tributary	Guest Rd. north of Rt. 6	Almost dry, eutrophic	11/19/98
Cherry Valley	Mill Creek Tributary	Sentinel Rd. just east of Rt. 11	Very eutrophic, farm land	11/19/98
Cherry Valley	Mill Creek Tributary	Falkenburg Rd. just south of Sentinel Rd.	Very eutrophic, farm land, oil scum	11/19/98
Cherry Valley	Mill Creek Tributary	Falkenburg Rd. between Falkenburg Rd. & Mill Rd.	Clean, eutrophic	11/19/98
Cherry Valley	Mill Creek Tributary	Sentinel Rd. between Falkenburg Rd. & Piper Rd.	Dry	11/19/98
Cherry Valley	Mill Creek Tributary	Sentinel Rd. just west of Russell Rd.	Clean	11/19/98
Cherry Valley	Mill Creek Tributary	Russell Rd. just north of Sentinel Rd.	Clean, gravel, no signs of fish	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Mill Rd. just east of Russell Rd.	Highly eutrophic	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Russell Rd. just south of Mill Rd.	Almost dry	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Russell Rd. between Mill Rd. & Rt. 6	Cloudy	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Loveland Rd. south of Rt. 6	Almost dry	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Loveland Rd. north of Dodgeville	Almost dry	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Loveland Rd. south of Dodgeville	Dry	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Loveland Rd. between Dodgeville Rd. & Linton Rd.	Cloudy, eutrophic, farm land	11/19/98
Cherry Valley	Pymatuning Creek Tributary	Knapp Rd. just north of Linton Rd.	Stagnant, very eutrophic	11/19/98
Cherry Valley	Mosquito Creek Tributary	Dodgeville Rd. just west of Peck Rd.	Cloudy, eutrophic, farm land	11/19/98
New Lyme	Lebanon Creek	New Lyme Wildlife Area Driveway	Clean, eutrophic, flowing	11/19/98
New Lyme	Lebanon Creek	Hunter Rd. just south of Dodgeville Rd.	Very eutrophic, farm land	11/19/98
New Lyme	Lebanon Creek Tributary	Hunter Rd. between Dodgeville Rd. & Linton Rd.	Eutrophic, almost dry, farm land	11/19/98
New Lyme	Lebanon Creek Tributary	Hunter Rd. just north of Linton Rd.	Stagnant, eutrophic, farm land	11/19/98
New Lyme	Mosquito Creek Tributary	Hunter Rd. between Linton Rd. & Dodgeville Rd.	Eutrophic, flowing	11/19/98
Cherry Valley	Lebanon Creek	Knapp Rd. between Linton Rd. & Dodgeville Rd.	Clean, almost dry	11/19/98
Lenox	Askue Run	Webster Rd. just east of Black Sea Rd.	Clean, almost dry	11/19/98
Lenox	Mill Creek Tributary	East Union Rd. south of Webster Rd.	Stagnant, eutrophic	11/19/98
Dorset	Mill Creek Tributary	Footville-Richmond Rd. just east of Rt. 11	Eutrophic, farm land	11/19/98
Lenox	Mill Creek Tributary	East Union Rd. between Footville-Richmond Rd. & Allen-Comp Rd.	Clean, rocky, eutrophic	11/19/98
Lenox	Mill Creek Tributary	Allen-Comp Rd. just east of East Union Rd.	Eutrophic, rocky, oil scum	11/19/98
Dorset	Mill Creek Tributary	Allen-Comp Rd. just east of Rt. 11	Cloudy, Eutrophic	11/19/98
Dorset	Mill Creek Tributary	Allen-Comp Rd. just west of Russell Rd.	Highly eutrophic, covered with algae	11/19/98
Lenox	Mill Creek Tributary	East Union Rd. just south of Allen-Comp Rd.	Eutrophic, somewhat clean	11/19/98
Lenox	Mill Creek Tributary	Tompkins Rd. just west of East Union Rd.		11/19/98

Number of Septic Permits since 1945	Number of Septic Repairs since 1986	Number of Septic Complaints since 1986	Number of Aerators	Number of Aerators not running at time of inspection since 1997	Number of Semi-Public Systems	Number of Semi-Public Package Plants
462	18	11	41	10	11	0
651	18	17	31	9	13	1
438	6	7	17	6	19	1
837	38	26	48	22	45	13

Statistical Summary of Semi-Public sewage disposal systems in Ashtabula County 1999		
Total number of Semi-Public sewage disposal systems	533	
Septic	328	
Extended Aeration Package Plants	73	
Holding Tanks	15	
Home Aeration Systems	13	
Trickling Filters	2	
Lagoon	1	
Sequencing Batch Filter	1	
Volume of Sewage Treated in Ashtabula County per day	14,144,100	100%
Municipal and County Systems	8,440,000	60%
(Calculated by phone survey of operators of systems)		
Residential Sewage Systems, Septic or Aeration	5,390,000	38%
(Calculated by multiplying number people living in non sewerred areas times 100 gal/day/person)		
Semi-Public Sewage Disposal Systems	254,100	2%
(Calculated by estimated use given the type of operation)		
(This is a very conservative number, probably 180,000)		
Volume of Sewage Treated per day by government facility	Gallons/day	
Ashtabula Municipal Sewage Treatment Plant	4,000,000	
Conneaut Municipal Sewage Treatment Plant	2,000,000	
Geneva Municipal Sewage Treatment Plant	1,000,000	
Jefferson Village Sewage Treatment Plant	500,000	
Andover Village Sewage Treatment Plant	250,000	
Orwell Village Sewage Treatment Plant	240,000	
Geneva On The Lake Sewage Treatment Plant	170,000	
Rock Creek Village and Roaming Shores	150,000	
Ashtabula County Sanitary Engineer Facilities		
Holiday Village, Andover	44,900	
Ashcraft, Kingsville	51,700	
Coffee Creek, Austinburg	21,911	
Meadowood, Plymouth	8,900	
Total Sewage Treatment per day by government facility	8,440,000	
Sewage Treatment by Ohio EPA inspected systems		
(Systems greater than 25,000 gal/day) or		
(A government run system)		
Premix	25,000	
Ashtabula County Vocational School	25,000	
Rt 11 and Rt. 90 Rest Stops, ODOT's at Dorset,		
Williamsfield, Geneva and Rome, Pymatuning State Park	10,000	
Total Sewage Treatment per day by Ohio EPA inspected systems	60,000	
Total Sewage Capacity per day by Privately Run Semi-Public	633,000	
Package Plants (Trailer Parks, Campgrounds, Businesses)		
Total Sewage Treatment per day by Privately Run		
Package Plants (Capacity x 0.3)	190,000	
Total Sewage Treatment per day by Privately Run Semi-Public		
Septic Systems		
276 treat less than 60 gal/day (See sample calculation below)	16,500	

130 treat between 60 and 300 gal/day	26,000	
54 treat between 300 and 500 gal/day (See example below)	21,600	
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Total Sewage Treatment per day by Privately Run Semi-Public Septic Systems	64,100	
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Total Sewage Treatment per day by Residential Sewage Systems		
53,900 county residents on septic x 100 gal/day/resident	5,390,000	
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Total Sewage Treatment per day in Ashtabula County	14,144,100	
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Volume of Sewage Generated by a small machine shop using a meter.		
Time of the test	124 days	
Volume of metered water used	4470 gallons	
Number of employees	6 employees	
(4470 gal/124 days/ 6 employees	10 gal/day/person	
Gallons per day for the entire business	60 gal/day	
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Volume of Sewage Generated by a home and three apartments using a meter.		
Time of the test	227 days	
Volume of metered water used	11320 cubic feet	
(Gallons calculated by multiplying gallons by 7.48)	84673.6 gallons	
Gallons per day for a house and three apartments	373 gallons/day	
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