

# **EVALUATION AND MANAGEMENT OF ON-SITE SEWAGE DISPOSAL SYSTEMS: NEW CHALLENGES, NEW INITIATIVES, NEW PARTNERSHIPS**

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## **ABSTRACT**

Management of onsite sewage disposal systems (OSDS) is necessary to assure proper performance of these systems, protect public health and protect surface water and groundwater quality. In the Rouge River Watershed, studies identified failure rates of OSDS ranging from 20% to 52%. As part of the storm water discharge permits issued by the Michigan Department of Environmental Quality (MDEQ), failing OSDS were required to be addressed. This brought together communities, the private sector, agencies and health departments to determine what was the best approach to preventing failing OSDS.

Counties were not in a position to add new staff to conduct inspections of existing OSDS. Current regulations did not require regular evaluation of OSDS. With the support of communities and many stakeholders, two county regulations were developed and put in effect in 2000. New partnerships emerged from this process with realtors, home inspectors, septage servicers, drain offices, Michigan State University (MSU) and NSF International. The new programs in Wayne County and Washtenaw County resulted in the evaluation of 870 OSDS in the first 9 months of 2000. All but 9 were performed by private certified evaluators. 161 systems were found to be failing and at least 155 were corrected. MSU established regular training programs for evaluators, and local health department personnel. More than 40 private business persons were certified to evaluate OSDS and some have participated in the national certification program administered by NFS International.

**KEYWORDS.** Management systems, Septic systems, Onsite sewage disposal, Watershed.

## **INTRODUCTION**

The identification of onsite sewage disposal systems (OSDS) as contributing to violations of water quality standards throughout the Rouge River Watershed, resulted in a re-evaluation of exiting programs to manage OSDS. Communities were made aware of the problems with OSDS in the development of the Rouge River Remedial Action Plan (RAP) (1994 RAP) the 1998 Progress Report (1998 RAP) and in discussions as part of a Federal Court case regarding water quality in the Rouge River.

Assistance in addressing the problems relative to failing OSDS was provided by the Rouge River National Wet Weather Demonstration Project (Rouge Project). The Rouge Project was created to demonstrate effective solutions to water quality problems facing urbanized watersheds that can provide guidance to municipalities across the nation that face similar problems. In addition to providing funding to help construct separated sewers and retention basins for combined sewer overflow (CSO) control, the Rouge Project has funded projects by governmental units and non-profit organizations that demonstrate how other sources of pollution can be controlled.

Oakland, Washtenaw and Wayne Counties are located in the Rouge River Watershed. Each county has received demonstration grants related to OSDS. Two studies (1994, 1995 RPO) were performed by Oakland County Environmental Health in an area of the county that had difficult soil conditions for OSDS. They found failure rates of OSDS of 39.3% in 1995 and 52% in 1994. A failure was considered as the detection of dye in the samples collected in surface water downstream of the OSDS, in one to 48 hours after dye was placed in the house plumbing. Using a different methodology than Oakland County, Wayne County Environmental Health found 21% of the 424 home OSDS surveyed in 1997 to be failing. Failure was considered observation of sewage discharge, liquid on the disposal field, a pipe draining sewage from the disposal area, broken septic tank, backup of sewage into the building or heavy growth of vegetation near the disposal field (Wayne County, 1997).

Wayne County, Washtenaw County and Oakland County, local communities, and the Michigan Department of Environmental Quality (MDEQ), were party to a federal court action concerning water quality of the Rouge River over the past 20 years. Several actions and decisions by the federal court have resulted in a Voluntary General Stormwater Permit, MIG610000 (Voluntary Permit) being issued by the Michigan Department of Environmental Quality, in 1997. This permit offers an innovative approach to the National Pollutant Discharge Elimination System (NPDES) permit program by focusing on the concept of watershed management. Washtenaw, Wayne and Oakland Counties and 37 other communities and agencies in the Rouge River watershed received certificates of coverage under the Voluntary Permit between November 1998 and January 2000. By receiving coverage under the Voluntary Permit and complying with the conditions of the permit, the communities and agencies will meet Clean Water Act, Phase II Stormwater regulation requirements. The Illicit Discharge Elimination Plans that were included in the General Storm Water Permit applications require that each community address the operation of OSDS in their community.

The challenge was clear, a new approach was needed to OSDS if water quality was to be improved and permit requirements were to be met. Details of Washtenaw and Wayne County regulations for the evaluation and maintenance of OSDS and the new challenges, initiatives and partnerships that developed follow.

## **WASHTENAW COUNTY**

### **New Challenges**

The pre year 2000 OSDS program in Washtenaw County focused the greatest amount of resources on review of vacant parcels for development with OSDS. Some educational material was developed and used with the public. Existing OSDS were reviewed when a complaint was filed with the department or a request was made for evaluation as part of a property transfer. The challenge was how to develop the public and political support to add a significant new program to minimize the impact of OSDS on surface water. This was a timely inquiry as a new initiative by Washtenaw County government required each department to review all of their programs and processes to determine whether or not outcomes were aligned with goals of their program. A review of the goal of the onsite sewage program (that is, safe and sanitary treatment and disposal of sewage) indicated that the goal was not being met with the failures that had been identified and that very little oversight of OSDS was occurring once a system was constructed.

Further support came when Washtenaw County conducted a survey of existing sand filters in use, and found thirty three percent were failing or had significant problems. This prompted a further review of existing systems.

Washtenaw County received anecdotal information regarding inconsistencies within the private sector in the evaluation of existing sewage systems at the time of property transfer. These evaluations ranged from walking over a system to invasive procedures that almost invariably led to the replacement of the sewage system, depending upon the inspector contracted by the prospective buyer. Standards were needed for the evaluation of OSDS.

Inspections at time of property transfer were considered the least intrusive method to homeowners as opposed to requiring inspections at given intervals. Furthermore, the time of property transfer approach allowed for the greatest opportunity for access to the property and for money to be available for correction.

Several arguments were raised during the development of this regulation. These included; the regulation doesn't go far enough to address failing septic systems, it's not necessary, there is no problem, it will ruin the real estate industry and it's unconstitutional. These concerns were addressed in individual meetings as well as through the development of Frequently Asked Questions sheets, educational materials, letters, brochures, press releases, and radio interviews

### **New Initiatives**

An initiative by the Rouge Project to write a regulation (RPO, 1998) that would require inspections of existing septic systems was underway when Washtenaw County was considering the need for an evaluation program. Participation in the development of the model regulation assisted in the writing of the county regulation.

NSF International initiated a program to write a standard to credential onsite sewage and onsite water inspectors. Washtenaw County was asked to participate in the development of that standard and was a test site for evaluating the test to become certified.

Brochures describing the program, identification of failing septic systems, proper use of septic systems, and maintenance of septic systems were developed and provided to township officials, the real estate community and local media. Media stories explaining the new regulation were published in all local newspapers. Environmental Health staff made guest appearances on several radio shows and attended meetings held by township boards, title company associations, real estate attorneys and real estate agents. A kickoff meeting (which over 300 people attended) was held in December of 1999 to further advertise the program and to answer questions from concerned citizens and the real estate community.

Recruitment of inspectors was necessary. A mailing to OSDS contractors, design engineers, well drillers, home inspectors, the real estate community, and sanitarians was directly sent to over 300 recipients. Training modules were developed in cooperation with the Tollgate Onsite Wastewater Training Center and Michigan State University. This training was reviewed and endorsed by the Advisory Board. Forty-two of forty-three applicants completed the training and successfully passed an examination and became certified.

## **New Partnerships**

To build consensus within the county, meetings were held with septic system installers, design engineers, realtors, real estate attorneys, township officials, title companies, well drillers, home inspectors, Board of Commissioners members and other local government officials.

## **Drain Office and Communities**

The Voluntary Permit requires communities to identify and eliminate illegal discharges, including those from failing septic systems. Working in cooperation with the Washtenaw County Drain Commissioner's Office, and those Washtenaw County communities within the Rouge River Watershed, a process for identifying these failing septic systems and their corrections was necessary. County workers and community workers were trained to report suspicious discharges to the county emergency reporting system. When the source of a discharge is found the community and the responsible party are notified.

## **Inspectors**

An industry that provided inspections already existed. It was felt that these inspectors and other potential inspectors could be trained and certified to assure that the critical elements of an inspection were uniformly applied. The response by the inspectors and others was very encouraging. Forty-two individuals were certified to do inspections in Washtenaw County.

## **Advisory Group**

Following the passage of the regulation June 9, 1999 by the Washtenaw County Board of Commissioners, an advisory group was formed. This advisory group had broad representation including an OSDS installer, a well driller, a home inspector, a realtor, a title company representative, a lending institution representative, an OSDS design engineer, a septic system inspector, a citizen-at-large and staff. This group referred to the model ordinance developed by the Rouge Project and developed the criteria used to determine whether properties were substantially compliant and could be sold or if corrective action would be required. The Advisory Group reviewed a fee schedule needed to pay for the program. This was approved by the Board of Commissioners. Approval was also obtained from the Board of Commissioners for the Department of Environment and Infrastructure Services, Environmental Health Division to hire one support staff, one program coordinator and on an as-needed basis, based on available funding, three sanitarians.

## **Results to Date**

After much discussion and meetings with stakeholders, a Regulation for the Inspection of Residential Onsite Water and Sewage Disposal Systems at Time of Property Transfer (Time of Property Transfer), was developed and became effective January 3, 2000 (Washtenaw County, 1999) in Washtenaw County.

Washtenaw County Time of Sale Program requires;

- inspections of on-site water and sewage systems serving residential properties at the time a property is up for sale.
- inspections must be conducted by individuals approved by the Washtenaw County Environmental Health Department.

- a corrective action plan must be submitted within thirty days, if the water or sewer system is determined to be substantially non-compliant. When systems are found to be substantially non-compliant, all necessary corrections must be made prior to title transfer or a contract for the repairs must be entered into and an amount equal to 1 1/2 times the contracted amount be placed into escrow. Under the latter scenario, all contracted repairs must be completed within 180 days of the property transfer.
- individuals who conduct inspections must meet educational and experience requirements, attend an approved training program, and pass an examination.
- inspectors must agree to conduct the inspections utilizing forms supplied by the department, and must also sign an ethics statement upholding professional standards and precludes entering into conflicts of interest.
- approval or non-compliance status is made by WCEH sanitarians or program coordinator within five days of receipt of an inspection report. That determination uses a rating system that was endorsed by an advisory committee during the program development process.

From January 3 through September 30, 2000, Washtenaw County processed a total of 785 property inspections. The failure rate of onsite sewage systems was eighteen percent. This closely met the expectations of twenty percent. Of these, all were corrected. One of the biggest concerns going into the program was what to do with those properties where monies were not available to make the necessary repairs. To date, this is proving not to be a major concern. Invariably, the property values in Washtenaw County are high enough to support people willing to buy the property and make the necessary repairs to keep the property livable. In each case, price could be negotiated, taking into account the necessary repairs and a settlement reached that allowed those repairs to be made.

One of the unique aspects of Washtenaw County's program is that it also requires the inspections of onsite water supply and the correction of substantial deficiencies when found. To date, seventeen percent of those properties inspected had significant problems with the water supply that required correction before the property could be sold. This rate was higher than anticipated, and compares to background information where action by the department to address water supply occurred during surveys or required inspections, were only ten percent. In addition, nitrates were observed to be above 10 ppm in six percent of the homes tested.

Fees charged do not fully support the cost of the program. Washtenaw County currently charges \$40 per inspection report, \$120 to conduct plan reviews of corrective actions, and \$50 per site visit to assure compliance with the corrective action plan. These fees will need to be revised and/or restructured to fully fund the program.

Currently the program reviews residential properties with OSDS that are sold. Properties that are not sold will not be evaluated nor will non-residential properties be evaluated. When more experience is gained with the residential time of sale program, these exclusions will be reconsidered.

As the challenge of adopting a new regulation was met, new challenges have presented themselves in implementing the regulation. One is how to identify properties that are being sold without inspections. The regulation places the burden on the property seller to contract for an inspection. No penalties are levied against realtors, title companies or lending institutions if an

inspection is not performed. It is, therefore, incumbent upon the department to seek every means possible to identify when a transaction is proposed or has occurred. Recent steps to improve this aspect of the program include contacting all township assessors' offices and requesting their cooperation in notifying the department when a sale has occurred, as well as organizations that publish property sales (such as credit bureaus, the Ann Arbor News, and others). This improvement has increased the number of inspection reports that have been submitted.

After six months of experience, decertification procedures have begun against two inspectors. To date, action has been limited to sending notices of concern and a requirement of revised inspection reports and in one case, an administrative conference to show cause why certification should not be revoked. It is necessary to provide oversight and periodic quality control inspections to assure private inspectors are acting in conformance with the requirements of the regulation.

## **WAYNE COUNTY**

### **New Challenges**

Wayne County has focused in the past the greatest amount of resources on the construction of new OSDS. As seen in Washtenaw County, training and education and meetings with the stakeholders was required before a new program for evaluation of OSDS could be implemented. The same issues related to water quality, failing OSDS that had been identified in the special study conducted in 1997 in Wayne County and the pressures from Federal court and communities, presented the challenge of developing the public and political support to explore a new ordinance to address the operation of OSDS.

### **New Initiatives**

For the ordinance to be a success, that is for failing on-site sewage disposal systems to be identified and remediated, a great deal of training and education was required for various stakeholders. The first major training of the various stakeholders began during the first meetings with the individual stakeholders as to what their responsibilities were in the framework of the total ordinance. The educational efforts were focused upon the procedures which are utilized within their respective business operations, how the ordinance may change or refocus those operations and how this ordinance could better serve their business. Part of this education was also understanding their perspective and to work within their frame of reference regarding failing OSDS.

Another positive force that has come about because of the ordinance is the upgrading of the information system for the OSDS program from a manual record keeping system to development of an electronic database. This will be beneficial both to the health department and to the communities it serves. The obvious advantage is up-to-date, accurate records on active on-site sewage disposal systems because of the communications shared between the health department and individual communities regarding sewer connections. This will result in a cleaner filing system at the health department and more accurate information in the communities as to where on-site systems are located in their community.

### **New Partnerships**

### **Watershed Communities**

A number of stakeholders were involved not only in the process, but also in the successful passage of the OSDS management ordinance in Wayne County. The support by the Rouge River watershed communities that would be immediately impacted by the ordinance, was also paramount to its successful development. To this end, in the spring of 1999, an initial meeting was held with the watershed communities and their legal representation for presentation of a draft ordinance. Revising the ordinance resulted in the communities as a group, supporting the ordinance.

### **Real Estate Industry**

The real estate industry serves as a focal point, as designated by the ordinance, and several meetings were held with representatives of both the real estate industry and financial institutions for their feedback on the draft ordinance. Additional revisions were made to those sections affecting their industry, which served as a basis for supporting the ordinance by the industry. This is not to say that the real estate industry agrees with the ordinance. Some within the industry feel the ordinance places an undue burden upon them as an enforcement mechanism. Others see the ordinance as a positive force, protecting them and their client.

A good example of gaining mutual understanding involved the real estate industry and one of the requirements of the ordinance, which states that a realtor or agent has a duty to inform a seller of certain responsibilities that the seller has under the ordinance. The initial feeling was that this places the real estate industry in an enforcement mode versus a service mode to their client. The ordinance only obligates the agent to inform the seller of their responsibilities, but in no way requires that the agent or realtor follow up to see if the seller has met their obligations. On the other hand, if their client is a purchaser they could see where the ordinance would help disclose information so the purchaser could make a better informed decision about purchasing a property.

### **Septage Servicers**

The draft ordinance required that septage servicers provide reports to the County Health Department regarding quantities of septage hauled and final disposal. Because of the potential impact upon this industry segment, two meetings were held with representatives of the septage servicers to once again solicit their support of the ordinance. The septage servicers felt the ordinance would be burdensome to their operations. They also requested a new septage disposal site be located in the western part of the county since this is where most of the septic tanks are located.

Once the purpose of the requirements of the ordinance were explained, that being part of the evaluation required that the septic tank be pumped, they could see the potential expansion of their business.

A few adjustments were made to the parts of the ordinance affecting them. These were;

- the form to be filed with the county could be a route slip, stamp or the form the county had developed.
- metering the quantity of septage pumped was replaced with estimates.
- septage servicers were originally not allowed to inspect systems they pumped. This was changed to allow them to pump and inspect OSDS if they also became evaluators.

Septage servicers are required to file reports anytime a septic tank is pumped whether or not it is part of an evaluation at the time of sale. The report includes the estimated amount of septage pumped, condition of the outlet device, any backflow that occurs, date of pumping, location of the final disposal site and any other relevant or unusual observations. Few reports have been received by the health department from septage servicers. One report included information indicating some potential problems with the OSDS. Some of the septage servicers feel that disclosure of the information, which includes their customers name and address, would be available to their competitors and would therefore place them in a position of losing customers. While this may be a shortcoming of the program, the intent of the ordinance is to identify failing on-site sewage disposal systems and get them corrected before they can impact upon public health or streams.

### **Home Inspectors**

Meetings were also held with third party home inspectors. The draft ordinance required that any on-site sewage disposal system be evaluated prior to sale of the property. It was hoped that the bulk of the inspections and reports would be performed by third party home inspectors. However, the health department retained the responsibility to continue such inspections as in the past. While the home inspectors had a number of questions and concerns, all seemed to agree that this would be both beneficial to the environment and to their business. The draft ordinance required that any inspector providing these services within Wayne County be registered with the Environmental Health Division.

Both the home inspector industry and the septage service industry felt that the proposed fees that would be charged by the health department would not only be reasonable, but would be very competitive with what their fees may be, which would give some indication of growth opportunities for their business.

### **Agencies**

Numerous meetings and input was received by various other agencies. The Wayne County Department of Environment had a major impact upon shaping the ordinance and, along with the Rouge Project Office, made sure the process of development of the ordinance kept on track. The Wayne County Office of Corporation Counsel provided, on numerous occasions, legal counsel, advice and support from the initial development of the proposal, through various community meetings, and ultimately submittal of the proposed ordinance to the Wayne County Board of Commissioners by the Department of Environment. The Michigan Department of Environmental Quality and the federal court were both informed periodically of the progress during the development stage. And finally, other agencies such as Michigan State University and NSF International were partners in implementing the ordinance.

### **Results to Date**

The Wayne County On-Site Sewage Disposal System Evaluation and Maintenance Ordinance (Wayne County, 1999) went into effect February 1, 2000. Wayne County's OSDS Ordinance requires that all OSDS be inspected at the time of sale, including non-residential properties and that a report be filed with the department whenever a septic tank is pumped. The ordinance initially applies to the 16 Wayne County communities in the Rouge River watershed. The rest of the county will be covered by the ordinance in September 2003.

The following information is for the time period February through October, 2000:

Number of evaluation reports reviewed	85
Number of failed systems	20
Percentage of systems failed	23.5%
Evaluations completed by Wayne County staff	9

The above information is consistent with a survey (Wayne County, 1997) conducted in 1997 by the Wayne County Environmental Health Division for on-site sewage disposal systems in selected communities within the watershed, which revealed over a 20 percent failure rate. The 23.5 percent failure rate, as noted by the information above, helps validate this information since the ordinance requires a much more extensive review of the on-site sewage disposal system than the survey did.

In addition, it was intended that the majority of the evaluation and maintenance reports would be conducted by third party home inspectors, although the health department would still maintain a work force that would continue to do the inspections. The fact that the health department is currently providing 11 percent of the inspections shows that private enterprise is a partner and plays a major part in reducing illicit discharges within Wayne County. It also allows the staff the time necessary to bring failing on-site sewage disposal systems into compliance even though those systems and the number of systems have increased their workload.

Strengths of the ordinance involves identifying failing on-site sewage disposal systems and remediating those failures in a timely fashion, thus reducing the duration of illicit discharges into the Rouge River. Another strength would be the education of the public, both the seller and the buyer, of the importance of maintaining their on-site sewage disposal system. A third strength would be better information on on-site sewage disposal systems, tracking and location of those systems, and better data over time regarding their functionality.

The Wayne County OSDS Ordinance addresses evaluation of an OSDS for a building that has been vacant for an extended period of time. Currently the ordinance allows the set aside of the inspection until after the property is sold. The new owner of the property is required to have the inspection completed after occupancy. This presents problems in providing the best possible evaluation of the on-site sewage disposal system under operational conditions and could result in financing problems and litigation.

## **COMMUNITY COMMITMENTS**

The Illicit Discharge Elimination Plans that were included in the General Storm Water Permit applications by communities included several items to address OSDS in each community. The variety of items in the plans to address OSDS in a community illustrates the communities' flexibility to address OSDS within the context of their community and resources. Table 1 lists the variety of actions 36 communities and 3 counties identified in their permit applications to address OSDS in their jurisdictions.

Table 1. Permit Application Actions for 36 Communities and 3 Counties.

OSDS Permit Activities	Number of Communities
Health Department assistance to find and eliminate failing OSDS	20
Annual report of improperly function OSDS to be submitted	16
Support county ordinance for evaluation of OSDS at time of sale	11
Incentives will be provided to connect to available sewers	9
Will map areas in community with OSDS	9
Will adopt local ordinance for inspection in no county ordinance	8
Requires sewer connection for failing OSDS if sewer available	7
Will extend sewer or require OSDS maintenance or regular basis	4
Will sewer all unsewered areas in community	3
Will provide education materials to OSDS owners	3
OSDS not permitted in community	2
Have existing ordinance requiring regular inspection of OSDS	2

What is significant in these activities is that for the first time, many communities are addressing OSDS issues in cooperation with health departments, supporting maintenance and evaluation programs and identifying areas in their communities that are served by OSDS.

## CONCLUSIONS

Wayne County and Washtenaw County have adopted, and other counties are considering adopting, regulations to require the evaluation of OSDS. Communities are addressing OSDS issues as part of their voluntary NPDES stormwater permits. The partnership approach between communities, county environmental health, NSF International, Michigan State University and the Michigan Department of Environmental Quality (MDEQ) has resulted in different approaches to meet a common goal - minimize water quality impacts from OSDS. The approaches taken by the partners to support the OSDS evaluations include the training of evaluators, consultation with real estate brokers, and homeowners, septage servicers, and communities. Much of the success of the programs in Wayne and Washtenaw Counties relies on private inspectors. This public - private relationship has forged new partnerships and new initiatives to evaluate and manage OSDS. Proper management will provide for long term use of OSDS and will improve water quality in the Rouge River.

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