



Footing Drain Disconnection Program HOMEOWNER INFORMATION PACKET

City of Ann Arbor
Public Services Area
www.a2fdd.com

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PROJECT BACKGROUND

Within the City of Ann Arbor, there are groups of homes that have experienced basement backup problems. Many of these have been the result of wastewater backing up from the sanitary sewers through basement floor drains, especially during periods of heavy rainfall. This wastewater presents a potential health risk and can cause damage to the structure and to belongings stored in the basement.

In addition, this excess groundwater places a strain on the sanitary sewer system and must be treated at the Waste Water Treatment Plant. Due to current and future regulations in the State of Michigan, it is critical the Utilities Department minimize the amount of unnecessary groundwater sent as wastewater to the Treatment Plant.

In 1999, the City formed the Sanitary Sewer Overflow Prevention Advisory Task Force to understand the causes of basement backup and develop solutions to the problem. The Task Force was comprised of homeowners, city staff and experts in related disciplines. In addition, the Task Force hired the engineering firm of CDM to assist in the data gathering and analysis. Throughout the project, the Task Force sought to provide the public with project information and solicit homeowner feedback to develop a recommendation that meets the diverse needs of the citizens.

TASK FORCE FINDINGS AND SOLUTIONS

The Task Force study determined that during heavy storms, rainwater from home footing drains overloads the sanitary sewer system and is the primary cause of basement backups. It was determined that even homes with no current basement backup problems were significant contributors to the basement backup problem for neighboring homes.

There are basically two ways to handle this problem: either reduce the amount of rainwater entering the sanitary sewer system, or provide more capacity in the system to store or carry these flows. Based on analysis and public feedback, the Task Force determined that reducing the amount of rainwater entering the system would be preferable to the public, environmentally responsible and most cost effective.

Therefore, the Task Force recommended that the Mayor and City Council implement a comprehensive citywide footing drain disconnection program within the City of Ann Arbor in order to reduce the amount of rainwater flowing into the sanitary sewer system.

The Task Force recommended a citywide program for a number of reasons.

- This basement backup problem is not confined to the five study areas.
- All buildings with connected footing drains contribute to the basement backup problem.
- Footing drain disconnection supports the City in a proactive approach to pending regulatory guidelines in the State of Michigan.
- Decreasing the amount of storm water flow that gets to the Water Treatment Plant reduces both the costs of treatment and the chances for potential overflows into the Huron River.



WHAT IS FOOTING DRAIN DISCONNECTION?

As shown on Figure 1, footing drains are small (4-inch diameter), perforated drainage pipes located near the foundation of your house. They are intended to keep rainwater that seeps through the ground from building up along the foundation or basement walls. In many homes, the downspouts, which carry rainwater from the gutters, discharge near the foundation walls. This water drains through the soils and into the footing drains. In most homes constructed before the 1980s, the footing drains are connected to the house sanitary connection (house lead) as shown in the figure above. This house lead carries the footing drain flow and wastewater from the house to the sanitary sewer system.

When it is not raining this is not normally a problem, but during a severe storm event too much rainwater can enter the sanitary sewer system. This excess flow can cause the mixture of rainwater and wastewater to backup in the house lead of some homes and cause basement backups.

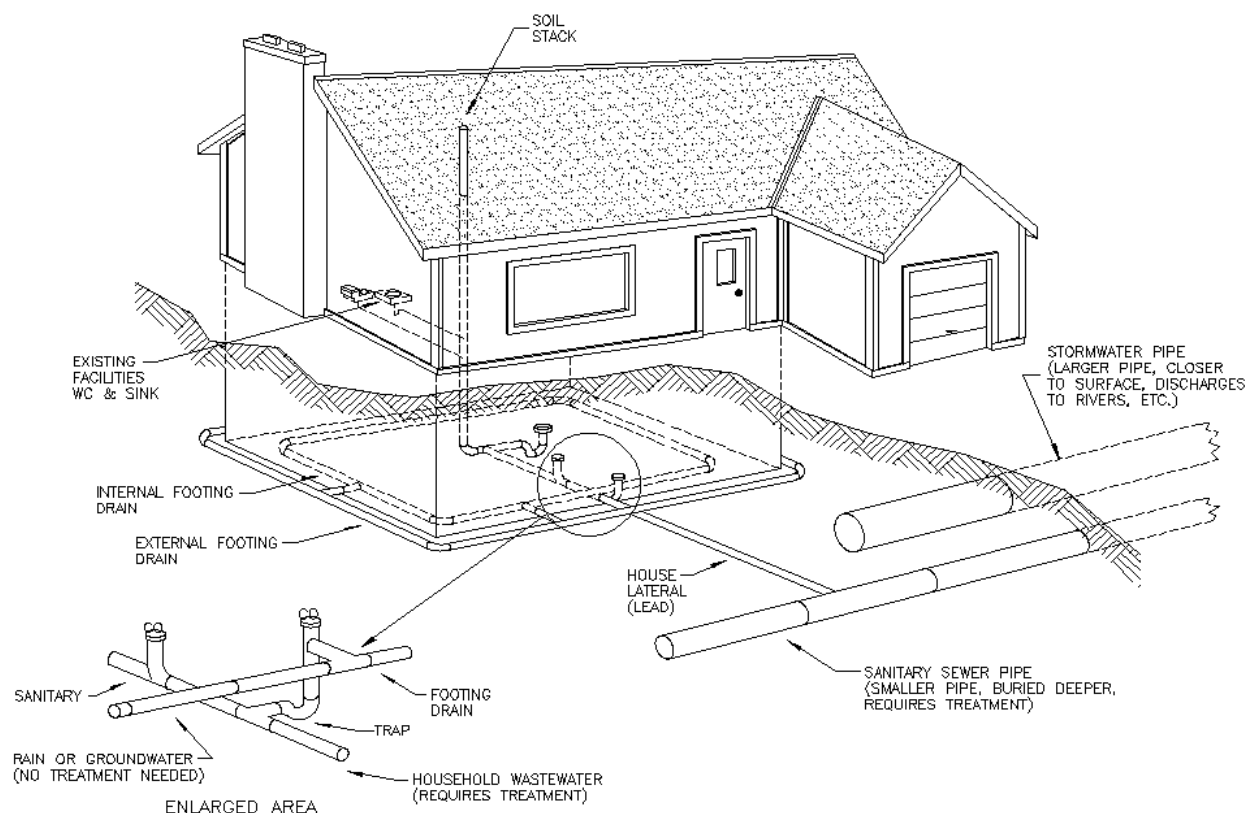


Figure 1 – Pre-construction Conditions

Footing drain disconnection is performed to remove the rainwater flows from the sanitary sewer system. This is done by disconnecting the footing drains from the house sanitary lead and installing a sump pump to move water from the footing drains into the storm water system. There may be some alternatives to sending the flow into the storm water system in some neighborhoods or homes. The creation of rain gardens or use of low areas in backyards are possibilities. A priority is placed on safe disposal of the storm water. For the vast majority of

homes the connection to the sanitary house lead is inside the basement, and the sump is installed in the basement as shown in Figure 2 below.

In homes that have experienced basement backups or are at risk for basement backup, the city can provide funding to install check valves to keep water from flowing back into the home from the sanitary sewer system.

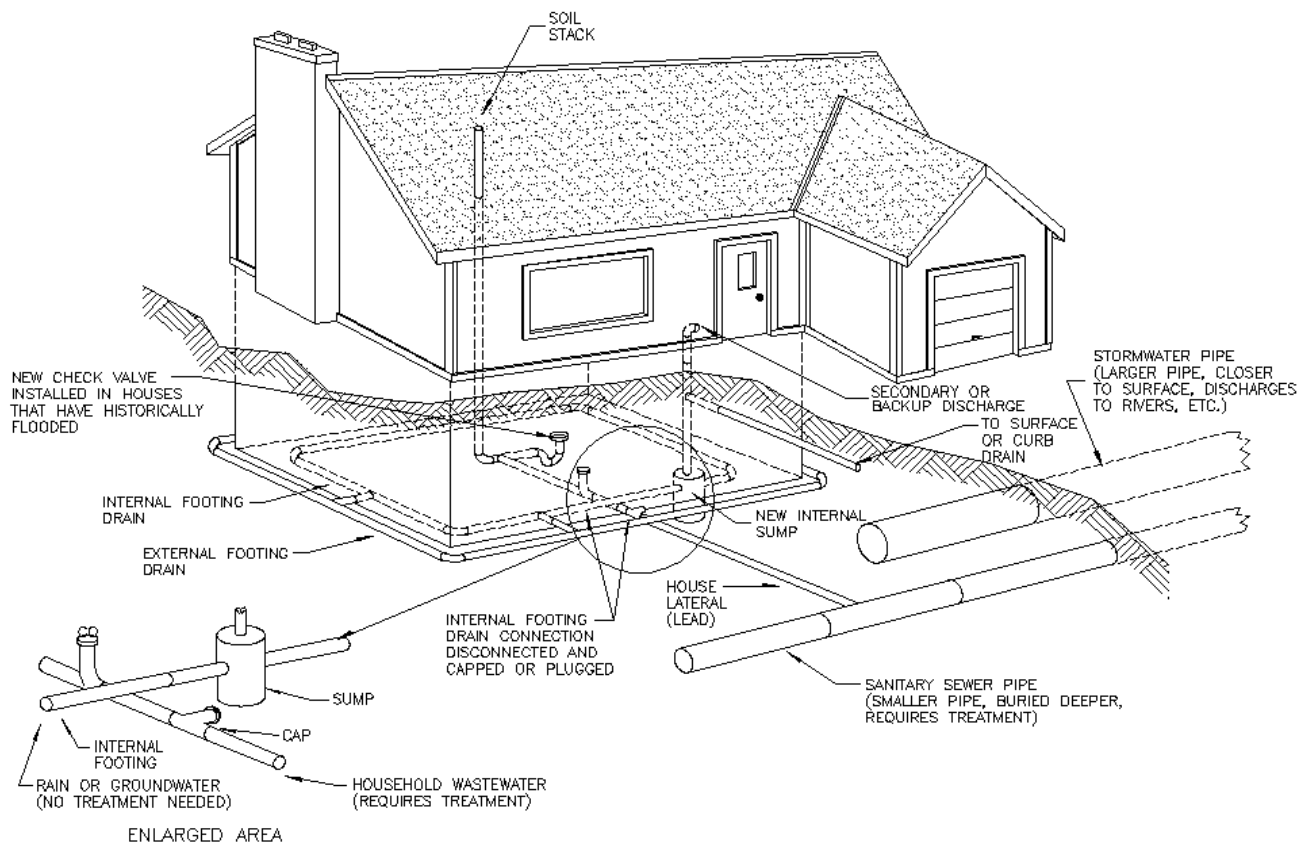


Figure 2 – Basement Sump Construction

WHY DISCONNECT FOOTING DRAINS?

The purpose of disconnecting footing drains is to keep rainwater out of the sanitary sewer system. During dry weather, the sanitary system has plenty of capacity to carry wastewater. In neighborhoods where footing drains are connected to the sanitary system, however, rainwater can overflow the sanitary system during heavy storms resulting in the rainwater/wastewater mix backing up into basements. Keeping rainwater out of the house 'lead' greatly reduces the amount of rainwater getting into the sanitary system, which protects downstream residents and reduces costs at the wastewater treatment plant. It also frees the house connection to carry wastewater to the sanitary system.

All homes built in the City of Ann Arbor since January of 1982 have disconnected downspouts and footing drains with sump pumps in the basements or with gravity discharge leads to a storm

water system. Surface discharge of downspouts allows more rainwater from roofs to be absorbed by the ground and reduces the amount of water being treated and released into the Huron River.

Footing drain disconnection has the following advantages:

- Protects homeowners who have had sanitary backups during severe storm events.
- Takes rainwater out of the sanitary system, reducing problems for downstream residents and eliminating treatment costs for the rainwater.
- Preserves natural features and protects watershed by minimizing undesirable discharges to the Huron River.
- Provides short-term and long-term protection for those at risk.
- Provides the lowest rate impact of all the possible solutions.

WHAT WILL HAPPEN AT MY HOME?

After you receive this homeowner information packet, you should contact the FDD Construction Manager (see page 9 for contact information) to arrange for the initial assessment at your home. This will be an excellent opportunity to ask specific questions about your home, and to learn more about the steps of the program. Next, you will choose from a list of pre-qualified contractors, obtain estimates and arrange a contract. (See page 9 for a list of the contractors) The actual construction work should take from 1 to 3 days of in-home construction. Construction photos are available on the project website www.a2fdd.com.

Curb drain installation work has most likely already been performed by a city hired contractor in the lawn extension area between the curb and sidewalk. The contractor installed a 6-inch diameter pipe with individual connections for each house that will collect the flows from sump pumps in individual homes and direct it to the storm sewer. Lastly the area that was disturbed was restored with new grass seeding and occasionally sidewalk or driveway aprons were replaced.

Initial Assessment will be conducted by the FDD Construction Manager with the homeowner and will include actions to:

- Determine if your footing drains are connected
- Identify possible locations for sump pump installation
- Assess site drainage options, including identification of any needed changes in downspout connections.
- Assess options for installation of sump discharge lead (piping) to an approved discharge location.

Inside work will be confined to the basement and will include:

- Removal of a section of the basement floor to access pipes and install the sump. Disconnection of the footing drains from the house lead and routing of new discharge lines.
- Installation of a new electrical circuit.
- Installation of the sump and sump pump. The sump is typically 24 inches in diameter and 30 inches deep. The cover is sealed and level with the basement floor.



- Repairs to the work area (i.e., replacing concrete, tiles, etc.)
- For homes that have previously experienced basement backup or those deemed to be at-risk for basement backup, installation of check valves on all plumbing fixtures located in the basement or a single check valve to protect all facilities in the basement.
- Clean up of the work area.

Work in the yard includes:

- Installation of a small pipe to carry footing drain water from the sump pump to a rainwater collection system or an approved alternative.
- Cleanup and restoration of any areas impacted by the installation.

WHAT WILL IT COST? HOW IS IT FUNDED?

The City will provide funding for the ‘core’ work up to \$4,100 for a typical household. Exceptional circumstances within a household may warrant payment beyond the \$4,100. Prior to signing a contract, a homeowner may request additional city support which will require competitive estimates from 2 different contractors. This request will be reviewed and may be approved by the City Project Manager and, if necessary, the City Administrator.) Financing for this project comes from sewer use fees. Items funded include:

- Parts and labor for standard sump and pump installation
- Parts and labor for discharge pipes
- Basic restoration of interior and exterior work areas including lawn reseeding and if necessary restoring the floor, ceiling surface or drywall patching.

The Homeowner will be responsible for the following costs where applicable:

- Additional features or restoration beyond what is required for basic installation and items classified as home improvements or exceed building code requirements (i.e. replacement of inadequate electrical service panel, construction of new enclosure for sump, etc.)
- Backup Sump Pump - In the event of a power failure, the primary sump pump will not function. This can result in groundwater collecting around the outside of your basement walls and floor where it can seep through cracks in the concrete or through the sump lid. The plumbing contractors can install, at the homeowner’s expense, either battery or water-powered backup pumps that will operate during an electrical failure or if your primary pump fails. You need to assess your desire for this additional level of protection as only you can understand the impacts moisture would have on your belongings in your basement, and the frequency of power failures in your neighborhood. Based on our experience with power failures during storm events, homeowners are advised to strongly consider the need for a backup system. (See questions 20-23 in the Frequently Asked Questions section for additional information)
- Long-term maintenance
- **Homeowner pays all costs plus a monthly surcharge if the work is not completed within 90 days after receiving the 90-day notice to disconnect (see required timing below)**



WHAT DO I NEED TO DO?

As a homeowner please review and complete the steps below to aid in a reliable and trouble free disconnection.

1. Become informed by reviewing the supplied materials in this packet and attending the scheduled neighborhood meeting.
2. You must then arrange an in-home project evaluation with a Construction Manager at 734-213-5444 to determine the need for a disconnection, discuss your options for getting the work done and get all your questions answered.
3. Review the list of pre-qualified contractors (page 9) and make an appointment with one or more to receive an estimate of costs for the work to be done in your home.
4. Review costs that are reimbursable by the City and identify any additional options you may want or need to contract for at your personal expense.
5. Submit the necessary forms to secure funding pre-approval to the Construction Manager.
 - Form 1 –Reaffirms that you understand that the contractor you hire is responsible for the work done at your property not the city of Ann Arbor. This is required of every homeowner.
 - Form 2 – This is only needed if the estimated cost exceeds the limit of \$4,100. Two estimates will be needed from different contractors for funding pre-approval above the \$4,100 limit.
When funding has been pre-approved the construction management staff will notify you by phone.
6. Ensure that the footing drain disconnection work gets completed properly:
 - Arrange a contract to get the work done with your selected contractor.
 - Discuss scheduling and basement preparation with the contractor.
 - Clear the work area so that the contractor can perform the work. (Contractor will provide specifics). If desired, add additional dust protection to exposed areas.
 - Monitor the work underway to ensure it meets your contract agreements. Consult the Construction Manager if help is needed. The contractor will arrange for city building inspections to occur during the work.
 - Review finished work with the contractor to ensure you understand maintenance and operations of your system.
7. Host a walkthrough with the Construction Manager to ensure that all work has been completed according to code and according to your contract. If all work has been completed as contracted, the city will issue payment to the contractor for the pre-approved amount.
 - Provide written feedback on the contractor and the overall project to the City.

WHEN DO I NEED TO COMPLETE THIS WORK?

The city and the construction management team work actively with property owners to ensure that all requirements of this program are understood and that construction occurs in timely manner. This packet and neighborhood meeting invitation is the first outreach to homeowners. Within the next two weeks, any homeowners who have not initiated a contract to disconnect will receive a mailed courtesy reminder letter. If no action is taken two months following that reminder, property owners will then receive a certified letter from the city. By city ordinance, property owners are mandated to complete the disconnection of their footing drains within 90 days of receiving a certified letter from the city. If the disconnection is not completed by the end of the 90-days the homeowners risk losing city funding for the work and possibly a surcharge on their sewer bill of \$100 per month for unmetered sewage entering the system. If adjustments need to be made to the mandated timing for completion, please communicate directly with the Construction Manager to review the unique circumstances in your home.



CONTACT NAMES AND NUMBERS

Construction Management Staff:

- Construction Managers
 - Justin Woods..... [734.213.5444]
- Assistant Construction Managers
 - Karen Duff & Josh Bennett..... [734.213.5444]
- CDM Project Manager – Jay Zawacki..... [734.213.5444]

City of Ann Arbor Staff:

- Project Manager – Anne Warrow[734.794.6410 ext. 43639]
- Public Services Director – Sue McCormick..... [734.794.6310]

PRE-QUALIFIED CONTRACTORS

Bidigare Contractors

Contact: John Bidigare
 P.O. Box 700464
 Plymouth, MI 48170
 Phone: (248) 735-1113
 Fax: (248) 735-1114

RDC Residential Services

Contact: Richard Connors
 10552 Homestead Lane
 Plymouth, MI 48170-5823
 Phone: (734) 564-2801
 Fax: (734) 414-0729

Hutzel Plumbing

Contact: Nancy Cummins
 2311 S. Industrial Highway
 Ann Arbor, MI 48104
 Phone: (734) 665-9111
 Fax: (734) 665-9238

Landscape Construction

Contact: John Janowski
 7412 N. Territorial
 Plymouth, MI 48170
 Phone: (734) 451-0751
 Fax: (734) 451-0751

Perimeter

Contact: Steve Rojeck
 8385 Jackson Road
 Ann Arbor, MI 48103
 Phone: (734) 424-9280
 Fax: (734) 424-2037



FREQUENTLY ASKED QUESTIONS

Background Questions: Reasons for Back Ups, Alternative Solutions

1. Are there alternatives to managing the water other than Footing Drain Disconnection? Why was this option chosen?

The SSO Task Force studied the issue of basement backups in 2000 to 2001 and identified three viable alternatives to solving these problems; footing drain disconnection, installing larger sewer pipes and building storage basins. This work found that footing drain disconnection (FDD) addressed the root cause of the basement backups, which was stormwater entering the sewer system during rain events. On average, every home with a connected footing drain adds 3,500 to 10,500 gallons per year of clean water that must be transported to the Wastewater Treatment Plant and treated before release to the Huron River. FDD was cheaper overall and, very importantly, reduced the chance of exceeding the Wastewater Treatment Plant capacity. FDD also provides the greatest security of the solutions as its capability to work effectively is not limited to certain size rainstorms.

2. Can I avoid the need for footing drain disconnection if I take actions such as redirecting my downspouts, sloping soil away from the foundation or installing low flow fixtures?

While those are excellent approaches to reduce some causes of wet basements and to reduce the volume of water that goes to the Wastewater Treatment Plant, this will not prevent enough water from entering the sewer system inappropriately. Footing drains still collect much of the rainfall that enters the ground. To protect your own and your neighbors' basements, the large volume of water entering the sewer system from rain storms must not enter the sewer system and FDD is the practical means identified to do this.

3. Why do I need to have this done and not my neighbors?

All buildings that have connected footing drains are scheduled for FDD work over the coming years. The schedule was established on a priority basis to disconnect the homes identified as needing protection from future basement backups and to accommodate a cost efficient installation process within a neighborhood.

4. I get water in my basement now. Will this solve that problem or make it worse?

This work will only address basement water problems that are caused by heavy rain events resulting in basement backups through floor drains. It will not improve or worsen other causes of wet basements such as leaks through cracks in basement walls or floors due to poor site drainage and/or poor or blocked footing drainage pipes.

5. What is the role of development in this problem? These basement backups have happened since our neighborhood has grown.

In tracking the source of the heavy flows that entered the system during rain storms in the year 2000, a Task Force of engineering professionals and community members identified that footing drains contributed 70-90% of the total volume of flow in the sewer system making this source the major cause of basement backups.

The existing sanitary sewer system without footing drain flow is more than adequate to handle recent and future development as planned for in existing treatment plant designs. New developments do not have footing drains connected to the sanitary system and will not add wet weather flows to the collection system.



Installation Process: Costs, Homeowner Choices, Restoration

6. Do I have to use a particular contractor (low bidder)?

Homeowners choose which pre-qualified contractor they want to provide them a bid. Homeowners only need to arrange one bid if the work can be accomplished within the \$4,100 average estimate. If costs exceed \$4,100, two estimates are needed. The homeowner may select either of the contractors, but must pay the differential between the lowest bid and the higher bid if the more costly contractor is selected.

7. Can I use another contractor who is not pre-qualified?

No. The City of Ann Arbor has developed a process for pre-qualifying contractors so that it is clear that they understand the methods and materials needed for a complete installation. Using other contractors would be more expensive for Ann Arbor to manage and would reduce the ability to support quality construction. With several contractors already pre-qualified, there is adequate choice for homeowners to make a selection. Exceptions to using the pre-qualified contractors may be allowed but the homeowner may not receive full reimbursement for all costs not pre-approved for work using pre-qualified contractors. Homeowners are encouraged to seek information/guidelines for reimbursement from FDD project staff before beginning work eligible for FDD funding. Contractors willing to do this type of work are encouraged to contact the city to seek pre-qualification status.

8. Can I perform the disconnection work myself?

Yes. Homeowners can perform the work. In this case, the homeowner would need to apply for all of the necessary permits, would have to comply with the construction specifications and materials of construction, and would be reimbursed for materials only. This reimbursement would only be made after the Construction Manager had completed his final inspection of the work.

9. What will this cost me as a homeowner?

The City will cover the costs necessary to complete an installation of the sump and basic restoration. In most homes this is \$4,100 or less. Homeowners may choose to pay for additional items to meet their desires for more security and enhanced restoration. Some homeowners choose to purchase a backup pump or to do additional landscaping work.

10. What does basic restoration mean?

Basic restoration inside the home means returning the home to the level of finish it had previous to the work. Concrete is replaced and smoothed, tiles are replaced with a closest match of available tile and the work site is cleared and cleaned. Outside the home, holes are filled in and grass seed is sown.

11. How do I know the contractor is installing quality components?

All work done by the pre-qualified contractors is in compliance with a very specific set of specifications for both the components to be used and the process for disconnection.

12. What will happen to my yard?

Every effort is made to minimize the amount of excavation and disruption in the yard. The least amount of yard disruption would be a small hole near the foundation wall where the discharge line exits your home. For more difficult installations due to the topography, type of soil or location of the discharge line, a trench across the lawn may be needed.



13. How long does construction last? How dusty is it? How disruptive?

Construction lasts for 2-3 days. Contractors protect flooring and hang protective plastic to minimize the mess. There will be concrete removed and this can generate dust and is noisy. See homeowners' surveys for rating on contractor cleanliness and courtesy.

14. How will this affect the radon levels in my basement?

Everything that is installed in the basement will be sealed, protecting the home from any additional radon exposure.

15. Will my floor drain still work?

Yes, your floor drain will still be operational unless it drains into the footing drains, then it has to be abandoned per plumbing code.

Maintenance and Operations

16. Who owns/maintains the sump, pump and additional plumbing lines?

The sump pump and lines are owned and maintained by the homeowner.

17. What happens when my sump pump doesn't work? What if the check valves (sewage backflow prevention devices) fail?

If your sump pump stops working, water from the footing drains will not be pumped out to your discharge lines and this water can collect in your basement. As with any primary appliance, it is critical that homeowners keep sump pumps in good repair. Most sumps pumps will operate for 10 to 15 years before needing replacement. Check valves need to be tested and maintained regularly or they could fail to operate and allow a basement backup to occur.

18. Is there a warranty?

Yes, the work and the sump pump have warranties through your plumbing contractor. The sump pump warranty is normally 1 year. Warranty for installation work will be outlined in your contract with the plumbing contractor.

19. Why is the City mandating a system that has potential to fail when I have never had a problem related to this before?

Any system like this does have the potential to fail, typically because of a loss of power or because the sump pump fails to operate. However, the alternative is that your home or the home of your neighbor could experience a basement backup when footing drain flows overwhelm the sewer system and the Wastewater Treatment Plant in times of heavy storms. Building code in Ann Arbor and in most other communities changed in 1982 to require that footing drains use sump pumps or similar systems to direct footing drain flows to the stormwater system or to an alternative onsite system like a rain garden or detention basin.

20. What is a backup sump pump and why would I need one?

A backup sump pump is a secondary pump that will operate if the primary sump pump fails due to a power outage or mechanical failure. Under normal conditions, the primary sump will start running when the water in the sump reaches a certain level. If a power failure occurs during a period of footing drain flow, the water level will continue to rise past that level without the primary pump operating, and the water can build up in the footing drains and in the soil around the basement. Basement wetness can result from water pressure building up around the outside of the basement walls, where it can seep through cracks in the concrete walls or floor. Water may also seep through the sump lid.



The decision to purchase a backup system is dependent upon each homeowner's individual needs. The factors that should be considered are the level of finish of the basement, the frequency of power outages, past wetness problems, and home elevation relative to surrounding areas. Power outages frequently occur during storm events and it is advisable to have a backup system installed if you are at all concerned about basement wetness.

21. What if I have a floor drain near the sump, wont the ground water seeping into the basement flow out through the floor drain from the sump?

Not necessarily. If the pump fails to pump out the ground water from your sump the water can build up in the footing drains and in the soil around the basement. Basement wetness can result from water pressure building up around the outside of the basement walls, where it can seep through cracks in the concrete walls or floor. The location that the water seeps through the basement walls or floor may not be near a floor drain and in that case the water may not drain out. Water may also seep through the sump lid into the basement and if there is a floor drain nearby the ground water may drain out through the floor drain without dispersing across the entire basement floor.

Please note that relying on draining the ground water out through the floor drain to the sanitary sewer system during a power outage or pump failure is counteractive to the goals of the footing drain disconnection program and it is not a reliable long term solution because it allows the water to enter the basement before it drains out, potentially causing damage.

22. What are the options for a backup system?

Backup sump pump systems are homeowner options and must be paid for by the homeowner. These backup systems exceed building code requirements and are considered a home improvement that is not fundable by City project dollars. The battery backup system is the most commonly chosen back up system by homeowners. For a short list of advantages and disadvantages of the different back-up sump pump systems please continue reading below. For further information regarding these back-up options please speak with a contractor or look up manufacturer information.

A battery back-up sump pump is an emergency backup pump that draws its power from an industry standard deep-cycle marine battery and pumps the water out of the sump during the loss of electricity or failure of the primary sump pump. The pump is installed in the sump and the battery pack is on the floor nearby. Battery based systems are usually fully automatic and maintain a full charge while the power is on and switch over automatically when the power turns off (indicated by an alarm).

Advantages

- Low maintenance requirements other than replacing the battery and checking the water level in battery.
- Low up front cost
- Easy to install
- Works if primary pump fails

Disadvantages

- Limited amount of energy in battery to power pump. Time varies by manufacturer of battery and backup pump, generally 7-24 hrs.
- Cost of battery replacement

A water powered back-up system is an emergency backup pump that uses the pressurized fresh water supply in the house to create suction that draws the water from the sump up through the discharge pipe to the outside of the house. It will require installing copper pipes from the



nearest water supply pipe to the sump area. The pump starts automatically if the power turns off or if the primary pump fails.

Advantages

- Power provided by city water pressure. As long as there is water pressure in your house the backup pump will work.
- Works if primary pump fails

Disadvantages

- Uses about 2 gallons of pressurized fresh water to pump out 1 gallon of sump water. Water usage will show up on the water bill.
- More expensive installation cost than battery backup
- Every 5 years a plumber has to certify that sump water is not mixing with the pressurized potable water
- Additional water supply pipes around sump area
- Sump cover may not be radon sealed

A manual start portable gasoline generator could also be used to provide power to the primary pump. These can be found at hardware stores and can vary in price from a few hundred to several thousand dollars. It will require that an extension cord is run from generator outside the house to the sump pump. Before purchase you would also need to verify that the generator will meet your power needs including the sump pump.

Advantages

- May cost less than battery back-up pump
- Portable generator has multiple uses

Disadvantages

- Have to be home to start the generator
- May have to refuel generator often
- No second backup pump

An automatic standby generator can be used to power select circuits in the house such as the sump pump, furnace, refrigerator and other appliances during power outages. The generator would start automatically when the power goes off and can be installed to be powered by natural gas, propane or gasoline. Usually it has to be professionally installed.

Advantages

- Power selected circuits or entire house for longer periods of time
- Starts automatically

Disadvantages

- Installation and maintenance costs
- No second backup pump

23. If my sump pump fails to operate, isn't this as bad as having a basement backup?

No. If your sump pump fails, the water that comes out of your sump is clean water from the ground around your basement. Normally this would drain to the nearest floor drain. On the other hand, if there was a basement backup caused by a surcharged sanitary sewer system, there is the potential that much more flow would enter your basement. This water would contain sanitary sewage, which is a more significant problem to manage.

24. How will this effect local surface water issues? (We already have street/yard trouble)

The water that currently flows through the footing drains will be routed to the stormwater system or to an alternative discharge site like a rain garden for homes that can accommodate that within their yard. In very large storms when basement backups can take place, the stormwater drainage system is designed to pond these excess flows in the streets until the downstream drainage system can accommodate these flows. The FDD generated flows are a small portion of these flows and would normally result in less than an inch of additional standing water for short periods of time. A storm water system which holds back or delays a portion of the large



volume of flow, caused by heavy rains, helps preserve the natural ecosystem of the Huron River.

25. I was told check valves were not allowed due to the potential to heave the basement floor. Is that true?

If footing drains are disconnected from the sanitary plumbing as part of a check valve installation, this problem will not occur. However, using check valves can result in heaving the basement floor IF installed when footing drains are still connected to the sewer system and if that sewer surcharges. The FDD program disconnects the footing drains from the sewer system and pumps the water out to discharge lines leading to the stormwater system to prevent this potential problem. The backflow prevention (check) valves that are installed on floor drains and other basement facilities as part of the FDD process are able to contain the pressure generated by the surcharged sewers in the basement plumbing.

26. How noisy is the pump? How often will it run?

The pump sounds much like a refrigerator motor. How often the pump runs depends on the amount of water being removed from your footing drains. In homes completed to date, this has been quite variable.

27. What happens if the discharge line freezes in the winter or is broken?

It is possible for the discharge lines to freeze as they are installed above the frost line. Normally, the water discharged from the sump pump is warm enough to flow without freezing to the storm drainage system. Additionally it is a cyclic flow which means it flows very fast while the pump is operating and hardly at all when not. This means that if the lines placed with the proper grade they should not contain water for an extended period of time therefore minimizing possible freezing. If it does freeze, there is an emergency discharge near the home that allows water to be pumped outside the house. Also, homeowner construction of fences and lawn watering systems could break the discharge line. In these cases, the emergency discharge would put the sump water next to the house until the homeowner can repair the line. The winter of 2002/2003 proved to be a good test for the potential of freezing discharge lines with several periods of extremely cold weather and a considerable frost depth. None of the 75+ installed discharge lines had any reported freezing problems.

28. How much will it cost to run my sump pump?

It has been estimated that the average property owner will pay less than a dollar a year for electricity to run the sump pump. Of course, some will be higher and some lower depending on the amount of water that is pumped.

29. If I have to replace the sump pump, what are the costs for doing this?

Sump pumps can be purchased from local home improvement and hardware stores for less than \$100. Often the property owner can install these units, but it not, estimates to replace the sump pump can be obtained from local plumbers. A common rule of thumb is that installation costs are equal to the equipment being replaced.

Legal Requirements



30. May I choose not to participate in the program? What are the consequences of that?

Participation in this program is mandated by city ordinance. The FDD program offers homeowners the opportunity to have the City pay for installation if the work is completed within the schedule of the program. If the homeowner does not comply with the notices to arrange disconnection, a fee of \$100 per month will be charged to the homeowner for the additional costs associated with handling un-metered footing drains into the sewer system. Disconnection is still required and if done after the 90 day notice expires, the disconnection work would no longer be paid for by the city.

GLOSSARY OF TERMS

- *Check Valve* - pipe fitting or valve which allows flow in one direction only e.g., prevents flow from coming into the house but allows flow to leave the house when a backup condition does not exist
- *Computer Modeling* – Computer program used to simulate the behavior of the collection system.
- *Downspout* – This is the pipe that takes water from the roof gutters in most houses. This should discharge onto the lawn.
- *Flow Meters* – Used to measure flows in the sewer system.
- *Footing Drain* – A drainage pipe (or tile) that is installed around the foundation of most basements of houses. This drain makes sure that water in the ground does not make the basement damp. This is connected to the sanitary sewer, to a sump pump, or directly to the storm sewer.
- *House Leads* - sewer pipe connecting an individual house to the City sewer
- *Infiltration* – This is rainwater flow that enters the sanitary sewer system through underground cracks in sewers.
- *Infiltration Device* - underground chamber that handles flow discharged from the sump pump, this chamber allows water to infiltrate into ground rather than discharge to storm sewer (limited to sandy soils or other soils that drain well)
- *Inflow* – This is a direct connection from surface drainage into the sanitary sewer.
- *Manhole* – This is the access structure that allows field crews to inspect sewers.
- *POTW* – Publicly Owned Treatment Works, essentially a city owned sewage system and treatment facility.
- *Rain Gage* – Used to measure the amount of rain from storm events.
- *Sanitary Sewer* – Sewer pipe that conveys wastewater to the Ann Arbor Wastewater Treatment Plant.
- *Storm Sewer* – A different pipe that takes rainwater collected in catch basins located in the street and conveys these flows to a creek or river.
- *Sump Pump* - pumps footing drain flows from lowest drainage point (sump) to the City storm sewer
- *Surface Drainage* – Rainwater that flows down the street or yard to a storm drain or into a creek or river.
- *Wastewater* – The used water that flows down drains in your home.



PAGE LEFT BLANK INTENTIONALLY to use for taking notes during neighborhood meeting, initial in-home assessment and/or meetings with contractors.

