

Public Information Meeting



Sump Pump Inspection Program

City of Boone, IA
August 17, 2021



Introductions



- **WHKS & Co. is a multidisciplinary Civil Engineering Firm headquartered in Mason City, Iowa, with offices in Ames, Rochester MN, East Dubuque & Springfield IL.**
- **Angie Kolz, PE is practice area leader for WHKS & Co water/wastewater department. WHKS has assisted over 30 Iowa and Minnesota communities with sump pump I&I reduction projects.**



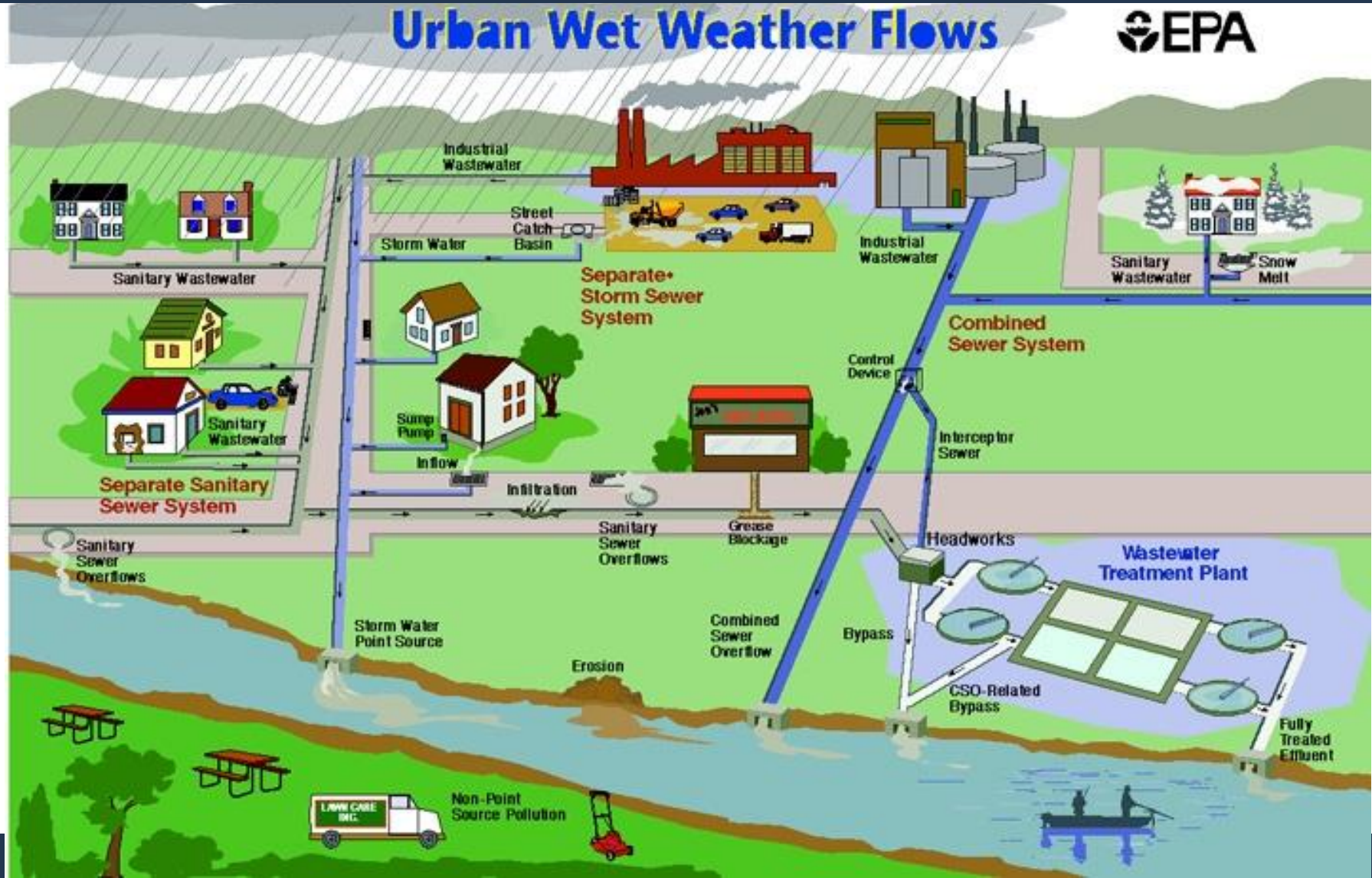
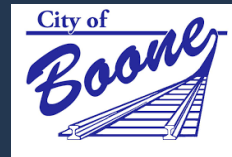
Presentation Objectives



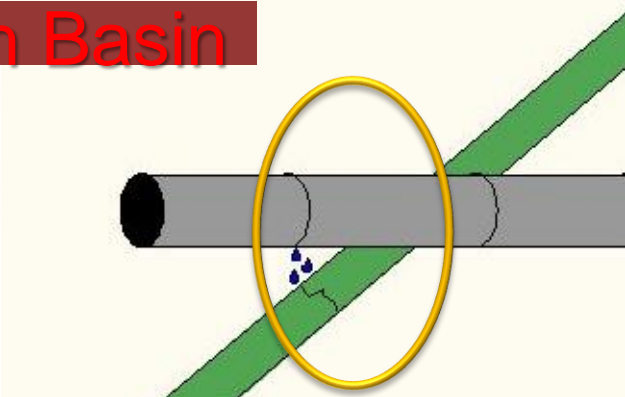
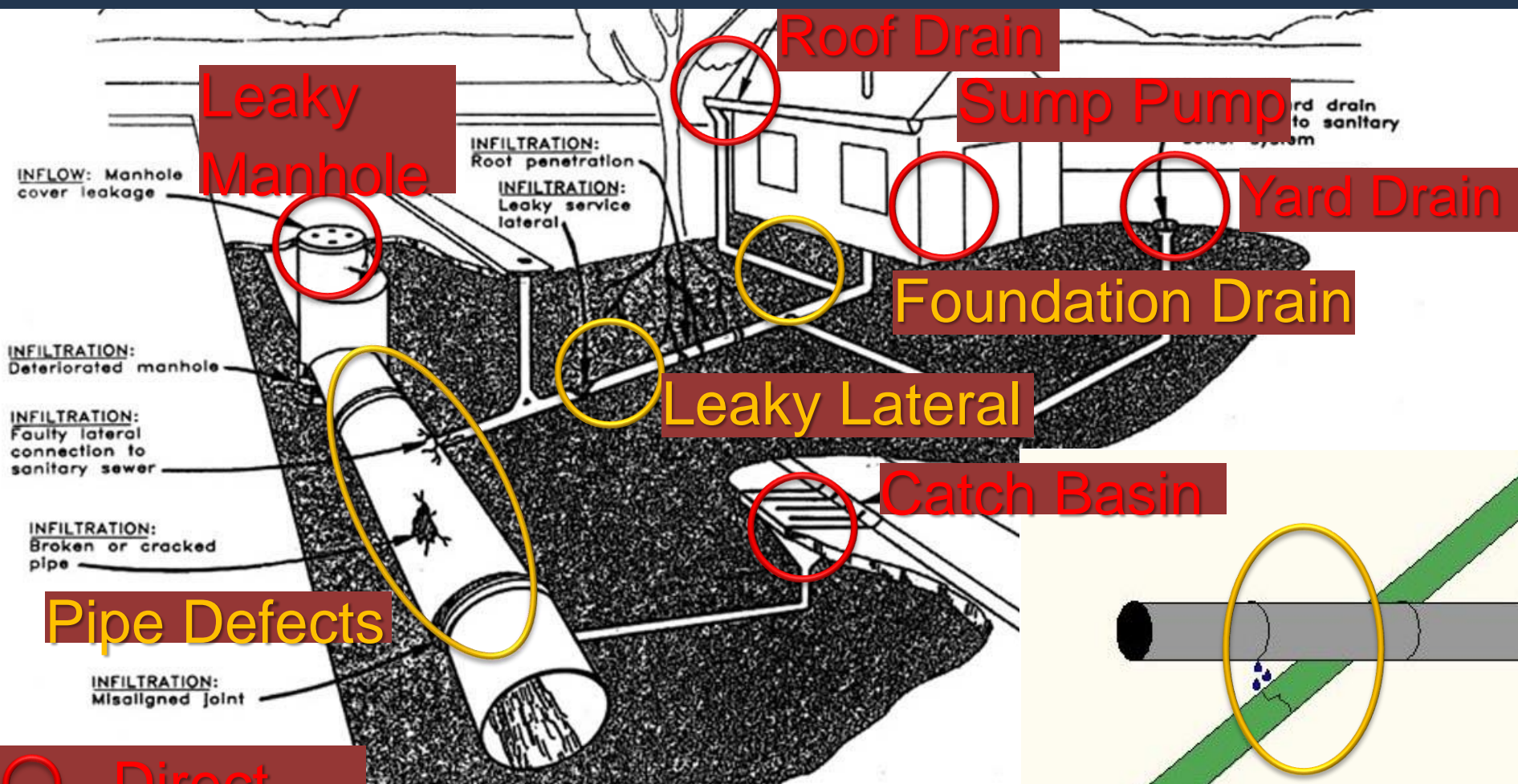
- **Why is a sump pump program being recommended?**
- **Discuss program details**
- **Discuss next steps**

What is I/I?

Inflow and Infiltration



Some Sources of I/I



Indirect
Connection

SANITARY SEWER PROBLEMS

Inflow and Infiltration

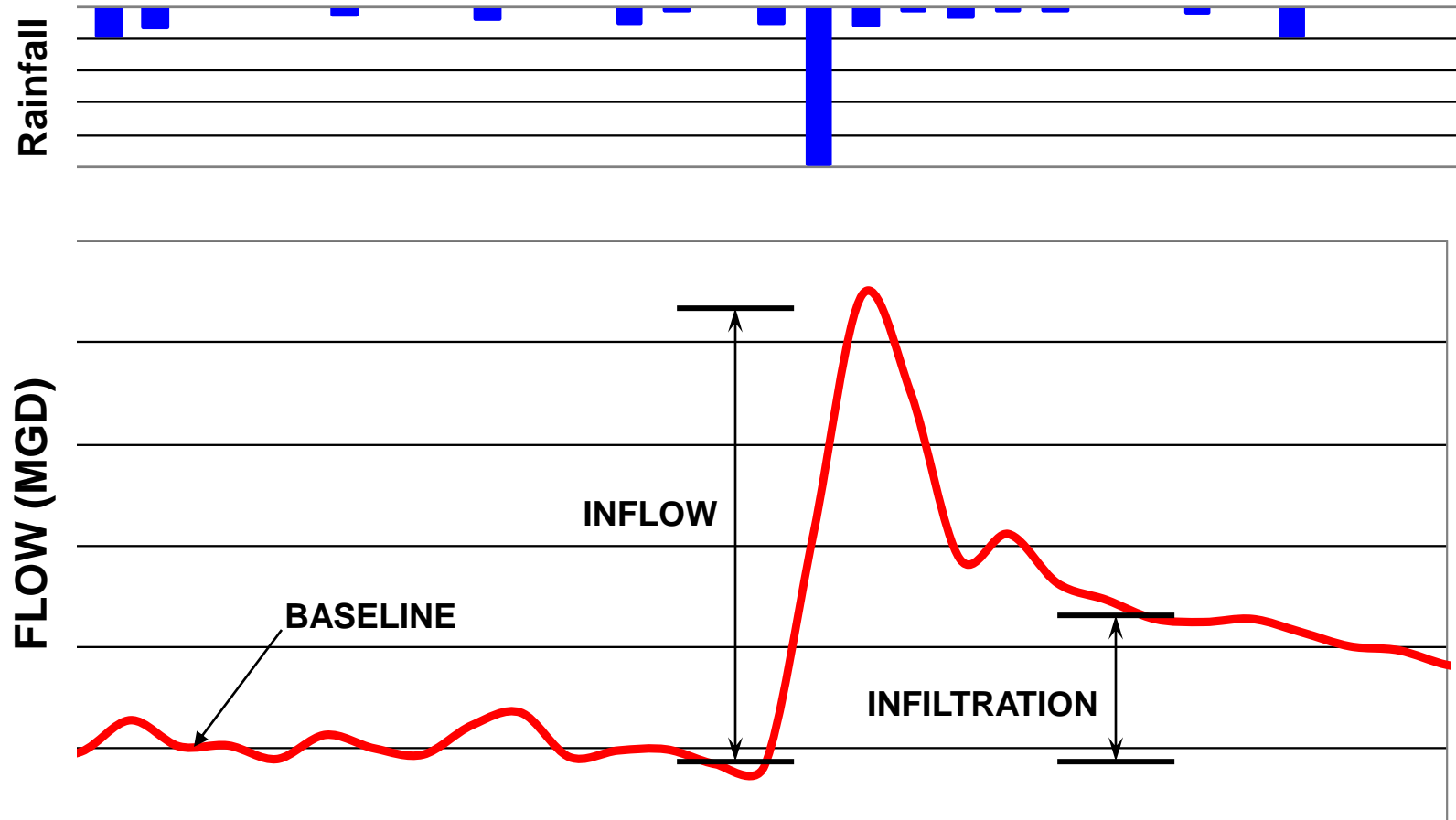


Boone System Description:

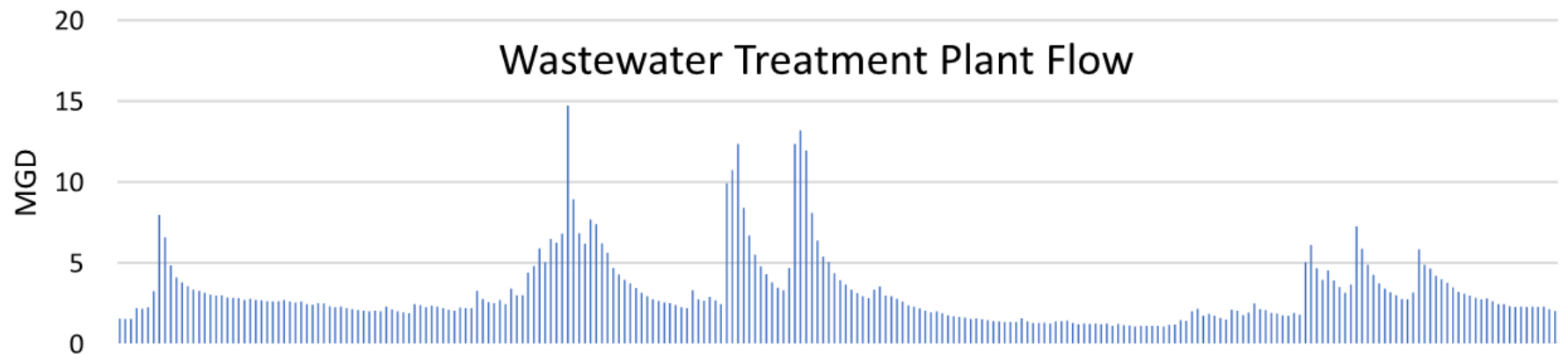
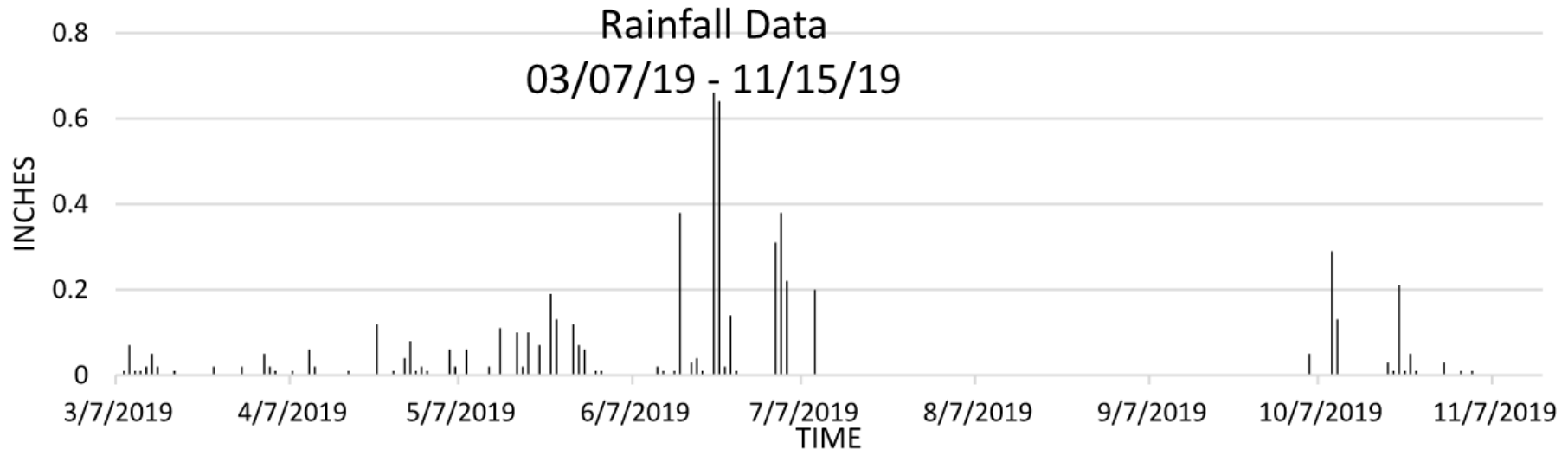
Average Dry Weather (ADW) flow (MGD): 2.1

Average Wet Weather (AWW) flow (MGD): 7.0

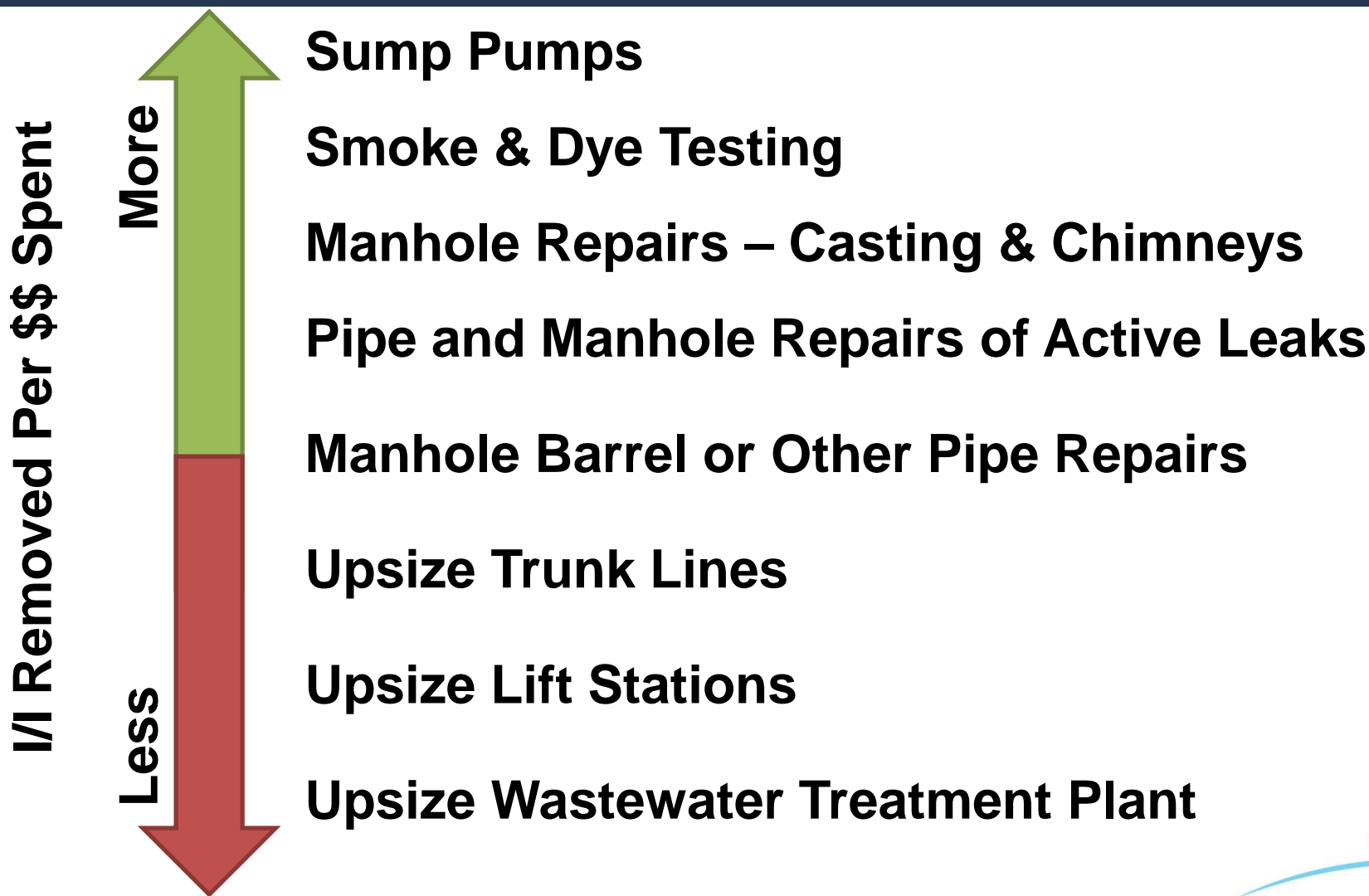
Peak Instantaneous Wet Weather (PIWW) flow (MGD): 24.6 **1170%**



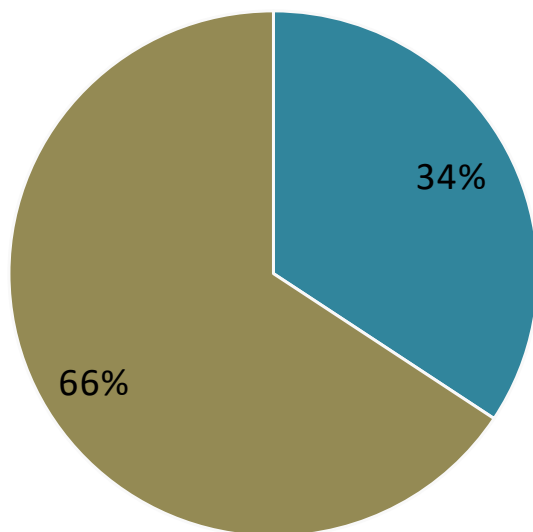
Inflow and Infiltration



Bang for your Buck

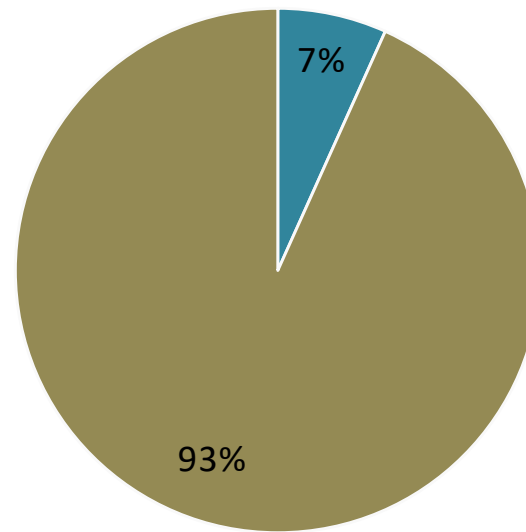


Example Flow Removal & Cost Public Sector vs. Private Sector



■ Private ■ Public

Sources of I/I



■ Private ■ Public

Cost to Remove I/I

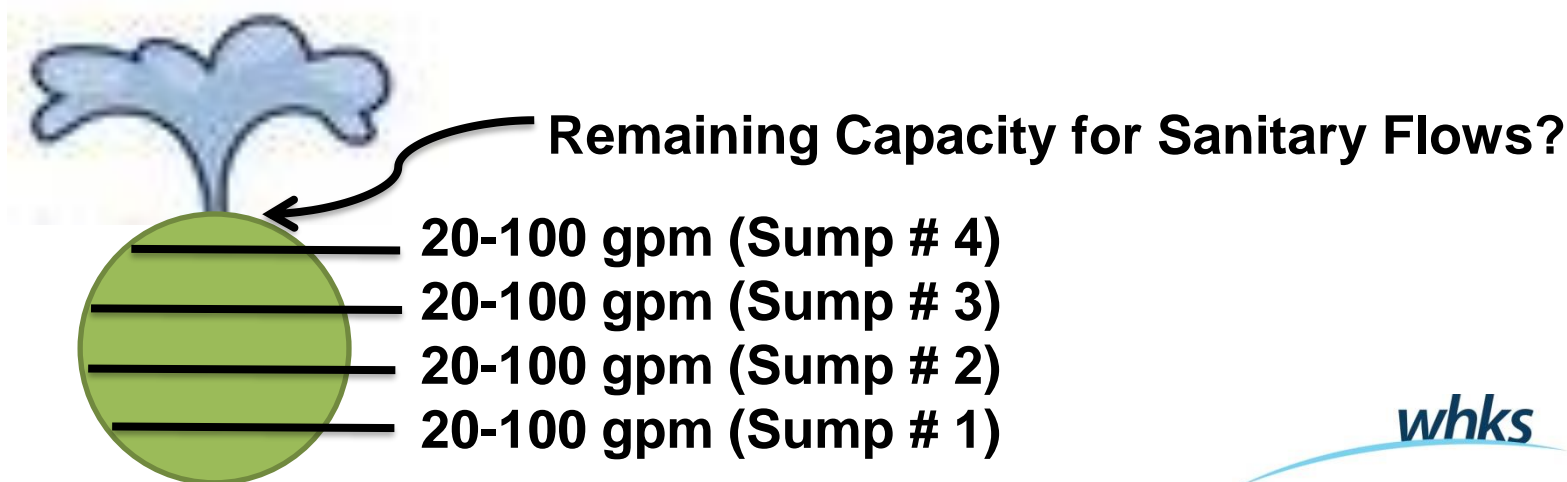
vs.

Example from Kutzky/Slatterly Pilot I/I Study, Rochester MN 2008
National averages range from 50/50 - 75/25

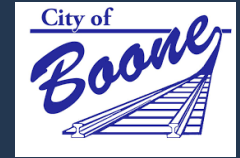


Why a Sump Pump Program?

- **A few sump pumps can make a big difference**
 - **Typical sump pump 20-100 gpm apiece**
 - **Typical 8" sewer capacity 350 gpm.**
 - **As few as FOUR pumps can take up the pipe capacity and cause a backup in the neighborhood.**



Why a Sump Pump Program?



Perspective:

- **5%-10% violation rate typical out of 17,000 inspections completed in thirty communities**
- **Hypothetically, if 5% rate applied to Boone's proposed 2019 inspection area:**
 - **Approx. 600 homes x 5% = 30 violations**
 - **If each pump contributed 50 gpm, 8 hours/day = 720,000 gpd**
 - **2019 sump area = 10% of Average Wet Weather at WWTP (0.72 MGD / 7 MGD AWW = 10.3%)**

Why a Sump Pump Program?

- **Sump pump programs are typically the MOST cost effective method to reduce I/I in the system**
 - **CIPP line sewer and rehab manholes @ \$25,000/block**
 - **Upsize sewer @ \$40,000/block (pipe only)**
 - **The cost of the current program is equivalent to approximately 1 block of upsized sewer.**
- **Cheaper to reduce wastewater than transport and treat**
 - **Duluth, MN Study - \$4/gal to treat, \$1/gal to remove**

Why a Sump Pump Program?

Talking Points



- **The jump in flows during wet weather is evidence that clear water is entering the system.**
- **I/I sources are typically 50/50 Public vs Private, recent studies as high as 25/75 Public vs Private**
- **Removing Inflow/Infiltration (I/I):**
 - **Reduces Backups**
 - **Protects Health**
 - **Controls Costs**

Sump Pump Program Approach



- **Public Information and Buy-in is KEY!**
- **Ordinance Revisions *completed!***
- **Public Info**
- **Public Meetings**
- **Scheduling & Inspections**



Your Government

Boone

DRESSING THE NEEDS OF CITIZENS WITHIN THE
REPUBLICAN LIMITS OF BOONE.

*city of Boone has made a dedication to its citizens: Provide a greater level of
education and health maintenance financial stability. We hope this
effort will help our citizens become more aware of city government activity.*

Sump Pump Inspection Program Coming Soon

The City of Boone has revised Ordinance 96.07 to prohibit all storm water including sump pumps from being connected to the sanitary sewer throughout the entire year. There will no longer be any seasonal sump pump connections allowed to the sanitary sewer. Any home or business that has a system that allows the switching of sump pump discharge to the sanitary sewer system will be required to remove it. The new ordinance will be implemented over several years throughout the City by specific targeted areas.

The City will be implementing a mandatory sump pump inspection program beginning in 2019.

Why is this important?

Like many cities in Iowa, Boone faces a challenge with its sanitary sewer system. During significant rain events, the sewer system can be overloaded. When it rains, flows can jump up to 20 times the normal amount. Overloaded sewers lead to basement backups and overflows of untreated sewage to Honey Creek and the Des Moines River.

The City is being urged by the EPA and Iowa DNR to reduce overflows. It is possible that DNR could require us to install an additional \$3 million dollar flow equalization basin at the wastewater treatment plant unless the excess clear water is removed from the sanitary sewer system.

Excess clear water enters the system from rain in storm sewers and manholes along with private sources such as sump pumps, basement sump pumps, and sump pumps. A sump pump removes ground water from around a home's foundation and pumps it into the street if available. The improper place for this water is the street where it can pollute the environment.

Your Government

Boone

MEMBER AUTHOR TALK WITH AARON PUTZE AND SPECIAL GUEST, CHUCK LONG
ay, November 27 at 6:00 p.m.

Public Library, Second floor Meeting Room

and Chuck will be sharing stories from Aaron's book, *Chuck Long: Destined for* and a autobiography of Chuck's life.

hardbound (\$30) and softbound (\$20) copies of the book will be available. will join in photos and sign one additional item for each book purchased!

AN THEATER, 1944-1945
30 p.m.

ond floor Meeting Room

er of The Houndstooth
ry Reenactment Company

and fight on the front lines in
aw authentic military items!

EPL is becoming a Scholastic Literacy Partner!

Starting in November, children who attend any storytime at Ericon Public Library will receive a punch card. After attending ten storytimes, each child will get to select a free book for their own home library!

This program is made possible through a generous donation from the Friends of Ericon Public Library.

SCHOLASTIC LITERACY PARTNERSHIP
Punch Card for Books

[illegible]

 **BUDGET
BLINDS**
Request Your Free In-Home Consultation!

**AT AMES FORD LINCOLN
WE PROMISE YOU ...**

**You can't buy
the wrong car
with our 7-Day
Like it or Return it Policy**

The Cedars Assisted Living in Madrid



Any family who is concerned about finding a place for their elder parents, The Cedars is the place they should look at.
-Lou Galveth, Resident



MADRID HOME COMMUNITIES

At Foundation Central Christian Church Famous Lynn's Lounge Coney's 5 pm to 7 pm
and ends May 15th burning allowed 8 am to 7 pm
Community Dedication Award details at www.boonegov.com
Herman Park Pavilion 7:30 pm
in April newsletter

UPCOMING EVENTS

- November 15th OPEN BURNING ENDS in the city of Boone
- Santa Express November 23, 24, 25, 30 & December 1, 2, 7, 8, 9, 14, 15, 16, www.bsvvt.com
- November 29th Downtown Holiday Lighted Parade
- December 13th "Shop with a Cop" County Law Enforcement

whks



William J. Skare
City Administrator



July 27, 2021

Property Owner: <<Owner Name>>
Property Address: <<Property Address>>

Re: 2021 Sump Inspection Program – Public Information Meeting

Due to high wastewater flows in the sanitary sewer system during wet weather, the City of Boone has adopted an Ordinance prohibiting the discharge of clear water into the sanitary sewer system. Clear water from any roof, surface, ground, sump pump, footing tile, swimming pool, seepage collection system ("beaver system") or other natural precipitation is prohibited from discharging into the sanitary sewer.

The City will be conducting mandatory sump pump inspections to verify that sump pumps, roof drains, and other clear water sources are not connected to the sanitary sewer system. This year (2021) is the third year of the program and it includes approximately 800 homes between Story Street and Division Street north of the railroad tracks. Over 1,400 homes have been inspected in other areas of the City since the program began in 2019. Other areas of the City will be inspected over the next couple years. The engineering firm, WHKS & Co., is coordinating this program and will serve as Project consultant.

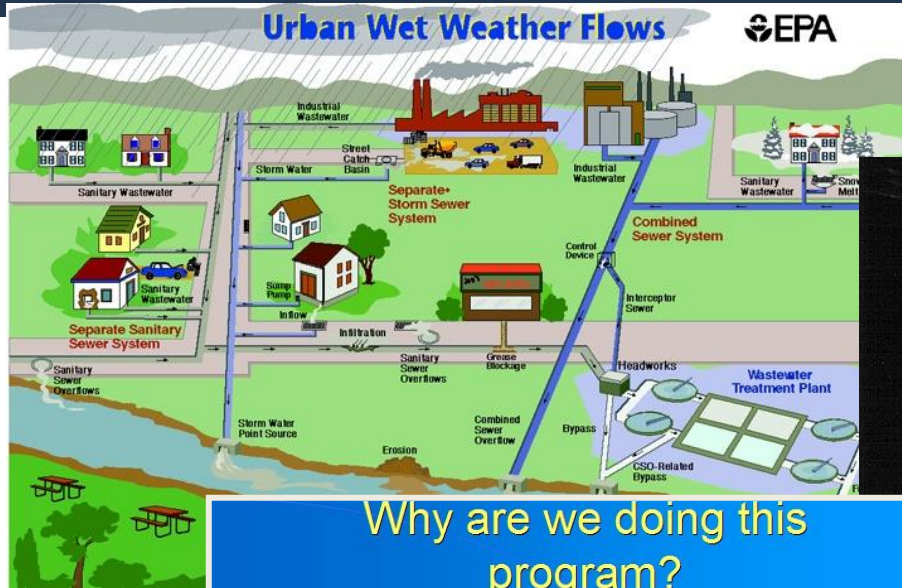
Public Informational Meeting: The City will host a public informational meeting on Tuesday, August 17th, 2021 at 5:00 pm at Boone City Hall 2nd floor Auditorium to discuss the scheduling of inspections, length of inspection, proper sump pump connection and other miscellaneous items. The meeting will be broadcast. Please access the broadcast via www.zoom.us, Meeting ID: 886 6207 8053 and Passcode: 152619.

Thank you for your attention to this matter. If you have any questions, or require any additional information, please do not hesitate to contact Angie Kolz, WHKS & Co., toll-free 866-880-8004.

Sincerely,

William J. Skare, CPM
City Administrator

Informational Meeting



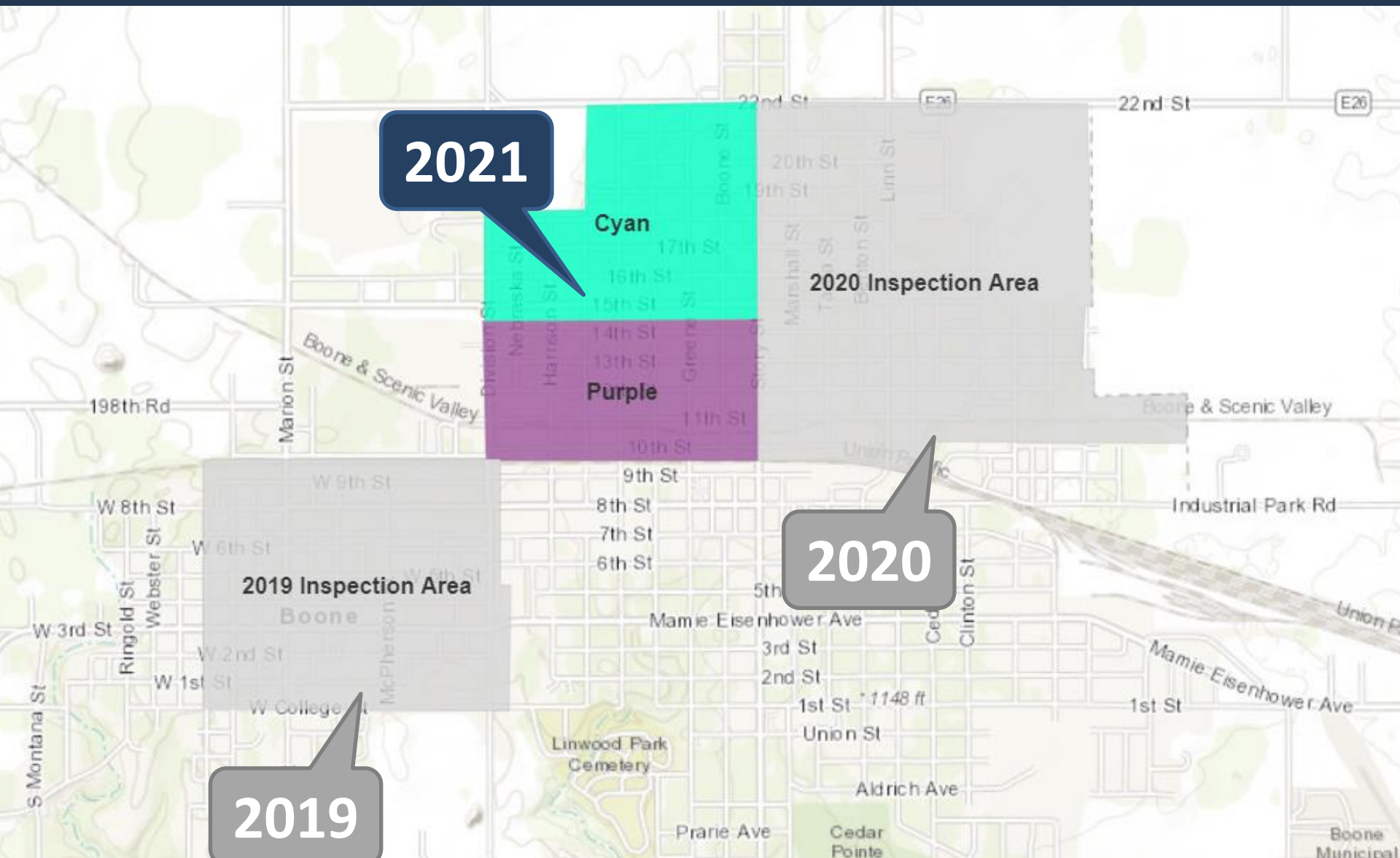
Why are we doing this program?

- ❖ Cheaper to reduce wastewater than to transport and treat
- ❖ Sewer replacement to upsize pipe, ~ \$40,000 per block
– (2.5 blocks for cost of this program)
- ❖ Duluth, MN Study - \$4/gal to treat, \$1/gal to remove

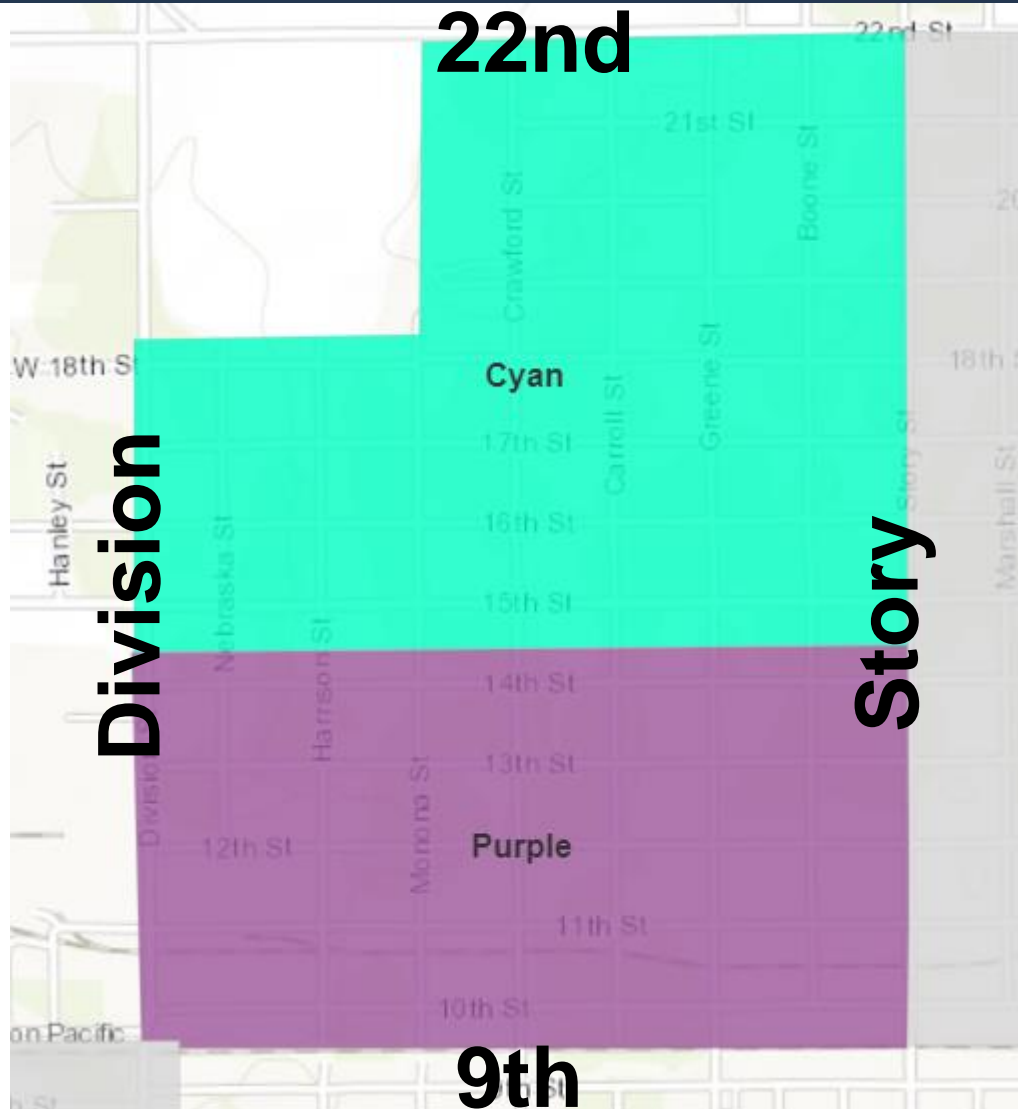
Scheduling



- **All inspections are scheduled, no door-to-door inspections.**
- **Scheduling is fast and easy**
- **Schedule through website or telephone**
 - BooneSump.com or toll free 1-866-880-8004
- **Residents will receive a letter when it is time for their sector to schedule inspections.**



2021 Area



Scheduling and Info Website

BooneSump.com

Find Appointment Availability



	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Available times for 06/03/2009:

- ☐ 12:00 PM - 12:15 PM
- ☐ 12:15 PM - 12:30 PM
- ☐ 12:30 PM - 12:45 PM
- ☐ 12:45 PM - 01:00 PM
- ☐ 01:00 PM - 01:15 PM
- ☐ 01:15 PM - 01:30 PM
- ☐ 01:30 PM - 01:45 PM
- ☐ 01:45 PM - 02:00 PM
- ☐ 02:00 PM - 02:15 PM
- ☐ 02:15 PM - 02:30 PM
- ☐ 02:30 PM - 02:45 PM
- ☐ 02:45 PM - 03:00 PM
- ☐ 03:00 PM - 03:15 PM
- ☐ 03:15 PM - 03:30 PM

The Inspection



- **Completed in under 15 minutes, many under 5 minutes**
- **Adult must be present**
- **Inspector looks at:**
 - **Sump pumps**
 - **Beaver drains**
 - **Roof drains**
 - **Site grading**
- **Occupant and inspector signs**
- **Notice of Violation and instructional diagrams given if needed**

Inspection Form

Inspector _____
Plumbing License # _____

Property Address _____ Page 2 of 2

City of Boone Sump Pump Inspection Report

A. Initial Inspection

1. Owner and Address:
 - a. Owner Name(s): _____
 - b. Address: _____
 - c. Occupants Name (If different): _____
 - d. Owner Address (s): (If different) _____
2. Date of Initial Inspection: _____
3. Date of construction and Building Type? Building built in year _____ (ex. 1959)
Note residential, apt., commercial, industrial: _____
4. History of backups or flooding? Note date, source, and actions taken: _____

5. Does building have:
 - a. ☐ Yes ☐ No Exterior grading sloping towards the building?
 - b. ☐ Yes ☐ No Roof drains that go into the ground?
 - c. ☐ Yes ☐ No Basement?
 - d. ☐ Yes ☐ No Seepage collection (beaver) system?
 - e. ☐ Yes ☐ No Sump pit?
6. If building has a **roof drain** that goes into the ground, which of the following apply?
 - a. ☐ It is properly constructed to discharge to open air or storm system.
 - b. ☐ It is improperly constructed to discharge into the sanitary sewer system.
 - c. ☐ Discharge location not determined.
7. If there is a **seepage collection (beaver) system**, which of the following apply?
 - a. ☐ It is properly constructed to discharge into a sump pit
 - b. ☐ It is improperly constructed to discharge into the sanitary sewer system.
 - c. ☐ Discharge location not determined.
8. If there is a **sump pit**, which of the following apply?
 - a. ☐ Pump is properly plumbed to discharge outside the basement through rigid piping.
 - b. ☐ Pump is improperly plumbed to discharge into the sanitary sewer system.
 - c. ☐ Pump has the capability of discharging into the sanitary sewer system (ex. flex hose).
 - d. ☐ There is a pit with no pump. Plumbing is checked as (a) (b) or (c) if present.
 - e. ☐ Discharge location not determined.
9. Other comments (exterior drains, uncapped cleanouts, inactive sump pit, etc): _____

10. Photos taken of Interior Sumps and Collection System, and Building Exterior? ☐ Yes ☐ No
11. If 6b, 7b, 8b or 8c was checked, a Violation Notice was given to the Occupant or Owner directing them to correct the violation by (date): _____

PASS _____

FAIL _____

City Follow-Up _____




DIAGRAM: roof drains into ground, exterior drains, improper grading, sump pits and pumps, sump pump discharges, beaver systems, sanitary grinder pumps, etc

B. Subsequent Inspection

1. Date of subsequent inspection: _____
2. Inspection conducted by _____
3. Does the building now comply with the applicable Ordinance for the City of Boone?
☐ Yes ☐ No

I hereby verify that the City Representative has inspected the above-described sump pump and the information set forth above is true and correct to the best of my knowledge.

Occupant/Owner _____

Date _____

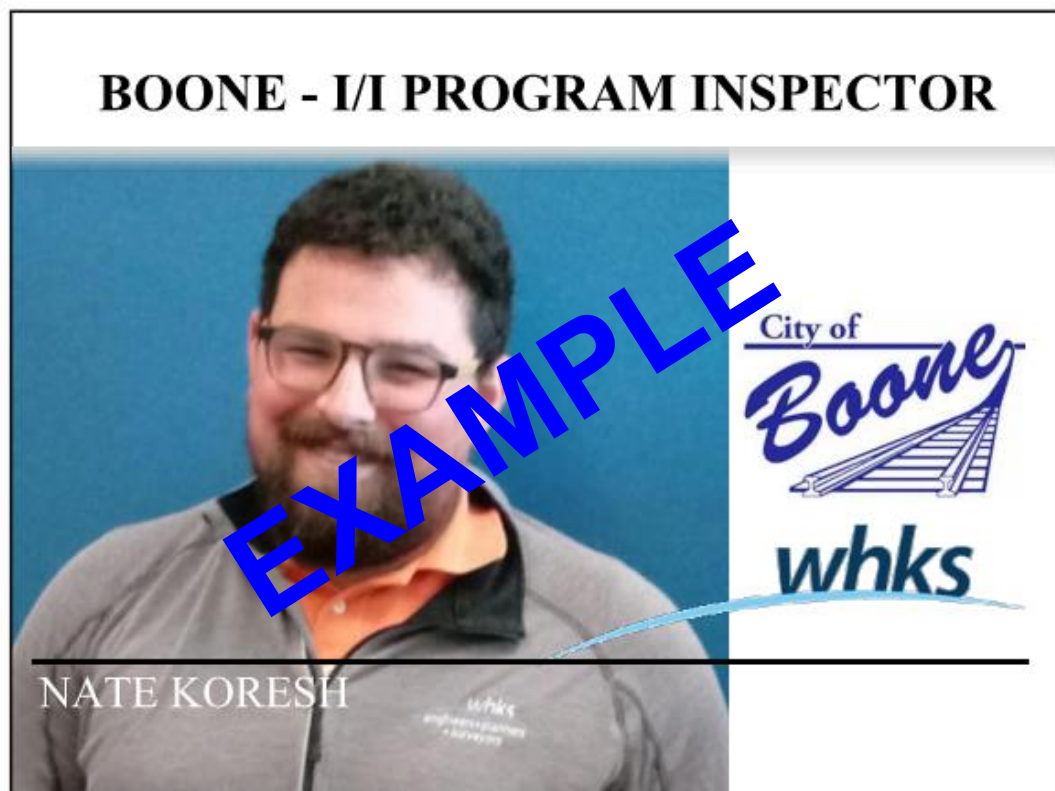
I hereby verify that the City Representative has inspected the above-described sump pump and the information set forth above is true and correct to the best of my knowledge.

City Representative _____

Licensed Plumbers: sign with license #.

Date _____

Inspector Identification



- All inspections are scheduled
- No door-to-door
- WHKS logos on
 - Badges
 - Clothing
 - Vehicles

Covid Safety

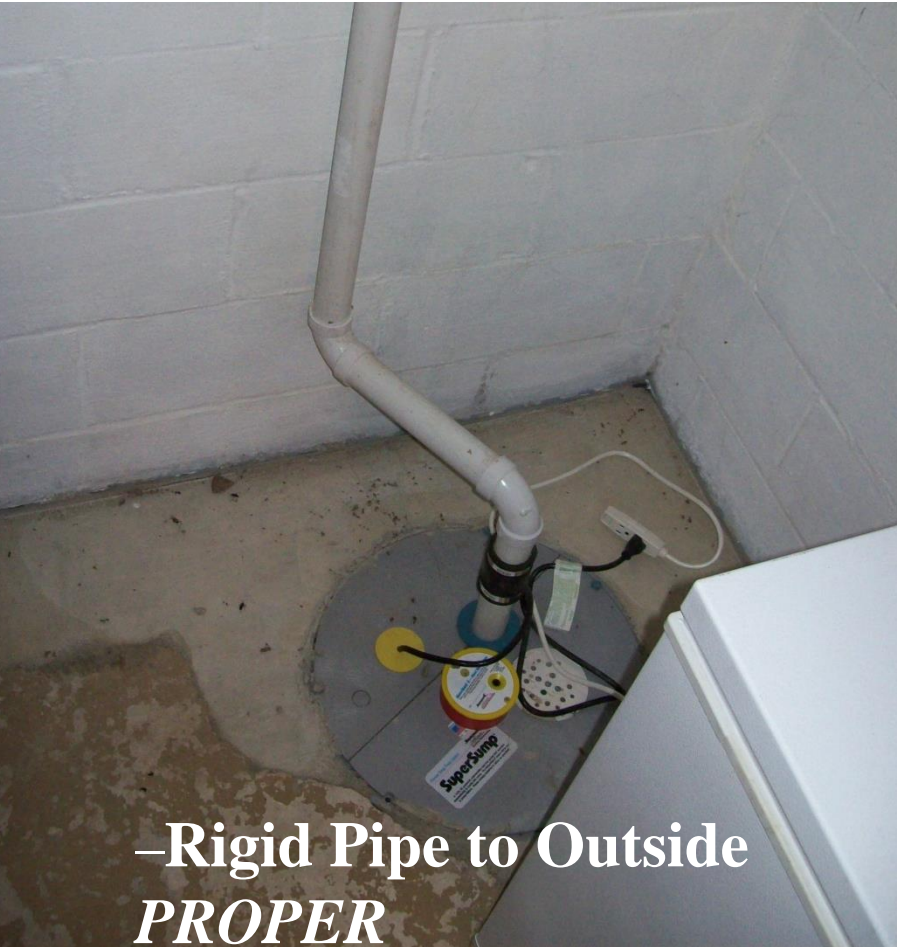


- **Our staff will wear masks into all homes for inspection**
- **We will take temperatures of our inspectors each day**
- **We will eliminate the signature at the end of the inspection to make it contactless.**

In our notice to residents we will add the following requests:

- Request no more than 1 person accompany us**
- Request maintaining a distance of 6' from inspector**
- Request the resident also wear a mask**
- Indicate that by resident scheduling an inspection they are indicating that no one in the household has had symptoms or a positive COVID test, and will cancel the inspection if this changes**

Installation Examples: Sump Pumps

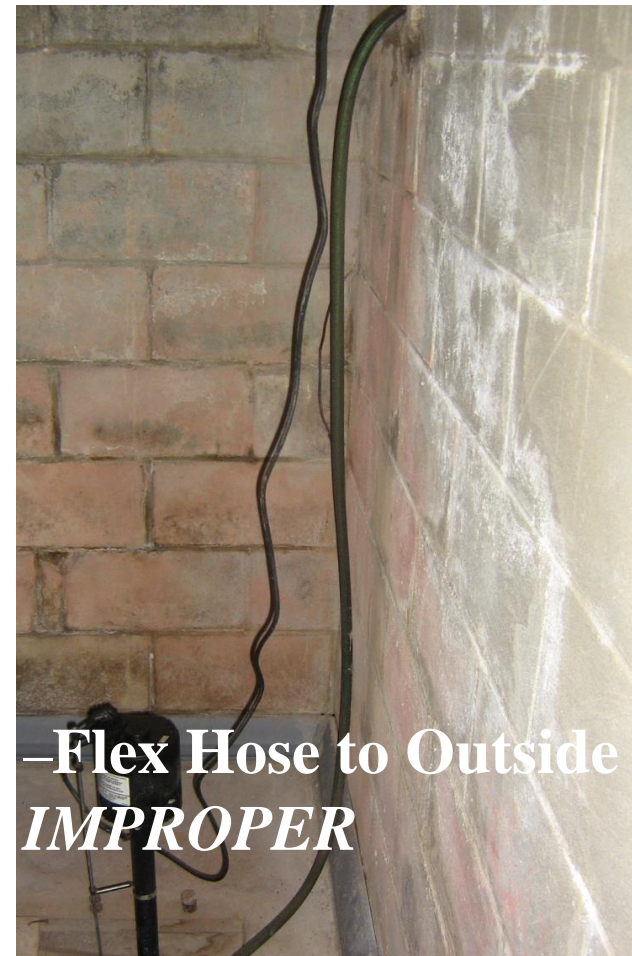
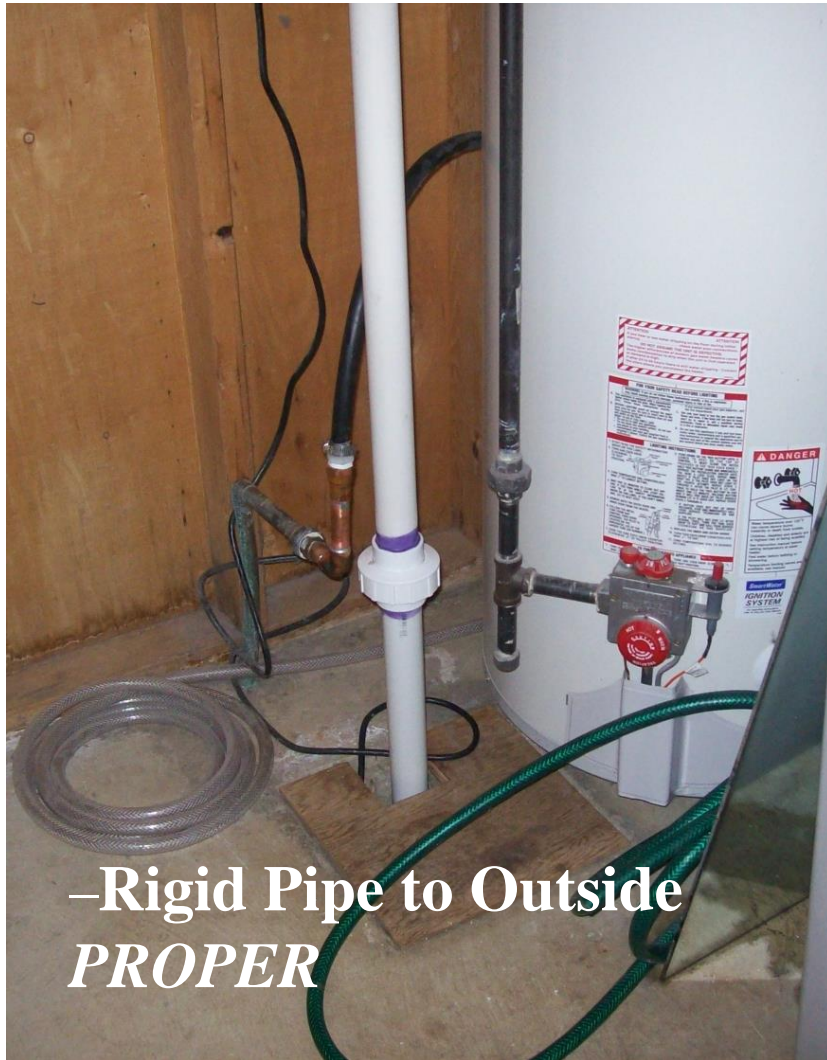


–Rigid Pipe to Outside
PROPER



–Flex Hose to Drain
IMPROPER

Installation Examples: Sump Pumps



Installation Examples: Sump Pumps



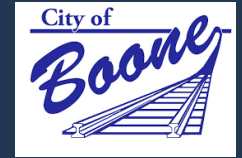
**Flex Hose to
Sanitary
via stool**

No.

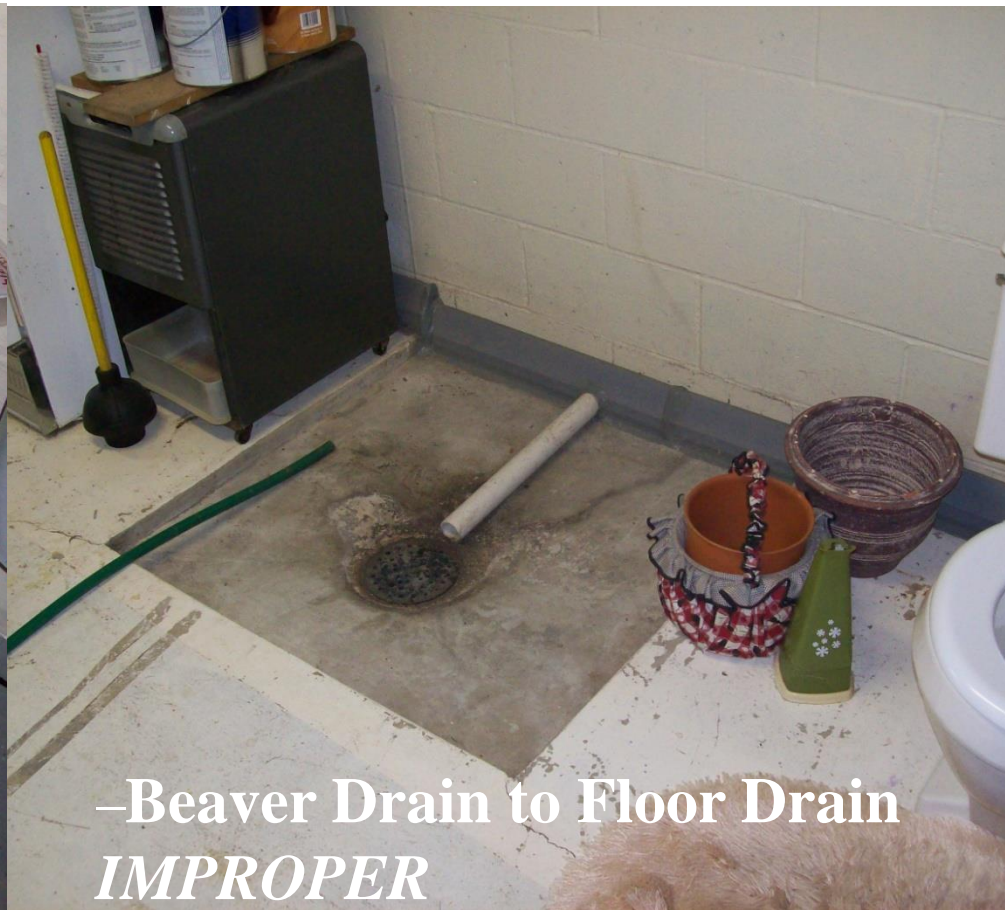
[Mipsbe.com/post](https://mipsbe.com/post)

whks

Installation Examples: Beaver Drains



–Beaver Drain to Sump Pit
PROPER



–Beaver Drain to Floor Drain
IMPROPER

Installation Examples: Beaver Drain / Tile



Installation Examples: Tile Pit



Photo courtesy of WCF Courier

Tile Pit into Floor Drain
“Running Trap”
IMPROPER

Plugged + Pump Installed
PROPER



Discharge Options



Flexible Pipe



Discharge Options



- **Curb outlet**

Discharge Options



- **Air Gap & underground pipe**



whks

Discharge Options

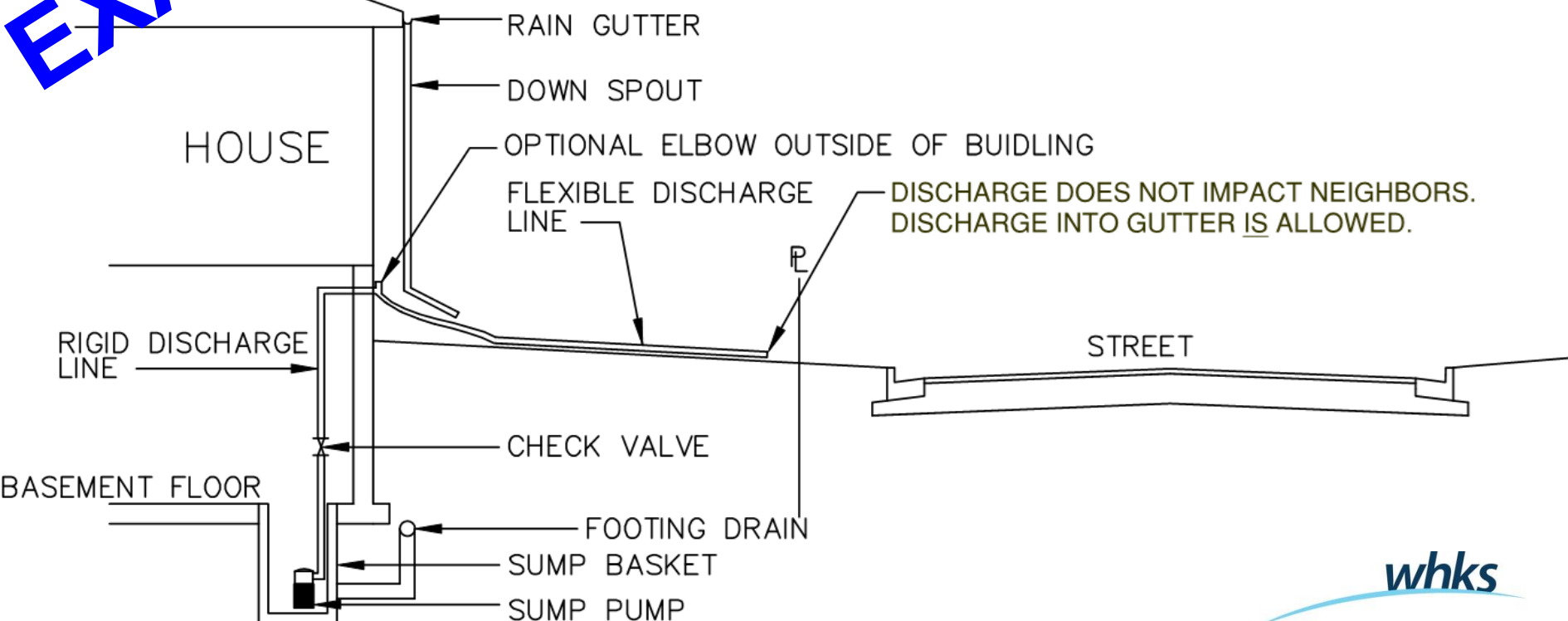


Legal, but not a good idea

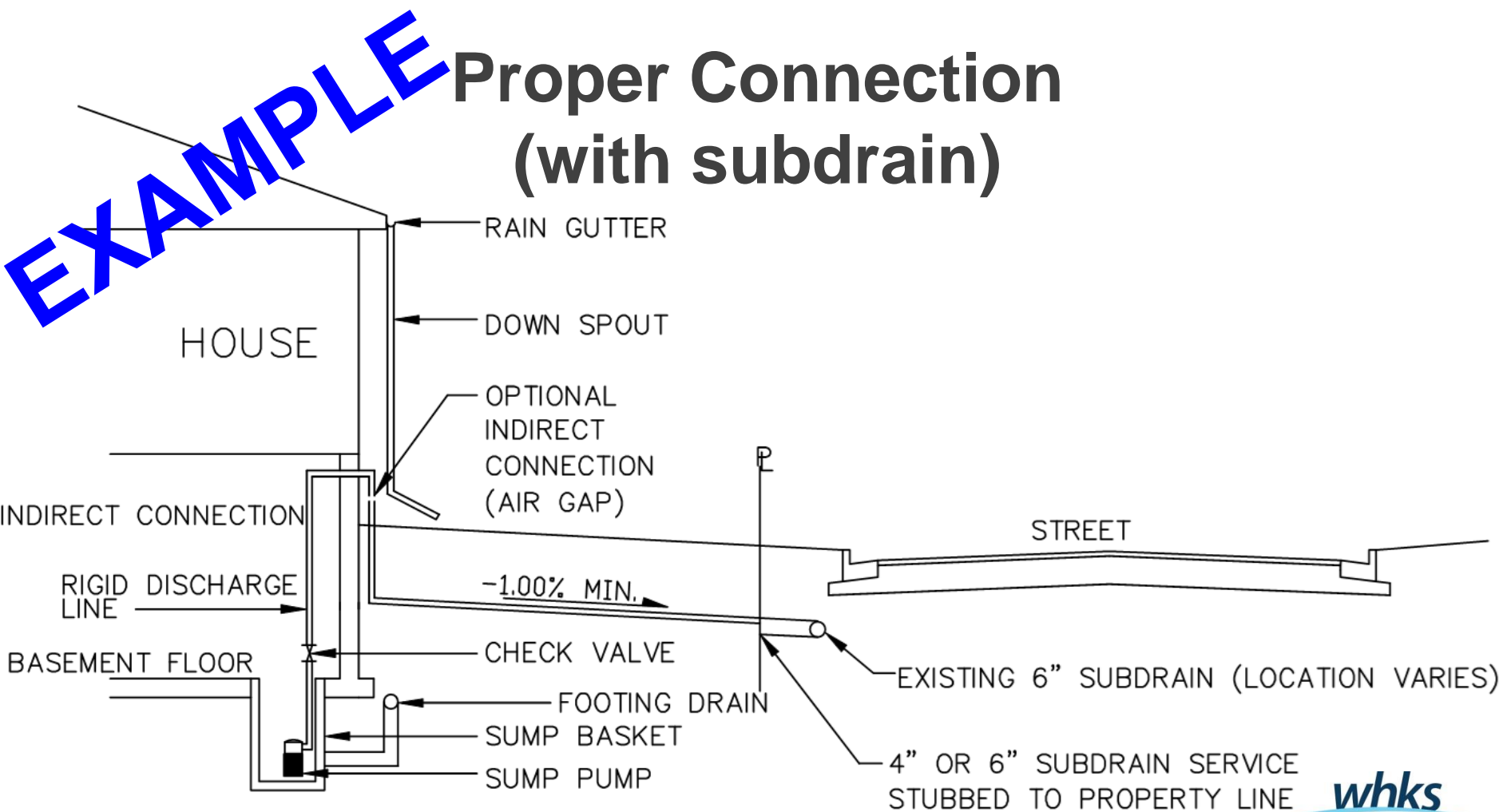
Sump Pump Diagrams

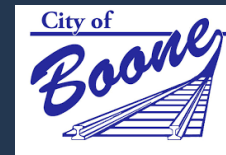
EXAMPLE

Proper Connection



Sump Pump Diagrams





Ordinance & Inspection Timeline

Item	Date
2019 Kickoff and Ordinance Revisions	Feb 4, 2019
2019 Public Information Meeting	May 6, 2019
2019 Inspections	May – Dec 2019
2020 Inspections	Aug – Dec 2020
2021 Public Information Meeting	Aug 17, 2021
2021 Inspections	Aug – Dec 2021

Long Range I/I Plan: Field Investigations

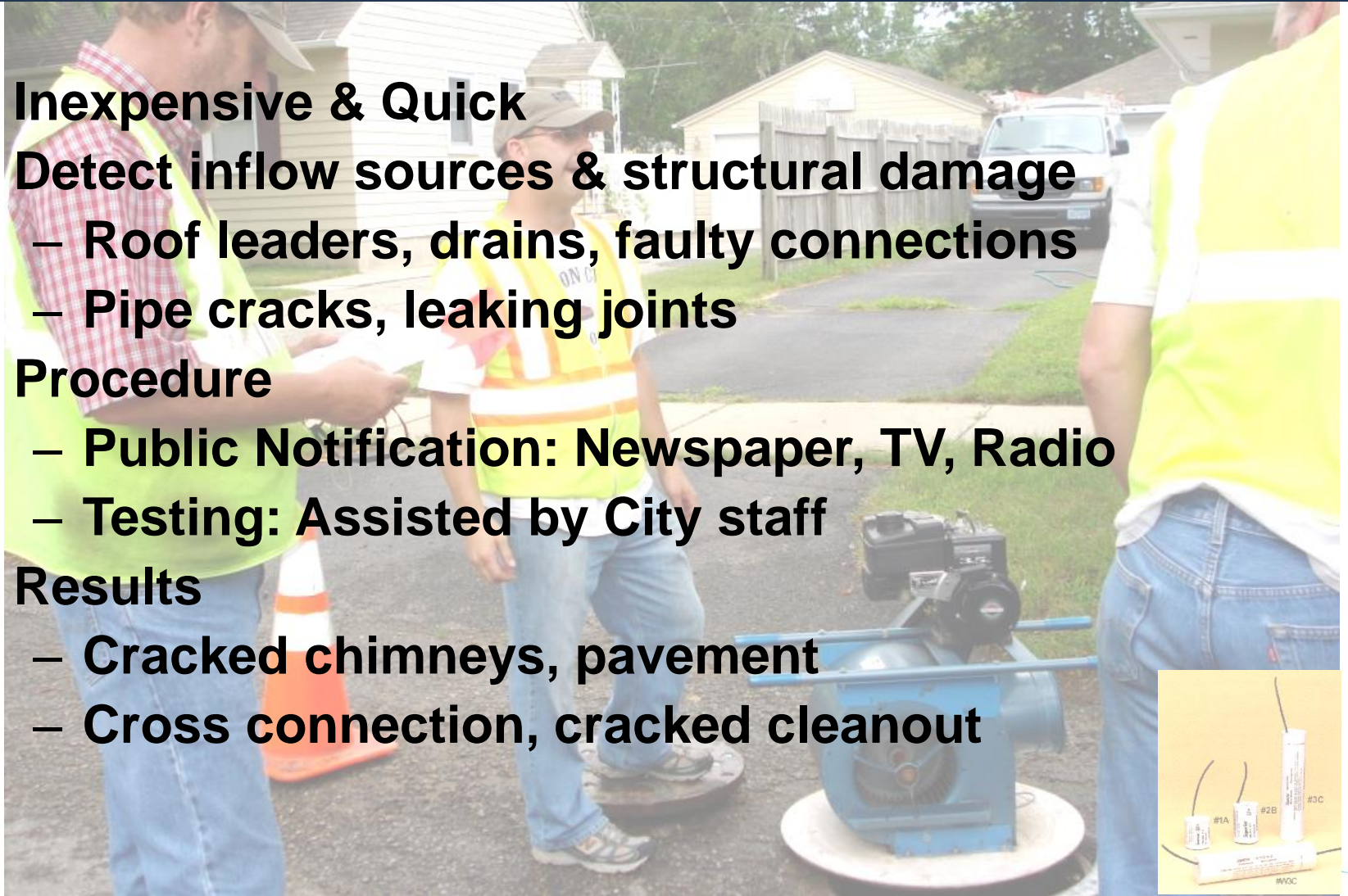


- **Private:**
 - **Building Inspections**
- **Public:**
 - **Smoke and Dye Testing**
 - **Manhole Inspections**

Smoke Testing



- **Inexpensive & Quick**
- **Detect inflow sources & structural damage**
 - Roof leaders, drains, faulty connections
 - Pipe cracks, leaking joints
- **Procedure**
 - Public Notification: Newspaper, TV, Radio
 - Testing: Assisted by City staff
- **Results**
 - Cracked chimneys, pavement
 - Cross connection, cracked cleanout



Manhole Inspection



- **I/I defects**
 - **Cover, frame seal, chimney, barrel**
- **Confirmed/updated system configuration**
 - **Location, depth, pipe size**



Questions?



Contact and Project Information



- Contact/ Project information
 - Angie Kolz, PE

akolz@whks.com

515-663-9997

