Public Information Meeting



Sump Pump Inspection Program

City of Boone, IA August 3, 2020



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 lowa 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





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

City of

Boone,



Bang for your Buck



I/I Removed Per \$\$ Spent

More

Less

Sump Pumps

Smoke & Dye Testing

Manhole Repairs – Casting & Chimneys

Pipe and Manhole Repairs of Active Leaks

Manhole Barrel or Other Pipe Repairs

Upsize Trunk Lines

Upsize Lift Stations

Upsize Wastewater Treatment Plant



Example Flow Removal & Cost Public Sector vs. Private Sector





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%)
 whks

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



Public Info







Daniel Scott City Engineer



Letter

July 20, 2020

Property Owner: Property Address:

Re: 2020 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. The 2020 inspection area includes approximately 800 homes located between 10th and 22nd Streets from Story Street easterly to the City limits. Last year, over 500 homes in the area between Main St and Division St north of College St were inspected. Other areas of the City will be inspected over the next few 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 Monday, August 3rd, 2020 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: 856 2125 2246 and Passcode: 692661

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,

Daniel Scott, P.E. City Engineer



Informational Meeting





WHKS & co. =

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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.



2020 Area





2020 Area





Scheduling and Info Website BooneSump.com



Booner

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

Boone

Date

Inspect Plumbir	or ig License #	Prop	erty Address
	City of Boone		Page 2 of 2
A. Ir	Sump Pump Inspection Report itial Inspection		Ť
1	Owner and Address: a. Owner Name(s):		74
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. 	DIAGRAM: roof drains into ground, exterio pumps, sump pump discharges, beaver syste	r drains, improper grading, sump pits and ms, sanitary grinder pumps, etc
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. 	B. Subsequent Inspection Date of subsequent inspection: Inspection conducted by Does the building now comply with the ap	plicable Ordinance for the City of Boone?
9	Other comments (exterior drains, uncapped cleanouts, inactive sump pit, etc):	Yes No	
1	D. Photos taken of Interior Sumps and Collection System, and Building Exterior? Yes No I. 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 (data):	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.	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.
Р	ASS FAIL City Follow-Up	Occupant/Owner	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:

- a. Request no more than 1 person accompany us
- b. Request maintaining a distance of 6' from inspector
- c. Request the resident also wear a mask

d. 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



-Rigid Pipe to Outside PROPER

-Flex Hose to Outside IMPROPER



Installation Examples: Sump Pumps





Installation Examples: Beaver Drains



-Beaver Drain to Sump Pit PROPER -Beaver Drain to Floor Drain *IMPROPER*

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Installation Examples: Beaver Drain / Tile



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Installation Examples: Tile Pit



Tile Pit into Floor Drain "Running Trap" *IMPROPER*

Plugged + Pump Installed PROPER











Flexible Pipe













 Air Gap & underground pipe







Legal, but not a good idea



Sump Pump Diagrams





Sump Pump Diagrams





Sump Pump Recommendations



- Continue Public Info!
- Begin Inspections



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 Public Information Meeting	August 3, 2020
2020 Inspections	Aug – Dec 2020



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



515-663-9997

