



Sanitary Sewer Updates

Open House



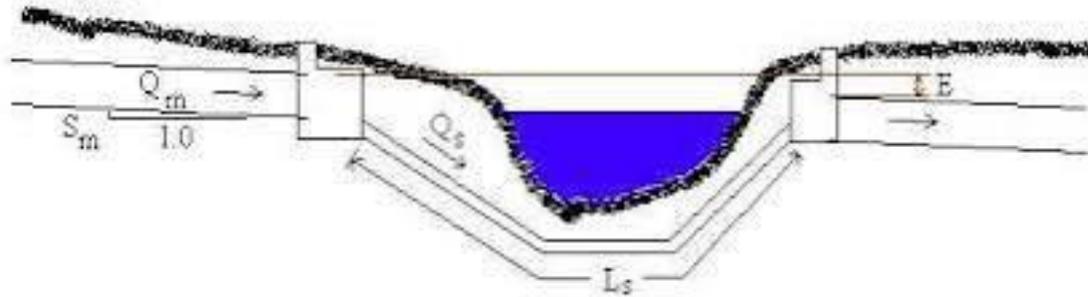
Progress

- Continue ongoing programs – video, cleaning, root removal, repair
- Siphon inspection and evaluation
- Wastewater routing optimization
- Collection System Analysis
- Evaluation/Revision of our inflow and infiltration reduction program
- Evaluating major capital modifications
- Public service announcements
- Reporting to you, Mayor Beutler, and City Council



Siphon Inspection

- Inspections were complete and siphons are operating as designed.
 - Siphons allow wastewater to flow under Dead Man's Run and other waterways without the use of pumps





Wastewater Routing

- Evaluating the option of routing more wastewater on a permanent basis to Northeast Wastewater Treatment Plant
 - A small portion of the Dead Man's Run area can be diverted currently
 - Modeling of the October storm indicated that diverting during the rain event had no significant impact on back-ups in the area
 - But piping changes for permanent diversion will now be modelled to see if there is any relief





System Analysis

- Evaluating the system to determine the overall inflow and infiltration levels
- Add additional flow indicators to the system to better monitor dry and wet weather operation, including the effect of groundwater level
- Utilize our model to focus our efforts on critical areas
- Revisit our inflow and infiltration reduction program to include any recommendations and/or modifications that will improve the overall effectiveness of the program





Treatment

- Evaluate other practical, economic and environmentally sound ways to handle excess flows
 - Pumping capacity
 - Additional treatment
 - Storage

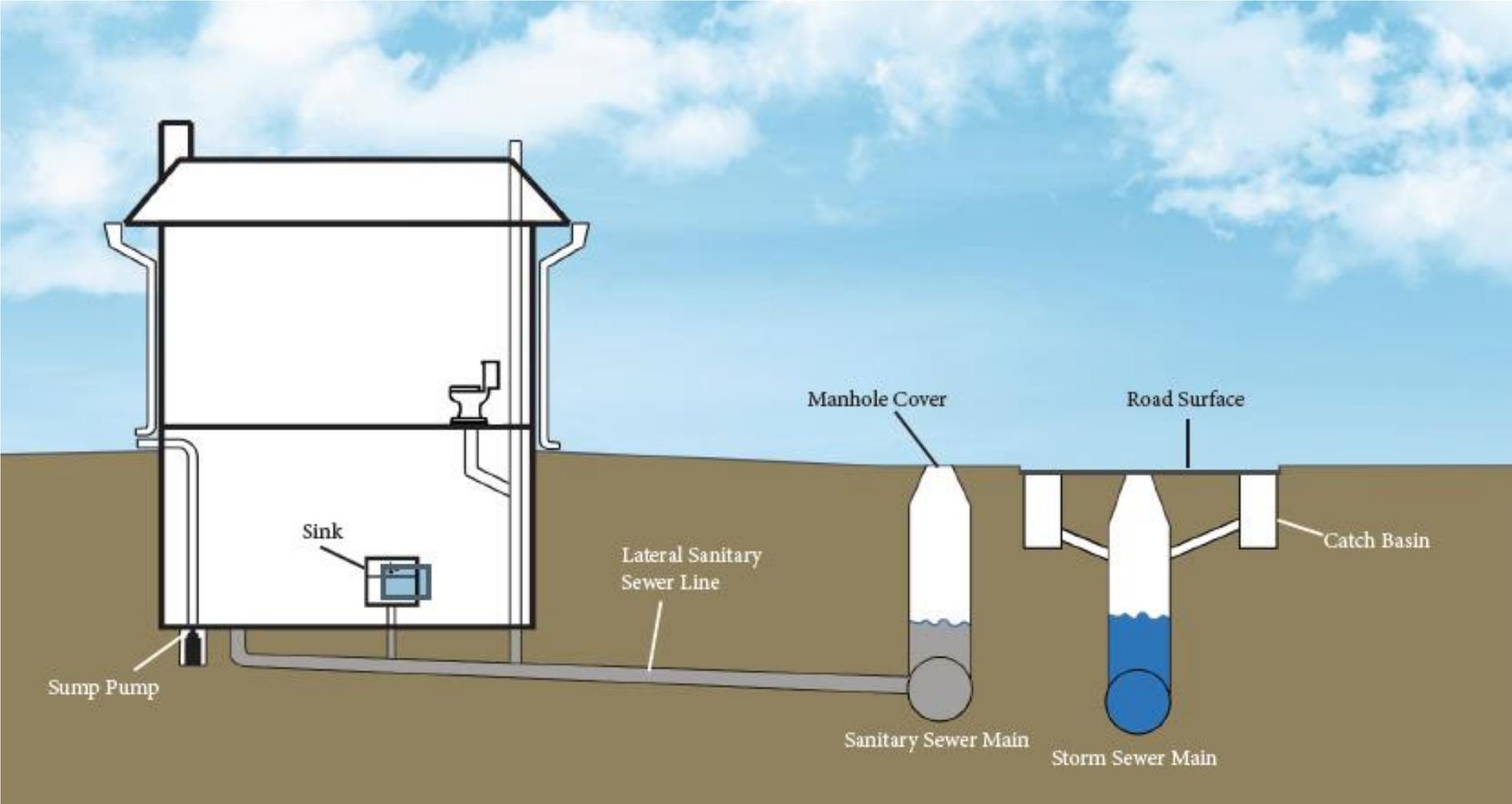




What you can do...

- Check your homeowner's insurance policy for back-up protection
- Evaluate your own lateral service connection
- Back flow prevention devices
- Check for other sources of inflow from your home
 - Sump pumps should discharge outside
- Be aware of what not to put down the drain





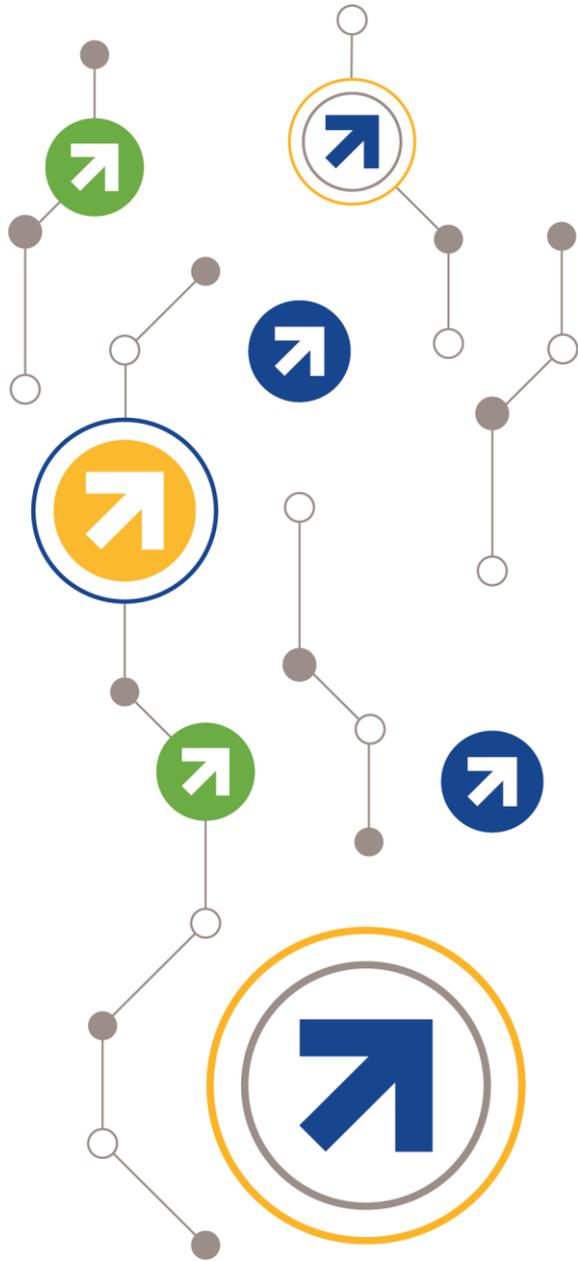


Lincoln Municipal Code

17.58.030 Discharges into Wastewater Collectors; Types not permitted

No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, or subsurface drainage, including interior and exterior foundation drains, to any wastewater collector. (Ord. 127 § 4; December 17, 1979: Prior Ord. 9965 §3; April 27, 1970).





Wastewater Treatment Facilities

Response to Extreme Rainfall Event

Wastewater Treatment Facilities

Response to Extreme Rainfall Event: May 6-8, 2015

Wed 5/6/2015 6:16 AM

David E. Thurber
National Weather Service Outlook, 5-6-15

**HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE OMAHA/VALLEY NE
529 AM CDT WED MAY 6 2015**

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF SOUTHWEST IOWA...WEST CENTRAL IOWA...EAST CENTRAL NEBRASKA...NORTHEAST NEBRASKA AND **SOUTHEAST NEBRASKA**.
DAY ONE...TODAY AND TONIGHT

SHOWERS...THEN NON-SEVERE THUNDERSTORMS WILL TO PUSH THE AREA TODAY. **STRONG TO SEVERE STORMS COULD DEVELOP TONIGHT, MAINLY AFTER 10 P.M. RAINFALL AMOUNTS 1/2 TO 3/4 INCH EXCEPT HIGHER AMOUNTS ARE POSSIBLE IN THUNDERSTORMS.** LARGE HAIL AND DAMAGING WINDS WITH GUSTS UP TO 38 MPH WOULD BE THE PRIMARY HAZARDS. LOCALLY HEAVY RAIN IS POSSIBLE TONIGHT.

AN UPPER LEVEL WEATHER DISTURBANCE WILL LIFT NORTHEAST ACROSS THE FORECAST AREA TODAY AND TONIGHT. INSTABILITY WILL INCREASE TONIGHT ALONG WITH INCREASING SHEAR.

DAYS TWO THROUGH SEVEN...**THURSDAY THROUGH TUESDAY**

SEVERE THUNDERSTORMS WILL BE POSSIBLE THURSDAY AND THURSDAY NIGHT.

Wed 5/6/2015 3:53 PM

David E. Thurber
Tornado Watch issued, 5-6-15

TORNADO WATCH OUTLINE UPDATE FOR WT 134
NWS STORM PREDICTION CENTER NORMAN OK
140 PM CDT WED MAY 6 2015

TORNADO WATCH 134 IS IN EFFECT UNTIL 900 PM CDT FOR THE FOLLOWING LOCATIONS

NEC001-035-059-061-067-079-081-095-109-129-151-159-169-181-185-070200-
/O.NEW.KWNS.TO.A.0134.150506T1840Z-150507T0200Z/

NEBRASKA COUNTIES INCLUDED ARE:

ADAMS	CLAY	FILLMORE
FRANKLIN	GAGE	HALL
HAMILTON	JEFFERSON	LANCASTER
NUCKOLLS	SALINE	SEWARD
THAYER	WEBSTER	YORK



Wastewater Treatment Facilities

Response to Extreme Rainfall Event: May 6-8, 2015

Each Year Prior to Wet Weather Season (April – June)

- Review and Update Wet Weather, High Flow and Emergency Operating Procedures
 - Staff workshop review of the procedures
 - Historical performance review for possible changes or improvements
- Schedule planned critical equipment maintenance outside of this time frame
- Transition treatment facilities from winter and ready for spring season
 - Instrument calibrations
 - Process changes
 - Commission UV disinfection process and supplemental chlorine feed equipment



Wastewater Treatment Facilities

Response to Extreme Rainfall Event: May 6-8, 2015

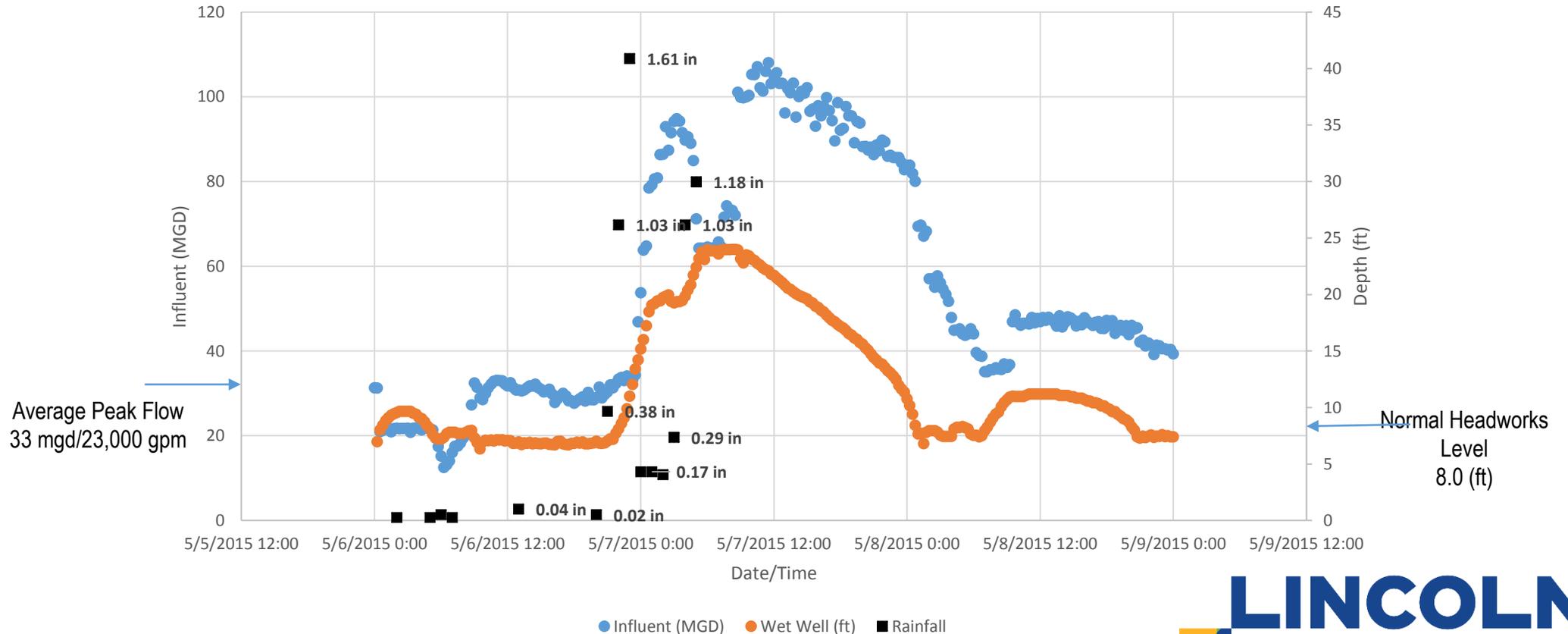
Prior to a Specific Event Following National Weather Service Notification

- Assess treatment facilities, wastewater liftstations and stormwater pump stations equipment status
 - Ready all critical systems and equipment
 - Review current maintenance – minimize downtime
- Maximize capacity
 - Adjust pump level start points and control staging for optimum hydraulic (high flow) performance
- Verify on-call or emergency response schedules and rosters
 - Notify staff of possible changes or additional needs

Wastewater Treatment Facilities

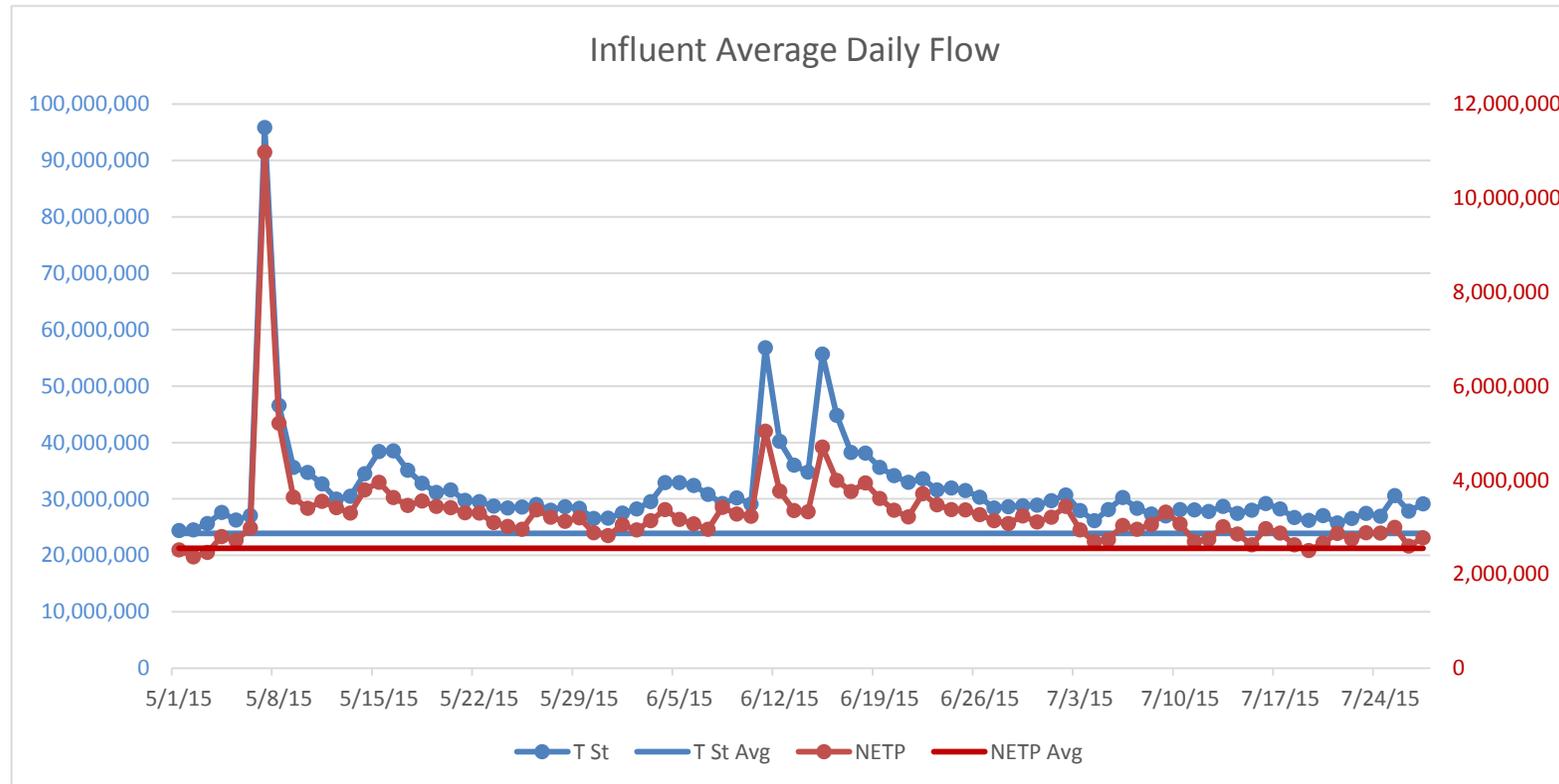
Response to Extreme Rainfall Event: May 6-8, 2015

May 6-8, 2015 Data Visual



Wastewater Treatment Facilities

Response to Extreme Rainfall Event: May 6-8, 2015

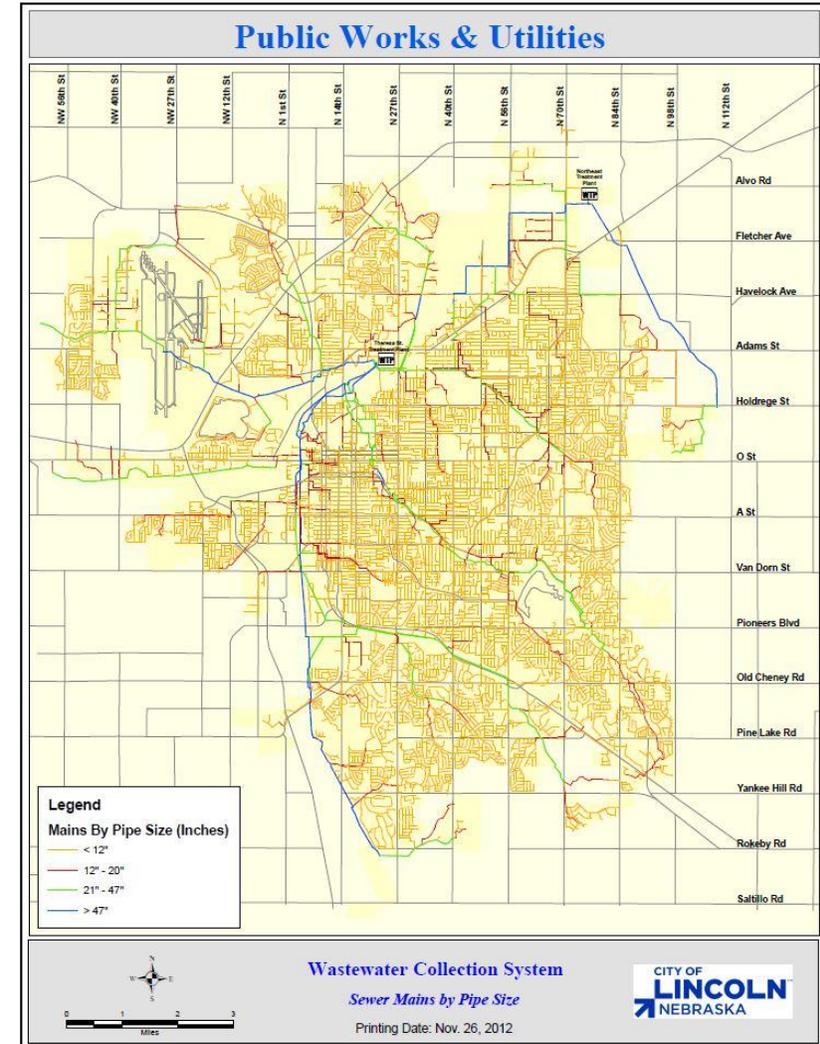




Wastewater Collection System

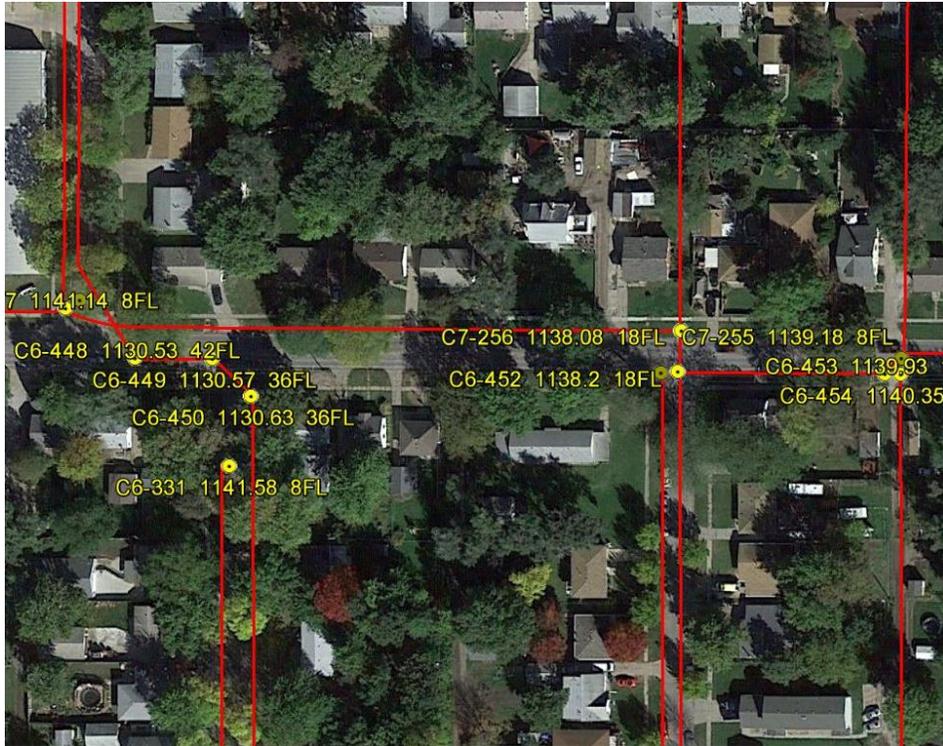
Wastewater Collection System

- Infrastructure
 - 1,025 miles of pipe 6" - 84"
 - 17,500+ manholes
 - 14 lift stations
 - Siphons
- Maintenance
 - Annually clean 600 miles
 - Annually inspect and video record 150 miles
 - Annually root control 225 miles



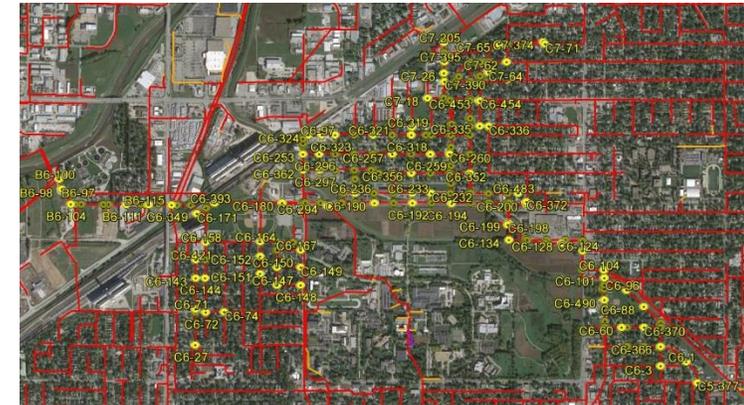


Wastewater Collection System



N 41st and Adams

195 Manholes inspected and surveyed



Looking for opportunities to improve sanitary sewer routing

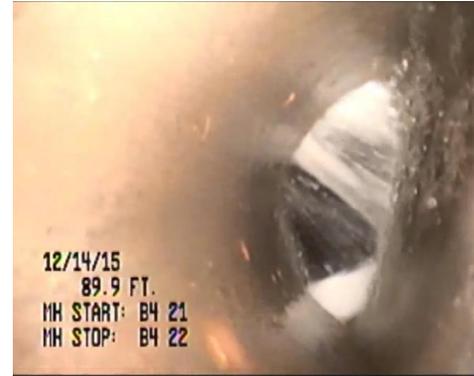




Wastewater Collection System

Inflow- Water intentionally entering the collection system. For example: sump pump connections, roof or foundation drains connected.

Infiltration- Water unintentionally entering the collection system. For example: cracks or holes in pipe walls letting ground water in, or poorly sealed manholes, letting storm water in.



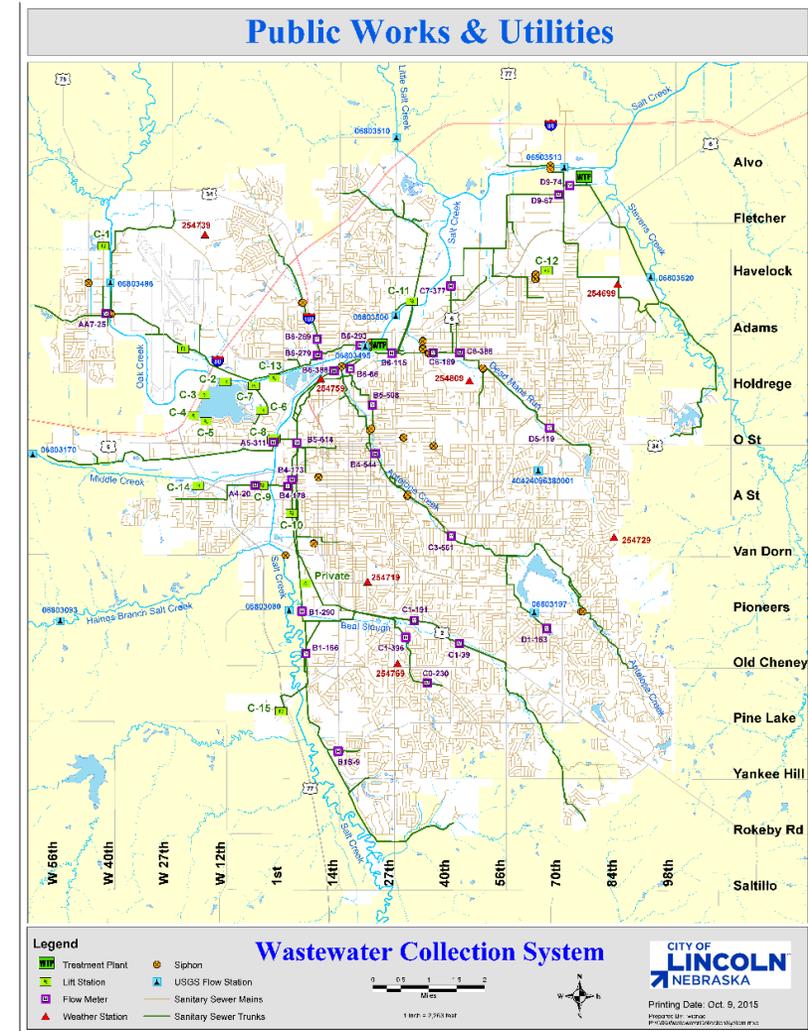


Flow Monitoring and Hydraulic Modeling

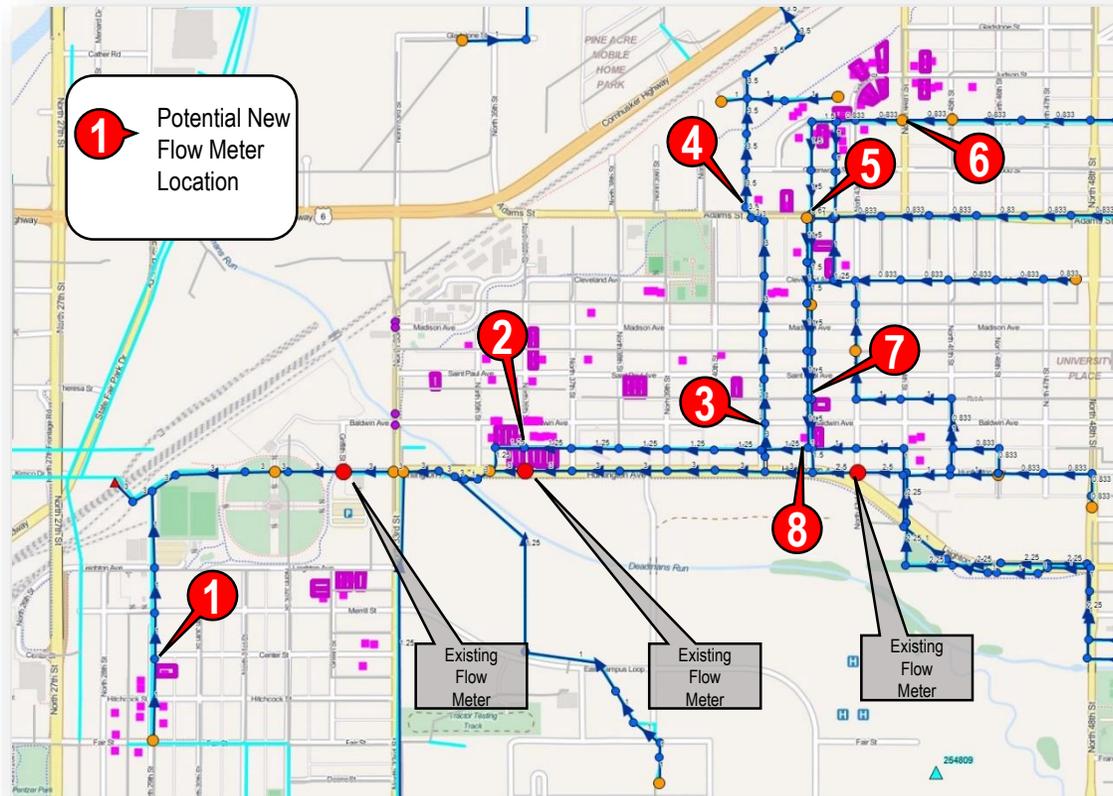


Sanitary Engineering Flow Monitoring

- 30 permanent flow monitoring locations
- Provides data to determine trends in the wastewater collection system
- High level alarms provide an early warning before flows reach wastewater treatment plants
- Additional monitors are being deployed to provide more data in vulnerable locations

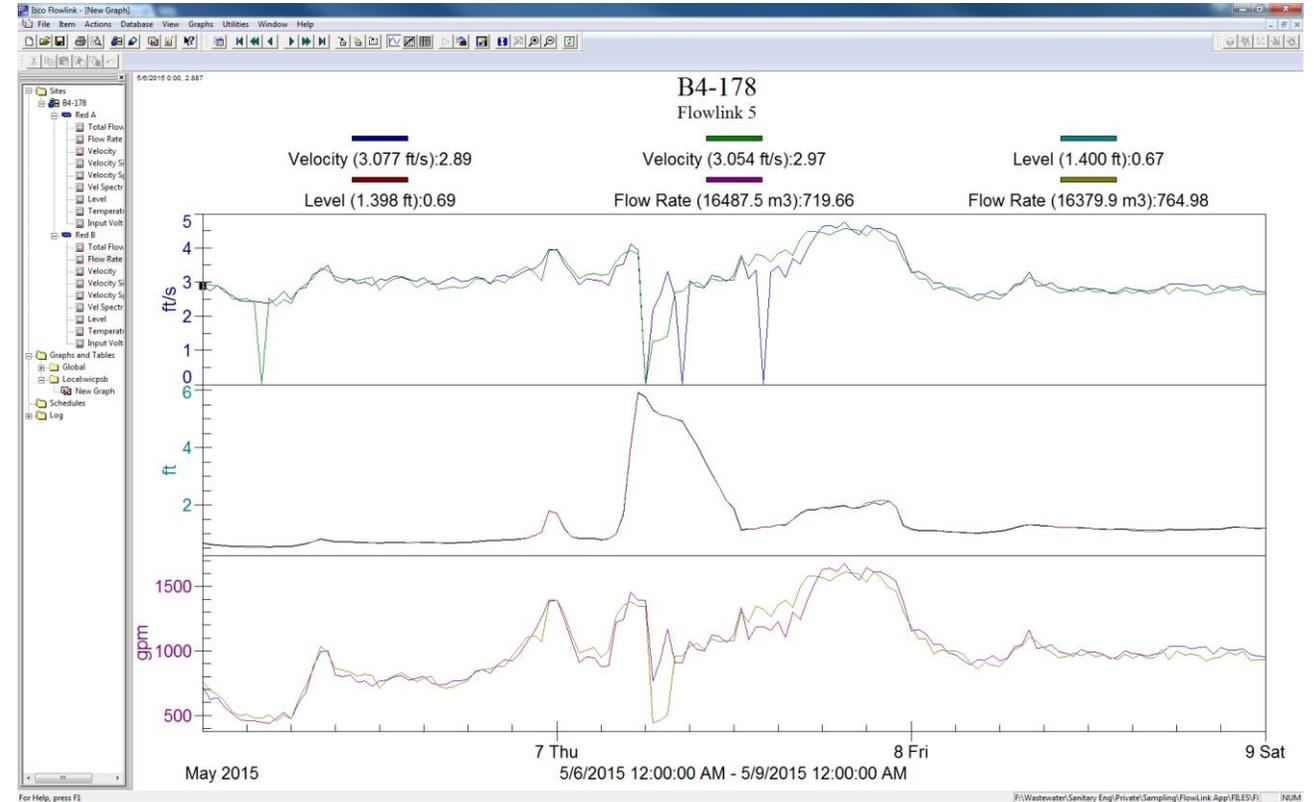


Expanded Flow Monitoring



Flow Monitoring and Hydraulic Modeling

- Flows meters are monitored using Flowlink software.
- Data collected from flow meters is used to create a hydraulic model.
- Hydraulic modeling locates potential areas of flow. restriction and is used to plan response to environmental conditions.





Thank you

For more information please visit
lincoln.ne.gov keyword: wastewater
or call us at 402-441-7961

For questions regarding the Sewer
Back-up Assistance Fund call the
City Attorney's Office at 402-441-7281