

VILLAGE OF LENA

STORMWATER AND WASTEWATER NEEDS

STORM DRAINAGE
INVESTIGATION

FINDINGS

STORMWATER
REMEDIES

SANITARY SEWER
COLLECTION
SYSTEM

FLOW
MONITORING

WASTEWATER
REMEDIES

WWTP
CONDITION

NEED
IMPROVEMENTS

FUNDING
APPROACH
DRAINAGE

FUNDING
APPROACH
WASTEWATER

COMPARISON

Storm Drainage Investigation

Reviewed storm sewer network and overland flow paths in eight drainage basins.



TYPICAL DESIGN STANDARDS

- STORM SEWER - 10 YEAR EVENT 5.03 INCHES IN A 24 HOUR PERIOD
- OVERLAND FLOW PATH > 15 YEAR EVENT UP TO 100 YEAR EVENTS 8.25 INCHES IN A 24 HOUR PERIOD

FINDINGS

DRAINAGE PATH RESTRICTIONS, BLOCKAGES LISTED BELOW

- #1 - N. Lake Road/County Hwy 7
- #2 - Linden Circle, Sherwood Ln. and N. Freedom St.
- #3 - Townline Rd. (between S. Washington St.
and Shumway St.)
- #4 - S. Center St. (between Grant St. and W. Provost St.)
- #5 - S. Rantoul St. and W. Provost St.
- #6 - E. Lena St. and N. Schuyler St.
- #7 - Grove St. and Center St. (not shown, minimal upgrades)



REMEDIES

N. LAKE ROAD
AND
W. FAIRWAY DR.

LINDEN CIRCLE,
SHERWOOD LN.
AND
N. FREEDOM ST.

TOWNLINE
ROAD

S. CENTER ST.
(BETWEEN
GRANT ST. AND
W. PROVOST ST.)

S. RANTOUL ST.
AND
W. PROVOST ST.

E. LENA ST. AND
N. SCHUYLER ST.

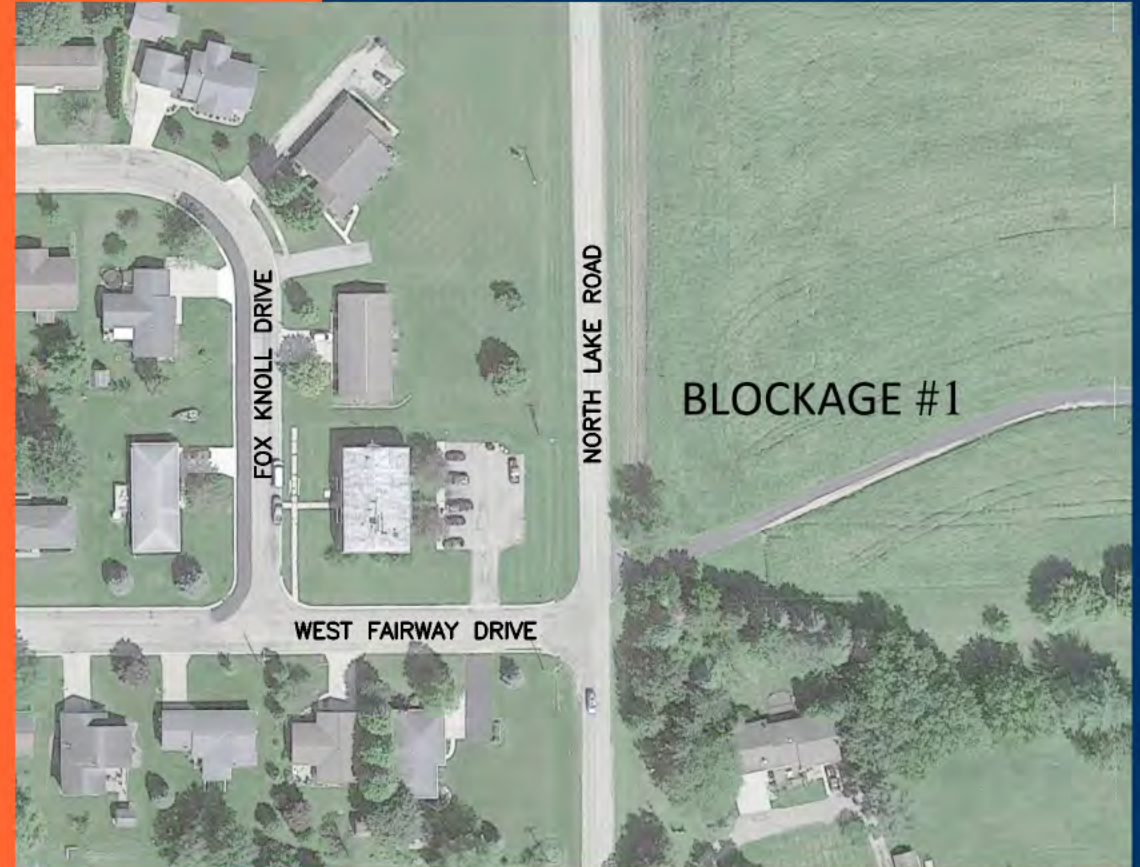
W. GROVE AND
N. CENTER ST.

IMPROVEMENT
COSTS

N. LAKE ROAD/COUNTY HIGHWAY 7

SCOPE OF WORK

COORDINATION WITH THE COUNTY TO
CLEAN AND UPSIZE CULVERTS



LINDEN CIRCLE, SHERWOOD LANE AND FREEDOM CIRCLE

SCOPE OF WORK

- INSTALL INLETS ON W. LENA STREET BETWEEN LINDEN CIRCLE AND SHERWOOD LANE AND UPSIZE THE STORM SEWER PIPES AND CONNECT TO THE EXISTING BOX CULVERT (2'X4') ON N. FREEDOM STREET.
- CONSTRUCTION OF A SWALE THROUGH THE LENA DRIVE INN FOR A 100-YEAR OVERLAND FLOW ROUTE.



TOWNLINE ROAD

SCOPE OF WORK

- INSPECT AND MAINTAIN THE 54-INCH PIPE TO CLEAR DEBRIS AND INSTALL A SECOND 54-INCH PIPE PARALLEL TO THE EXISTING CULVERT AT TOWNLINE ROAD, LOWER THE CENTERLINE OF TOWNLINE ROAD DURING THIS CONSTRUCTION TO ALLOW IT TO OVERTOP AND ACT AS AN OVERLAND FLOW PATH, CREATE A DISCRETE SWALE TO BYPASS FLOW AROUND THE SANITARY RECLAMATION PLANT, AND ADD TWO (2) CULVERTS UNDER THE EXISTING RECLAMATION DRIVEWAY.



SOUTH CENTER STREET

(Between Grant St. and W. Provost St.)

SCOPE OF WORK

- OPTION 1 - INSTALLING A BOX CULVERT ON W. PROVOST ST. HEADING SOUTH TO S. CENTER ST., WEST ON S. CENTER ST. TO GRANT ST., SOUTH ON GRANT ST. TO S. SCHUYLER ST., WEST ON S. SCHUYLER ST. TO ROUSCH ST., SOUTH ON ROUSCH CONNECTING TO THE EXISTING 48" PIPE.
- OPTION 2 - INSTALLING A BOX CULVERT IN THE BACKYARD HEADING WEST TO GRANT ST., SOUTH ON GRANT ST. TO S. SCHUYLER ST., WEST ON S. SCHUYLER ST. TO ROUSCH, SOUTH ON ROUSCH ST. CONNECTING TO THE EXISTING 48" PIPE.
- OPTION 3 - THIS OPTION INCLUDES PURCHASING THREE HOMES, CREATING SWALE AND INSTALLING A BOX CULVERT ON GRANT ST. TO SCHUYLER ST. WEST ON S. SCHUYLER ST. TO ROUSCH ST. SOUTH ON ROUSCH ST. CONNECTING TO THE EXISTING 48' PIPE.



SOUTH RANTOUL STREET AND WEST PROVOST STREET

SCOPE OF WORK

- UPSIZING STORM SEWER 30" TO A 36" RCP FROM THE INTERSECTION OF MAPLE ST. AND S. RANTOUL ST. TO W. PROVOST ST. AND THE ADDITION OF FOUR (4) NEW INLETS IN RANTOUL ST. TO COLLECT WATER



EAST LENA STREET AND NORTH SCHUYLER STREET

SCOPE OF WORK

- UPSIZE STORM SEWER PIPES TO HELP ROAD DRAINAGE.



WEST GROVE STREET AND NORTH CENTER STREET

SCOPE OF WORK

- DUE TO LACK OF OPEN MANHOLE LIDS IN THE AREA, ITS RECOMMENDED TO REPLACE CLOSED MANHOLE LIDS WITH BEHIVE FRAMES AND GRATES TO ALLOW WATER TO ENTER THE STORM SEWER SYSTEM AND MINIMIZE CLOGGING



REMEDIES COSTS

Location	Flood Impact Cost	Improvement Cost	ROI
N. Lake Road and W. Fairway Dr.	\$271,006.75	County owned	
Linden Cir. / Sherwood Ln & N. Freedom St.	\$3,381,269.50	\$231,888.00	14.581477
Culvert on Townline Rd.	\$9,637,206.25	\$495,328.80	19.45618
Option 1 - Grant St. / S. Center St. and W. Provost	\$3,585,624.00	\$2,357,560.80	1.5209041
Option 2 - Grant St. / S. Center St. and W. Provost	\$3,585,624.00	\$1,937,452.80	1.8506897
Option 3 - Grant St. / S. Center St. and W. Provost	\$3,585,624.00	\$2,441,516.40	1.4686053
S. Rantoul St. and W. Provost St.	\$267,463.50	\$855,006.00	0.3128206
W. Grove and N. Center St.		\$6,750.00	
E. Lena St. and N. Schuyler St.	\$-	\$964,744.80	0

INFILTRATION/INFLOW

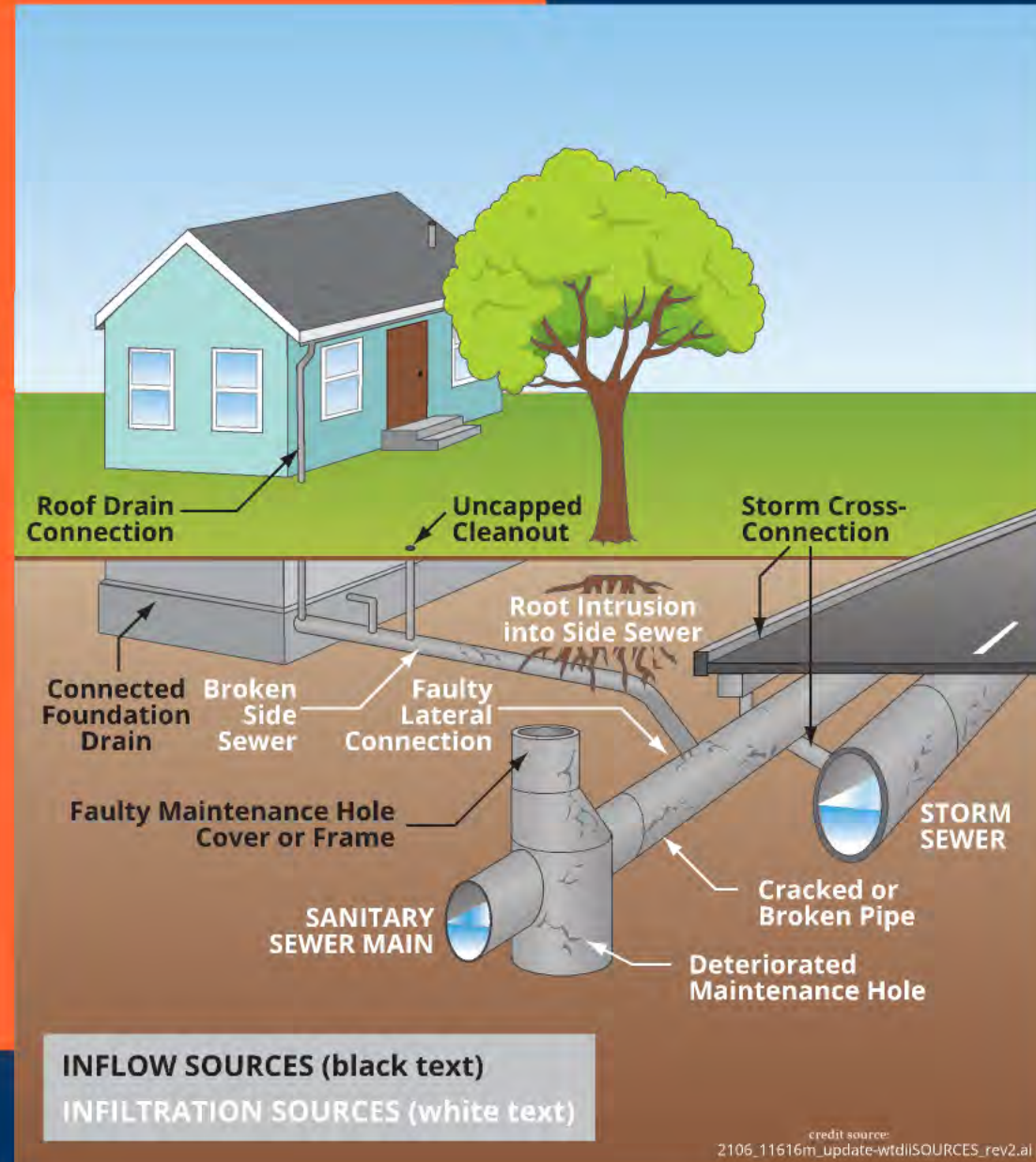
WHAT IS
INFILTRATION/
INFLOW

WHY IS
INFILTRATION/
INFLOW A
PROBLEM

WHAT IS INFILTRATION AND INFLOW (I/I)?

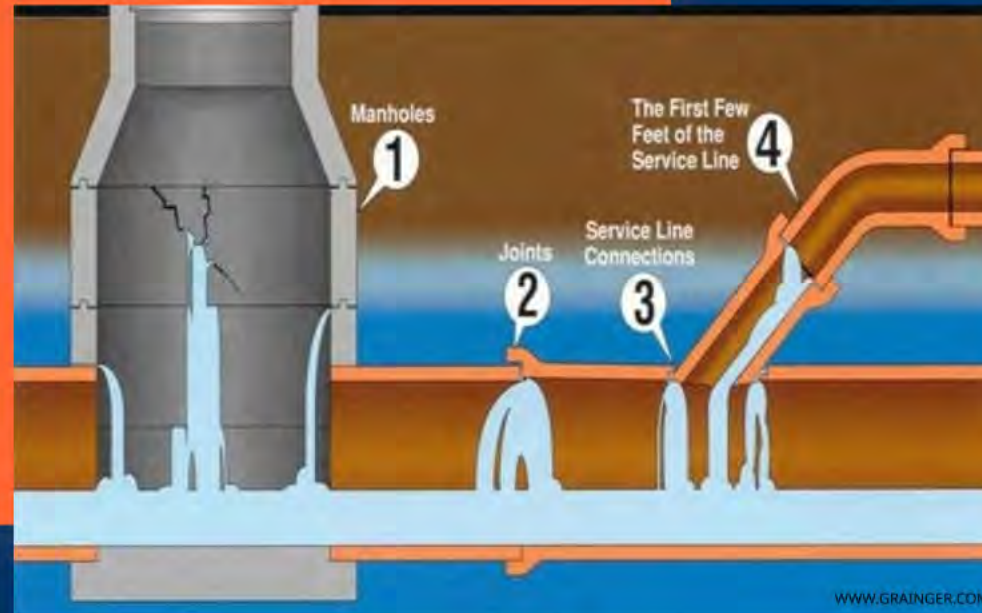
EXCESS WATER THAT FLOWS INTO SEWER PIPES FROM GROUNDWATER AND STORMWATER.

- INFILTRATION SEEPS INTO SEWER PIPES THROUGH HOLES, CRACKS, JOINT FAILURES AND FAULTY CONNECTIONS
- INFLOW RAPIDLY FLOWS INTO SEWERS VIA ROOF DRAIN DOWNSPOUTS, FOUNDATION DRAINS, STORM DRAIN CROSS-CONNECTIONS, AND THROUGH HOLES IN MANHOLE COVERS



WHY IS IT A PROBLEM?

- NEGATIVE IMPACT AT WASTEWATER PLANT.
- EXCESSIVE I/I CAN RESULT IN SURCHARGES IN THE COLLECTION SYSTEM.
 - BASEMENT BACKUP
 - SANITARY SEWER OVERFLOW INTO ENVIRONMENT



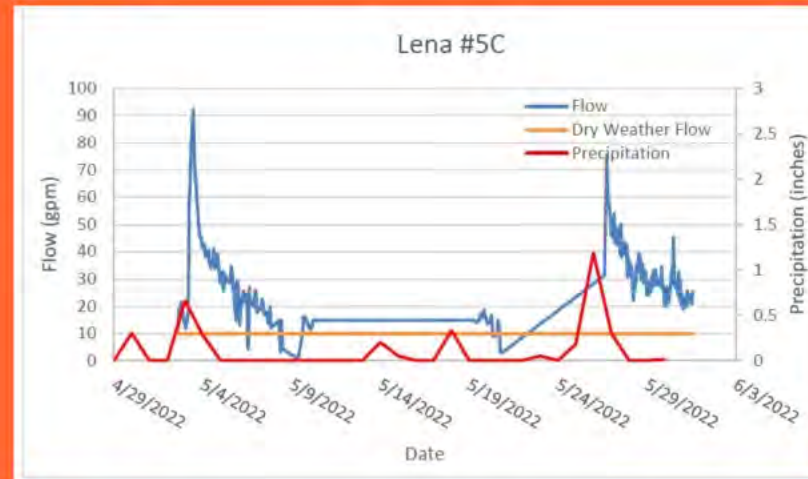
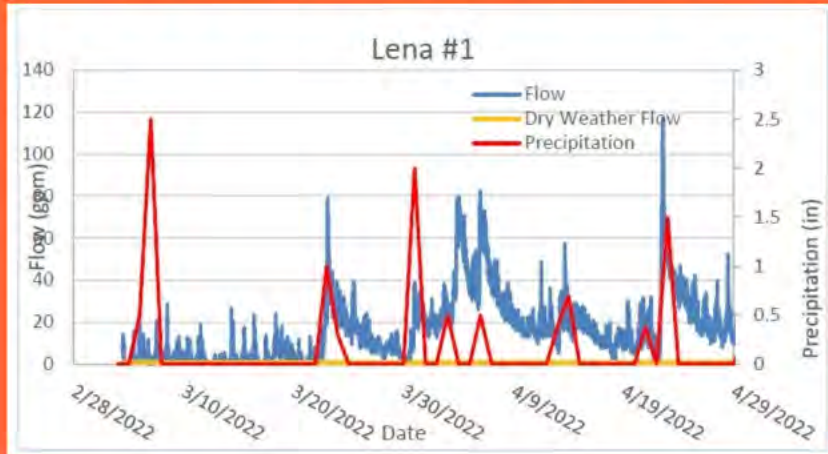
FLOW MONITORING

- IEPA MANDATED IN NPDES PERMIT
- 2021 AND 2022
- PEAK FLOWS



**PEAK FLOW
CHARTS**

PEAK FLOW CHART SAMPLES



REMEDIES

- SEWER REPLACEMENT/LINING
- DISCONNECT ILLICIT CONNECTIONS



WASTEWATER TREATMENT PLANT CONDITION

- NEW REGULATIONS ON DISCHARGE LIMITS
- THE LAST MAJOR CAPITAL IMPROVEMENTS TO THE WASTEWATER PLANT WERE COMPLETED IN THE LATE 1990'S.
- NEW TECHNOLOGY TO FACE NEW CHALLENGES

IMPROVEMENTS

HEADWORKS - \$805,000

PRIMARY TREATMENT (CLARIFIERS) - \$1,040,000

SOLIDS HANDLING (DIGESTORS) - \$3,400,000

EXCESS FLOW POND - \$625,000



FUNDING OF DRAINAGE IMPROVEMENTS

LENA STREET - EXISTING FUNDS
TOWNLINE ROAD - LOCAL BOND
PAID BACK VIA EXISTING STORM
WATER UTILITY FEE/IEPA
REVOLVING LOAN
OTHERS - TBD

REVENUE SOURCES - STORMWATER UTILITY FEE
INCREASE FROM \$4 TO \$12

FUNDING FOR WASTEWATER IMPROVEMENTS

- LINING PROJECT - IEPA REVOLVING LOAN
IMPACT TO SEWER RATE - \$7-\$10* MONTH/USER
- HEADWORKS - IEPA REVOLVING LOAN
IMPACT TO SEWER RATE - \$4.50-\$6.25* MONTH/USER
- PRIMARY TREATMENT - IEPA
IMPACT TO SEWER RATE - \$5.50-\$7.75* MONTH/USER
- AGGREGATE
IMPACT TO SEWER RATE - \$17-\$24 MONTH/USER

CURRENT SEWER RATE

\$15.47 minimum 1200 gallons
after that the rate is:
.59 per 100 gallons

*VARIES DEPENDING ON IEPA LOAN PROGRAM DETAILS AT
TIME OF SECURING FUNDING

LOCAL WATER/SEWER RATES

COMBINED WATER & SEWER BILL ASSUMING A
MONTHLY USAGE OF 5,000 GALLONS

Warren	\$ 84.15
Pecatonica	\$125.74
Forreston	\$115.65
Lanark	\$219.60
Stockton	\$105.41
Lena (currently - \$67.52)	\$ 91.52 (assumed worst case)