

STORMWATER MANAGEMENT UPDATE

AUGUST 10, 2021
VILLAGE BOARD WORK SESSION



INTRODUCTION

AGENDA

- IDENTIFY THE CONCERN(S)
- OVERVIEW OF THE VILLAGE'S SEWER SYSTEM
 - MWRD TARP OVERVIEW
- SYSTEM IMPROVEMENTS
 - 2005-2006 WOODLAWN SEWER REPLACEMENT AND OUTFALL RECONSTRUCT
 - STORM RELIEF SEWERS NORTH OF 31ST STREET (2006)
- STEPPING BACK - THE 2012 STUDY & OTHER STORMWATER EFFORTS
- CENTRAL AREA STORM SEWER PROJECT – PREPARATION
- CENTRAL AREA STORM SEWER PROJECT – THE PLAN
- FUNDING
- AMERICAN RESCUE PLAN FUNDING – A RESOURCE FOR STORMWATER MANAGEMENT
- QUESTIONS

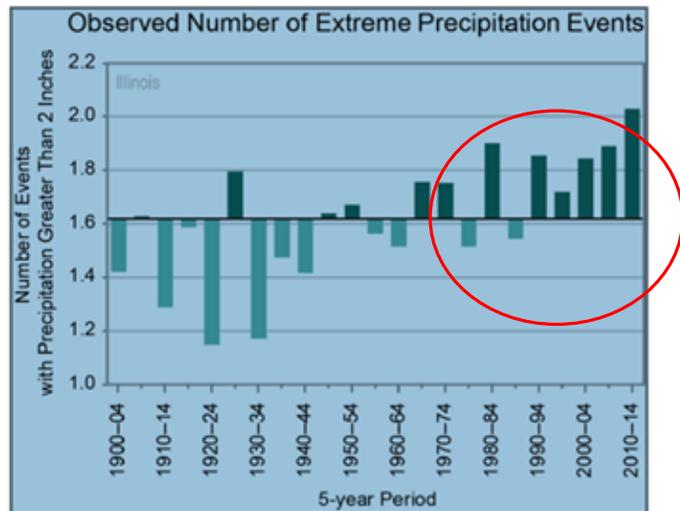
CONCERNS

CONCERN(S)

- MORE RAIN: HEAVY RAINS ARE MORE FREQUENT AND CAN BE MORE INTENSE, AND RAINFALL RECORDS ARE INCREASING. *(DATA INCLUDED)*
- WITH INTENSE RAIN EVENTS, SYSTEM BECOMES SURCHARGED.
- CENTRAL AREA DISPROPORTIONATELY IMPACTED DUE TO LAND DEPRESSION AND LOCATION.
- AN EFFECTIVE STRATEGY MUST INCLUDE SOMEWHERE FOR THE WATER TO GO.
- AN EFFECTIVE STRATEGY HAS A SUBSTANTIAL COST.

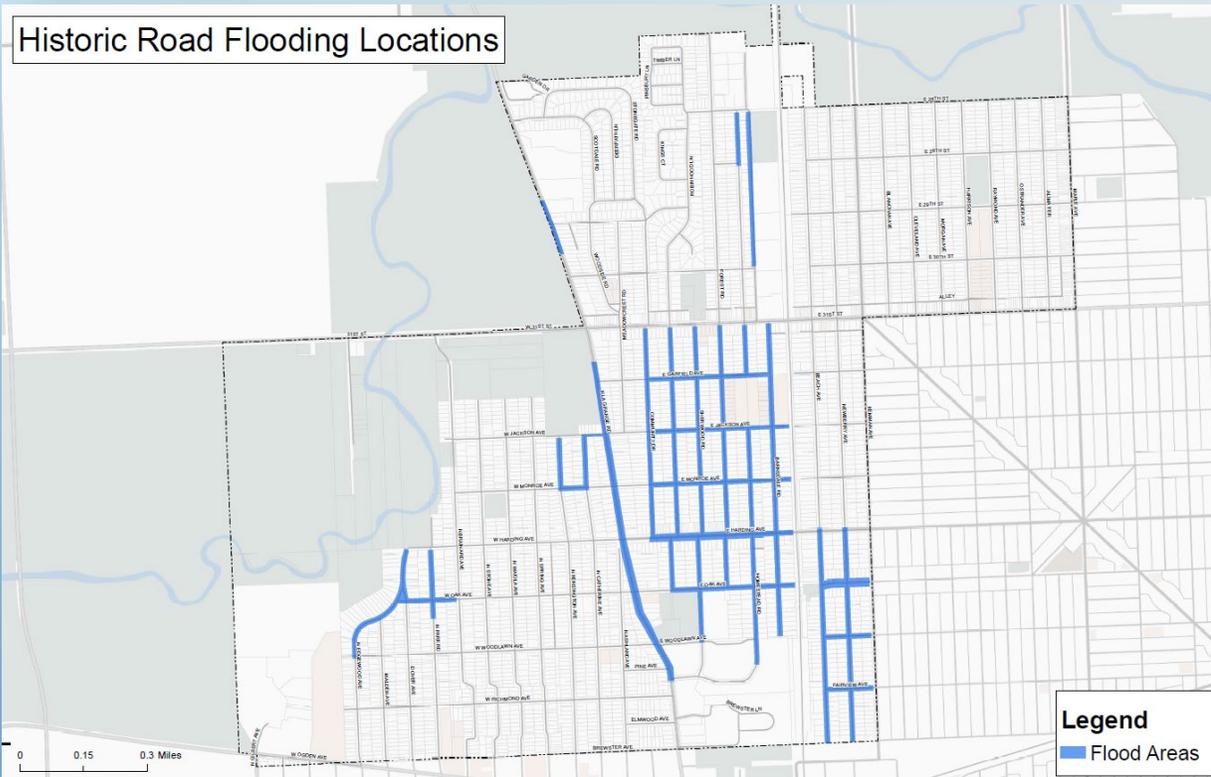
CONCERNS: MORE RAIN

Observed trends in frequency of heavy storms in Illinois



- ILLINOIS STATE WATER SURVEY, BULLETIN 75 IN 2020
- SHOWS THAT THE NUMBER OF STORMS IN ILLINOIS PRODUCING OVER 2 INCHES OF RAIN HAS NEARLY DOUBLED OVER THE PAST CENTURY.
- THE STATEWIDE AVERAGE ANNUAL PRECIPITATION HAS INCREASED 11 PERCENT AND TEMPERATURES HAVE RISEN BY 1.2 DEGREES.
- FOR NE ILLINOIS THE RAINFALL DATA USED REPRESENTS AN INCREASE RANGING FROM 10% TO 16% IN RAINFALL DEPENDING ON THE DURATION OF THE EVENT.
- A CHART OF THE TREND OF RAIN STORM EVENTS ACROSS ILLINOIS.

CONCERNS: SYSTEM



- NEW GIS MAP WITH HISTORICAL STREET FLOODING.
- VARIOUS AREAS THROUGHOUT IN THE VILLAGE IMPACTED: SEWER BACKUPS, FOUNDATION SEEPAGE, STREET FLOODING AND REAR YARD FLOODING

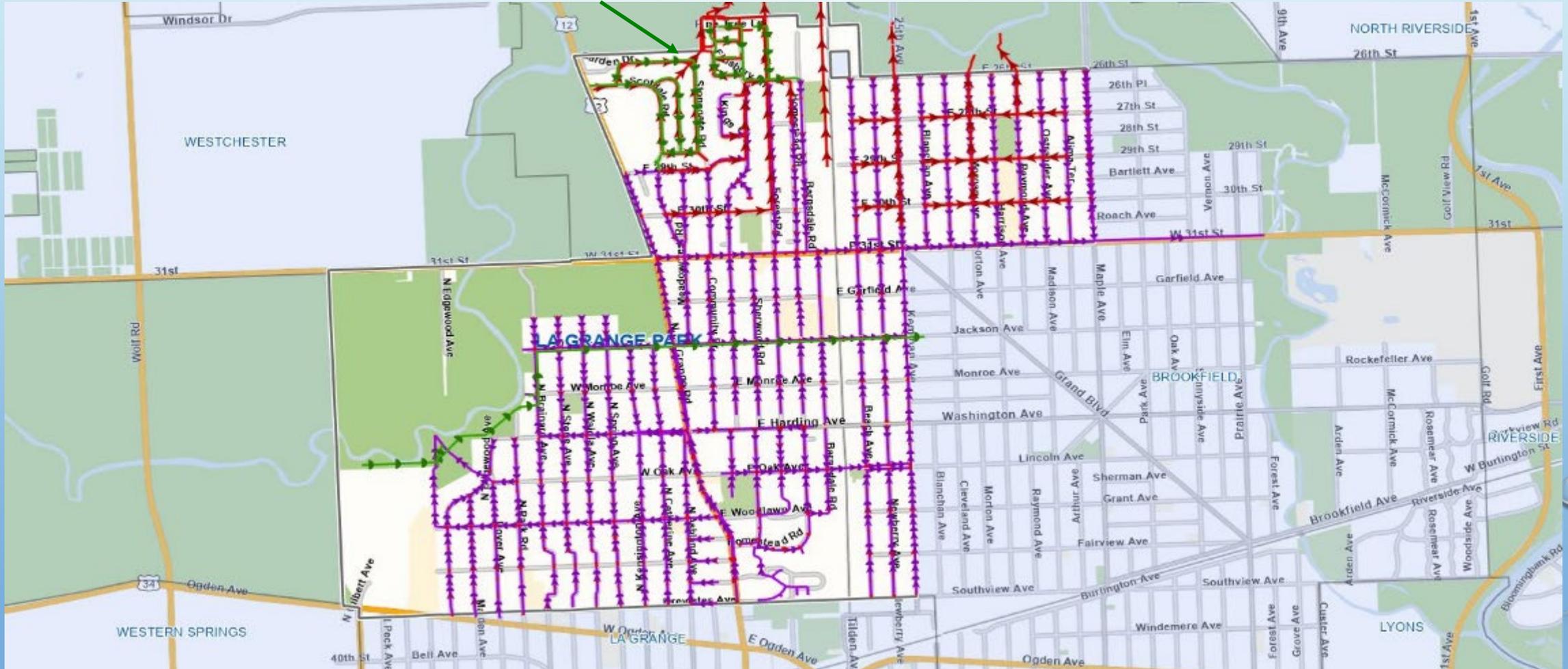
OVERVIEW – SEWER SYSTEM (CURRENT)

Purple = Combination

Green = Sanitary

Red = Storm

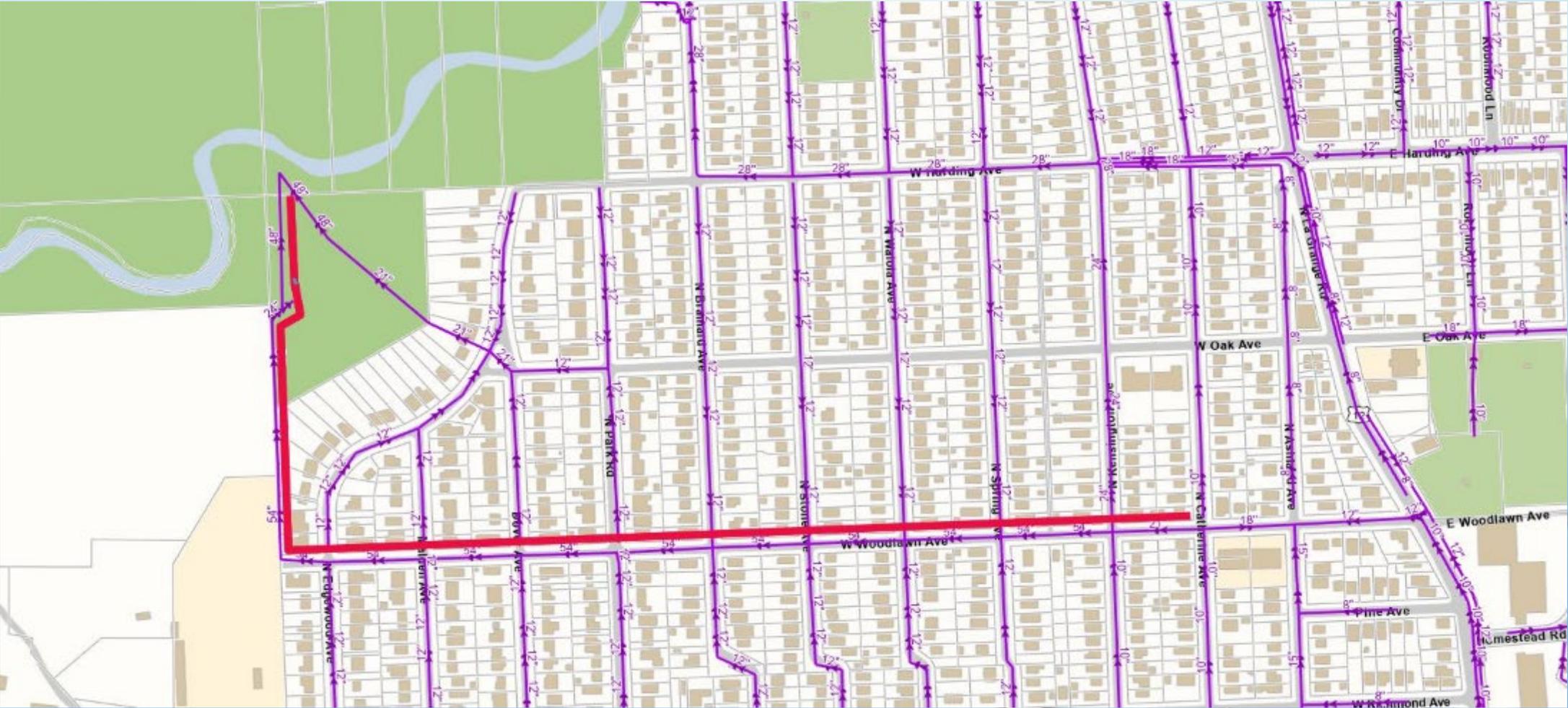
Dark Green = MWRD Interceptor



WOODLAWN OUTFALL SEWER (2006)

- COMBINED SEWER IMPROVEMENT – INCREASED PIPE SIZE FROM 24” TO 54”
- INCREASED CONVEYANCE TO THE DEEP TUNNEL CONNECTION
- INCREASED THE OVERFLOW CAPACITY BY ENLARGING THE OUTFALL DIAMETER AND MODIFYING THE OUTLET ELEVATION

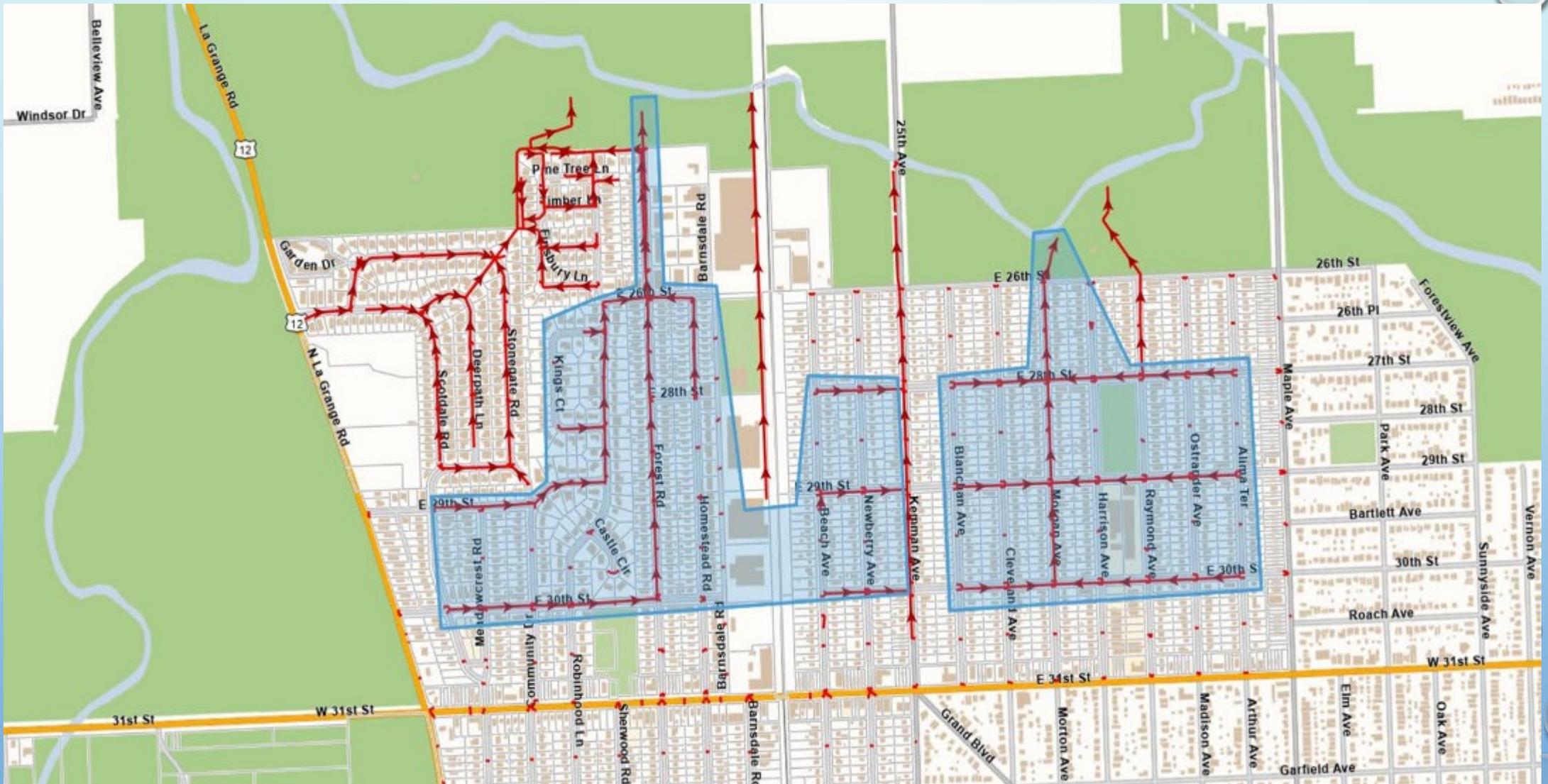
WOODLAWN OUTFALL SEWER (2006)



STORM RELIEF SEWERS NORTH OF 31ST STREET (2006)

- SEPARATE STORM SEWER NETWORK
- DISCONNECTED AREAS OF COMBINED SEWERS TO REDUCE FLOODING IMPACT
- INCREASED CONVEYANCE TO SALT CREEK
- NEW OUTFALLS TO SALT CREEK ON FOREST ROAD (48") AND MORGAN AVENUE (48")

STORM RELIEF SEWERS NORTH OF 31ST STREET (2006)



MWRD - OVERVIEW

- **INTERCEPTOR MAINS** – THE VILLAGES COMBINATION SEWERS CONVEY WASTEWATER (DRY WEATHER FLOWS) TO MWRD'S INTERCEPTOR SEWERS THAT FLOW TO THE STICKNEY TREATMENT PLANT.
- **TARP – TUNNEL AND RESERVOIR PROJECT**
 - DURING WET WEATHER FLOW, FLOWS ARE DIVERTED INTO THE DEEP TUNNEL AND ONLINE RESERVOIRS. WHEN THE TUNNELS REACH CAPACITY, THE OVERFLOWS (COMBINED SEWER OVERFLOWS) ARE DIRECTED INTO SALT CREEK
- **TARP – STATISTICS**
 - OVERALL CAPACITY WHEN COMPLETE (2029) 20.55 BILLION GALLONS
 - TUNNELS – 2.3 BILLIONS GALLONS
 - RESERVOIRS – 18.25 BILLIONS GALLONS
- **AFTER EVENTS**
 - TUNNELS AND RESERVOIRS ARE PUMPED BACK TO THE TREATMENT PLANTS TO CLEAN WATER BEFORE RELEASING TO WATERWAYS.





MEMO

Date: December 9, 2010
 To: Village of La Grange Park
 Attn: Mr. Dale Codina, Interim Village Manager
 From: Paul G. Flood
 Re: Sewer Alternative Report

As required, we have prepared preliminary to mitigate flood was limited to losses related to wastewater treatment systems that can be entered by the Village Council. Issues pertaining to foundation cracks were not included.

2011-12 STUDY

Program	Description	Cost	Benefits	Limitations
Storm Sewer System (continued)	An example of partial implementation of a program would be to construct a storm sewer to address the area between Dunwoody and the area of the area. It is not clear if this area is currently served by 2012 storm sewer or if it is not. Storm sewer is affected. It is not clear if this area is currently served by 2012 storm sewer or if it is not.	\$4,300 and \$6,100,000	Project would reduce clean water and duration of street flooding within area of the lower areas of the Village. Additionally, the sewer area would be able to handle high intensity events, with the result of a decrease in sewer backups that would occur during each storm.	Long duration flow is likely events that will lead to sewer backup. Potential for sewer backup to occur in areas that are not currently served by the Village. System would help in partial coverage to reduce cost of such a plan. Cost could be higher than in residential areas.
Combined Sewer System	The installation of a sewer that would take flow to access capacity of the existing system and then flow to the "Deep Tunnel" area that is located near the LaGrange Park area on the southeast corner of Oakton Park. Additionally, the project would place restrictions to reduce the risk of sewer entering the system.	\$1,000,000	The work would reduce the occurrence and duration of flooding with its components for the affected area. Additionally, the work would reduce the frequency of sewer backups along the main branch of the sewer and the four collector sewers would be directly impacted to a lesser extent in a decrease of street flooding along the path of the sewer. The system can be expanded to extend up the local streets to allow connection of additional buildings to the system.	The installation would include costs associated with construction that would need to be accounted for and included in the Village's budget. The Village's budget for the "Deep Tunnel" would be included when the design capacity is included in the Village's budget. The Village's budget for the "Deep Tunnel" would be included when the design capacity is included in the Village's budget. The Village's budget for the "Deep Tunnel" would be included when the design capacity is included in the Village's budget.

Program	Description	Cost	Benefits	Limitations
New 21st Street Outfall	The installation of a larger outfall or parallel pipe along Village sewer located in 21st Street to exit intersection with Salt Creek.	\$2,400,000	The pipe could be in lieu of outfall to "Deep Tunnel" in LaGrange Park to supplement to the system to allow for additional overflow capacity to Salt Creek when "Deep Tunnel" is closed due to limits in capacity.	Benefit of the system is limited during high intensity rainfall events as collector sewer capacity is limiting factor causing the flooding.
Street Closures Restriction	The project involves the installation of restrictors in the pipe to reduce the rate at which water enters the existing pipe.	\$1,700,000	This work reduces the frequency of sewer backup in the Village. The restrictor would be variable in size to account for capacity of system and available roadway storage.	The work would result in an increase in the frequency and area of "street flooding".
Isolated Detention	The installation of restrictors in the pipe to reduce the rate at which water enters the existing pipe, with the exception of existing late rear intersections to be used as smaller detention facilities.	\$600,000 per location	The work would reduce the frequency of sewer backup in the Village. The smaller ponds located at intersections would reduce the frequency and duration of street flooding.	Acquisition of property is significant with a minimum of 2 lots each at approximately 28 locations being required to have significant benefit.
Disconnection of downspouts & prohibits the introduction of new drains the flows (perforated) to system	The village would pass an ordinance requiring all downspouts to be disconnected from combined sewer and not allowing future connections of sump pumps for drain lines from being connected to sewer service from the site.	Resident Cost	Approximately 20% of homes within the area have downspouts connected to system that will be disconnected. The number of sump pumps to be disconnected cannot be estimated without inspection, but will vary significantly. The disconnection of other properties will also have an environmental impact as it will reduce the amount of water that is required to be treated as combined sewage.	Cost borne by residents, potentially can aggravate flooding within low lying areas (rear yards).

- ENGINEERING & CAPITAL PROJECTS COMMITTEE STUDIED FLOODING IMPACTS AND MADE RECOMMENDATIONS
- PRIORITIZED IMPACTS OF FLOODING:
 - SEWER BACKUPS
 - SIGNIFICANT STREET FLOODING IMPACTING PROPERTY ACCESS AND TRANSPORTATION
 - REAR YARD FLOODING IMPACTING STRUCTURES
 - REAR YARD FLOODING IMPACTING USE (BEYOND 72 HOURS)
 - NUISANCE REAR YARD FLOODING (GONE IN 72 HOURS)



CENTRAL SEWER AREA SEPARATION PROGRAM

THE PLAN

THE CONCEPT OF THE PROJECT IS TO CONSTRUCT A SEPARATE STORM SEWER SYSTEM TO HELP ALLEVIATE SURFACE FLOODING IN THE CENTRAL AREA OF THE VILLAGE BOUNDED BY 31ST STREET ON THE NORTH, THE INDIANA HARBOR BELT RAILROAD ON THE EAST, OAK AVENUE ON THE SOUTH, AND LAGRANGE ROAD ON THE WEST.



WHAT ARE THE GOALS AND BENEFITS?

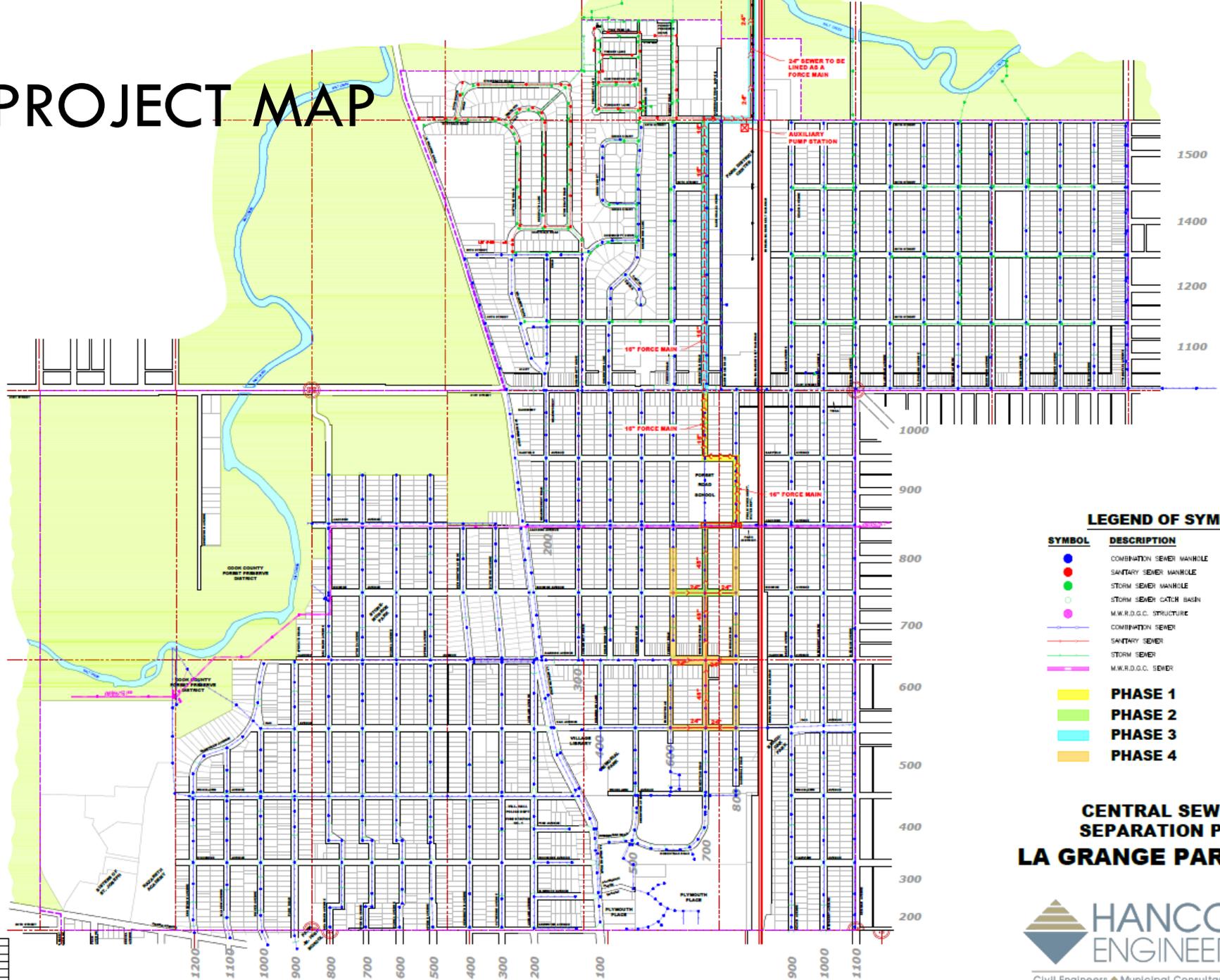
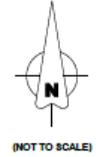
STORM SEWER SEPARATION PROGRAMS ARE INTENDED TO CONVEY STORM WATER IN ITS OWN PIPE NETWORK TO A LOCAL WATERWAY, IN OUR CASE THE SALT CREEK RIVER SYSTEM. MULTIPLE BENEFITS OCCUR WHEN A SYSTEM LIKE THESE ARE FULLY FUNCTIONAL:

- REDUCE STORM WATER IN THE VILLAGE'S COMBINATION SYSTEM, WHICH PROVIDES RELIEF FROM BASEMENT BACKUPS.
- REDUCES STREET FLOODING WHICH IS A CAUSE OF CONCERN FOR EMERGENCY OPERATION VEHICLES.
- REDUCE OVERLAND FLOODING, WHICH IS INCREASINGLY GETTING WORSE.
- REDUCING STREET FLOODING WILL HAVE LESS OF A CHANCE OF DAMAGING STRUCTURES (I.E. HOMES, BASEMENTS)
- REDUCE VEHICLE DAMAGE DUE TO DRIVERS ENTERING HIGH WATER LEVELS IN THE STREETS.

THE PLAN CONCEPT

THE CONCEPT OF THE PLAN TO ACHIEVE THE GOALS STATED WILL BE TO CONSTRUCT LARGE DIAMETER GRAVITY SEWERS IN THE AREAS SOUTH OF JACKSON AVENUE WHICH WILL DRAIN INTO AN UNDERGROUND DETENTION VAULT / WET WELL ON JACKSON BETWEEN HOMESTEAD RD. AND BARNSDALE RD. INCORPORATED INTO THIS STRUCTURE WILL BE SUBMERSIBLE PUMPS THAT WILL PUMP THE ACCUMULATED WATER AT A CONTROLLED RATE THROUGH A FORCE MAIN PIPE NORTHWARD UNDER HOMESTEAD RD. INTO SALT CREEK. THE LAST SECTION OF FORCE MAIN NORTH OF 26TH ST. WILL UTILIZE AN EXISTING 24" SEWER THAT WILL BE LINED TO ALLOW PRESSURIZED FLOW.

PROJECT MAP



1500
1400
1200
1100
1000
900
800
700
600
500
400
300
200

LEGEND OF SYMBOLS

SYMBOL	DESCRIPTION
● (Blue)	COMBINATION SEWER MANHOLE
● (Red)	SANITARY SEWER MANHOLE
● (Green)	STORM SEWER MANHOLE
○ (Green)	STORM SEWER CATCH BASIN
○ (Pink)	M.W.R.D.G.C. STRUCTURE
— (Blue)	COMBINATION SEWER
— (Red)	SANITARY SEWER
— (Green)	STORM SEWER
— (Pink)	M.W.R.D.G.C. SEWER
■ (Yellow)	PHASE 1
■ (Light Green)	PHASE 2
■ (Cyan)	PHASE 3
■ (Orange)	PHASE 4

CENTRAL SEWER AREA SEPARATION PROGRAM LA GRANGE PARK, ILLINOIS



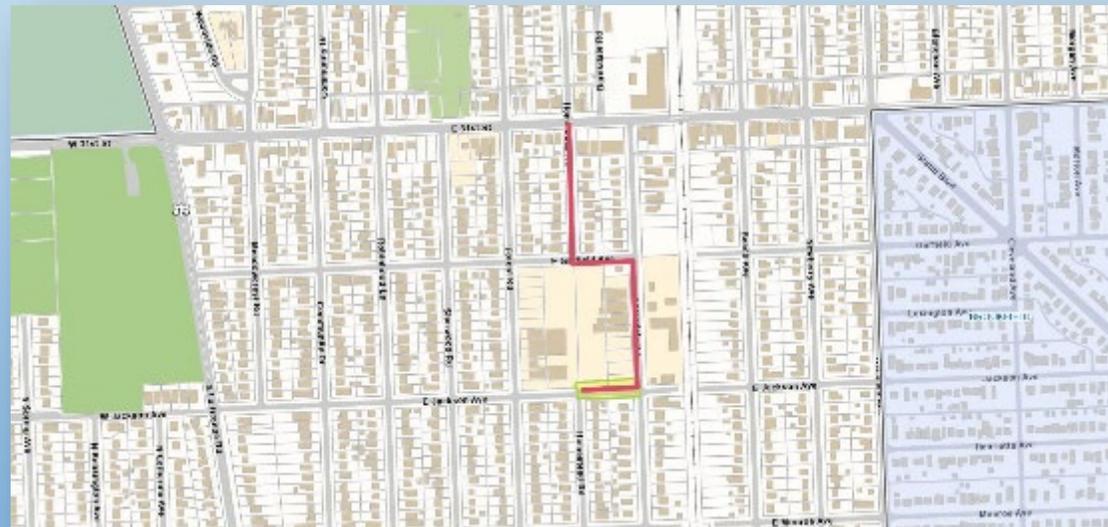
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11-05-13	
10-25-12	
2-18-10	
1-2-09	
5-31-02	
DATE	

PHASED CONSTRUCTION

THE PROJECT CAN BE CONSTRUCTED IN SMALLER PHASES, OR ALL AT ONCE IF FUNDING ALLOWS. IF PHASED CONSTRUCTION IS USED, HERE IS HOW THE PHASES WILL BE SEQUENCED AND WHAT WILL BE BUILT IN EACH PHASE. THE ESTIMATED COST IS ALSO INCLUDED.

PHASE 1 - \$2,050,000

CONSTRUCT A PRECAST BOX CULVERT ON JACKSON FROM BARNSDALE ROAD TO HOMESTEAD ROAD; INSTALL A STORM WATER PUMP STATION AND GENERATOR NEAR THE PUBLIC WORKS SITE; INSTALL A FORCE MAIN FROM THE BOX CULVERT TO HOMESTEAD ROAD AT 31ST STREET WHERE A TEMPORARY CONNECTION TO THE 48" SEWER WILL BE MADE.



PHASE 2 - \$2,130,000

INSTALL A 48" STORM SEWER FROM JACKSON AVE TO MONROE AVE, AND 24" SEWER EXTENSIONS ON MONROE TO BARNSDALE AND FOREST. INCLUDE GREEN INFRASTRUCTURE WHERE FEASIBLE.



PHASE 3 - \$2,600,000

INSTALL A FORCE MAIN PIPE FROM 31ST AND HOMESTEAD TO A CONNECTION AT 26TH ST WITH THE EXISTING 24" OUTFALL SEWER TO SALT CREEK. PROVIDE A SECONDARY LIFT STATION AND RECONFIGURE PRIVATE STORM SEWERS OF THE BUSINESSES AT THIS LOCATION. LINE THE 24" OUTFALL SEWER TO ACT AS A FORCE MAIN TO SALT CREEK



PHASE 4 - \$3,250,000

EXTEND A 48" STORM SEWER ON HOMESTEAD FROM MONROE AVE TO OAK AVE, INCLUDE CONNECTION OF DRAINAGE STRUCTURES ALONG THE ROUTE. EXTEND 24" SEWER ON HARDING AVE AND OAK AVE FROM BARNSDALE ROAD TO FOREST ROAD TO COLLECT RUNOFF FORM THE INTERSECTIONS. POSSIBLE EXTENSION OF SEWER DOWN BARNSDALE ROAD AND FOREST ROAD TO COLLECT MID BLOCK DRAINAGE AS PART OF ROADWAY PROGRAMS IN FUTURE YEARS.



FUNDING THE PROJECT

Total Cost

Phase 1		\$2,050,000
Phase 2		\$2,131,000
Phase 3		\$2,600,000
Phase 4		\$3,250,000
TOTAL		\$10,031,000

Sources

Borrow	up to...	\$5,000,000
ARPA	about...	\$1,800,000
State/or		
MWRD		\$5,000,000
TOTAL		\$11,800,000

More to come on ARPA... stay tuned...

FUNDING THE PROJECT

BORROWING

- BAIRD FINANCIAL ANALYSIS SHOWS THAT WE CAN SUPPORT \$5 MILLION
 - ALTERNATE REVENUE BONDS
 - MUST KNOW WHAT WE NEED TO BORROW
 - PROCESS IS DRIVEN BY THE VILLAGE
 - SHORTER TIMELINE
 - ILLINOIS REVOLVING LOAN PROGRAM
 - AMOUNT IS FLEXIBLE
 - GRANT-LIKE ADMINISTRATION
 - PROCESS IS DRIVEN BY THE STATE
 - LONGER TIMELINE
 - COMPETITIVE
 - ECHOES ARPA REQUIREMENTS

OTHER FUNDING SUPPORT

- STATE OF ILLINOIS
 - THE STATE'S ARPA SHARE FOR REGIONAL PROJECTS OR COMMUNITY SUPPORT
 - OTHER CAPITAL FUNDING
 - TIMING & FUNDING UNCERTAIN
- MWRD
 - STORMWATER PARTNERSHIP PROGRAM
 - *MUST BE "SHOVEL READY"*
 - REQUIRES ADVANCED EXPENDITURES IN ENGINEERING
 - TIMING IS SOMEWHAT CERTAIN, FUNDING IS VERY COMPETITIVE

AMERICAN RESCUE PLAN ACT



home.treasury.gov

AMERICAN RESCUE PLAN ACT

- \$1.9 TRILLION IN ECONOMIC STIMULUS AND COVID-19 RELIEF.
- \$65.1 BILLION FOR MUNICIPALITIES
- \$45.57 BILLION TO METROPOLITAN MUNICIPALITIES BASED ON CDBG FORMULA
- \$19.53 BILLION TO MUNICIPALITIES WITH POPULATIONS LESS THAN 50,000 (NEUS)
- \$1,791,472.79 TO LA GRANGE PARK

ARPA – ELIGIBLE USES

ELIGIBLE USES FOR ARPA FUND INCLUDE:

- SUPPORT PUBLIC HEALTH EXPENDITURES
- ADDRESS NEGATIVE ECONOMIC IMPACTS CAUSED BY THE PUBLIC HEALTH EMERGENCY
- REPLACE LOST PUBLIC SECTOR REVENUE
- PROVIDE PREMIUM PAY FOR ESSENTIAL WORKERS
- INVEST IN WATER, SEWER AND BROADBAND INFRASTRUCTURE

OTHER REQUIREMENTS

- REQUEST FUNDS FROM STATE
- CIVIL RIGHTS ASSURANCE
- TERMS AND CONDITIONS
- OBLIGATE FUNDS BY DECEMBER 31, 2024
- ANNUAL REPORTING
- HALF NOW, OTHER HALF IN ONE YEAR

VILLAGE BOARD FEEDBACK ON...

- *IS THERE GENERAL SUPPORT FROM THE BOARD TO UTILIZE THE FEDERAL ARPA ALLOCATION FOR THE PURPOSES OF THE CENTRAL SEWER AREA SEPARATION PROJECT, IF ELIGIBLE?*
- *DO WE WANT TO PROGRESS ENGINEERING PLANS TO A “SHOVEL READY” POSITION, IN PREPARATION FOR THE MWRD STORMWATER PARTNERSHIP PROGRAM, CALL FOR PROJECTS?*

ARE THERE ANY QUESTIONS?