



CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE ALTERNATIVES ANALYSIS

Project Scoping Report

2022 CMOM Central East Small Diameter Sewershed Project

PREPARED FOR: San Antonio Water System

PREPARED BY: Camille Garza, Steven Anthes and Sean Oboyle

DATE: July 21, 2022

Revision	Date	Revision Description	Approved By
0	6/21/22	Draft Submittal	Camille Garza, Steven Anthes & Sean Oboyle
1	6/24/2022	Final Draft QC	Project Controls, Ann Peche & Rachel Hoffmeyer
2	7/21/2022	Final Submittal	Ann Peche

This report is released for the purpose of defining the scope of this project and providing recommendations to be verified during the design phase. This report is not to be used for construction, bidding or permitting purposes.

Ann E. Peche, P.E.

1.0 Executive Summary

San Antonio Water System (SAWS) entered into a Consent Decree (CD) with the United States Environmental Protection Agency (EPA) on July 23, 2013. As part of the ongoing Capacity, Management, Operations, and Maintenance (CMOM) component of the CD, SAWS is required to perform alternative analysis on targeted and urgent mains identified as high risk.

This report presents the results of the CMOM alternative analysis for approximately 4,134.3 linear feet of selected gravity sewer lines. **Table-1.1** summarizes the proposed constructions methods and their estimated costs. The recommendations in this report may be further modified during subsequent design and construction phases, as appropriate, based on additional data and findings.

Table-1.1: Proposed Construction Method and Estimated Costs

Type of Work	Length (ft)	Line Size Range (in)	Estimated Construction Cost
OPEN CUT	3,677.9	8 – 18	\$ 2,087,800.00
PIPEBURST	456.4	20	\$ 224,900.00
Total	4,134.3		\$ 2,312,700.00

2.0 Evaluation

Pipe segments chosen to be rehabilitated on this package have contributed to previous SSOs, and/or are likely to cause or significantly contribute to the future of occurrence of SSOs.

3.0 Coordination

Street Projects

The City of San Antonio (CoSA) provides an ArcGIS layer of street projects throughout the city. No street projects have been identified in the scope of this project at this time. It is recommended that SAWS coordinate with CoSA to determine the timing of the street projects during design. Please note that pipes may be required to have the construction expedited where street projects are forthcoming.

High and Medium Pavement Condition Index (PCI) Roads

CoSA provides an ArcGIS layer that has the estimated PCI of roads in the city. **Table-3.2** below shows what mains are going to be impacting high and medium PCI roads and will increase the unit price for that main.

Table-3.2: Pipes Impacting High and Medium PCI Roads

Compkey	Street Name	Estimated PCI
964298	BLUEMEL	98.76
962872	WURZBACH RD	96.77
988329	AMITY RD	99.38

Other Considerations

Pipes located in sensitive areas that may require additional permits have been listed below in **Table-3.3**.

Table-3.3: Pipes that need additional coordination

Compkey	Reason
998547	100 Year Floodplain
1000154	100 Year Floodplain
1004408	100 Year Floodplain
968600	100 Year Floodplain & CoSA Park
967532	100 Year Floodplain & CoSA Park
967283	100 Year Floodplain & CoSA Park
988329	TXDOT ROW
975749	Railroad ROW

4.0 Planning Budget

The planning budget provided below is based on historical data from similar bids between 2017 and 2021. The data in **Table-4.1** and **Table-4.2** provides cost estimating metrics for the different methods of sewer pipeline rehabilitation and replacement (CIPP, pipe bursting, pipe replacement) for the typical sewer pipe sizes. The unit pricing was calculated based on: pipe size, rehabilitation method, number of estimated point repairs, internal repairs, lateral reconnections, and the pavement condition index of all impacted roads. A contingency of 30% is incorporated into the Estimated Cost Calculation because of the age of the historical data used to calculate the unit pricing. The planning budget should be revised by the Project Design Consultant during the design based on AACE International standards.

Table-4.1: Estimated OPEN CUT Cost

Description	Quantity	Unit	Unit Price	Total*
8 – inch OPEN CUT	2,243.6	LF	\$316.01	\$ 709,000.00
12 – inch OPEN CUT	518.3	LF	\$474.63	\$ 246,000.00
18 – inch OPEN CUT	916.0	LF	\$710.70	\$ 651,000.00
Sub Total				\$ 1,606,000.00
Contingency (30%)				\$ 481,800.00
Total				\$ 2,087,800.00

Table-4.2: Estimated PIPEBURST Cost

Description	Quantity	Unit	Unit Price	Total*
20 – inch PIPEBURST	456.4	LF	\$379.05	\$ 173,000.00
Sub Total				\$ 173,000.00
Contingency (30%)				\$ 51,900.00
Total				\$ 224,900.00

*Total amounts have been rounded to nearest \$1000.

5.0 Planning Recommendation

Table-5.1 provides detailed information, the preliminary remediation method, as well as the reason behind each method chosen for each pipe segment included in this package.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
10	964298	OPEN CUT	8	290.5	VCP	1967	DS CCTV from 2021 includes MH to MH coverage. Pipe has surface aggregate missing and sags. 2 laterals identified in the CCTV. Main appears to cross a gas main and is parallel to/in line with a 8" water main. Segment is a C-rated opportunity main located upstream of an E-rated main, but its condition is declining, and sag should be addressed. Propose Open Cut due to condition and proximity to E-rated main proposed for Open Cut.
10	962872	OPEN CUT	8	280	VCP	1967	DS CCTV from 2021 includes 248ft of segment length and stops due to missing pipe within the flow line. Recent US CCTV not available. Pipe is in fair condition until 165ft from the USMH where the pipe begins to have sections of missing pipe and voids. DS CCTV from 2018 includes MH to MH coverage and also shows sections of missing pipe and voids. 3 laterals identified in the CCTV. Main appears to cross a gas main, OHE, and a 20" water main near DSMH and is parallel to/in line with a 8" water main. 2 SSOs reported at the lateral associated with the Pizza Hut in 2018 & 2021. SAWS WO #2038019 indicates a point repair will be made on this line. Consultant to follow-up with SAWS on the status of this WO and any available post CCTV during design. Propose Open Cut due to pipe condition.
11	998547	OPEN CUT	8	164.1	CP	1968	DS CCTV from 2021 includes MH to MH coverage. Pipe has high water level throughout making it difficult to see all of the main. The pipe has multiple areas of missing pipe wall with voids. 3 laterals identified in the CCTV. Smart meter is located on the USMH. The as-built shows this main to be within a sewer easement. Consultant to confirm easements and if there are any obstructions along the sewer alignment or around the DSMH. Main appears to cross a 6" water main. Propose Open Cut due to pipe condition.
11	1000154	OPEN CUT	8	192	VCP	1968	DS CCTV from 2022 includes MH to MH coverage. Pipe has multiple areas of missing pipe wall with voids. Pipe material is CP not VCP. The as-built do not clearly indicate whether this main is within a sewer easement. It appears to be within a 40' CPSB Easement. Consultant to confirm easements. Main appears to cross an earthen stormwater channel and concrete storm water channel. Propose Open Cut due to pipe condition.
12	1004408	PIPEBURST	20	456.4	DIP	1991	US CCTV from 2021 includes MH to MH coverage. Pipe material appears to be RCP, not DI. Surface aggregate visible, some reinforcement is visible, and there are a couple of intruding sealing rings hanging. The main has some sags, but they do not appear to be deep sags and there are no reported SSOs. As-builts indicate that the sewer main and the parallel 15" sewer main are located in a 25' easement. Consultant to confirm easements. Propose Pipe Bursting due to pipe condition and location.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
13	968600	OPEN CUT	18	270	VCP	1964	US CCTV from 2022 includes 102ft of segment length and stops at an offset joint. The first 80ft of pipe from the DSMH is PVC before it changes to VCP. The VCP pipe televised in US CCTV has multiple fractures, areas of broken pipe, and a void in the crown of the pipe. DS CCTV from 2022 stops at 10.8ft because of broken piece of pipe obstructing the crawler. There is a large void from 12oclock to 3 o'clock where this broken piece of pipe was previously located. As-builts do not indicate that the sewer main is within an easement. Consultant to investigate easements. Propose Open Cut due to known pipe defects and unknown pipe condition from unavailable CCTV coverage.
13	967532	OPEN CUT	18	300	VCP	1964	US CCTV from 2022 includes 28ft of segment length and stops because CCTV crawler cannot pass transition from VCP to PVC PR. US CCTV recorded multiple areas of broken pipe prior to material change. DS CCTV from 2022 stops at 3ft due to heavy silt in the pipe. As-builts do not indicate that the sewer main is within an easement. Consultant to investigate easements. Propose Open Cut due to areas of broken pipe and unknown pipe condition from unavailable CCTV coverage.
13	967283	OPEN CUT	18	346	VCP	1964	US CCTV from 2021 includes 61.5ft of segment length and stops due to large rag ball. Based on US CCTV from 2015, there is a large offset joint at that location that likely contributed to the rag ball. DS CCTV from 2021 stops at 3.5ft but it is unclear why CCTV crawler could not continue because of the high-water level. Camera zooms in on DS pipe and it appears there may be a pipe collapse. As-builts do not indicate that the sewer main is within an easement. Consultant to investigate easements. Propose Open Cut due to known pipe defects and unknown pipe condition from unavailable CCTV coverage.
14	974185	OPEN CUT	8	380	CP	1950	DS CCTV from 2022 includes 30ft of segment length and stops at missing pipe with cavity. Pipe is PVC up to the missing pipe, and the pipe appears to be concrete past the cavity. US CCTV from 2021 includes 25ft of segment length and stops at sag; rocks were visible in the line. US CCTV showed the pipe to be PVC going into the sag. CCTV from 2013 shows the main to be CP and VCP prior to the PVC Point Repairs, but complete CCTV was not available back then due to the already poor condition of the main. In 2013, the pipe was missing pipe wall and had cavities; it also had slight horizontal bends in the line. The main is located in an alley with a gas main and OHE. Smart MH located on the USMH. Propose Open Cut due to pipe condition. Consideration is need in regard to the depth of the line (10-14ft) and the space within the alley.
15	993235	OPEN CUT	8	300	VCP	1957	US CCTV from 2022 includes 186ft of segment length and stops due to intruding taps. No DS CCTV available. Pipe has aggregate visible, a previous point repair, and deposit attached grease. 9 laterals identified in the CCTV (2 capped). Pipe Burst is an option. Segment is a D-rated opportunity main located upstream of an E-rated main. Propose Open Cut due to proximity to E-rated main proposed for Open Cut.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
15	995813	OPEN CUT	8	300	VCP	1957	DS CCTV from 2021 includes 30ft of segment length and stops due to camera under water. US CCTV from 2020 stops at 1lf due to broken pipe with large void. CCTV from 2015 includes MH to MH coverage and shows large sections of missing pipe with large voids. 9 laterals identified in the 2015 CCTV, but some may be capped. Main appears to cross an 8" water main near DSMH. USMH has a smart cover on it. Propose Open Cut due to pipe condition.
16	988329	OPEN CUT	8	337	VCP	1957	US CCTV from 2020 includes 192ft of segment length and stops due to broken pipe from 4 black pipes drilled through the crown of the main (note: the black pipes run parallel to, not perpendicular to the main). Work order was initiated on 3/19/2019 but no work has been done. Consultant to investigate the utility that drilled the black pipes and coordinate a repair. Pipe is concrete with a PVC point repair and not VCP, and it has a medium joint offset near DSMH. Pipe appears to be dry a couple of feet past the only lateral identified in the CCTV. DS CCTV from 2020 includes 7ft of segment length and stops due to debris, potentially caused by the drilling of the black cables through the pipe. DSMH is located between a power pole and sidewalk off of Rigsby Rd. Location of USMH is not clear. Pipe is a candidate for CIPP if offset joint is corrected and broken pipe is addressed, but it is unclear the length of the broken pipe since about 140ft of pipe is untelevised. Consultant to investigate if there are any other sewer lateral connections besides the one identified as it could allow SAWS to abandon the upstream portion of the main that is damaged but appears to be dry. Propose Open Cut due to unknown conditions/factors.
17	975016	OPEN CUT	12	300.7	CP	1935	DS CCTV from 2021 includes 250ft of segment length and US CCTV from 2021 includes 54ft of segment length; both CCTV stop at debris. Pipe has multiple fractures and sections of missing pipe wall with soil visible & some voids. These defects were also present in 2014 CCTV. 6 laterals identified in the CCTV (5 capped). Main appears to cross a 6" water main and a gas main and parallels a storm drain. Large transmission tower at the corner of Mallard St & W Pyron Ave could require additional coordination with CPS during design. USMH has a smart cover on it. Propose Open Cut due to pipe condition.
17	975749	OPEN CUT	12	217.6	CP	1935	DS CCTV from 2022 includes MH to MH coverage. Pipe has multiple fractures. 8 laterals identified in the CCTV (5 capped). Main appears to cross storm drain and is parallel to, possibly in line with, a storm drain. Segment is located in the street outside Al Forge Park. Consultant to confirm if DSMH is located outside Railroad ROW. Pipe Burst is an option if utility separation between sewer and storm is confirmed. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose Open Cut due to potential storm drain conflict and proximity to E-rated main proposed for Open Cut.

6.0 Proposed Project Schedule

Table-6.1 provides a general project schedule which includes a timeframe for engineering design (plans, permits, right-of-entry, etc.), bidding, and construction phases based CIP board funding and previous schedules from similar projects. These should be reviewed and revised by the consultant during the contract negotiation.

7.0 Detailed Maps

In the detailed maps attached are the CoSA street projects, the estimated PCI for all CoSA roads, and relevant sensitive areas.

Table 6.1 - Proposed Project Schedule

ID	Task Name	Calendar Days	Start	Finish	2022																		
					3rd Quarter				4th Quarter				1st Quarter				2nd Quarter						
					Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	2022 CMOM Central East Small Diameter Sewershed Project	1175	Fri 7/29/22	Wed 10/15/25	[Gantt bar spanning from 7/29/22 to 10/15/25]																		
2	Request for Qualifications & Professional Services Contract Execution	166	Fri 7/29/22	Tue 1/10/23	[Gantt bar from 7/29/22 to 1/10/23]																		
7	Design	610	Wed 1/11/23	Wed 9/11/24	[Gantt bar from 1/11/23 to 9/11/24]																		
19	Solicitation	139	Thu 9/12/24	Tue 1/28/25	[Gantt bar from 9/12/24 to 1/28/25]																		
20	100% Deisgn - Contracting Review	22	Thu 9/12/24	Thu 10/3/24	[Gantt bar from 9/12/24 to 10/3/24]																		
21	Advertisement	28	Fri 10/4/24	Thu 10/31/24	[Gantt bar from 10/4/24 to 10/31/24]																		
22	Board Prep	74	Fri 11/1/24	Mon 1/13/25	[Gantt bar from 11/1/24 to 1/13/25]																		
23	Board Date	1	Tue 1/14/25	Tue 1/14/25	[Gantt bar from 1/14/25 to 1/14/25]																		
24	Execute Construction Contract	14	Wed 1/15/25	Tue 1/28/25	[Gantt bar from 1/15/25 to 1/28/25]																		
25	Construction	260	Wed 1/29/25	Wed 10/15/25	[Gantt bar from 1/29/25 to 10/15/25]																		



MH 10199
Rim Elv: 933.98
Inv. Elv: 928.08

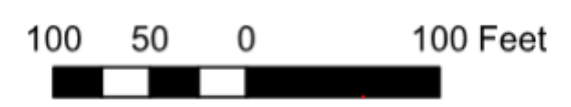
MH 10203
Rim Elv: 932.46
Inv. Elv: 926.86

MH 9203
Rim Elv: 933.5
Inv. Elv: 927.8

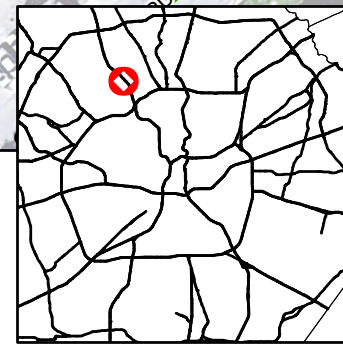
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	OPEN CUT		CoSA Bond Projects		Creeks
	PIPEBURST		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

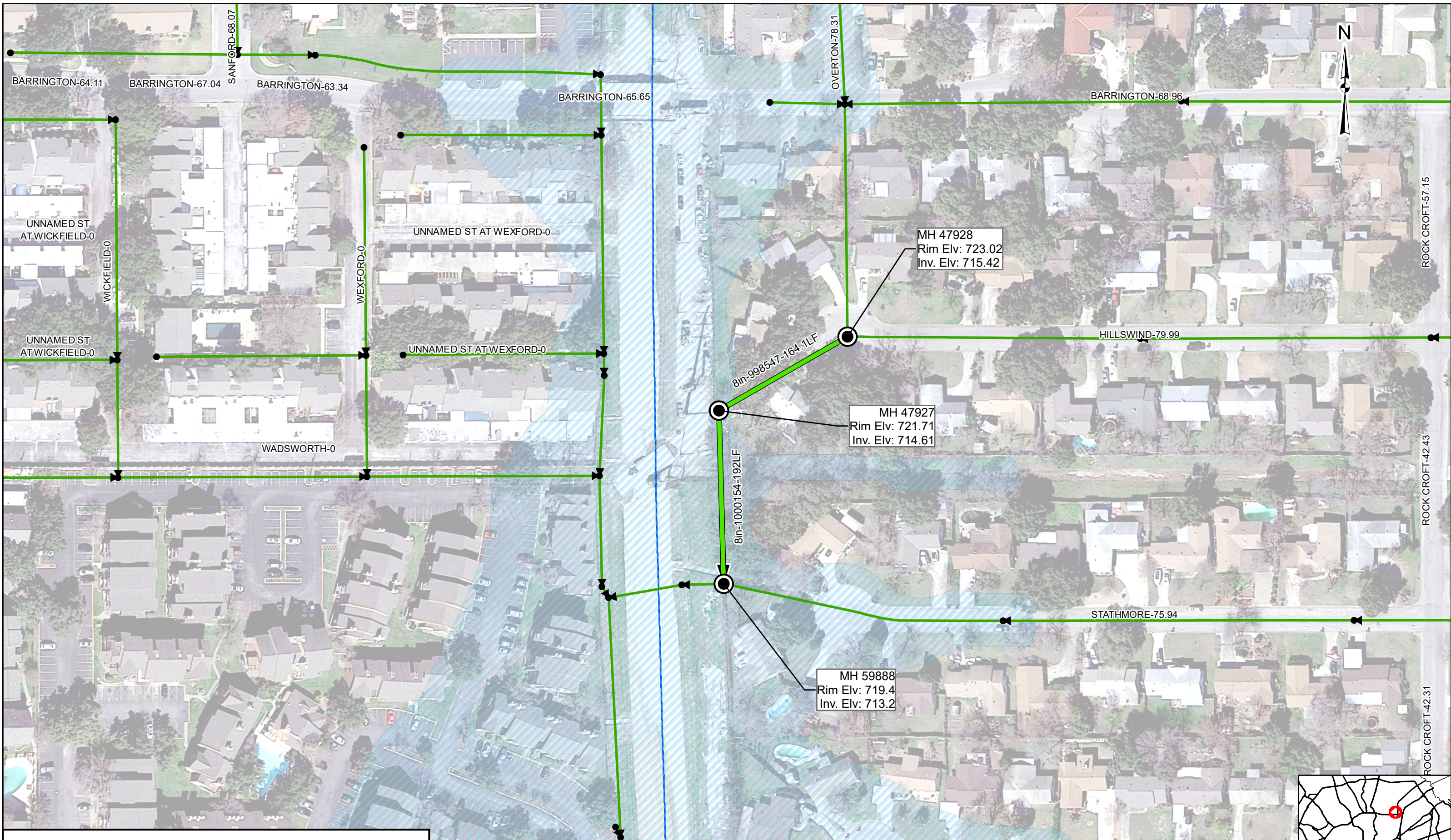
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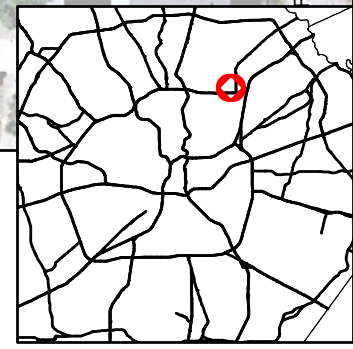
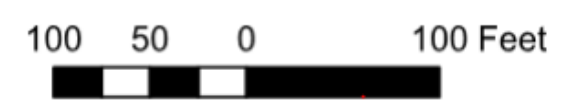


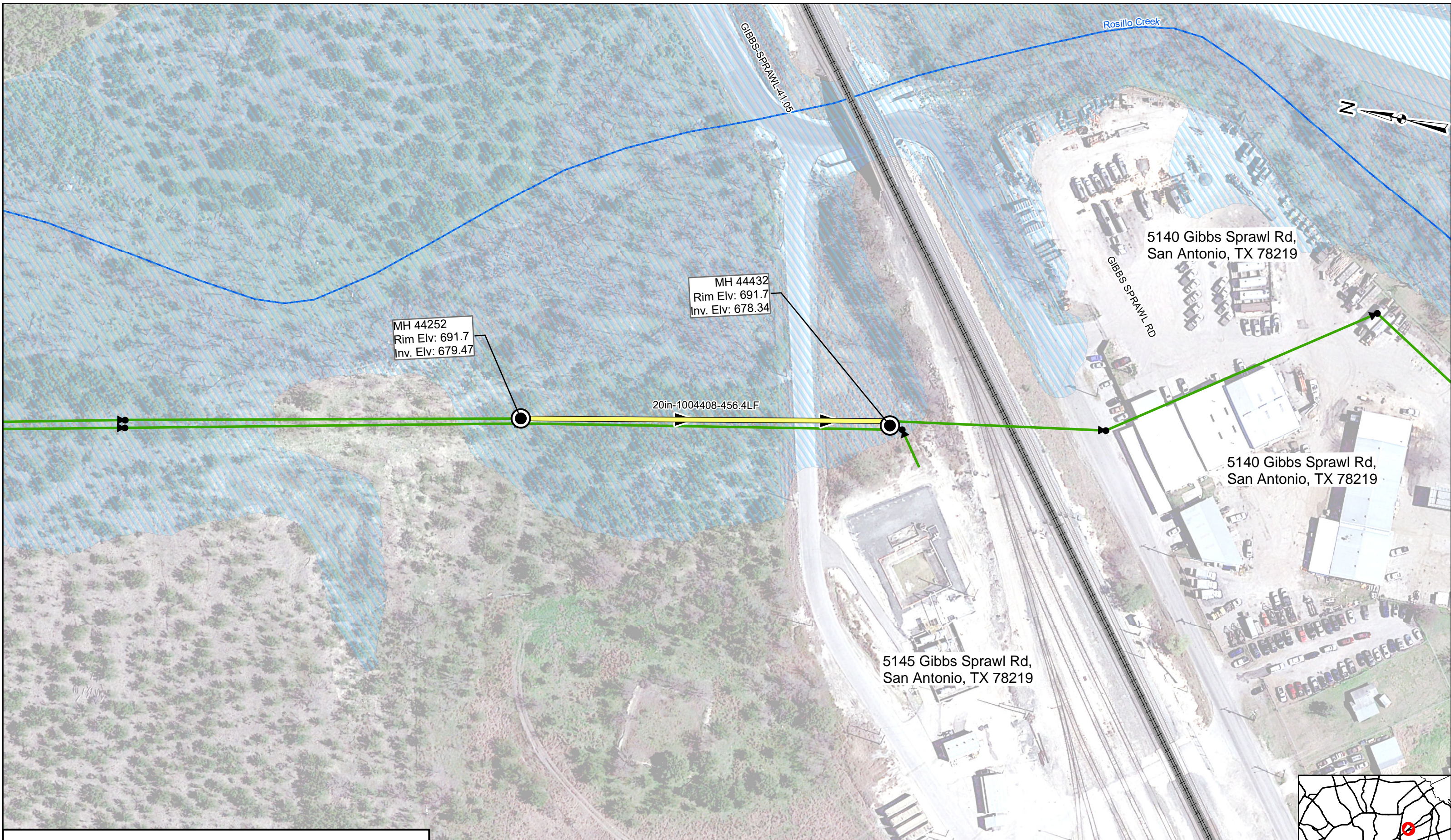
07/21/2022





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MH 44252
Rim Elv: 691.7
Inv. Elv: 679.47

MH 44432
Rim Elv: 691.7
Inv. Elv: 678.34

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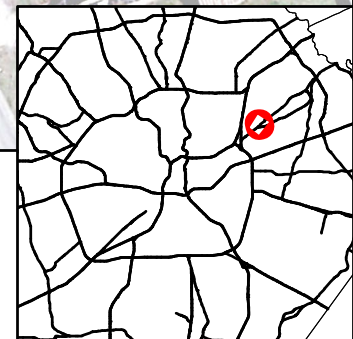
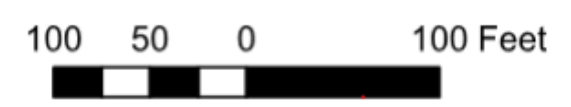
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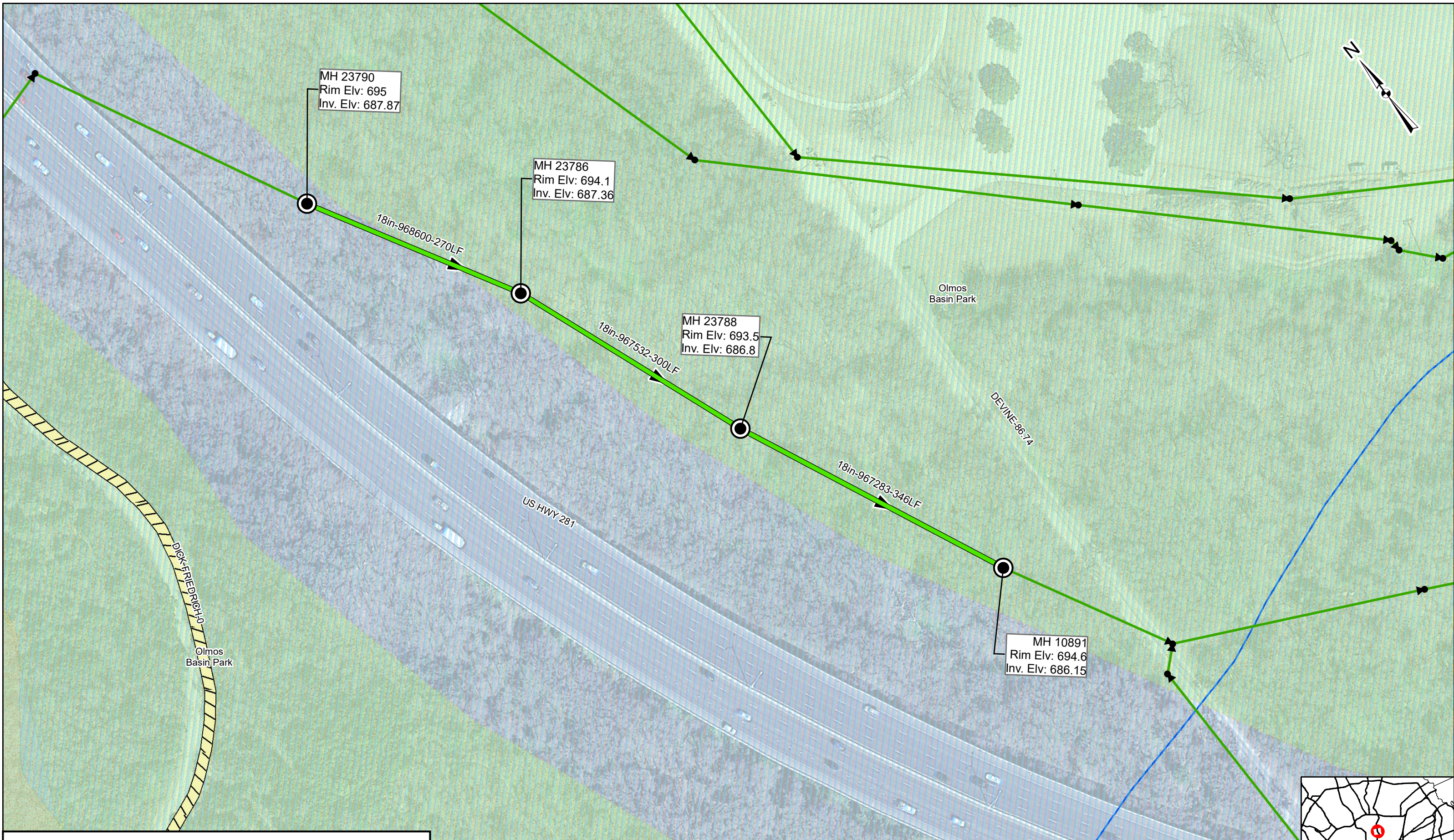
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San Antonio, TX 78219

5145 Gibbs Sprawl Rd,
San Antonio, TX 78219

	Manhole		CoSA IMP Project		100Yr Floodplain
	OPEN CUT		CoSA Bond Projects		Creeks
	PIPEBURST		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Central East Small Diameter Sewershed Project





MH 23790
Rim Elv: 695
Inv. Elv: 687.87

MH 23786
Rim Elv: 694.1
Inv. Elv: 687.36

MH 23788
Rim Elv: 693.5
Inv. Elv: 686.8

MH 10891
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Inv. Elv: 686.15

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18in-967532-300LF

18in-967283-346LF

US HWY 281

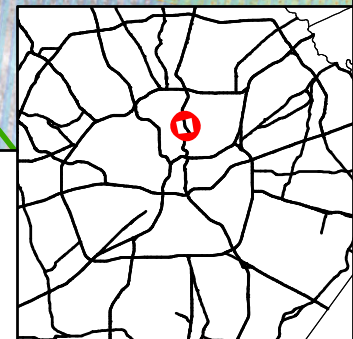
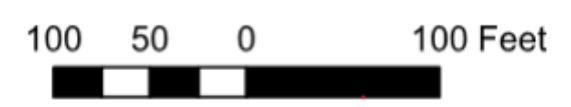
Olmos Basin Park

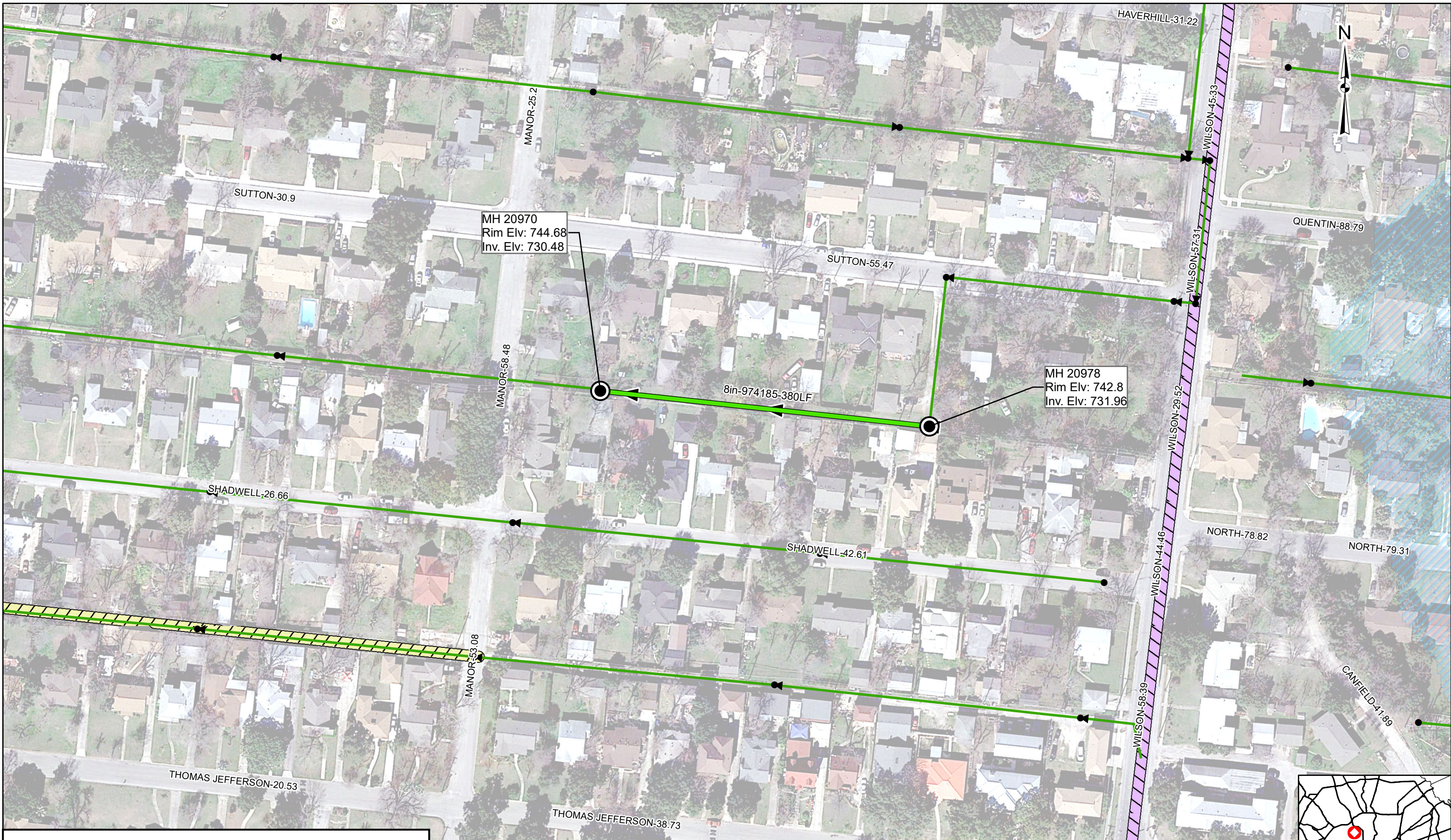
DEVINE-86.74

DICK REBERTO
Olmos Basin Park

	Manhole		CoSA IMP Project		100Yr Floodplain
	OPEN CUT		CoSA Bond Projects		Creeks
	PIPEBURST		Railroad		CoSA Park
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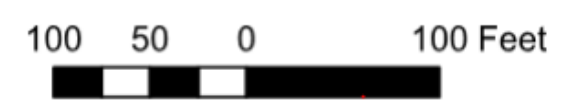
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Inv. Elv: 730.48

MH 20978
Rim Elv: 742.8
Inv. Elv: 731.96

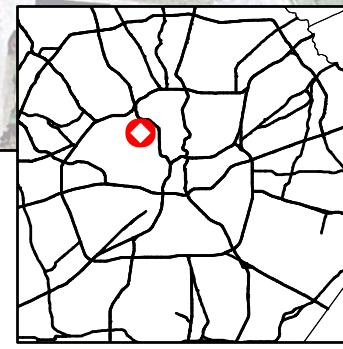
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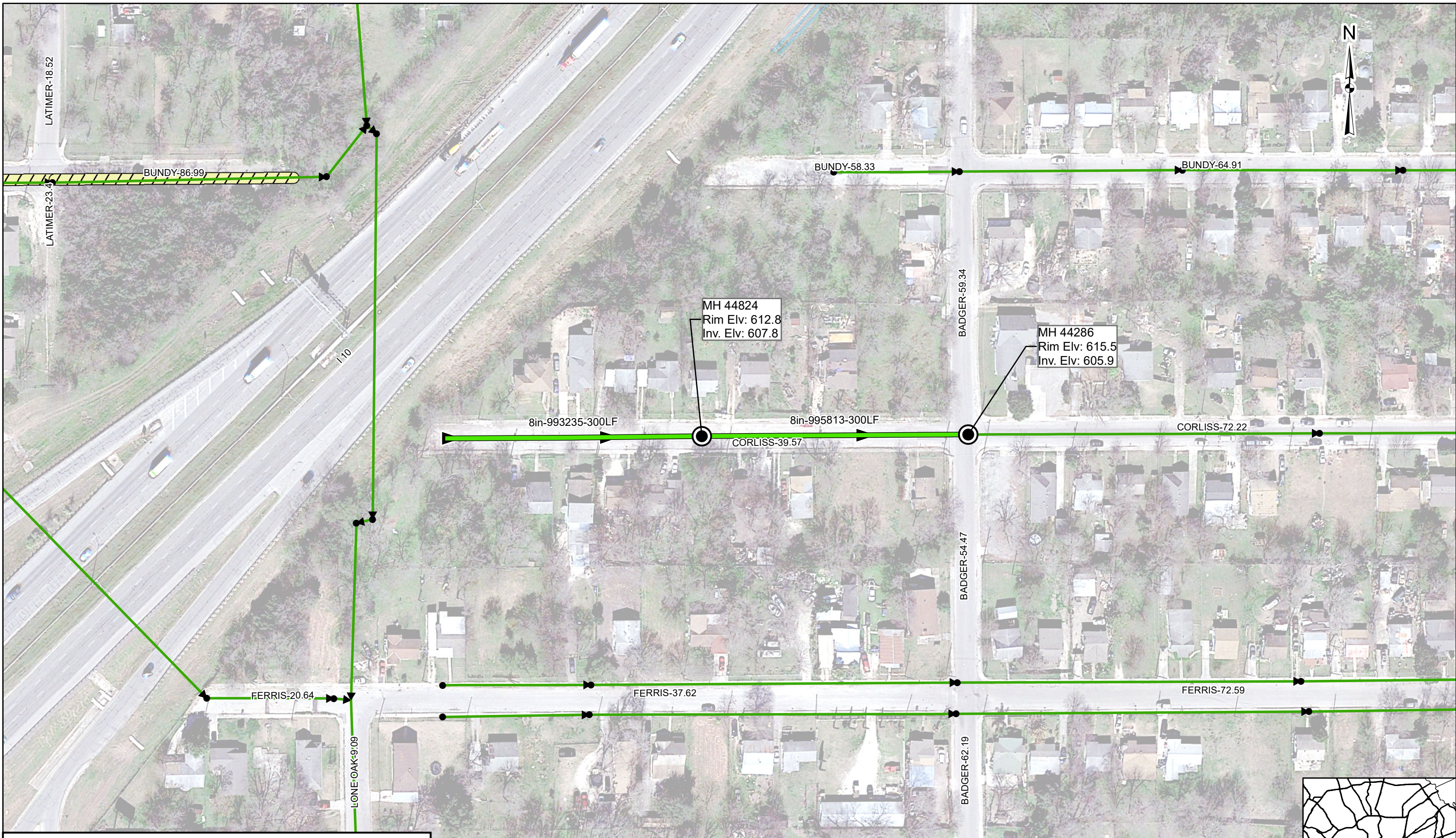
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	OPEN CUT		CoSA Bond Projects		Creeks
	PIPEBURST		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

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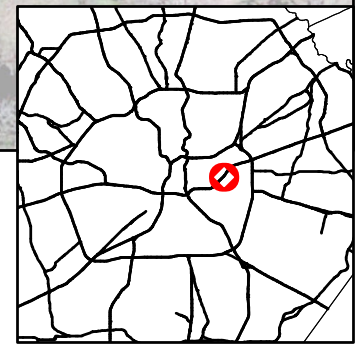
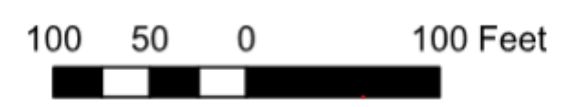
07/21/2022





	Manhole		CoSA IMP Project		100Yr Floodplain
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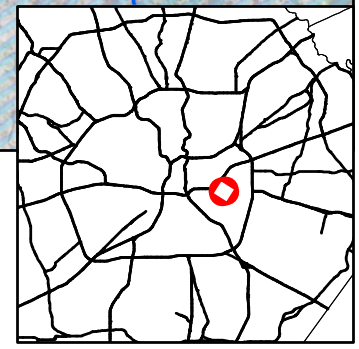
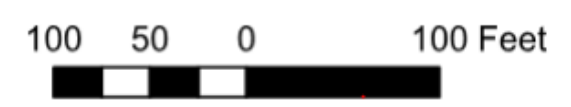
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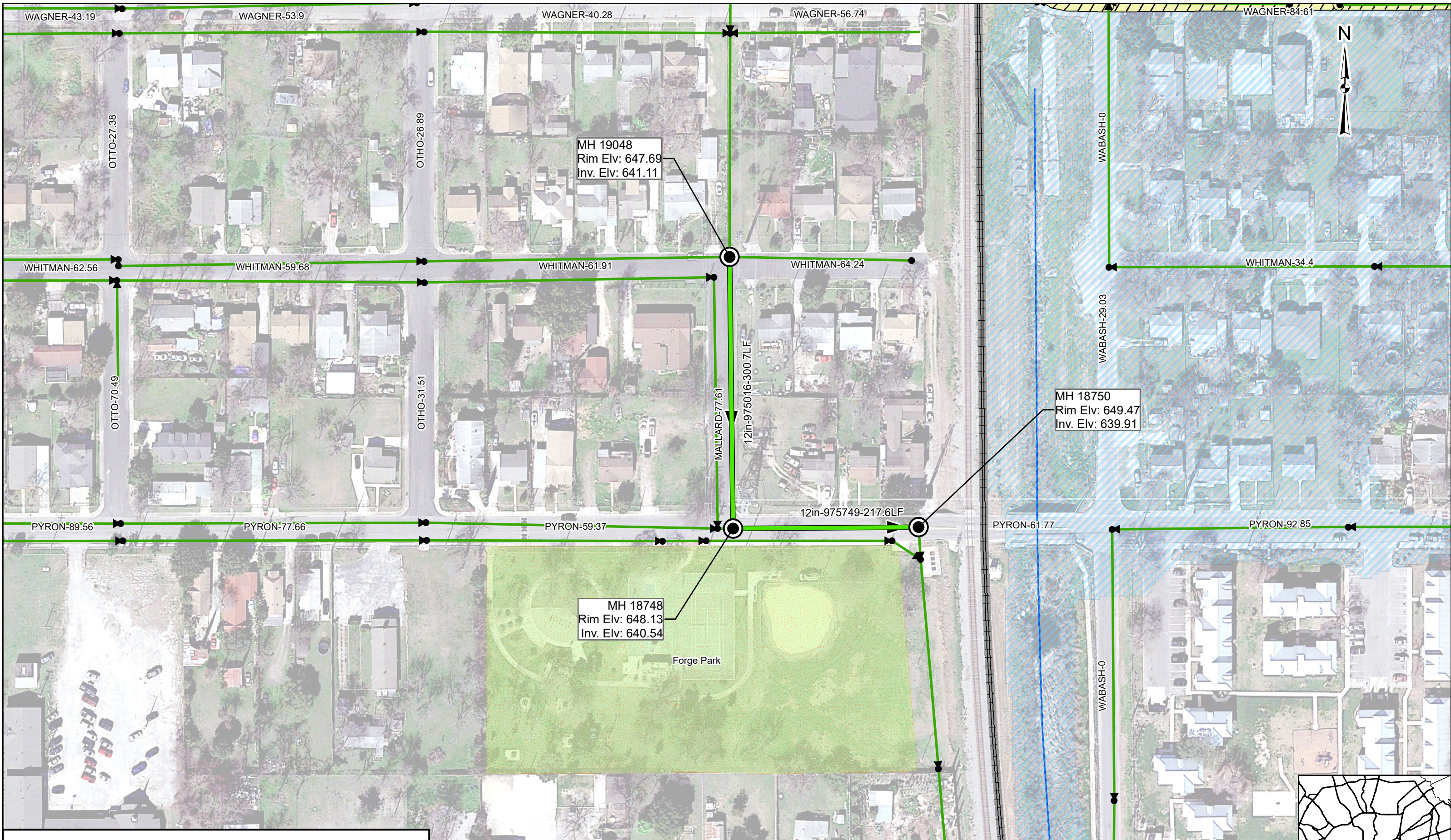




	Manhole		CoSA IMP Project		100Yr Floodplain
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