



CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE ALTERNATIVES ANALYSIS

Project Scoping Report

2022 CMOM Multiple Sewershed Project

PREPARED FOR: San Antonio Water System

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Revision	Date	Revision Description	Approved By
0	6/16/2022	Draft Submittal	Camille Garza, Steven Anthes & Sean Oboyle
1	6/24/2022	Final Draft QC	Project Controls, Ann Peche & Rachel Hoffmeyer
2	7/19/2022	Final Submittal	Ann Peche
3	11/11/2022	Updated Table 6.1 – Proposed Project Schedule	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 13,334 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
CIPP	13,328	24 – 60	\$ 11,809,200.00
OPEN CUT	6	48	\$ 14,300.00
Total	13,334		\$ 11,823,500.00

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. **Table-3.1** below lists the pipes that are located near or within identified street projects. This information has also been overlaid into the detailed location maps provided. It is our understanding that the actual dates of the projects are subject to change. 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.

Table-3.1: Pipes Located on CoSA Improvement Project

Compkey	Street Location	Type of Project
981957	W. Commerce St.	2023 Pavement Rehabilitation – Mill & Overlay

995286	Roosevelt Ave	2023 Pavement Rehabilitation – Mill & Overlay
980463	S. Flores St.	2025 Pavement Preservation – Micro Surface
982777	S. Flores St.	2025 Pavement Preservation – Micro Surface
982458	S. Flores St.	2025 Pavement Preservation – Micro Surface
982276	S. Flores St.	2025 Pavement Preservation – Micro Surface
982667	S. Flores St.	2025 Pavement Preservation – Micro Surface
981729	S. Flores St.	2025 Pavement Preservation – Micro Surface

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
969822	W Commerce St	81.09
970704	W Commerce St	81.09
980765	Buena Vista St	96.12
994635	Elm	84.94
1011597	Castroville Rd	85.7
1011496	Castroville Rd	83.88
1011063	Castroville Rd	91.65
1011062	Castroville Rd	86.12
991419	S Presa St	96.66
981476	S Presa St	96.66
3142416	S Presa St	96.66
994099	S Presa St	96.66
983161	S Presa St	96.66
993733	S Presa St	96.66
982495	Vitra St	91.5

980463	S Flores St	96.11
982777	S Flores St	92.83
982458	S Flores St	92.98
982276	S Flores St	93.18
982667	S Flores St	93.18
981729	S Flores St	96.11
994578	E Southcross Blvd	98.45
985880	E Southcross Blvd	98.45
980912	Ashley Rd	90.4
981726	Ashley Rd	90.4
981727	Ashley Rd	96.65

*Anticipated PCI increase due to completed CoSA 2021 Pavement Project

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
965502	100 Year Floodplain
966363	100 Year Floodplain
970803	100 Year Floodplain & TxDOT ROW
965794	100 Year Floodplain & TxDOT ROW
966525	100 Year Floodplain& TxDOT ROW
969822	CoSA Park
970704	Idea Public School
971752	Idea Public School, 100 Year Floodplain & Creek
981957	100 Year Floodplain
980765	100 Year Floodplain
995284	Railroad ROW

995286	Railroad ROW
983674	100 Year Floodplain
986921	100 Year Floodplain
985249	100 Year Floodplain
984734	100 Year Floodplain
1010954	100 Year Floodplain
1012936	100 Year Floodplain
1012545	100 Year Floodplain
1013190	100 Year Floodplain
1010601	100 Year Floodplain
1010136	100 Year Floodplain

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 ACE International standards.

Table-4.1: Estimated CIPP Cost

Description	Quantity	Unit	Unit Price	Total*
24 – inch CIPP	6,257.2	LF	\$462.03	\$ 2,891,000.00
30 – inch CIPP	1,182.5	LF	\$577.59	\$ 683,000.00
36 – inch CIPP	388.9	LF	\$694.27	\$ 270,000.00
48 – inch CIPP	4,812.2	LF	\$923.90	\$ 4,446,000.00
60 – inch CIPP	687.2	LF	\$1,155.41	\$ 794,000.00
Sub Total				\$ 9,084,000.00
Contingency (30%)				\$ 2,725,200.00
Total				\$ 11,809,200.00

Table-4.2: Estimated OPEN CUT Cost

Description	Quantity	Unit	Unit Price	Total*
48 – inch OPEN CUT	6	LF	\$1,833.33	\$ 11,000.00
Sub Total				\$ 11,000.00
Contingency (30%)				\$ 3,300.00
Total				\$ 14,300.00

*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
18	965502	CIPP	24	416.5	RCP	1978	US CCTV from 2018 includes MH to MH coverage with sonar, but the coverage is limited due to high water level and splashing from the direction of the flow. Based on what is visible from the CCTV, there is some surface aggregate visible, but overall pipe is in fair condition and is a candidate for CIPP. Propose new CCTV be taken in DS direction. Main is a D-rated opportunity main located two segments upstream of an E-rated main. Segment crosses a storm channel and there is a large tree within the alignment near the USMH. Propose CIPP due to pipe condition, location, and proximity to E-rated main proposed for CIPP.
18	966362	CIPP	24	262.5	RCP	1978	DS CCTV from 2018 includes MH to MH coverage with sonar. Some surface aggregate visible, but overall pipe is in fair condition and is a candidate for CIPP. Main is a C-rated opportunity main located one segment upstream of an E-rated main. Segment runs parallel to a storm channel. Propose CIPP due to pipe condition, location, and proximity to E-rated main proposed for CIPP.
18	966363	CIPP	24	253.4	RCP	1978	DS CCTV from 2018 includes MH to MH coverage with sonar. Some surface aggregate visible and deposits attached ragging, but overall pipe is in fair condition and is a candidate for CIPP. Flow from incoming 12" sewer main into DSMH causes a lot of splashing. Main is a C-rated opportunity main located upstream of an E-rated main. Segment crosses a storm channel and 8" water main. Propose CIPP due to pipe condition, location, and proximity to E-rated main proposed for CIPP.
19	970803	CIPP	24	134.2	RCP	1978	DS CCTV from 2019 includes MH to MH coverage with sonar. Surface aggregate visible/projecting. Pipe is a candidate for CIPP. DSMH is located on 410 access road. Segment appears to cross a storm channel, 8" water main, and gas main. Propose CIPP due to pipe condition and location.
19	965794	CIPP	24	344.4	RCP	1978	DS CCTV from 2018 includes MH to MH coverage with sonar. Some surface aggregate visible, but overall pipe is in fair condition and is a candidate for CIPP. Main is located on 410 access road and is a C-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition, location, and proximity to E-rated main proposed for CIPP.
19	966525	CIPP	24	395.1	RCP	1978	DS CCTV from 2018 includes MH to MH coverage with sonar. Some surface aggregate visible, but overall pipe is in fair condition and is a candidate for CIPP. Main is located on 410 access road and is a C-rated opportunity main located one segment downstream of an E-rated main. Propose CIPP due to pipe condition, location, and proximity to E-rated main proposed for CIPP.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
20	969822	CIPP	30	453.8	PVC	1982	DS CCTV from 2020 includes MH to MH coverage. Pipe material is VCP, not PVC. Pipe has a longitudinal fracture shown in the CCTV but is overall a candidate for CIPP. 1 lateral identified in the CCTV. Main is located within Monterrey Park and appears to run under playground. As-built indicates the main is within a 25' easement. Consultant to confirm easement or determine if JUA is required with Parks. There are four other mains upstream of this main that run through the park, but they have not received condition ratings. During coordination, Parks should be made aware that those segments will be part of SAWS future rehab work. Segment appears to cross a 24" water main and gas main on W. Commerce St. Segment is a C-rated opportunity main located upstream of an E-rated main. Propose CIPP due to condition, size, location, and proximity to E-rated main proposed for CIPP.
20	970704	CIPP	30	612.8	PVC	1982	DS CCTV from 2020 includes MH to MH coverage. Pipe material is VCP, not PVC. The pipe has multiple longitudinal fractures through the pipe crown, some of which could be lined through. There are some minor joint offsets and a broken pipe in the pipe crown near the DSMH that may require point repairs. The water level increases to 90% towards the downstream end. 1 lateral identified in the CCTV. Main runs from W Commerce St through the east side of Monterrey Park apartment complex property and then through Idea school property, primarily the driveway and parking lot. As-built indicates the main is within a 25' easement. Consultant to confirm easement. Propose CIPP due to pipe size and location.
20	971752	CIPP	30	115.9	PVC	1982	DS CCTV from 2020 includes MH to MH coverage. Pipe material is VCP, not PVC. Pipe has multiple longitudinal fractures and area of broken pipe near USMH. Main is primarily located on Idea school property but its entire segment length appears to be located outside the school's fence. It is upstream of a siphon that crosses Zarzamora Creek. As-built indicates the main is within a 25' easement. Consultant to confirm easement. As-built also indicates main has 30' of concrete encasement, likely due to low ground coverage. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe size, condition and proximity to E-rated main proposed for CIPP.
21	981957	CIPP	36	194.8	RCP	1973	DS CCTV from 2021 includes MH to MH coverage and sonar available. CCTV starts at USMH 23488 and travels past Node 485567 which is considered the end of this segment and the start of compeky 980765. CCTV continues to DSMH 38219. This segment has intruding sealing rings hanging, reinforcement visible/projecting, and debris hanging. 2 laterals identified in CCTV for this segment prior to the node where an 8" sewer main comes in. Main appears to cross a 6" water main. Propose CIPP due to pipe size, location, and condition.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
21	980765	CIPP	36	194.1	RCP	1973	DS CCTV from 2021 includes MH to MH coverage and sonar available. CCTV starts at USMH 23488 and travels past Node 485567 which is considered the CCTV coverage for compkey 981957. CCTV continues to DSMH 38219 which is considered the CCTV coverage for this segment. This segment has intruding sealing rings hanging, reinforcement projecting, a small area with a pipe fracture that is not broken, and debris hanging. 2 laterals identified in CCTV for this segment. Main appears to cross a gas main. Propose CIPP due to pipe size, location, and condition.
22	994635	CIPP	60	314.2	RCP	1967	DS CCTV from 2020 includes MH to MH coverage. Some surface aggregate visible at crown of pipe. Pipe is a candidate for CIPP. Main is located in front of a Denny's and appears to cross UGE. Segment is a C-rated opportunity main located two segments upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
22	984731	CIPP	60	33.8	RCP	1967	DS CCTV from 2020 includes MH to MH coverage. Pipe is in fair shape and is a candidate for CIPP. Main is located in near SAWS Central cooling plant and a Denny's and appears to cross UGE. Segment is a C-rated opportunity main located one segment upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
22	985247	CIPP	60	119.2	RCP	1967	DS CCTV from 2020 includes MH to MH coverage. Some surface aggregate visible at crown of pipe. Pipe is a candidate for CIPP. Main is located in front of SAWS Central cooling plant and appears to cross a gas main and UGE. Segment is a C-rated opportunity main located upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
22	984828	CIPP	60	220	RCP	1966	DS CCTV from 2020 includes MH to MH coverage. Some surface reinforcement visible and repair patches were applied around missing pipe wall within the crown of the pipe at 197ft and 206ft from the USMH. 18" sewer main enters pipe at 2o'clock, 235ft from the USMH. Pipe material changes from RCP to FRP for last 14 ft before DSMH which is also FRP. Pipe is a candidate for CIPP but wrinkles would likely occur at the repair patches and change of pipe material. Main is located between SAWS Central cooling plant and the Henry B. Convention Center garage and appears to cross 4" & 24" chill water mains, an 8" water main, and UGE. Propose CIPP due to pipe condition, size, and location.
23	1011597	CIPP	48	475.4	RCP	1965	DS CCTV from 2020 includes MH to MH coverage and sonar available. Some surface reinforcement visible near USMH and deposits settled throughout. Pipe is a candidate for CIPP. Main appears to cross a 6" water main and OHE. Propose CIPP due to pipe condition and size.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
23	1011496	CIPP	48	235	RCP	1965	DS CCTV from 2020 includes MH to MH coverage and sonar available. Some surface aggregate missing and deposits settled throughout. Pipe is a candidate for CIPP. DSMH appears to be a doghouse MH. Segment is a D-rated opportunity main located downstream and upstream of E-rated mains. Main is located in front of Henry B. Gonzalez Elementary school and appears to cross a 24" storm pipe, gas, and OHE. Propose CIPP due to pipe condition and size.
23	1011063	CIPP	48	756	RCP	1965	DS CCTV from 2020 includes MH to MH coverage and sonar available. Some surface reinforcement visible and deposits settled throughout. Pipe is a candidate for CIPP. Main appears to cross a 6" & 12" water main, a 24" & 30" Storm drain, a gas main, and OHE. Propose CIPP due to pipe condition and size.
24	1011062	CIPP	48	772	RCP	1965	DS CCTV from 2020 includes MH to MH coverage and sonar available. Some surface reinforcement visible. Pipe is a candidate for CIPP. An abandoned MH structure was identified on the CCTV 10ft upstream of the DSMH. DSMH appears to be a doghouse MH. Main is located on Castroville Rd in front of a Texas Health And Human Services building, an education center, and a funeral home and appears to cross a 24" & 54" Storm Drain and OHE. Propose CIPP due to pipe condition and size.
25	991419	CIPP	48	169.3	RCP	1966	DS CCTV from 2020 includes MH to MH coverage and sonar available. Pipe has surface aggregate projecting and an area of reinforcement visible/projecting near the USMH. Pipe is a candidate for CIPP. There was an SSO incident recorded at the DSMH in 2020 due to a rain event. Main appears to cross a gas main. Propose CIPP due to pipe condition and size.
25	981476	CIPP	48	463	RCP	1966	DS CCTV from 2021 includes MH to MH coverage and sonar available from 2020. Pipe has surface aggregate projecting and is a candidate for CIPP. DSMH is located on the sidewalk near power poles. Main appears to cross a 4" & 6" water main and a storm drain. Propose CIPP due to pipe condition and size.
25	3142416	CIPP	48	108	RCP	1966	DS CCTV from 2021 includes MH to MH coverage and sonar available from 2020. Pipe has surface aggregate visible and is a candidate for CIPP. Main is located under sidewalk, and DSMH is next to a VIA bus stop. Main appears to cross an 8" water main and 8" sewer main. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition, size, and proximity to E-rated main proposed for CIPP.
25	994099	CIPP	48	24.8	RCP	1966	DS CCTV from 2021 includes MH to MH coverage and sonar available from 2020. Pipe has surface aggregate visible and is a candidate for CIPP. Main appears to cross a storm drain. Segment is a D-rated opportunity main located one segment downstream of an E-rated main. Propose CIPP due to pipe condition, size, and proximity to E-rated main proposed for CIPP.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
25	983161	CIPP	48	342.4	RCP	1966	DS CCTV from 2021 includes MH to MH coverage and sonar available from 2020. Pipe has surface aggregate projecting and an area of reinforcement visible/projecting near the USMH. Main appears to cross a 6" water main, a gas main, and storm drains. Propose CIPP due to pipe condition and size.
25	993733	CIPP	48	328	RCP	1966	DS CCTV from 2021 includes MH to MH coverage and sonar available from 2017. The water level of the pipe is at 65% at the USMH and increases to 100% at around 220ft from the USMH. From what was visible above the water level, the pipe has surface aggregate projecting, but the condition of downstream portion of the pipe is unknown due to pipe at 100% water level. It may be beneficial to get more recent sonar CCTV due to the high water level. Main appears to cross an 8" water main, a gas main, and storm drains. Propose CIPP due to visible pipe condition and size.
25	982495	CIPP	48	594	RCP	1966	DS CCTV from 2022 includes MH to MH coverage. Pipe has surface aggregate visible and is a candidate for CIPP. Main appears to cross a 8" water main, a gas main, UGE, and storm drains. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition, size, and proximity to E-rated main proposed for CIPP.
26	982498	CIPP	48	156.5	RCP	1914	DS CCTV from 2020 includes MH to MH coverage. Pipe material is brick, not RCP. The majority of pipe is suitable for CIPP, but there is a defective patch repair at 142ft from the USMH that would need to be corrected/removed prior to CIPP. 4 laterals identified in the CCTV. Coordination with Brackenridge Highschool will be required for bypass. Main appears to cross a 12" water main, a gas main, UGE and storm drains. Propose CIPP due to pipe condition and size.
26	984162	OPEN CUT	48	6	RCP	1917	DS CCTV from 2022 includes MH to MH coverage. Compkey 984162 does not appear to be a circular pipe but rather a short section of concrete that makes up part of a junction box connecting MH 27771 & MH 27632. No as-builts are available. Consultant to confirm the best method of rehab for this asset. Propose Open Cut based on available information.
26	995284	CIPP	48	229.5	RCP	1917	DS CCTV from 2020 includes MH to MH coverage and sonar available. Pipe has reinforcement visible/projecting/corrosion near the USMH and surface aggregate visible throughout. Pipe is a candidate for CIPP. DSMH has a flow meter. An as-built is not available for this main that crosses under two railroad tracks. Main appears to cross or parallel a 12" water main. Propose CIPP due to pipe location, condition, and size.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
26	995286	CIPP	48	158.3	RCP	1917	DS CCTV from 2020 includes MH to MH coverage. Pipe has surface aggregate visible/missing and is a candidate for CIPP. An as-built is not available for this main. GIS indicates that this main crosses a railroad, but the tracks may have been removed since they are not visible on google maps. Main appears to cross or parallel a 12" water main. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe location, condition, size, and proximity to E-rated main proposed for CIPP.
27	980463	CIPP	24	338.2	RCP	1955	DS CCTV from 2020 includes MH to MH coverage. Surface aggregate visible throughout the top of the pipe. Pipe is a candidate for CIPP. 7 laterals identified in the CCTV (2 are capped). Segment is a D-rated opportunity main located one segment upstream of an E-rated main. Main appears to cross a gas main and OHE. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
27	982777	CIPP	24	88.6	RCP	1955	DS CCTV from 2020 includes MH to MH coverage. Some cracks and surface aggregate visible throughout the top of the pipe. Pipe is a candidate for CIPP. 3 laterals identified in the CCTV (1 is capped). Segment is a D-rated opportunity main located upstream of an E-rated main. Main appears to cross a 6" water main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
27	982458	CIPP	24	179.9	RCP	1955	DS CCTV from 2020 includes MH to MH coverage. Multiple cracks in pipe near USMH; surface wall missing at the top of the pipe at 55LF and hole with void identified at the top of the pipe at 112LF downstream of USMH. The rest of the pipe appears suitable for CIPP. 6 laterals identified in the CCTV. Main is located on S Flores St in front of a small grocery store and appears to cross a 36" Storm Drain, gas main, and UGE. Point repairs prior to CIPP would result in mill and overlay due to High PCI rd but construction would be less impact and costly than complete Open Cut replacement. Propose CIPP due to pipe condition and location.
27	982276	CIPP	24	166.5	RCP	1955	DS CCTV from 2020 includes 121ft of segment length and US CCTV from 2021 includes 35.8 ft of segment length; both CCTV stop at a protruding lateral with a segment of black piping wedged between the protruding lateral and the sewer main. Follow-up CCTV from 2020 shows the segment of black piping was removed, but protruding lateral still extends from the top of the pipe to the pipe centerline. Some longitudinal cracks throughout the pipe. Pipe is a candidate for CIPP once protruding lateral has been removed. 4 laterals identified in the CCTV (1 is capped). Segment is a C-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
27	982667	CIPP	24	39.5	RCP	1955	DS CCTV from 2022 includes MH to MH coverage. Pipe has some surface aggregate visible and is a candidate for CIPP. Main appears to cross a 6" water main. Propose CIPP due to pipe condition and location.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
27	981729	CIPP	24	276.8	RCP	1955	DS CCTV from 2020 includes MH to MH coverage. Some longitudinal cracks throughout the pipe and a small area of broken pipe. Pipe is a candidate for CIPP. 9 laterals identified in the CCTV (2 are capped). One lateral is defective and may require external reconnection. Segment is a D-rated opportunity main located two segments downstream of an E-rated main. Main appears to cross OHE. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
28	983240	CIPP	24	485	RCP	1990	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate visible. Pipe is a candidate for CIPP. Main appears to cross an 8" water main. Segment is a D-rated opportunity main located three segments upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
28	983674	CIPP	24	672	RCP	1990	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate visible. Pipe is a candidate for CIPP. Main appears to cross a storm drain. Segment is a D-rated opportunity main located two segments upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
28	994685	CIPP	24	220	RCP	1990	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate visible. Pipe is a candidate for CIPP. Main appears to cross an 8" water main and gas main. Segment is a D-rated opportunity main located one segment upstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
28	994578	CIPP	24	133.4	RCP	1990	DS CCTV from 2021 includes MH to MH coverage and sonar available from previous CCTV. Some surface aggregate missing, broken intruding sealing rings, and reinforcement visible throughout the pipe. Pipe is a candidate for CIPP. Main appears to cross an 8" water main. Segment is a D-rated opportunity main located upstream of an E-rated main, but based on CCTV, this main could have an E-rating. May consider pipe bursting if feasible. Propose CIPP due to pipe location and proximity to E-rated main proposed for CIPP.
29	985880	CIPP	24	630.8	RCP	1990	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate missing and outline of reinforcement visible. Pipe is a candidate for CIPP. Main appears to cross an 8" water main, gas mains, and a storm drain box. Propose CIPP due to pipe condition.
29	986921	CIPP	24	660	RCP	1990	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate visible. Pipe is a candidate for CIPP. Main appears to cross a gas main. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
29	985249	CIPP	24	84.5	RCP	1990	DS CCTV from 2020 includes MH to MH coverage. Some surface aggregate missing and reinforcement visible. Pipe is a candidate for CIPP. Main appears to cross an 8" sewer main and drainage culvert. DSMH receives sufficient flow from an 8" main; Need to confirm if elevation of the 8" main into the DSMH meets TCEQ requirements or if external drop piping is needed. Segment is a D-rated opportunity main located one segment downstream of an E-rated main. Propose CIPP due to pipe location and proximity to E-rated main proposed for CIPP.
29	984734	CIPP	24	475.9	CP	1990	DS CCTV from 2020 includes MH to MH coverage. Some surface aggregate missing and reinforcement visible. Pipe is a candidate for CIPP. 1 lateral identified in the CCTV. Main appears to cross two gas mains. Segment is a D-rated opportunity main located two segments downstream of an E-rated main. Propose CIPP due to pipe location and proximity to E-rated main proposed for CIPP.
30	980912	CIPP	24	601.7	RCP	1995	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate missing and reinforcement visible. Pipe is a candidate for CIPP. 15 laterals identified in the CCTV. USMH is a junction box, and parallel 42" sewer main also exits the junction box. CCTV was blurry and not clear within the USMH. Recommend pole camera to evaluate condition of the junction box. Main appears to cross a gas main and a 24" storm drain. Propose CIPP due to pipe condition and location.
30	981726	CIPP	24	533.3	RCP	1995	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate missing and reinforcement visible. Pipe is a candidate for CIPP. 8 laterals identified in the CCTV. Main appears to cross a 24" storm drain and 6" water main. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
31	981727	CIPP	24	537.8	RCP	1995	DS CCTV from 2021 includes MH to MH coverage. Some surface aggregate missing and outline of reinforcement visible. Pipe is a candidate for CIPP. 11 laterals identified in the CCTV. Main appears to cross a gas main, a storm drain inlet, and 6" water main. Segment is a D-rated opportunity main located one segment downstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.
32	1010954	CIPP	36	250	RCP	1986	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate and outline of reinforcement visible. Pipe is a candidate for CIPP. Main is located near Medio Creek in a wooded area. The as-built shows this main to be within a 20' sewer easement. Consultant to confirm easement as main appears to cross multiple property lines. Propose CIPP due to pipe condition and size.

Table-5.1: Recommendation Summary

Map No.	Pipe ID	Preliminary Rehabilitation Actions	Diameter	Length	Material	Install Year	Comments
32	1012936	CIPP	36	650	RCP	1986	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate missing. Pipe is a candidate for CIPP. Main is located near Medio Creek in a wooded area. The as-built shows this main to be within a 20' sewer easement. Consultant to confirm easement as main appears to cross multiple property lines. Propose CIPP due to pipe condition and size.
33	1012545	CIPP	36	700	RCP	1986	US CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate missing and reinforcement is visible. Pipe is a candidate for CIPP. Main is located near Medio Creek in a wooded area; it may cross under the creek. The as-built shows this main to be within a 20' sewer easement and to be partially concrete encased. Consultant to confirm easement and location in relation to the creek. Segment is a D-rated opportunity main located downstream of an E-rated main, but based on CCTV, this main could have an E-rating. Propose CIPP due to pipe condition and size.
33	1013190	CIPP	36	500	RCP	1986	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate missing and reinforcement is visible. Pipe is a candidate for CIPP. Main is located near Medio Creek in a wooded area; it may cross under the creek. The as-built shows this main to be within a 20' sewer easement and to be partially concrete encased. Consultant to confirm easement and location in relation to the creek. Segment is a D-rated opportunity main located upstream of an E-rated main, but based on CCTV, this main could have an E-rating. Propose CIPP due to pipe condition and size.
33	1010601	CIPP	36	708.5	RCP	1986	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate and outline of reinforcement visible. Pipe is a candidate for CIPP. Main is located near Medio Creek and crosses under the Marbach Rd bridge. The as-built shows this main to be within a 20' sewer easement. Consultant to confirm easement as main appears to cross multiple property lines. Propose CIPP due to pipe condition and size.
34	1010136	CIPP	36	401.5	RCP	1986	DS CCTV from 2021 includes MH to MH coverage and sonar available. Some surface aggregate and outline of reinforcement visible. Pipe is a candidate for CIPP. Main is located near Medio Creek in a wooded area. The as-built shows this main to be within a 20' sewer easement and to be concrete encased for most of its length. Consultant to confirm easement and location in relation to the creek. Segment is a D-rated opportunity main located downstream of an E-rated main. Propose CIPP due to pipe condition and proximity to E-rated main proposed for CIPP.

6.0 Proposed Project Schedule

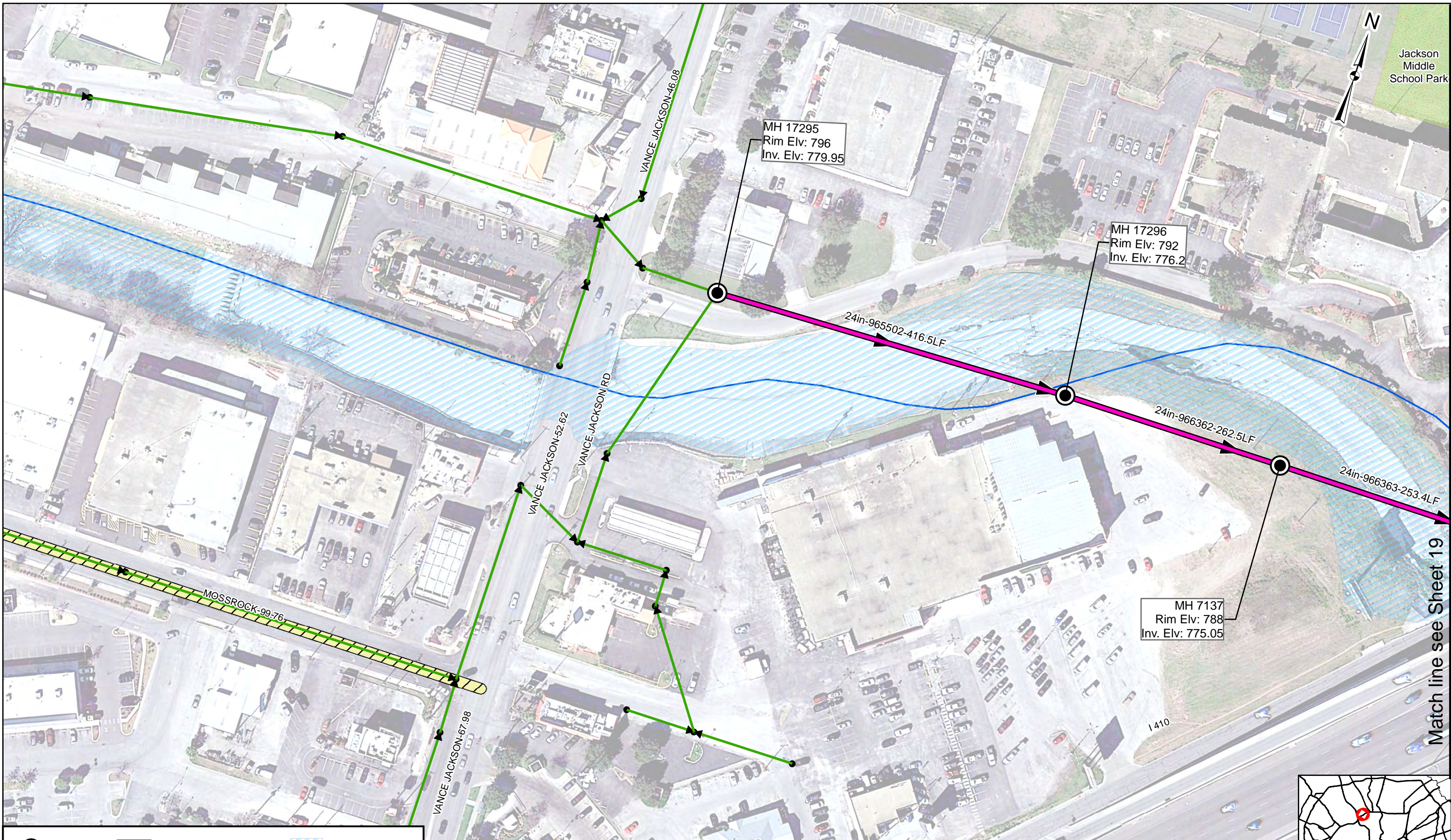
Table-6.1 provides a general project schedule which includes a timeframe for engineering design (plans, permits, right-of-entry, etc.), bidding, and construction phases based CIP board funding and previous schedules from similar projects. These should be reviewed and revised by the consultant during 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																																																						
					2023												2024												2025												2026												2027						
					3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th									
					Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1	2022 CMOM Multiple Sewershed Project	1903	Fri 7/29/22	Wed 10/13/27																																																							
2	Request for Qualifications & Professional Services Contract Execution	313	Fri 7/29/22	Tue 6/6/23																																																							
7	Design	695	Wed 6/7/23	Thu 5/1/25																																																							
19	Solicitation	110	Fri 5/2/25	Tue 8/19/25																																																							
20	100% Deisgn - Contracting Review	21	Fri 5/2/25	Thu 5/22/25																																																							
21	Advertisement	28	Fri 5/23/25	Thu 6/19/25																																																							
22	Board Prep	46	Fri 6/20/25	Mon 8/4/25																																																							
23	Board Date	1	Tue 8/5/25	Tue 8/5/25																																																							
24	Execute Construction Contract	14	Wed 8/6/25	Tue 8/19/25																																																							
25	Construction	785	Wed 8/20/25	Wed 10/13/27																																																							



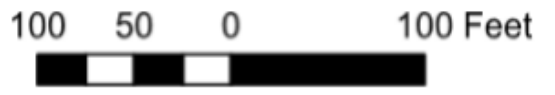
Jackson Middle School Park



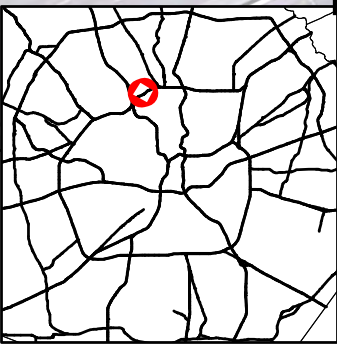
Match line see Sheet 19

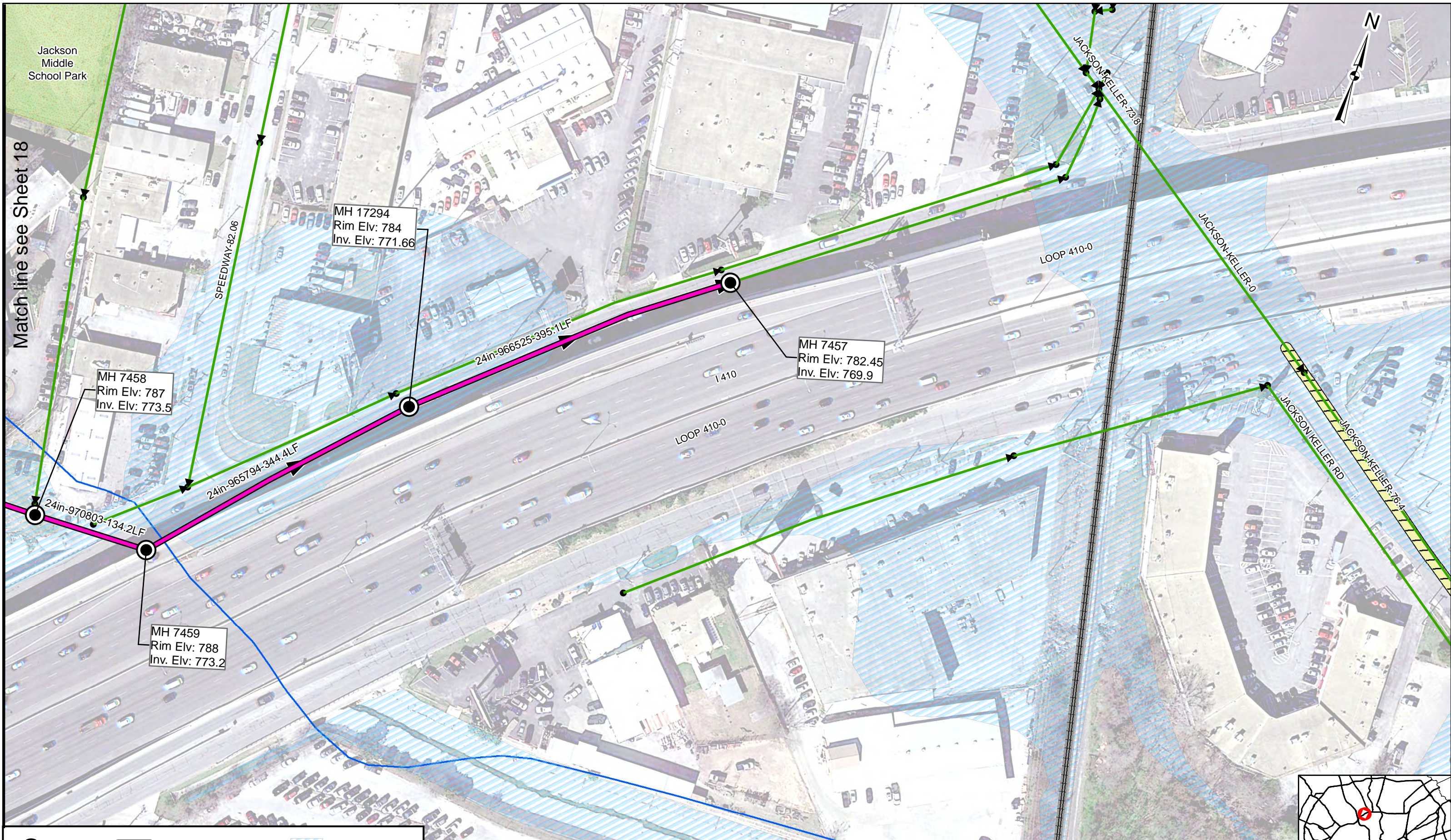
	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project



11/11/2022



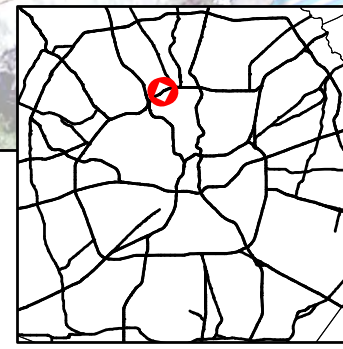
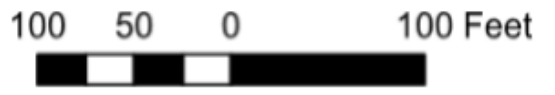


Match line see Sheet 18



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

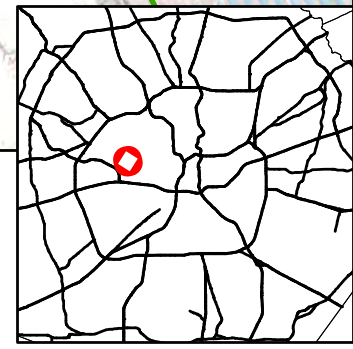
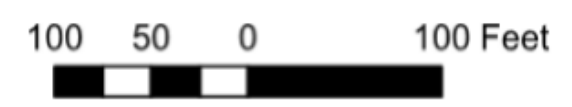
2022 CMOM Multiple Sewershed Project

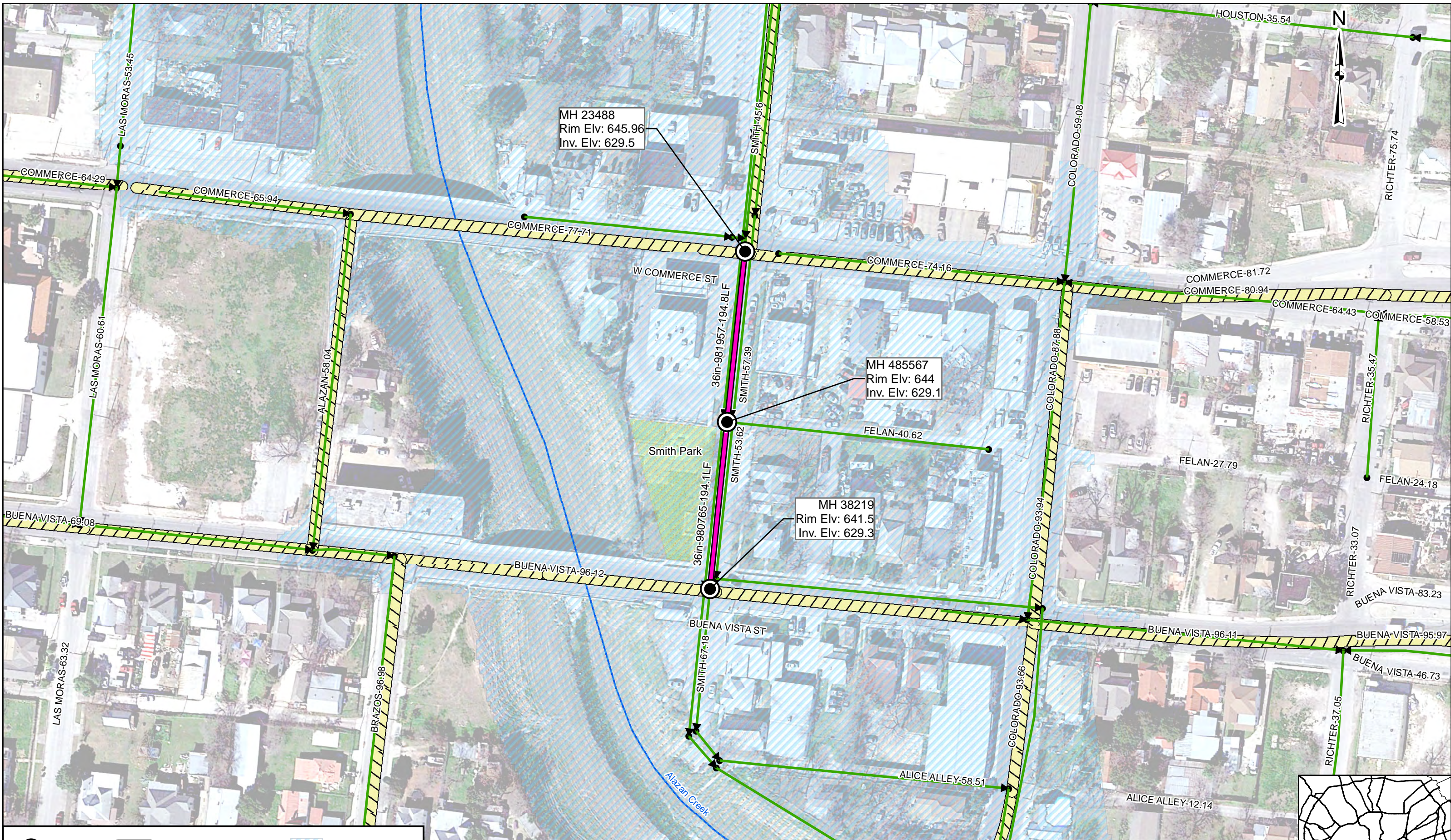




	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project





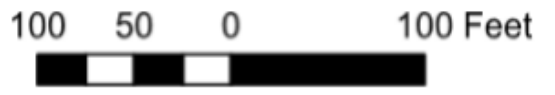
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Inv. Elv: 629.5

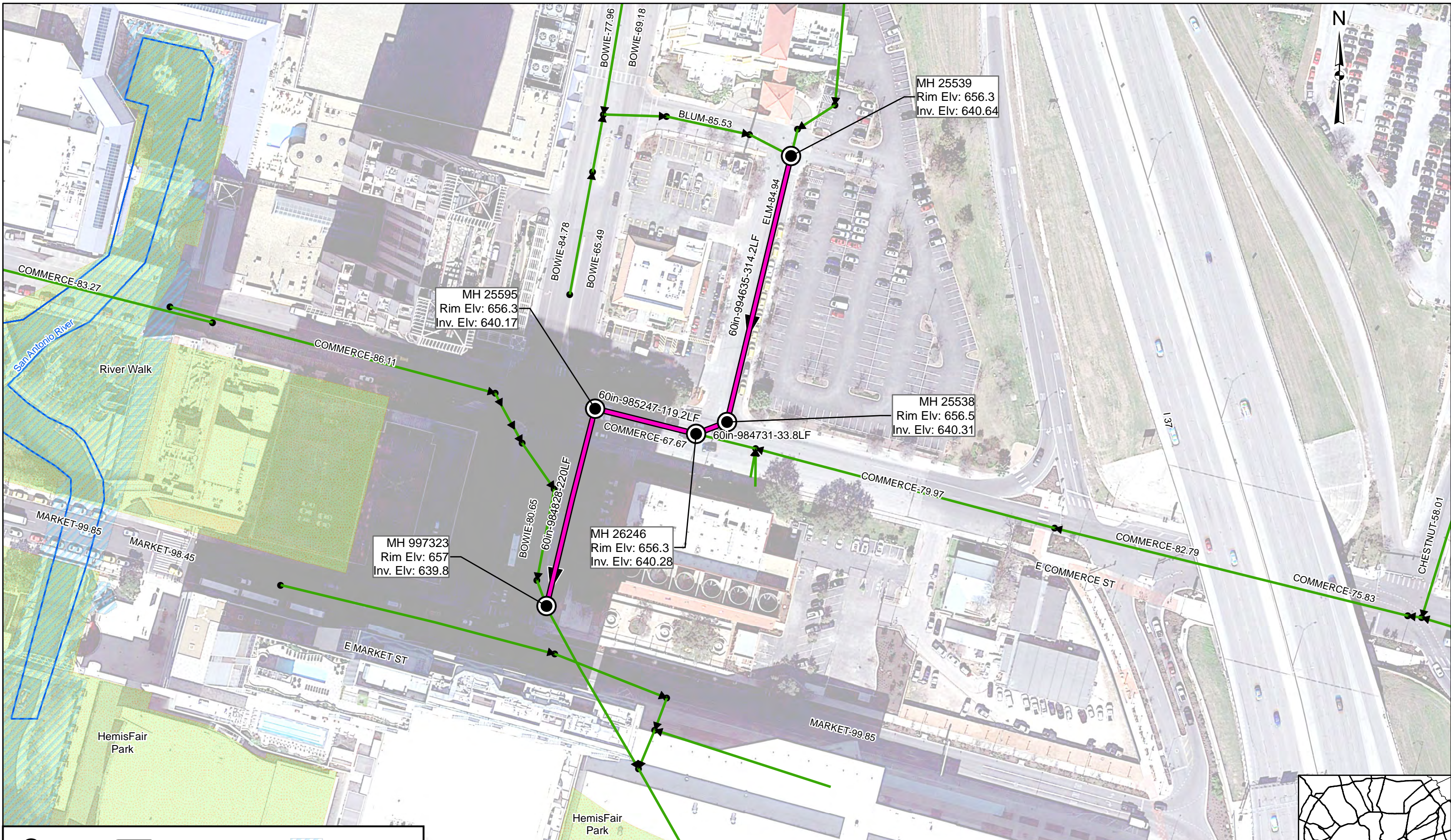
MH 48567
Rim Elv: 644
Inv. Elv: 629.1

MH 38219
Rim Elv: 641.5
Inv. Elv: 629.3

2022 CMOM Multiple Sewershed Project

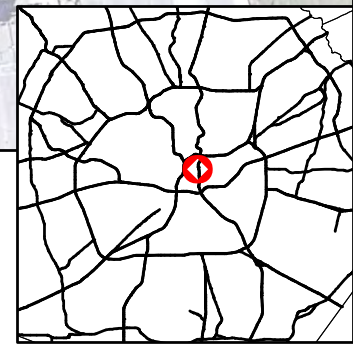
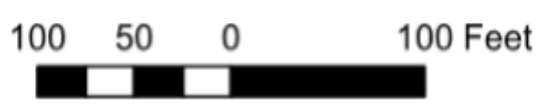
- Manhole
- CoSA IMP Project
- 100Yr Floodplain
- CIPP
- CoSA Bond Projects
- Creeks
- OPEN CUT
- Railroad
- Edwards Recharge Zones
- CoSA Park
- Karst Zone

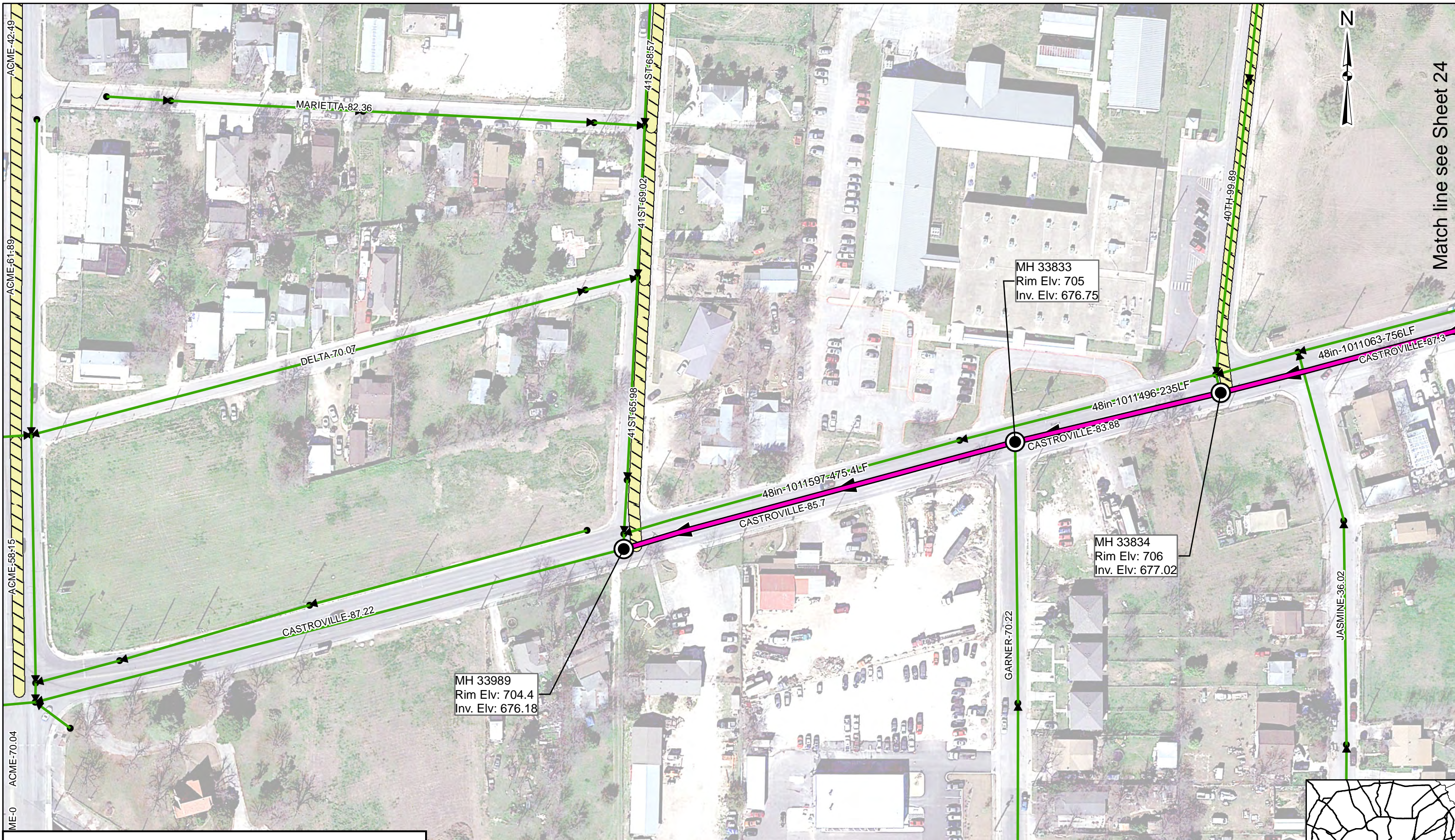




	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project

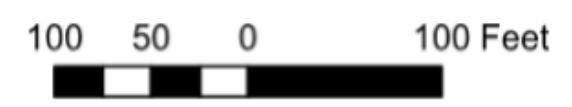


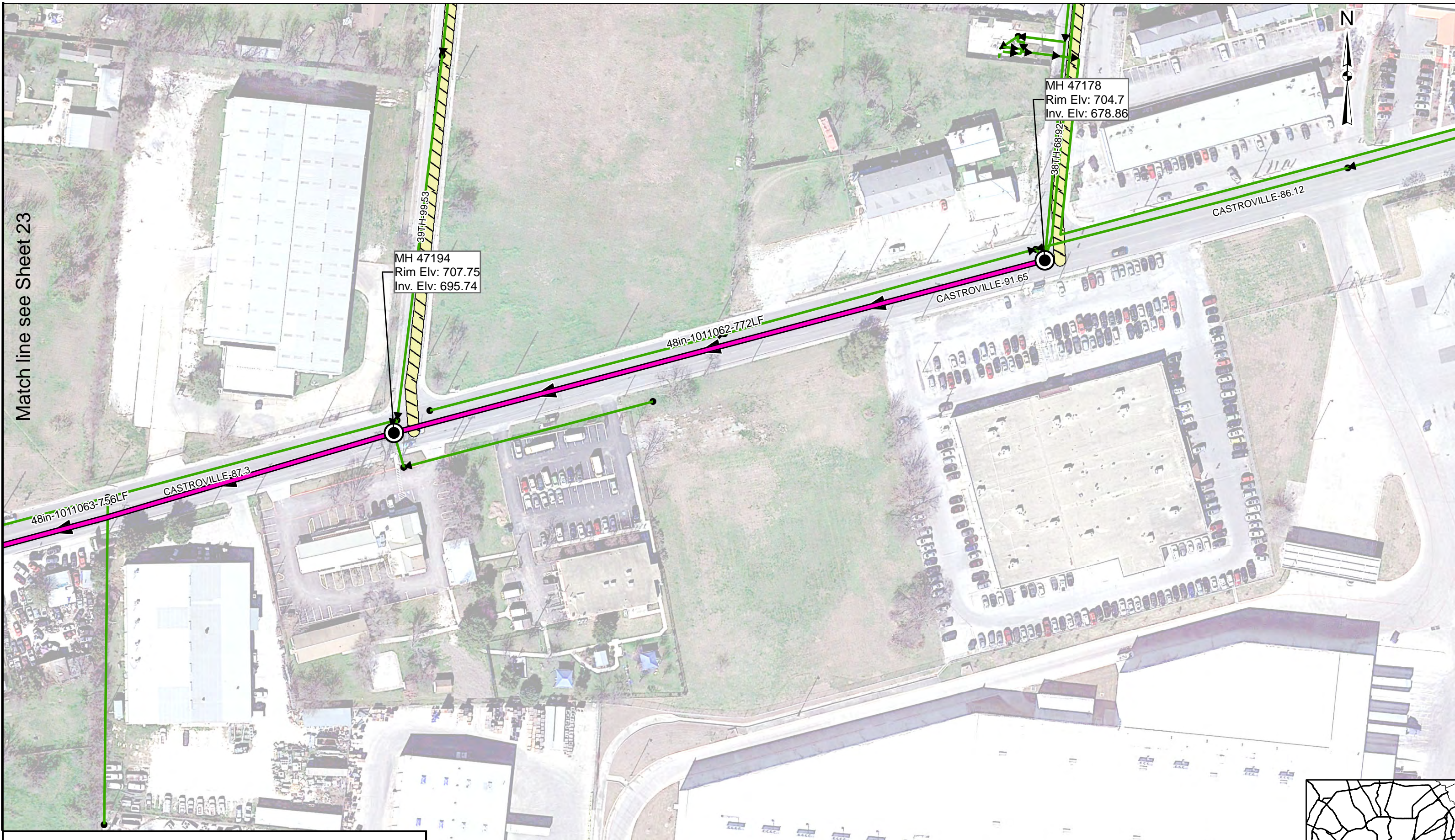


Match line see Sheet 24

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

2022 CMOM Multiple Sewershed Project





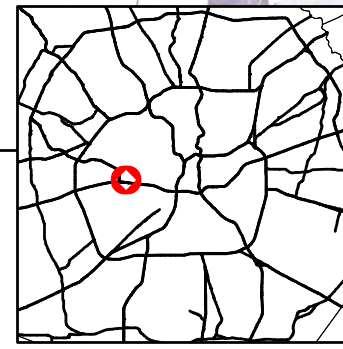
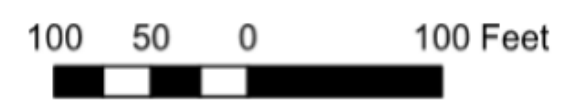
Match line see Sheet 23

MH 47194
Rim Elv: 707.75
Inv. Elv: 695.74

MH 47178
Rim Elv: 704.7
Inv. Elv: 678.86

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

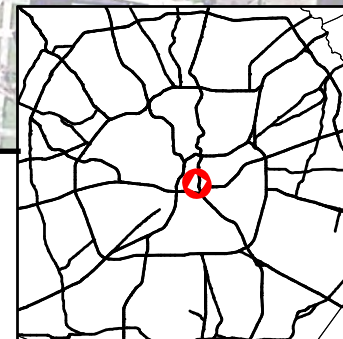
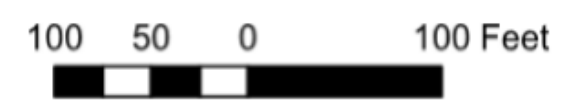
2022 CMOM Multiple Sewershed Project



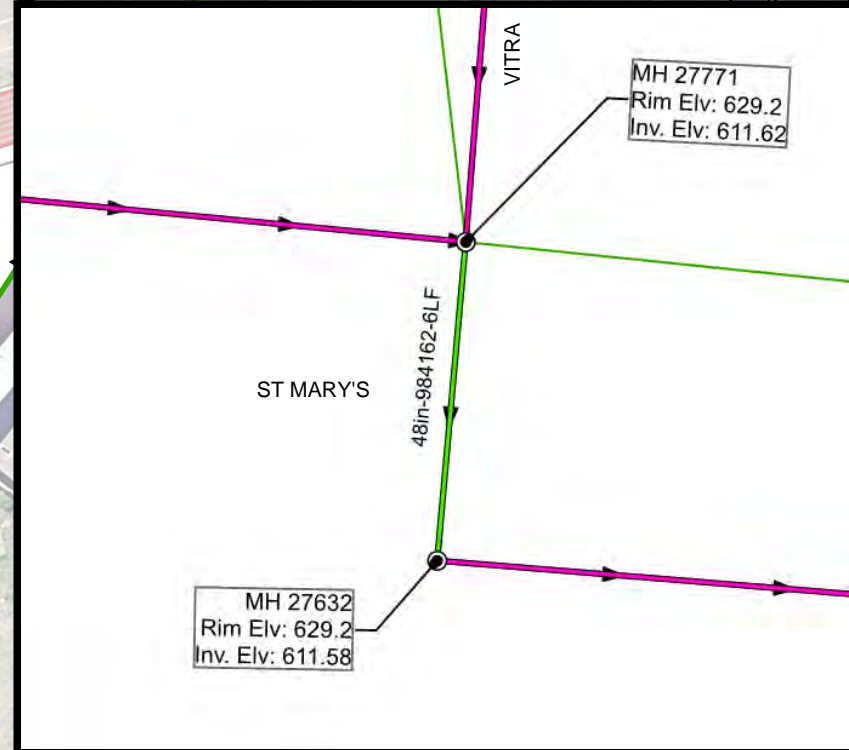
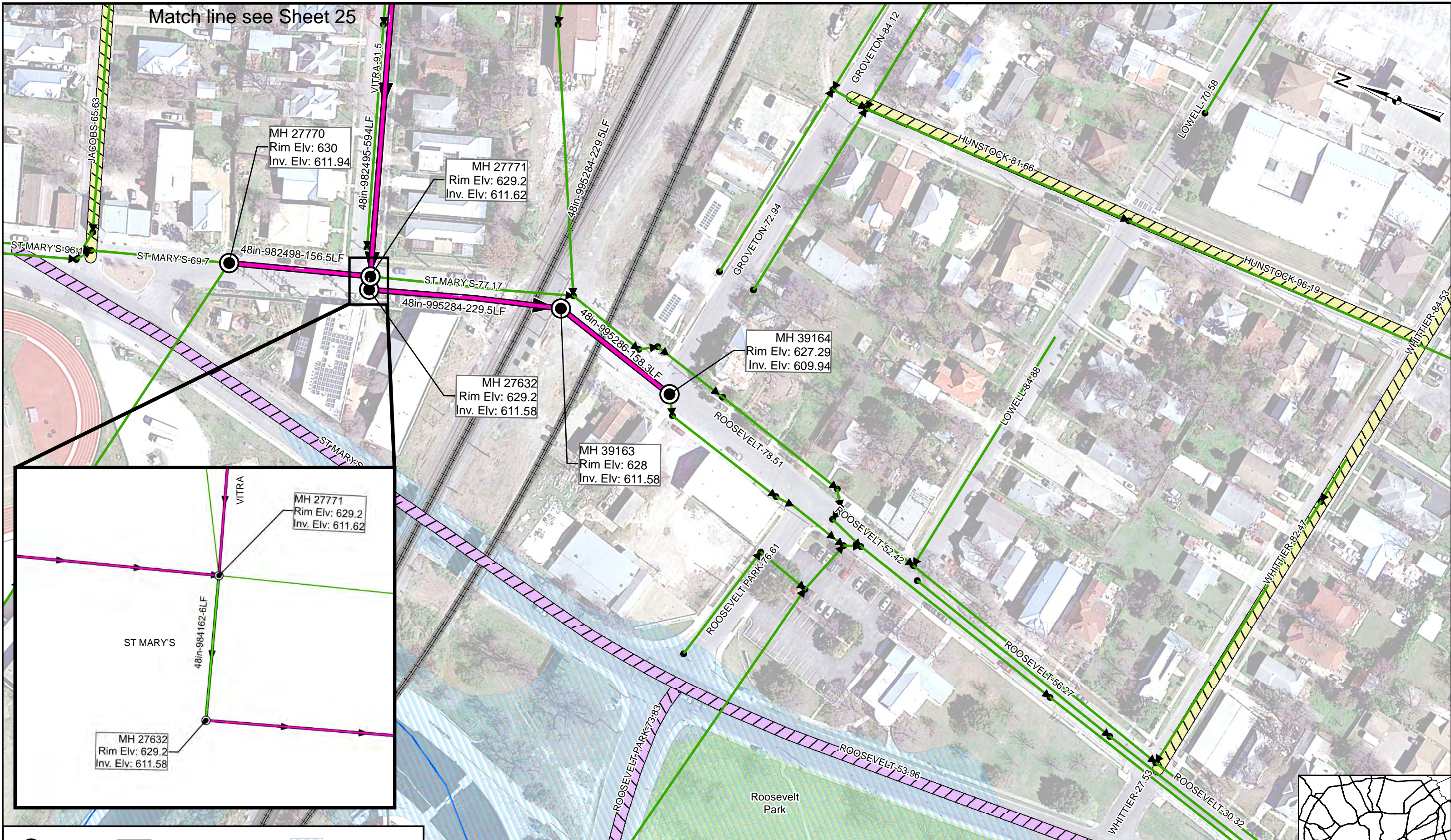


	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project

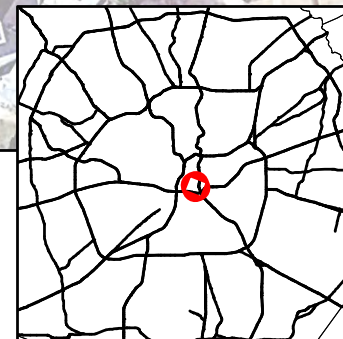
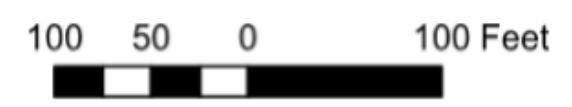


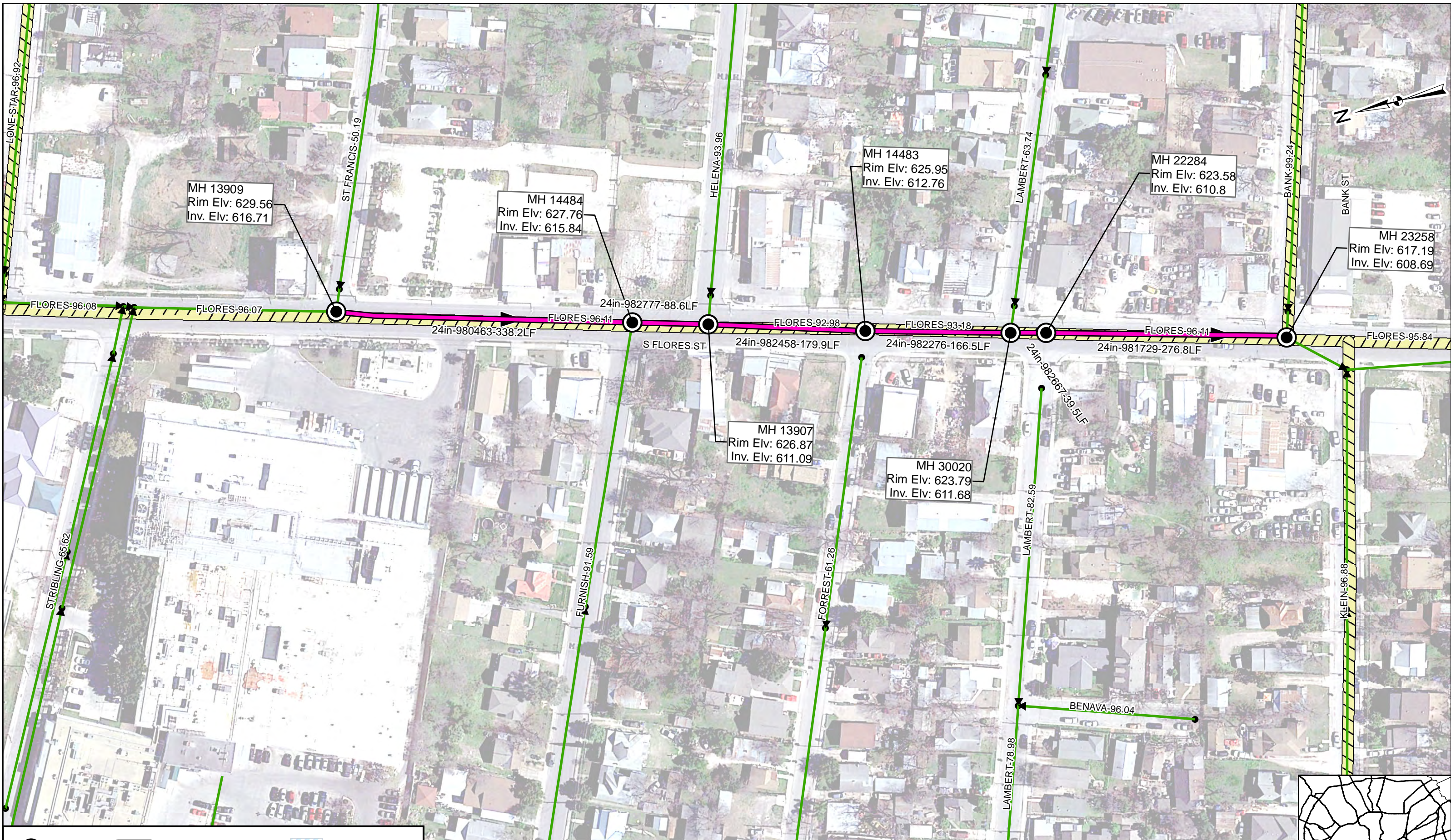
Match line see Sheet 26



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

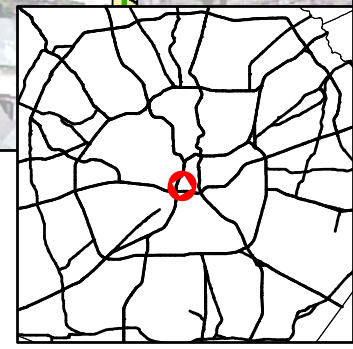
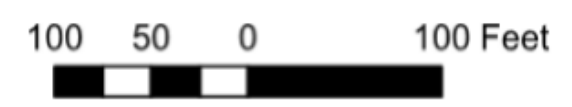
2022 CMOM Multiple Sewershed Project

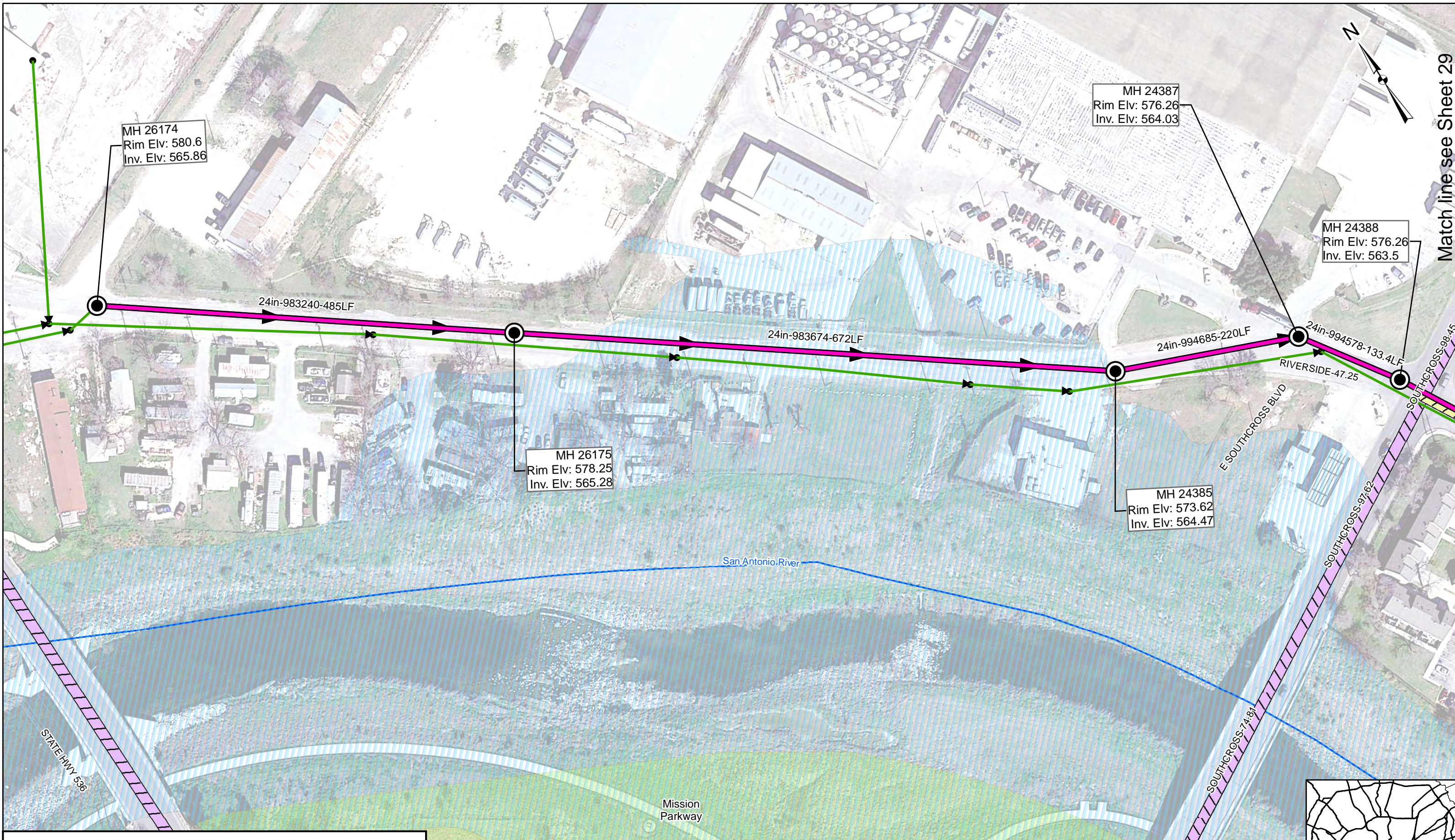




	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project



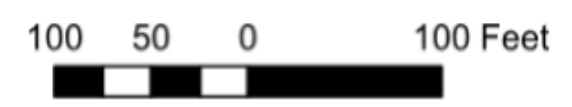


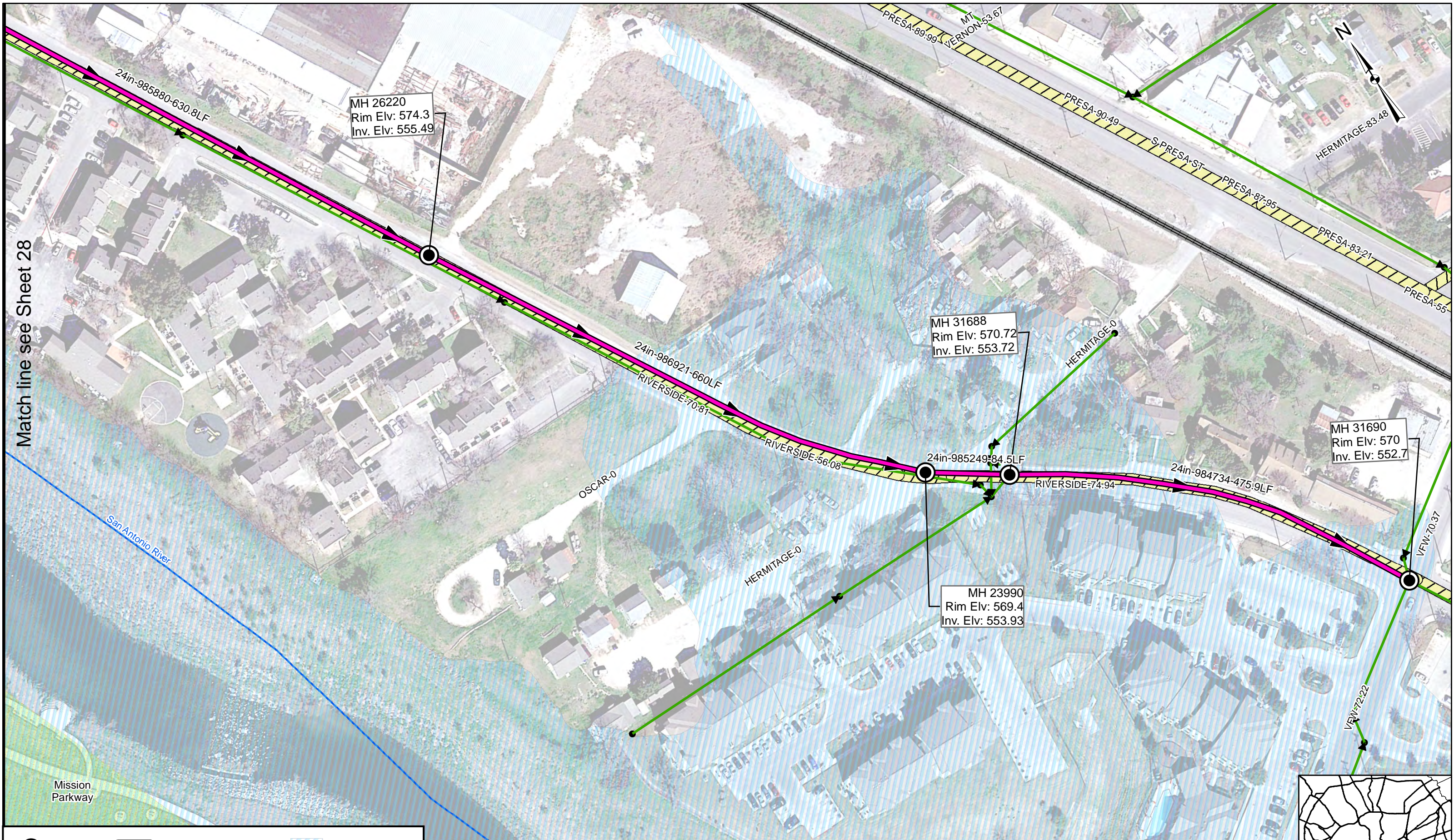
Match line see Sheet 29



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

2022 CMOM Multiple Sewershed Project

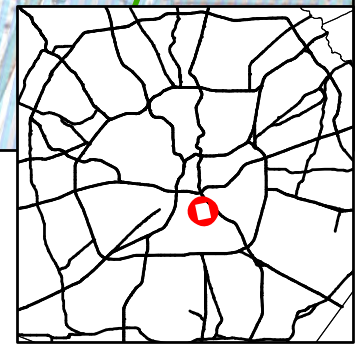
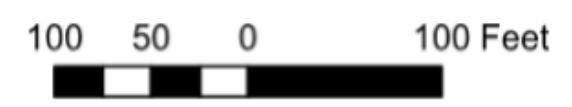


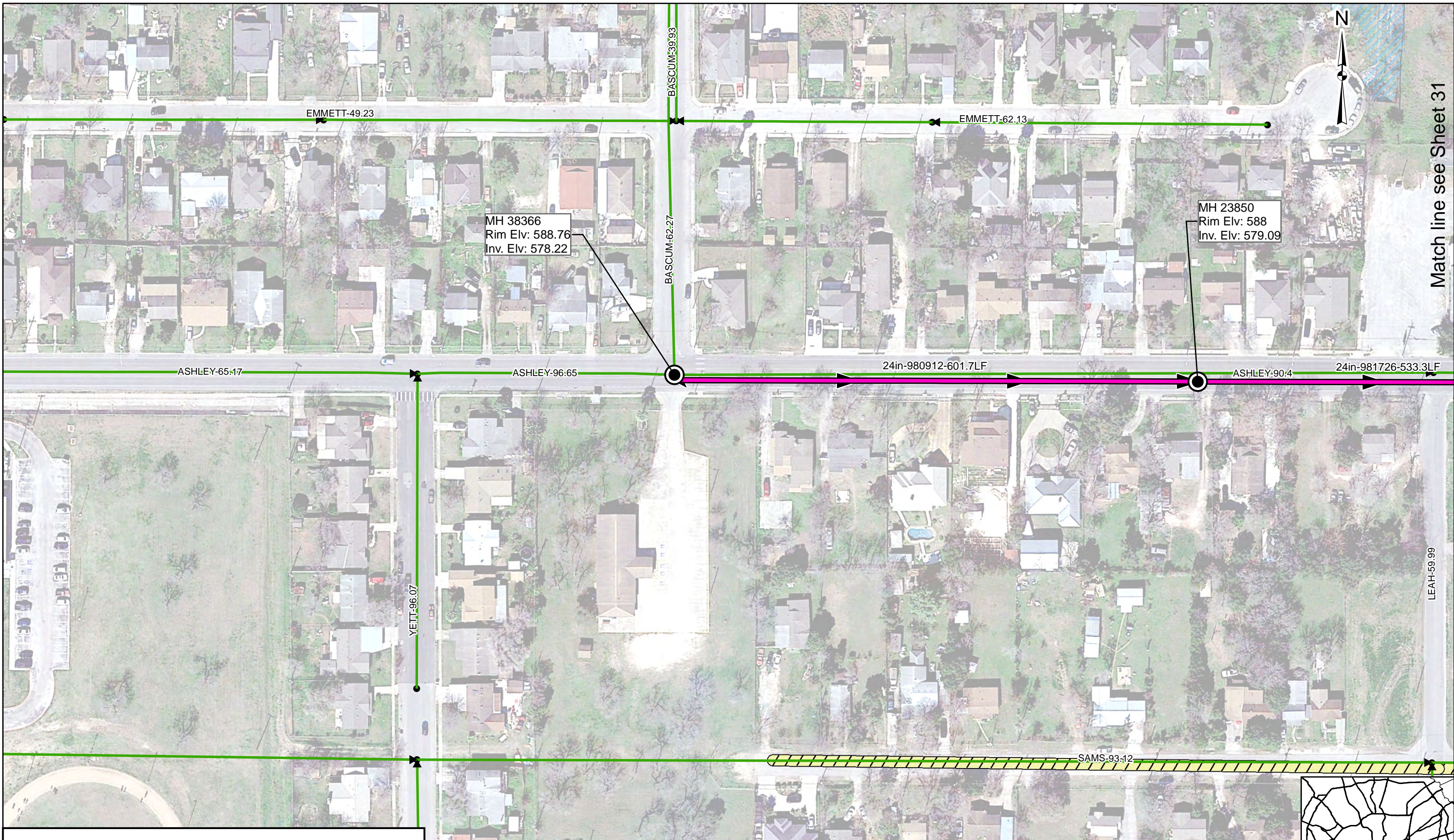


Match line see Sheet 28

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

2022 CMOM Multiple Sewershed Project



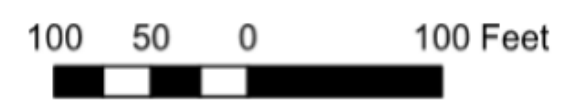


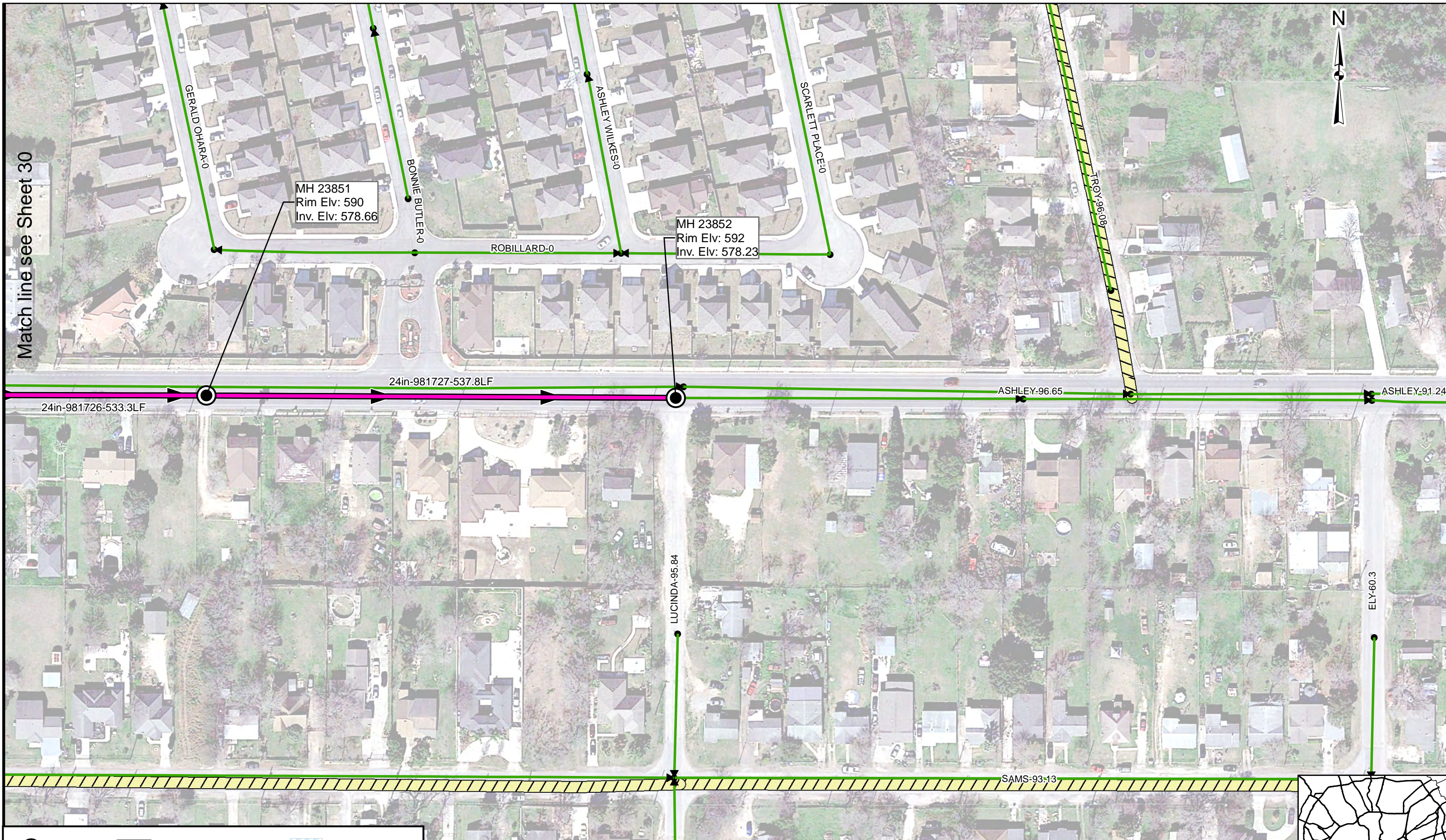
Match line see Sheet 31

MH 38366
Rim Elv: 588.76
Inv. Elv: 578.22

MH 23850
Rim Elv: 588
Inv. Elv: 579.09

2022 CMOM Multiple Sewershed Project





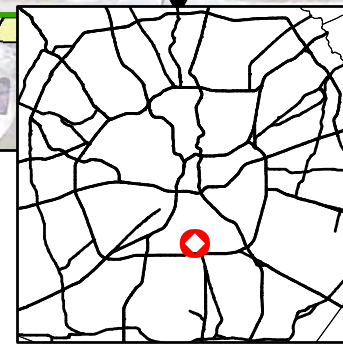
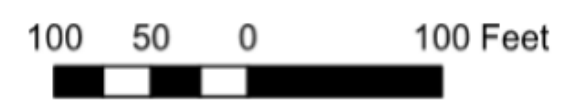
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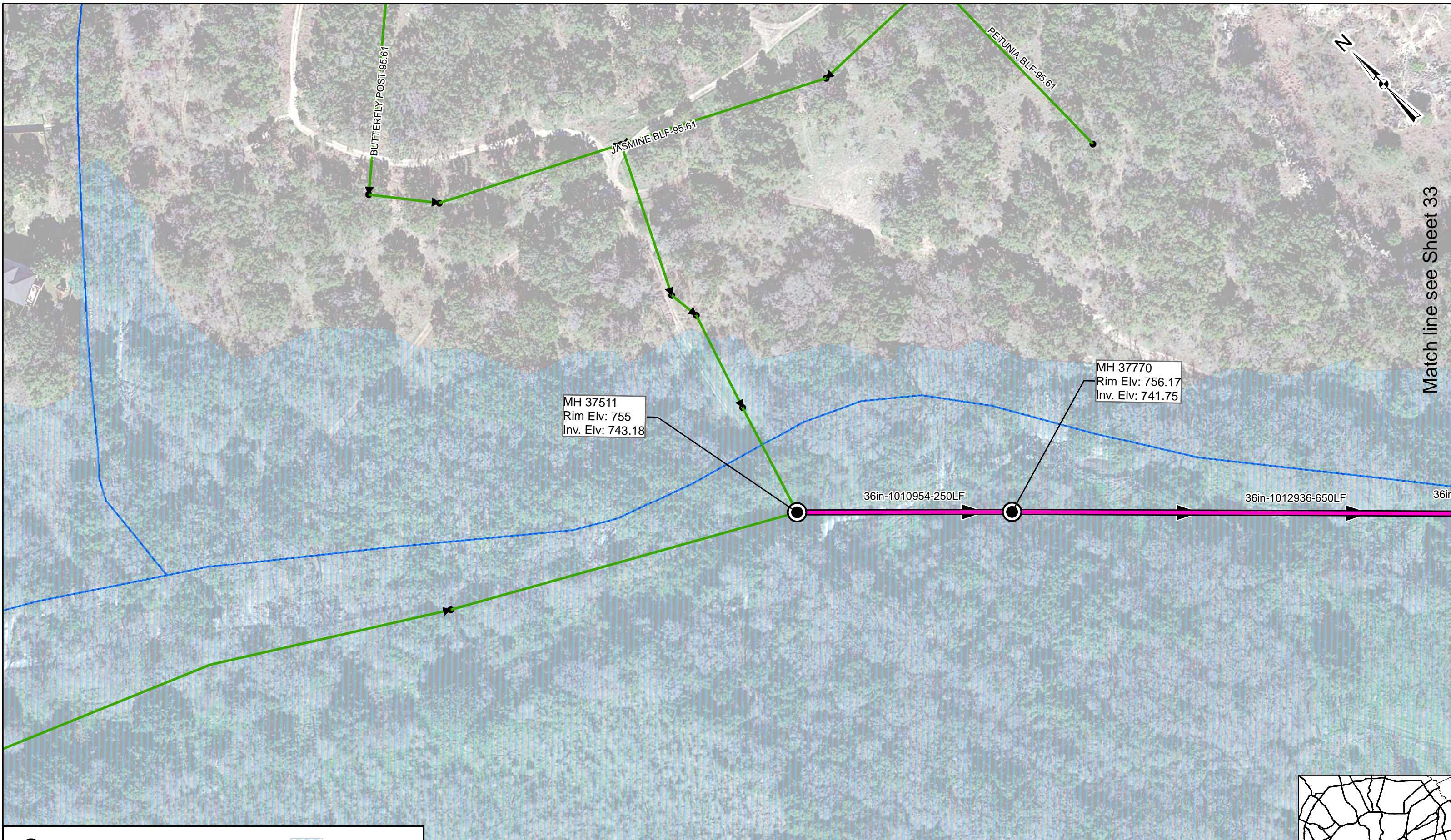
MH 23851
Rim Elev: 590
Inv. Elev: 578.66

MH 23852
Rim Elev: 592
Inv. Elev: 578.23

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

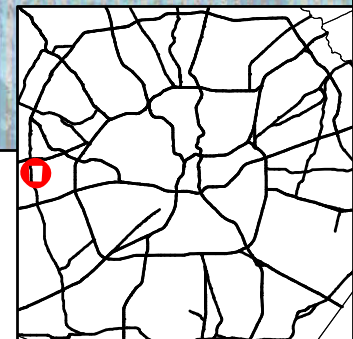
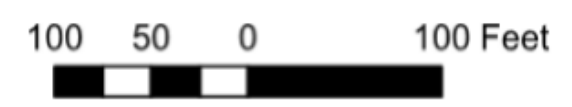
2022 CMOM Multiple Sewershed Project



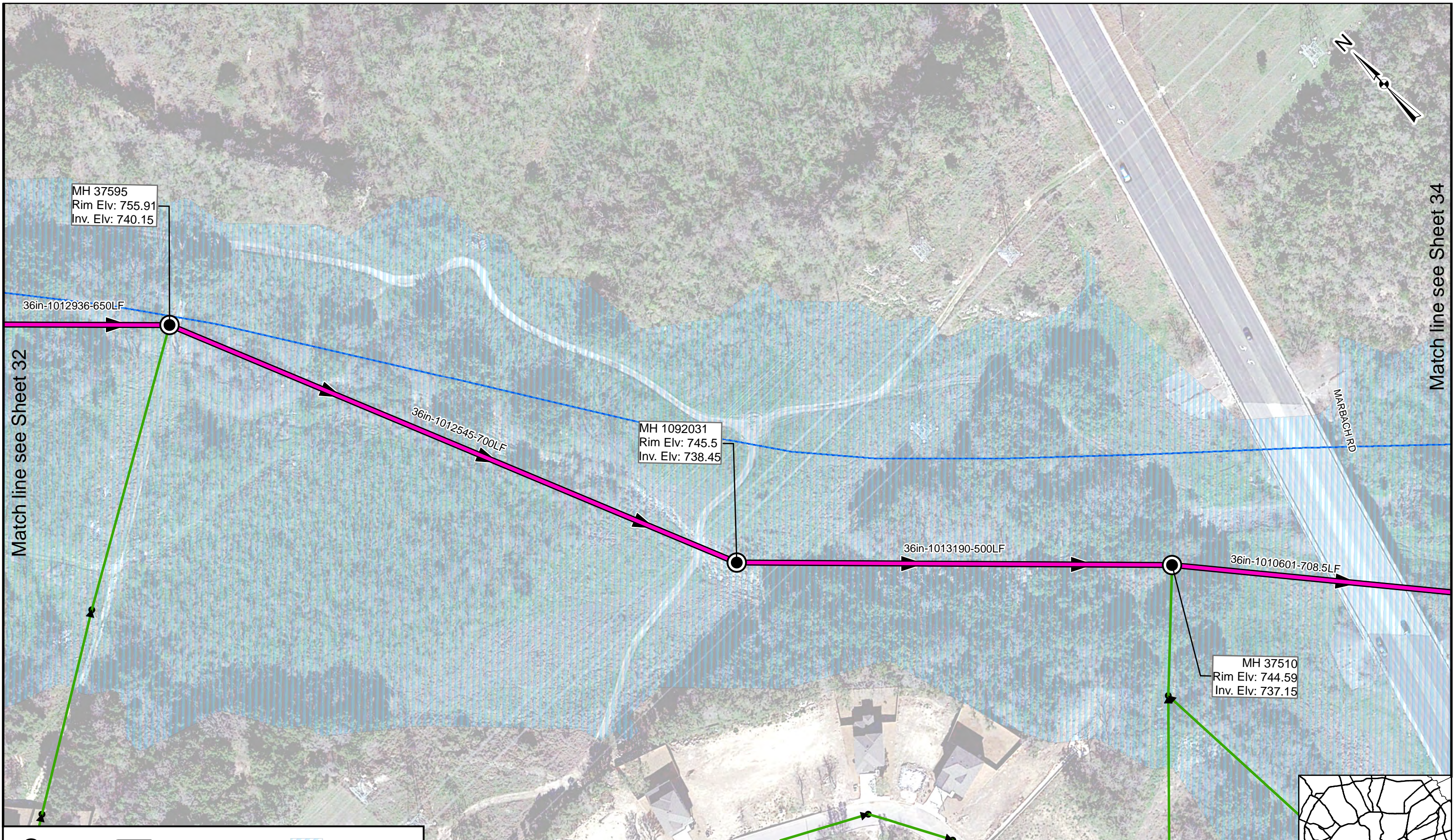


	Manhole		CoSA IMP Project		100Yr Floodplain
	CIPP		CoSA Bond Projects		Creeks
	OPEN CUT		Railroad		CoSA Park
			Edwards Recharge Zones		Karst Zone

2022 CMOM Multiple Sewershed Project



Match line see Sheet 33



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Inv. Elv: 740.15

MH 1092031
Rim Elv: 745.5
Inv. Elv: 738.45

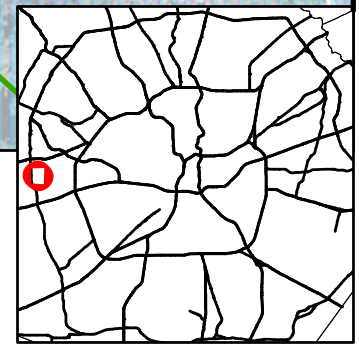
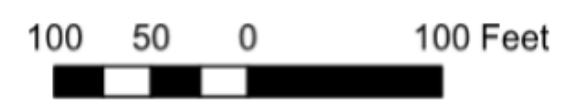
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Inv. Elv: 737.15

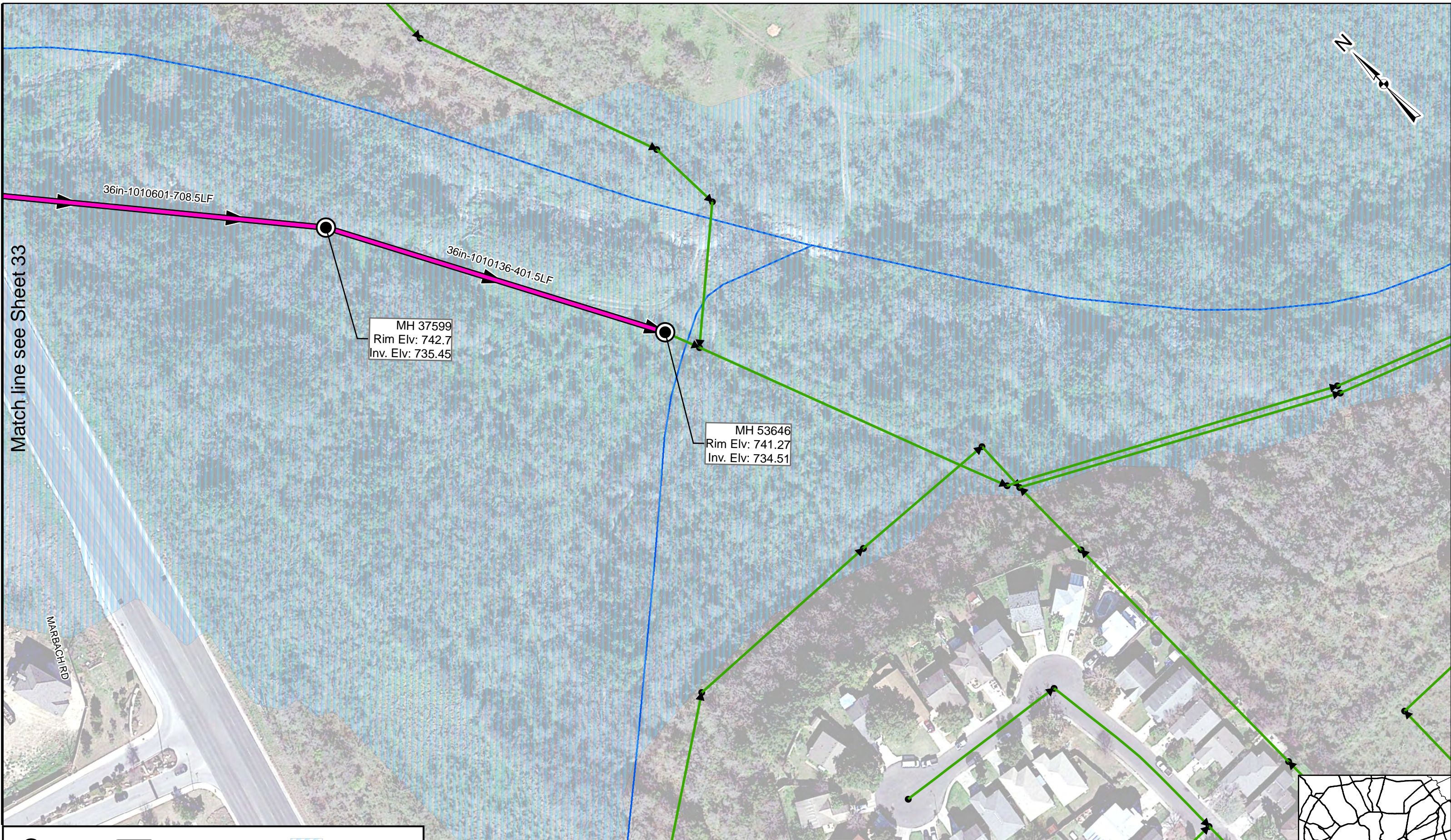
Match line see Sheet 32

Match line see Sheet 34

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

2022 CMOM Multiple Sewershed Project





Match line see Sheet 33

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

2022 CMOM Multiple Sewershed Project

