



Capital Master Plan 2024 - 2033

Platte Canyon Water and Sanitation District



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PLATTE CANYON WATER AND SANITATION DISTRICT

CAPITAL MASTER PLAN

2024 - 2033

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SECTION 1

MASTER PLAN DESCRIPTION

BACKGROUND

Platte Canyon Water and Sanitation District was organized in May 1959 to provide potable water distribution and wastewater collection and transmission services to properties located within the District boundaries. Since the formation of the District, over 77.5 miles of water mains, 75.6 miles of sanitary sewer mains, and one potable water pumping station have been installed by the District and private developers. The District now has responsibility for operation, maintenance, rehabilitation, and replacement of all these facilities.

The District first implemented an asset management program in 1986, which consisted of evaluating the assets to develop a systematic rehabilitation and replacement program. The program was substantially enhanced and updated in 2018 and 2019 by adding an evaluation of the criticality of each asset to the existing assessment. This criticality factor is based on age, type of material, number of failures, and observed condition of each asset. Using the new asset evaluation criteria, the selection and prioritization of capital projects is updated each year. The evaluation process and criteria used to determine which assets are in need of rehabilitation or replacement are described in a following section.

Present day replacement costs for assets owned and maintained by the District totals over \$150 million. Although the majority of the District's infrastructure remains within its expected useful life, electrolysis-caused corrosion as well as normal aging and deterioration of facilities have increased the need for the rehabilitation and replacement of District assets.

The oldest of the District's assets were installed in 1958 and 46 percent were installed prior to 1974. These assets are now approaching the end of their useful life and are failing at an increasing rate. This Capital Master Plan provides a systematic process for scheduling and conducting these necessary system improvements in a timely and cost-effective manner.

PURPOSE

The purpose of this Plan is to itemize and schedule water and wastewater facility expansion, rehabilitation and replacement projects, and vehicle and equipment purchases. This Plan is intended to be a dynamic document. The proposed construction, rehabilitation, and replacement schedule is reviewed annually and adjusted to reflect changes in development patterns, and infrastructure deterioration and failure. The Plan is submitted to the Board of Directors for review and discussion in conjunction with the annual budget and ten-year financial plan.

The Plan enhances the accuracy and effectiveness of budgeting and cash flow analysis and allows the district to schedule future expenditures and determine appropriate levels of capital reserves. It provides for long range planning of tax and service fee revenues used for infrastructure

rehabilitation and repair, minimizing the potential for large fluctuations in tax and service fee rates. The program further allows for planning and scheduling system replacements and rehabilitations on a consistent basis to match proposed revenues.

The Plan provides a framework for the district to be proactive rather than reactive when dealing with asset replacement and rehabilitation needs. System modifications are prioritized so the facilities most in need of repair are replaced or rehabilitated in an appropriate timeframe. The goal is to minimize operation and repair expenses by avoiding costly unscheduled repair, replacement, and rehabilitation of deteriorating facilities. Most importantly, an aggressive capital rehabilitation and replacement program helps avoid system deterioration, disruption, and potential safety, health and property damage impacts.

For vehicle and equipment needs, the Plan provides for systematic replacement of the district's fleet and equipment. Replacements are scheduled to avoid large expenditures for equipment repairs, excessive down time of malfunctioning equipment, while balancing annual expenditures for replacements. The Plan allows for consideration of service life, manufacturers production lead time, and changing performance requirements for various vehicle and equipment assets.

FINANCIAL

The capital requirements for the Plan are rising as the district's facilities age and deteriorate. The district has historically funded all projects via cash from reserves or the monthly service fee. However, based on recent discussions and analysis, the district is considering obtaining a loan or issuing bonds to pay for the replacement of the remaining cast iron pipe in the system, beginning in 2026. The water main replacement schedule included in this Plan accounts for that approach. Should the loan/bond issuance not be pursued, the district will revert to a replacement schedule that is similar to what was presented in the previous year's Plan.

The District's Board of Directors adopted a revised Cash Reserve Policy in May 2019 that establishes criteria for establishing minimum cash reserves for operations, capital expenditures and debt service. The criteria for the capital reserve component are based on the greater of the projected capital expenses for the next five years, or a set percentage of the replacement cost of all District assets adjusted for depreciation. The suggested balance for each reserve component is calculated and presented to the Board during the annual budget and financial plan evaluation. The District's goal is to maintain appropriate cash reserves to fund the levels of service for operations at established levels of service as well as rehabilitation and replacement of system assets as determined by the comprehensive Plan.

CRITERIA FOR RATING WATER AND SEWER MAIN REHABILITATION AND REPLACEMENT PROJECTS

Water

In 2020, the District implemented a robust capital planning process based on a variety of factors, many of which the District was already using in its planning process. The new process continues the District's goal of prioritizing the replacement of water mains over the ten-year planning

horizon. The approach expanded upon the previously used analytical, objective rating process to include a more comprehensive assessment of all District-owned water mains that incorporates a wider range of factors.

This process includes the ability to group multiple segments of pipe located along the same street as projects and rank them against each other. Co-located priority segments become one large project and those with higher priority segments are recommended for replacement on a more aggressive schedule. Previously, each pipe segment was evaluated on an individual basis, which resulted in a disjointed approach to full replacement of critical water mains in a specific roadway.

Performance Score (Likelihood of Failure)

To begin with, a performance score is calculated for each segment using known pipe characteristics including those listed in the following table.

Age of pipe	The score assigned to each segment is based upon the following age ranges: • 0-10 years old – 1 point • 11-30 years old – 2 points • 31-50 years old – 3 points • 51-58 years old – 4 points • 59 and older – 5 points
Type of pipe	Each type of pipe is assigned a score, which is based on the likelihood of failure. A higher number means it is more likely for that pipe material to fail: • cast iron (CIP) – 5 points • ductile iron, asbestos-cement, steel – 3 points • polyvinyl chloride (PVC) – 1 point
Number of leaks	Each segment is assigned a score based on the number of failures on that segment: • no failures – 0 points • 1 failure – 3 points • 2 failures – 4 points • 3 or more failures – 5 points

An overall Performance score is then calculated for each segment with the pipe material weighted at 36% of the total points and the age of pipe and number of leaks equally weighted at 32% each.

Impact Score (Consequence of Failure)

Next, an impact score is calculated for each segment using two different factors. One factor is the condition rating determined by District staff in the past years. The other is the number of isolation valves required to shut down each segment.

Condition Score: A condition score, which is defined as the result of a water main failing, is measured as the impact/significance on the distribution system, customers in the surrounding area, and the District. Every segment in the distribution system was reviewed by staff and given a CoF rating. This rating, which ranges from 1 to 5, increases as the impacts of the water main failure become more significant and costlier. Factors considered include:

- Number of units served – This is all customers served by that segment of water main, including residents, businesses, commercial entities, and municipal buildings.
- Number of critical customers or large businesses served – Critical customers include schools and universities, hospitals, assisted living facilities, senior centers, urgent care centers, fire stations, and other locations that provide a vital public service. Large businesses affected by a potential break include strip malls and shopping centers as well as stand-alone businesses.
- Cost to repair – The cost to repair will typically be between \$6,000 and \$10,000 (rated a 3 out of 5) but variances such as depth of the main, difficult access, and size of break can impact the rating.
- Time to repair – The time to repair will most typically be 4 to 6 hours (rated a 2 out of 5) but variables such as ease of access to the break area and/or complexity of the break are also considered.
- Other factors – Other factors can include environmental impacts (a flowing break near a river/lake), potential flooding of nearby customers property, a potential break on a major thoroughfare or the only road to an area or critical customer, potential impacts to critical customers (as noted above), or other circumstances that would make a break repair more difficult, costly, and/or impactful to customers.

Then in the platform, additional granularity was added and points were assigned as follows for the condition score and the number of isolation valves:

Condition Score	The score assigned to each segment is based upon the following ranges: • 1.0 to 1.7 – 1 point • 1.8 to 2.5 – 2 points • 2.6 to 2.9 – 3 points • 3.0 to 3.5 – 4 points • 3.6 or higher – 5 points
Number of isolation valves	The score assigned to each segment is based upon the following: • 1 to 2 valves – 1 point • 3 to 4 valves – 2 points • 5 valves – 3 points • 6 valves – 4 points • 7 or more valves – 5 points

An overall Impact score is then calculated for each segment with the condition score weighted at 95% of the total points and the number of isolation valves weighted at 5%.

Overall Score

An overall score (based on a maximum of 100 points) is calculated for each segment as follows:

$$\text{Overall Score} = [(\text{Performance Score}) \times 3 + (\text{Impact Score})] \times 5$$

An example of the application of the pipe evaluation rating system follows:

A cast iron pipe installed in 1960 with two failures, a condition rating of 2.6, and 5 isolation valves receives an overall score as calculated below:

Age of pipe 5 points
Type of pipe 5 points
Number of leaks 4 points
Performance Score = $5 \times 0.32 + 5 \times 0.36 + 4 \times 0.32 = 4.68$

Condition rating 3 points
of Isolation Valves 3 points
Impact Score = $3 \times 0.95 + 3 \times 0.05 = 3.0$

Total Score ($4.68 \times 3 + 3.0$) $\times 5 = 85.20$

Using the Overall Score, a ranking list is developed of all the water mains in the distribution system. The top 200 most critical water mains were then grouped into projects based upon their location (i.e. all segments in the same street became one project) and combined Overall Score. This list became the starting point for the prioritization of the replacement and rehabilitation projects within the district.

The projects were initially assigned to years based upon the current industry standard of replacing 1% of pipes per year. That list and mapping of projects was then evaluated for several additional factors including project proximity and total annual cost. In some cases, projects were moved up or down on the replacement schedule to obtain budget and/or construction efficiencies.

Sewer

Sanitary sewer pipelines are rated during routine, preventive television inspections. Pipelines deemed to be at risk of failure or stoppage despite increased preventive maintenance, or identified as a source of infiltration or exfiltration, are scheduled for rehabilitation or replacement within a three-year timeframe. Some pipelines that are damaged yet can continue to provide reliable service with increased preventive maintenance are scheduled for rehabilitation or replacement in later years based on the extent of damage and potential for failure.

SECTION 2

SUMMARY OF PROPOSED CAPITAL EXPENDITURES FOR THE PERIOD 2024 - 2033

The annual asset evaluation process results in the addition and rescheduling of several capital projects from the previous ten-year capital plan. These fluctuations in project scheduling are expected due to the timing, type and number of water and sewer main failures, and the criticality of each asset determines the priority for rehabilitation or replacement.

Additional infrastructure improvements are required beyond the current ten-year planning period, so a 30-year infrastructure rehabilitation and replacement plan is also prepared. This plan is used as a planning tool to reflect the long-range facility improvements and financial needs of the district.

The Plan has been divided into water facility rehabilitation/replacement, water main replacement, sanitary sewer rehabilitation and replacement, and vehicle and equipment additions and replacements.

The 2024-2033 Capital Master Plan includes \$2,670,373 for capital projects and vehicles in 2024, and \$29,852,191 during the ten-year period. This compares with the previous ten-year projected expenditures of \$25,470,230. Water facility replacement projects account for 89% of the proposed expenditures while purchases of vehicles account for the remaining 11%. The district's extensive sanitary sewer video inspection and maintenance program has not revealed a need to schedule major rehabilitation or replacement of sewer system assets in the next ten years.

Water Facilities

The schedule for water facility projects is based on the process as explained in the criteria for replacement of assets section of this report. No facilities in the replacement/rehabilitation schedule are needed to expand capacity to serve new development. Existing district facilities are adequate to serve all anticipated development within the district's ultimate service area.

Water Mains

Four water main replacement projects are scheduled for 2024. These projects include the replacement of approximately 4,500 feet of 8-inch and 12-inch cast iron pipe with advanced levels of electrolysis-caused corrosion with new PVC pipe. The pipe to be replaced is located in the Bow Mar South neighborhood, was installed in 1963, and was not protected from corrosive soils as is current practice. There have been a combined seven (7) breaks on these water mains. The projected construction cost for these projects (including a 20% contingency) is \$2,232,000.

The Plan proposes 39 additional water main replacement projects between 2025 and 2033, which represents the replacement of 39,000 feet of pipe. The projects in years 2026 and 2027 are proposed to be paid for using an SRF loan or bond issuance, pending approval from the district's voters.

The projected replacement cost for all 43 capital projects scheduled from 2024 to 2033 is \$24,560,500. This includes the cost of construction and a 20 percent construction contingency for each project. The type and size of the pipe scheduled for replacement as part of these projects is shown in Table 1 below.

Table 1

Size	Cast Iron Pipe	Asbestos Cement Pipe
4-inch	2,277 feet	0 feet
6-inch	14,580 feet	3,750 feet
8-inch	9,309 feet	5,037 feet
10-inch	690 feet	0 feet
12-inch	6,413 feet	579 feet
16-inch	936 feet	0 feet

From 2024 to 2033, an additional \$2,046,700 is budgeted for capital project engineering costs. These costs are projected at 10 percent of anticipated construction costs and may be partially budgeted in the year prior to when construction is planned. This allows the district to have projects designed and ready for bidding prior to the start of the construction season.

Both construction (with contingency) and engineering costs are inflated at 3.37% per year using the ten-year average of the Engineering News Record Construction Cost Index.

In total, the water main replacement projects in the 2024-2033 Capital Master Plan include 43,570 feet of pipe proposed for replacement. This represents 10 percent of all water main assets owned by the district, which reflects a replacement rate of 1.00 percent per year. This rate aligns with the water sector best practice of replacing 1.00 percent of water main assets per year.

Sanitary Sewers

No sanitary sewer replacements have been scheduled for 2024. No sewer replacement or rehabilitation projects are scheduled between 2025 and 2033.

Vehicles & Equipment

In 2024, vehicle and equipment replacements are projected at \$152,665. These include replacement of two (2) standard four-wheel drive pickup trucks and the combination valve/vacuum valve operator. Vehicle replacement costs for the period between 2024 and 2033 are projected to be \$3,245,040. A detailed vehicle replacement schedule is provided in Section 4. Note the costs in that section are shown in 2024 values and have been inflated at 3.29 percent per year in Table 2.

The major difference from the previous year's proposal is the addition of two pickup trucks to the district's fleet. Staff proposes these fleet additions to better support the activities of the construction and operations teams. One vehicle will be dedicated to the construction team, for a total of two (2) vehicles for that group. The significant increase in developer project construction activities has led to increased demands for site visits and two staff sharing one vehicle is no longer

feasible. The second vehicle will be added to the operations fleet to align the number of vehicles to the number of staff. This provides for an easier deployment of staff when responding to the increased locate requests and allows the other staff to continue assigned work activities. It also provides for additional fleet redundancy for when vehicles are temporarily out of service for maintenance activities.

Summary of All Capital Expenditures

The district's water distribution system continues to require significant attention as portions of the system approach the end of its reliable, useful life. It is extremely important that the district maintains a proactive facility maintenance program and comprehensive long-range capital improvement program to detect and repair all district owned infrastructure as necessary.

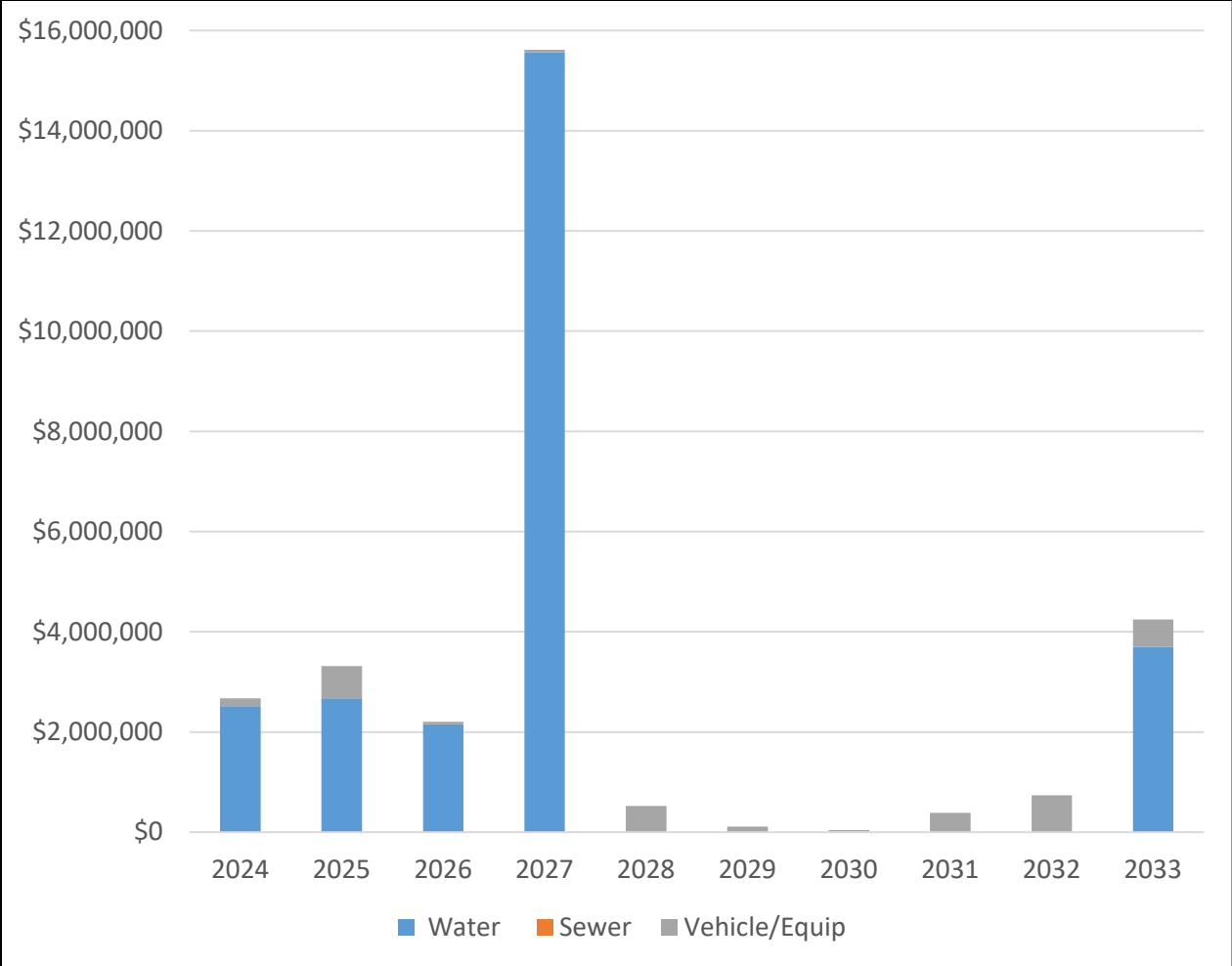
The district's sewer transmission (interceptor) network is extensive and serves a significant area outside of the district. Replacement or rehabilitation of these sewers has cost millions of dollars. With the rehabilitation/replacement of the backbone sewer infrastructure, its useful life has been extended 50 years.

To complete all projects as proposed in the 2024-2033 Capital Master Plan, the district will need to obtain a loan or issue bonds in 2026. Obtaining this funding allows the district to accelerate a portion of the water main replacement program and potentially stabilize the rate of annual increases proposed in the district's water and sewer service fee. Should the district not pursue this approach, then the schedule of projects would be redistributed throughout the 10-year planning period.

The following table and chart summarize the costs associated with the capital projects proposed from 2024 through 2033.

Table 2

Year	Water	Sewer	Vehicles/Equip.	Totals
2024	\$2,516,470	\$0	\$153,902	\$2,670,373
2025	\$2,675,066	\$0	\$640,129	\$3,315,196
2026	\$2,156,262	\$0	\$49,589	\$2,205,852
2027	\$15,563,687	\$0	\$51,221	\$15,614,908
2028	\$0	\$0	\$523,180	\$523,180
2029	\$0	\$0	\$109,293	\$109,293
2030	\$0	\$0	\$40,138	\$40,138
2031	\$0	\$0	\$388,676	\$388,676
2032	\$0	\$0	\$736,016	\$736,016
2033	\$3,695,665	\$0	\$552,895	\$4,248,560
TOTAL	\$26,607,151	\$0	\$3,245,040	\$29,852,191



SECTION 3

WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITY REHABILITATION AND REPLACEMENT PROJECTS SCHEDULED FOR 2024 - 2033

2024 Capital Improvement Projects

Water

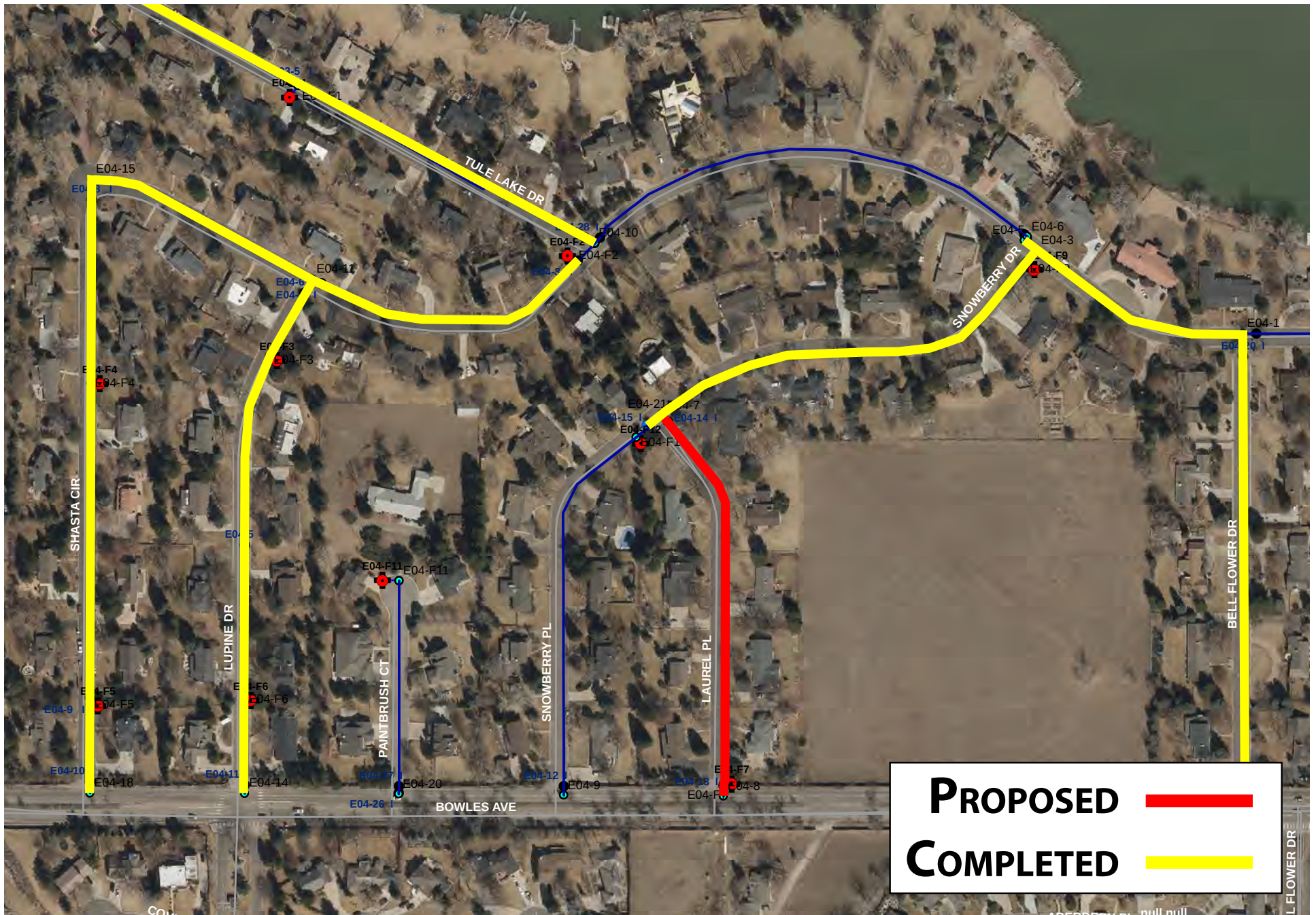
Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
24-1W	Bow Mar South	S. Laurel Place from S. Snowberry Drive to W. Bowles Ave.	Replace 758 feet of 6-inch cast iron pipe with 6-inch PVC pipe	60	\$299,667	\$59,933	\$29,967	\$389,567
24-2W	Bow Mar South	S. Snowberry Drive from S. Laurel Place to W. Bowles Ave.	Replace 797 feet of 6-inch cast iron pipe with 8-inch PVC pipe; diameter was upsized by DW staff	60	\$335,407	\$67,081	\$33,541	\$436,029
24-3W	Bow Mar South	Marigold Lane from Blue Sage Drive to S. Sumac Lane	Replace 1,028 feet of 6-inch cast iron pipe with 6-inch PVC pipe	60	\$406,574	\$81,315	\$40,657	\$528,546
24-4W	Bow Mar South	Blue Sage Drive from W. Berry Ave to Tule Lake Drive	Replace 1,906 feet of 12-inch cast iron pipe with 12-inch PVC pipe	60	\$894,098	\$178,820	\$89,410	\$1,162,328

Sewer

No projects scheduled.

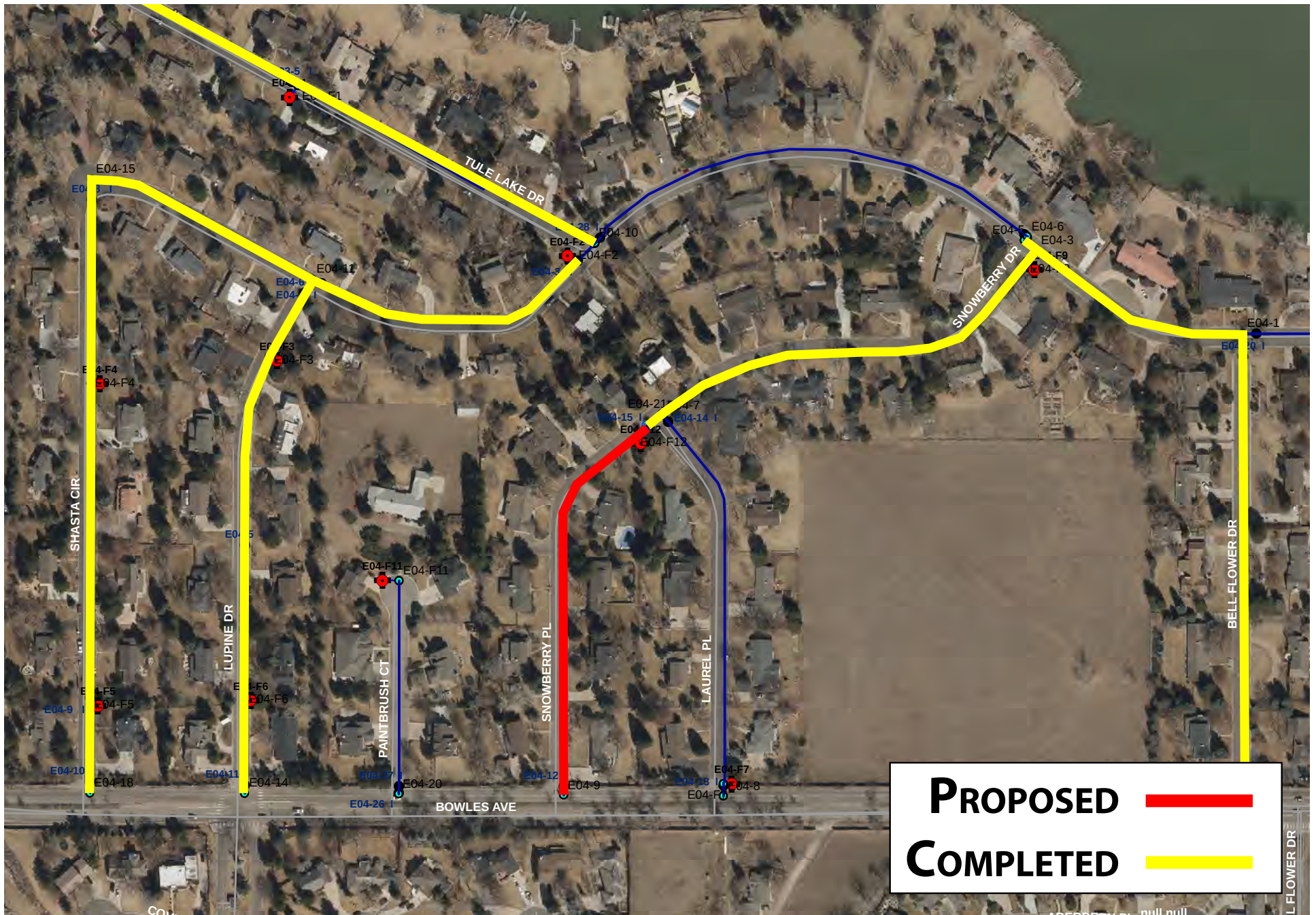
PROJECT C.I.P. 24-1W

S. LAUREL PL. WATER MAIN REPLACEMENT



PROJECT C.I.P. 24-2W

S. SNOWBERRY DR. WATER MAIN REPLACEMENT



PROJECT C.I.P. 24-3W
MARIGOLD LN. WATER MAIN REPLACEMENT



PROJECT C.I.P. 24-4W
BLUE SAGE DR. WATER MAIN REPLACEMENT



2025 Capital Improvement Projects

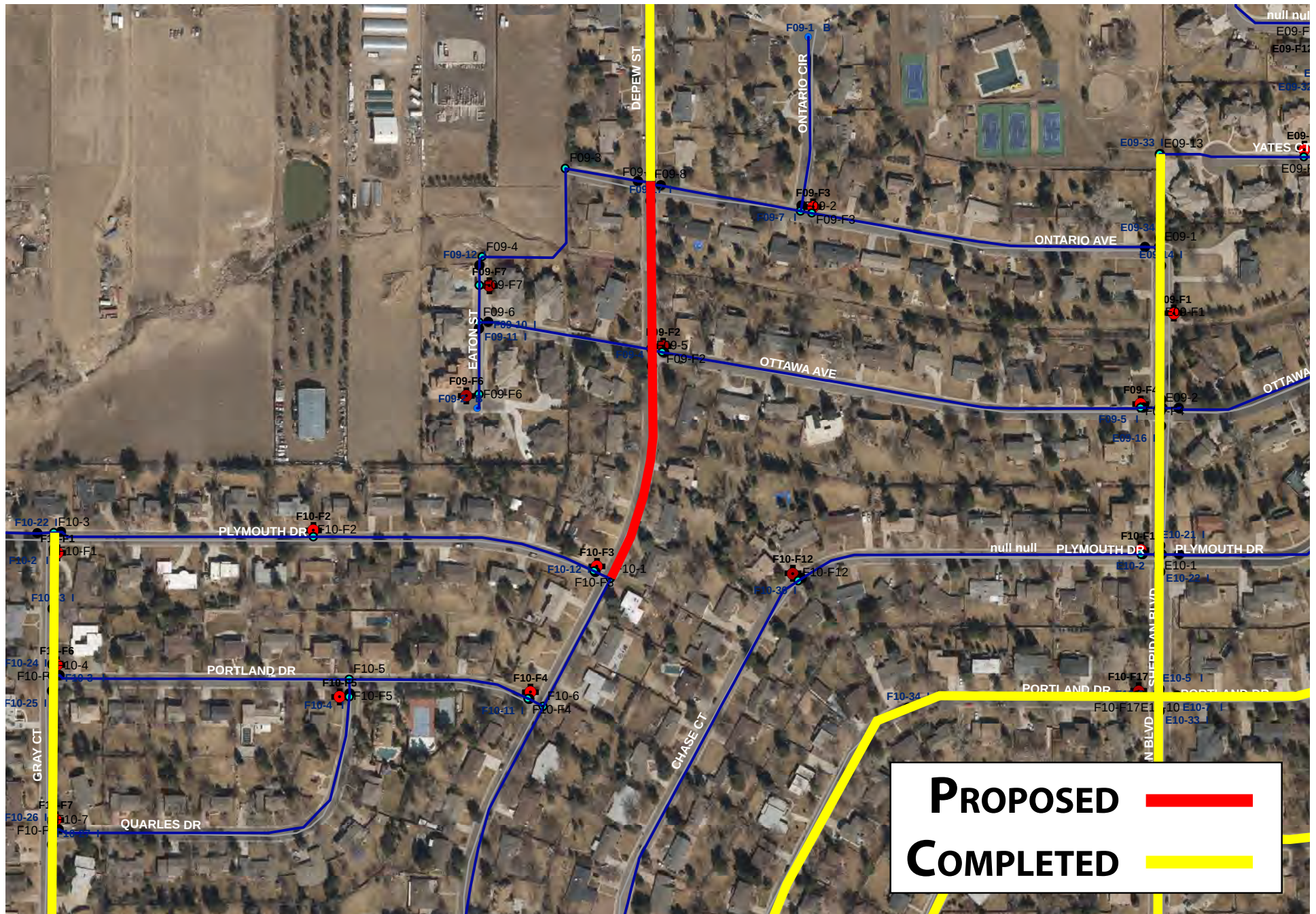
Water

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
25-1W	Normandy Estates	S. Depew Street from W. Ontario Ave to W. Plymouth Drive	Replace 902 feet of 8-inch cast iron pipe with 8-inch PVC pipe; w/ culvert crossing	49, 65	\$442,407	\$88,481	\$44,241	\$575,129
25-2W	Normandy Estates	S. Depew St. from W. Plymouth Drive to W. Rowland Ave.	Replace 970 feet of 6-inch cast iron pipe with 8-inch PVC pipe; diameter was upsized by DW staff; replace 302 feet of 8-inch asbestos cement pipe with 8-inch PVC pipe	49, 65	\$553,484	\$110,697	\$55,348	\$719,529
25-3W	Columbine Hills	W. Chestnut Drive from S. Lamar Court to S. Kendall Blvd.	Replace 1,453 feet of 6-inch cast iron pipe with 6-inch PVC pipe	53	\$508,711	\$101,742	\$50,871	\$661,324
25-4W	Normandy Estates	W. Plymouth Dr. from S. Gray Court to S. Depew Street	Replace 1,271 feet of 8-inch cast iron pipe with 8-inch PVC pipe	49	\$553,140	\$110,628	\$55,314	\$719,082

Sewer

No projects scheduled.

PROJECT C.I.P. 25-1W
S. DEPEW ST. WATER MAIN REPLACEMENT



2026 Capital Improvement Projects

Water

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
26-1W	Leawood	S. Lamar Dr. from W. Leawood Drive to S. Marshall Court	Replace 1,013 feet of 6-inch cast iron pipe with 6-inch PVC pipe	54	\$428,047	\$85,609	\$42,805	\$556,462
26-2W	Leawood	W. Burgandy Drive loop off W. Brittany Place	Replace 857 feet of 6-inch cast iron pipe with 6-inch PVC pipe	60	\$362,113	\$72,423	\$36,211	\$470,746
26-3W	Leawood	S. Marshall Place from W. Leawood Drive to S. Marshall Court	Replace 1,931 feet of 8-inch cast iron pipe with 8-inch PVC pipe	53	\$868,497	\$173,699	\$86,850	\$1,129,046

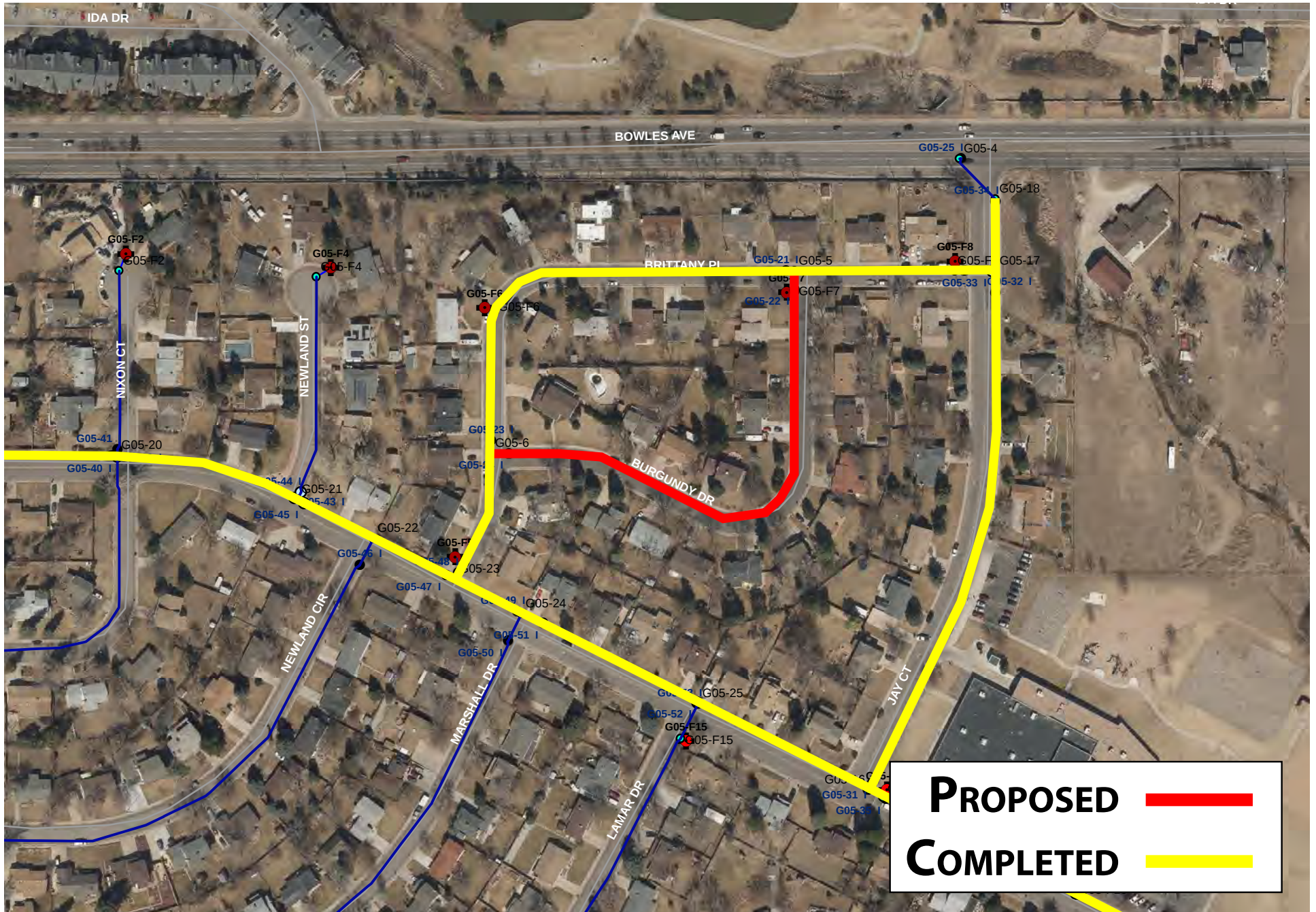
Sewer

No projects scheduled.

[illegible]

PROJECT C.I.P. 26-2W

W. BURGANDY DR. WATER MAIN REPLACEMENT



2027 Capital Improvement Projects

Water

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
27-1W	Columbine Knolls	S. Lamar Street from W. Coal Mine Ave. to S. Kendall Blvd.	Replace 3,305 feet of 12-inch cast iron pipe with 12-inch PVC pipe	59	\$1,712,929	\$342,586	\$171,293	\$2,226,807
27-2W	Columbine Knolls	W. Portland Ave. from S. Marshall Street to S. Lamar Street	Replace 373 feet of 8-inch cast iron pipe with 8-inch PVC pipe	59	\$173,260	\$34,652	\$17,326	\$225,238
27-3W	Columbine Knolls	S. Marshall St. from W. Portland Ave. to W. Roxbury Place	Replace 1,133 feet of 8-inch cast iron pipe with 8-inch PVC pipe	59	\$526,856	\$105,371	\$52,686	\$684,913
27-4W	Columbine Knolls	S. Kendall Blvd. from W. Rowland Place to W. Fremont Drive	Replace 1,158 feet of 6-inch cast iron pipe with 6-inch PVC pipe	52	\$600,137	\$120,027	\$60,014	\$780,178
27-5W	Leawood	S. Newland St. cul-de-sac off W. Leawood Drive	Replace 347 feet of 6-inch cast iron pipe with 6-inch PVC pipe	61	\$151,624	\$30,325	\$15,162	\$197,112
27-6W	Columbine Knolls	W. Rowland Place from S. Kendall Blvd. to S. Depew Street	Replace 1,192 feet of 8-inch cast iron pipe with 12-inch PVC pipe; diameter was upsized by DW staff	55	\$554,271	\$110,854	\$55,427	\$720,553
27-7W	Columbine Knolls	W. Roxbury Place from S. Kendall Blvd. to S. Ingalls Way	Replace 961 feet of 6-inch cast iron pipe with 6-inch PVC pipe	55	\$419,864	\$83,973	\$41,986	\$545,824
27-8W	Columbine Knolls	S. Chase Ct. from S. Rowland Place to W. Geddes Place	Replace 1,088 feet of 8-inch cast iron pipe with 8-inch PVC pipe	55	\$505,624	\$101,125	\$50,562	\$657,311

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
27-9W	Columbine West	W. Glasow Pl. cul-de-sac off W. Hinsdale Drive	Replace 351 feet of 4-inch cast iron pipe with 4-inch PVC pipe	50	\$123,659	\$24,732	\$12,366	\$160,757
27-10W	Columbine West	S. Salisbury Court cul-de-sac off W. Hinsdale Dr.	Replace 262 feet of 4-inch cast iron pipe with 4-inch PVC pipe	52	\$107,108	\$21,422	\$10,711	\$139,241
27-11W	Columbine West	S. Reed Court cul-de-sac off W. Hinsdale Dr.	Replace 351 feet of 4-inch cast iron pipe with 4-inch PVC pipe	52	\$143,392	\$28,678	\$14,339	\$186,409
27-12W	Columbine West	S. Vance Street cul-de-sac off W. Hinsdale Dr.	Replace 310 feet of 4-inch cast iron pipe with 4-inch PVC pipe	52	\$126,761	\$25,352	\$12,676	\$164,790
27-13W	Columbine West	W. Quarto Place cul-de-sac off S. Pierce Court	Replace 433 feet of 6-inch cast iron pipe with 6-inch PVC pipe	51	\$189,172	\$37,834	\$18,917	\$245,924
27-14W	Columbine West	S. Teller Street cul-de-sac off W. Hinsdale Dr.	Replace 303 feet of 4-inch cast iron pipe with 4-inch PVC pipe	52	\$124,086	\$24,817	\$12,409	\$161,312
27-15W	Columbine West	Webster St. from W. Coal Mine Ave. to W. Glasgow Place	Replace 936 feet of 8-inch cast iron pipe with 8-inch PVC pipe	52	\$534,848	\$106,970	\$53,485	\$695,303
27-16W	Normandy Estates	W. Ontario Ave. from S. Depew Street to S. Sheridan Blvd.	Replace 1,160 feet of 8-inch cast iron pipe with 8-inch PVC pipe	65	\$539,288	\$107,858	\$53,929	\$701,074
27-17W	Columbine Hills	W. Monticello Ave. from S. Jay Dr. to S. Kendall Blvd. then north on S. Kendall Blvd. to W. Elmhurst Ave	Replace 260 feet of 8-inch cast iron pipe with 8-inch PVC pipe and 684 feet of 10-inch cast iron pipe with 10-inch PVC pipe	63	\$460,475	\$92,095	\$46,048	\$598,618

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
27-18W	Columbine Hills	W. Alder Ave. from S. Marshall Court to S. Jay Drive	Replace 1821 feet of 6-inch cast iron pipe with 6-inch PVC pipe	50	\$795,867	\$159,173	\$79,587	\$1,034,627
27-19W	Normandy Estates	W. Ontario Circle cul-de-sac off W. Ontario Ave.	Replace 394 feet of 4-inch cast iron pipe with 4-inch PVC pipe	65	\$161,151	\$32,230	\$16,115	\$209,497
27-20W	Normandy Estates	W. Rowland Ave. from S. Kendall Blvd. to S. Depew Street	Replace 1,216 feet of 6-inch cast iron pipe with 6-inch PVC pipe	49	\$531,345	\$106,269	\$53,135	\$690,749
27-21W	Columbine Knolls	W. Rowland Ave. from S. Marshall Street to S. Lamar Street	Replace 701 feet of 6-inch cast iron pipe with 6-inch PVC pipe	59	\$306,308	\$61,262	\$30,631	\$398,200
27-22W	Columbine Knolls	W. Roxbury Pl. from S. Marshall Street to S. Kendall Blvd.	Replace 1,348 feet of 8-inch cast iron pipe with 8-inch PVC pipe	59	\$588,814	\$117,763	\$58,881	\$765,458
27-23W	Columbine West	S. Upham St. cul-de-sac off W. Hinsdale Dr.	Replace 306 feet of 4-inch cast iron pipe with 4-inch PVC pipe	52	\$125,211	\$25,042	\$12,521	\$162,775
27-24W	Columbine Hills	S. Marshall Court from W. Alder Ave. to W. Chatfield Ave.	Replace 234 feet of 6-inch cast iron pipe with 6-inch PVC pipe	55	\$102,239	\$20,448	\$10,224	\$132,911
27-25W	Columbine Hills	S. Jay Drive from W. Elmhurst Dr. to W. Alder Ave.	Replace 623 feet of 12-inch cast iron pipe with 12-inch PVC pipe	63	\$322,975	\$64,595	\$32,298	\$419,868
27-26W	Columbine Hills	S. Ames Way from W. Ken Caryl Ave. to W. Caryl Ave.	Replace 885 feet of 6-inch cast iron pipe with 6-inch PVC pipe	64	\$386,625	\$77,325	\$38,662	\$502,612
27-27W	Columbine Hills	W. Caryl Ave. from S. Sheridan Ct. to S. Depew Way	Replace 303 feet of 6-inch cast iron pipe with 6-inch PVC pipe	64	\$132,245	\$26,449	\$13,225	\$171,919

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
27-28W	N/A	W. Coal Mine Ave. from S. Marshall Street to S. Depew Street	Replace 2,906 feet of 8- inch asbestos cement pipe with 12-inch PVC pipe; diameter was upsized by DW staff	59	\$1,506,167	\$301,233	\$150,617	\$1,958,017

Sewer

No projects scheduled.

PROPOSED —

COMPLETED —

PROJECT C.I.P. 27-3W

S. MARSHALL ST. WATER MAIN REPLACEMENT



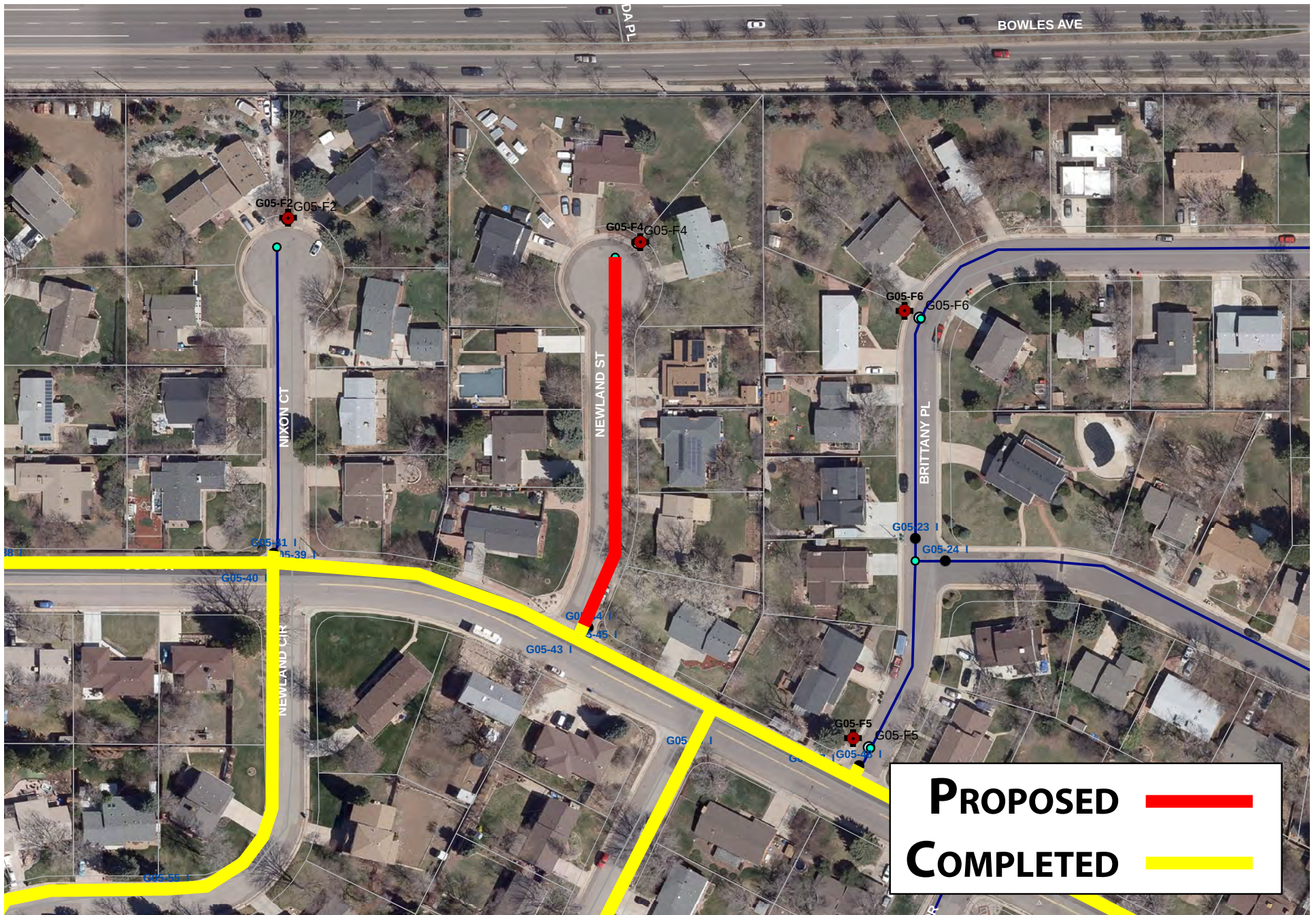
PROJECT C.I.P. 27-4W

S. KENDALL BLVD. WATER MAIN REPLACEMENT



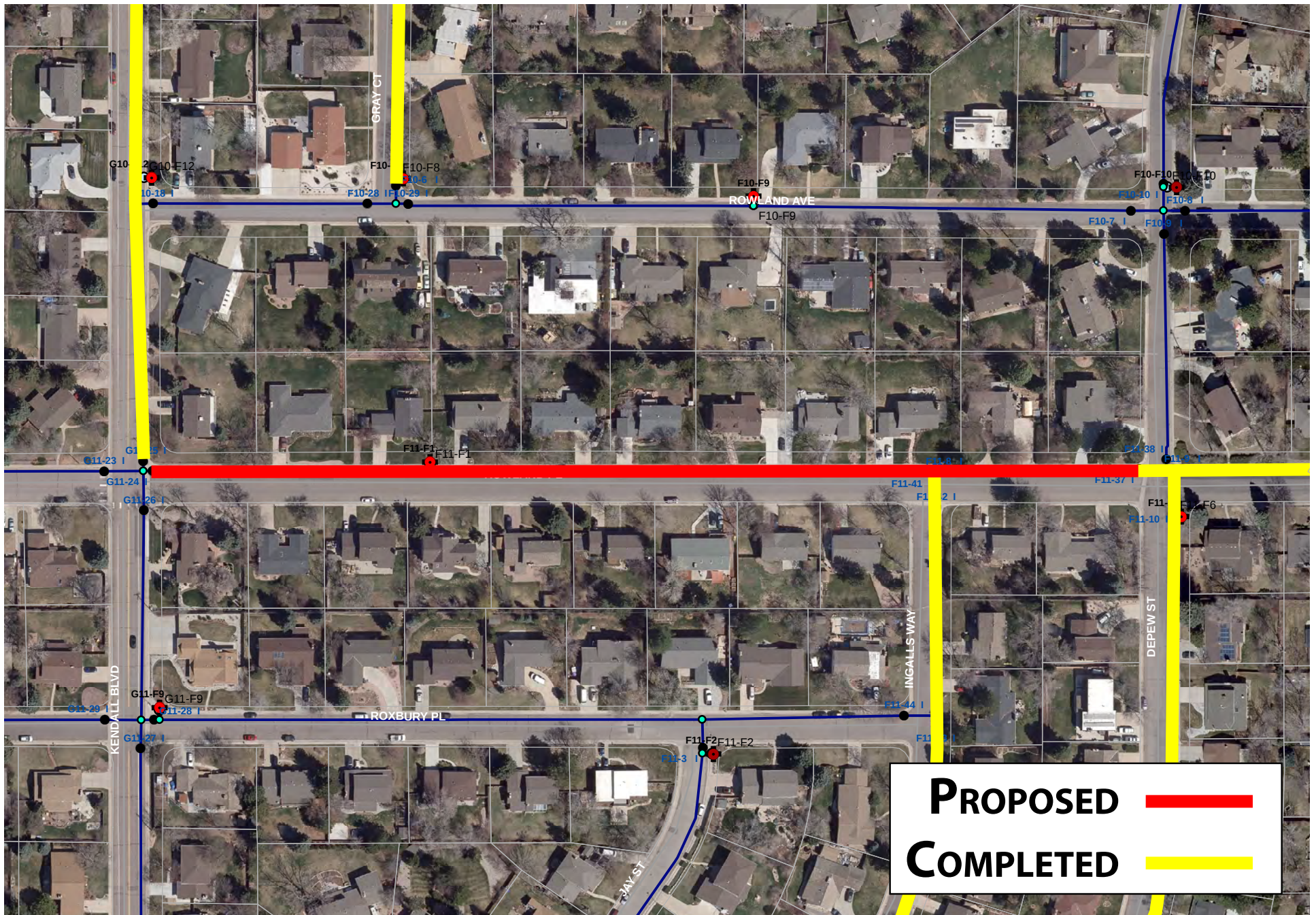
PROJECT C.I.P. 27-5W

S. NEWLAND ST. WATER MAIN REPLACEMENT



PROJECT C.I.P. 27-6W

W. ROWLAND PL. WATER MAIN REPLACEMENT



PROJECT C.I.P. 27-7W

W. ROXBURY PL. WATER MAIN REPLACEMENT

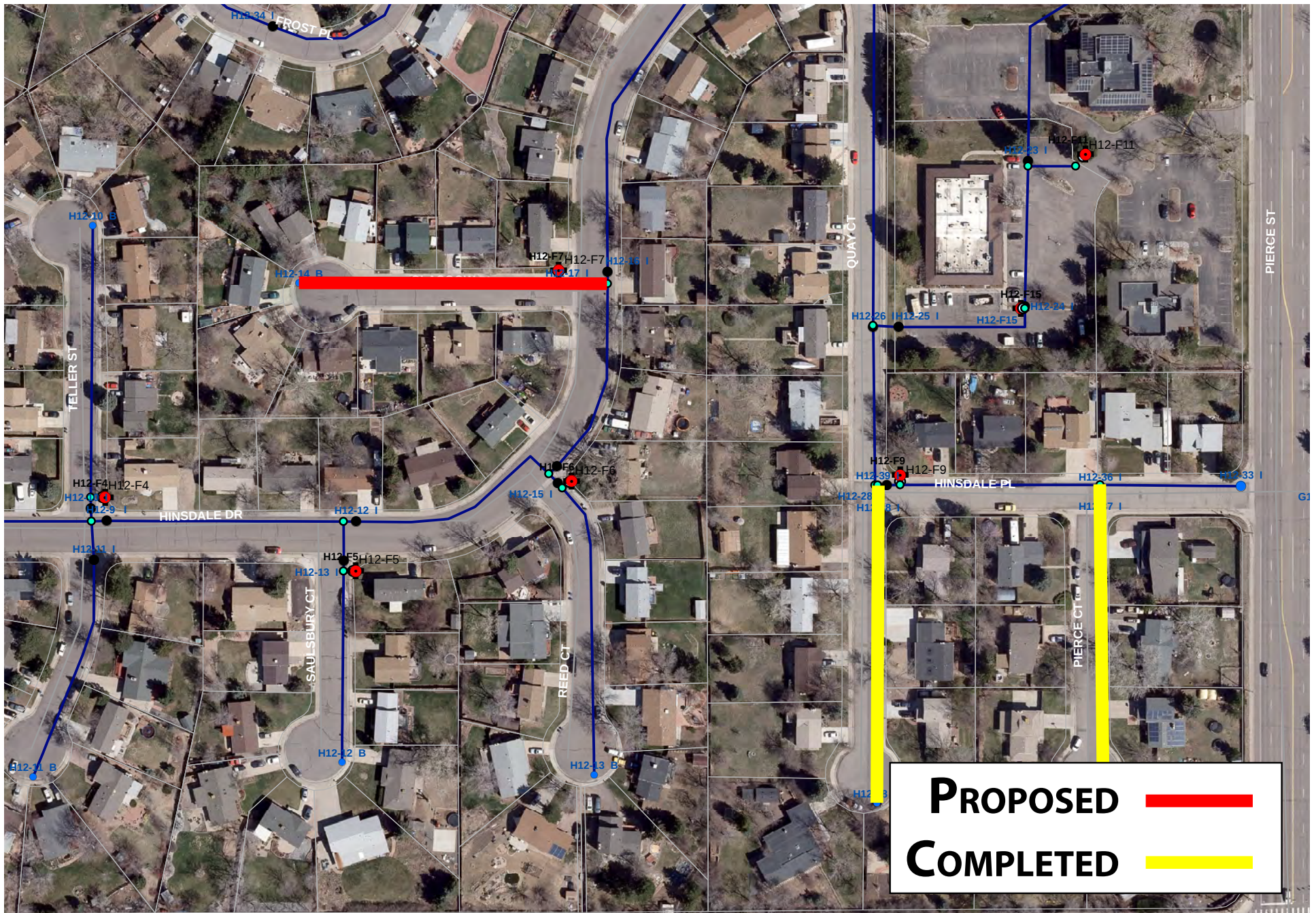


PROPOSED ———

COMPLETED ———

PROJECT C.I.P. 27-9W

W. GLASGOW PL. WATER MAIN REPLACEMENT

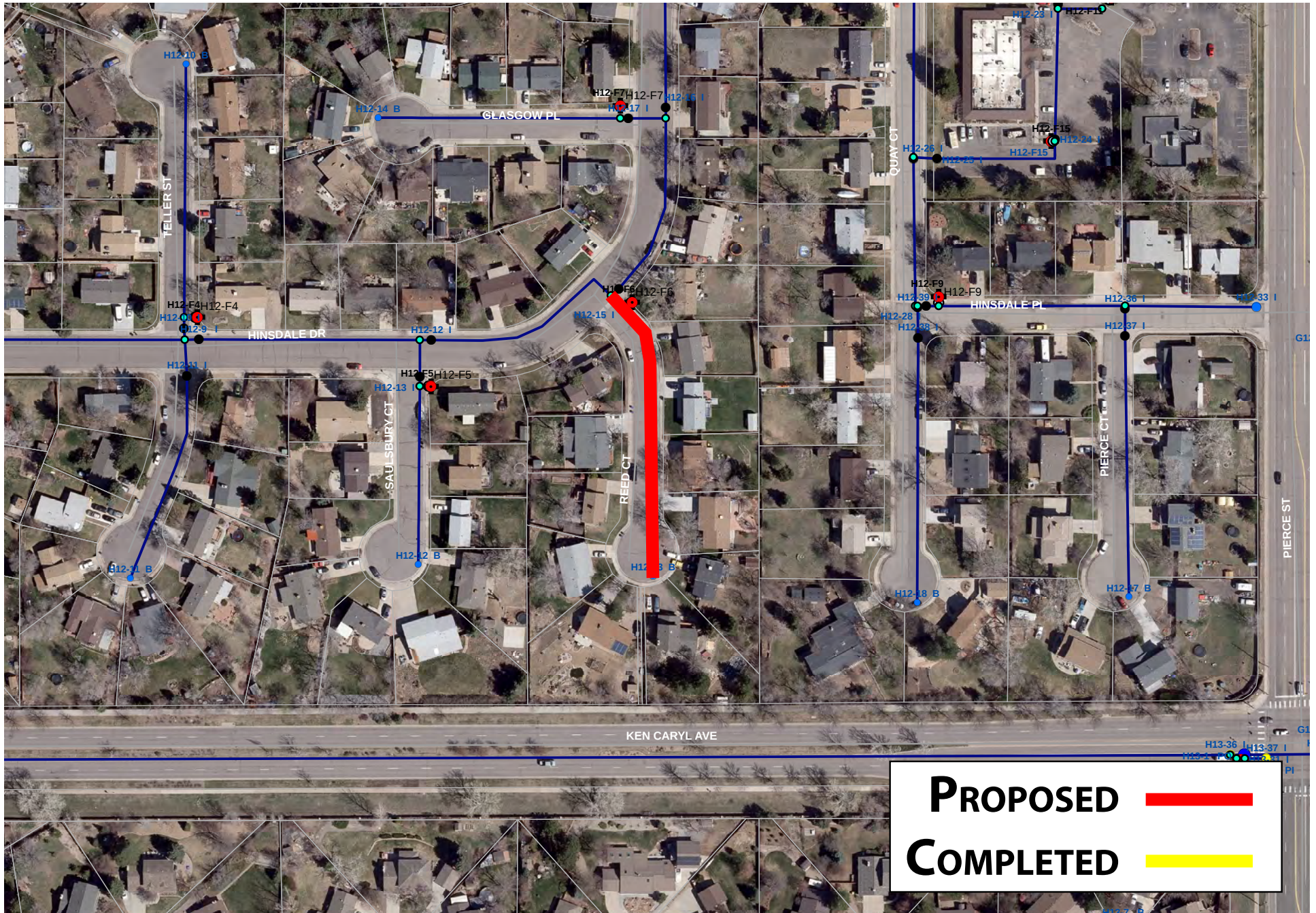


PROPOSED

COMPLETED

PROJECT C.I.P. 27-11W

S. REED CT. WATER MAIN REPLACEMENT



PROJECT C.I.P. 27-13W

W. QUARTO PL. WATER MAIN REPLACEMENT

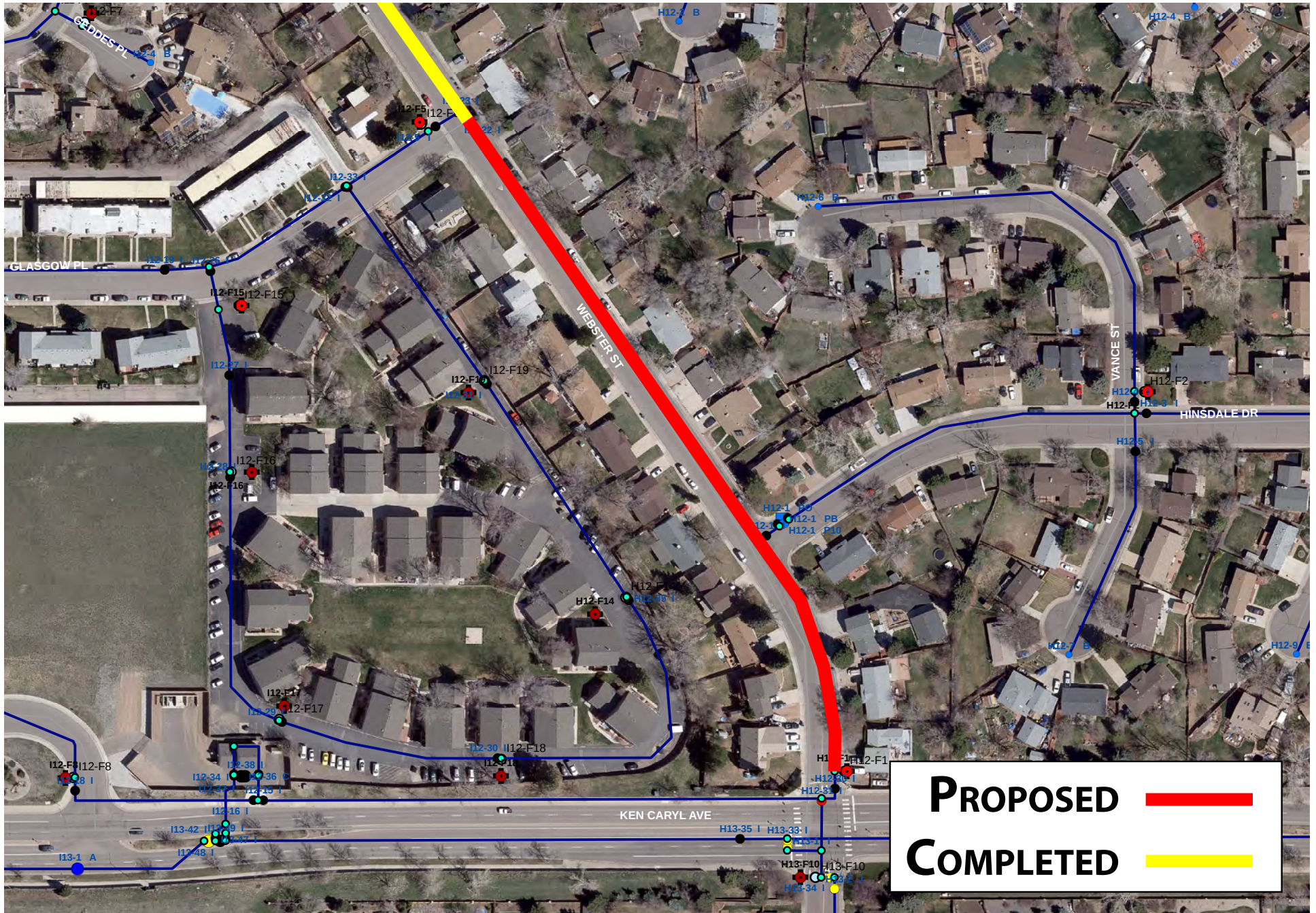


PROPOSED ———

COMPLETED ———

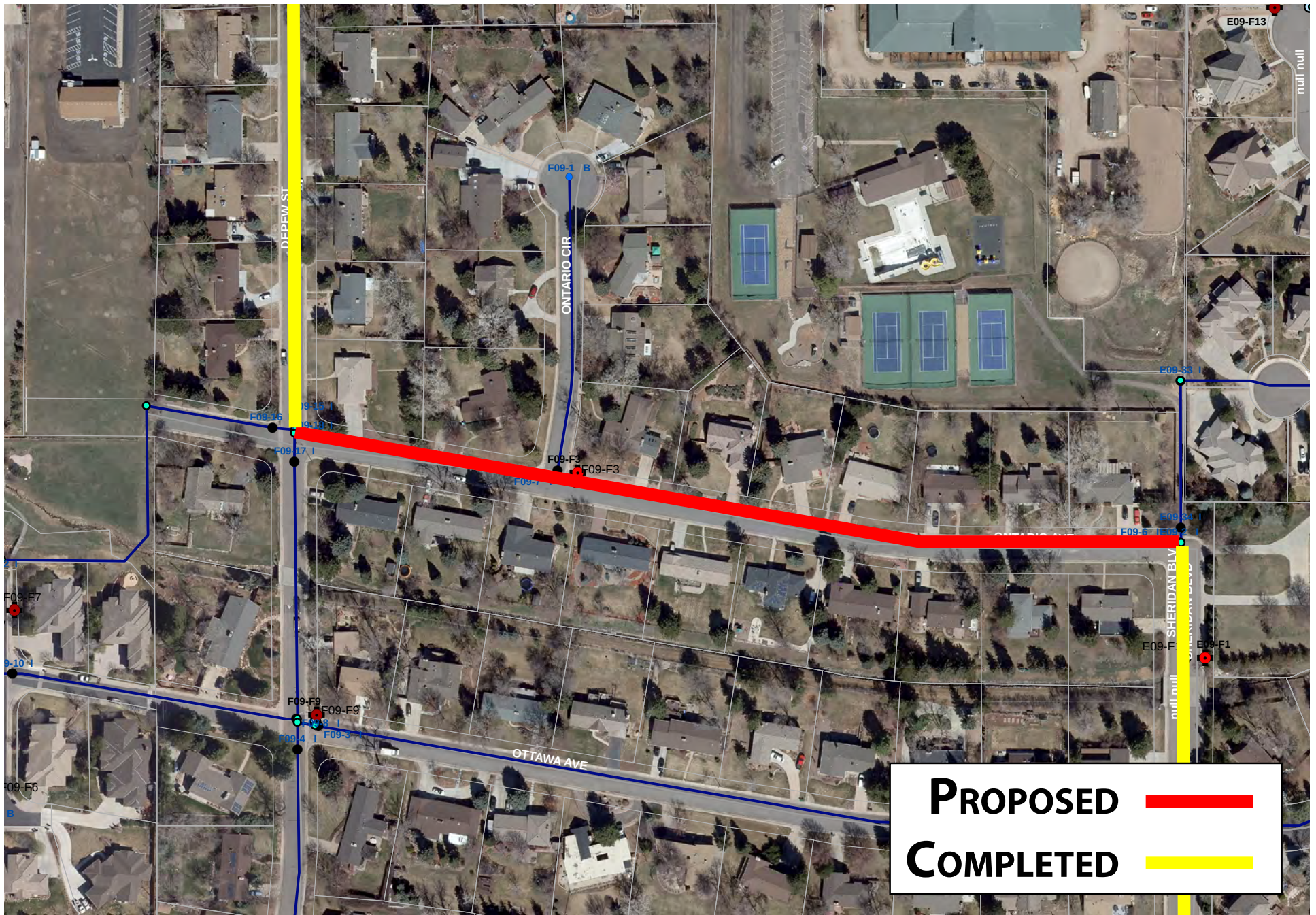
PROJECT C.I.P. 27-15W

S. WEBSTER ST. WATER MAIN REPLACEMENT



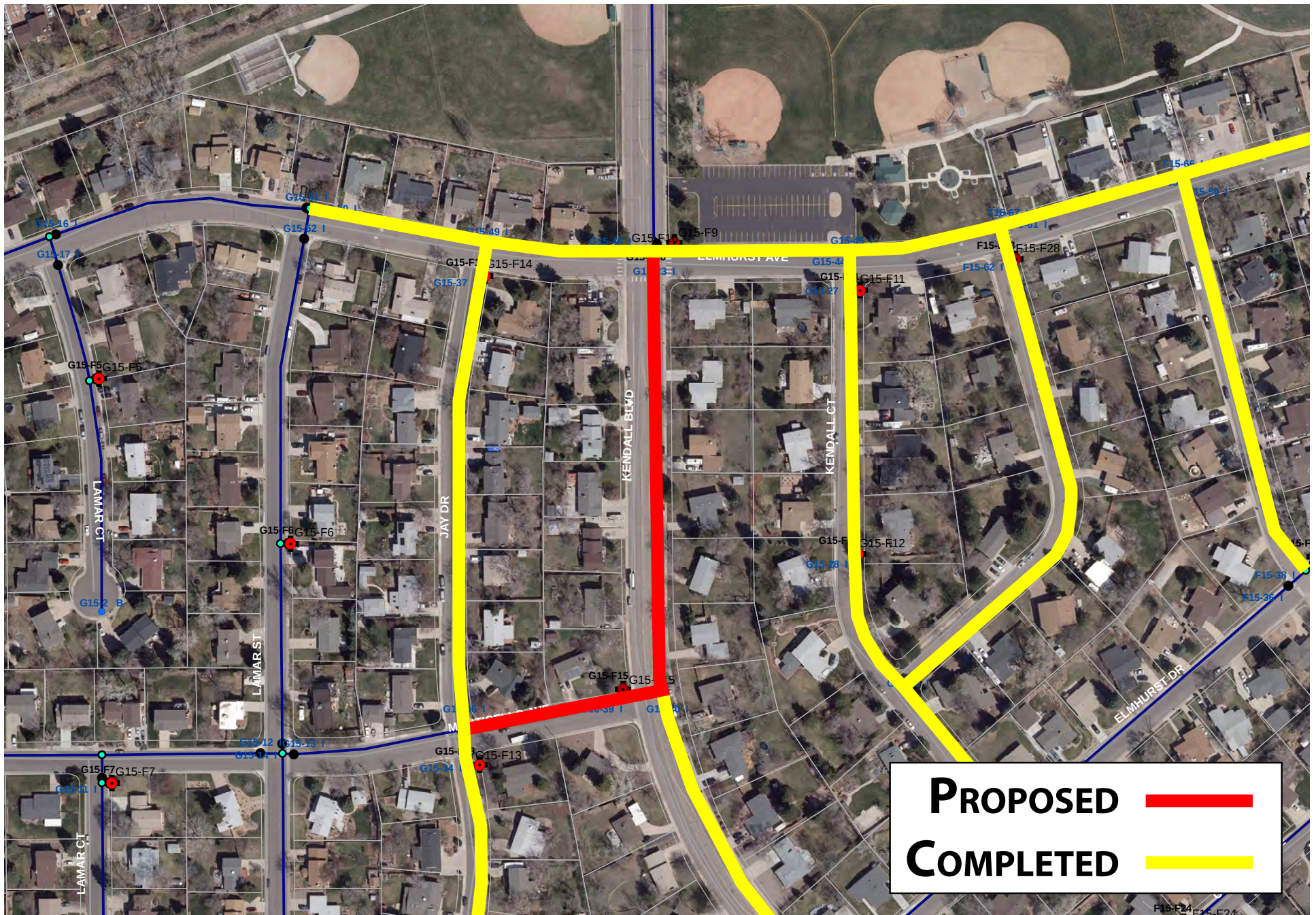
PROJECT C.I.P. 27-16W

W. ONTARIO AVE. WATER MAIN REPLACEMENT



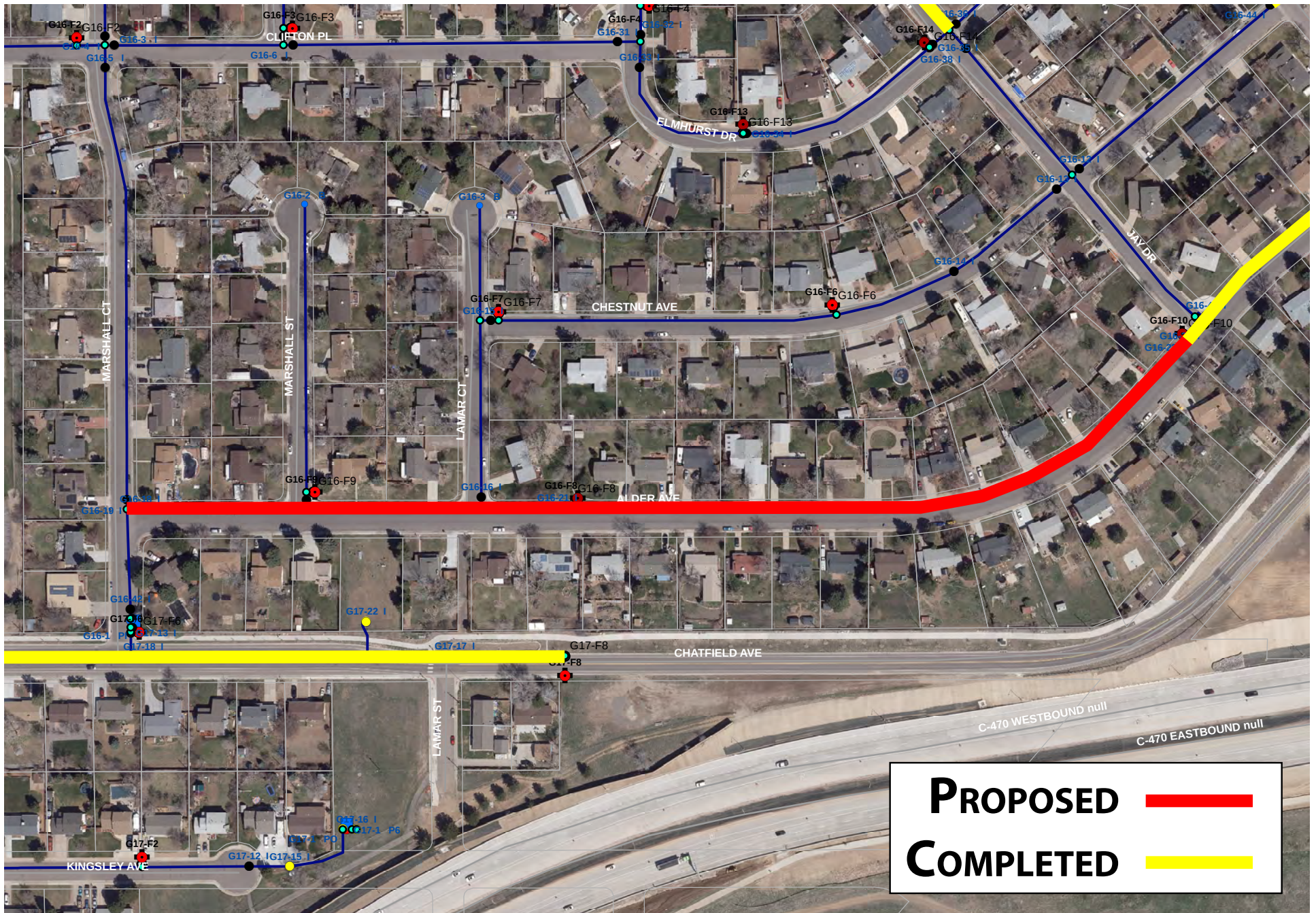
PROJECT C.I.P. 27-17W

W. MONTICELLO AVE. WATER MAIN REPLACEMENT



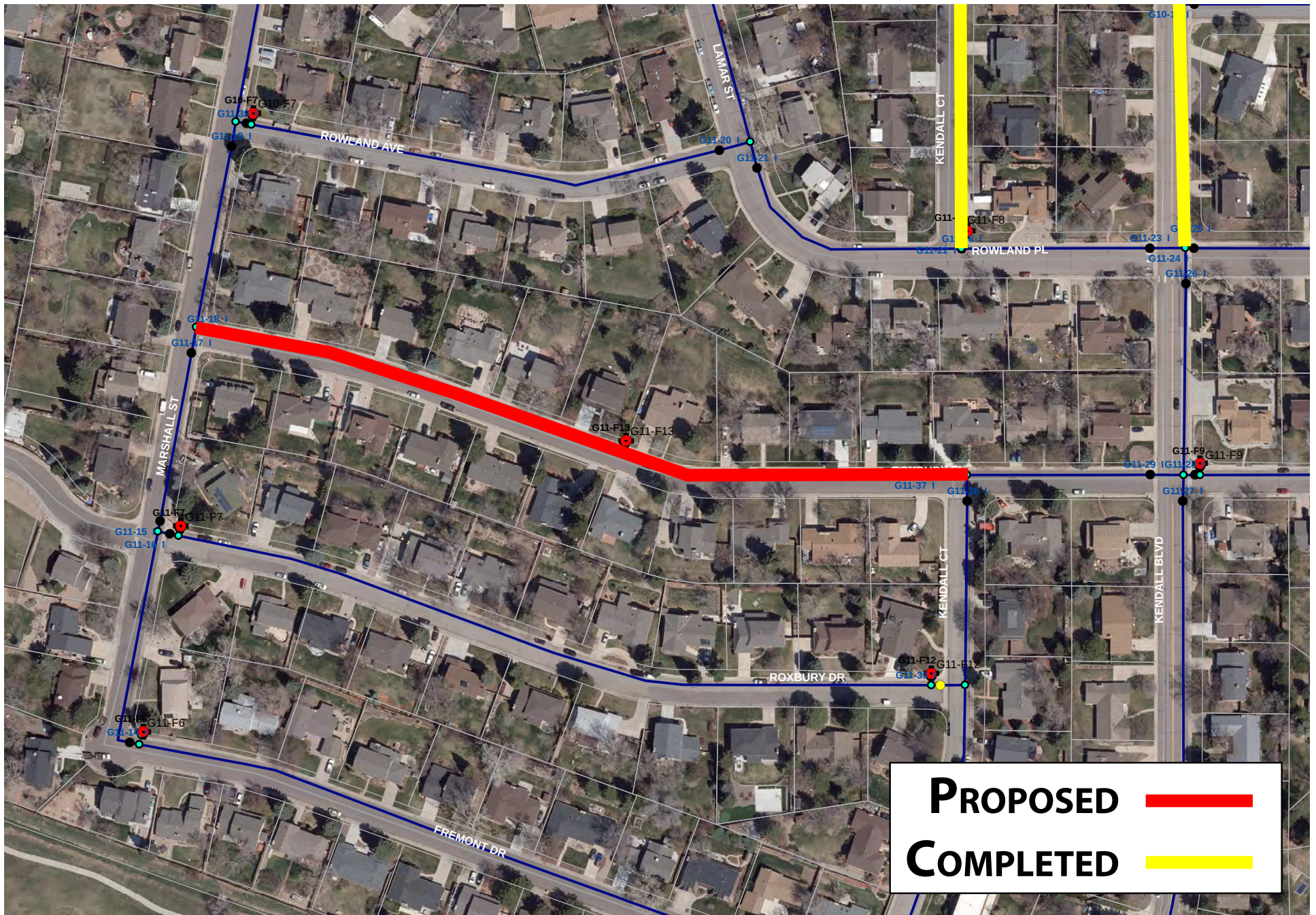
PROJECT C.I.P. 27-18W

W. ALDER AVE. WATER MAIN REPLACEMENT



PROJECT C.I.P. 27-22W

W. ROXBURY PL. WATER MAIN REPLACEMENT

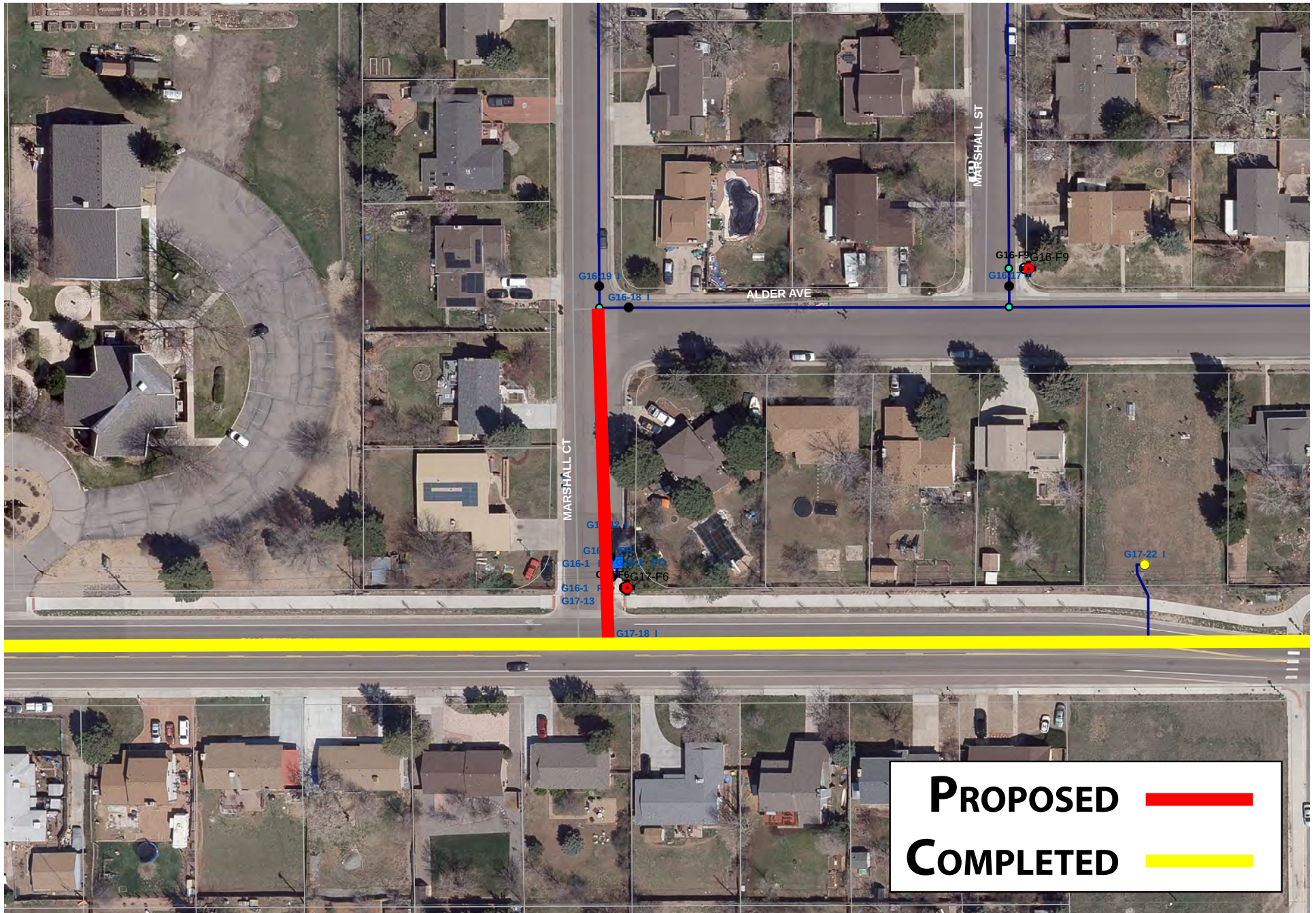


PROPOSED ———

COMPLETED ———

PROJECT C.I.P. 27-24W

S. MARSHALL CT. WATER MAIN REPLACEMENT



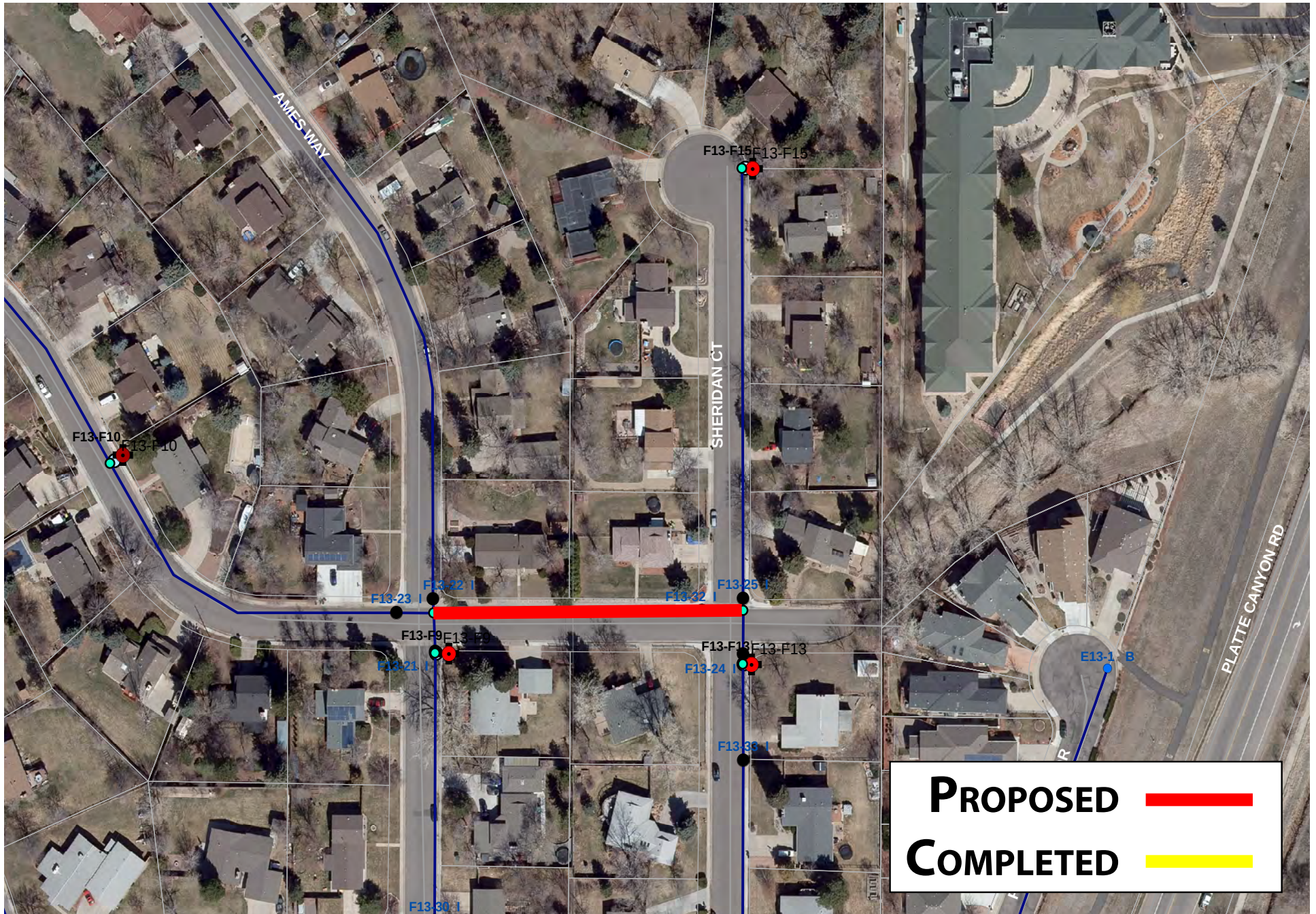
PROJECT C.I.P. 27-26W

S. AMES WAY WATER MAIN REPLACEMENT

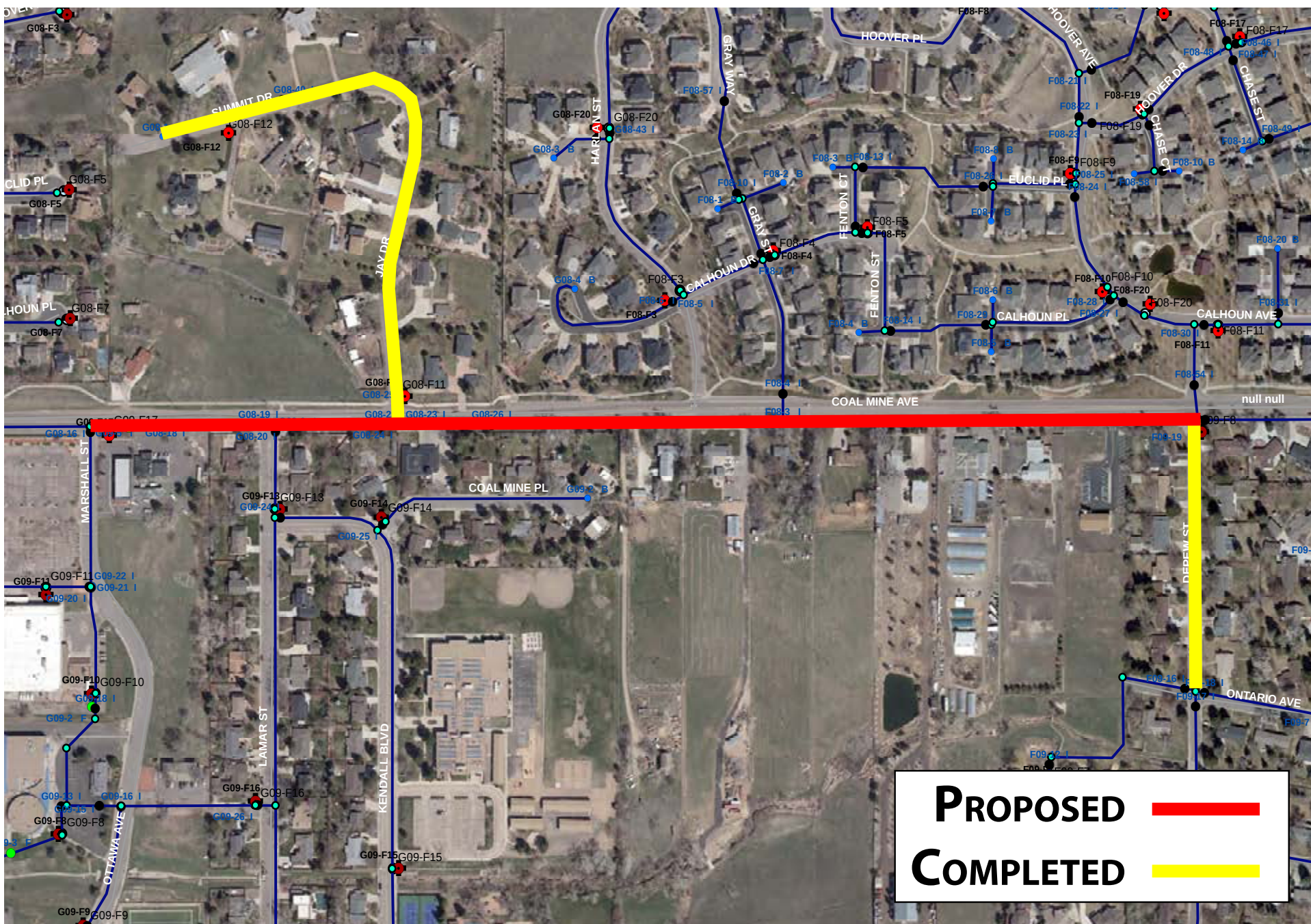


PROJECT C.I.P. 27-27W

W. CARYL AVE. WATER MAIN REPLACEMENT



PROJECT C.I.P. 27-28W
W. COAL MINE AVE. WATER MAIN REPLACEMENT



2033 Capital Improvement Projects

Water

Project	Subdivision	Location	Description	Pipe Age (yrs)	COST			
					Construction	Contingency (20%)	Engineering (10%)	TOTAL
33-1W	Columbine Knolls	S. Newland Court (Portland Ave to Rowland Ave)	Replace 929 feet of 8-inch asbestos cement pipe with 8-inch PVC pipe	52	\$527,074	\$105,415	\$52,707	\$685,196
33-2W	Leawood	W. Arbor Ave W. S. Harlan Way	Replace 1,874 feet of 6-inch and 8-inch asbestos cement pipe with PVC pipe	51	\$1,014,352	\$202,870	\$101,435	\$1,318,658
33-3W	Leawood	W. Caley Ave and S. Ingalls St.	Replace 1,579 feet of 6-inch asbestos cement pipe with 6-inch PVC pipe	52	\$841,687	\$168,337	\$84,169	\$1,094,193
33-4W	Normandy Estates	W. Plymouth Drive	Replace 862 feet of 6-inch asbestos cement pipe with 6-inch PVC pipe	53	\$459,701	\$91,940	\$45,970	\$597,611

Sewer

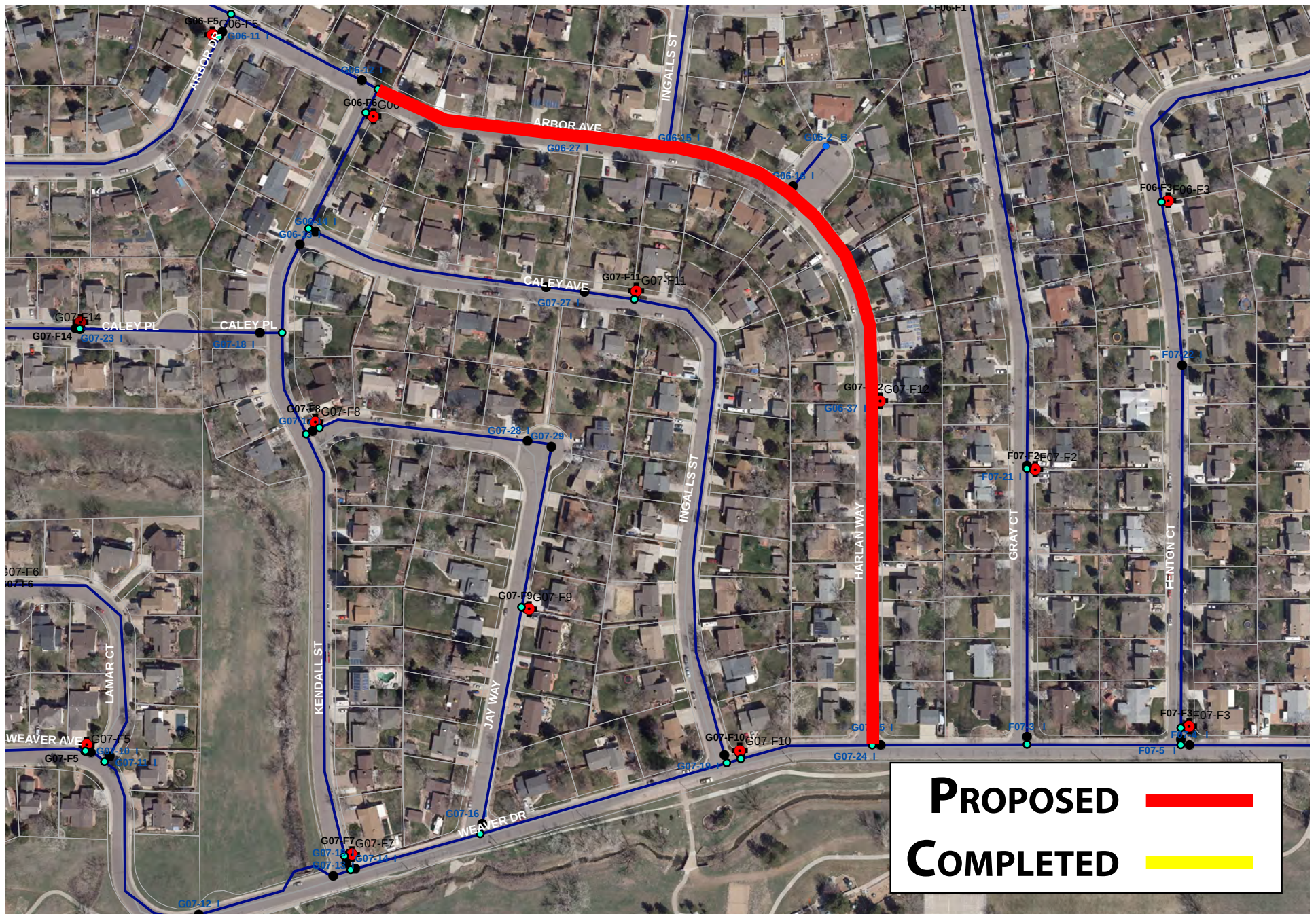
No projects scheduled.

PROJECT C.I.P. 33-1W

S. NEWLAND CT. WATER MAIN REPLACEMENT

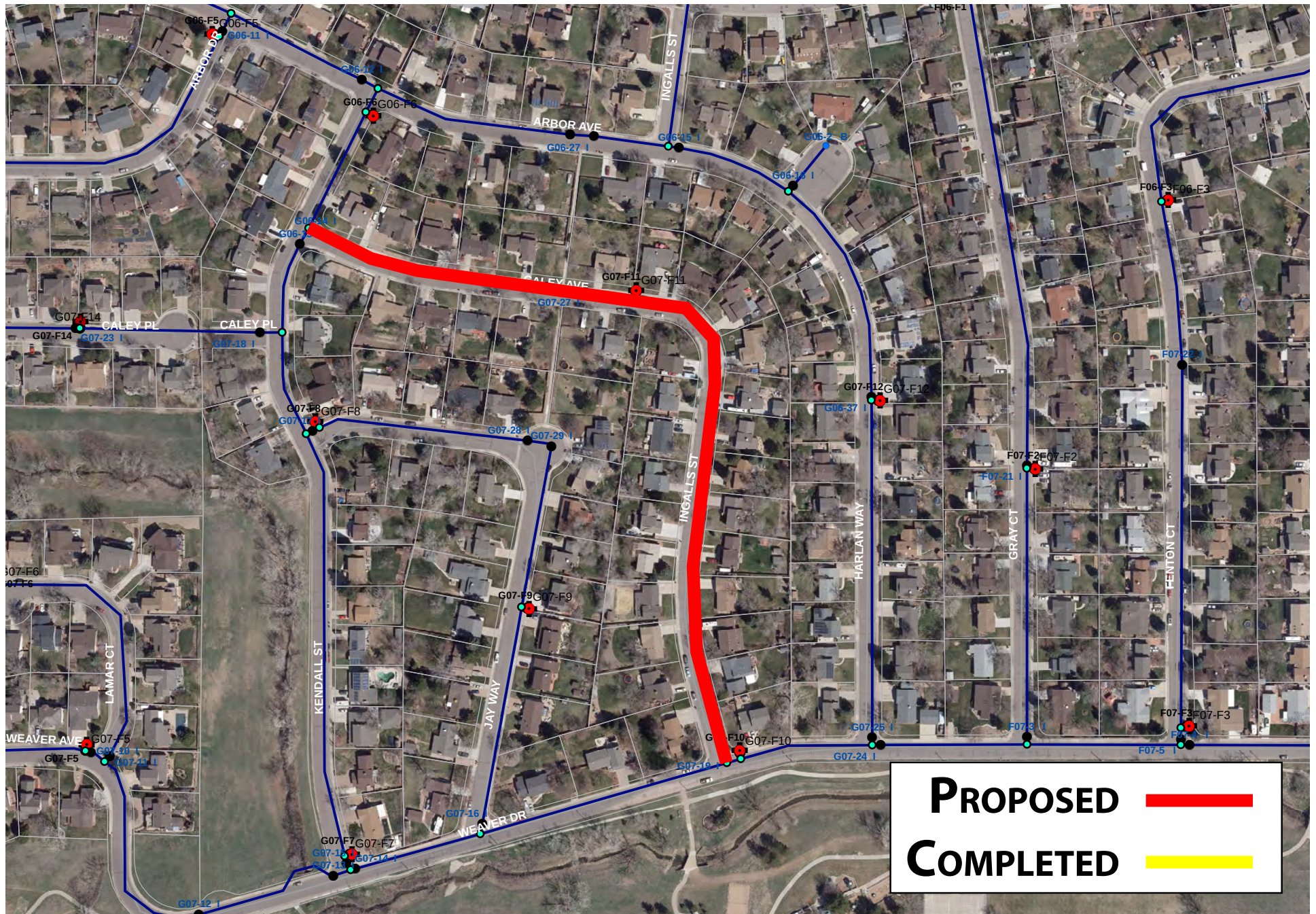


W. ARBOR AVE. & S. HARLAN WAY WATER MAIN REPLACEMENT



PROJECT C.I.P. 33-3W

W. CALEY AVE. & S. INGALLS ST. WATER MAIN REPLACEMENT



PROJECT C.I.P. 33-4W

W. PLYMOUTH DR. WATER MAIN REPLACEMENT



SECTION 4

VEHICLE AND EQUIPMENT SCHEDULE 2024 - 2033

VEHICLE AND EQUIPMENT SCHEDULE

<u>2024</u>	\$59,000	Combo Valve/Vac Valve Operator - replaces 2016 Hurco Unit
	\$45,000	4WD Pick up - replaces 2014 Ford (1)
	<u>\$45,000</u>	<u>4WD Pick up – replaces 2014 Ford (2)</u>
	\$149,000	
<u>2025</u>	\$600,000	Combo Sewer Cleaner/Vac Unit - replaces 2015 Vac Con Unit
<u>2026</u>	\$45,000	4WD Pick up - replaces 2016 Ford
<u>2027</u>	\$45,000	4WD Pick up - replaces 2019 Ford
<u>2028</u>	\$45,000	4WD Pick up - replaces 2020 Ford
	<u>\$400,000</u>	<u>Television Unit - replaces 2018 Cues Unit</u>
	\$445,000	
<u>2029</u>	\$45,000	Utility Vehicle - replaces 2021 Ford Edge
	<u>\$45,000</u>	<u>4WD Pick up - replaces 2021 Ford</u>
	\$90,000	
<u>2030</u>	\$32,000	Trailer-Mounted Valve Operator - replaces 2022 Hurco Unit
<u>2031</u>	\$45,000	4WD Pick up - replaces 2023 Ford (1)
	\$45,000	4WD Pick up - replaces 2023 Ford (2)
	\$45,000	4WD Pick up - replaces 2023 Chevy (1)
	\$45,000	4WD Pick up - replaces 2023 Chevy (2)
	<u>\$120,000</u>	<u>Flatbed with Compressor and Crane – replaces 2021 Flatbed</u>
	\$300,000	
<u>2032</u>	\$45,000	4WD Pick up - replaces 2024 Pickup
	\$45,000	4WD Pick up - replaces 2024 Pickup
	\$60,000	Combo Valve/Vac Valve Operator - replaces 2024 Hurco Unit
	<u>\$400,000</u>	<u>Sewer Cleaner – replaces 2022 Camel Sewer Cleaner</u>
	\$550,000	
<u>2033</u>	\$400,000	Television Unit – replaces 2022 IBAK Unit

SECTION 5

COMPLETED CAPITAL CONSTRUCTION PROJECTS

COMPLETED CAPITAL CONSTRUCTION PROJECTS

<u>October 2022</u>	Project CIP 22-1W Replaced 2,306 feet of 6-inch cast iron pipe with 12-inch PVC pipe. (\$862,487)
<u>October 2022</u>	Project CIP 22-2W Replaced 1,110 feet of 6-inch cast iron pipe with 6-inch PVC pipe. (\$212,709)
<u>October 2022</u>	Project CIP 22-3W Replaced 404 feet of 6-inch cast iron pipe with 6-inch PVC pipe. (\$96,004)
<u>September 2021</u>	Project CIP 21-1W Replaced 1,900 feet of 8-inch cast iron pipe with 1,900 feet of 8-inch PVC pipe in S. Depew Street between S. Platte Canyon Road and W. Canyon Trail in the Columbine Hills Subdivision. This project also includes a culvert crossing (\$682,940)
<u>September 2021</u>	Project CIP 21-2W Replaced 700 feet of 6-inch cast iron pipe with 700 feet of 6-inch PVC pipe in W. Alder Way between S. Depew St. and W. Alder Ave. in the Columbine Hills Subdivision (\$172,026)
<u>September 2021</u>	Project CIP 21-3W Replaced 1,700 feet of 6-inch cast iron pipe with 1,700 feet of 8-inch PVC pipe on the S. Newland Circle loop on W. Leawood Dr. in the Leawood Subdivision (\$358,068)
<u>September 2020</u>	Project CIP 20-1W Replaced 1,311 feet of 6-inch cast iron pipe with 1,311 feet of 6-inch PVC pipe in W. Geddes Ave. between S. Sheridan Ct. and S. Chase Ct. in the Columbine Knolls and Grove Subdivision (\$292,745)
<u>September 2020</u>	Project CIP 20-2W Replaced 1,107 feet of 8-inch cast iron pipe with 1,107 feet of 12-inch PVC pipe in S. Kendall Blvd. between W. Alder Ave. and W. Monticello Ave. in the Columbine Hills Subdivision (\$315,517)
<u>September 2020</u>	Project CIP 20-3W Replaced 465 feet of 6-inch cast iron pipe with 465 feet of 8-inch PVC pipe in W. Alder Ave. between S. Kendall Blvd. and S. Jay Dr. in the Columbine Hills Subdivision (\$108,954)
<u>September 2020</u>	Project CIP 20-4W Replaced 900 feet of 6-inch cast iron pipe with 900 feet of 8-inch PVC pipe in W. Canyon Trail between S. Depew St. and S. Sheridan Ct. in the Columbine Hills Subdivision (\$206,630)
<u>September 2020</u>	Project CIP 20-5W Replaced 1,005 feet of 6-inch cast iron pipe with 1,005 feet of 8-inch PVC pipe in W. Canyon Ave. between S. Depew St. and W. Canyon Dr. in the Columbine

Hills Subdivision (\$269,549)

September 2019

Project CIP 19-1W

Replaced 1,058 feet of 8-inch cast iron pipe with 1,058 feet of 8-inch PVC pipe in S. Jay Ct. between W. Bowles Ave. and W. Leawood Dr. in the Leawood Subdivision (\$235,134)

September 2019

Project CIP 19-4W

Replaced 2,319 feet of 8-inch cast iron pipe with 2,319 feet of PVC pipe in W. Leawood Dr. between S. Pierce St. and W. Fair Dr. in the Leawood Subdivision (\$701,658)

September 2019

Project CIP 19-2W

Replaced 732 feet of 6-inch cast iron pipe with 732 feet of PVC pipe in S. Jay Dr. between W. Elmhurst Ave. and W. Monticello Ave. in the Columbine Hills Subdivision (\$170,404)

September 2019

Project CIP 19-3W

Replaced 1,255 feet of 8-inch cast iron pipe with 1,255 feet of 8-inch PVC pipe in W. Rowland Pl. between S. Depew St. and S. Sheridan Ct. in the Columbine Knolls Subdivision (\$293,085)

September 2019

Project CIP 19-1S

Replaced 293 feet of 16-inch polyethylene pipe with 293 feet of PVC pipe in S. Sheridan Blvd. at W. Fair Dr. in the Leawood Subdivision (\$180,350)

October 2018

Project – Not Numbered

Scott J. Morse Pump Station fencing, parking, and storage facilities (\$199,005)

October 2018

Project CIP 18-1W

Replaced 210 feet of 16-inch steel pipe with 210 feet of 12-inch PVC pipe in S. Sheridan Blvd. between W. Ontario Ave. and S. Yates Ct. (\$199,005 est.)

August 2018

Project CIP 18-3W

Replaced 1,378 feet of 6-inch cast iron pipe with 1,378 feet of PVC pipe in W. Geddes Cir. west of S. Sheridan Blvd. in the Columbine Manor Subdivision (\$282,754)

July 2018

Project CIP 18-1S

SpectraShield lined five manholes on 16-inch sewer main in S. Sheridan Blvd. between 6159 and 6249 S. Sheridan Blvd. (\$ 8,950)

October 2017

Projects CIP 17-1S, CIP 17-2S, and CIP 17-3S

CIPP lined 7,339 feet of 8-inch and 1,431 feet of 10-inch concrete sewer pipe in S. Depew St., W. Ontario Ave., W. Ontario Cir., S. Sheridan Blvd., W. Plymouth Dr., S. Gray Ct., W. Portland Dr., W. Quarles Dr. and lined 39 concrete manholes. (Normandy Estates Subdivision) (\$356,297)

October 2017

Project CIP 17-3W

Replaced pressure reducing valve and piping at W. Frost Dr. and S. Webster St. (Columbine West Subdivision) **(\$32,210)**

September 2017

Project CIP 17-2W

Replaced 1,946 feet of 6-inch cast iron pipe with 1,946 feet of PVC pipe in Morning Glory Ln. between Blue Sage Dr. and W. Berry Ave. (Bow Mar South Subdivision) **(\$213,537)**

July 2017

Project CIP 17-1W

Replaced 994 feet of 6-inch cast iron pipe with 994 feet of 6-inch PVC pipe in W. Canyon Dr. between S. Depew St. and W. Canyon Ave. (Columbine Hills Subdivision) **(\$159,173)**

June 2017

Project CIP 16-1W

Replaced inlet discharge interior piping, pumps, motors and control system components at Scott J. Morse Pump Station (Columbine Hills Subdivision) **(\$1,241,782)**

September 2016

Project CIP 16-2W

Replaced 180 feet of 6-inch cast iron pipe in W. Portland Dr. between W. Ottawa Ave. and S. Sheridan Blvd. with 180 feet of 6-inch C-900, class 150 PVC pipe. (Normandy Estates) **(\$29,420)**

August 2016

Project CIP 16-1S

CIPP lined 3,383 feet of 8-inch concrete pipe, lined 14 concrete manholes and reestablished 40 service connections in W. Rowland Ave., S. Normandy Cir., W. Quarles Dr. and S. Windsor St. (Normandy Estates) **(\$129,981)**

September 2015

Project CIP 15-1S

CIPP lined 3,383 feet of 8-inch concrete pipe, lined 14 concrete manholes and reestablished 40 service connections in W. Rowland Ave., S. Normandy Cir., W. Quarles Dr. and S. Windsor St. (Normandy Estates) **(\$135,225)**

September 2014

Project CIP 14-1W

Replaced 1,560 feet of 6-inch cast iron pipe in S. Chase Wy. Between W. Rowland Pl. and S. Sheridan Ct. with 1,560 feet of 6-inch C-900, class 150 PVC (Columbine Knolls Subdivision) **(\$251,896)**

September 2014

Project CIP 14-1S

CIPP lined 1814 feet of 8-inch concrete pipe, lined 9 manholes, and reestablished 17 sewer service taps in Robincrest Ln. and Meadowlark Ln. north of Coal Mine Ave. (Columbine Heights Subdivision) **(\$123,938)**

September 2013

Project CIP 13-1W

Replaced 325 feet of 4-inch cast iron pipe with 325 feet of 4-inch C-900, class 150 PVC pipe in S. Quay Ct. between W. Hinsdale Pl. and end of cul-de-sac (Columbine West Subdivision) **(\$62,164)**

September 2013

Project CIP 13-2W

Replaced 775 feet of 6-inch cast iron pipe with 775 feet of 8-inch C-900, class 150,

PVC pipe in S. Jay Dr. between W. Monticello Ave. and W. Elmhurst Dr. (Columbine Hills Subdivision) (\$116,244)

September 2012

Project CIP 12-1W

Replaced 523 feet of 6-inch cast iron pipe with 523 feet of 6-inch C900 class 150 PVC pipe in S. Sheridan Ct. between W. Ken Caryl Ave. and W. Hinsdale Ave. (Columbine Knolls Subdivision) (\$88,872)

September 2012

Project CIP 12-1S

CIPP lined 1,313 feet of 21-inch and 4,803 feet of 18-inch concrete pipe and 27 concrete manholes on the Raccoon Creek Interceptor Sewer (\$429,565)

October 2011

Project CIP 11-1S

Replaced 50 feet of 24-inch concrete sewer pipe with 24-inch, PVC sewer pipe in W. Bowles Ave., between Platte Canyon Rd. and Middlefield Ln. (\$68,652)

October 2010

Project CIP 10-1S

Replaced 200 feet of 8-inch vitrified clay pipe in W. Roxbury Dr. between manholes S.4.1.2 and S.4.1.1. with 200 feet of 8-inch, SDR-35 PVC sewer pipe (Columbine Knolls Subdivision) (\$57,821)

September 2010

Project CIP 10-1W

Replaced 325 feet of 4-inch cast iron pipe in S. Pierce St. between W. Hinsdale Pl. and end of Pierce St. cul-de-sac with 325 feet of 4-inch, C-900, class 200 PVC pipe (Columbine West Subdivision) (\$45,820)

September 2010

Project CIP 10-2W

Replaced 1,100 feet of 6-inch cast iron pipe in W. Portland Dr. between S. Sheridan Blvd. and W. Rowland Ave. with 1,100 feet of 6-inch, C-900, class 150 PVC pipe (Normandy Estates Subdivision) (\$121,697)

September 2009

Project CIP 09-1W

Replaced 483 feet of 16-inch cast iron pipe in W. Leawood Dr. between S. Sheridan Blvd. and S. Benton Wy. with 483 feet of 12-inch, C-900, class 150 PVC pipe (Leawood Subdivision) (\$110,988)

September 2009

Project CIP 09-2W

Replaced 500 feet of 6-inch asbestos-cement pipe in W. Ottawa Pl. between S. Webster St. and the end of the cul-de-sac with 500 feet of 6-inch, C-900, class 150 PVC pipe (Columbine West Subdivision) (\$81,472)

September 2008

Project CIP 08-1W

Replaced 695 feet of 8-inch asbestos-cement pipe with 695 feet of 8-inch, C-900, class 150 PVC pipe in S. Depew St. between W. Coal Mine Ave. and W. Ontario Ave. (Normandy Estates Subdivision) (\$103,668)

September 2008

Project CIP 08-2W

Replaced 796 feet of 6-inch cast iron pipe with 796 feet of 6-inch, C-900, class 150 PVC pipe in Dutch Creek Dr. between Meadowlark Ln. and Glenridge Dr. (Columbine Heights Subdivision) (\$119,561)

September 2008

Project CIP 08-3W

Replaced 1,215 feet of 6-inch cast iron pipe with 1,215 feet of 6-inch, C-900, class 150 PVC pipe in W. Hinsdale Cir. between S. Platte Canyon Dr. (south intersection) and S. Platte Canyon Dr. (north intersection) (Columbine Manor Subdivision) (\$127,867)

October 2007

Project CIP 07-1W

Replaced 660 feet of 6-inch cast iron pipe with 660 feet of 6-inch, C-900, class 150 PVC pipe in W. Chestnut Ave. between W. Elmhurst Ave. and W. Elmhurst Dr. (\$72,126)

October 2007

Project CIP 07-2W

Replaced 752 feet of 6-inch cast iron pipe with 752 feet of 6-inch, C-900, class 150 PVC pipe in S. Ingalls St. between W. Rowland Pl. and W. Geddes Pl. (\$97,508)

September 2007

Project CIP 07-2S

Installed 186 feet of 30-inch PVC pipe from the inlet to the Platte River Lift Station to the Roxborough Water and Sanitation District interceptor sewer. (\$60,000)

September 2007

Project CIP 07-1S

CIPP lined 180 feet of 8-inch vitrified clay pipe (VCP) in W. Chestnut Ave. between manholes 71.97 to 71.93 (Columbine Hills Subdivision). 497 feet of 8-inch VCP in W. Glasgow Ave. between manholes 33.5.2 to 33.5 (Columbine Knolls Subdivision) and 551 feet of 8-inch VCP in W. Geddes Ave. between manholes 33.4.2 to 33.4.4 (Columbine Knolls Subdivision) (\$33,450)

October 2006

Project CIP 06-1W

Replaced 1,065 feet of 16-inch cast iron pipe with 1,065 feet of 16-inch, class 235 PVC pipe in S. Webster St. between W. Glasgow Pl. and W. Frost Dr. and 180 feet of 6-inch cast iron pipe with 6-inch, C-900, class 150, PVC pipe in W. Geddes Cir. East of S. Webster St. (\$262,823)

October 2006

Project CIP 06-2W

Replaced 1,521 feet of 6-inch cast iron pipe in S. Depew Wy. Between S. Depew St. and W. Canyon Trail with 1,521 feet of 6-inch C-900, class 150, PVC pipe. (\$215,509)

July 2006

Project CIP 6-1S

Rehabilitated with cured-in-place method of rehabilitation 3,600 feet of 8-inch vitrified clay pipe in W. Rowland Ave. between S. Gray Ct. and S. Sheridan Blvd. and in S. Sheridan Blvd. between W. Rowland Ave. and W. Ottawa Ave. (\$103,669)

October 2005

Project CIP 05-3W

Replaced 8-inch pressure reducing valve and vault on S. Webster St., 235 feet south of W. Ottawa Ave. (Columbine West Subdivision). (\$57,216)

September 2005

Project CIP 05-1W

Replaced 2,150 feet of 8-inch cast iron pipe with 8- inch, C-900, class 150 PVC pipe in W. Elmhurst Dr. between S. Kendall Blvd. and W. Elmhurst Ave. (Columbine Hills Subdivision). (\$207,715)

September 2005

Project CIP 05-2W

Replaced 2,150 feet of 8-inch cast iron pipe with 8-inch, C-900, class 150 pipe in W. Chestnut Ave. between S. Kendall Blvd. and W. Elmhurst Ave. (Columbine Hills Subdivision). (\$208,382)

August 2005

Project CIP 04-5W

Replaced 1,025 feet of 18-inch steel pipe with 1,025 feet of 16-inch ductile iron pipe in. S. Sheridan Blvd. (extended) between Dutch Creek and W. Coal Mine Ave. (\$213,865)

May 2005

Project CIP 05-1S

Rehabilitated with a cured-in-place method of rehabilitation 2,154 feet of 8-inch vitrified clay pipe in Morning Glory Ln. between manholes 17.63.10 and 17.63 (Bow Mar South Subdivision). (\$62,565)

September 2004

Project CIP 04-2S

Replaced 239 feet of 8-inch SDR-35 pipe with 239 feet of C-900, class 200, PVC pipe in W. Frost Dr. (\$44,760)

August 2004

Project CIP 04-1W

Replaced 830 feet of 6-inch cast iron pipe in W. Elmhurst Dr. between W. Clifton Pl. and the end of the cul-de-sac. (\$114,549)

August 2004

Project CIP 04-3W

Replaced 14 fire hydrants at the following locations:

On W. Hinsdale Cir. 326' W of Platte Canyon Dr.	(E12-F2)
On W. Fremont Pl. at S. Pierce Ct.	(H11-F16)
On S. Webster St. at W. Ken Caryl Rd.	(H12-F1)
On S. Pierce Ct. at W. Hinsdale Dr.	(H12-F12)
On S. Vance St. at W. Hinsdale Dr.	(H12-F2)
On S. Upham St. at W. Hinsdale Dr.	(H12-F3)
On S. Teller St. at W. Hinsdale Dr.	(H12-F4)
On W. Plymouth Dr. 515' east of Gray Ct.	(F10-F2)
On W. Plymouth Dr. at S. Depew St.	(F10-F3)
On W. Rowland Ave. 400' east of Gray Ct.	(F10-F9)
On S. Saulsbury Ct. at W Hinsdale Dr.	(H12-F5)
On S. Reed Ct. at W. Hinsdale Dr.	(H12-F6)
On S. Quay Ct. at W. Hinsdale Dr.	(H12-F8)
On S. Zephyr Way at W. Glasgow Pl.	(I12-F2)
On W. Glasgow Pl. 600' west of S. Webster St.	(I12-F4)
On W. Glasgow Pl. at S. Webster St.	(I12-F5)
On W. Canyon Ave. at S. Kendall Blvd.	(G14-F12)
On W. Indore Pl. at S. Kendall Blvd.	(G12-F5)

(\$50,418)

July 2004

Project CIP 04-1S

Rehabilitated with a cured-in-place method of rehabilitation 803 feet of 8-inch vitrified clay pipe in Roxbury Dr. between S. Pierce St. and S. Newland St. (\$26,017)

October 2003

Project CIP 03-1S

Rehabilitated 26 manholes on the Outfall Sewer in Platte Canyon Rd. between W. Coal Mine Ave. and W. Chatfield Ave. (\$22,273)

September 2003

Project CIP 03-2W

Replaced 2,250 feet of 8-inch cast iron pipe in W. Alder Ave. between S. Depew St. and S. Kendall Blvd. with 2,250 feet of 8-inch, C-900, class 150, PVC pipe (Columbine Hills). (\$197,693)

August 2003

Project CIP 03-2S

Rehabilitated 738 feet of 8-inch vitrified clay pipe in S. Sheridan Ct. and within an easement between manholes 49.2 and OF60 using a curried-in-place method of rehabilitation (Columbine Hills). (\$23,185)

August 2003

Project CIP 03-3S

Rehabilitated 270 feet of 10-inch vitrified clay pipe in S. Depew St. between W. Ottawa Ave. and manhole S1-4 using a cured-in-place method of rehabilitation. (\$12,217)

April 2003

Project CIP 03-3W

Replaced 11 each 4¼-inch fire hydrants at the following locations:

On W. Chestnut Ave. 450' NE of Chestnut Wy.	(F15-F6)
On W. Alder Wy. 350' north of W. Alder Ave.	(F15-F8)
On W. Elmhurst Ave. at W. Kendall Blvd.	(G15-F9)
On W. Elmhurst Dr. at S. Kendall Blvd.	(G16-F11)
On W. Rowland Pl. 600' west of Ingalls Wy.	(F11-F1)
On S. Marshall St. at W. Portland Ave.	(G10-F6)
On W. Rowland Ave. at S. Marshall St.	(G10-F7)
On W. Roxbury Pl. 550' east of Marshall St.	(G11-F13)
On W. Roxbury Pl. at Kendall Blvd.	(G11-F9)
	(\$14,885)

September 2002

Project CIP 02-1S

Rehabilitated 15 manholes on the Outfall Sewer in Bowles Ave. and S. Platte Canyon Rd. (manholes OF 15 to OF 30). (\$19,513)

August 2002

Project CIP 02-2S

Installed Muffin Monster sewage grinder at the Platte River Lift Station. (\$49,963)

August 2002

Project CIP 02-2W

Replaced 948 feet of 6-inch and 881 feet of 8-inch cast iron pipe in S. Depew St. between W. Rowland Pl. and W. Fremont Dr. with 1830 feet of 8-inch C-900, class 150, PVC pipe. (Columbine Knolls). (\$170,182)

August 2002

Project CIP 02-1W

Replaced 1,700 feet of 6-inch cast iron pipe in S. Sheridan Ct. between W. Canyon Trail and end of Sheridan Ct. cul-de-sac with 1,700 feet of 6-inch C-900, class 150 PVC pipe. (Columbine Hills). (\$142,614)

July 2002

Project CIP 02-3W

Replaced 11 each 4¼-inch fire hydrants at the following locations:

On S. Ames Wy. at W. Ken Caryl Ave.	(F13-F12)
On S. Depew Wy. at S. Depew St.	(F13-F7)
On S. Depew Wy. at W. Caryl Pl.	(F13-F8)
On W. Canyon Dr. at W. Canyon Ave.	(F14-F2)
On W. Canyon Ave. at S. Fenton St.	(F14-F3)
On S. Eaton Wy. at S. Depew St.	(F14-F4)
On S. Depew Wy. at W. Canyon Trail	(F14-F5)
On W. Chestnut Dr. at W. Elmhurst Ave.	(F15-F2)
On W. Elmhurst Dr. at W. Elmhurst Ave.	(F15-F3)
On W. Chestnut Ave. 285' west of Chestnut Wy.	(F15-F5)
At 5123 S. Geddes Cir.	(E11-F5)

(\$17,775)

July 2002

Project CIP 02-4W

Installed isolation valves on each side of each District water main crossing of the Denver Water Department's Conduit 20. Valve locations were as follows:

W. Bowles Ave. east of S. Jay Ct. (Leawood) (2)	12"
W. Leawood Dr. east of S. Jay Ct. (Leawood) (2)	8"
W. Maplewood Pl. at S. Ingalls St. (Leawood) (2)	6"
W. Maplewood Dr. at S. Ingalls St. (Leawood) (2)	6"
W. Fair Dr. at S. Ingalls St. (Leawood) (2)	8"
W. Arbor Ave. at S. Ingalls St. (Leawood) (1)	8"
W. Caley Ave. at S. Ingalls St. (Leawood) (2)	6"
S. Jay Wy. at S. Jay Wy. (Leawood) (2)	6"
W. Weaver Dr. at S. Jay Wy. (Leawood) (2)	12"
W. Coal Mine Ave. at S. Marshall St. (Misc.) (1)	8"
W. Marshall St. (Pierce Street Mall) (1)	8"
W. Portland Ave. at S. Marshall St. (Columbine Knolls) (2)	8"
W. Canyon Ave. at S. Pierce St. (Columbine Hills) (2)	12"
	(\$61,566)

August 2001

Project 01-2W

Replaced 1,100 feet of 6-inch cast iron pipe in W. Fremont Dr., between W. Fremont Ave. and S. Platte Canyon Dr. with 1,100 feet of C-900, class 150, PVC pipe. (\$112,045)

August 2001

Project 01-3W

Replaced 2,110 feet of 8-inch cast iron pipe in S. Sheridan Ct. between W. Hinsdale Ave. and W. Rowland Pl. (Columbine Manor). (\$254,234)

August 2001

Project 01-4W

Replaced 12 each 4¼ fire hydrants at the following locations:

On Blue Sage Dr. at W. Berry Ave.	(D03-F1)
On Blue Sage Dr. at Sumac Ln.	(D03-F2)
On Morning Glory Ln. 835' south of Berry Ave.	(D03-F3)
On Blue Sage Dr. at Morning Glory Ln.	(D04-F1)
On Wood Sorrel Dr. at Tule Lake Dr.	(D04-F4)
On Marigold Ln. at Sumac Ln.	(E03-F2)
On Laurel Pl. at W. Bowles Ave.	(E04-F7)
On Snowberry Dr. at Tule Lake Dr.	(E04-F9)
On S. Jay Dr. at W. Coal Mine Ave.	(G08-F11)
On Summit Dr. at S. Kendall Wy.	(G08-F12)
On S. Depew St. at W. Rowland Pl.	(F11-F6)
On S. Chase Wy. at W. Rowland Pl.	(F11-F8)

(\$36,893)

July 2001

Project 01-1S

Rehabilitated 2,676 feet of 10-inch concrete sewer pipe in an easement between S. Sheridan Blvd. and S. Platte Canyon Rd. (Normandy Estates Outfall Sewer) with cured in place lining. Rehabilitated 10 manholes located on the pipeline. (\$106,810)

July 2001

Project 01-2S

Rehabilitated 1,200 feet of 8-inch clay tile pipe in an easement between S. Sheridan Blvd. and Shasta Circle north of Bowles Ave. with cured in place lining. (\$40,579)

December 2000

Project 00-2S

Rehabilitated 15 manholes (OF1 to OF14) on the District's outfall sewer main. (\$26,669)

September 2000

Project 00-1W

Replaced 1,050 feet of 18-inch steel water main in S. Sheridan Blvd. between W. Portland Dr. and W. Fremont Ave. with 1,050 feet of 16-inch ductile iron pipe. (\$236,106)

September 2000

Project 00-2W

Replaced 1,573 feet of 6-inch cast iron pipe in W. Rowland Ave. between S. Sheridan Blvd. And W. Quarles Drive, including the Normandy Pl. cul-de-sac with 1, 573 feet of C-900, class 150, PVC pipe. (\$145,663)

September 2000

Project 00-3W

Replaced 17 Pacific States fire hydrants at the following locations:

On S. Gray Ct. at W. Fair Dr.	(F06-F1)
On W. Fair Dr. at W. Maplewood Dr.	(F06-F2)
On S. Fenton Ct. 1000' north of W. Weaver Dr.	(F06-F3)
On S. Eaton Ct. at W. Maplewood Dr.	(F06-F4)
On W. Leawood Dr. at W. Fair Dr.	(F06-F5)
On W. Leawood Dr. at S. Chase St.	(F60-F6)

On S. Gray Ct. 500' north of Weaver Dr.	(F07-F2)
On S. Fenton Ct. at W. Weaver Dr.	(F07-F3)
On S. Depew Ct. 250' north of Weaver Dr.	(F07-F5)
On S. Chase Ct. 400' north of Weaver Dr.	(F07-F6)
On S. Chase St. 700' north of Weaver Dr.	(F07-F7)
On S. Chase St. at W. Weaver Dr.	(F07-F8)
On W. Leawood Dr. 50' northwest of Benton Wy.	(F07-F9)
On W. Maple wood Dr. at S. Ingalls St.	(G06-F9)
On W. Canyon Ave. at W. Nova Dr.	(G14-F11)
On W. Canyon Ave. at St. Newland St.	(G14-F2)
On S. Pierce St. 245' south of Canyon Ave.	(H14-F14)

(\$41,351)

August 2000

Project 00-1S

Rehabilitated 2,775 feet of 8-inch vitrified clay sewer pipe in the Bow Mar South subdivision using the cured-in-place (Insituform) method of rehabilitation. (\$93,747)

December 1999

Project 99-3S

Installed ultrasonic sewage flow meter at Platte Canyon Sewage Lift Station. (\$16,924)

December 1999

Project 99-2S

Rehabilitated manholes OF51, OF52, OF53, OF54 and OF55 on the District's outfall sewer main. (\$12,055)

September 1999

Project 99-1S

Rehabilitated 2,392 feet of 24-inch concrete sewer main between manholes OF34 and OF39 using a cured in place rehabilitation process. (\$178,043)

September 1999

Project 99-3W

Installed eight 6-inch gate valves at various locations. (\$24,009)

September 1999

Project 99-1W

Replaced 2,725 feet of 6-inch cast iron pipe in S. Platte Canyon Dr. between S. Sheridan Blvd. and W. Fremont Ave. (Columbine Manor Subdivision. (\$161,153)

September 1999

Project 99-2W

Replaced 10-inch pressure reducing valve and vault on W. Hinsdale Dr. at S. Webster St. (\$53,340)

November 1998

Project 98-2S

Rehabilitated manholes OF30 through OF33 and OF61 through OF64 on the District's outfall sewer main (eight manholes). (\$11,025)

November 1998

Project 98-1S

1. Sliplined 406 feet of 24-inch concrete pipe between manholes OF32 and OF33 and 1,016 feet of 18-inch concrete pipe between manholes OF61 and OF64 on the District's outfall sewer main. (\$68,534)

2. Insituformed 905 feet of 24-inch concrete pipe between manholes OF24 and OF30 on the District's outfall sewer main. (\$79,241)

October 1998

Project 98-1W

Replaced 760 feet of 6-inch cast iron pipe in W. Quarles Dr. between S. Sheridan Blvd. and Normandy Parkway with 760 feet of 6-inch C-900, class 150, PVC pipe. (\$81,212)

September 1998

Project 98-2W

Replaced 1,322 feet of 8-inch cast iron pipe in Tule Lake Dr. between S. Sheridan Blvd. and Shasta Cir. with 1,322 feet of 8-inch C-900, class 150, PVC pipe. (\$106,088)

May 1998

Project 01-1W

Replaced 1,263 feet of 6-inch cast iron pipe in S. Gray Ct. Between W. Plymouth Dr. and W. Rowland Ave. with 1,263 feet of 6-inch, C-900, class 150 PVC pipe. (\$90,096)

May 1998

Projects 97-4W and 97-5W

Replaced 10-inch pressure regulating valve and vault on S. Webster St. at W. Frost Dr., replaced 6-inch pressure regulating valve on W. Frost Dr. at S. Webster St., replaced 10-inch pressure regulating valve and vault on W. Fremont Dr. at S. Allison St. (\$90,198)

May 1998

Project 97-1W

Replaced 1,046 feet of 18-inch steel water main with 1,046 feet of 16-inch ductile iron pipe, and 290 feet of 6-inch cast iron pipe with 290 feet of class 50 ductile iron pipe in S. Sheridan Blvd. in Normandy Estates Subdivision. (\$228,137)

February 1998

Project 97-1S

Sliplined 2,035 feet of 24-inch concrete sanitary sewer main with 22-inch O.D., SDR 32.5 PE pipe between outfall sewer manholes OF19 and OF30. (\$122,864)

July 1997

Project 97-2W

Replace IKOR variable speed motor controller at the Columbine West Water Pumping Station. (\$58,536)

July 1997

Project 97-3W

Installed centralized, telemetered, computerized supervisory control and data acquisition (SCADA) system. (\$55,908)

October 1996

Project 96-1S

Sliplined 1,517 feet of 27-inch sanitary sewer main between manhole OF3 and OF7. (\$100,395)

June 1996

Project 96-1W

Installed 1,508 feet of 12-inch class 150 PVC pipe with associated appurtenances in S. Pierce St. between W. Fair Dr. and W. Leawood Dr. (\$74,908)

July 1995

Project 95-2W

Relocated 732 feet of 12-inch asbestos-cement pipe with 732 feet PVC pipe in W. Coal Mine Avenue between S. Webster Street and the entrance to The Terrace at Columbine. (\$33,470)

July 1995

Project 95-3W

Replaced 1,758 feet of 6-inch cast iron pipe with 1,758 feet of PVC pipe in W. Geddes Place between S. Sheridan Court and S. Depew Street in the Columbine Grove Subdivision. (\$95,432)

July 1995

Project 95- 4W

Replaced 1,179 feet of 6-inch cast iron water pipe with 1,179 feet of 6-inch PVC pipe in S. Ames Way between W. Caryl Avenue and W. Canyon Trail. (\$66,744)

July 1995

Project 95-1S

Sliplined 1,064 feet of 27-inch concrete pipe between manholes OF7 and OF12 in S. Julian Street between W. Bowles Avenue and W. Alamo Place and 875 feet of 24-inch concrete sewer main between S. Julian Street and S. Lowell Way. (\$170,332)

September 1994

Unscheduled

Replaced 500 feet of 6-inch cast iron pipe with 500 of 6-inch PVC in the W. Fremont Place cul-de-sac west of S. Sheridan Blvd. (\$132,102)

August 1994

Project 94-3W

Replaced 1,550 feet of 6-inch cast iron water pipe with 1,550 feet of 8-inch PVC pipe in W. Fremont Avenue between Platte Canyon Road and S. Sheridan Boulevard. (\$95,959)

July 1994

Sliplined 1, 375 feet of 21-inch concrete sewer main in Platte Canyon Road between manholes OF42 and OF47. (\$64,757)

November 1994

Insituform rehabilitated 500 feet of 8-inch vitrified clay sewer pipe in an easement between S. Ingalls Street and S. Jay Way. (\$29,277)

September 1994

Project 93-3W

Replaced 1,500 feet of 18-inch steel water main with 1,600 feet of 16-inch ductile iron pipe between W. Bowles Avenue and W. Leawood Drive. (\$123,000)

April 1993

Project 93-1W

Replaced 800 feet of 6-inch cast iron water pipe in W. Quarles Drive between S. Sheridan Blvd. and W. Rowland Ave. (Normandy Estates Subdivision) with 800 feet of 6-inch PVC pipe. (\$36,000)

May 1993

Project 93-1S and 93-2S

Sliplined 545 feet of 21-inch concrete sewer between manholes 56.1 and 58,501 feet of 18-inch concrete sewer between manholes 58 and 59, and 1,000 feet of 27-inch concrete pipe between the sewage lift station and manhole 3 on the Platte Canyon outfall sewer main. (\$128,410)

May 1992

Project 92-1W

Replaced 1,150 feet of 6-inch cast iron water pipe in Sumac Lane west of Blue Sage Dr. to end of cul-de-sac with 8-inch PVC pipe (Bow Mar South Subdivision). (\$62,120)

May 1992

Project 92-2W

Replaced 925 feet of 6-inch cast iron water pipe S. Kendall Ct. between W. Elmhurst Ave. and W. Elmhurst Dr. with 6-inch PVC pipe (Columbine Hills Subdivision). (\$51,782)

March 1992

Project CIP 91-1S

Sewage Lift Station Rehabilitation Project. (\$199,478)

1. Rehabilitated existing concrete lift station building
2. Constructed generator and storage building
3. Installed automatic electric transfer switch
4. Installed 500 gallon diesel fuel tank
5. Rehabilitated wet well
6. Replaced in-let gates
7. Replaced comminutor
8. Installed wooden fence

August 1991

Project CIP 91-1W

Replaced 1,200 feet of 6-inch cast iron water pipe in S. Kendall Ct. between S. Kendall Blvd. and W. Rowland Pl. (Columbine Knolls Subdivision). (\$ 58,066)

September 1990

Project CIP 90-1S

Sliplined 1,876 feet of 8-inch and 10-inch clay tile sewer pipe in an easement through the Columbine Hills Shopping Center and in W. Canyon Ave. between S. Pierce St. and S. Kendall Blvd. (\$30,537)

May 1990

Project CIP 90-1W

Replaced 1,219 feet of 6-inch cast iron water pipe in W. Brittany Pl. between W. Leawood Dr. and S. Jay Ct. (Leawood Subdivision). (\$60,949)

August 1989

Project CIP 89-2W

- a). Replaced 950 feet of 12 inch cast iron water main in Blue Sage Dr. between W. Bowles Ave. and Tule Lake Dr. (Bow Mar South Subdivision)
- b). Replaced 450 feet of 6 inch cast iron pipe in W. Roxbury Pl. west of S. Sheridan Blvd. (Columbine Grove Subdivision). (\$96,200)

July 1989

Project CIP 89-1W

Replaced 1,550 feet of 6 inch cast iron pipe in Lupine Dr. between W. Bowles Ave. and Shasta Cir. and in Shasta Cir. between Lupine Dr. and Tule Lake Dr. (Bow Mar South Subdivision). (\$75,490)

<u>December 1988</u>	Project CIP 88-2S Replaced manhole 40 on District Outfall Sewer Main in Platte Canyon Road. (\$ 2,500)
<u>June 1988</u>	Project CIP 88-1S Sliplined 200 feet of 24 inch concrete sewer between manholes 33 and 34 in Platte Canyon Rd. at Dutch Creek. (\$13,616)
<u>June 1988</u>	Project CIP 88-1W Replaced 1250 feet of 6 inch water main in S. Kendall Blvd. between S. Kendall Ct. and W. Rowland Pl. (\$60,164)
<u>September 1987</u>	Project CIP 87-1W Replaced 1,400 feet of 6 inch water main in W. Plymouth Dr. between S. Kendall Blvd. and S. Harlan Ct.; and in S. Harlan Ct. (cul-de-sac) south of W. Plymouth Dr. (\$57,672)
<u>September 1987</u>	Project CIP 87-1S Replaced 1,470 feet of 8 inch sanitary sewer in W. Bowles Ave. between Platte Canyon Rd. and Blue Sage Dr. (\$69,808)
<u>July 1986</u>	Project CIP 86-1W Replaced 1,800 feet of eight inch water pipe in Shasta Circle (Bow Mar Subdivision). (\$76,276)
<u>September 1985</u>	Project CIP 85-1S Sliplined 694 feet of 18 inch sewer, 3,064 feet of 21 inch sewer, and 1,604 feet of 24 inch sewer. (\$ 220,780)
<u>December 1978</u>	Project CIP 78-2W Replaced 1,450 feet of six inch water pipe in Summit Dr. and Jay Dr. (Columbine Estates Subdivision). (\$33,782)
<u>December 1978</u>	Project CIP 78-1W Replaced 305 feet of six inch water pipe in W. Rowland Cir., west of S. Lamar St. (Columbine Knolls Subdivision). (\$11,496)
<u>April 1977</u>	Project 77-1W Replaced 817 feet of six inch water pipe in Snowberry Dr. (Bow Mar South Subdivision). (\$18,616)
<u>April 1976</u>	Project 76-2W Replaced 855 feet of six inch water pipe in Bell Flower Dr. (Bow Mar South Subdivision). (\$11,960)
<u>April 1976</u>	Project 76-1W Replaced 855 feet of six inch water pipe in Wood Sorrell Dr. (Bow Mar South Subdivision). (\$11,960)
<u>March 1975</u>	Project 75-1W

Replaced 1,140 feet of eight inch water pipe in Tule Lake Dr. (Bow Mar South Subdivision). (\$19,873)

SECTION 6

CAPITAL IMPROVEMENT PROJECT MAP

WATER MAIN REPLACEMENT PROJECTS	
KEY	PROJECT
1	75-1W
2	76-1W
3	76-2W
4	77-1W
5	78-1W
6	78-2W
7	86-1W
8	87-1W
9	88-1W
10	89-1W
11a	89-2W
11b	89-2W
12	90-1W
13	91-1W
14	92-2W
15	92-1W
16	93-1W
17	93-3W
18	94-3W
19	Unscheduled
20	95-2W
21	95-3W
22	95-4W
23	Unscheduled
24	97-1W
25	01-1W
26	98-1W
27	98-2W
28	99-1W
29	00-1W
30	00-2W
31	01-2W
32	01-3W
33	02-1W
34	02-2W
35	03-2W
36	04-1W
37	04-5W
38	05-1W
39	05-2W
40	06-1W
41	06-2W
42	07-1W
43	07-2W
44	08-1W
45	08-2W
46	08-3W
47	09-1W
48	09-2W
49	10-1W
50	10-2W
51	12-1W
52	13-1W
53	13-2W
54	14-1W
55	16-2W
56	16-1W
57	17-1W
58	17-2W
59	17-3W
60	18-1W
61	18-3W
62	19-1W
63	19-2W
64	19-3W
65	19-4W
66	20-1W
67	20-2W
68	20-3W
69	20-4W
70	20-5W
71	21-1W
72	21-2W
73	21-3W
74	22-1W
75	22-2W
76	22-3W
77	23-1W

PROPOSED WATER MAIN REPLACEMENT PROJECTS	
KEY	PROJECT
1	24-1W
2	24-2W
3	24-3W
4	24-4W
5	25-1W
6	25-2W
7	25-3W
8	25-4W
9	26-1W
10	26-2W
11	26-3W
12	27-1W
13	27-2W
14	27-3W
15	27-4W
16	27-5W
17	27-6W
18	27-7W
19	27-8W
20	27-9W
21	27-10W
22	27-11W
23	27-12W
24	27-13W
25	27-14W
26	27-15W
27	27-16W
28	27-17W
29	27-18W
30	27-19W
31	27-20W
32	27-21W
33	27-22W
34	27-23W
35	27-24W
36	27-25W
37	27-26W
38	27-27W
39	27-28W
40	33-1W
41	33-2W
42	33-3W
43	33-4W

PROPOSED WATER MAIN REPLACEMENT

- BEAM BREAK
- ELECTROLYSIS BREAK
- LEAK ● FITTING
- CONTRACTOR ERROR
- UNKNOWN

WATER MAIN REPLACED

