

FIRST CREEK CREEK OVERVIEW

BUCKELY ROAD UPSTREAM TO FUTURE EASTERN HILLS ROAD 8

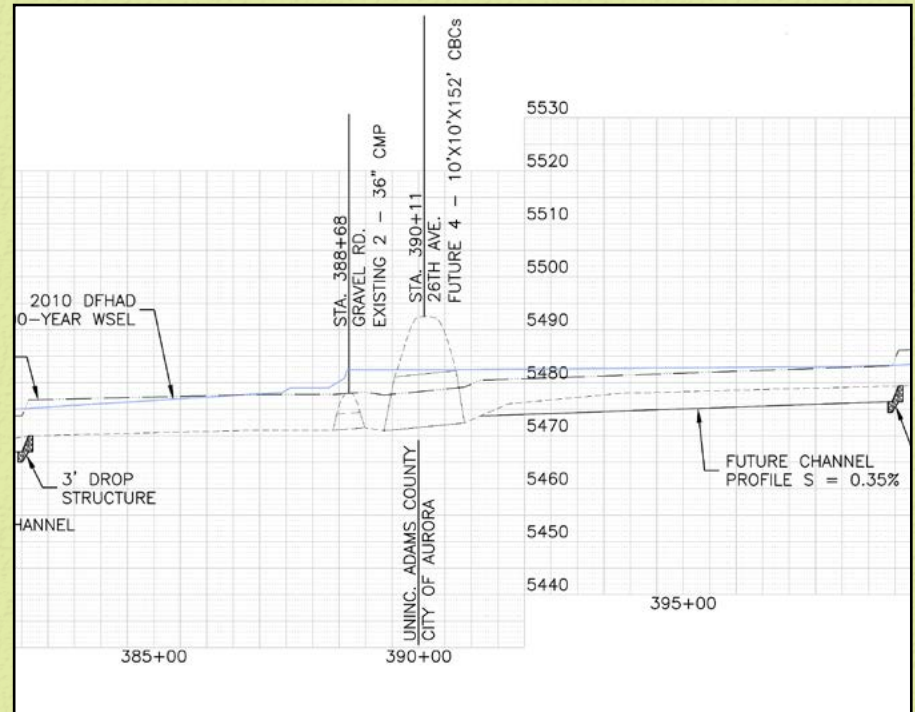
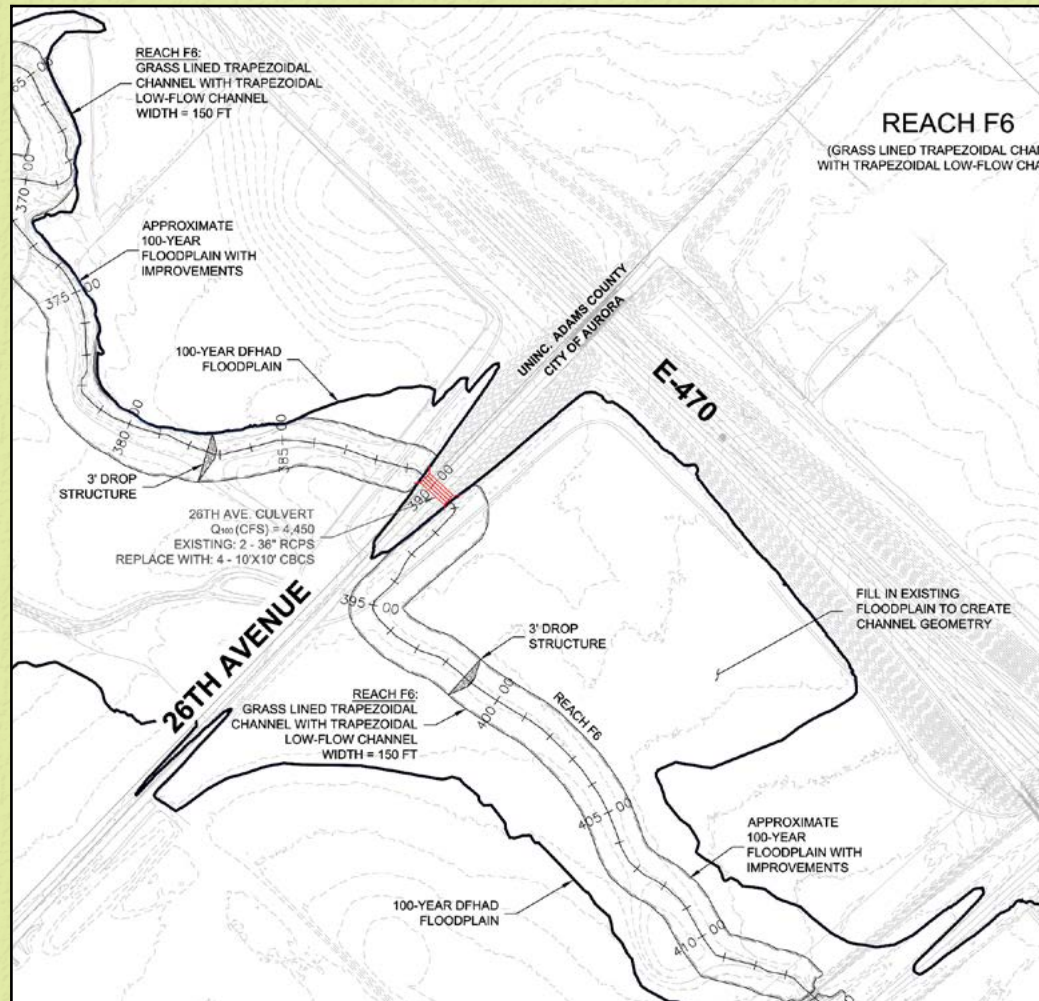


REACH NAME	FIRST CREEK STATIONING	REACH LENGTH (FEET)	TOTAL NUMBER OF PROJECTS
REACH F1	9+30 to 60+70	5,140	-
REACH F2	60+70 to 82+40	2,170	-
REACH F3	82+40 to 154+00	7,160	-
REACH F4	154+00 to 290+40	13,640	-
REACH F5	290+40 to 337+70	4,730	-
REACH F6	337+70 to 460+60	12,290	2
REACH F7	460+60 to 580+70	12,010	3
REACH F8	580+70 to 621+70	4,100	3
REACH F9	621+70 to 663+50	4,180	2
REACH F10	663+50 to 711+00	4,750	3
REACH F11	711+00 to 788+40	7,740	4
REACH F12	788+40 to 845+50	5,710	-
TRIBUTARY REACH T1	2000+00 to 2071+50	7,150	-
TRIBUTARY REACH T2	2071+50 to 2153+70	8,220	-
TRIBUTARY REACH T3	2153+70 to 2292+80	13,910	-



FIRST CREEK PROJECT FC-1 - EAST 26TH AVENUE CULVERT

INTERSECTION OF FIRST CREEK AND 26TH AVENUE



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x10'	76	LF	\$4,958	\$376,787
Headwall and Toewalls	1	EA	\$3,917	\$3,917
Wingwalls (including concrete apron)	1	EA	\$37,668	\$37,668
Removal of Culver Pipe (<48" Dia.)	152	LF	\$31	\$4,697
Dewatering				\$5,000
Mobilization			5%	\$21,153
Traffic Control				\$20,000
Utility Coordination/Relocation			5%	\$21,153
Stormwater Management/Erosion Control			5%	\$21,153
SUBTOTAL				\$511,530
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$322,133.7
TOTAL ESTIMATED COST				\$833,664

PROJECT DESCRIPTION

Reach F6 of First Creek (Upper) is between stations 337+70 to 460+60. The downstream reach limit is located 4,300' upstream of Picadilly Road and the upstream limit is located at I-70.

There are seven road crossings and associated structures within this reach. The existing 26th Avenue west of E-470 culvert consists of two 36-inch RCPS, has a 100-year Conceptual Design peak flow of 4,550 cfs, and does not convey the 100-year event without overtopping. The proposed replacement culvert consists of four 10-foot by 10-foot CBCs.

Note that the proposed culverts were sized to fit the existing roadway profiles with little to no change in the stream invert profile. If taller culverts are desired (e.g. to accommodate pedestrian crossings), the profile of the road may need to be raised to avoid drastic changes to the creek bed.

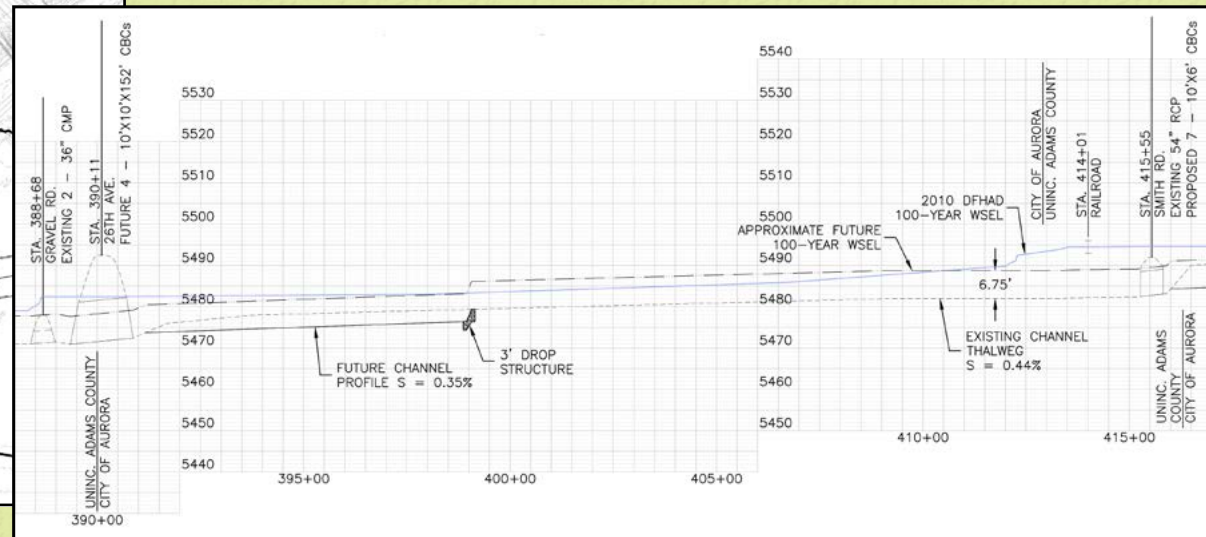
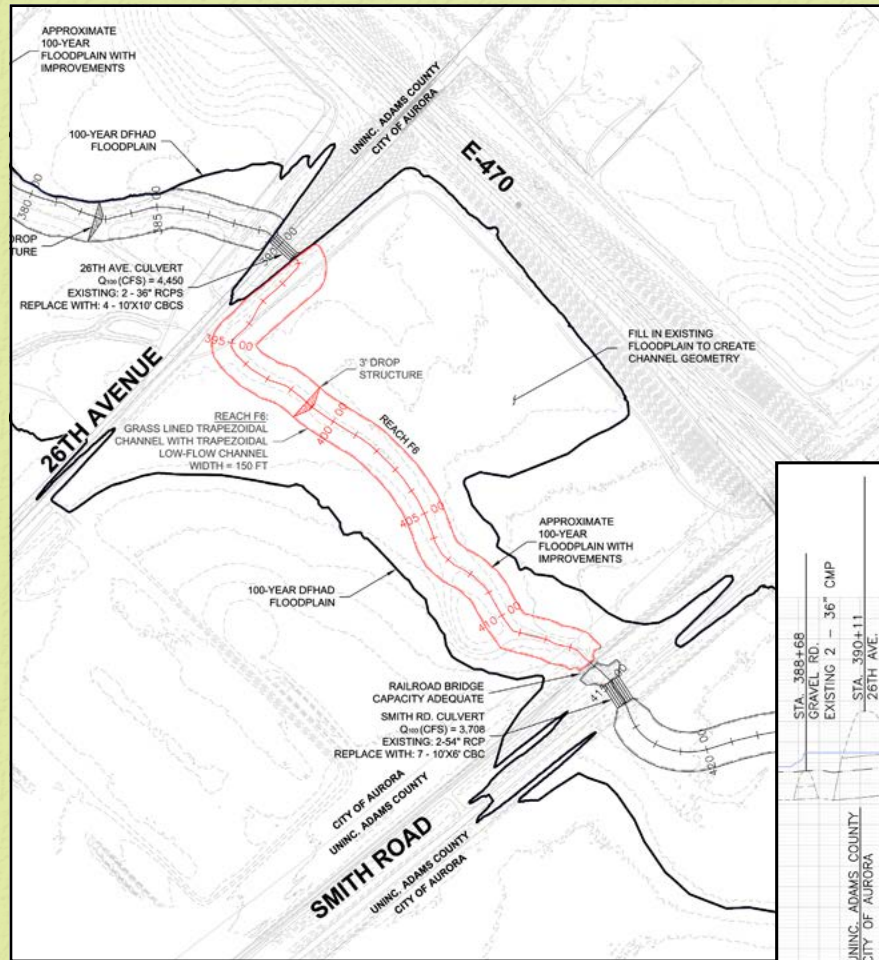
Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK

PROJECT FC-2 - ENGINEERED TRAPEZOIDAL CHANNEL STA: 390+00 TO 412+90

FIRST CREEK FROM 26TH AVENUE TO SMITH ROAD



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Drop Structure	1	EA	\$202,012	\$202,012
Excavation (High Range)	44840	CY	\$26	\$1,154,630
Reclamation & Seeding (native grasses)	8	ACRE	\$1,030	\$8,240
Trail/Path, Crusher Fines (10' Width)	2335	LF	\$10	\$24,051
Easement/ROW Acquisition	8	ACRE	\$87,120	\$696,960
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control		14%		\$292,024.92
SUBTOTAL				\$2,377,917
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$1,057,547
TOTAL ESTIMATED COST				\$3,435,464

Annual Operation and Maintenance				
Mowing	8	ACRE	\$150	\$1,200
Debris Removal	2335	LF	\$3	\$7,005
Restorative Maintenance and Rehabilitation	0.4	MI	\$5,000	\$2,000
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$10,205

PROJECT DESCRIPTION

Reach F6 of First Creek (Upper) is between stations 337+70 to 460+60. The downstream reach limit is located 4,300' upstream of Picadilly Road and the upstream limit is located at I-70. The existing natural channel is 12,290 feet long and has a slope of approximately 0.43%. The channel contains a flow split, is very wide in some areas, and is incised in other areas. There are portions of the channel that contain a well-defined low flow channel and areas that do not.

A trapezoidal channel with a trapezoidal low flow channel is proposed within Reach F6. The future 100-year channel has an average top width of 150 feet including two feet of freeboard per the City of Aurora criteria. The engineered channel will be grass lined, have a slope of 0.35%, and contain the 100-year Conceptual Design event in an area that is narrower than the existing wide channel. The low flow channel will have a top width of 40 feet. Areas of cut and fill will be used to create this channel and the overbanks will have a 1-2% slope to accommodate the maintenance and recreation trail. Four drop structures are proposed to achieve a stable slope of 0.35%.

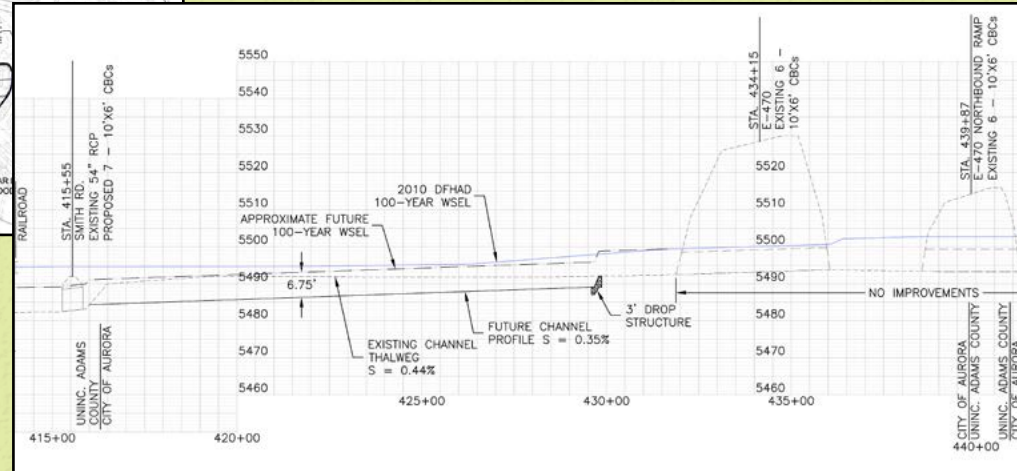
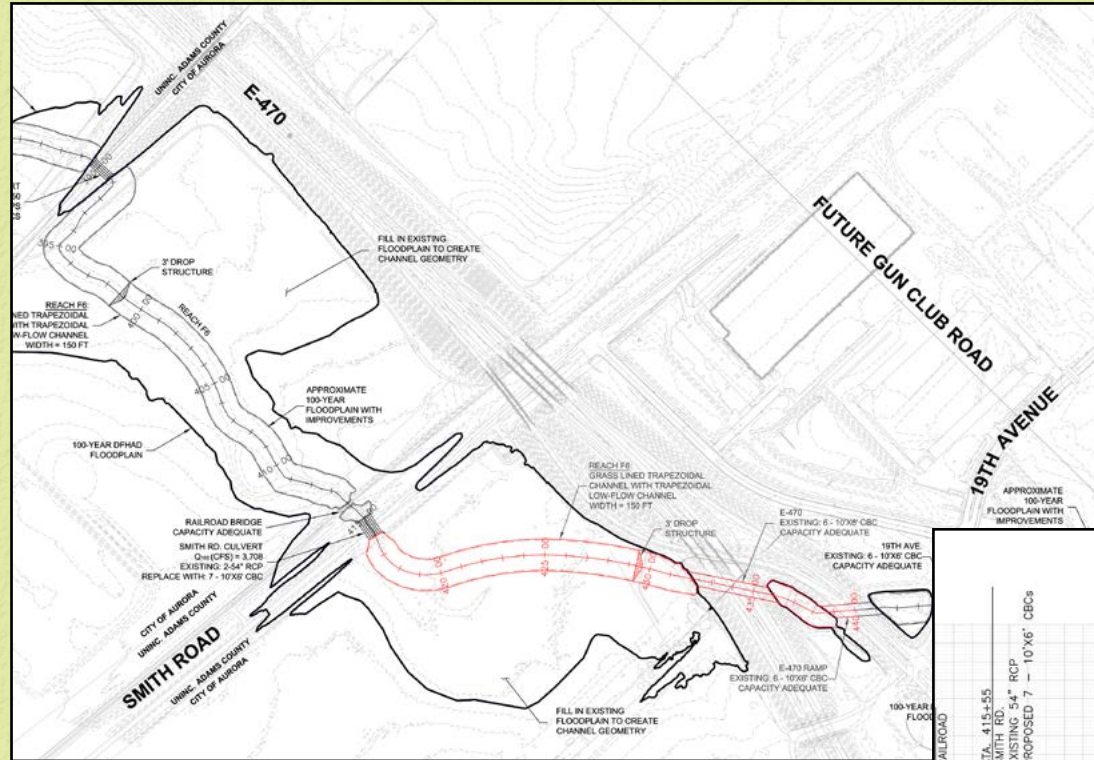
A permanent 10 foot wide maintenance trail will be built within the overbanks during trapezoidal channel construction to provide construction and maintenance access.



FIRST CREEK

PROJECT FC-3 - ENGINEERED TRAPEZOIDAL CHANNEL STA: 416+30 TO 439+90

FIRST CREEK WEST OF E-470 AND I-70 INTERSECTION



Item	Quantity	Unit	Unit Cost	Total Cost
Drop Structure	1	EA	\$202,012	\$202,012
Excavation (High Range)	44840	CY	\$26	\$1,154,630
Reclamation & Seeding (native grasses)	8	ACRE	\$1,030	\$8,240
Trail/Path, Crusher Fines (10' Width)	2335	LF	\$10	\$24,051
Easement/ROW Acquisition	8	ACRE	\$87,120	\$696,960
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control		14%		\$292,024.92
SUBTOTAL				\$2,377,917
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$1,098,136
TOTAL ESTIMATED COST				\$3,476,053

Annual Operation and Maintenance				
Mowing	8	ACRE	\$150	\$1,200
Debris Removal	2335	LF	\$3	\$7,005
Restorative Maintenance & Rehabilitation	0.4	MI	\$5,000	\$2,000
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$10,205

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

PROJECT DESCRIPTION

Reach F6 of First Creek (Upper) is between stations 337+70 to 460+60. The downstream reach limit is located 4,300' upstream of Picadilly Road and the upstream limit is located at I-70. The existing natural channel is 12,290 feet long and has a slope of approximately 0.43%. The channel contains a flow split, is very wide in some areas, and is incised in other areas. There are portions of the channel that contain a well-defined low flow channel and areas that do not.

A trapezoidal channel with a trapezoidal low flow channel is proposed within Reach F6. The future 100-year channel has an average top width of 150 feet including two feet of freeboard per the City of Aurora criteria. The engineered channel will be grass lined, have a slope of 0.35%, and contain the 100-year Conceptual Design event in an area that is narrower than the existing wide channel. The low flow channel will have a top width of 40 feet. Areas of cut and fill will be used to create this channel and the overbanks will have a 1-2% slope to accommodate the maintenance and recreation trail. Four drop structures are proposed to achieve a stable slope of 0.35%.

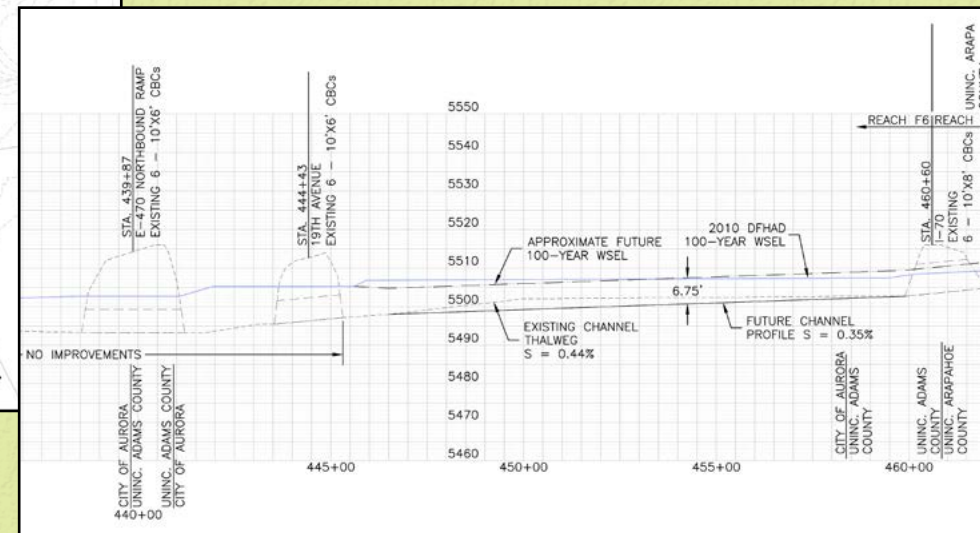
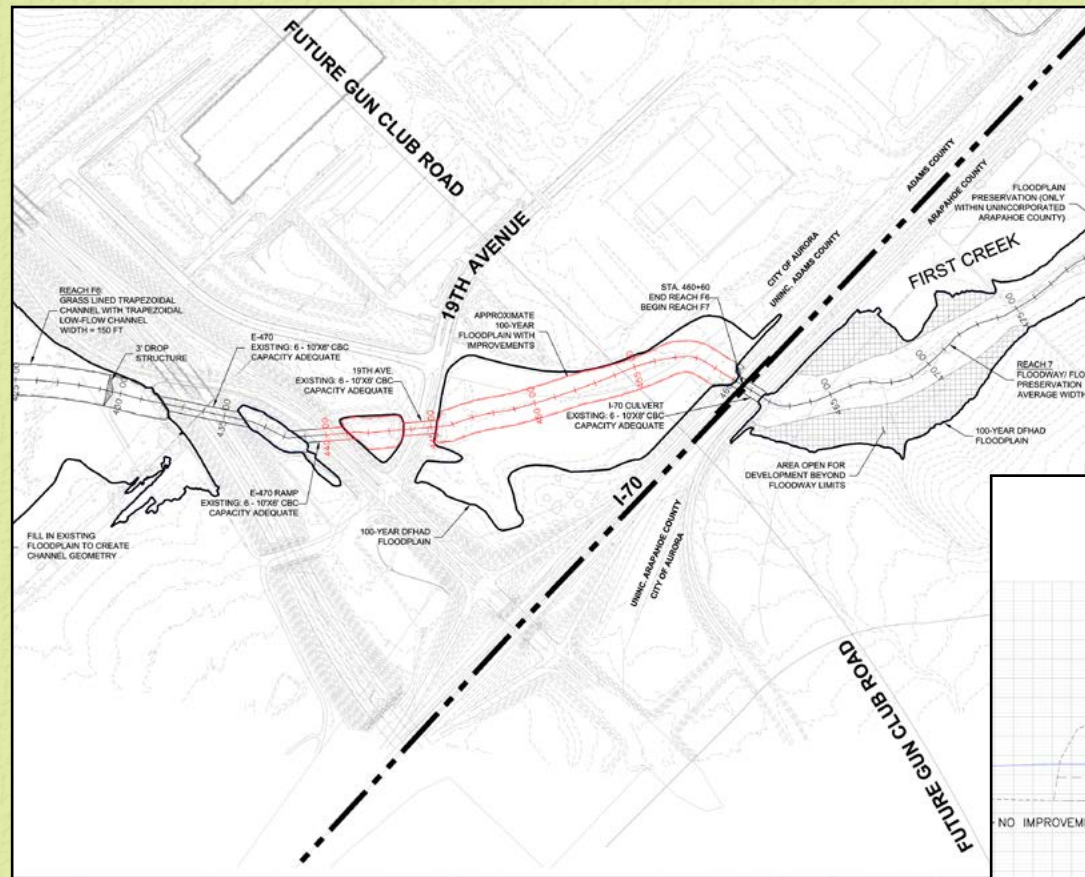
A permanent 10 foot wide maintenance trail will be built within the overbanks during trapezoidal channel construction to provide construction and maintenance access.



FIRST CREEK

PROJECT FC-4 - ENGINEERED TRAPEZOIDAL CHANNEL STA: 440+80 TO 458+30

FIRST CREEK AT INTERSECTION OF E-470 AND I-70



Item	Quantity	Unit	Unit Cost	Total Cost
Excavation (High Range)	33040	CY	\$26	\$850,780
Reclamation & Seeding (native grasses)	6	ACRE	\$1,030	\$6,180
Trail/Path, Crusher Fines (10' Width)	1721	LF	\$10	\$17,726
Easement/ROW Acquisition	6	ACRE	\$87,120	\$522,720
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$195,637
SUBTOTAL				\$1,593,043
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$710,192
TOTAL ESTIMATED COST				\$2,303,236

Annual Operation and Maintenance				
Mowing	6	ACRE	\$150	\$900
Debris Removal	1721	LF	\$3	\$5,163
Restorative Maintenance & Rehabilitation	0.3	MI	\$5,000	\$1,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$7,563

PROJECT DESCRIPTION

Reach F6 of First Creek (Upper) is between stations 337+70 to 460+60. The downstream reach limit is located 4,300' upstream of Picadilly Road and the upstream limit is located at I-70. The existing natural channel is 12,290 feet long and has a slope of approximately 0.43%. The channel contains a flow split, is very wide in some areas, and is incised in other areas. There are portions of the channel that contain a well-defined low flow channel and areas that do not.

A trapezoidal channel with a trapezoidal low flow channel is proposed within Reach F6. The future 100-year channel has an average top width of 150 feet including two feet of freeboard per the City of Aurora criteria. The engineered channel will be grass lined, have a slope of 0.35%, and contain the 100-year Conceptual Design event in an area that is narrower than the existing wide channel. The low flow channel will have a top width of 40 feet. Areas of cut and fill will be used to create this channel and the overbanks will have a 1-2% slope to accommodate the maintenance and recreation trail. Four drop structures are proposed to achieve a stable slope of 0.35%.

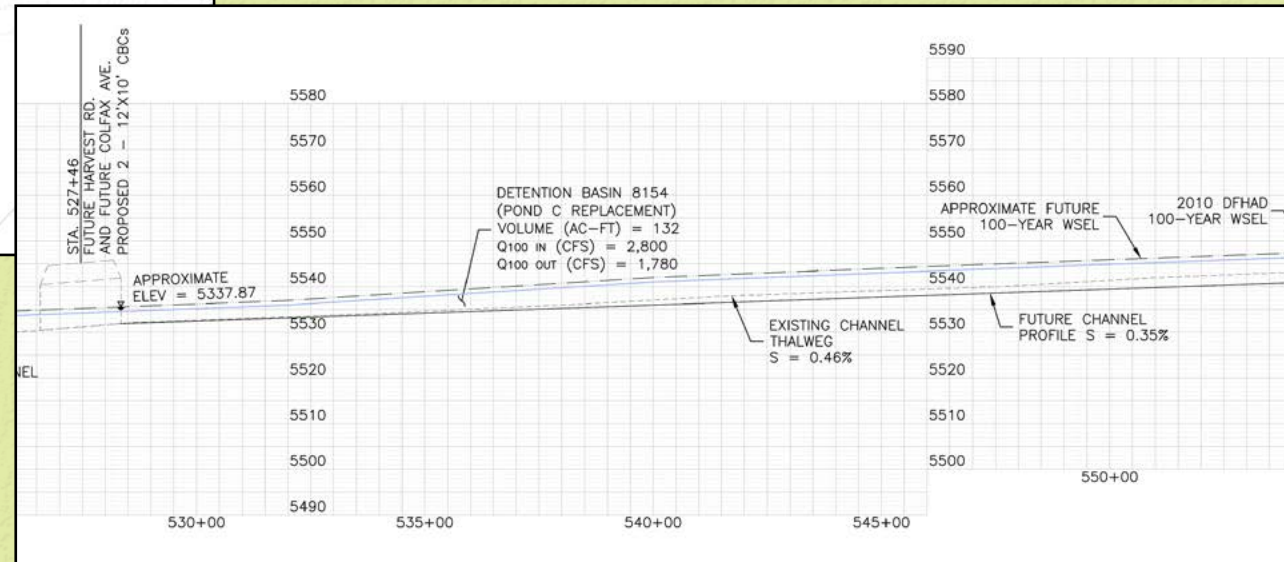
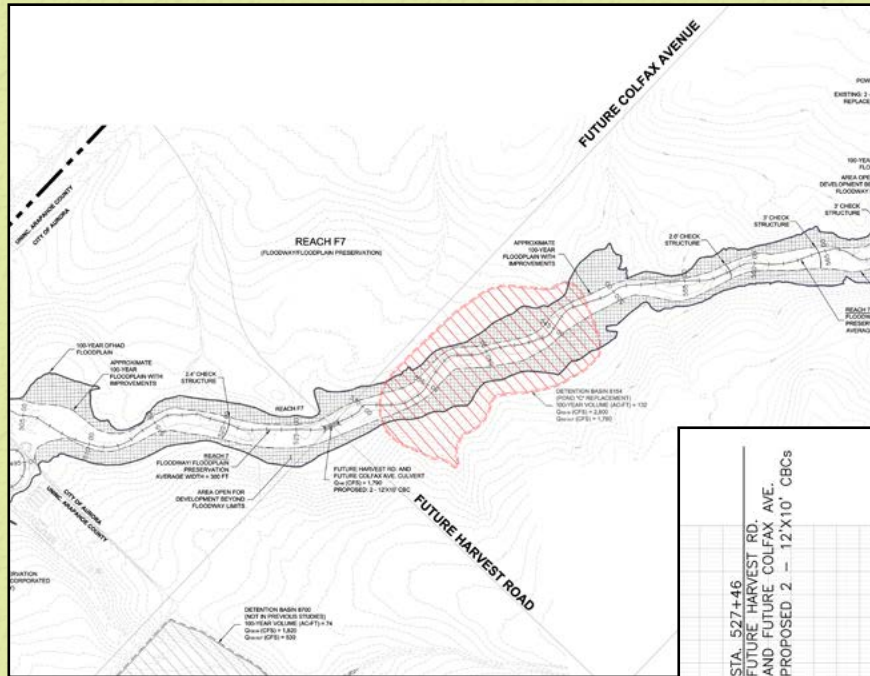
A permanent 10 foot wide maintenance trail will be built within the overbanks during trapezoidal channel construction to provide construction and maintenance access.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-5 - DETENTION BASIN 8154

SOUTHEAST OF FUTURE INTERSECTION OF COLFAX AVENUE AND HARVEST ROAD



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Excavation, High Range	71200	CY	\$26	\$1,833,400
Outlet Works	1	EA	\$500,000	\$500,000
Easement/ROW Acquisition	24	ACRE	\$87,120	\$2,090,880
Dewatering				\$5,000
Mobilization			5%	\$116,670
Traffic Control				\$20,000
Utility Coordination/Relocation			5%	\$116,670
Stormwater Management/Erosion Control			5%	\$116,670
SUBTOTAL				\$4,799,290
Contingencies			25%	\$1,199,823
Engineering Design Services			15%	\$719,894
Legal and Administrative Services			5%	\$239,965
Construction Administration & Management			10%	\$479,929
TOTAL ESTIMATED COST				\$7,438,900
Annual Operation and Maintenance				
Mowing and Debris Removal (5year)	24	ACRE	\$1,650	\$39,600
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$39,600

PROJECT DESCRIPTION

Reach F7 of First Creek (Upper) is between stations 460+60 to 581+50. The downstream reach limit is located at I-70 and the upstream limit is located at Powhatan Road.

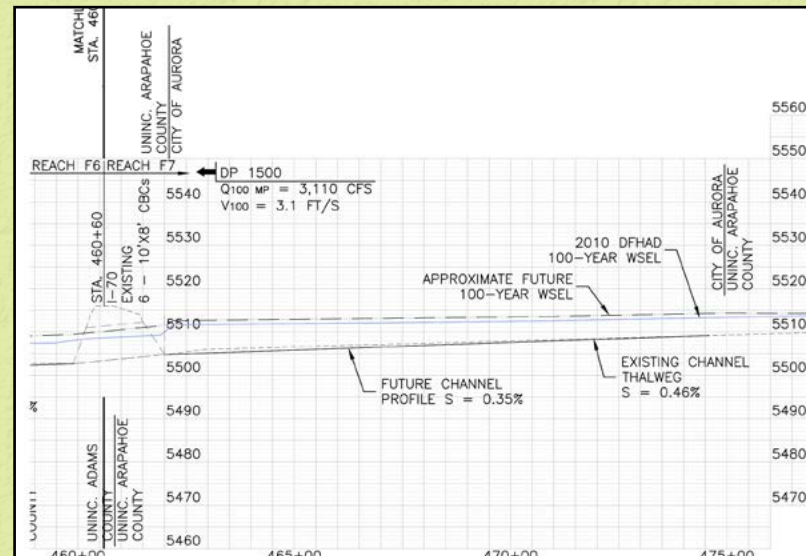
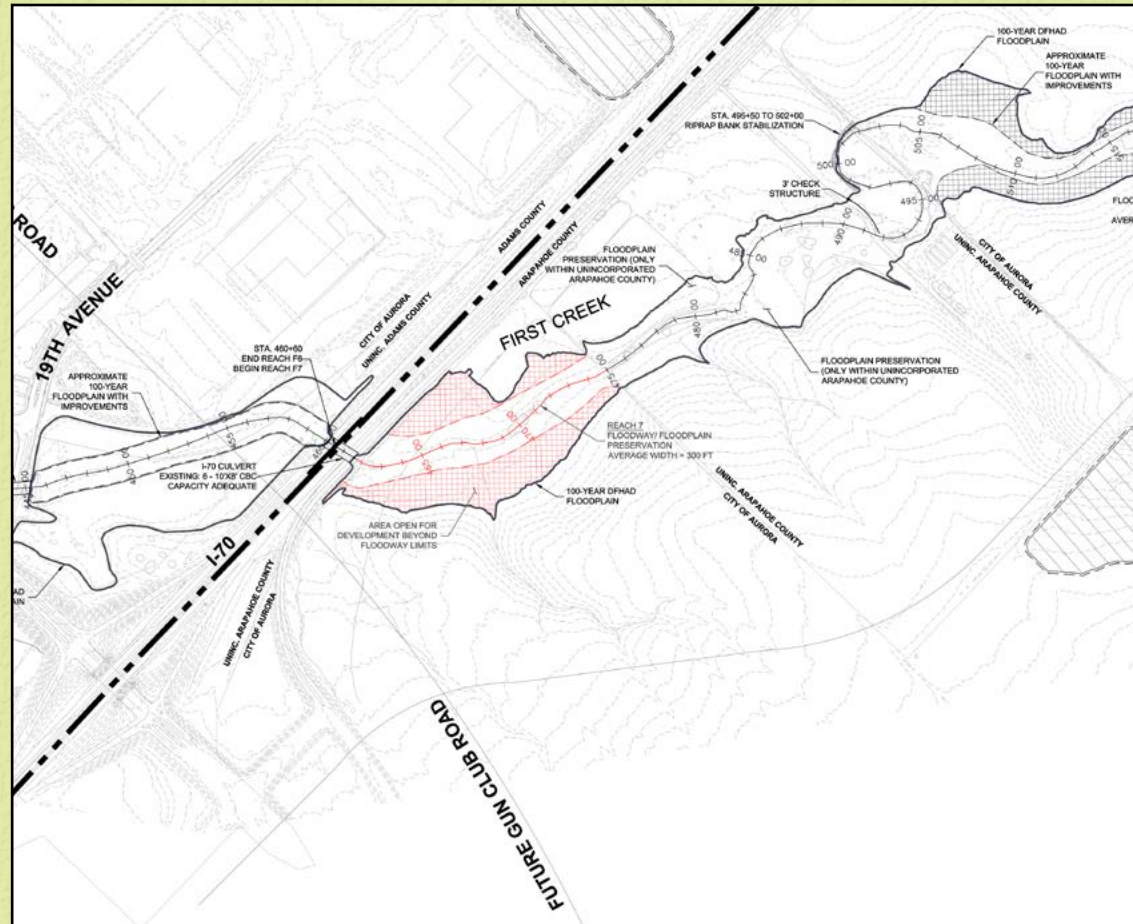
One detention basin is proposed within this reach. Basin 8154, located on the main stem of First Creek, has a 100-year Conceptual Design volume of 132 acre feet and has a 100-year discharge of 1,780 cfs.

Note that the 2002 First Creek Master Planning Study proposed a detention basin (Pond "C") near station 480+00. Due to approved development plans in this area of Unincorporated Arapahoe County, construction of a regional detention basin at the proposed location is no longer feasible. There is also a tributary from the south that contributes a great deal to the 100-year peak flow. In order to attain a similar peak flow reduction as provided by Pond "C", detention is proposed on First Creek near the future intersection of Colfax Avenue and Harvest Road (new Basin 8154) and on the adjacent tributary (new Basin 8700).



FIRST CREEK PROJECT FC-6 - FLOODWAY PRESERVATION STA: 462+10 TO 474+90

FIRST CREEK SOUTHEAST OF GUN CLUB ROAD AND I-70 INTERSECTION



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Trail/Path, Crusher Fines (10' Width)	1330	FT	\$10	\$13,699
Easement/ROW Acquisition	8	ACRE	\$87,120	\$696,960
Dewatering				\$0
Mobilization			5%	\$685
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$685
Stormwater Management/Erosion Control			5%	\$685
SUBTOTAL				\$712,714
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$193,132
TOTAL ESTIMATED COST				\$905,846
Annual Operation and Maintenance				
Debris Removal (5/year)	1330	LF	\$3	\$3,990
Restorative Maintenance & Rehabilitation	0.3	MI	\$5,000	\$1,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$5,490

PROJECT DESCRIPTION

Reach F7 of First Creek (Upper) is between stations 460+60 to 581+50. The downstream reach limit is located at I-70 and the upstream limit is located at Powhatan Road.

The existing natural channel is 12,090 feet long and has a slope of approximately 0.46%. The average 100-year DFHAD floodplain is 330 feet wide. The channel floodplain is moderately wide and has shallow floodplain fringes in some areas.

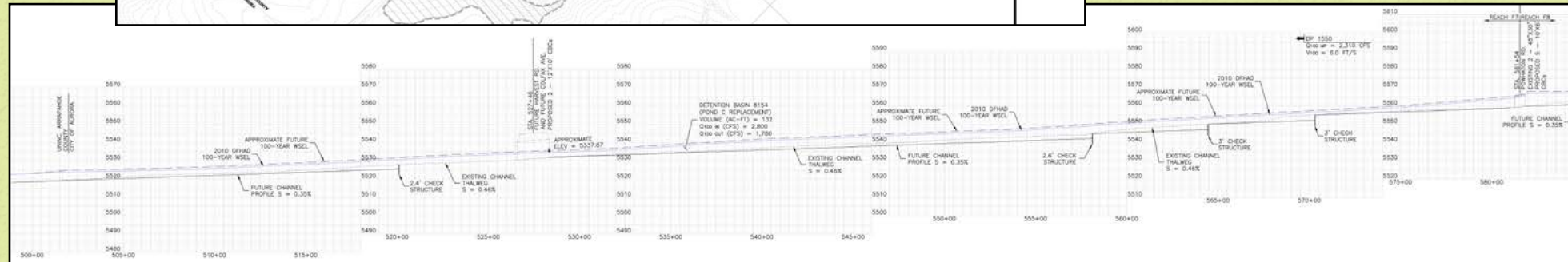
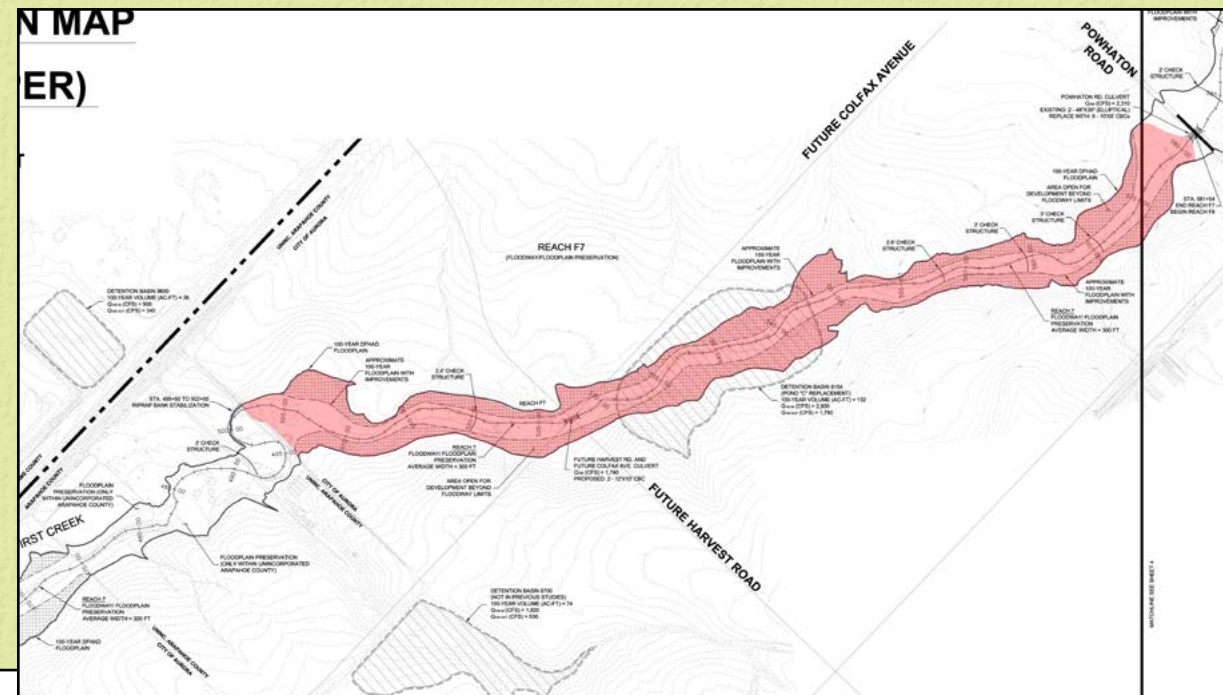
Floodway preservation is proposed for this reach. The future 100-year floodway channel has an average top width of 150 feet. An exception occurs within Unincorporated Arapahoe County. Because the County's criteria does not allow any development in the floodplain, floodplain preservation is proposed only in the sections of Reach F7 that fall within Unincorporated Arapahoe County. To protect against excessive channel degradation in the future, five check structures are proposed to achieve a stable slope of 0.35%. Additionally, riprap bank stabilization will be installed in locations where the existing vertical banks are at least eight feet high.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures. A 10 foot wide maintenance trail is also proposed for construction with the detention basin (assumed to be 200 feet for cost purposes).



FIRST CREEK PROJECT FC-7 - FLOODWAY PRESERVATION STA: 502+00 TO 580+70

FIRST CREEK FROM SOUTHEAST OF GUN CLUB ROAD & I-70 INTERSECTION TO POWATON ROAD



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Check Structure	608	LF	\$340	\$206,720
Reclamation & Seeding (Native Grasses)	24	ACRE	\$1,030	\$24,720
Trail/Path, Crusher Fines (10' Width)	8179	FT	\$10	\$84,244
Easement/ROW Acquisition	51	ACRE	\$87,120	\$4,443,120
Dewatering				\$0
Mobilization			5%	\$15,784
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$15,784
Stormwater Management/Erosion Control			5%	\$15,784
SUBTOTAL				\$4,806,156
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$360,347
TOTAL ESTIMATED COST				\$5,166,503
Annual Operation and Maintenance				
Debris Removal (5/year)	1330	LF	\$3	\$3,990
Restorative Maintenance & Rehabilitation	0.3	MI	\$5,000	\$1,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$5,490

PROJECT DESCRIPTION

Reach F7 of First Creek (Upper) is between stations 460+60 to 581+50. The downstream reach limit is located at I-70 and the upstream limit is located at Powhaton Road.

The existing natural channel is 12,090 feet long and has a slope of approximately 0.46%. The average 100-year DFHAD floodplain is 330 feet wide. The channel floodplain is moderately wide and has shallow floodplain fringes in some areas.

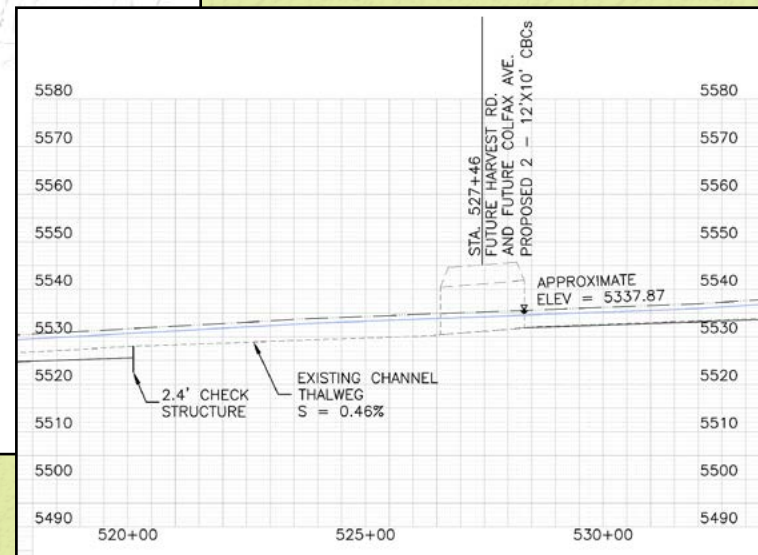
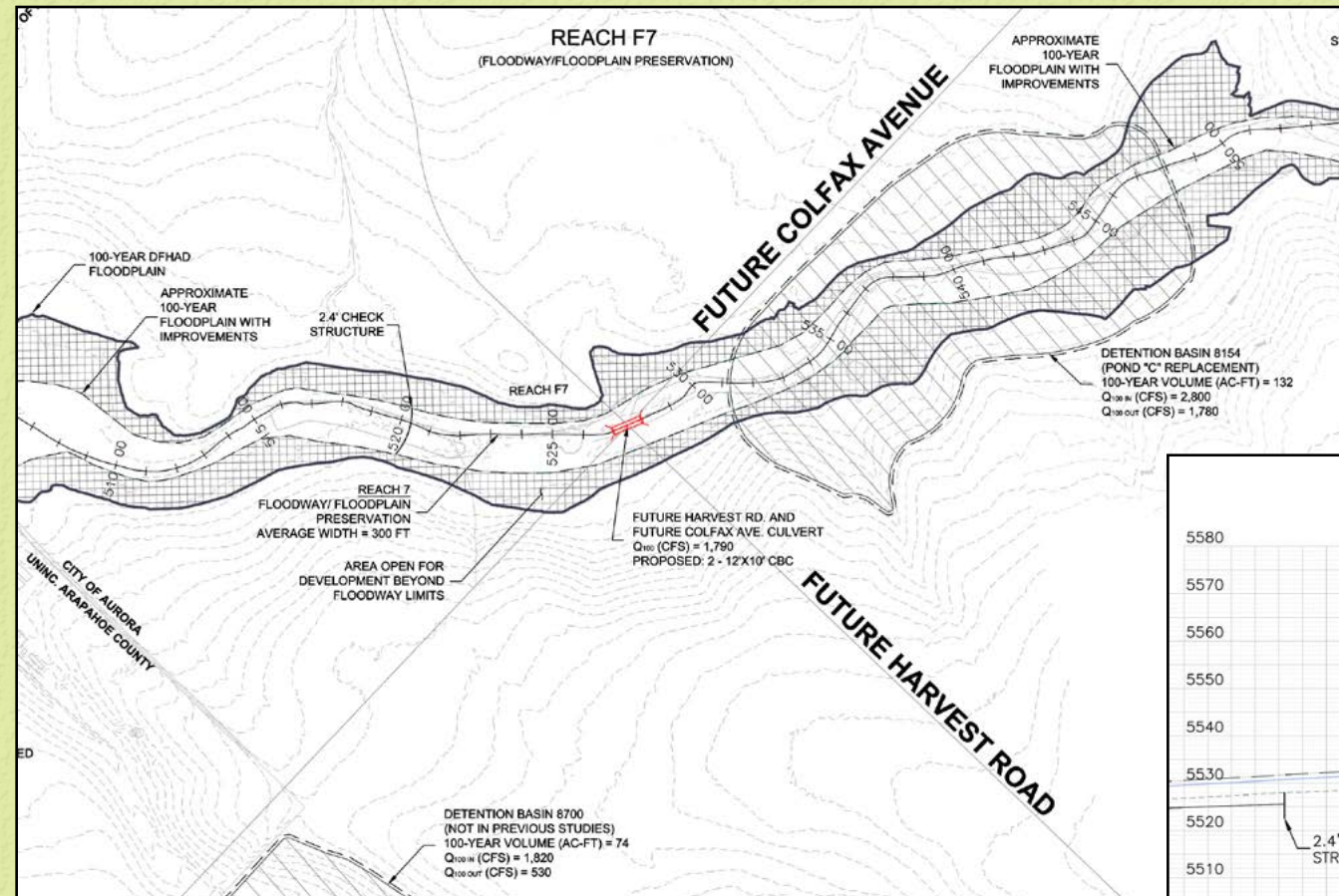
Floodway preservation is proposed for this reach. The future 100-year floodway channel has an average top width of 150 feet. An exception occurs within Unincorporated Arapahoe County. Because the County's criteria does not allow any development in the floodplain, floodplain preservation is proposed only in the sections of Reach F7 that fall within Unincorporated Arapahoe County. To protect against excessive channel degradation in the future, five check structures are proposed to achieve a stable slope of 0.35%. Additionally, riprap bank stabilization will be installed in locations where the existing vertical banks are at least eight feet high.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures. A 10 foot wide maintenance trail is also proposed for construction with the detention basin (assumed to be 200 feet for cost purposes).



FIRST CREEK PROJECT FC-8 - FUTURE HARVEST RD. AND FUTURE COLFAX AVE. CULVERT

FUTURE INTERSECTION OF COLFAX AVENUE AND HARVEST ROAD



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x12'	168	LF	\$2,887	\$485,040
Headwall and Toewalls	2	EA	\$2,404	\$4,807
Wingwalls (includes concrete apron)	2	EA	\$31,413	\$62,827
Dewatering, Mobilization, Traffic Control, Utility Coordination/ Relocation, Stormwater Management/Erosion Control			15%	\$82,900.99
SUBTOTAL				\$635,574
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$630,857.01
TOTAL ESTIMATED COST				\$1,266,431

PROJECT DESCRIPTION

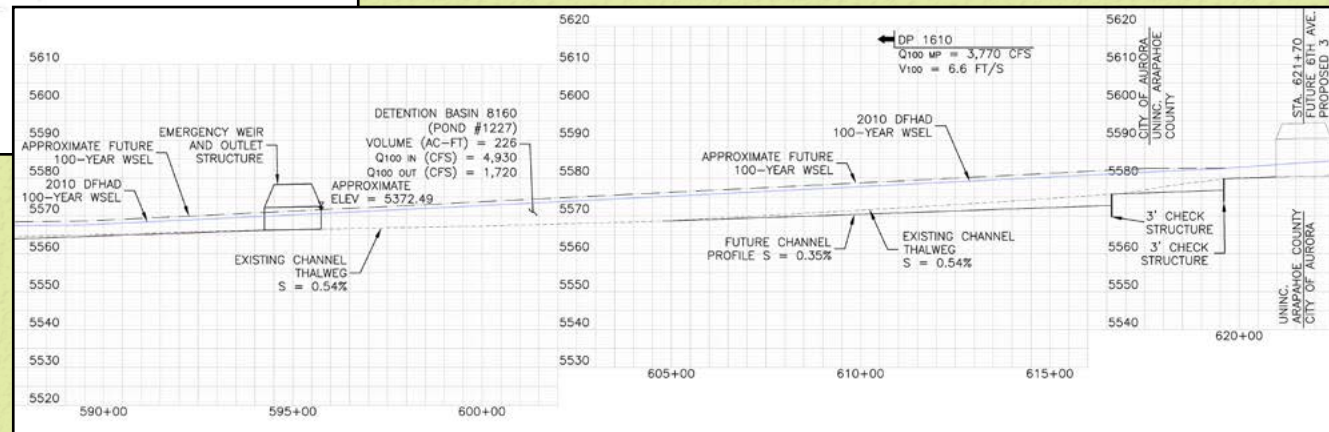
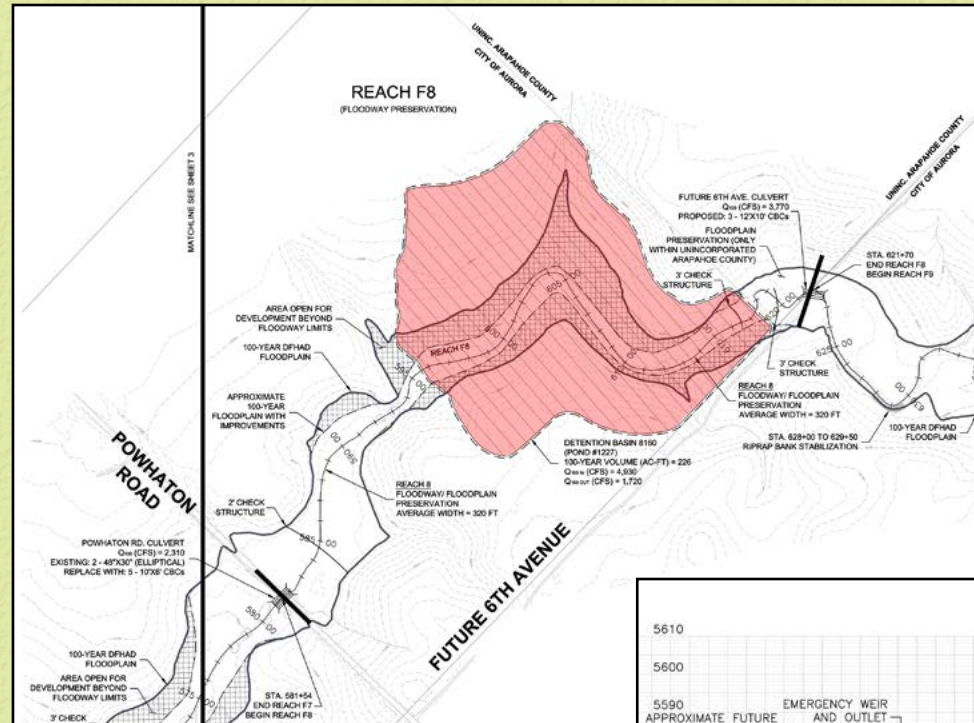
Reach F7 of First Creek (Upper) is between stations 460+60 to 581+50. The downstream reach limit is located at I-70 and the upstream limit is located at Powhatan Road.

There is one road crossing and associated structure within this reach. At the intersection of future Harvest Road and future Colfax Avenue, the proposed culvert consists of two 12-foot by 10-foot CBCs which will adequately convey the 100-year Conceptual Design peak flow of 1,790 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-9 - DETENTION BASIN 8160 NORTH OF 6TH AVENUE



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Excavation, High Range	121300	CY	\$26	\$3,123,475
Outlet Works	1	EA	\$500,000	\$500,000
Removal of Culvert Pipe (<48" Diam.)	116	LF	\$31	\$3,584
Reclamation & Seeding (Native Grasses)	40	ACRE	\$1,030	\$41,200
Easement/ROW Acquisition	40	ACRE	\$87,120	\$3,484,800
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$513,556
SUBTOTAL				\$7,666,616
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$3,309,624
TOTAL ESTIMATED COST				\$10,976,240
Annual Operation and Maintenance				
Mowing (5/year)	40	ACRE	\$150	\$6,000
Debris Removal (5/year)	40	ACRE	\$1,500	\$60,000
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$66,000

PROJECT DESCRIPTION

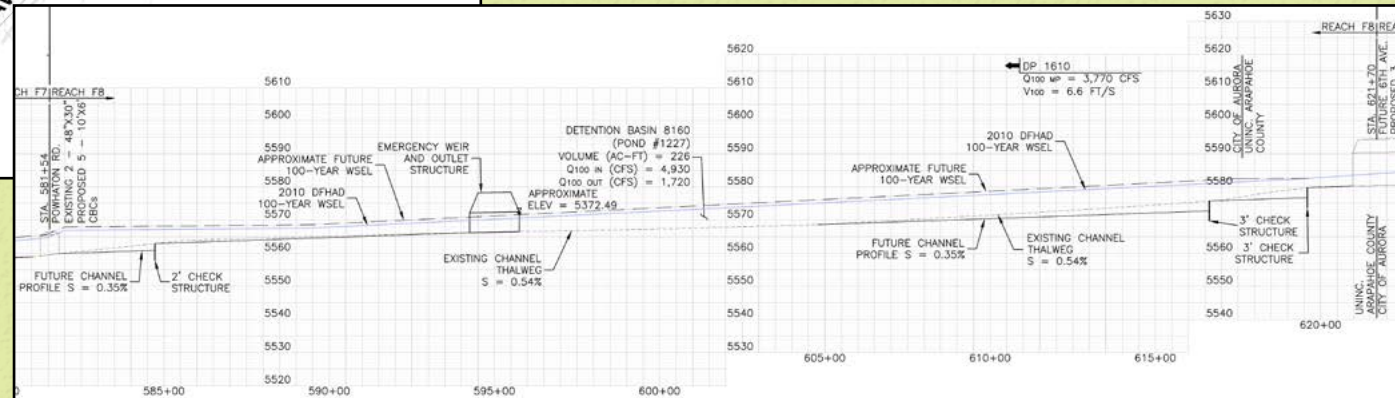
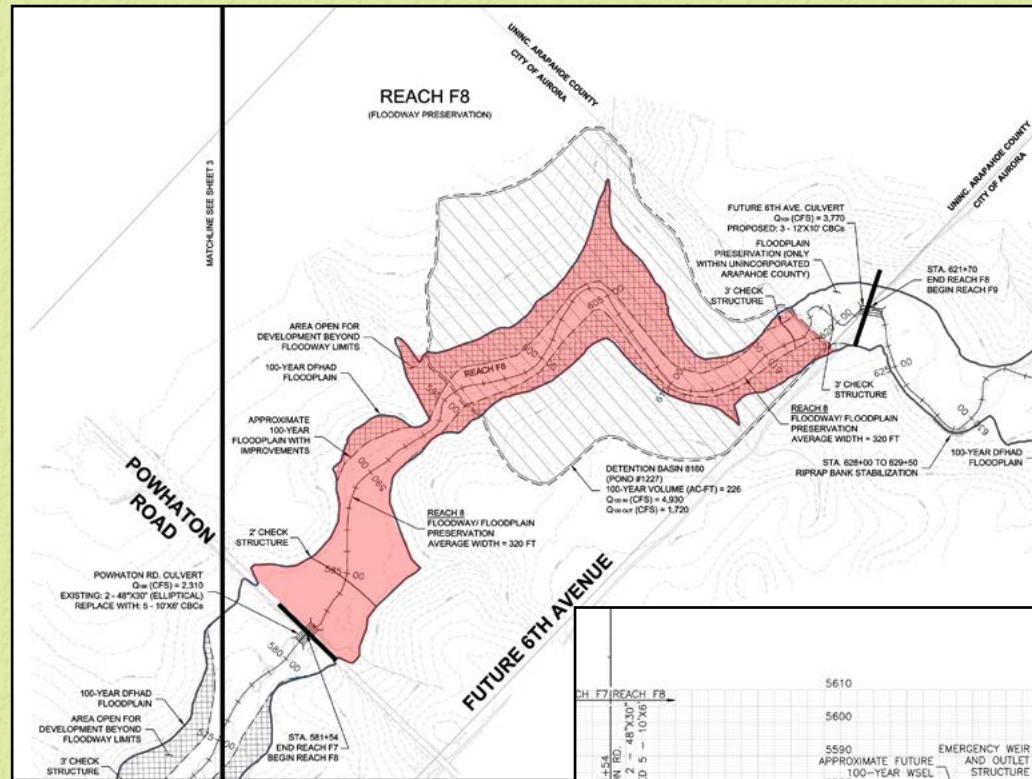
Reach F8 of First Creek (Upper) is between stations 581+50 to 621+70. The downstream reach limit is located at Powhatan Road and the upstream limit is located at the future 6th Avenue.

There is one proposed detention facility within Reach F8. Basin 8160, located near station 595+00, has a 100-year Conceptual Design volume of 226 acre feet and a 100-year discharge of 1,720 cfs.



FIRST CREEK PROJECT FC-10 - FLOODWAY PRESERVATION AND CHECK STRUCTURES

FIRST CREEK FROM POWHATON ROAD TO 6TH AVENUE



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Check Structure	328	LF	\$340	\$111,520
Trail/Path, Crusher Fines (10' Width)	3818	FT	\$10	\$39,325
Easement/ROW Acquisition	19	ACRE	\$87,120	\$1,655,280
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$21,118
SUBTOTAL				\$1,827,244
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$136,094
TOTAL ESTIMATED COST				\$1,963,338
Annual Operation and Maintenance				
Debris Removal (5/year)	3618	LF	\$3	\$10,854
Restorative Maintenance and Rehabilitation	0.7	MI	\$5,000	\$3,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$14,354

PROJECT DESCRIPTION

Reach F8 of First Creek (Upper) is between stations 581+50 to 621+70. The downstream reach limit is located at Powhaton Road and the upstream limit is located at the future 6th Avenue.

The existing natural channel is 4,020 feet long and has a slope of approximately 0.54%. The average 100-year DFHAD floodplain is 330 feet wide. Along some areas of this reach the channel is very poorly defined.

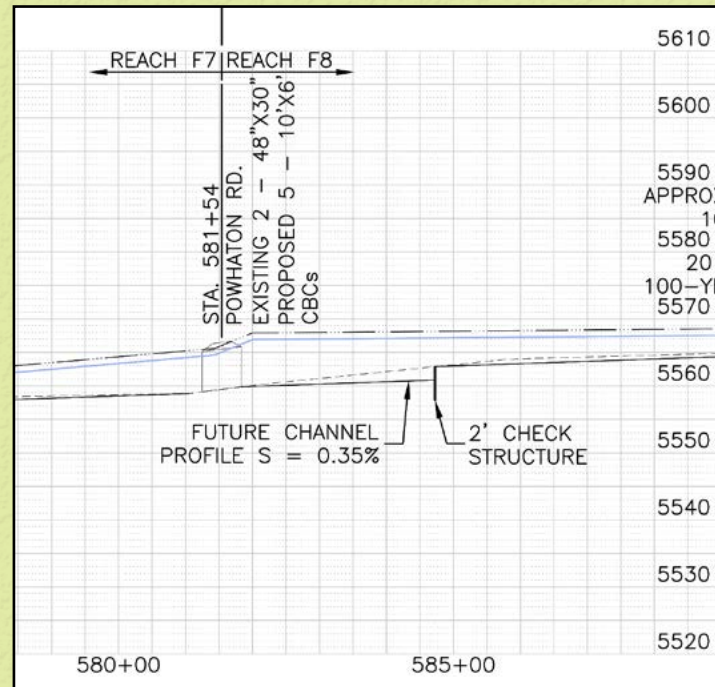
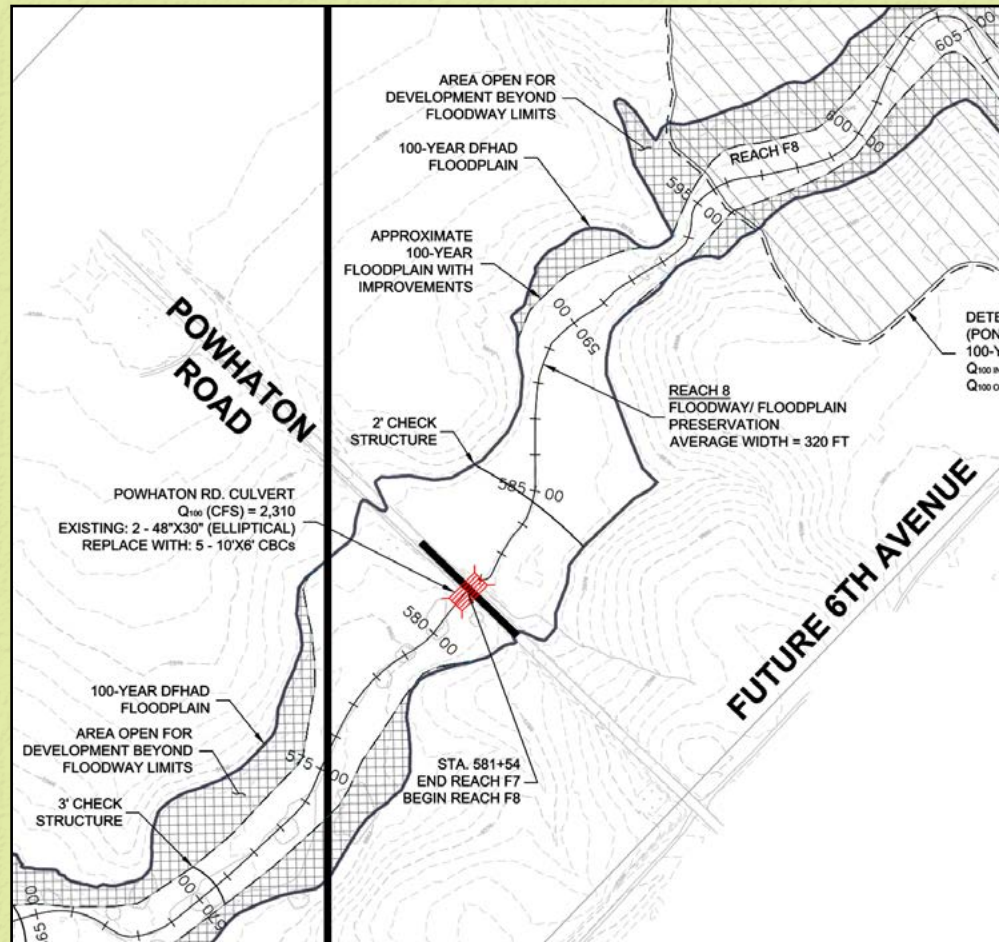
Floodway preservation is proposed for Reach F8. The future 100-year floodway channel has an average top width of 160 feet. An exception occurs within Unincorporated Arapahoe County. Because the County's criteria does not allow development in the floodplain, floodplain preservation is proposed only in the sections of Reach F8 that fall within Unincorporated Arapahoe County. To protect against excessive channel degradation in the future, three check structures are proposed to achieve a stable slope of 0.35%.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures. A 10 foot wide maintenance trail is also proposed for construction with the detention basin (assumed to be 200 feet for cost purposes).



FIRST CREEK PROJECT FC-11 - POWHATON ROAD CULVERT

INTERSECTION OF POWHATON ROAD AND FIRST CREEK



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x6'	152	LF	\$5,156	\$783,786
Headwall and Toewalls	2	EA	\$4,896	\$9,792
Wingwalls - with Concrete Apron	2	EA	\$24,133	\$48,265
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control	14%			\$117,858
SUBTOTAL				\$959,702
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$759,539
TOTAL ESTIMATED COST				\$1,719,241
Annual Operation and Maintenance				
Debris Removal (5/year)	3618	LF	\$3	\$10,854
Restorative Maintenance and Rehabilitation	0.7	MI	\$5,000	\$3,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$14,354

PROJECT DESCRIPTION

Reach F8 of First Creek (Upper) is between stations 581+50 to 621+70. The downstream reach limit is located at Powhaton Road and the upstream limit is located at the future 6th Avenue.

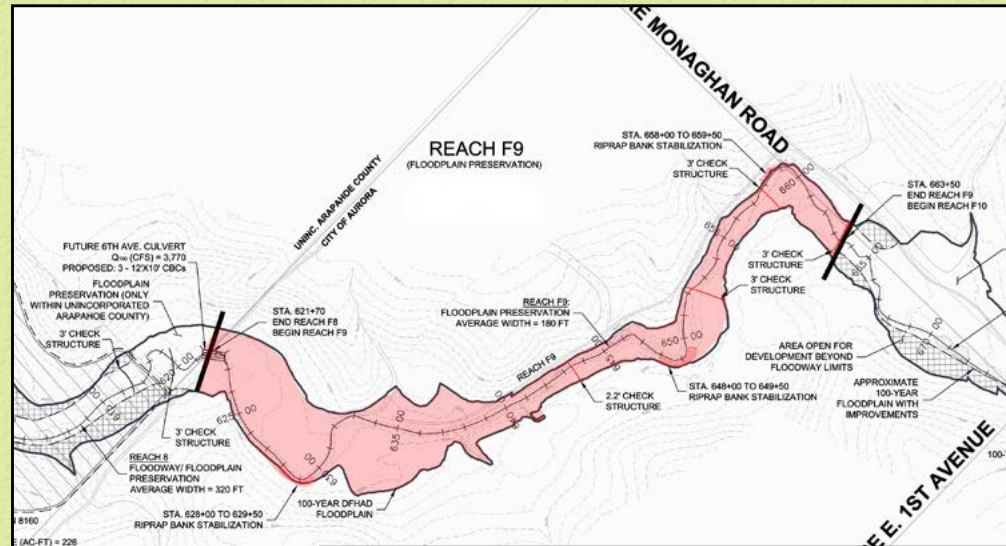
There is one road crossing and associated structure within this reach. The existing Powhaton Road culvert consists of two 48-inch by 30-inch elliptical CMPs, has a 100-year Conceptual Design peak flow of 2,310 cfs, and does not convey the 100-year event. The proposed replacement culvert consists of five 10-foot by 6-foot CBCs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-12 - FLOODPLAIN PRESERVATION

FIRST CREEK FROM 6TH AVENUE TO MONAGHAN ROAD



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Check Structure	724	LF	\$340	\$246,160
Soil Riprap, Type H	1242	CY	\$72	\$89,548
Trail/Path, Crusher Fines (10' Width)	4180	FT	\$10	\$43,054
Easement/ROW Acquisition	17	ACRE	\$87,120	\$1,481,040
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$53,027
SUBTOTAL				\$1,912,829
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$363,167
TOTAL ESTIMATED COST				\$2,275,996
Annual Operation and Maintenance				
Debris Removal (5/year)	4180	LF	\$3	\$12,540
Restorative Maintenance & Rehabilitation	0.8	MI	\$5,000	\$4,000
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$16,540

PROJECT DESCRIPTION

Reach F9 of First Creek (Upper) is between stations 621+70 to 663+50. The downstream reach limit is located at the future 6th Avenue and the upstream limit is located 4,200 feet upstream of the future 6th Avenue.

The existing natural channel is 4,180 feet long and has a slope of approximately 0.55%. The average 100-year DFHAD floodplain is 180 feet wide. The low flow channel is well-defined and is mildly incised in some locations along this reach.

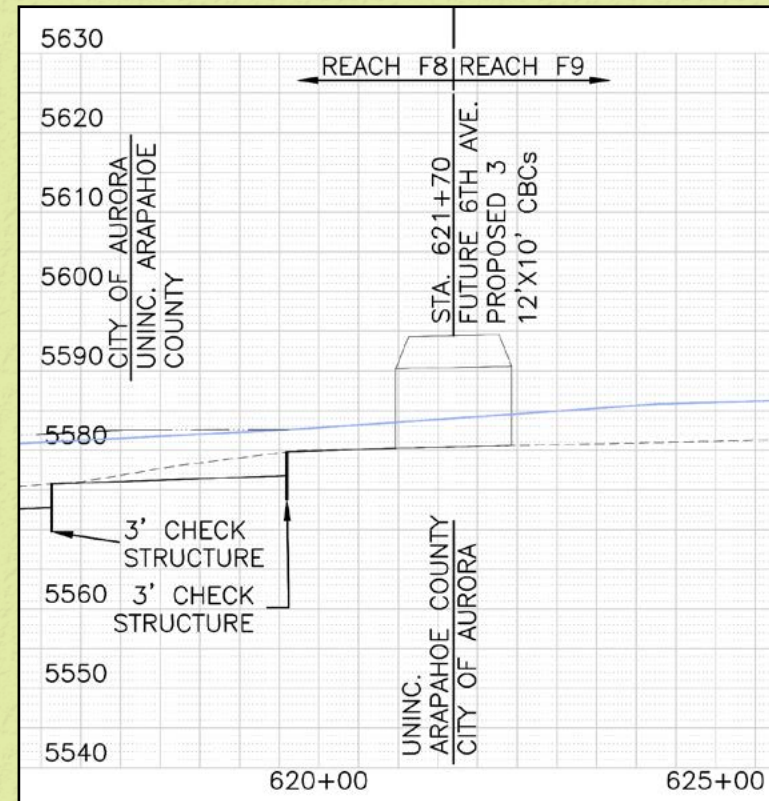
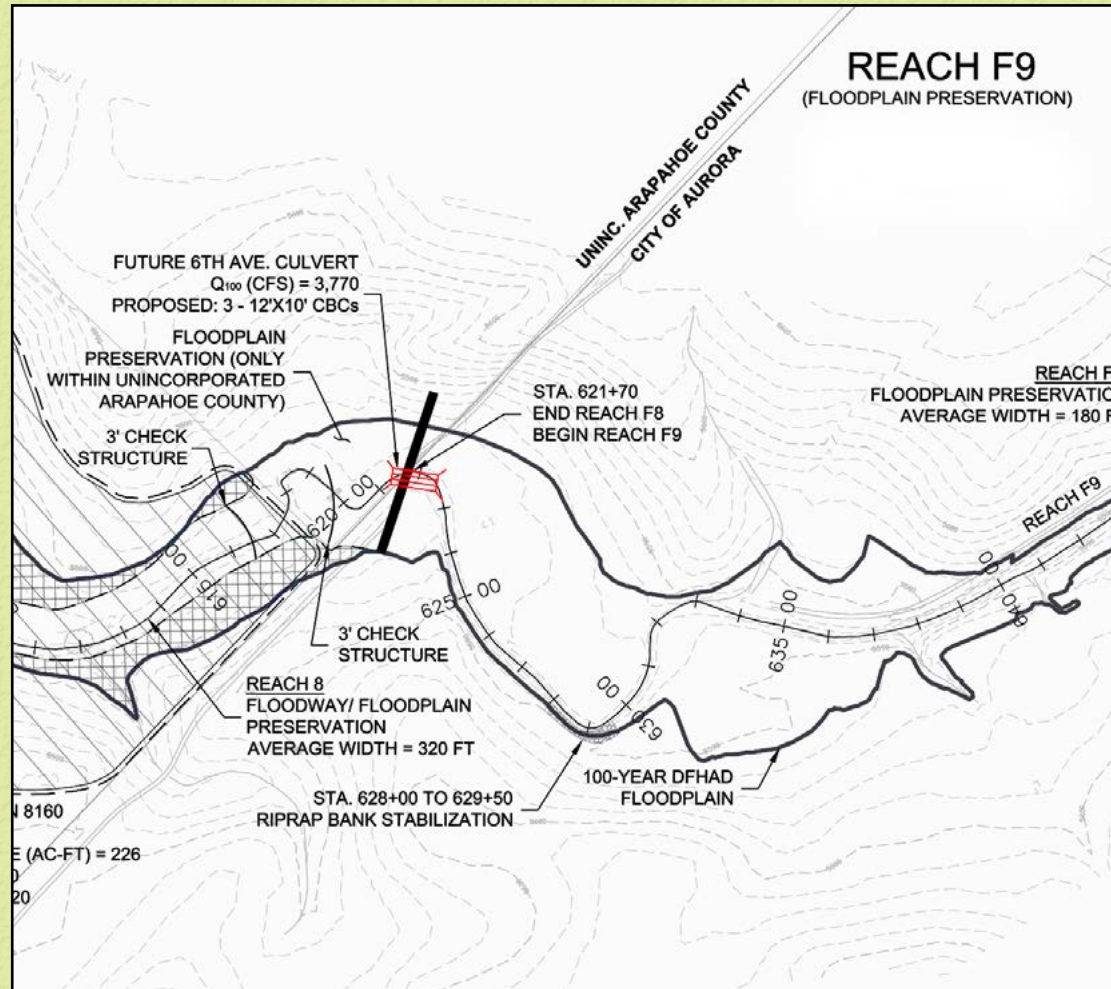
Floodplain preservation is proposed for Reach F9. Thus the future 100-year floodplain width does not change from the average 100-year DFHAD floodplain. To protect against excessive channel degradation in the future, four check structures are proposed to achieve a stable slope of 0.35% if erosion occurs. Additionally, riprap bank stabilization will be installed in locations where vertical banks are at least eight feet high.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures.



FIRST CREEK PROJECT FC-13 - FUTURE 6TH AVENUE CULVERT

INTERSECTION OF FUTURE 6TH AVENUE AND FIRST CREEK



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 12'x10'	152	LF	\$4,331	\$658,266
Headwall and Toewalls	2	EA	\$3,472	\$6,944
Wingwalls - with Concrete Apron	2	EA	\$35,931	\$71,862
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$103,190
SUBTOTAL				\$840,262
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$706,723
TOTAL ESTIMATED COST				\$1,546,985

PROJECT DESCRIPTION

Reach F9 of First Creek (Upper) is between stations 621+70 to 663+50. The downstream reach limit is located at the future 6th Avenue and the upstream limit is located 4,200 feet upstream of the future 6th Avenue.

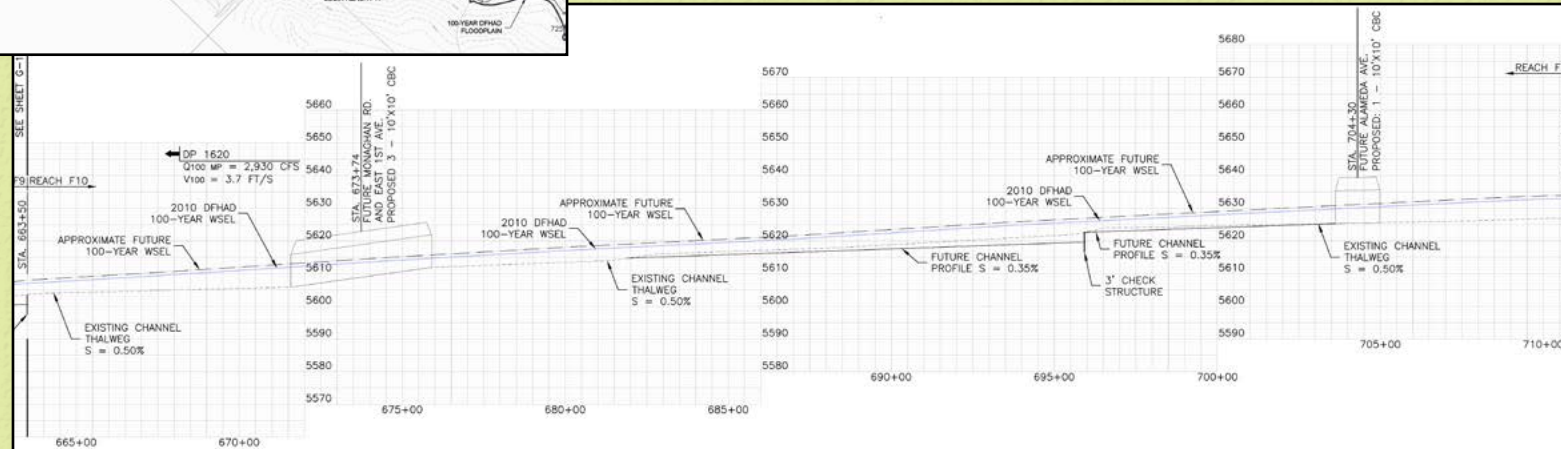
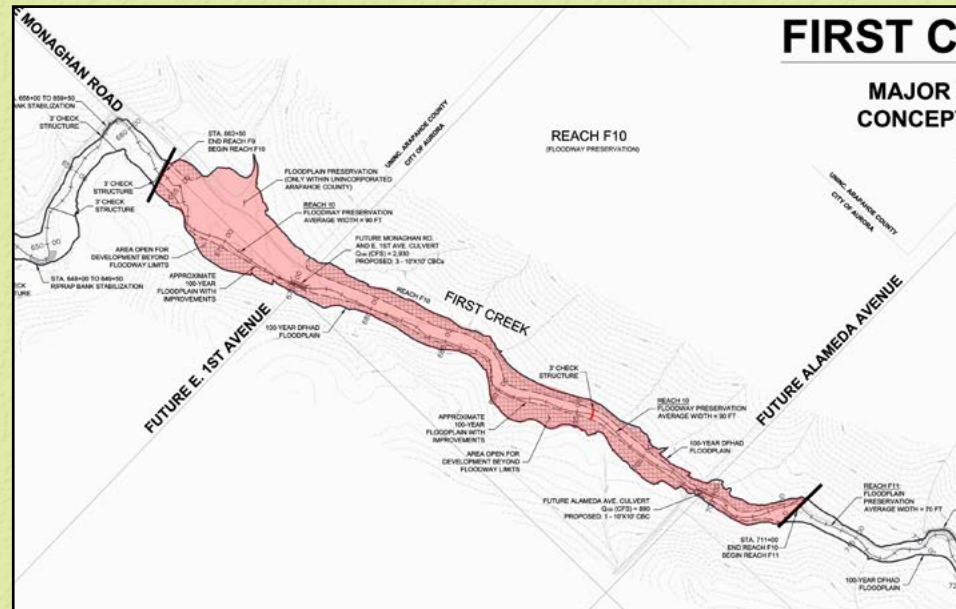
There is one road crossing and associated structure within this reach. At future East 6th Avenue, the proposed culvert consists of three 12-foot by 10-foot CBCs which will convey the 100-year Conceptual Design peak flow of 3,770 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-14 - FLOODWAY PRESERVATION

FIRST CREEK FROM EAST MONAGHAN ROAD TO SOUTH OF ALAMEDA AVENUE



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Check Structure	88	LF	\$340	\$29,920
Trail/Path, Crusher Fines (10' Width)	4750	FT	\$10	\$48,925
Easement/ROW Acquisition	10	ACRE	\$87,120	\$871,200
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$11,038
SUBTOTAL				\$961,083
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$68,239
TOTAL ESTIMATED COST				\$1,029,323
Annual Operation and Maintenance				
Debris Removal (5/year)	4750	LF	\$3	\$14,250
Restorative Maintenance and Rehabilitation	0.9	MI	\$5,000	\$4,500
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$18,750

PROJECT DESCRIPTION

Reach F10 of First Creek (Upper) is between stations 663+50 to 711+00. The downstream reach limit is located from 4,200 feet upstream of future 6th Avenue and the upstream limit is located 700 feet upstream of future Alameda Avenue.

The existing natural channel is 4,750 feet long and has a slope of approximately 0.50%. The average 100-year DFHAD floodplain is 210 feet wide. The channel in this location is well-defined.

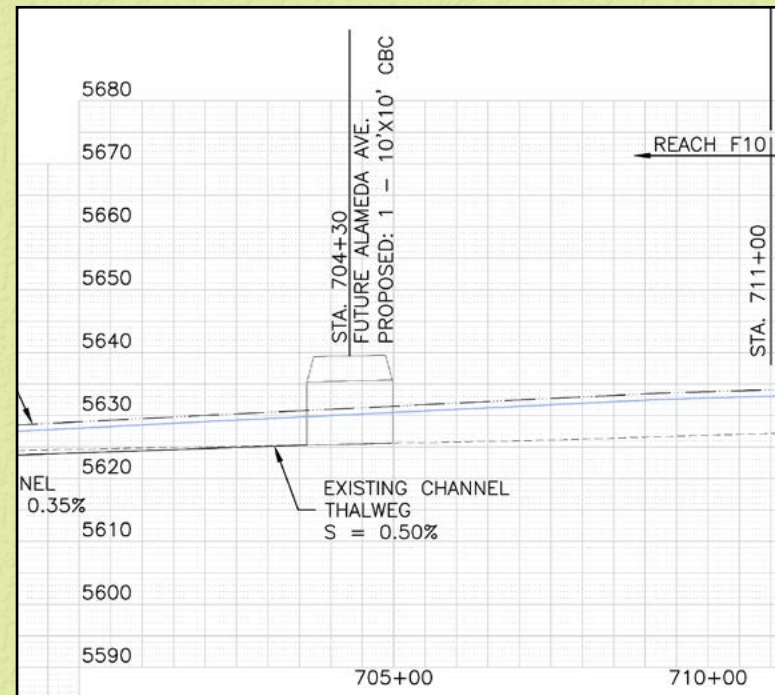
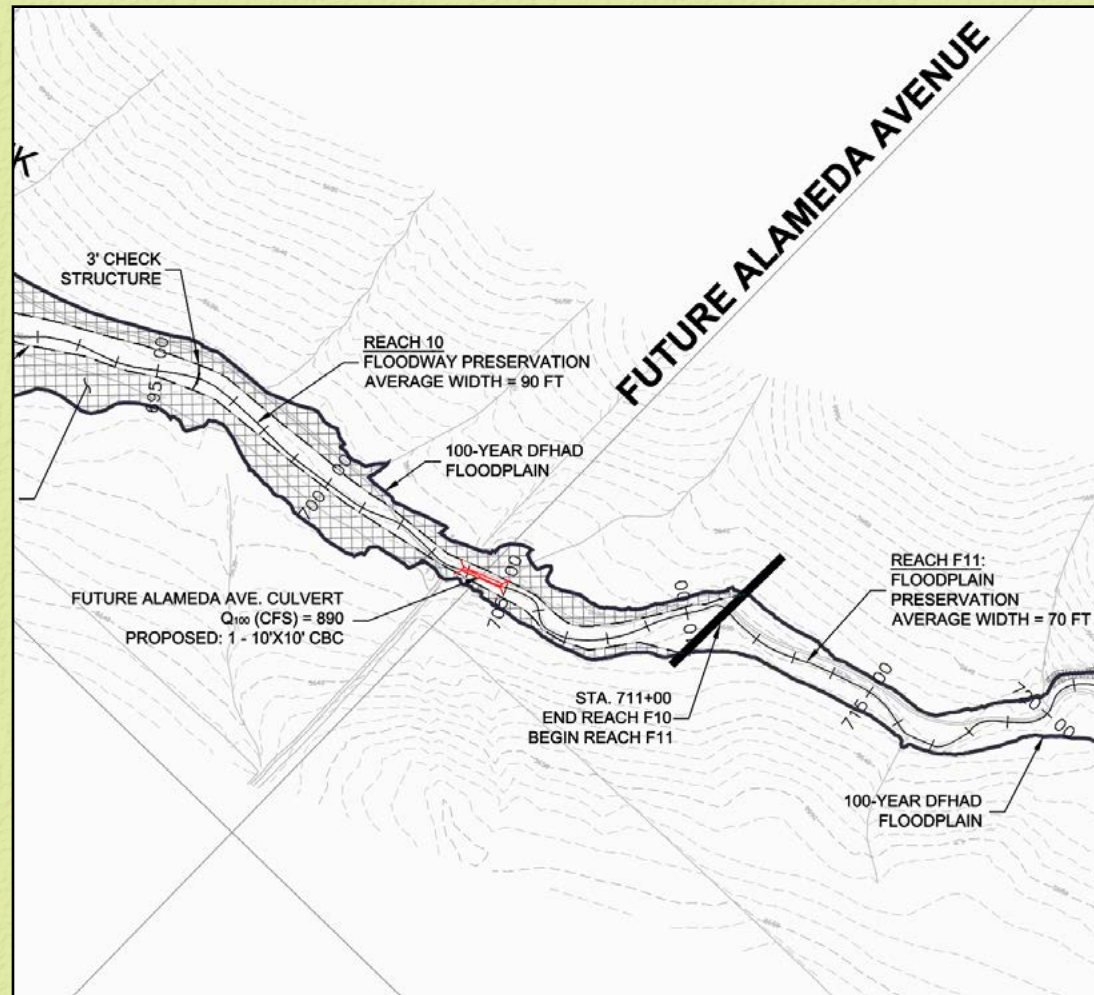
Floodway preservation is proposed for this reach. The future 100-year floodway channel has an average top width of 90 feet. An exception occurs within Unincorporated Arapahoe County. Because the County's criteria does not allow development in the floodplain, floodplain preservation is proposed only in the sections of Reach F10 that fall within Unincorporated Arapahoe County. To protect against excessive channel degradation in the future, one check structure is proposed to achieve a stable slope of 0.35% if erosion occurs. Additionally, riprap bank stabilization will be installed in locations where vertical banks are at least eight feet high.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures.



FIRST CREEK PROJECT FC-15 - FUTURE ALAMEDA AVENUE CULVERT

INTERSECTION OF FUTURE ALAMEDA AVENUE AND FIRST CREEK



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x10	114	LF	\$1,239	\$141,295
Headwalls and Toewalls	2	EA	\$968	\$1,937
Wingwalls - with Concrete Apron	2	EA	\$26,201	\$52,401
Dewatering, Mobilization, Traffic Control, Utility Coordination/ Relocation, Stormwater Management/Erosion Control			14%	\$27,389
SUBTOTAL				\$223,022
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$169,318
TOTAL ESTIMATED COST				\$392,340

PROJECT DESCRIPTION

Reach F10 of First Creek (Upper) is between stations 663+50 to 711+00. The downstream reach limit is located from 4,200 feet upstream of future 6th Avenue and the upstream limit is located 700 feet upstream of future Alameda Avenue.

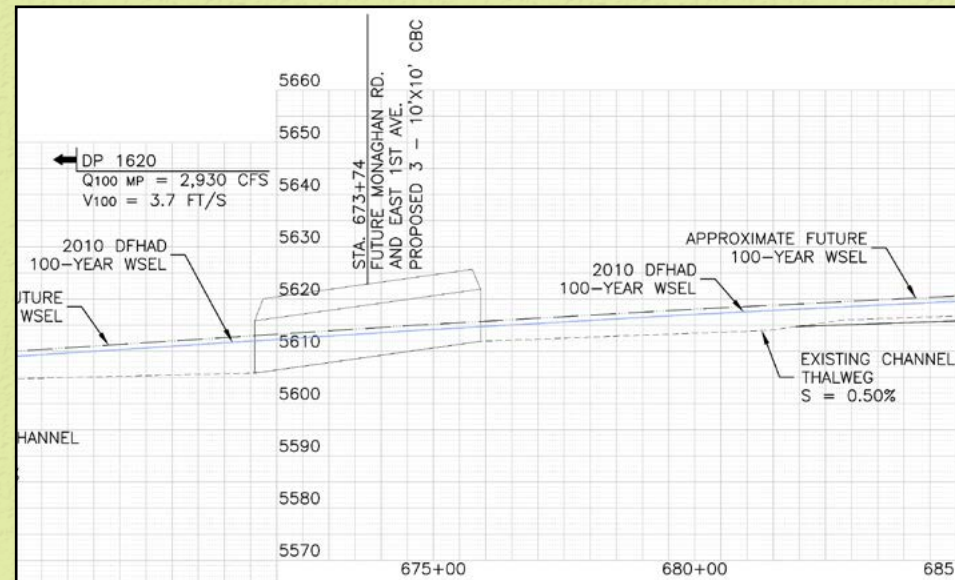
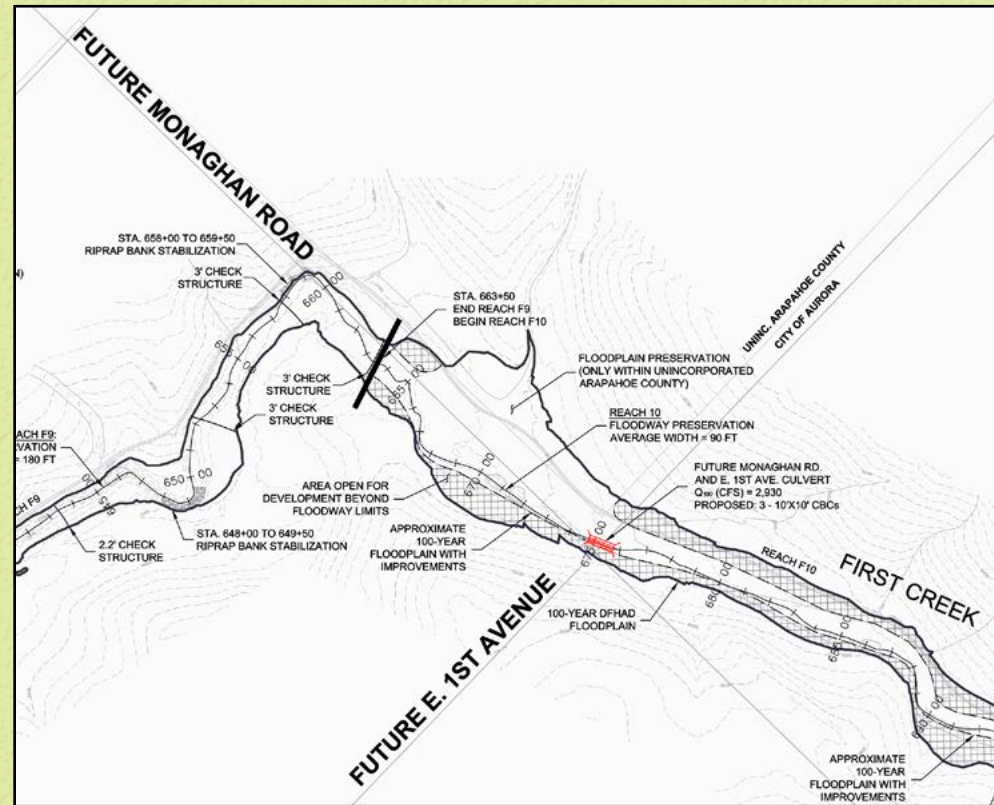
There are two road crossings and associated structures within this reach. At the intersection of future Monaghan Road and East 1st Avenue, the proposed culvert consists of three 10-foot by 10-foot CBCs which will convey the 100-year Conceptual Design peak flow of 2,930 cfs. At future Alameda Avenue, the proposed culvert consists of one 10-foot by 10-foot CBC which will convey the 100-year Conceptual Design peak flow of 890 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-16 - FUTURE MONAGHAN ROAD AND EAST 1ST AVENUE CULVERTS

FUTURE EAST 1ST AVENUE AND MONAGHAN ROAD INTERSECTION



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x10'	152	LF	\$3,718	\$565,180
Headwalls and Toewalls	2	EA	\$2,938	\$5,875
Wingwalls - with Concrete Apron	2	EA	\$33,846	\$67,692
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control		14%		\$89,425
SUBTOTAL				\$728,172
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$552,829
TOTAL ESTIMATED COST				\$1,281,000

PROJECT DESCRIPTION

Reach F10 of First Creek (Upper) is between stations 663+50 to 711+00. The downstream reach limit is located from 4,200 feet upstream of future 6th Avenue and the upstream limit is located 700 feet upstream of future Alameda Avenue.

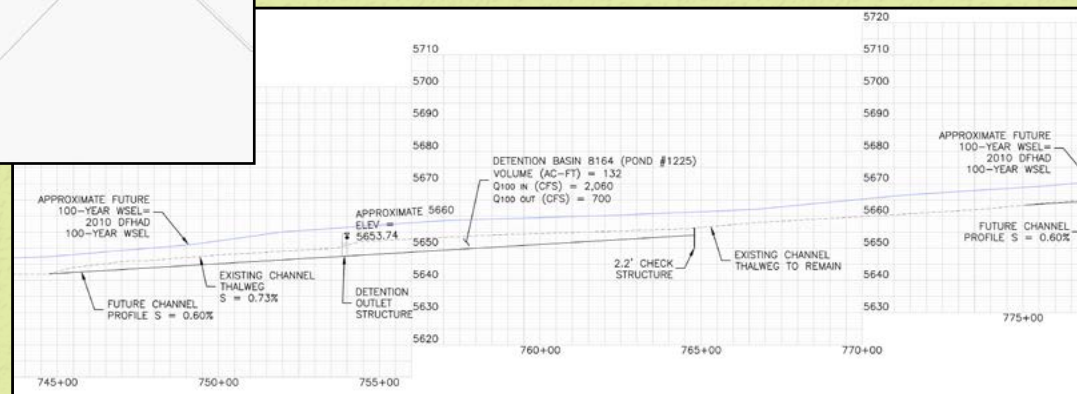
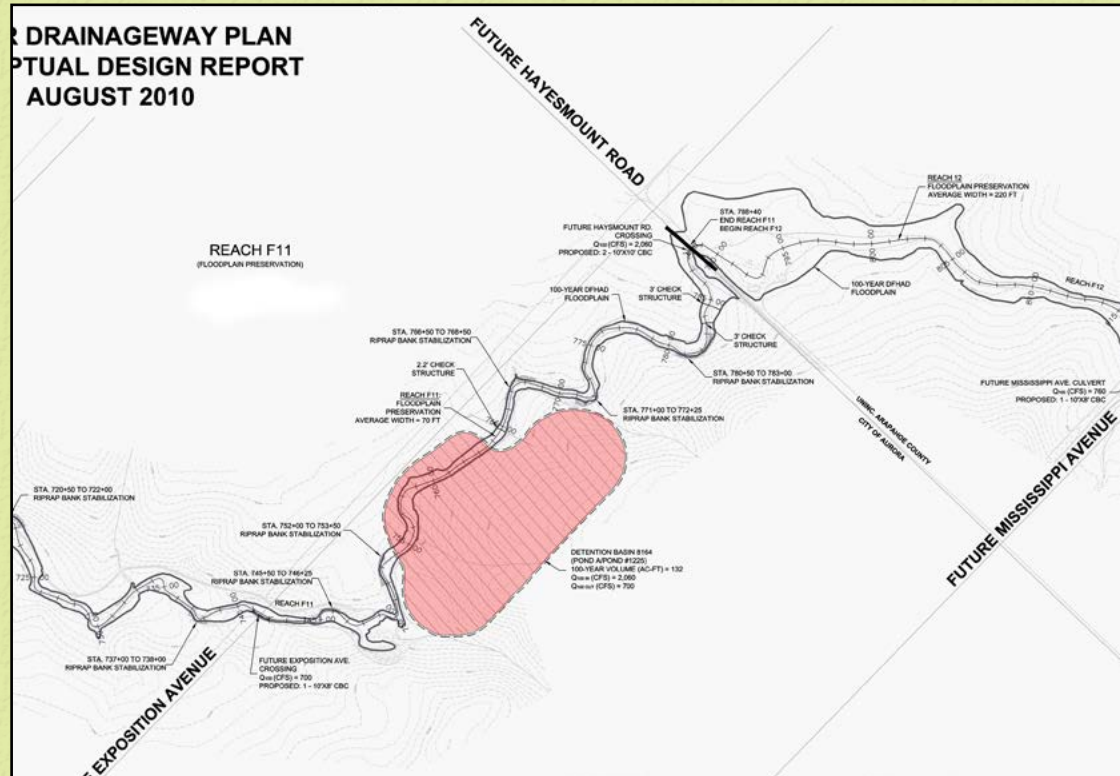
There are two road crossings and associated structures within this reach. At the intersection of future Monaghan Road and East 1st Avenue, the proposed culvert consists of three 10-foot by 10-foot CBCs which will convey the 100-year Conceptual Design peak flow of 2,930 cfs. At future Alameda Avenue, the proposed culvert consists of one 10-foot by 10-foot CBC which will convey the 100-year Conceptual Design peak flow of 890 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-17 - DETENTION BASIN 8164

SOUTHWEST OF EXPOSITION AVENUE AND HAYESMOUNT ROAD FUTURE INTERSECTION



Item	Quantity	Unit	Unit Cost	Total Cost
Excavation, High Range	71200	CY	\$26	\$1,833,400
Outlet Works	1	EA	\$500,000	\$500,000
Reclamation & Seeding (Native Grasses)	8	ACRE	\$1,030	\$8,240
Easement/ROW Acquisition	16	ACRE	\$87,120	\$1,393,920
Dewatering, Mobilization, Traffic Control, Utility Coordination/ Relocation, Stormwater Management/Erosion Control			14%	\$327,830
SUBTOTAL				\$4,063,390
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$2,065,097
TOTAL ESTIMATED COST				\$6,128,486
Annual Operation and Maintenance				
Mowing (5/year)	16	ACRE	\$150	\$2,400
Debris Removal (5/year)	16	ACRE	\$1,500	\$24,000
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$26,400

PROJECT DESCRIPTION

Reach F11 of First Creek (Upper) is between stations 711+00 to 788+40. The downstream reach limit is located 700 feet upstream of future Alameda Avenue and the upstream limit is located 4,700 feet upstream of future Exposition Avenue.

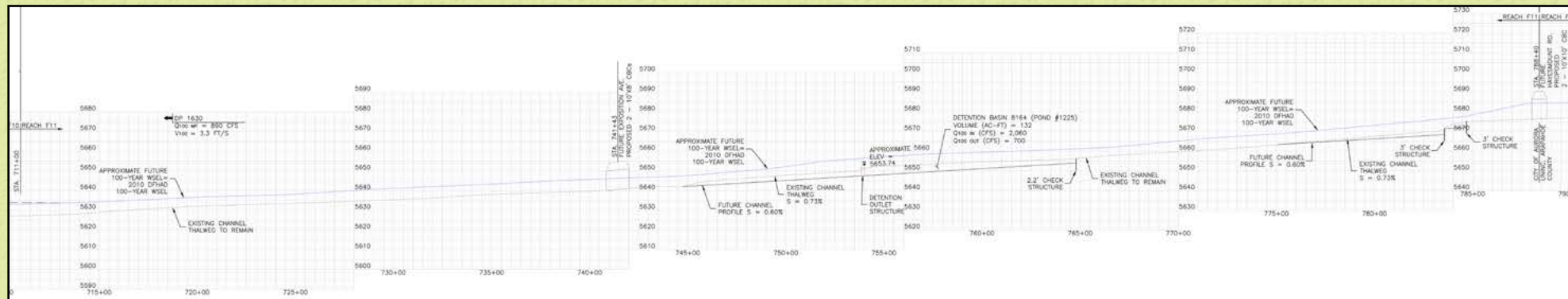
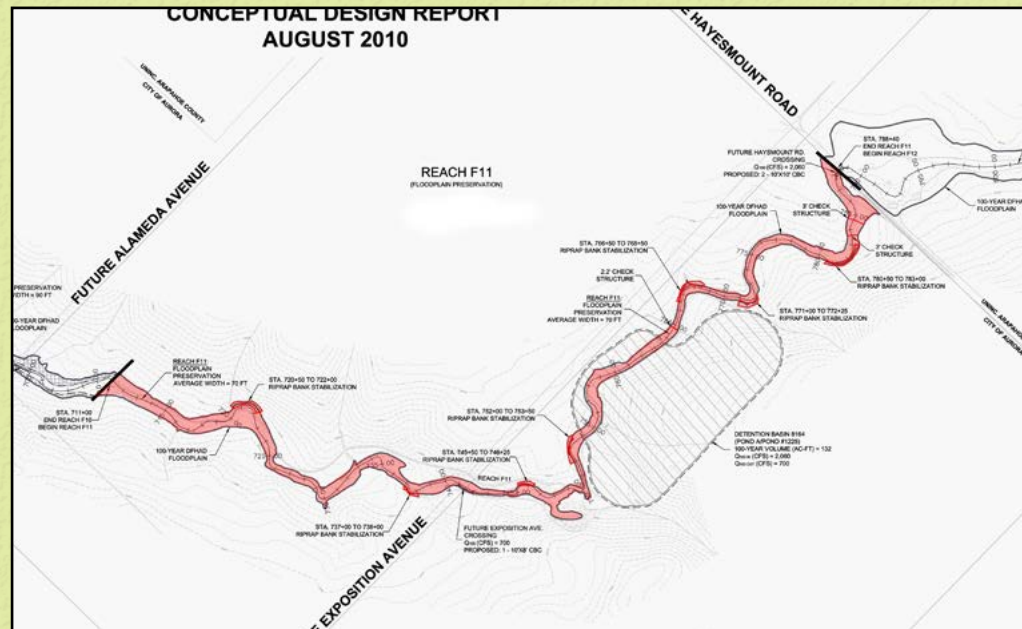
There is one proposed detention facility within this reach. Basin 8164, located near station 755+00, has a 100-year Conceptual Design volume of 132 acre feet and a 100-year discharge of 700 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-18 - FLOODPLAIN PRESERVATION

FIRST CREEK, SOUTH OF ALAMEDA AVENUE TO HAYESMOUNT ROAD



Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Check Structure	204	LF	\$340	\$69,360
Soil Riprap, Type H	2956	CY	\$72	\$213,128
Reclamation & Seeding (Native Grasses)	16	ACRE	\$1,030	\$16,480
Trail/Path, Crusher Fines (10' Width)	7740	FT	\$10	\$79,722
Easement/ROW Acquisition	19	ACRE	\$87,120	\$1,655,280
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control			14%	\$53,017
SUBTOTAL				\$2,086,986
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$333,967
TOTAL ESTIMATED COST				\$2,420,953
Annual Operation and Maintenance				
Debris Removal (5/year)	7740	LF	\$3	\$23,220
Restorative Maintenance and Rehabilitation	1.47	MI	\$5,000	\$7,350
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$30,570

PROJECT DESCRIPTION

Reach F11 of First Creek (Upper) is between stations 711+00 to 788+40. The downstream reach limit is located 700 feet upstream of future Alameda Avenue and the upstream limit is located 4,700 feet upstream of future Exposition Avenue.

The existing natural channel is 7,740 feet long and has a slope of approximately 0.73%. The average 100-year DFHAD floodplain is 70 feet wide.

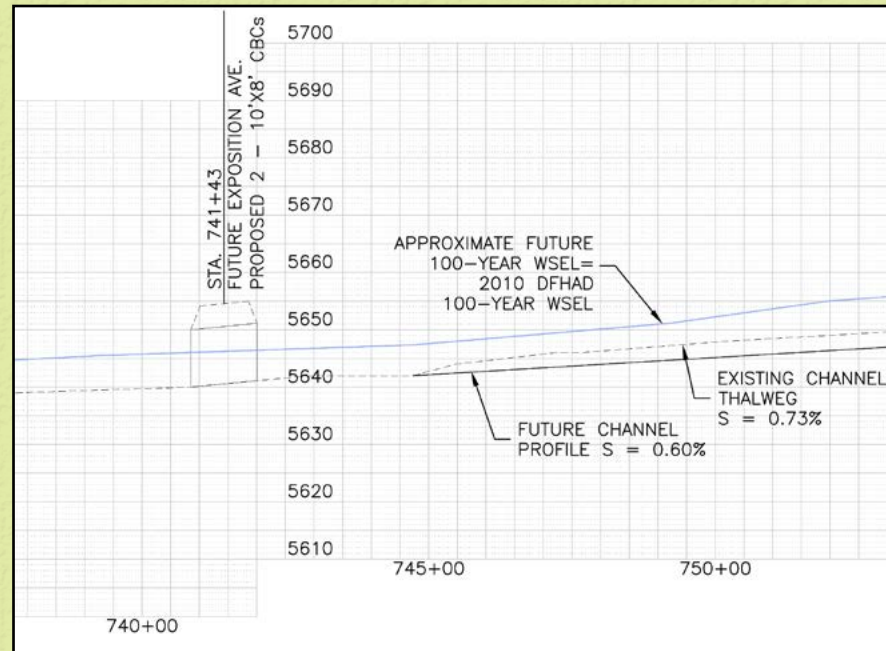
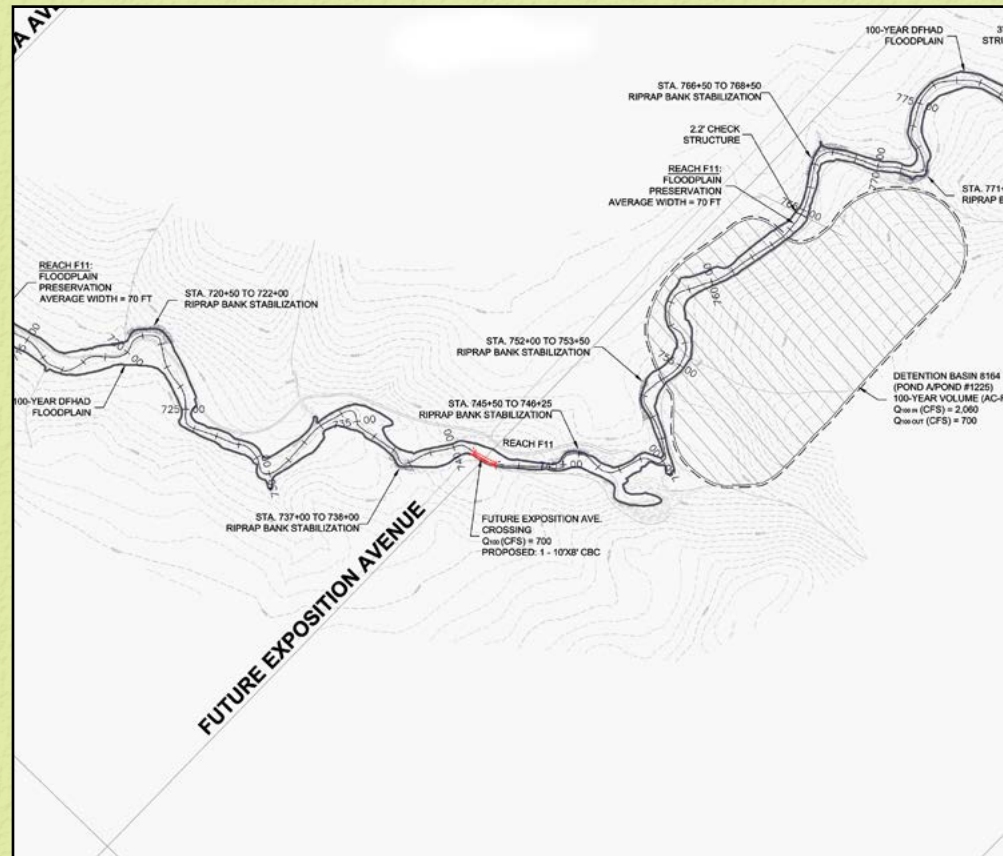
Floodplain preservation is proposed for Reach F11. Thus the future 100-year floodplain width does not change from the average 100-year DFHAD floodplain. To protect against excessive channel degradation in the future, three check structures are proposed to achieve a stable slope of 0.60% if erosion occurs. Additionally, riprap bank stabilization will be installed in locations where vertical banks are at least eight feet high.

A permanent 10 foot wide maintenance trail should be built alongside the channel at the time that maintenance procedures are completed or as necessary for access construction of channel stabilization measures. A 10 foot wide maintenance trail is also proposed for construction with the detention basin (assumed to be 200 feet for cost purposes).



FIRST CREEK PROJECT FC-19 - FUTURE EXPOSITION AVENUE CULVERT

INTERSECTION OF FIRST CREEK AND FUTURE EXPOSITION AVENUE



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x8'	84	LF	\$1,137	\$95,492
Headwall and Toewalls	2	EA	\$968	\$1,937
Wingwalls - with Concrete Apron	2	EA	\$18,319	\$36,639
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control	14%			\$18,769
SUBTOTAL				\$152,837
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$118,235
TOTAL ESTIMATED COST				\$271,072

PROJECT DESCRIPTION

Reach F11 of First Creek (Upper) is between stations 711+00 to 788+40. The downstream reach limit is located 700 feet upstream of future Alameda Avenue and the upstream limit is located 4,700 feet upstream of future Exposition Avenue.

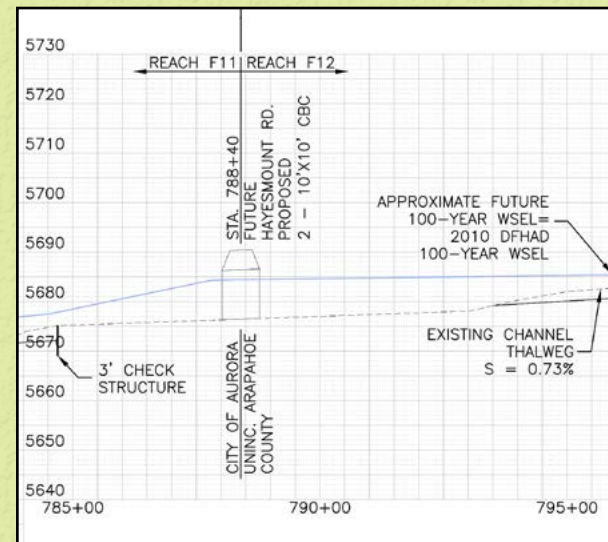
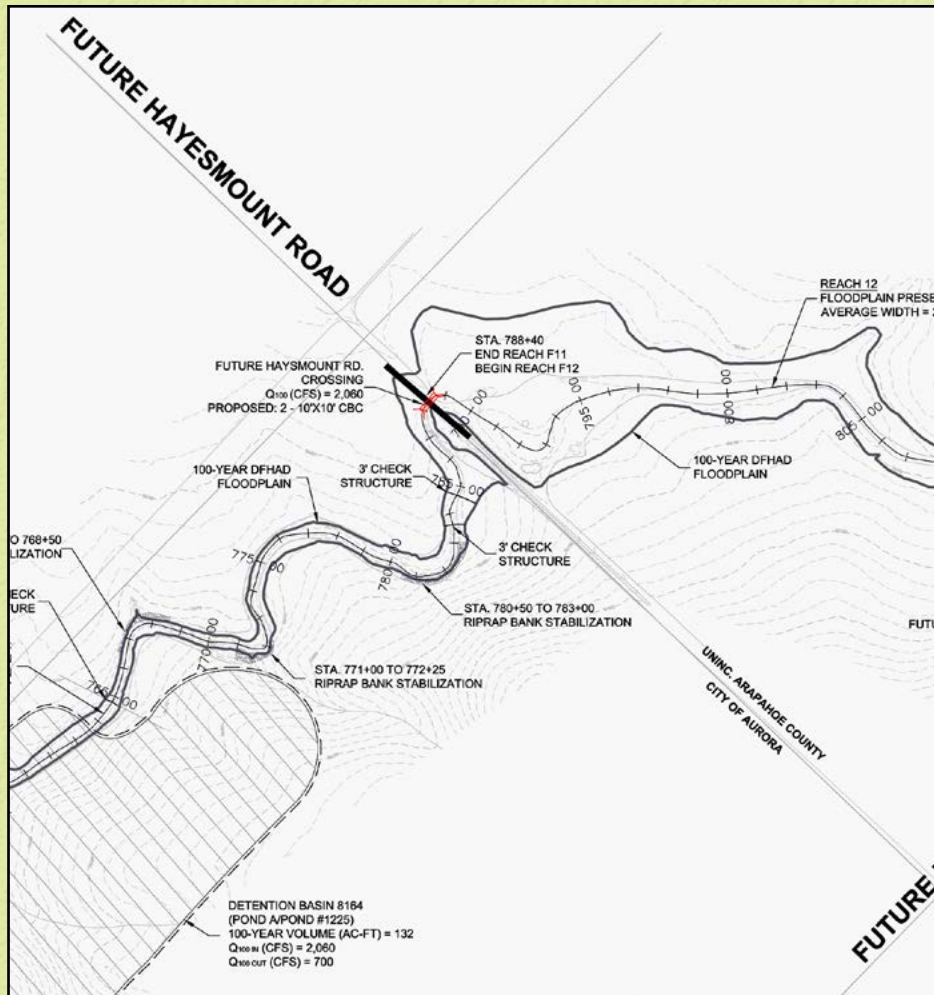
There are two road crossings and associated structures within this reach. At future Exposition Avenue, the proposed culvert consists of one 10-foot by 8-foot CBC which will convey the 100-year Conceptual Design peak flow of 700 cfs. The other culvert is located at future Hayesmount Road which is on the border of Reach 11 and Reach 12 as well as on the border of the City of Aurora and Unincorporated Arapahoe County. The proposed culvert consists of two 10-foot by 10-foot CBCs which will convey the 100-year Conceptual Design peak flow of 2,060 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521



FIRST CREEK PROJECT FC-20 - FUTURE HAYESMOUNT ROAD CULVERT

INTERSECTION OF FIRST CREEK AND FUTURE HAYESMOUNT ROAD



Item	Quantity	Unit	Unit Cost	Total Cost
Concrete Box Culvert Pipe - 10'x10'	42	LF	\$2,479	\$104,112
Headwall and Toewalls	1	EA	\$2,047	\$2,047
Wingwalls - with Concrete Apron	1	EA	\$30,023	\$30,023
Dewatering, Mobilization, Traffic Control, Utility Coordination/Relocation, Stormwater Management/Erosion Control		14%		\$19,066
SUBTOTAL				\$155,248
Contingencies, Engineering Design Services, Legal and Administrative Services, Construction Administration & Management				\$120,100
TOTAL ESTIMATED COST				\$275,348

PROJECT DESCRIPTION

Reach F11 of First Creek (Upper) is between stations 711+00 to 788+40. The downstream reach limit is located 700 feet upstream of future Alameda Avenue and the upstream limit is located 4,700 feet upstream of future Exposition Avenue.

There are two road crossings and associated structures within this reach. At future Exposition Avenue, the proposed culvert consists of one 10-foot by 8-foot CBC which will convey the 100-year Conceptual Design peak flow of 700 cfs. The other culvert is located at future Hayesmound Road which is on the border of Reach 11 and Reach 12 as well as on the border of the City of Aurora and Unincorporated Arapahoe County. The proposed culvert consists of two 10-foot by 10-foot CBCs which will convey the 100-year Conceptual Design peak flow of 2,060 cfs.

Item	Local Priority	Global Priority	Project Rating	Project Score
ECONOMIC		0.5		
Optimized Asset Lifecycle Costs	0.33	0.165	0.75	0.124
Operational Efficiencies	0.33	0.165	0.5	0.083
Growth and Economic Development	0.34	0.17	0.5	0.085
ENVIRONMENTAL		0.25		
City Sustainability Initiatives	0.33	0.083	0.4	0.033
Environmental Risk Management	0.33	0.083	0.6	0.050
Regulatory Compliance	0.34	0.085	0.2	0.017
SOCIAL		0.25		
Levels of Service	0.2	0.05	0.8	0.04
Customer/Community Benefit	0.2	0.05	0.4	0.02
Social Risk Management	0.2	0.05	0.8	0.04
System Performance	0.2	0.05	0.4	0.02
Contractual Obligations	0.2	0.05	0.2	0.01
TOTAL SCORE				0.521

