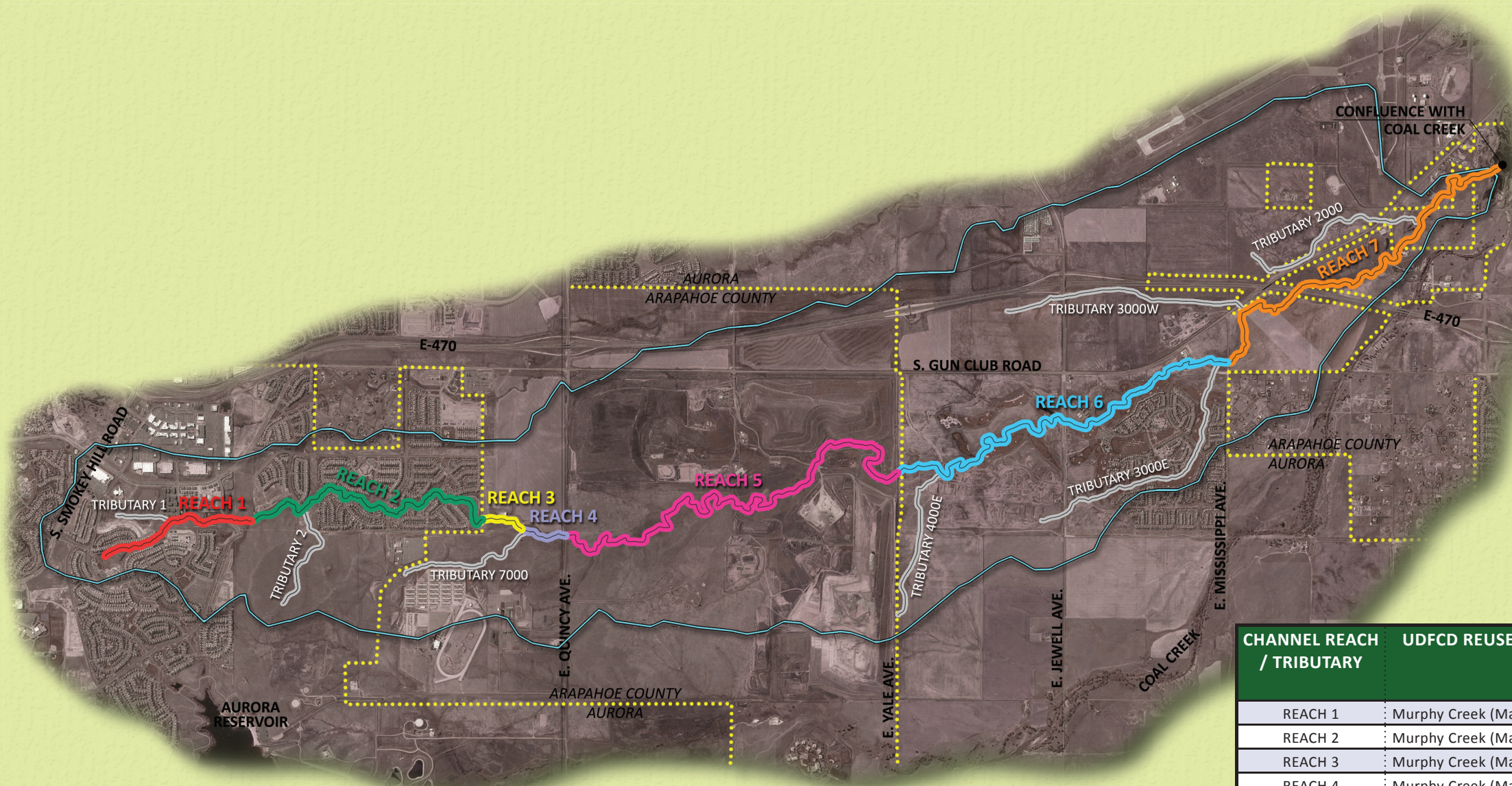


MURPHY CREEK CREEK OVERVIEW

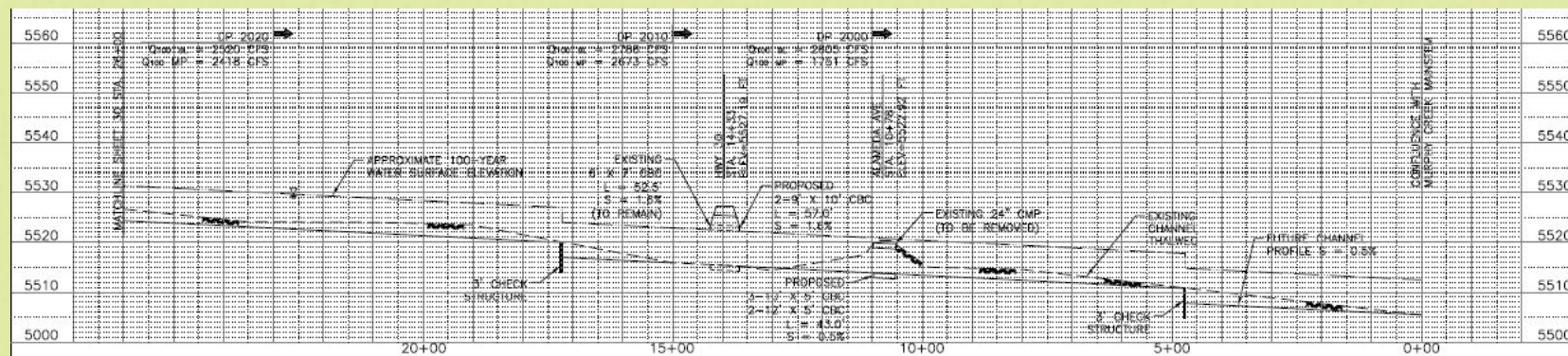
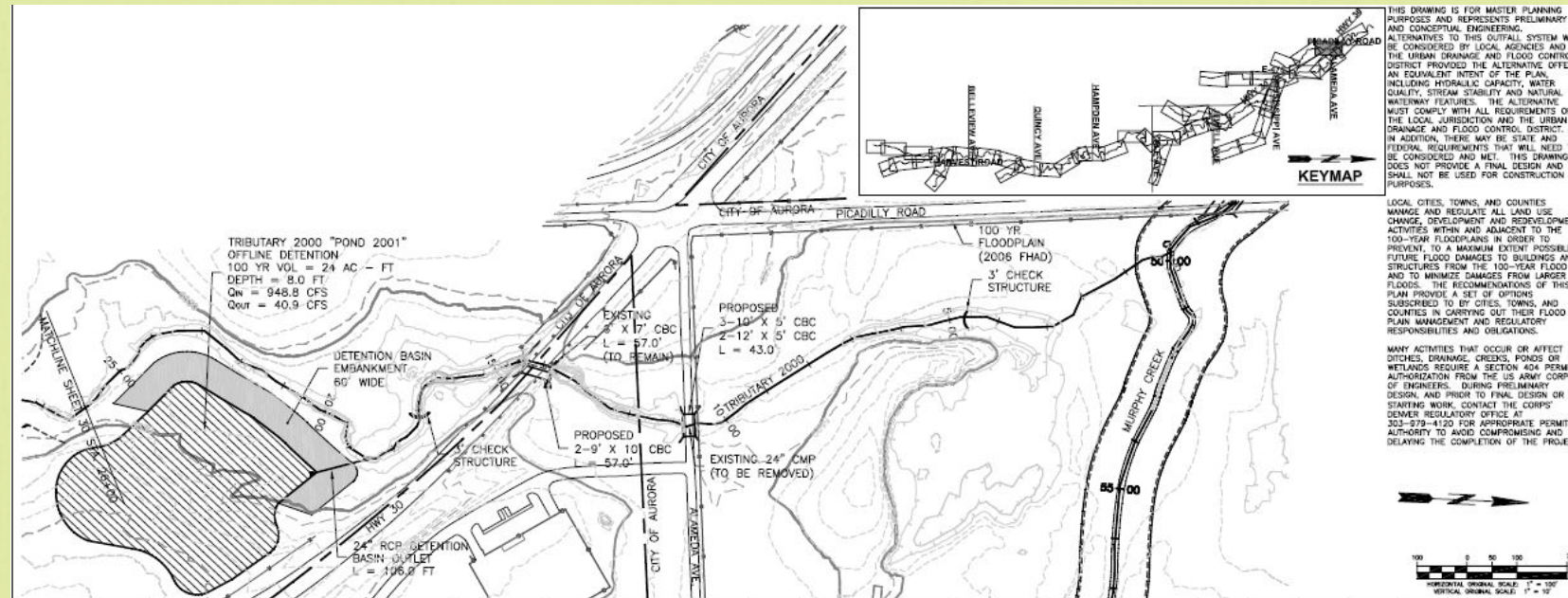
EAST SMOKEY HILL ROAD TO COAL CREEK



CHANNEL REACH / TRIBUTARY	UDFCD REUSE NAME	UDFCD ID NUMBER	REACH LENGTH (FEET)	TRIBUTARY AREA (ACRES)	TOTAL NUMBER OF PROJECTS	NUMBER OF CHECK STRUCTURES
REACH 1	Murphy Creek (Mainstream)	01-05-4409-01	6,922	715.6	-	35
REACH 2	Murphy Creek (Mainstream)	01-05-4409-01	8,750	559.1	1	-
REACH 3	Murphy Creek (Mainstream)	01-05-4409-01	850	111.4	-	2
REACH 4	Murphy Creek (Mainstream)	01-05-4409-01	2,000	470.1	1	3
REACH 5	Murphy Creek (Mainstream)	01-05-4409-01	19,000	2,251.20	-	12
REACH 6	Murphy Creek (Mainstream)	01-05-4409-01	15,500	1,825.30	-	10
REACH 7	Murphy Creek (Mainstream)	01-05-4409-01	16,000	2,092.80	7	-
TRIBUTARY 1	Chelsea Draw	1-05-4409-09	5,760	205.7	-	-
TRIBUTARY 2	"Unnamed"	1-05-4409-08	3,130	128.6	-	-
TRIBUTARY 7000	Brett Gulch	1-05-4409-07	3,000	325.8	-	-
TRIBUTARY 4000E	Harvest Gulch	1-05-4409-06	4,600	245.5	-	-
TRIBUTARY 4000W	Gun Club Creek	1-05-4409-05	6,200	313.1	1	-
TRIBUTARY 3000E	Murphy Creek East	1-05-4409-04	8,300	352.7	2	-
TRIBUTARY 3000W	Murphy Creek West	1-05-4409-03	7,400	309.7	3	8
TRIBUTARY 2000	Richard Run	1-05-4409-02	7,500	1,131.20	4	2

MURPHY CREEK PROJECT M.T2000.1 - TRIBUTARY 2000 CHECK STRUCTURES AND CULVERTS

WEST OF E-470 AND HWY 30 INTERSECTION TO MURPHY CREEK



TRIBUTARY 2000 CROSSING AT HIGHWAY 30



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
Check Structure	2	EA	\$7,111	\$14,222
Toe Protection	3,400	LF	\$22	\$74,800
10'x5' CBC	129	LF	\$1,300	\$167,700
12'x5' CBC	86	LF	\$1,300	\$111,800
9'x10' CBC	114	LF	\$4,000	\$456,000
Roadway Rehabilitation	595	SY	\$100	\$59,500
Headwalls/Wingwalls	4	LS	\$20,000	\$80,000
Maintenance Trail	1700	LF	\$80	\$136,000
ROW and Easements	478000	SF	\$2	\$956,000
Dewatering			2%	\$22,000
Mobilization			5%	\$55,001
Traffic Control				\$30,000
Utility Coordination/Relocation			5%	\$55,001
Stormwater Management/Erosion Control			5%	\$55,001
SUBTOTAL				\$2,273,026
Contingencies			25%	\$329,256
Engineering Design Services			15%	\$197,554
Legal and Administrative Services			5%	\$65,851
Construction Administration & Management			10%	\$131,703
TOTAL ESTIMATED COST				\$2,997,390
Annual Operation and Maintenance				
Debris Removal	1700	LF	\$1	\$5,100
Mowing	11	AC	\$50	\$1,650
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$6,750

PROJECT DESCRIPTION

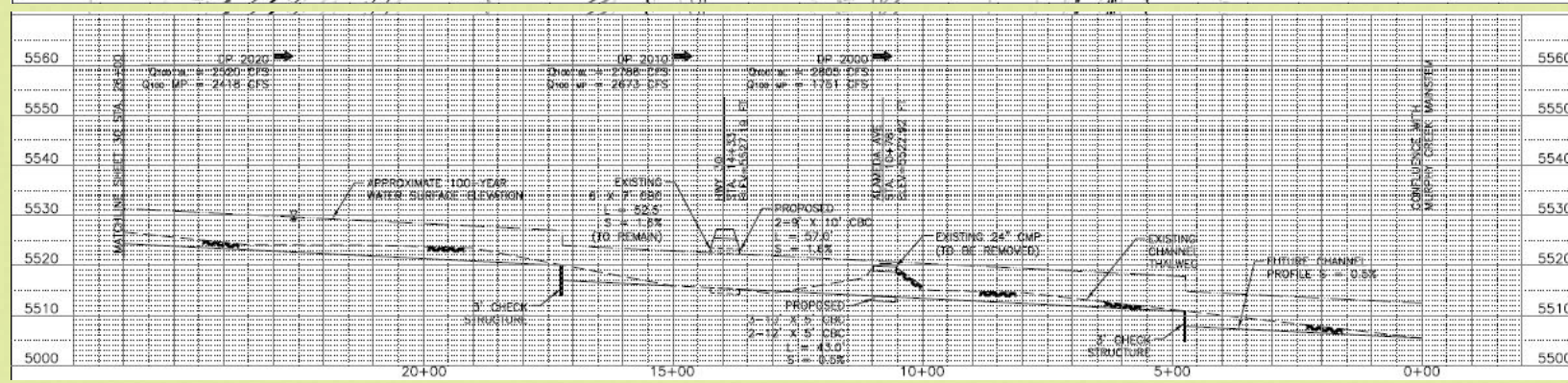
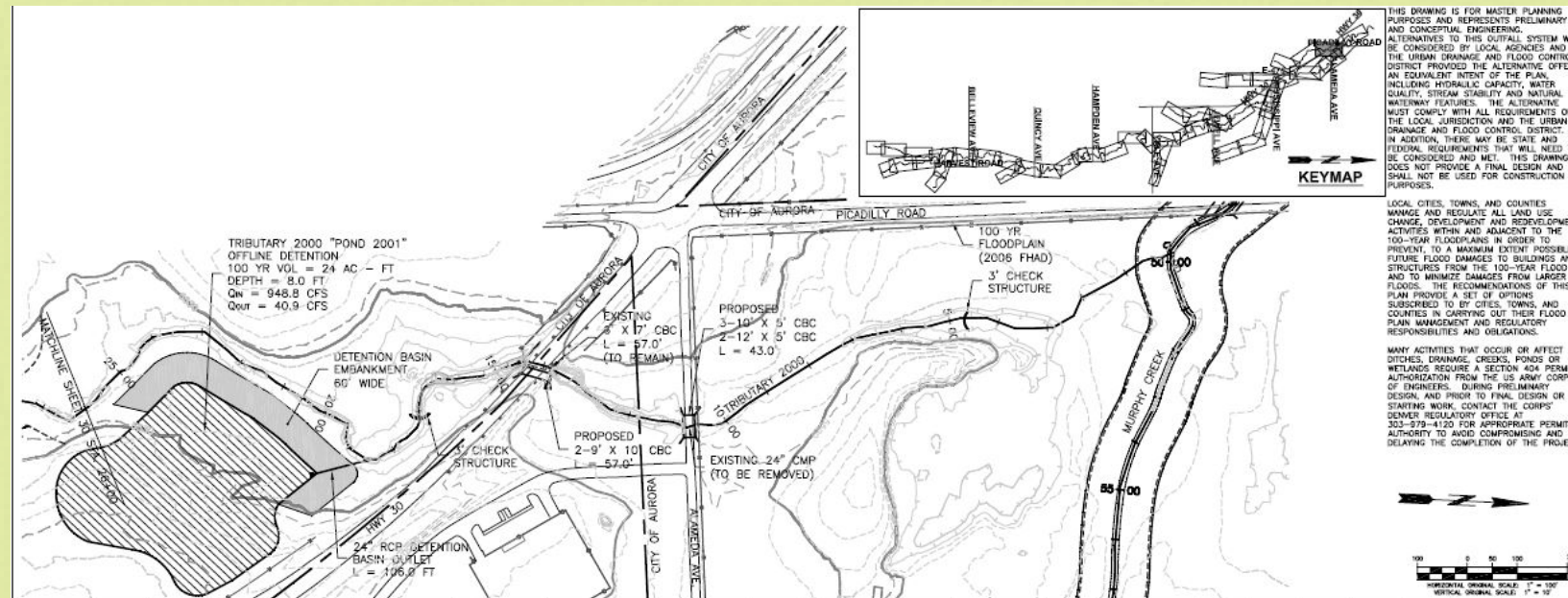
Tributary 2000 between stations 0+00 to 26+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 24" CMP crossing at Alameda Avenue is overtopped during the 100-year event.

The existing channel slope is approximately 1.1% and will likely experience erosion in the future.

Since an existing channel exists within this reach, 2 check structures are proposed within the reach and will halt future erosion allowing the channel to stabilize at a predicted slope of 0.50%. An offline detention basin is recommended upstream of Hwy 30. Runoff in the channel in excess of 1700 cfs will discharge in the detention basin. In addition to the existing 6' x 7' CBC under Hwy 30, 2-9' x 10' CBC is proposed to convey the 100-year event. The existing pipe crossing at Alameda Avenue is undersized and will be replaced with 3-10' x 5' CBC and 2-12' x 5' CBC.

MURPHY CREEK PROJECT M.T2000.2 - TRIBUTARY 2000 DETENTION POND

WEST OF E-470 AND HWY 30 INTERSECTION TO MURPHY CREEK



TRIBUTARY 2000 CROSSING AT HIGHWAY 30



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
Pond Excavation	29,040	CY	\$20	\$580,800
Outlet Structure	1	LS	\$15,000	\$15,000
Spillway	1.00	LS	\$22,000	\$22,000
Revegetation	5.5	AC	\$2,500	\$13,750
Maintenance Trail	300	LF	\$80	\$24,000
ROW and Easements	250,000	SF	\$2	\$500,000
Dewatering			2%	\$13,111
Mobilization			5%	\$32,778
Traffic Control				\$0
Utility Coordination/Relocation				\$0
Stormwater Management/Erosion Control			2%	\$32,778
SUBTOTAL				\$1,234,216
Contingencies			25%	\$183,554
Engineering Design Services			15%	\$110,132
Legal and Administrative Services			5%	\$36,711
Construction Administration & Management			10%	\$73,422
TOTAL ESTIMATED COST				\$1,638,035
Annual Operation and Maintenance				
Pond Outlet Structure Debris Removal	1	LS	\$500	\$1,500
Mowing	5.5	AC	\$50	\$825
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$2,325

PROJECT DESCRIPTION

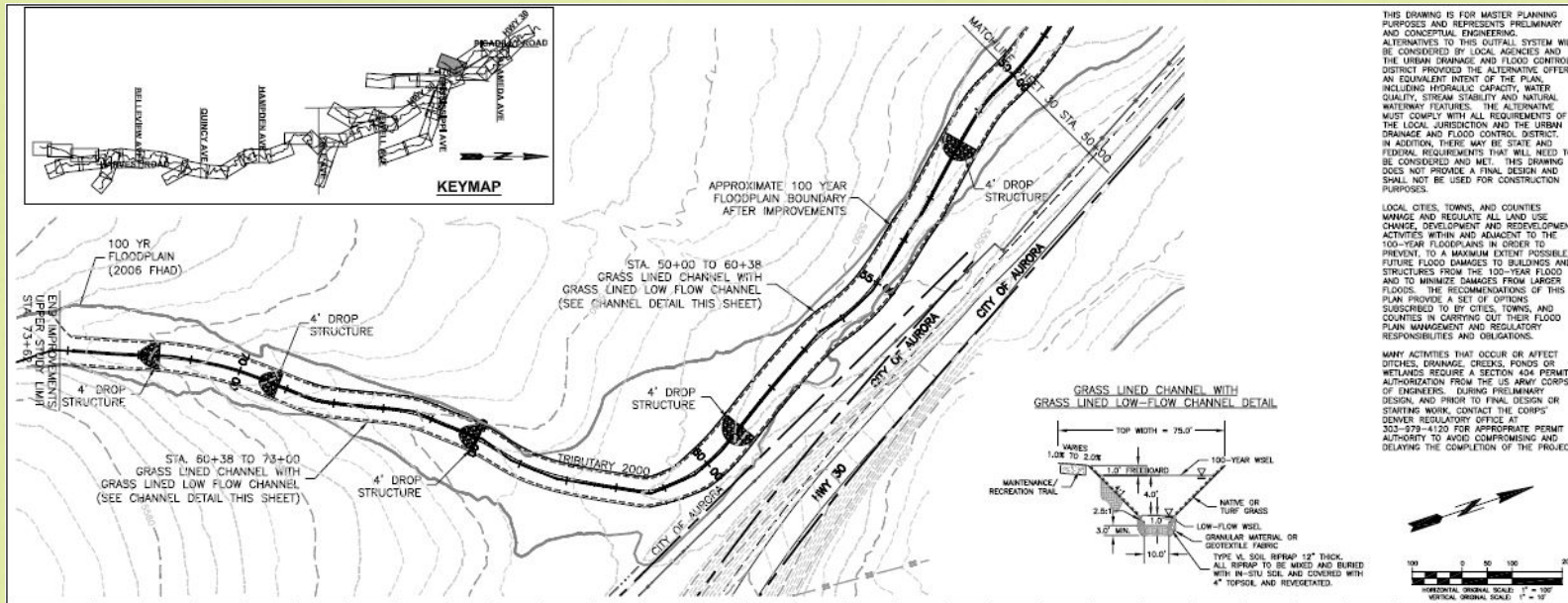
Tributary 2000 between stations 0+00 to 26+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 24' CMP crossing at Alameda Avenue is overtopped during the 100-year event.

The existing channel slope is approximately 1.1% and will likely experience erosion in the future.

Since an existing channel exists within this reach, 2 check structures are proposed within the reach and will halt future erosion allowing the channel to stabilize at a predicted slope of 0.50%. An offline detention basin is recommended upstream of Hwy 30. Runoff in the channel in excess of 1700 cfs will discharge in the detention basin. In addition to the existing 6' x 7' CBC under Hwy 30, 2-9' x 10' CBC is proposed to convey the 100-year event. The existing pipe crossing at Alameda Avenue is undersized and will be replaced with 3-10' x 5' CBC and 2-12' x 5' CBC.

MURPHY CREEK PROJECT M.T2000.3 - TRIBUTARY 2000 DROP STRUCTURES 1-4

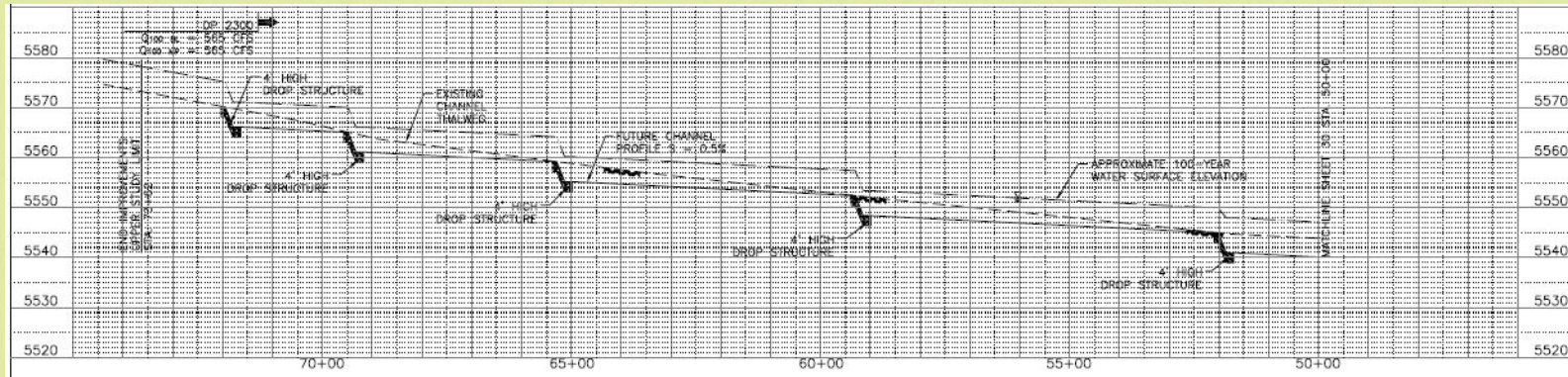
WEST OF E-470 AND HWY 30 INTERSECTION TO MURPHY CREEK



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING. ALTERNATIVES TO THIS OUTFALL SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAINS IN ORDER TO PREVENT, TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOOD AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS SUBSCRIBED TO BY CITIES, TOWNS, AND COUNTIES IN CARRYING OUT THEIR FLOOD PLAN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR OR AFFECT DITCHES, DRAINAGE CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE CORPS' DENVER REGULATORY OFFICE AT 303-579-4100 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID COMPROMISING AND DELAYING THE COMPLETION OF THE PROJECT.



Item	Quantity	Unit	Unit Cost	Total Cost
Channel Excavation	12,024	CY	\$30	\$360,720
Drop Structure	4	LS	\$100,000	\$400,000
Revegetation	2.25	AC	\$3,000	\$6,750
Toe Protection	4,478	LF	\$22	\$98,516
Maintenance Trail	2,239	LF	\$80	\$179,120
ROW and Easements	167,925	SF	\$2	\$335,850
Dewatering			2%	\$20,902
Mobilization			5%	\$52,255
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$0
Stormwater Management/Erosion Control			5%	\$52,255
SUBTOTAL				\$1,506,369
Contingencies			25%	\$292,630
Engineering Design Services			15%	\$175,578
Legal and Administrative Services			5%	\$58,526
Construction Administration & Management			10%	\$117,052
TOTAL ESTIMATED COST				\$2,150,154
Annual Operation and Maintenance				
Debris Removal	2239	LF	\$1.00	\$6,717
Mowing	2.25	AC	\$50	\$338
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$7,055



UPPER REACH OF TRIBUTARY 2000



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

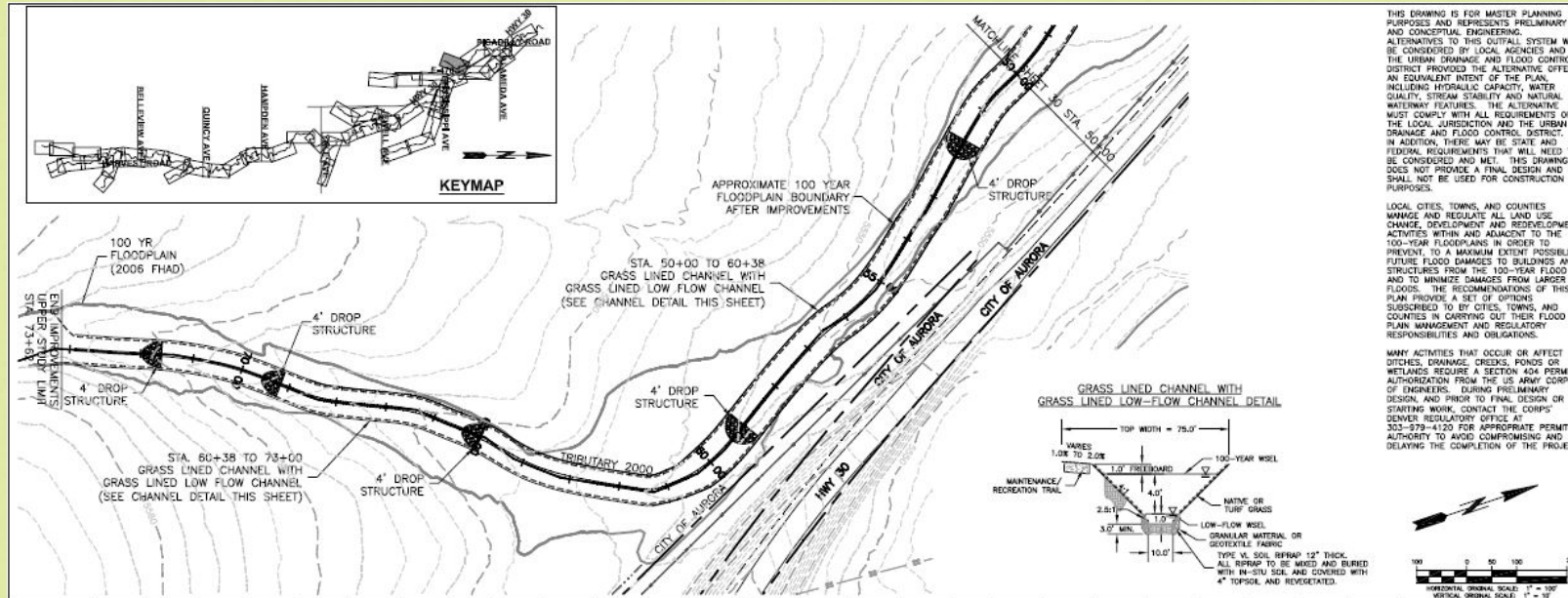
Tributary 2000 between stations 50+00 to 73+62 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

The existing channel slope is approximately 1.3% and will likely experience degradation in the future.

An improved channel is recommended in this reach. Future improvements within Buckley AFB will be required to provide full spectrum detention before releasing to Tributary 2000. 5 drop structures are proposed in this reach.

MURPHY CREEK PROJECT M.T2000.4 - TRIBUTARY 2000 DROP STRUCTURES 5-6

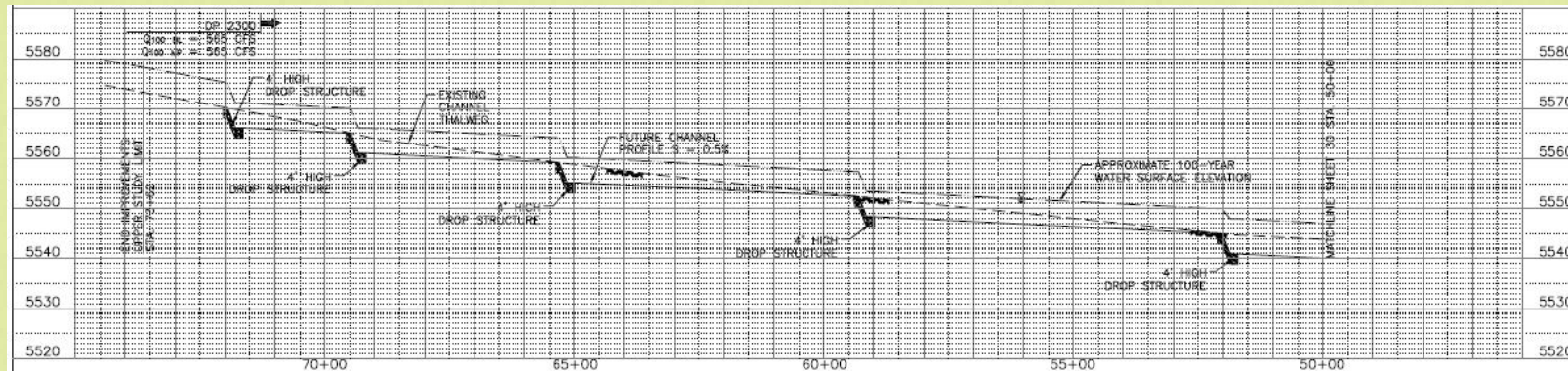
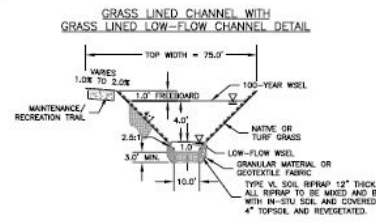
WEST OF E-470 AND HWY 30 INTERSECTION TO MURPHY CREEK



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING. ALTERNATIVES TO THIS OUTFALL SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

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UPPER REACH OF TRIBUTARY 2000



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
Channel Excavation	39,250	CY	\$30	\$1,177,500
Drop Structure	2	LS	\$130,000	\$260,000
Revegetation	7.50	AC	\$3,000	\$22,500
Toe Protection	6,950	LF	\$22	\$152,900
Maintenance Trail	3,475	LF	\$80	\$278,000
ROW and Easements	284,200	SF	\$2	\$568,400
Dewatering			2%	\$37,818
Mobilization			5%	\$94,545
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$0
Stormwater Management/Erosion Control			5%	\$94,545
SUBTOTAL				\$2,686,208
Contingencies			25%	\$529,452
Engineering Design Services			15%	\$317,671
Legal and Administrative Services			5%	\$105,890
Construction Administration & Management			10%	\$211,781
TOTAL ESTIMATED COST				\$3,851,002
Annual Operation and Maintenance				
Debris Removal	3475	LF	\$1.00	\$10,425
Mowing	7.5	AC	\$50	\$1,125
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$11,550

PROJECT DESCRIPTION

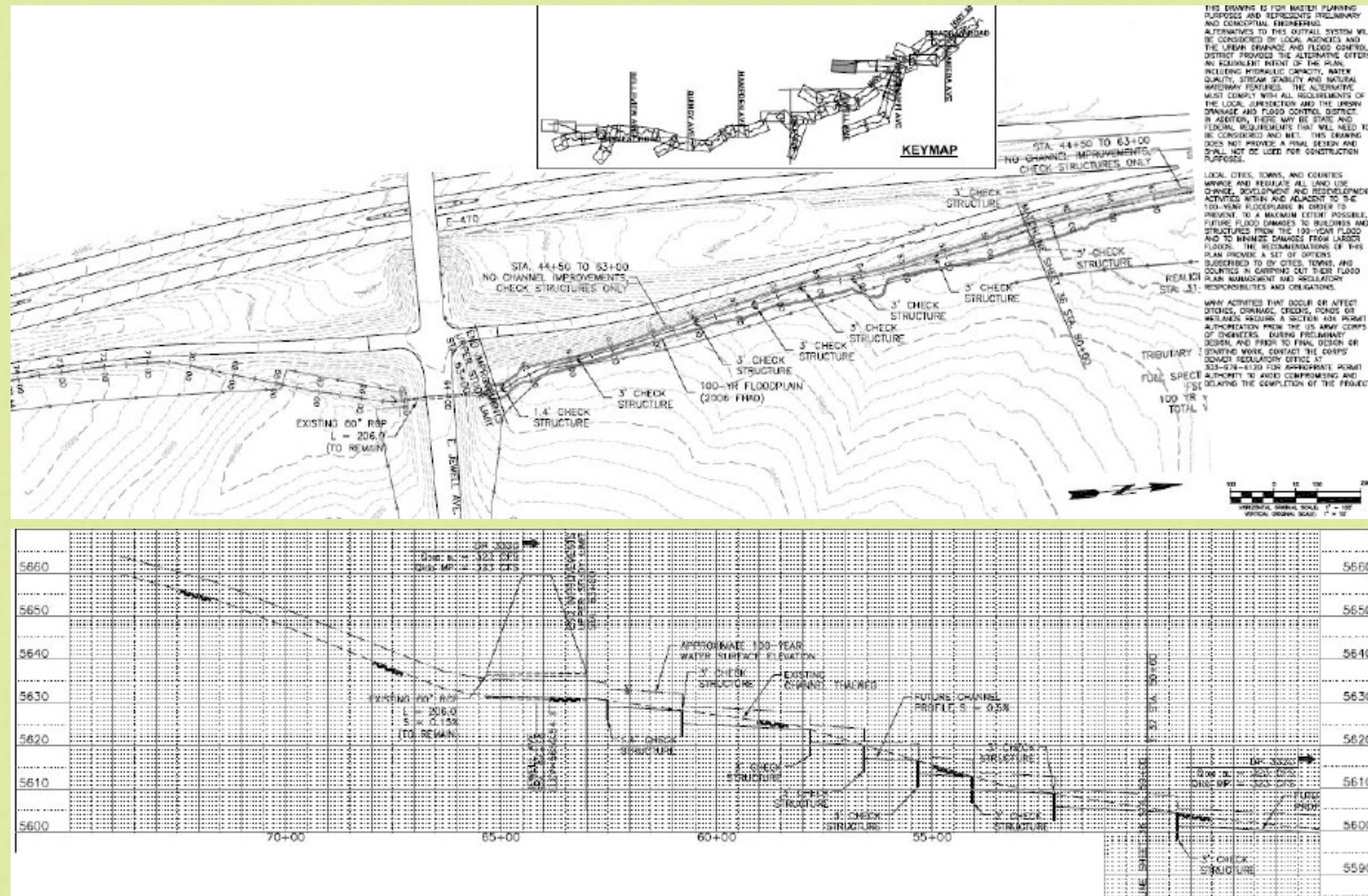
Tributary 2000 between stations 50+00 to 73+62 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

The existing channel slope is approximately 1.3% and will likely experience degradation in the future.

An improved channel is recommended in this reach. Future improvements within Buckley AFB will be required to provide full spectrum detention before releasing to Tributary 2000. 5 drop structures are proposed in this reach.

MURPHY CREEK PROJECT M.T3000W.1 - TRIBUTARY 3000W CHECK STRUCTURES

EAST OF E-470 NORTH BOUND ON-RAMP AT EAST JEWELL AVENUE



Item	Quantity	Unit	Unit Cost	Total Cost
Check Structures*	8	EA	\$3,555	\$28,440
Toe Protection	1400	LF	\$22	\$30,800
Maintenance Trail	1400	LF	\$20	\$28,000
ROW and Easements	42000	SF	\$2	\$84,000
Dewatering			10%	\$9,000
Mobilization			15%	\$14,000
Traffic Control				\$0
Stormwater Management/Erosion Control			15%	\$14,000
SUBTOTAL				\$208,240
Contingencies			25%	\$21,810
Engineering Design Services			15%	\$13,090
Legal and Administrative Services			5%	\$4,370
Construction Administration & Management			10%	\$8,730
TOTAL ESTIMATED COST				\$256,240
Annual Operation and Maintenance				
Debris Removal (3 times per year)	1400	LF	\$1	\$4,200
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$4,200

PROJECT DESCRIPTION

Tributary 3000W between stations 50+00 to 63+00 is within the E-470 ROW. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

The existing channel slope, downstream of Jewell Avenue, is approximately 1.3% and will likely experience erosion in the future.

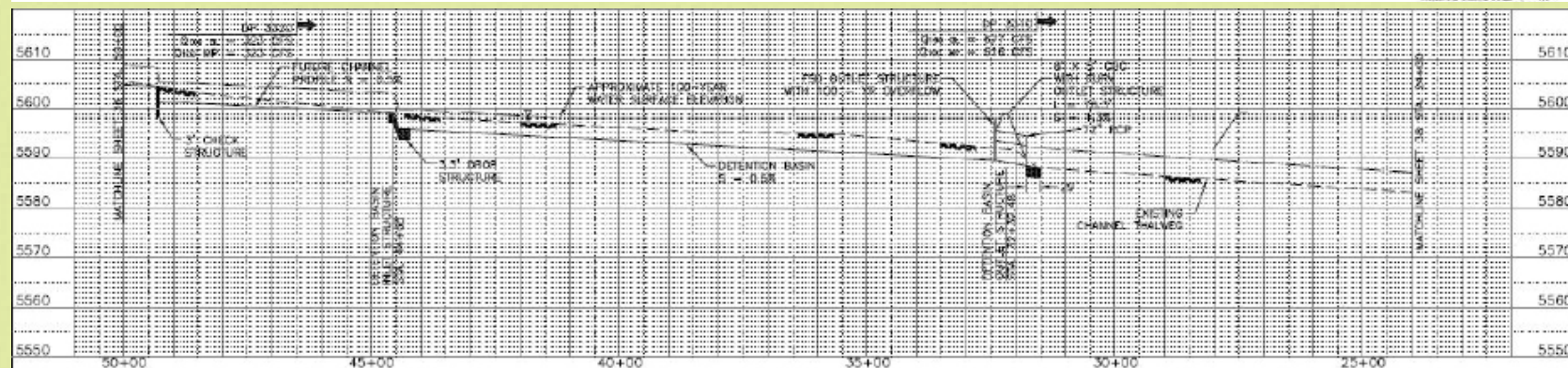
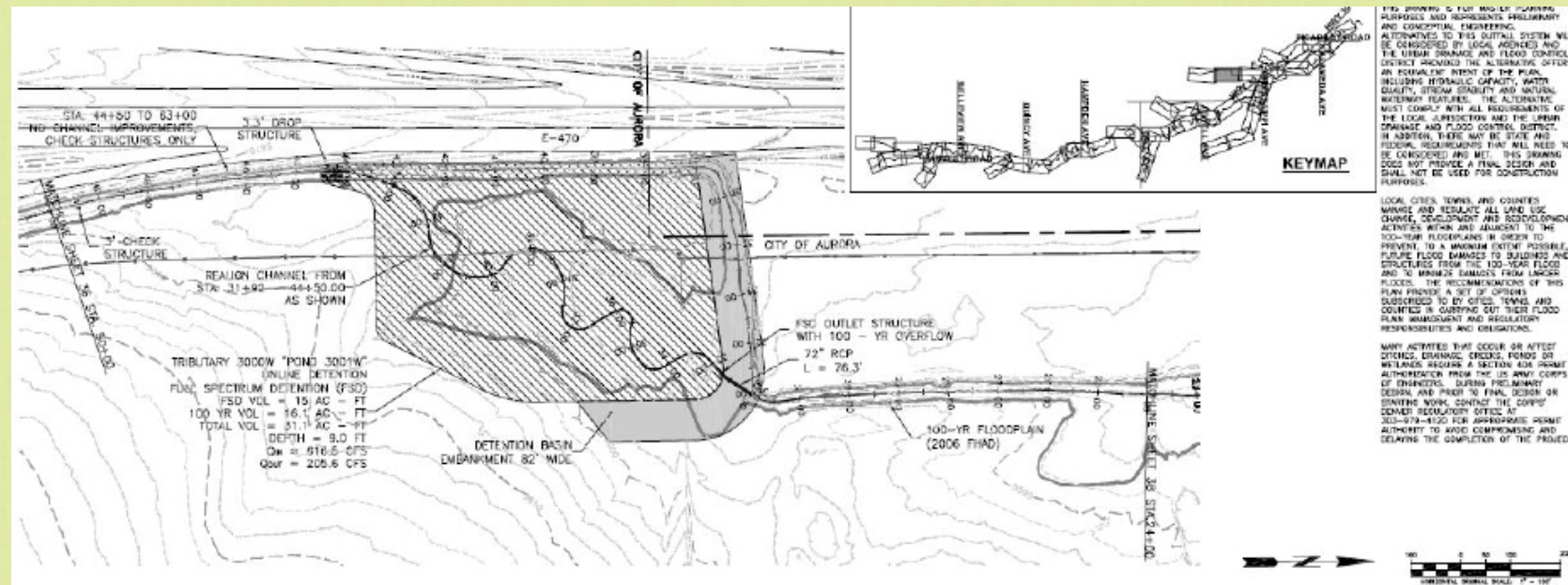
7 check structures are proposed within the reach and will halt future erosion allowing the channel to stabilize at a predicted slope of 0.50%.

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



MURPHY CREEK PROJECT M.T3000W.2 - TRIBUTARY 3000W DETENTION POND

NORTHEAST OF E-470 NORTH BOUND ON-RAMP AT EAST JEWELL AVENUE



TRIBUTARY 3000W WITHIN THE CLOSED AURORA LANDFILL

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
Pond Excavation	45,174	CY	\$20	\$903,480
Outlet Structure	1	LS	\$50,000	\$50,000
Entrance Grade Control Structure	1.00	LS	\$25,000	\$25,000
Spillway	1	LS	\$22,000	\$22,000
Revegetation	7.00	AC	\$2,500	\$17,500
Maintenance Trail (Pond)	1,140	LF	\$30	\$34,200
Maintenance Trail (50+00 - 24+00)	2,600.00	AC	\$20	\$52,000
ROW and Easements	374,303	SF	\$2	\$748,606
Dewatering			2%	\$21,044
Mobilization			5%	\$52,609
Traffic Control				\$0
Utility Coordination/Relocation				\$0
Stormwater Management/Erosion Control			2%	\$52,609
SUBTOTAL				\$1,979,048
Contingencies			25%	\$307,610
Engineering Design Services			15%	\$184,566
Legal and Administrative Services			5%	\$61,522
Construction Administration & Management			10%	\$123,044
TOTAL ESTIMATED COST				\$2,655,790

Annual Operation and Maintenance				
Pond Outlet Structure Debris Removal	7	AC	\$1,000	\$21,000
Debris Removal (Waterway)	2600	LF	\$1	\$7,800
Mowing	7	AC	\$50	\$1,050
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$29,850

PROJECT DESCRIPTION

Tributary 3000W between stations 24+00 to 50+00 is within the City of Aurora and the E-470 ROW. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Downstream of approximately station 32+00 is a closed landfill owned by the City of Aurora.

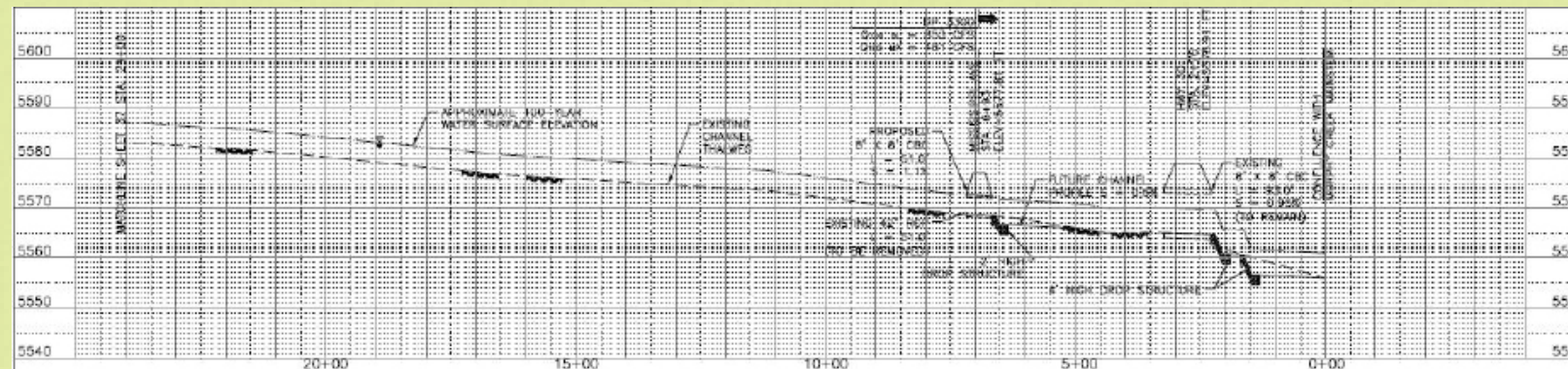
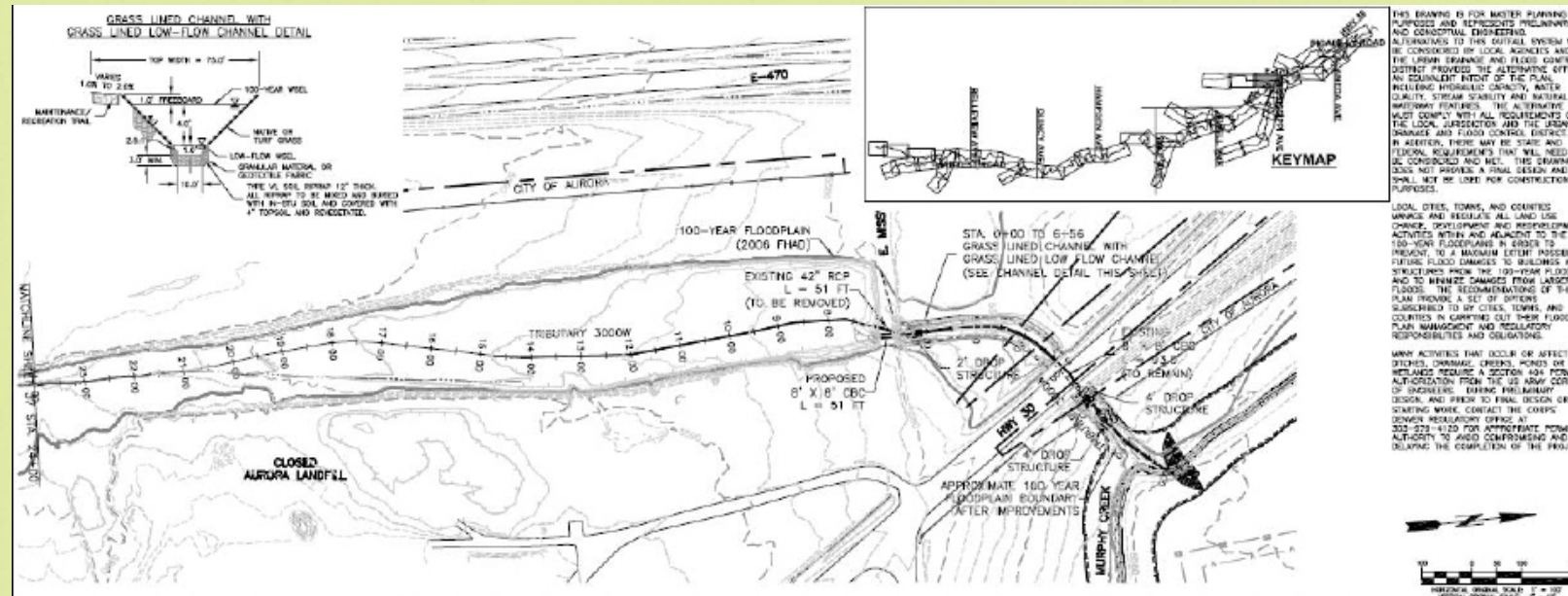
The existing channel slope, within this reach, is approximately 0.7% and will likely experience erosion in the future.

An existing channel, upstream of approximately station 44+50, will be stabilized with 1 check structure allowing the channel to stabilize at a predicted slope of 0.50%. An online detention basin is recommended upstream of the closed landfill. The detention basin will provide full spectrum detention (FSD) and 100-year detention. A flow spreader was requested at the outlet of the detention basin to minimize concentrated flow through the closed landfill.



MURPHY CREEK PROJECT M.T3000W.3 - TRIBUTARY 3000W DROP STRUCTURES AND CULVERTS

SOUTH WEST OF HIGHWAY 30 TO MURPHY CREEK



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	4,028	LF	\$30	\$120,840
Drop Structure	3	EA	\$35,550	\$106,650
Toe Protection	1,500	LF	\$22	\$33,000
8'x8' CBC	51	LF	\$1,300	\$66,300
Headwalls/Wingwalls	2	LS	\$20,000	\$40,000
Maintenance Trail	750	LF	\$80	\$60,000
Revegetation	0.76	AC	\$3,000	\$2,273
ROW and Easements	345000	SF	\$2	\$690,000
Dewatering			5%	\$15,297.50
Mobilization			10%	\$30,595
Traffic Control				\$0
Utility Coordination/Relocation			0%	\$0
Stormwater Management/Erosion Control			10%	\$30,595
SUBTOTAL				\$1,074,710
Contingencies			25%	\$96,178
Engineering Design Services			15%	\$57,707
Legal and Administrative Services			5%	\$19,236
Construction Administration & Management			10%	\$38,471
TOTAL ESTIMATED COST				\$1,286,301
Annual Operation and Maintenance				
Debris Removal	1700	LF	\$1	\$5,100
Mowing	11	AC	\$50	\$1,650
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$6,750

PROJECT DESCRIPTION

Tributary 3000W between stations 0+00 to approximately 24+00 is within Arapahoe County. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 42" RCP pipe crossing Mississippi Avenue road alignment is inadequate to convey the 100-year event. The existing 8'x8' CBC crossing Highway 30 road alignment is adequate to convey the 100-year event.

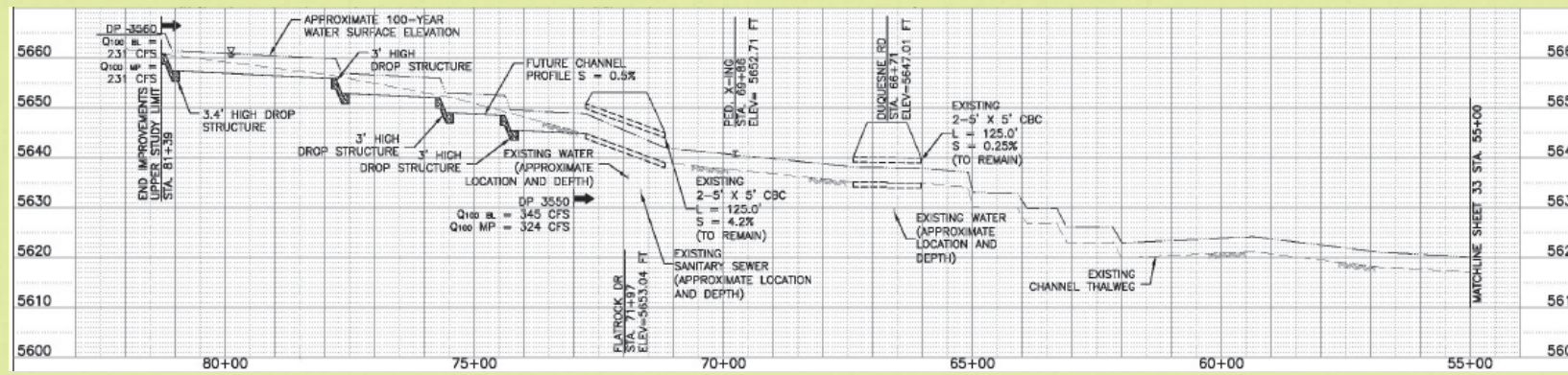
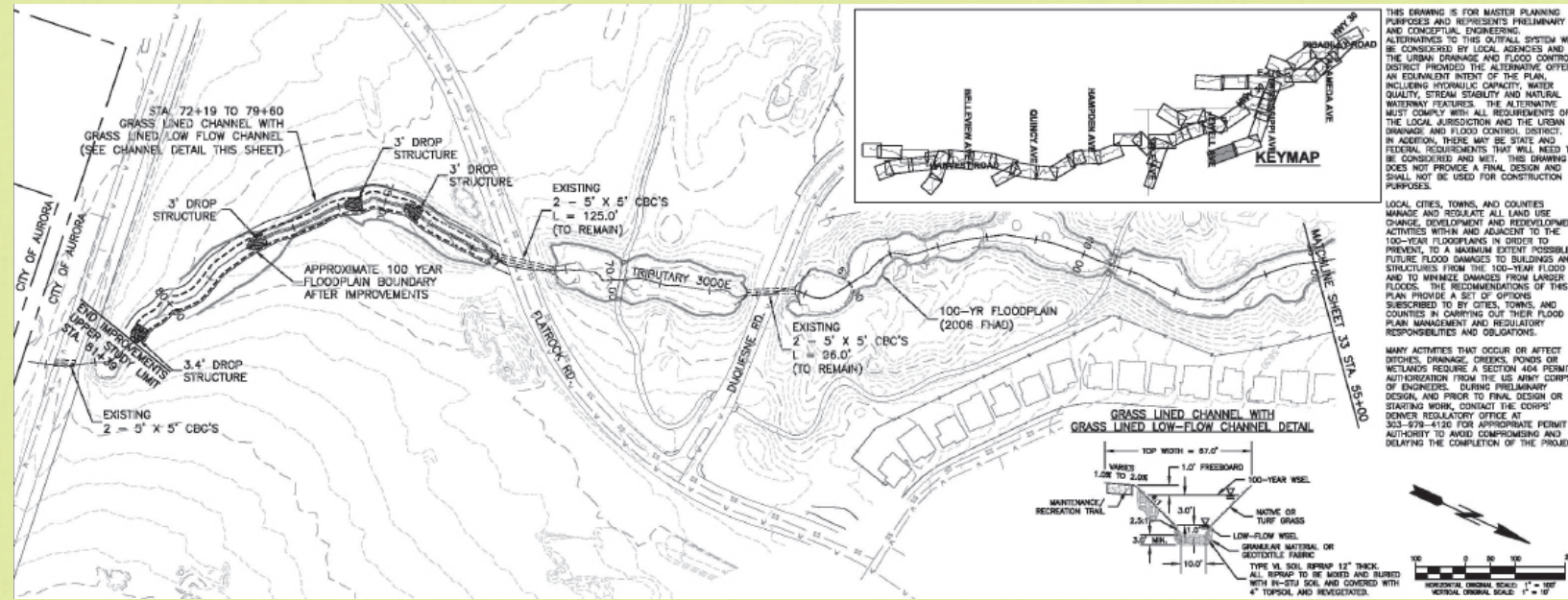
The existing channel slope within this reach is approximately 0.6% and will likely experience degradation in the future.

The channel, upstream of approximately station 6+50, is within the closed Aurora landfill. No improvements are requested in this reach. At the Mississippi Avenue roadway alignment an additional 8' x 8' CBC is proposed to convey the 100-year event. Downstream of Mississippi Avenue an improved channel is recommended. 3 drop structures are proposed to stabilize the channel slope at a predicted slope of 0.50%.



MURPHY CREEK PROJECT M.T3000E.1 - TRIBUTARY 3000E DROP STRUCTURES 1-4

EAST JEWELL AVENUE TO FLATROCK ROAD



TRIBUTARY 3000E UPSTREAM OF FLATROCK DRIVE

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
Channel Excavation	3,556	CY	\$30	\$106,680
Drop Structure	4	LS	\$50,000	\$200,000
Revegetation	2.25	AC	\$3,000	\$6,750
Toe Protection	1,778	LF	\$22	\$39,116
Maintenance Trail	889	LF	\$80	\$71,120
ROW and Easements	190,813	SF	\$2	\$381,626
Dewatering			5%	\$21,183.30
Mobilization			10%	\$42,366.60
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$0
Stormwater Management/Erosion Control			10%	\$42,367
SUBTOTAL				\$911,209
Contingencies			25%	\$132,396
Engineering Design Services			15%	\$79,437
Legal and Administrative Services			5%	\$26,479
Construction Administration & Management			10%	\$52,958
TOTAL ESTIMATED COST				\$1,202,479
Annual Operation and Maintenance				
Debris Removal	889	LF	\$1.00	\$2,667
Mowing	1	AC	\$50	\$150
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$2,817

PROJECT DESCRIPTION

Tributary 3000E between stations 55+00 to 81+39 is within the Murphy Creek Development. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

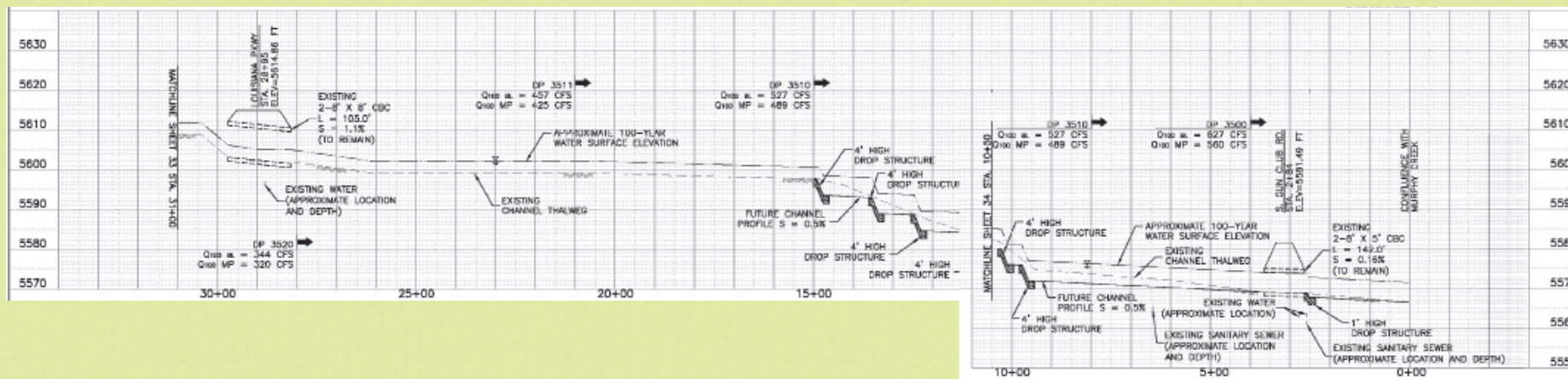
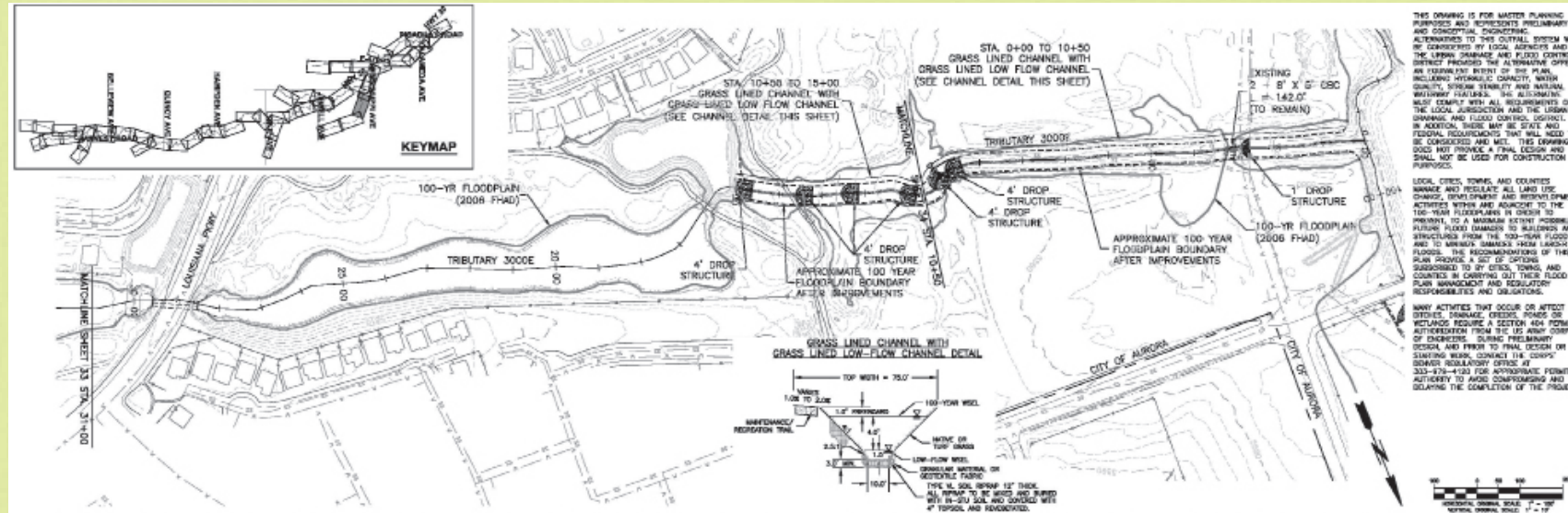
The existing channel slope, upstream of Flatrock Drive, is approximately 2.7% and will likely experience erosion in the future. Downstream of Flatrock Drive within the Murphy Creek Development the existing channel slope appears stable, existing drainage improvements were constructed at the time of development.

Upstream of Flatrock Drive an improved channel is recommended. 4 drop structures are recommended in order to stabilize the channel slope at 0.5%.



MURPHY CREEK PROJECT M.T3000E.2 - TRIBUTARY 3000E DROP STRUCTURES 5-8

MURPHY CREEK DEVELOPMENT



TRIBUTARY 3000E WITHIN MURPHY CREEK DEVELOPMENT



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
Channel Excavation	8,055	CY	\$30	\$241,650
Drop Structure	7	LS	\$75,000	\$525,000
Revegetation	1.50	AC	\$3,000	\$4,500
Toe Protection	3,000	LF	\$22	\$66,000
Maintenance Trail	1,500	LF	\$80	\$120,000
ROW and Easements	304,500	SF	\$2	\$609,000
Dewatering			2.5%	\$23,928.75
Mobilization			5%	\$47,857.50
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$0
Stormwater Management/Erosion Control			5%	\$47,858
SUBTOTAL				\$1,685,794
Contingencies			25%	\$269,198
Engineering Design Services			15%	\$161,519
Legal and Administrative Services			5%	\$53,840
Construction Administration & Management			10%	\$107,679
TOTAL ESTIMATED COST				\$2,278,030
Annual Operation and Maintenance				
Debris Removal	1500	LF	\$1.00	\$4,500
Mowing	1.5	AC	\$50	\$225
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$4,725

PROJECT DESCRIPTION

Tributary 3000E between stations 0+00 to 31+00 is within the Murphy Creek Development. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Two small trails crossing of tributary 3000E near stations 13+80 and 15+90 will be submerged during the 100-year event. The existing 2-8' x 5' CBC crossing at approximately 3+10 is adequate to convey the 100-year event (this is the future alignment of South Gun Club Road).

Within the Murphy Creek Development the existing channel slope appears stable, existing drainage improvements were constructed at the time of development. The existing channel slope downstream of the pond at approximately station 15+00 is approximately 3.3% and will likely experience erosion in the future.

Downstream of approximately station 15+00 an improved channel is recommended. 4 drop structures are recommended in order to stabilize the channel slope at 0.5%.

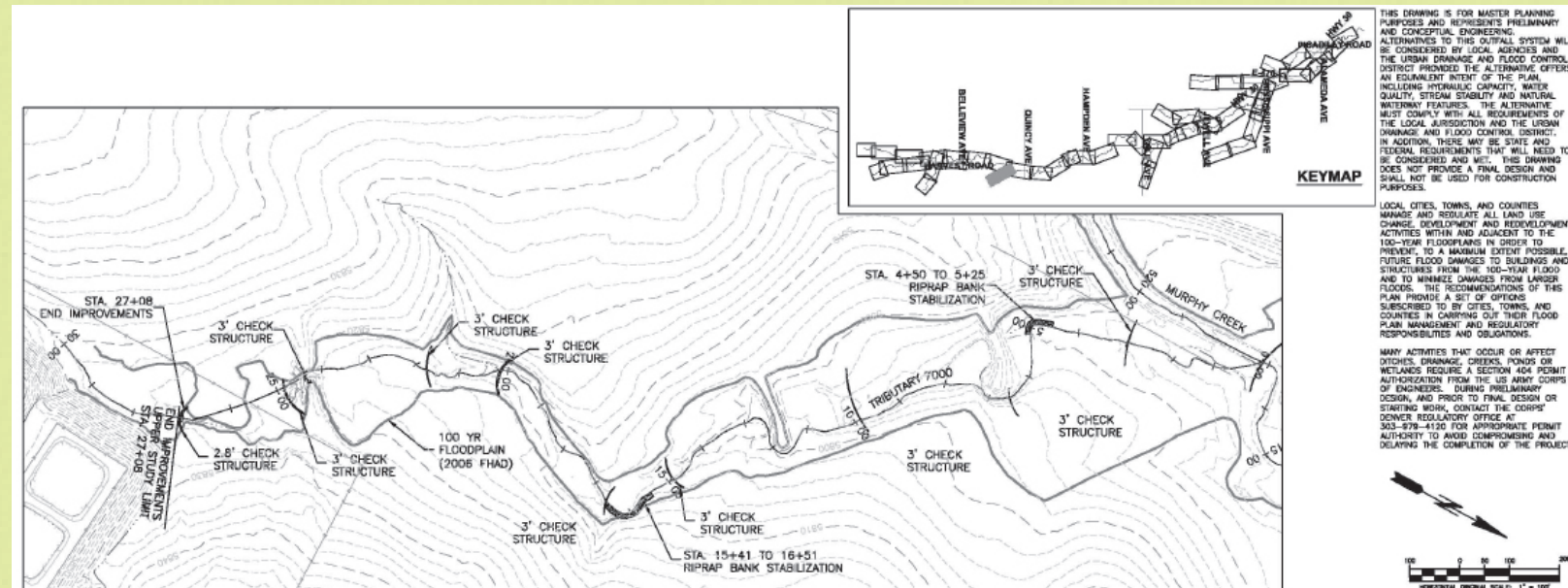
The existing channel slope is approximately 0.9% and will likely experience erosion in the future.

An improved channel is proposed within this reach. 3 drop structures are recommended in order to stabilize the channel slope at 0.5%.

PN XXXXXX

MURPHY CREEK PROJECT M.T7000.1 - TRIBUTARY 7000 CHECK STRUCTURES

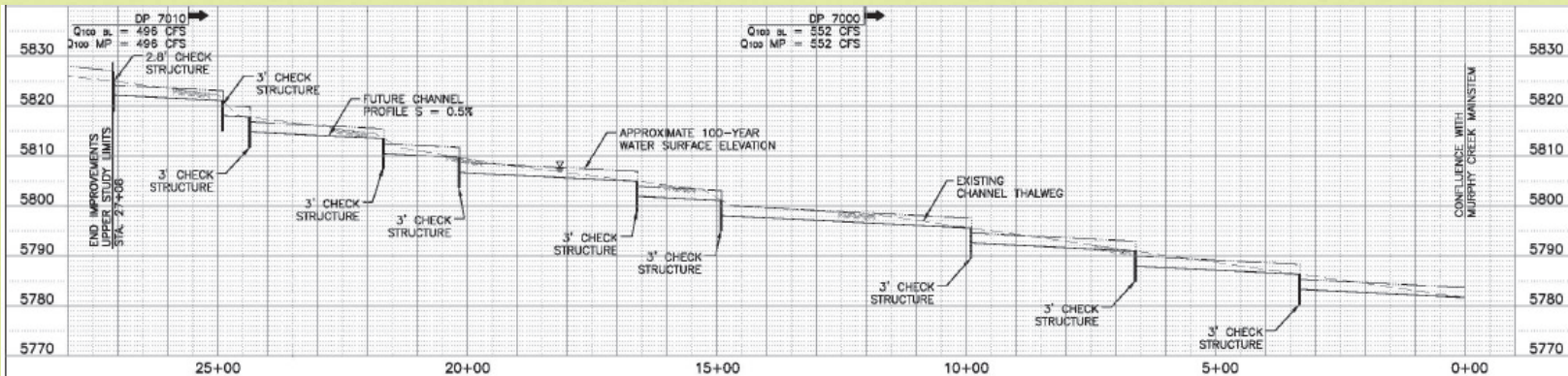
WEST OF ARAPAHOE PARK RACETRACK TO MURPHY CREEK



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING. ALTERNATIVES TO THIS DRAINAGE SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE USRA DRAINAGE AND FLOOD CONTROL DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL INTEREST FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE USRA DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAINS IN ORDER TO PREVENT TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOODS AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS SUBSCRIBED TO BY CITIES, TOWNS, AND COUNTIES IN CARRYING OUT THEIR FLOOD PLAN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR OR AFFECT DITCHES, DRAINAGE, CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE CORPS' OWNER REGULATORY OFFICE AT 303-578-4120 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID COMPROMISING AND DELAYING THE COMPLETION OF THE PROJECT.



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
Bank Stabilization	185	feet	\$140	\$25,900
Check Structures*	10	EA	\$13,333	\$133,330
Toe Protection	2708	LF	\$22	\$59,576
Maintenance Trail	2708	LF	\$20	\$54,160
ROW and Easements	500980	SF	\$2	\$1,001,960
Dewatering			5%	\$13,000
Mobilization			10%	\$25,000
Traffic Control				\$0
Stormwater Management/Erosion Control			10%	\$25,000
SUBTOTAL				\$1,312,026
Contingencies			25%	\$61,770.00
Engineering Design Services			15%	\$37,060.00
Legal and Administrative Services			5%	\$12,360
Construction Administration & Management			10%	\$24,710
TOTAL ESTIMATED COST				\$1,447,926
Annual Operation and Maintenance				
Debris Removal (3 times per year)	2708	LF	\$1	\$8,124
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$8,124

PROJECT DESCRIPTION

Murphy Creek between stations 0+00 to 27+08 is within Arapahoe County. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

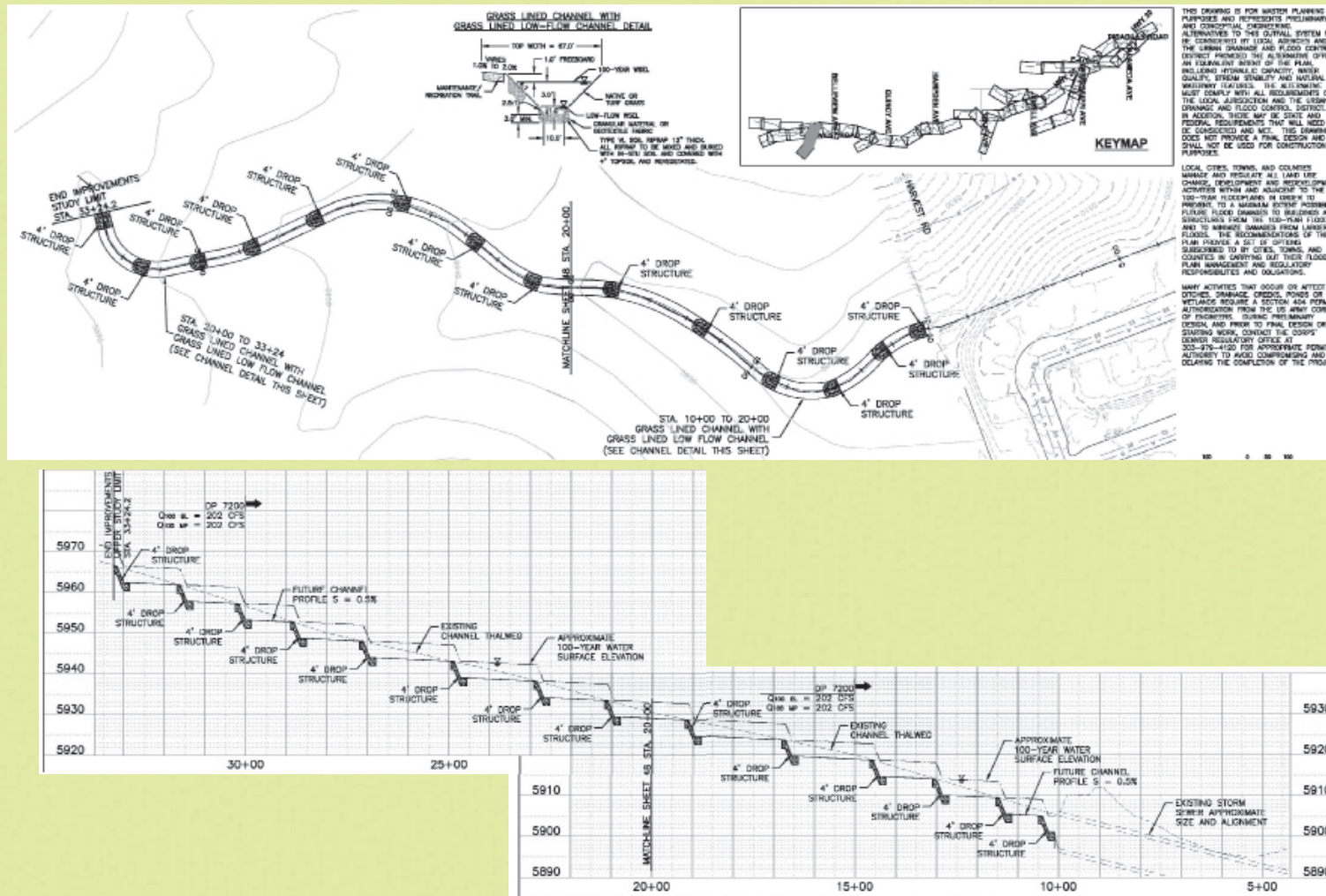
The existing channel slope is approximately 1.3% and will likely experience degradation in the future.

10 check structures are proposed within the reach to halt future erosion and allow the channel to stabilize at a predicted slope of 0.50%. Riprap bank stabilization is recommended, between stations 4+50 to 5+25 and 15+50 to 16+50.



MURPHY CREEK PROJECT M.T2.1 - TRIBUTARY 2 DROP STRUCTURES

EAST OF TOLLGATE CROSSING



Item	Quantity	Unit	Unit Cost	Total Cost
Channel Excavation	14,832	CY	\$30	\$444,960
Drop Structure	12	LS	\$70,000	\$840,000
Revegetation	3.40	AC	\$3,000	\$10,200
Toe Protection	4,708	LF	\$22	\$103,576
Maintenance Trail	3,708	LF	\$80	\$296,640
ROW and Easements	278,436	SF	\$2	\$556,872
Dewatering			2%	\$33,908
Mobilization			5%	\$84,769
Traffic Control				\$0
Utility Coordination/Relocation				\$0
Stormwater Management/Erosion Control			5%	\$84,769
SUBTOTAL				\$2,455,693
Contingencies			25%	\$474,705
Engineering Design Services			15%	\$284,823
Legal and Administrative Services			5%	\$94,941
Construction Administration & Management			10%	\$189,882
TOTAL ESTIMATED COST				\$3,500,045
Annual Operation and Maintenance				
Debris Removal	3708	LF	\$1.00	\$11,124
Mowing	3.4	AC	\$50	\$510
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$11,634

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

Tributary 2 between stations 20+00 to approximately 33+25 is within the City of Aurora, a school site is proposed within this reach. No floodplain delineation was performed for this reach.

The existing channel slope is approximately 2.3% and will likely experience degradation in the future.

An improved channel is recommended in this reach. 8 drop structures are proposed to allow the channel to stabilize at a predicted slope of 0.50%.

Tributary 2 between stations 0+00 to 20+00 is within the City of Aurora, a school site is proposed within this reach. No floodplain delineation was performed for this reach. An existing 48" storm sewer is located between stations 0+00 to 10+00.

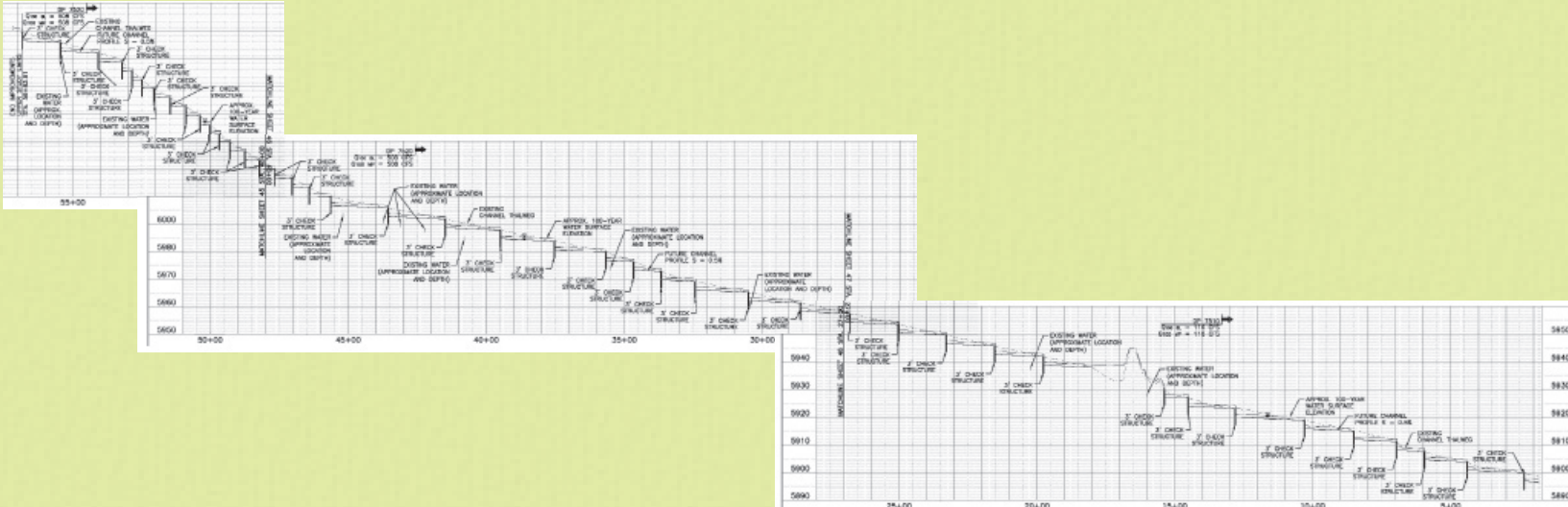
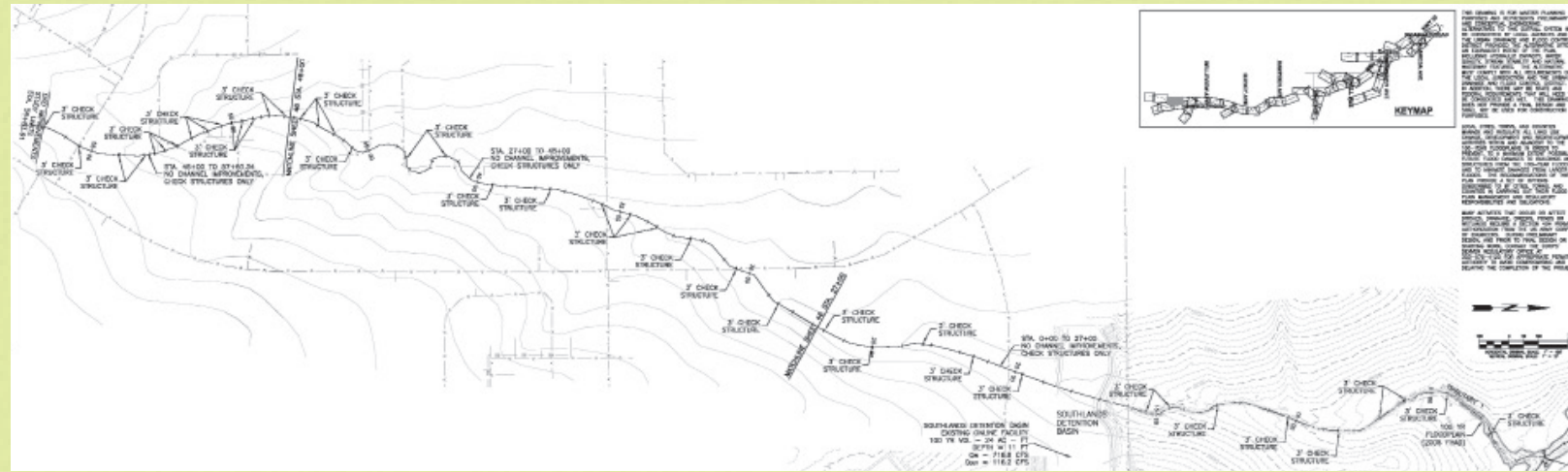
The existing channel slope is approximately 2.0% and will likely experience degradation in the future.

An improved channel is recommended in this reach. 6 drop structures are proposed to allow the channel to stabilize at a predicted slope of 0.50%.



MURPHY CREEK PROJECT M.T1.1 - TRIBUTARY 1 DROP STRUCTURES

SORREL RANCH AND TOLLGATE CROSSING DEVELOPMENTS



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
Check Structures*	43	EA	\$1,778	\$76,454
Toe Protection	5700	LF	\$22	\$125,400
Maintenance Trail	5700	LF	\$20	\$114,000
ROW and Easements	166500	SF	\$2	\$333,000
Dewatering			5%	\$16,000
Mobilization			10%	\$32,000
Traffic Control				\$0
Stormwater Management/Erosion Control			5%	\$32,000
SUBTOTAL				\$728,854
Contingencies			25%	\$78,970.00
Engineering Design Services			15%	\$47,380.00
Legal and Administrative Services			5%	\$15,800
Construction Administration & Management			10%	\$31,590
TOTAL ESTIMATED COST				\$902,594
Annual Operation and Maintenance				
Debris Removal (3 times per year)	5700	LF	\$1	\$17,100
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$17,100

* QUANTITY OF CHECK STRUCTURES IS THE TOTAL CHECK STRUCTURES FROM THE MURPHY CREEK OSP. THE CHECK STRUCTURE PRICE HAS BEEN AVERAGED OVER THE ENTIRE REACH.

PROJECT DESCRIPTION

Tributary 1 between stations 48+00 to 57+00 is within the City of Aurora. No floodplain delineation was performed for this reach. The existing channel slope is approximately 9.0% and will likely experience degradation in the future. 15 check structures are proposed within the reach to halt future erosion and allow the channel to stabilize at a predicted slope of 0.50%.

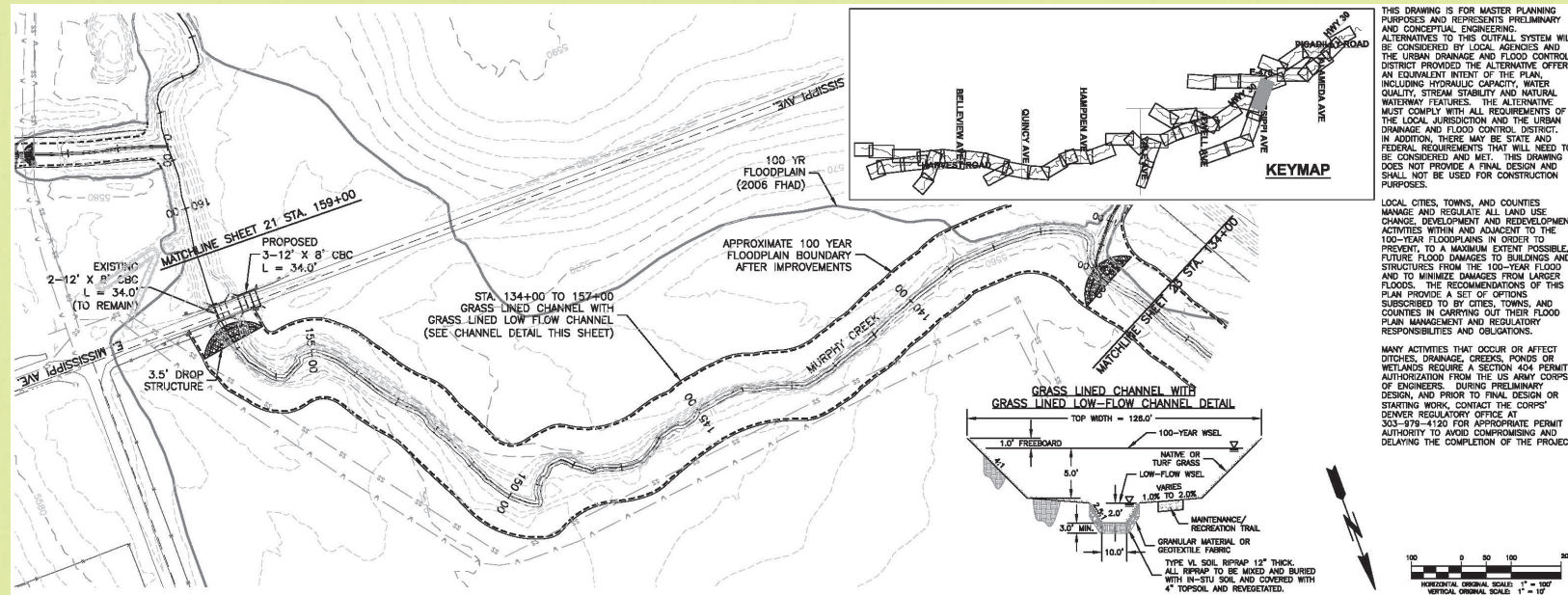
Tributary 1 between stations 27+00 to 48+00 is within the City of Aurora. No floodplain delineation was performed for this reach. The existing channel slope is approximately 3.5% and will likely experience degradation in the future. 14 check structures are proposed within the reach to halt future erosion and allow the channel to stabilize at a predicted slope of 0.50%.

Tributary 1 between stations 0+00 to 27+00 is within the City of Aurora and the Pomeroy Development. No floodplain delineation was performed for this reach. The existing Southlands Detention Basin is within this reach between approximately stations 16+60 to 18+60. The existing channel slope is approximately 2.3% and will likely experience degradation in the future. 14 check structures are proposed within the reach to halt future erosion and allow the channel to stabilize at a predicted slope of 0.50%.



MURPHY CREEK PROJECT M.R7.1 - REACH 7 BOX CULVERT #1 AND DROP STRUCTURE #1

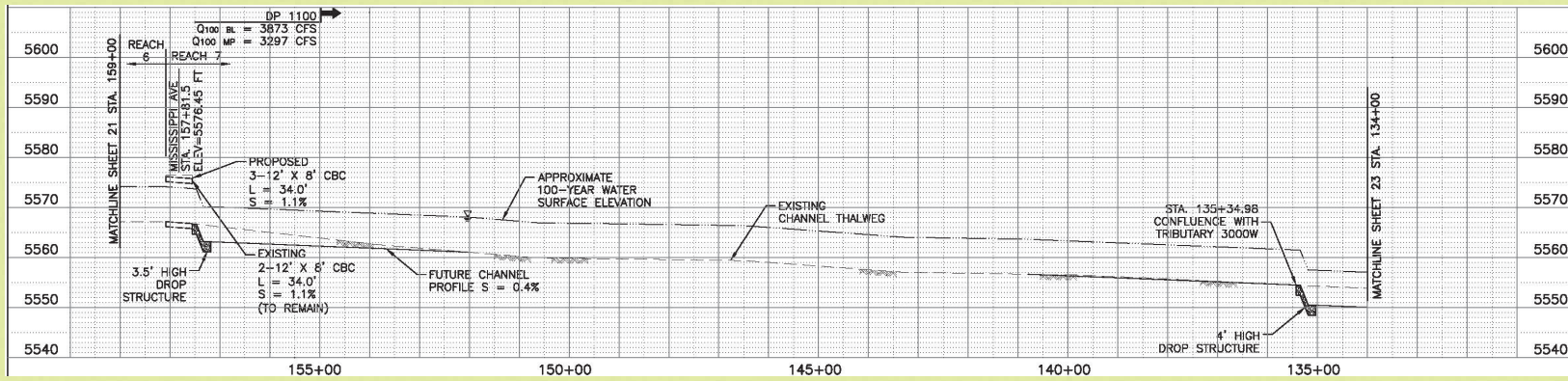
REACH 7 AT EAST MISSISSIPPI AVENUE



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING ALTERNATIVES TO THIS OUTFALL SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAIN IN ORDER TO PREVENT TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOOD AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS, SUBMITTED TO BY CITIES, TOWNS, AND COUNTIES IN CARRYING OUT THEIR FLOOD PLAN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR OR AFFECT DITCHES, DRAINAGE CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN, AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE CORPS DENVER REGULATORY OFFICE AT 303-979-4120 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID CONFLICTING AND DELAYING THE COMPLETION OF THE PROJECT.



MISSISSIPPI AVENUE CONCRETE BOX CULVERT



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
Channel Excavation	17,570	CY	\$30	\$527,100
Drop Structure	1	LS	\$225,000	\$225,000
Revegetation	2.25	AC	\$3,000	\$6,750
Toe Protection	1,700	LF	\$22	\$37,400
12'x8' CBC	102	LF	\$2,000	\$204,000
Headwall/Wingwall	2	EA	\$20,000	\$40,000
Roadway Rehabilitation	220	SY	\$100	\$22,000
Maintenance Trail	850	LF	\$80	\$68,000
ROW and Easements	107,100	SF	\$2	\$214,200
Dewatering			2%	\$22,605
Mobilization			5%	\$56,513
Traffic Control				\$20,000
Utility Coordination/Relocation			5%	\$56,513
Stormwater Management/Erosion Control			5%	\$56,513
SUBTOTAL				\$1,556,593
Contingencies			25%	\$335,598
Engineering Design Services			15%	\$201,359
Legal and Administrative Services			5%	\$67,120
Construction Administration & Management			10%	\$134,239
TOTAL ESTIMATED COST				\$2,294,908
Annual Operation and Maintenance				
Debris Removal	850	LF	\$1.00	\$2,550
Mowing	2.25	AC	\$50	\$338
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$2,888

PROJECT DESCRIPTION

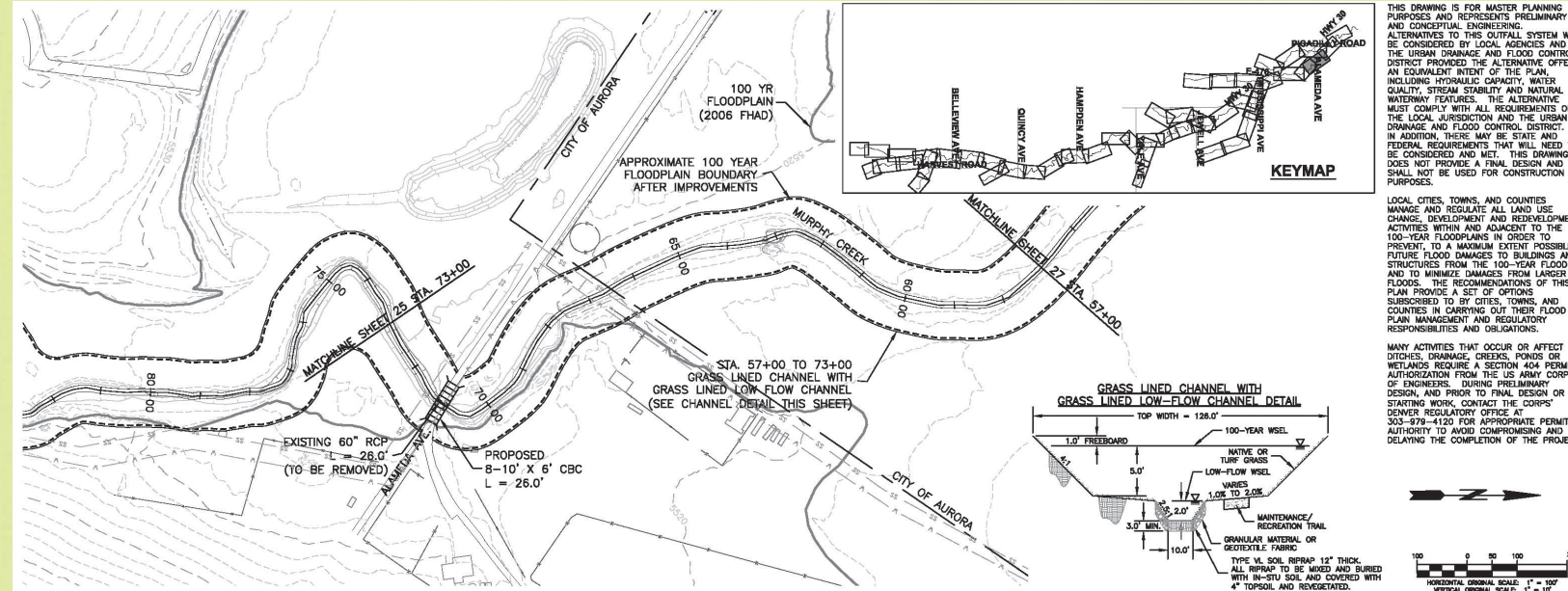
Murphy Creek between stations 134+00 to 159+00 is within the Murphy Creek Development in the upper segment and downstream of Mississippi Avenue, in the lower segment of the drainageway, is conveyed through the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Tributary 3000W meets with Murphy Creek at station 135+45. The existing 2-12' x 8' CBC crossing at Mississippi Avenue is overtopped during the 100-year event.

The existing channel slope is approximately 0.5% in a few locations and will experience erosion in the future.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel begins downstream of Mississippi Avenue and there are 2 drop structures proposed in this reach. In addition to the existing 2-12' x 8' CBC under Mississippi Avenue an additional 3-12' x 8' CBC is proposed to convey the 100-year event.

MURPHY CREEK PROJECT M.R7.2 - REACH 7 BOX CULVERT #2

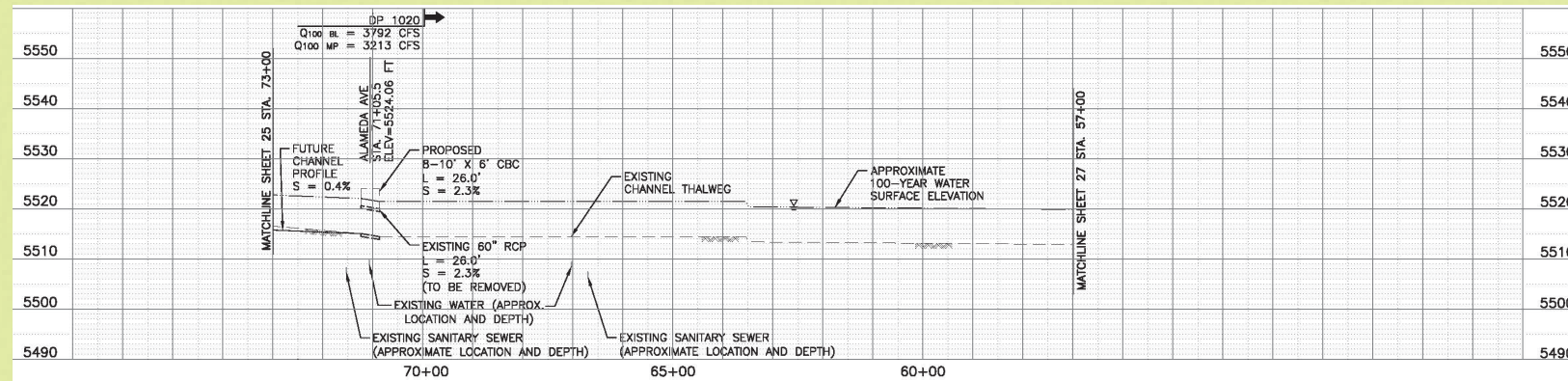
REACH 7 AT EAST ALAMEDA AVENUE



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING. ALTERNATIVES TO THIS OUTFITTING SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAINS IN ORDER TO PREVENT, TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOOD AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS SUBSCRIBED TO BY CITIES, TOWNS, AND COUNTIES IN CARRYING OUT THEIR FLOOD PLAN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR OR AFFECT DITCHES, DRAINAGE CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN, AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE COLORADO DENVER REGULATORY OFFICE AT 333-979-4120 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID COMPROMISING AND DELAYING THE COMPLETION OF THE PROJECT.



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
Channel Excavation	29,966	CY	\$30	\$898,980
10'x6' CBC	208	LF	\$1,300	\$270,400
Headwall/Wingwall	2	EA	\$20,000	\$40,000
Roadway Rehabilitation	250	SY	\$100	\$25,000
Remove 60" RCP	26	LF	\$50	\$1,300
Revegetation	4	AC	\$3,000	\$10,875
Toe Protection	2,900	LF	\$22	\$63,800
Maintenance Trail	1,450	LF	\$80	\$116,000
ROW and Easements	182,700	SF	\$2	\$365,400
Dewatering			2%	\$28,527
Mobilization			5%	\$71,318
Traffic Control				\$20,000
Utility Coordination/Relocation			5%	\$71,318
Stormwater Management/Erosion Control			5%	\$71,318
SUBTOTAL				\$2,054,235
Contingencies			25%	\$422,209
Engineering Design Services			15%	\$253,325
Legal and Administrative Services			5%	\$84,442
Construction Administration & Management			10%	\$168,884
TOTAL ESTIMATED COST				\$2,983,095
Annual Operation and Maintenance				
Debris Removal	1450	LF	\$1.00	\$4,350
Mowing	3.625	AC	\$50	\$544
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$4,894

PROJECT DESCRIPTION

Murphy Creek between stations 57+00 to 73+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 60' RCP pipe crossing at Alameda Avenue is overtopped during the 100-year event.

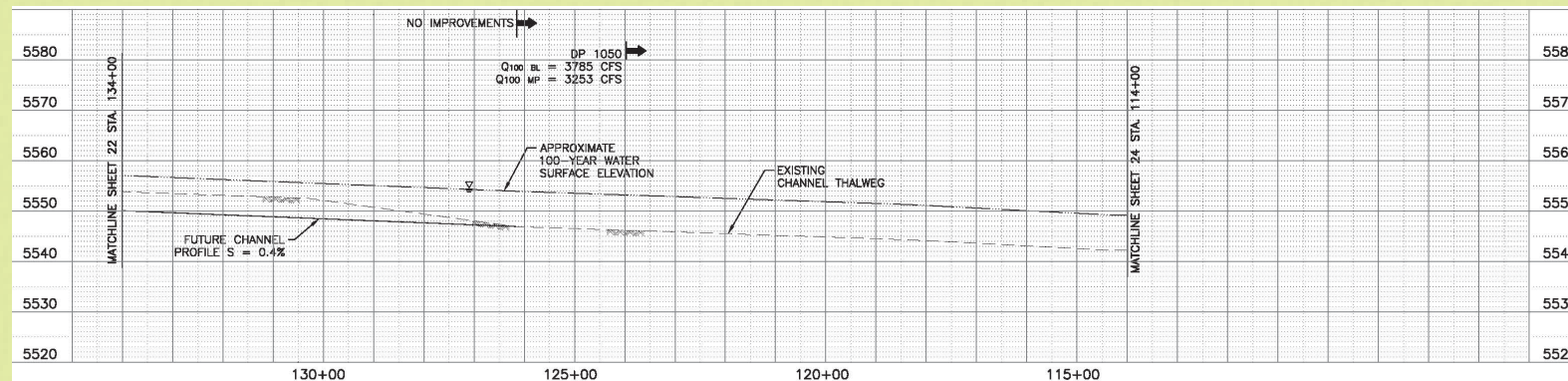
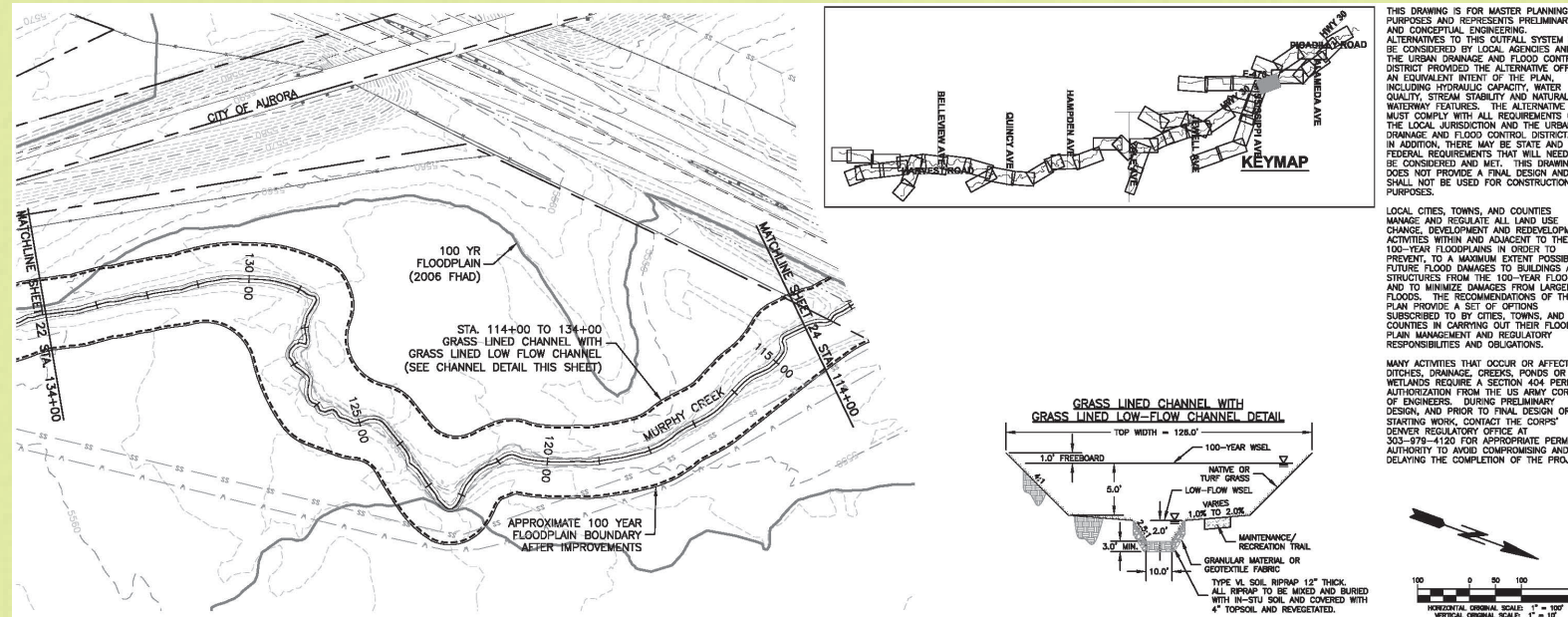
The existing channel slope is approximately 0.08% and appears stable.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel is shown within the entire reach. No drop structures are necessary within this reach since the stream is very close to its stable slope of 0.4%. The existing 60' RCP at Alameda Avenue is proposed to be replaced by 8-10' x 6' CBC to convey the 100-year event.



MURPHY CREEK PROJECT M.R7.3 - REACH 7 CHANNEL IMPROVEMENTS (114+00-135+00)

REACH 7 EAST OF INTERSECTION OF 6TH AVENUE AND E-470



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
Channel Excavation	41,333	CY	\$30	\$1,239,990
Revegetation	5	AC	\$3,000	\$15,000
Toe Protection	4,200	LF	\$22	\$92,400
Maintenance Trail	2,100	LF	\$80	\$168,000
ROW and Easements	264,600	SF	\$2	\$529,200
Dewatering			2%	\$30,308
Mobilization			5%	\$75,770
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$75,770
Stormwater Management/Erosion Control			5%	\$75,770
SUBTOTAL				\$2,302,206
Contingencies			25%	\$443,252
Engineering Design Services			15%	\$265,951
Legal and Administrative Services			5%	\$88,650
Construction Administration & Management			10%	\$177,301
TOTAL ESTIMATED COST				\$3,277,360
Annual Operation and Maintenance				
Debris Removal	2100	LF	\$1.00	\$6,300
Mowing	5	AC	\$50	\$750
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$7,050

PROJECT DESCRIPTION

Murphy Creek between stations 114+00 to 134+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

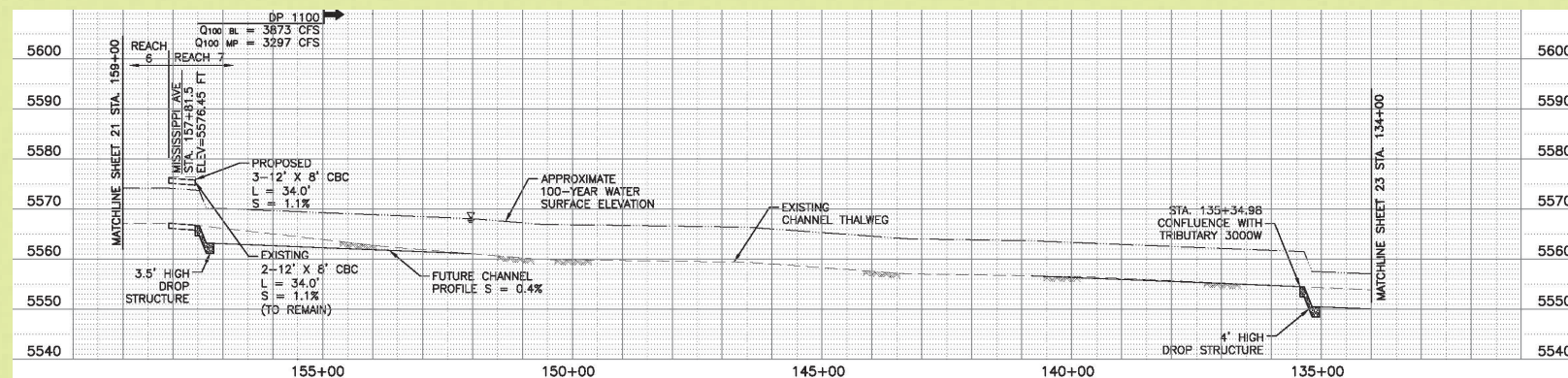
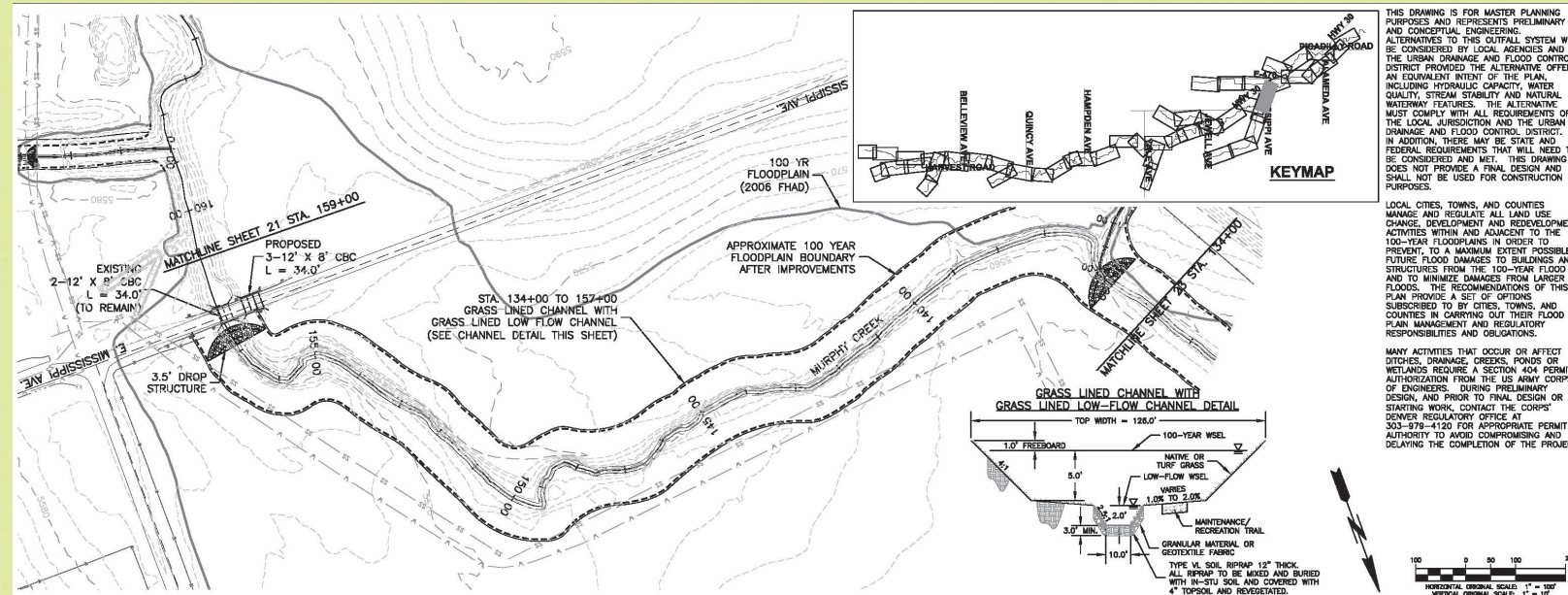
The existing channel slope is approximately 0.6% in a few locations and will experience erosion in the future.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, an improved channel is proposed for this reach.



MURPHY CREEK PROJECT M.R7.4 - DROP STRUCTURE #2

REACH 7 NORTH OF E. MISSISSIPPI AVENUE



MISSISSIPPI AVENUE CONCRETE BOX CULVERT



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
Channel Excavation	29,963	CY	\$30	\$898,890
Drop Structure	1	LS	\$225,000	\$225,000
Revegetation	3.75	AC	\$3,000	\$11,250
Toe Protection	2,900	LF	\$22	\$63,800
Maintenance Trail	1,450	LF	\$80	\$116,000
ROW and Easements	207,900	SF	\$2	\$415,800
Dewatering			2%	\$26,299
Mobilization			5%	\$65,747
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$65,747
Stormwater Management/Erosion Control			5%	\$65,747
SUBTOTAL				\$1,954,280
Contingencies			25%	\$384,620
Engineering Design Services			15%	\$230,772
Legal and Administrative Services			5%	\$76,924
Construction Administration & Management			10%	\$153,848
TOTAL ESTIMATED COST				\$2,800,444
Annual Operation and Maintenance				
Debris Removal	850	LF	\$1.00	\$2,550
Mowing	3.75	AC	\$50	\$563
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$3,113

PROJECT DESCRIPTION

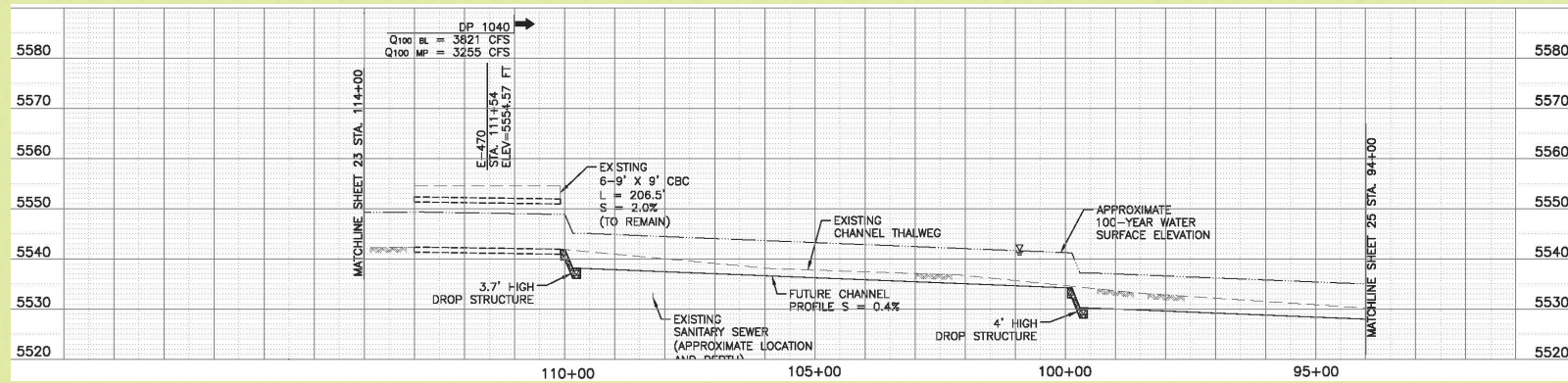
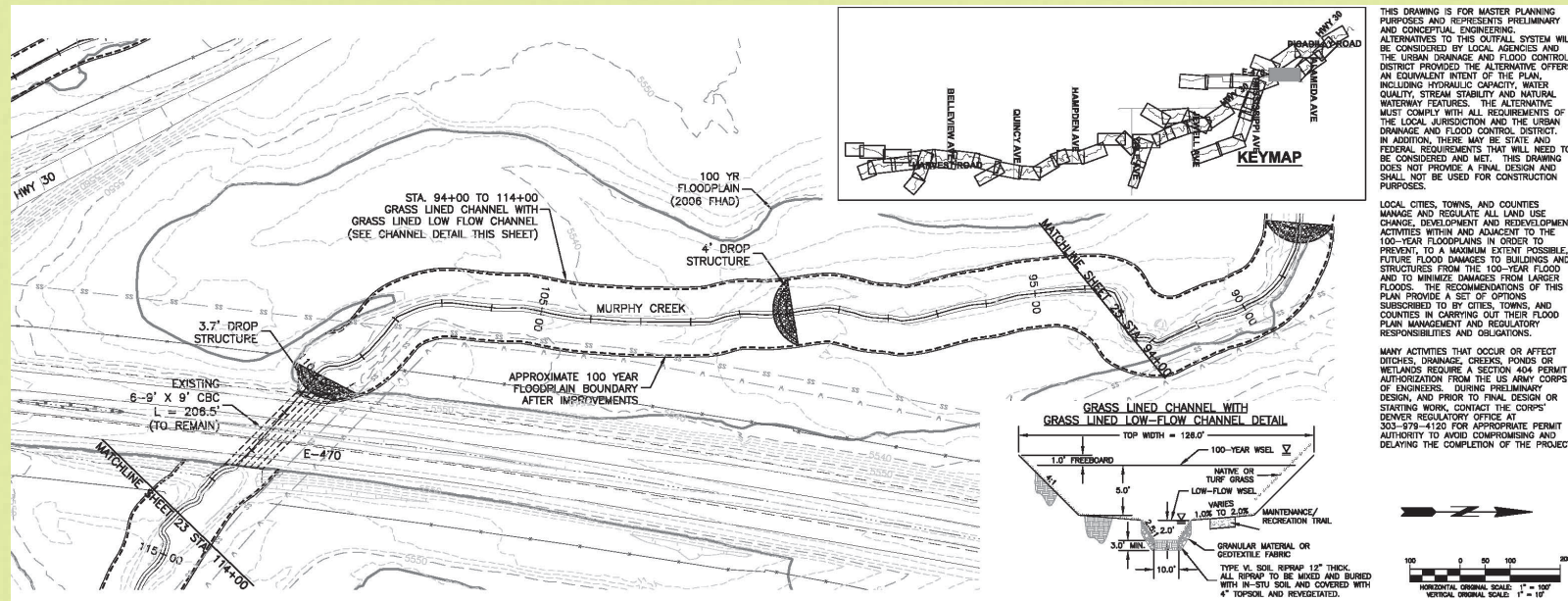
Murphy Creek between stations 134+00 to 159+00 is within the Murphy Creek Development in the upper segment and downstream of Mississippi Avenue, in the lower segment of the drainageway, is conveyed through the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Tributary 3000W meets with Murphy Creek at station 135+45. The existing 2-12' x 8' CBC crossing at Mississippi Avenue is overtopped during the 100-year event.

The existing channel slope is approximately 0.5% in a few locations and will experience erosion in the future.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel begins downstream of Mississippi Avenue and there are 2 drop structures proposed in this reach. In addition to the existing 2-12' x 8' CBC under Mississippi Avenue an additional 3-12' x 8' CBC is proposed to convey the 100-year event.

MURPHY CREEK PROJECT M.R7.5 - DROP STRUCTURE #3 & #4

REACH 7 WEST OF E-470



Item	Quantity	Unit	Unit Cost	Total Cost
Channel Excavation	49,600	CY	\$30	\$1,488,000
Drop Structure	2	LS	\$225,000	\$450,000
Revegetation	6.00	AC	\$3,000	\$18,000
Toe Protection	4,800	LF	\$22	\$105,600
Maintenance Trail	2,400	LF	\$80	\$192,000
ROW and Easements	302,400	SF	\$2	\$604,800
Dewatering			2%	\$45,072
Mobilization			5%	\$112,680
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$0
Stormwater Management/Erosion Control			5%	\$112,680
SUBTOTAL				\$3,128,832
Contingencies			25%	\$631,008
Engineering Design Services			15%	\$378,605
Legal and Administrative Services			5%	\$126,202
Construction Administration & Management			10%	\$252,403
TOTAL ESTIMATED COST				\$4,517,050
Annual Operation and Maintenance				
Debris Removal	2400	LF	\$1.00	\$7,200
Mowing	6	AC	\$50	\$900
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$8,100



MURPHY CREEK AT E-470

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

Murphy Creek between stations 94+00 to 114+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 6-9' x 9' CBC crossing at E-470 is adequate to convey the 100-year event.

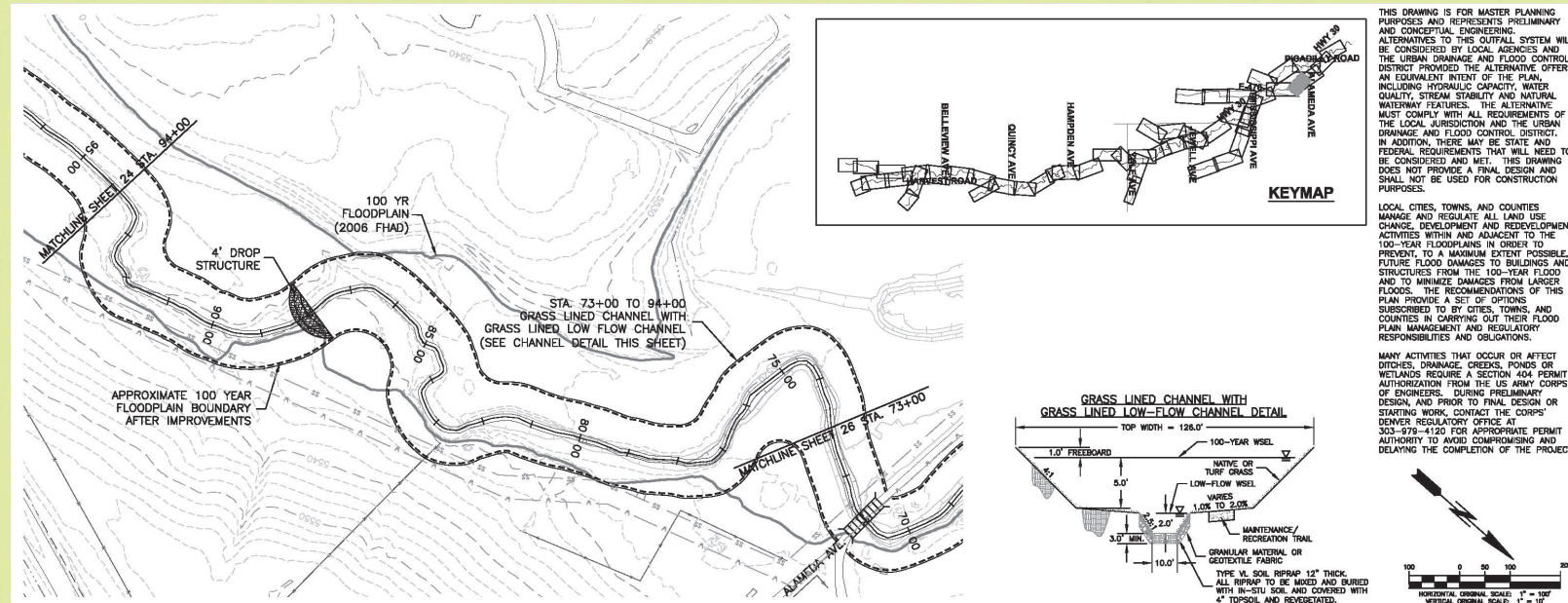
The existing channel slope is approximately 0.5% and will likely experience erosion in the future.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel is shown upstream of E-470 and extends downstream of the E-470 CBC crossing. There are 2 drop structures proposed in this reach.



MURPHY CREEK PROJECT M.R7.6 - DROP STRUCTURE #5

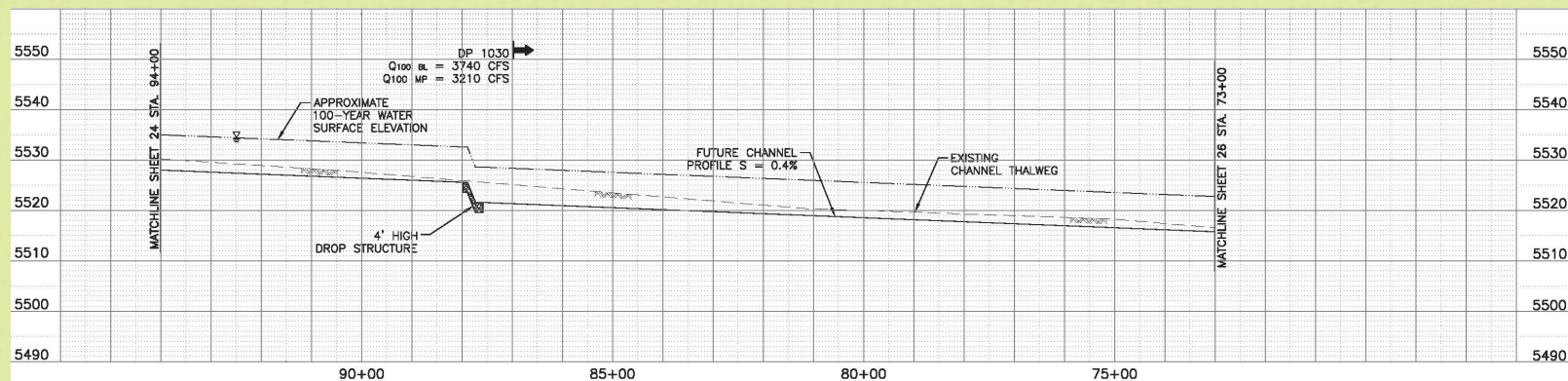
REACH 7 AT



THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING ALTERNATIVES TO THE OUTFALL SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAIN IN ORDER TO PREVENT, TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOOD AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS SUBMITTED TO BY CITIES, TOWNS, AND COUNTIES IN CARRYING OUT THEIR FLOOD PLAN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR OR AFFECT DITCHES, DRAINAGE CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE CORPS' DENVER REGULATORY OFFICE AT 303-979-4120 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID COMPROMISING AND DELAYING THE COMPLETION OF THE PROJECT.



Item	Quantity	Unit	Unit Cost	Total Cost
Channel Excavation	34,100	CY	\$30	\$1,023,000
Drop Structure	1	LS	\$225,000	\$225,000
Revegetation	4.00	AC	\$3,000	\$12,000
Toe Protection	3,300	LF	\$22	\$72,600
Maintenance Trail	1,650	LF	\$80	\$132,000
ROW and Easements	207,900	SF	\$2	\$415,800
Dewatering			2%	\$29,292
Mobilization			5%	\$73,230
Traffic Control				\$0
Utility Coordination/Relocation				\$0
Stormwater Management/Erosion Control			5%	\$73,230
SUBTOTAL				\$2,056,152
Contingencies			25%	\$410,088
Engineering Design Services			15%	\$246,053
Legal and Administrative Services			5%	\$82,018
Construction Administration & Management			10%	\$164,035
TOTAL ESTIMATED COST				\$2,958,346
Annual Operation and Maintenance				
Debris Removal	1650	LF	\$1.00	\$4,950
Mowing	4	AC	\$50	\$600
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$5,550

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

Murphy Creek between stations 73+00 to 94+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary.

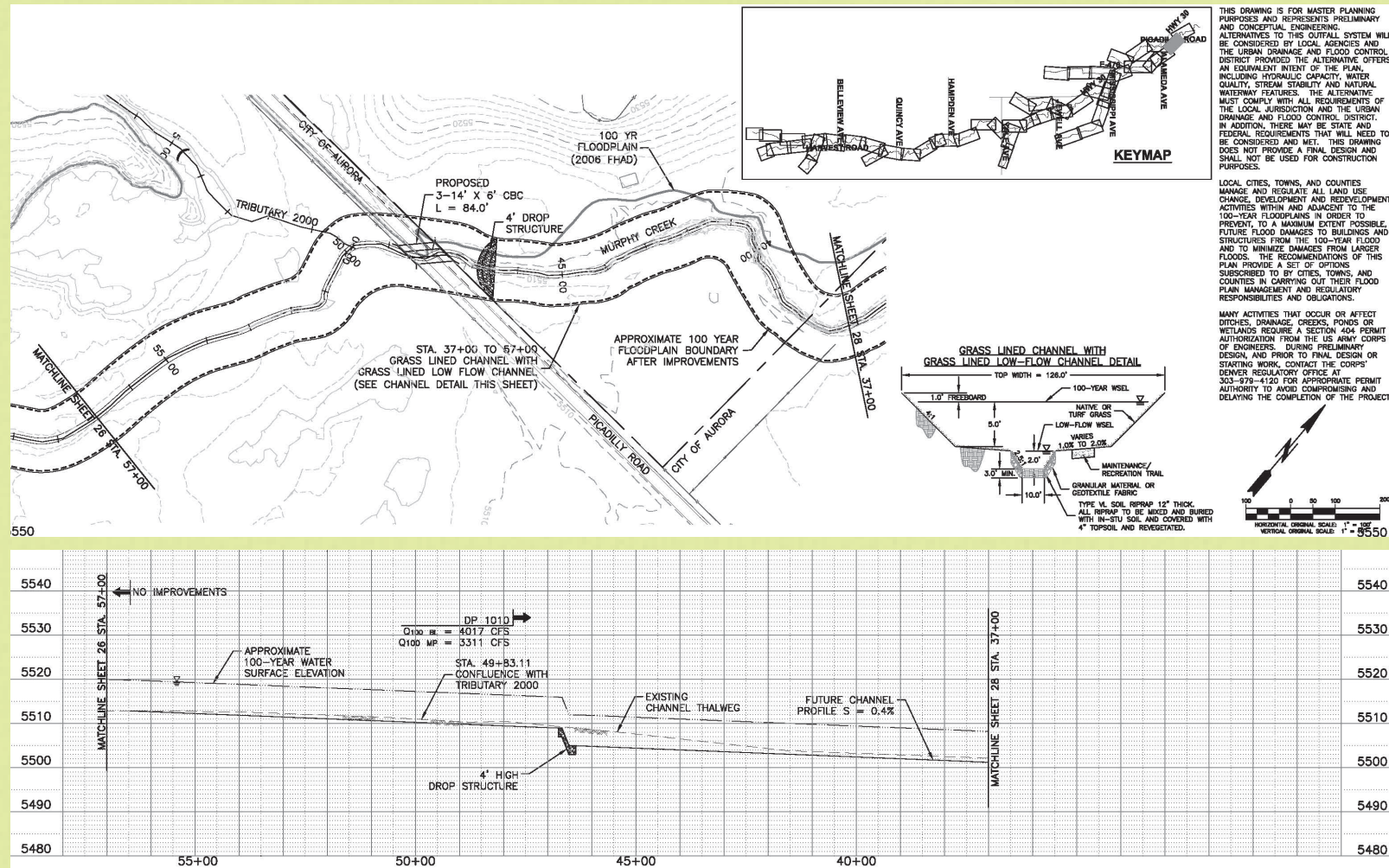
The existing channel slope is approximately 0.5% and will likely experience erosion in the future.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel is shown within the entire reach. 1 drop structure is proposed in this reach.



MURPHY CREEK PROJECT M.R7.7 - DROP STRUCTURE #6

REACH 7 AT PICADILLY ROAD



Item	Quantity	Unit	Unit Cost	Total Cost
Channel Excavation	78,533	CY	\$30	\$2,355,990
Drop Structure	1	LS	\$225,000	\$225,000
14'x6' CBC	252	LF	\$2,000	\$504,000
Headwall/Wingwall	2	EA	\$20,000	\$40,000
Roadway Rehabilitation	240	SY	\$100	\$24,000
Revegetation	9	AC	\$3,000	\$27,000
Toe Protection	5,600	LF	\$22	\$123,200
Maintenance Trail	3,800	LF	\$80	\$304,000
ROW and Easements	478,800	SF	\$2	\$957,600
Dewatering			2%	\$72,064
Mobilization			5%	\$180,160
Traffic Control				\$20,000
Utility Coordination/Relocation			2%	\$72,064
Stormwater Management/Erosion Control			2%	\$72,064
SUBTOTAL				\$4,977,141
Contingencies			25%	\$1,004,885
Engineering Design Services			15%	\$602,931
Legal and Administrative Services			5%	\$200,977
Construction Administration & Management			10%	\$401,954
TOTAL ESTIMATED COST				\$7,187,888
Annual Operation and Maintenance				
Debris Removal	3800	LF	\$1.00	\$11,400
Mowing	9	AC	\$50	\$1,350
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$12,750



MURPHY CREEK AT PICADILLY 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

PROJECT DESCRIPTION

Murphy Creek between stations 37+00 to 57+00 is within the City of Aurora. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Tributary 2000 meets Murphy Creek at approximately station 49+90.

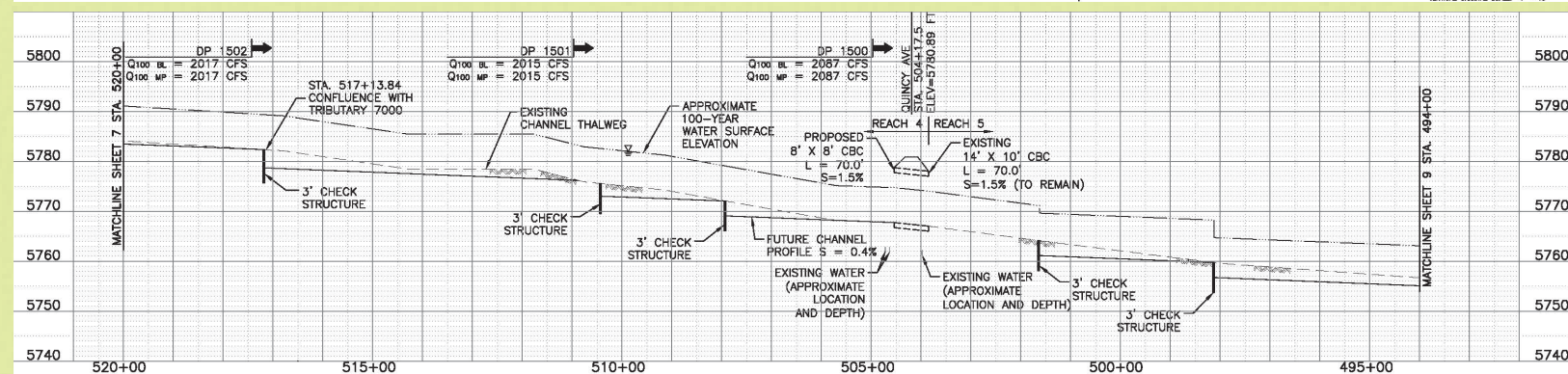
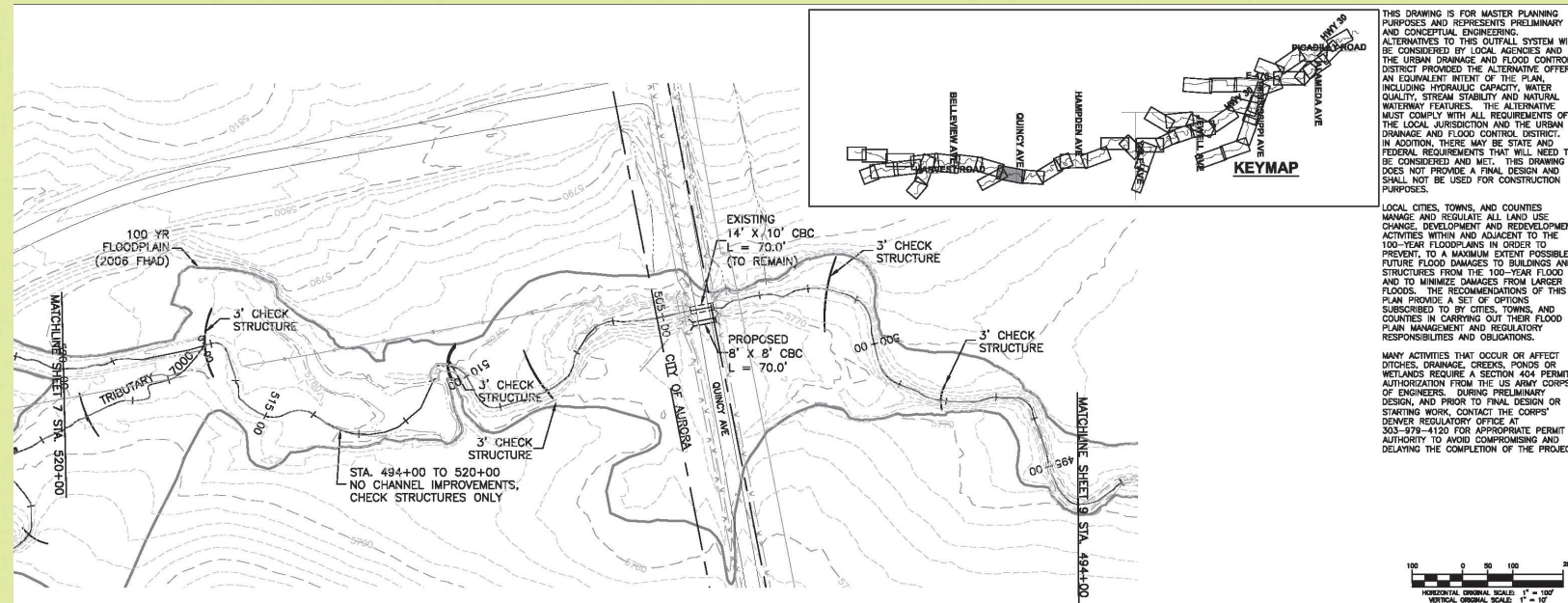
The existing channel slope is approximately 0.9% and appears stable.

Since the floodplain is very wide in the lower portion of the watershed, it was preferred to improve the channel. As shown on the plan sheet on the opposite page, the improved channel is shown within the entire reach. 1 drop structure is proposed in this reach. It is proposed that Picadilly Road be raised in order to construct 3-14'x 6' CBC.



MURPHY CREEK PROJECT M.R4.1 - REACH 4 CULVERT

REACH 4 AT



QUINCY AVENUE CULVERT.



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
8'x8' CBC	70	LF	\$1,300	\$91,000
Headwall/Wingwall	2	EA	\$20,000	\$40,000
Roadway Rehabilitation	250	SY	\$100	\$25,000
Dewatering				\$5,000
Mobilization			15%	\$3,750
Road Rehabilitation				\$40,000
Traffic Control			10%	\$2,500
Utility Coordination/Relocation			10%	\$2,500
Stormwater Management/Erosion Control			10%	\$2,500
SUBTOTAL				\$81,250
Contingencies			25%	\$20,313
Engineering Design Services			15%	\$12,188
Legal and Administrative Services			5%	\$4,063
Construction Administration & Management			10%	\$8,125
TOTAL ESTIMATED COST				\$125,938
Annual Operation and Maintenance				
N/A	0	AC	\$600	\$0
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$0

PROJECT DESCRIPTION

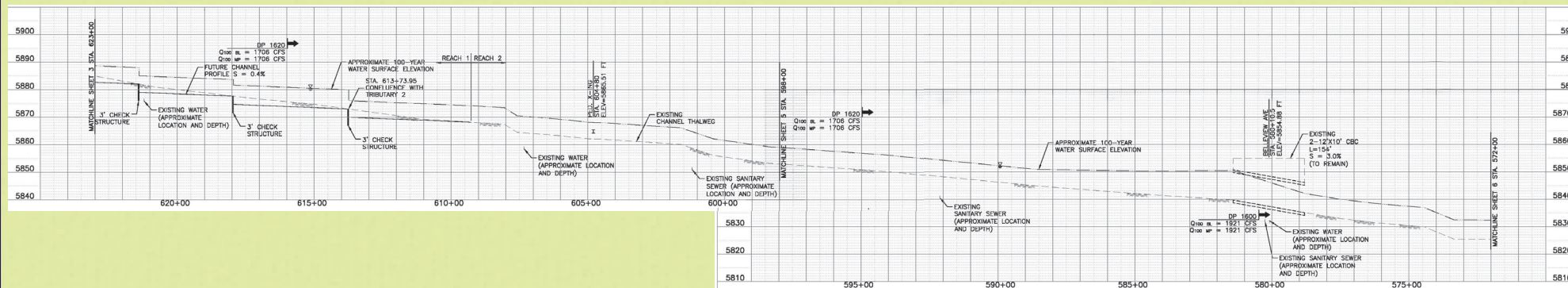
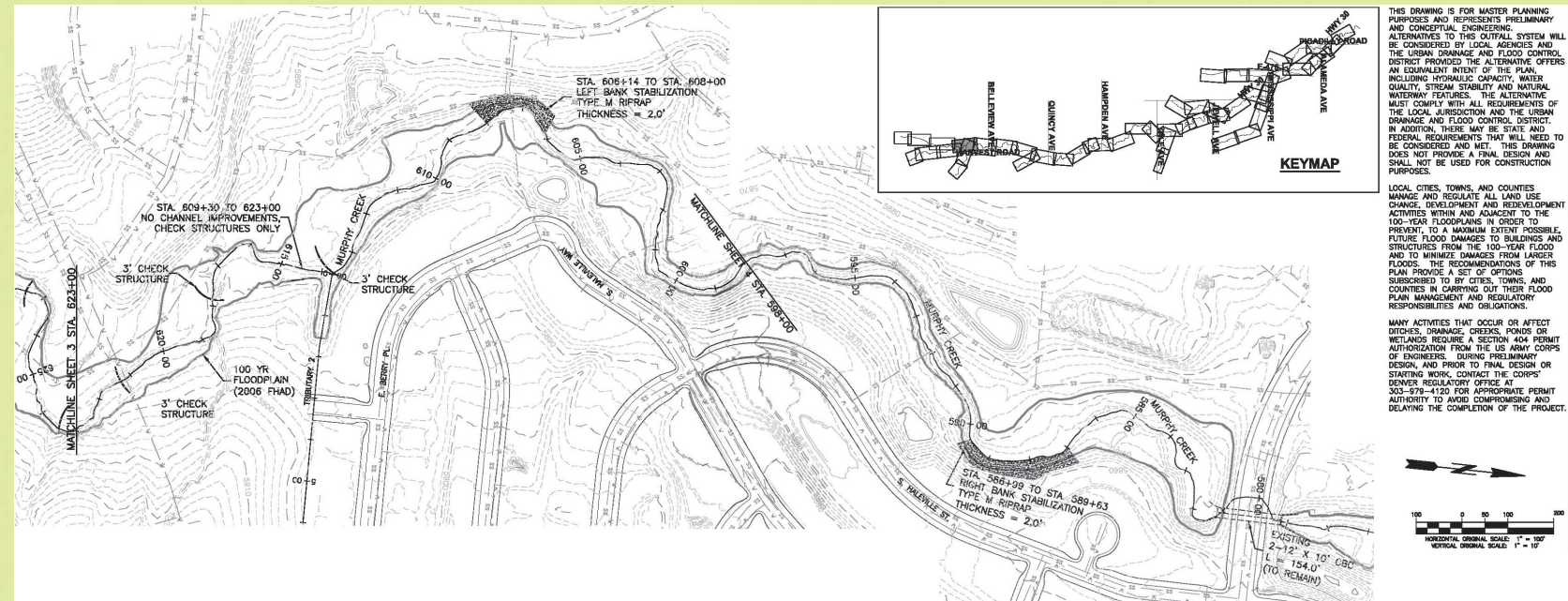
Murphy Creek, upstream of Quincy Avenue is within Arapahoe County, downstream of Quincy Avenue, which is within the City of Aurora, the channel is within the Denver Arapahoe Disposal Site. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 14' x 10' CBC crossing at Quincy Avenue is overtopped during the 100-year event.

The existing channel slope within this reach is approximately 1.0% and will likely experience erosion in the future.

5 check structures are proposed within the reach and will halt future erosion allowing the channel to stabilize at a predicted slope of 0.40%. In addition to the existing 14' x 10' CBC under Quincy Avenue an additional 8' x 8' CBC is proposed to convey the 100-year event.

MURPHY CREEK PROJECT M.R2.1 - REACH 2 BANK STABILIZATION

REACH 2 WITHIN TOLLGATE DEVELOPMENT



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
Bank Stabilization	500	feet	\$215	\$107,500
Dewatering				\$5,000
Mobilization			15%	\$10,750
Traffic Control				\$0
Utility Coordination/Relocation			5%	\$5,375
Stormwater Management/Erosion Control			15%	\$10,750
SUBTOTAL				\$139,375
Contingencies			25%	\$34,844
Engineering Design Services			15%	\$20,906
Legal and Administrative Services			5%	\$6,969
Construction Administration & Management			10%	\$13,938
TOTAL ESTIMATED COST				\$216,031
Annual Operation and Maintenance				
N/A	-	AC	-	N/A
TOTAL ANNUAL OPERATION & MAINTENANCE COST				\$0

PROJECT DESCRIPTION

Murphy Creek between stations 598+00 to 623+00 is within the Pomeroy Development in the upper segment and Tollgate Development in the lower segment. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. Tributary 2 meets with Murphy Creek at approximately station 588+00.

Upstream of the Tollgate Development, the existing channel slope is approximately 0.7% and will likely experience erosion in the future. Within the Tollgate Development the existing channel slope appears stable, existing drainage improvements were constructed at the time of development.

3 check structures are proposed within the reach, upstream of the Tollgate Development, to halt future erosion allowing the channel to stabilize at a predicted slope of 0.40%. Within the Tollgate Development restorative maintenance is recommended, bank stabilization is shown between stations 606+14 to 608+00.

Murphy Creek between stations 572+00 to 598+00 is within the Tollgate Development. According to the 2006 FHAD Study, there are no structures within the 100-year floodplain boundary. The existing 2-12'x 10' CBC crossing at Bellevue Avenue is adequate to convey the 100-year event.

Within the Tollgate Development the existing channel slope appears stable, existing drainage improvements were constructed at the time of development. The existing channel slope is approximately 0.6%.

Within the Tollgate Development restorative maintenance is recommended, with bank stabilization shown between stations 586+99 to 589+63.

