

CHERRY CREEK BASIN WATER QUALITY AUTHORITY
TABLE 1 - SUMMARY OF POTENTIAL POLLUTANT REDUCTION FACILITIES
REVISIONS FOR 2009 CIP

Date prepared: December 29, 2009

Color Code: Blue

Project Completed

Green: Planned for construction in 2009

Proj. Designation	Project Title	Status	Description	Cost Estimate (1000\$)							Note	
				Capital	Land Acquisition	Water Augment ⁸	Capital Replace ⁹	O&M	Annual Cost @ 7%	CCBWQA Share (%)		
(1)	(2)	(3)	(4)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(22)	
CCR-1	Reservoir Destratification (mixing)	Officially started April 2008	Use inlake mixing to minimize algae blooms, therefore chlorophyll a	\$ 968				28	\$ 103	100%	1	
CCB-1	CCSP Wetlands	Prelim design prepared in 2003 (Ref 1, 8)	Restore 60 Acres of wetlands in multiple phases	\$ 1,928	\$ -	\$ -	\$ -	19	\$ 168	100%	18	
CCB-5.1	Cherry Creek Sediment Pond at Arapahoe Road	Feasibility study completed December 2006 (Ref 9)	Design and construct sediment pond	\$ 2,355	\$ 50	\$ -	\$ -	\$ 90	\$ 275	18%	1, 19	
CCB-5.2	Arapahoe/Douglas County Line Stream Stabilization	Project completed w/o Authority participation	Local stream stabilization (L = 2700 ft)	\$ 1,062	\$ -	\$ -	\$ -	1	\$ 83	0%	2	
CCB-5.3	Cottonwood Bridge Stream Stabilization	Project completed by Parker w/o Authority participation	Local stream stabilization (L = 2700 ft)	\$ 436	\$ -	\$ -	\$ -	2	\$ 36	0%	2	
CCB-5.4	Cherry Creek Stream Stabilization at Main street (Parker)	Conceptual design by UDFCD identified priority 1	Local stream stabilization (L = 2820 ft)	\$ 1,776	\$ -	\$ -	\$ -	1	\$ 138	21%	2	
CCB-5.5	Stroh Road Stream Stabilization	Conceptual design by UDFCD identified priority 1	Local stream stabilization (L = 3000 ft)	\$ 218	\$ -	\$ -	\$ -	1	\$ 18	25%	2	
CCB-5.6	Cherry Creek Stream Stabilization at Lincoln Avenue (Parker)	Conceptual design by UDFCD identified priority 3	Local stream stabilization (L = 2350 ft)	\$ 1,447	\$ -	\$ -	\$ -	1	\$ 112	21%	2	
CCB-5.7	Cherry Creek Stream Stabilization at Eco-Park (Arap County)	Conceptual design by UDFCD identified priority 3	Local stream stabilization (L = 1150 ft)	\$ 532	\$ -	\$ -	\$ -	1	\$ 42	29%	2	
CCB-5.8	Cherry Creek Stream Stabilization U/S Arapahoe Rd (Centennial)	Partially completed with Corner Star development	Local stream stabilization (L = 1675 ft)	\$ 518	\$ -	\$ -	\$ -	1	\$ 41	25%	2	
CCB-5.9	Cherry Creek Stream Stabilization at 12-Mile Park (CCSP)	Conceptual design scheduled for 2009	Local stream stabilization (L = 1100 ft)	\$ 300	\$ -	\$ -	\$ -	1	\$ 24	100%	2, 20	
CCB-5.10	Cherry Creek Stream Stabilization at Vermillion Creek.	Conceptual design by UDFCD identified priority 3	Local stream stabilization (L = 2880 ft)	\$ 1,323	\$ -	\$ -	\$ -	2	\$ 104	28%	2	
CCB-6.1	Piney Creek Stream Stabilization - Project 1	Authority funded \$118,000 Arapahoe County in 2002.	Restore 5200 lf upstream of Parker Road	\$ 997	\$ -	\$ -	\$ -	\$ 10	\$ 87	13%	2	
CCB-6.2	Piney Creek Stream Stabilization - Project 2 U/S Buckley Rd	Final design prepared by UDFCD, SEMSWA & Stantec. No Authority funds to date	Reclaim 1700 lf upstream of Buckley Road	\$ 998	\$ -	\$ -	\$ -	\$ 1	\$ 78	12%	2	
CCB-7.1	McMurdo Gulch (Castle Rock)	Conceptual Design by Castle Rock (Ref 11)	Stream Reclamation	\$ -	To Be Determined							2
CCB-8	Limestone Filter Enhancement	Specific project not identified	Construct limestone filter bed downstream of retention pond	\$ 943		\$ -	\$ 595	\$ 1	\$ 119	43%		
CCB-11	Advanced Water Treatment Plant	Conceptual design prepared	Construct 2 MGD AWT plant on Cottonwood Creek to treat Cherry Creek and Cottonwood Creek flows.	\$ 4,593	unknown	unknown		\$ 69	\$ 423	100%	11	
CCB-12	Bowtie Property PRF	Purchase completed 2003	Stabilize confluence (Ph 1) and construct sediment pond (Ph 2)	\$ 826	\$ 300	\$ 63	\$ 1.8	\$ 6	\$ 95	100%	2	
CCB-12.1	Expanded Bowtie Project	No action to date	Constructed Wetlands u/s Bowtie Property in Cherry Creek	\$ 235	\$ 200	\$ 80	\$ -	\$ 7	\$ 47	100%		
CCB-13.1	Cottonwood/Peoria Wetlands Pond	Completed 2003. Restorative maintenance required in 2009	Joint funded project with UDFCD, GWV, Arapahoe County	\$ 1,636	\$ -	\$ -	\$ -	\$ 5	\$ 131	12%	2	
CCB-13.2	Cottonwood Stream Reclamation	Phase I completed in 2004. Phase II completed June 2008 (Ref 2)	11,600 lf of stream reclamation from Peoria to Perimeter Rd. Pond	\$ 2,200	\$ -	\$ -	\$ -	\$ 55	\$ 224	100%	2	

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CCB-13.3	Cottonwood Creek Stream Stabilization at Easter Avenue	Design completed by Arapahoe County (SEMSWA) & UDFCD. Construction funding IGA began in 2008	2,600 lf of stream reclamation from Easter Ave to Briarwood Ave	\$ 1,350	\$ -	\$ -	\$ -	\$ 1	\$ 105	25%	2
CCB-14	Belleview Open Water Wetlands	Co-funding opportunity with USACE on indefinite hold	Retrofit existing develop. w/wet detention pond	\$ 210	\$ -	\$ -	\$ -	\$ 2	\$ 18	100%	2
CCB-15	Surface Water Reuse at Cherry Creek Vista	Supplemental water not available. Project on indefinite hold.	Use water from Cottonwood Creek to irrigate 10-acres	\$ 50	\$ -	\$ -	\$ -	\$ -	\$ 3.85	100%	
CCB-16	Stream Corridor Preservation	No projects identified in 2008	Partner with others to purchase property or conservation easements along Cherry Creek	0						100%	1
CCB-17.2	Reservoir Shoreline Stabilization Mountain Loop Trail	Technical Feasibility Investigation completed in Sept. 2008	CCSP Recreation sites: Mountain, Lake and Cottonwood Creek Loops	\$ 550	\$ -	\$ -	\$ -	\$ 5	\$ 47.35	100%	1
CCB-18	ISDS Sewer Service	No action to date	Provide Sewer Service for ISDS Areas							To Be Determined	1

\$ 45,194

\$ 19,295

Basis for Analysis

- (A) Unit cost of phosphorus removal based on annualized cost of completed project over 35 years at 7% interest rate.
- (B) All projects identified provide for additional phosphorus immobilization beyond minimum requirements, unless noted otherwise.

- NOTES:**
1. Assumed that augmentation for consumptive use not required
 2. Augmentation for naturally established wetlands not required (assumption)
 8. Water costs at \$ 2,500 per acre foot
 9. Present worth of capital replacement
 11. Land acquisition and water augmentation not defined. CWS\ACWWA JWPP project influenced scope of project.
 15. Estimate based on costs for similar work along East Shoreline dating back to 1996
 18. SEO opined that ET must be augmented. Also, recent Reservoir fluctuations may render project infeasible. Placed on indefinite hold.
 19. Project technically feasible with Authority contribution up to 19%.
 20. Joint project with CCSP. Integrate design with Dog Park uses and improvements. Estimate based on similar stream stabilization projects

REFERENCES

1. Muller Eng 2003. *Feasibility Evaluation for Cherry Creek State Park Wetlands Project*
2. Muller Eng 2003. *Feasibility Evaluation for Cottonwood Creek Stream Stabilization Project*
3. AMEC 2005. *Draft Feasibility Report Cherry Creek Reservoir Destratification*
4. AMEC 2006. *Recommendations for Prepurchase of Jamor Equipment for Cherry Creek Reservoir Destratification Project.*
5. Tetra Tech August 2006. *Phosphorus Estimates in Cherry Creek and Cost for Removal via Sediment Trap.*
6. WERF 2000. *Phosphorus Credit Trading in the Cherry Creek Basin: An Innovative Approach to Achieving Water Quality Benefits.*
7. Ruzzo, WP September 5, 2003. *Cherry Creek Corridor Master Plan-Estimate of Phosphorus Reduction from Stream Reclamation*
8. Ruzzo, W. P. September 21, 2006. *Cottonwood Creek Reclamation - Water Rights Augmentation Requirements.*
9. TetraTech December 2006. *Design of Cherry Creek Sediment Basin and Stream Stabilization.*
10. Brown and Caldwell Feb 2007. *Shop Creek Wetlands Pollutant Reduction Facility Wetland Assessment*
11. PBSJ October 2006. *Draft McMurdo Gulch Major Drainageway Master Plan*