Colorado Springs Stormwater Program

STORMWATER PROGRAM IMPLEMENTATION PLAN

November 2016

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[NOTE TO THE READER]

The document you are reading is a final draft version of the Stormwater Program Implementation Plan (SPIP) prepared by the City of Colorado Springs, Colorado (City).

The intent of the SPIP and its three Appendices is to describe how the City intends to create and structure its new stormwater program. It sets goals and objectives and lays out a foundation for transforming the City stormwater program from its condition in late 2015 to what is needed to satisfy the terms of the City's MS4 Permit. In that sense the SPIP is a snapshot at one point in time of the types of necessary program improvements. It does not describe the details of each component of its improved stormwater program; these details are being formulated by the new Stormwater Division staff with the help of outside experts. These details have been and will continue to be formalized in a variety of internal documents including a Program Description Document (PDD) referenced in the MS4 permit, standard operating procedures for maintenance, training manuals, inspection procedures, enforcement escalation policies, and the like.

The City is constantly improving its stormwater organization, systems and processes as it rebuilds its stormwater resources and capacity. The City will provide annual public updates of progress made, but will not prepare further updates of the SPIP or its Appendices.

This draft document is nevertheless at a point in its development at which the citizens of Colorado Springs and other interested parties should be aware of directions the City intends to take with its stormwater program. These are matters of obvious public health, safety, environmental protection, and financial importance and the City wants to be open and transparent.

Please be aware that the City continues discussions with federal and state authorities interested in this stormwater program. These discussions may lead to changes to the future structure, programs and fuction of the Stormwater Division. Please also be aware that the stormwater Capital Program described in this document continues to undergo discussion with the City's downstream neighbors and other interested parties. This program, too, may change from the description in this document.

Thank you for your interest in the City of Colorado Springs stormwater program.

Revision Log

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TABLE OF CONTENTS

Page No.

1.0 EXECUTIVE SUMMARY 1
2.0 INTRODUCTION AND BACKGROUND 5
- 2.1 Purpose 5
- 2.2 Study Area 5
- 2.3 Documentation of City's Stormwater Assessment 5
- 2.4 Recent History of Stormwater Management in Colorado Springs 6

3.0 STORMWATER PROGRAM ORGANIZATIONAL CHANGES 8
- 3.1 New Organizational Structure 8
- 3.2 Staffing Changes and Additions 9

4.0 MS4 PROGRAM IMPROVEMENT 13
5.0 CAPITAL PROGRAM IMPROVEMENT 15
- 5.1 Project List 15
- 5.2 Project Prioritization 16
- 5.3 Validation of Project Costs 19
- 5.4 Project Schedule and Cost Distribution 19

6.0 PUBLIC OUTREACH AND COMMUNICATION IMPROVEMENT 23
- 6.1 MS4 Permit Requirements for Outreach 23
- 6.2 Assessment of and Improvements to Current Outreach Activities 23
- 6.3 Outreach Strategy 24

7.0 STORMWATER PROGRAM BUDGET 26
- 7.1 MS4/O&M Program Budget 26
- 7.2 Combined MS4 and Capital Budget for Stormwater Program 28
- 7.3 Total Estimated Stormwater Expenditures in Colorado Springs 30

8.0 IMPLEMENTATION PLAN 32

APPENDIX A – MS4 PROGRAM IMPROVEMENT PLAN REPORT
APPENDIX B – CAPITAL PROGRAM DELIVERY PLAN REPORT
APPENDIX C – PUBLIC EDUCATION AND OUTREACH PROGRAM REPORT

LIST OF TABLES

Table 3-1. Stormwater Staff Aligned with Primary Stormwater Components 10
Table 3-2. Phased Staff Additions for Augmenting Stormwater Division Program 12
Table 5-1. Creek Crossing Project List 16
Table 6-1. Summary of Public Outreach Strategy 24
Table 7-1. Budget for Stormwater Division and Dedicated Public Works Staff 26
Table 7-2. MS4/O&M Budget for Functions Performed Outside Stormwater Division 27
Table 7-3. Summary of Downstream Benefits in 2016 and 2017 30
Table 8-1. Implementation Steps for 2016 32

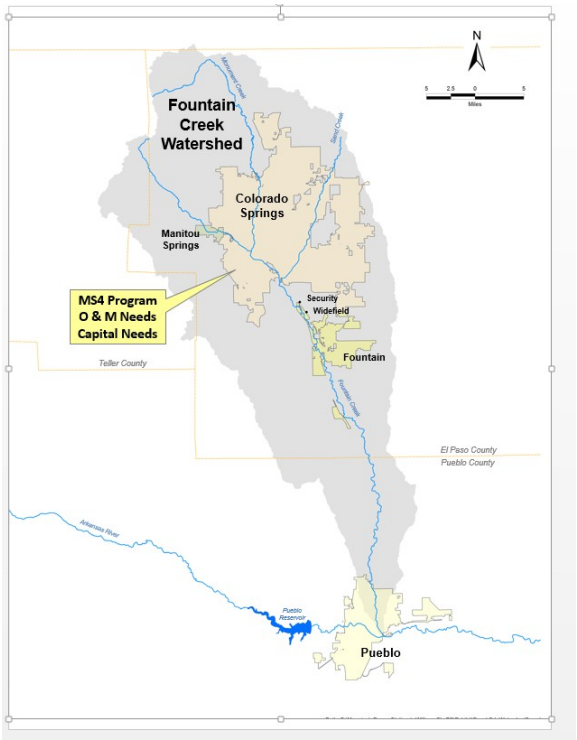
LIST OF FIGURES

Figure 2-1. Location of Colorado Springs and the Fountain Creek watershed 6
Figure 2-2. Colorado Springs Stormwater Timeline 7
Figure 3-1. New Stormwater Division and Other Public Works Divisions 8
Figure 3-2. Stormwater Division Group Functions 9
Figure 3-3. Distribution of Stormwater Division Staff by Primary Function 10
Figure 3-4. Stormwater Staff Organization Chart 11
Figure 4-1. Key Elements of MS4 Program Improvement 14
Figure 5-1. Location Map for Stormwater Projects 17
Figure 5-2. Schedule for City Stormwater Capital Project 21
Figure 5-3. Projected Schedule for Creek Crossing Projects 22
Figure 7-1. Stormwater Division Annual Budget When Division is Fully Staffed 27
Figure 7-2. Summary of MS4/O&M Budgeted Costs for 2016-2020 28
Figure 7-3. City Stormwater Program Costs for 2016-2025, Adjusted for Assumed Escalation 29
Figure 7-4. Allocation of $20.5 Million Stormwater Budget with Fully Staffed Program 30

1.0 EXECUTIVE SUMMARY

Introduction and Background

The City of Colorado Springs (City) conducted a comprehensive review of its stormwater management program. The City has recognized that its stormwater program requires improvement due in recent years to funding limitations, staff turnover, a poor economy, and the need to respond to multiple natural disasters. The City has performed this review at this time to determine how to effectively invest additional financial resources in stormwater management.



Location of Colorado Springs in the Fountain Creek watershed

The City of Colorado Springs is located in El Paso County and the Fountain Creek watershed. It covers 195 square miles, making Colorado Springs the most extensive municipality in Colorado. With this extensive area comes a significant stormwater challenge, as the City manages runoff from 32 different subwatersheds within the city limits.

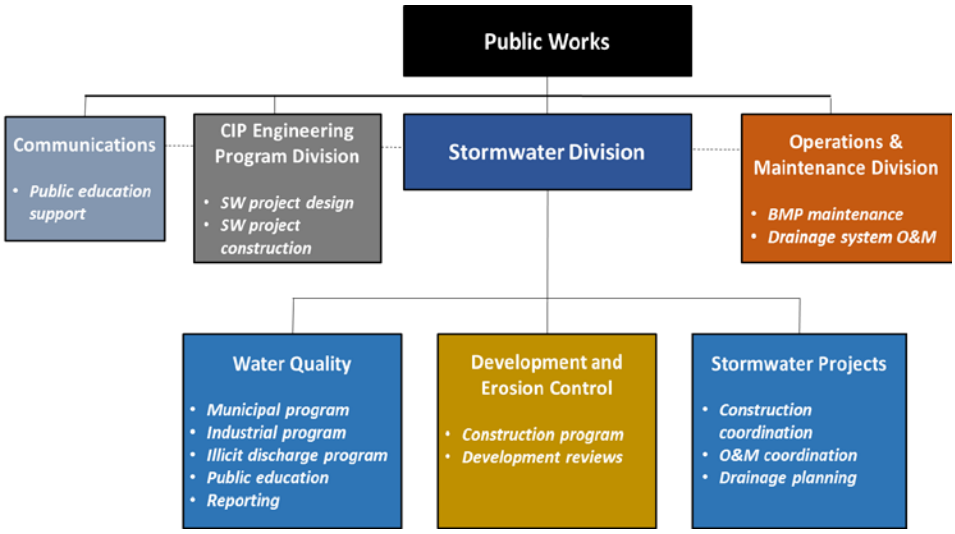
The City has comprehensively reviewed its stormwater program. The purpose of this review is to address the City's own needs and to respond to concerns expressed by regulators and neighbors. The result is this Stormwater Program Implementation Plan report, which outlines the City's plans to reorganize and consolidate stormwater activities, hire and train additional staff, purchase equipment, implement construction projects, and pursue program improvement goals over the next two years and beyond.

The City's Municipal Separate Storm Sewer System (MS4) Program, Operations and Maintenance (O&M) Program, Capital Projects Program, and Public Education and Outreach Program have all been examined and are addressed in this report. Key findings are as follows:

- The Colorado Springs stormwater program has been underfunded and understaffed in recent years compared to similar communities and to the Colorado Springs Stormwater Enterprise that operated from 2006 to 2009.
- MS4 programs, strategies, and tools developed in the past — the City's written framework for its program — are good. The difficulty is that resources have been insufficient to execute them fully.
- Drainage system O&M and infrastructure improvements are important needs.
- Past capital project budgeting did not account for cost escalation due to inflation; therefore, costs of future projects were sometimes underestimated in previous plans and discussions within the City and with neighboring communities.
- Public education and outreach efforts have lacked strategic focus to establish stormwater management as an important community benefit.

Stormwater Program Reorganization

The City has created a separate Stormwater Division within its Public Works Department. City staff dedicated to stormwater work, as expressed in full time equivalents (FTEs), will increase from 28 FTEs to 66 FTEs between late 2015 and the end of 2017. Most significantly, included in the additional staff are a Stormwater Division Manager, three senior section leaders, and a substantial number of inspectors and engineers. Some positions will be filled by re-purposing current staff, but most will be new hires.

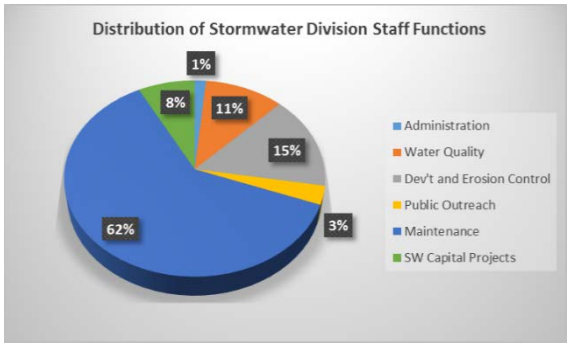


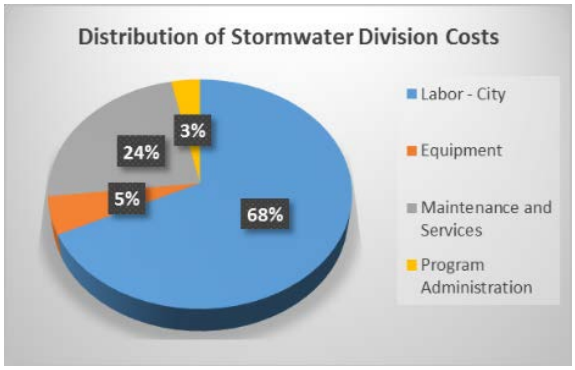
Location of new Stormwater Division in the reorganized Public Works Department

MS4 and O&M Program Improvement

The City will undertake the following key actions to improve the MS4 and O&M programs:

- Increase FTEs dedicated to stormwater MS4 and O&M Program (including capital project delivery) from 28 in December 2015 to 66 in December 2017. As of November 2016, 49 positions have been filled.
- Increase the annual City budget specifically for MS4 compliance from approximately $3 million to an average of approximately $5.6 million in 2016 and $6.9 million in 2017. Additional MS4 activities, supported by separate parts of the City budget, will continue to be performed by the O&M Division (street sweeping - $918,000/yr), the fire department (spill response - $225,000/yr), and Colorado Springs Utilities (CSU) (inspection and maintenance of stream crossings - $375,000/yr). Total MS4 compliance spending annually will be about $7.1 million in 2016 under the improvement plan.
- Emphasize enforcement for construction site operators, industrial site owners, and private developers that are not in compliance.
- Increase emphasis on inspector staffing, training, record-keeping, and prioritization of O&M activities.
- Implement over 150 actions in the next two years to improve processes, tools, and strategies for meeting the terms of the MS4 permit.

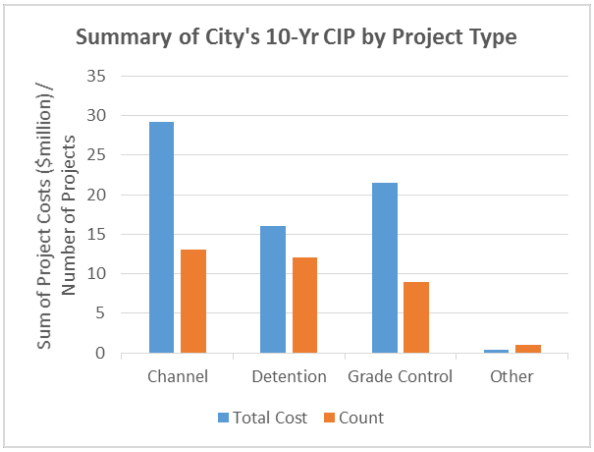




About two-thirds of the Stormwater Division budget will go toward staff salaries and benefits when fully staffed, and about two-thirds of staff positions will be focused on drainage system maintenance

- Improve lines of authority and responsibility and narrow the span of control for program implementation by creating the Stormwater Division.

Capital Program Improvement



Most planned capital projects address channel stability or capacity problems, provide detention storage, or stabilize eroding channels

A comprehensive list of stormwater capital projects has been developed for implementation over the next 20 years. This list is referred to as the stormwater Capital Improvements Project (CIP) List. The projects in the CIP List are prioritized based on benefits provided within the City and to downstream neighbors of Colorado Springs. The City worked closely with Wright Water Engineers (representing Pueblo County) in prioritizing the CIP. A total of 71 projects were considered in detail, with 37 projects included in the first 10-years of the 20-year CIP List. Similar numbers of channel improvement, detention basin, and channel grade control projects are included on the CIP List, but channel improvement projects involve the largest capital investment.

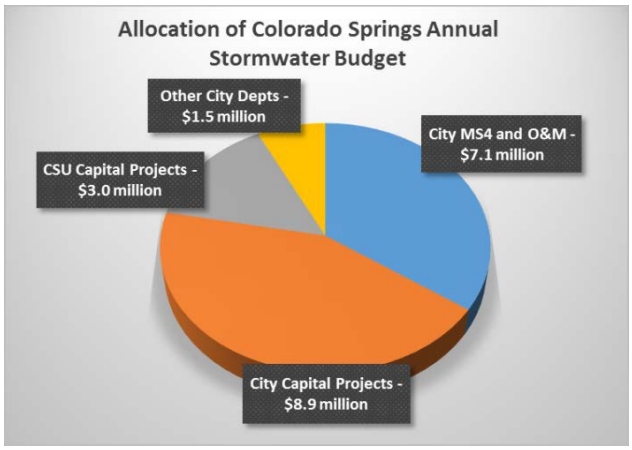
In parallel with the City's stormwater capital program efforts, CSU has an ongoing effort to construct stormwater projects to protect CSU infrastructure that crosses stream channels and floodplains. CSU's Sanitary Sewer Creek Crossing Program implements capital projects with a total average cost of approximately $3 million annually. CSU and City stormwater staff will closely coordinate their efforts to provide maximum benefit from these efforts to meet overall stormwater program objectives.

Public Outreach and Communication

The City reviewed its public education and outreach strategies and programs related to the requirements of the MS4 permit, the need to reach out to the local regulated community, and the City's desire to promote the benefits of improved stormwater management to its citizens. Strategies and tactics were identified for an overall communication strategy, public education (e.g., website and hotline upgrades, stakeholder inventories), public outreach (e.g., school programs, festivals, media outreach, brochures, social media), and public involvement related to implementation of capital projects.

Budget

The City has committed to spend an average of $20 million per year on its stormwater program (core MS4 requirements, O&M, and capital projects) for 20 years beginning in 2016. This commitment includes an average of $3 million per year by CSU through its Sanitary Sewer Creek Crossing Program that provides stormwater system benefits. In addition, other City departments have an annual budget of about $1.5 million for stormwater related activities that are part of MS4 permit compliance such as street sweeping and spill response. City and CSU budgets will be escalated to keep up with inflation with a total commitment of $460 million to be spent between 2016 and 2035.



Allocation of $20.5 million annual stormwater budget ($19 million dedicated and $1.5 million in other departments) when Stormwater Division is fully staffed

With the MS4 Program and O&M requiring an average of $7.8 million per year when the Stormwater Division is fully staffed, an average of $9.2 million per year remains for capital projects (not including the CSU Sanitary Sewer Creek Crossing Program). At this level of funding, approximately 37 capital projects can be completed in 10 years, including ongoing FEMA grant-funded projects and a $1.5 million per year allocation for emergency projects.

Implementation Plan

Beginning in late 2015 and continuing in 2016 and 2017, the City will use the Stormwater Program Implementation Plan as its roadmap for revitalizing its stormwater infrastructure and operations. The City has hired a new Stormwater Division Manager and other key staff, is preparing for other new hires, and has organized a new and improved Stormwater Division. Criticisms in EPA and State of Colorado inspection reports are being addressed, and the O&M practices for the City are being expanded and improved. Eight capital projects will immediately move into design and construction during 2016.

2.0 INTRODUCTION AND BACKGROUND

2.1 Purpose

The City of Colorado Springs (City) is committing to comprehensive management of its stormwater system. The City has recognized that its stormwater program requires improvement due in recent years to funding limitations, staff turnover, a poor economy, and the need to respond to multiple natural disasters.

As a result, the City has performed a detailed review of its stormwater program, including appropriate functions, internal organization, budget requirements, and staff and equipment needs. This review has covered the areas of stormwater permit compliance, operation and maintenance (O&M), capital projects, and public education and outreach.

The City has performed this review at this time to determine how to effectively invest additional financial resources in stormwater management. In addition, this review coincides with the need to respond to recent assessments of the stormwater permit program by the Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) and ongoing discussions with downstream neighboring communities on the need for capital projects to reduce effects of urbanization on runoff quantity and quality.

2.2 Study Area

The City of Colorado Springs lies within El Paso County and the Fountain Creek watershed, upstream of the cities of Fountain and Pueblo (see **Figure 2-1**). The City is the most populous municipality in southern Colorado, supporting a population of about 416,000 in 2015. Effective stormwater management is important to the City. Because the City is located in the upstream portion of the Fountain Creek watershed, effective stormwater management is also important to its downstream neighbors.

The City covers 195 square miles, making it the most extensive municipality in Colorado. With this extensive area comes a significant stormwater challenge, as the City manages runoff from 32 different drainage basins within the city limits.

2.3 Documentation of City's Stormwater Assessment

The City of Colorado Springs has developed this plan to improve its stormwater program. This stormwater program consists of two key components – the ongoing stormwater system operation, including Municipal Separate Storm Sewer System (MS4) permit activities (MS4 Program), and implementation of capital improvement projects for the stormwater system (Capital Program). The results of the City's stormwater planning efforts are contained in two reports:

- MS4 Program Improvement Plan Report (attached as **Appendix A** and **Supplement to Appendix A**)
- Capital Program Delivery Plan Report (attached as **Appendix B**)

In addition, the City performed an assessment of its public education and outreach needs relative to MS4 permit compliance and its desire to improve the public's understanding of the benefits of stormwater management. The results of this review are presented in the Public Education and Outreach Program Report in **Appendix C**.

This Stormwater Program Implementation Plan report consolidates and summarizes the findings from the MS4, Capital Project, and Public Outreach assessments. A draft Program Management Plan (PMP) is in the process of being prepared as part of the Capital Program Delivery Plan. It contains detailed guidelines for implementing capital projects. The draft Program Management Plan is bound as a separate volume.

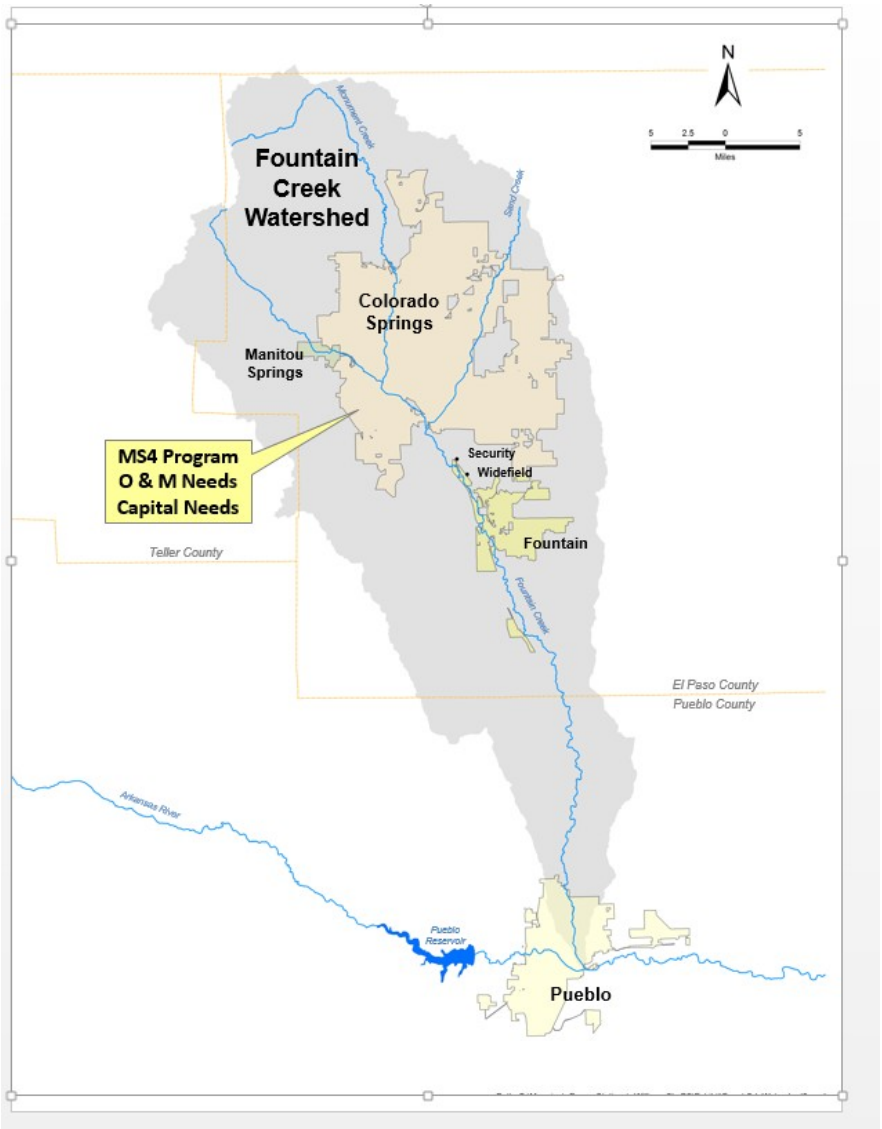


Figure 2-1. Location of Colorado Springs and the Fountain Creek watershed

2.4 Recent History of Stormwater Management in Colorado Springs

The City's overall stormwater program has evolved over time in response to changes in local conditions and priorities. **Figure 2-2** is a timeline of key milestones in the City's stormwater program history over the past 20 years. The following milestones are notable in this stormwater program assessment.

- Colorado's Taxpayer Bill of Rights (TABOR), passed in 1992, provides limits on the authority of governments to raise money through new taxes and on the amount of increased revenue governments can spend. TABOR, combined with a fiscally conservative electorate Colorado Springs, limits the amount of money the City can spend on public works programs like the MS4 Program.
- The Colorado Springs Stormwater Enterprise (SWENT) was formed by the City in 2005 and operated from 2007 to 2009, when it was dissolved in response to a public election. The SWENT performed many of the MS4 Program activities – others remained the responsibility of other City departments – as well as implementing stormwater capital projects. SWENT was funded by a dedicated stormwater fee. After Colorado Springs voters passed an amendment that resulted in termination of SWENT in 2009, all

stormwater management functions returned to the City Public Works Department and other departments and financial obligations returned to the City's General Fund. After that time, funding and staff levels were cut back significantly.

- The prolonged recession that began in the late 2000s significantly affected City revenues and its ability to fund public works programs and maintain staffing levels.
- Natural disasters, such as the Waldo Canyon Fire in 2012 and the September 2013 floods, required City stormwater staff to focus on disaster response, including application for mitigation grants and administration of the projects funded by those grants. These natural disasters required significant expenditures by the City.
- EPA performed an audit of the City's MS4 Program in 2013 and a follow-up inspection in 2015, and asserted deficiencies in the way the Program was being implemented.
- A City-funded Stormwater Needs Assessment report created in 2013 identified a list of over $535 million in stormwater infrastructure that could be completed in the City.
- The City adopted a new Drainage Criteria Manual (DCM) in 2014 that included a section on stormwater quality policies and design of best management practices (BMPs). The DCM includes a policy that post-development runoff cannot exceed pre-development runoff conditions.
- In November 2014, an effort to create a new regional stormwater authority, including Colorado Springs, El Paso County, and other smaller communities in El Paso County, was rejected by the voters.
- In January 2015, recognizing that additional resources were needed to adequately address current stormwater problems and capital projects, Colorado Springs City Council expressed support for allocating $16 million per year for 10 years to the stormwater program, and Colorado Springs Utilities (CSU) expressed support for another $3 million per year (as part of CSU's stream crossing program) for a total of $19 million per year.
- In April 2016, the City, CSU and Pueblo County signed an Inter-Governmental Agreement (IGA) committing spending for stormwater infrastructure, maintenance and education programs in the amount of $460 million over the next 20 years (contingent on annual appropriations) to improve the City's stormwater system.

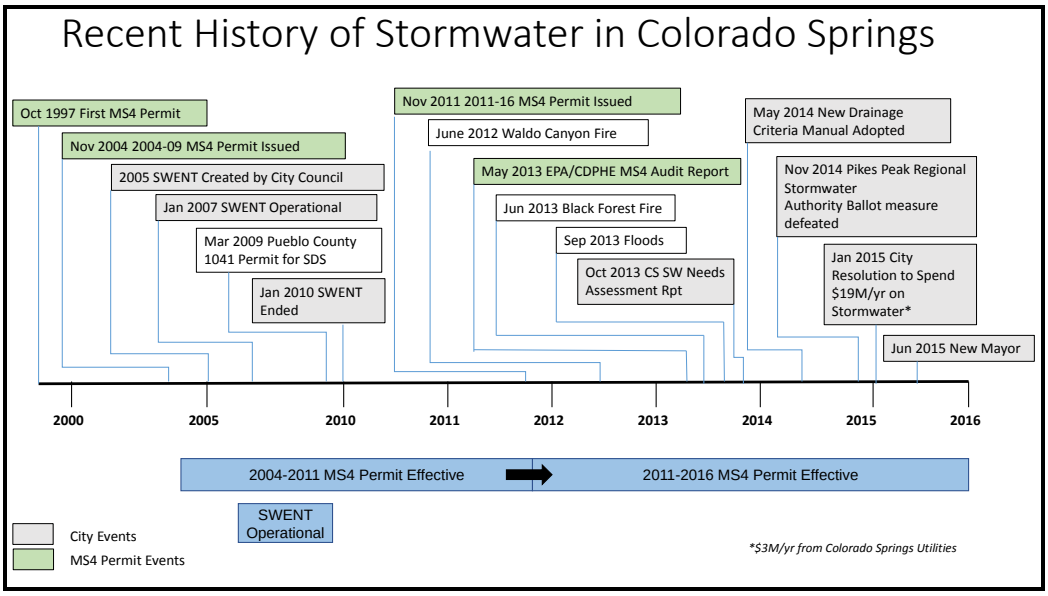


Figure 2-2. Colorado Springs Stormwater Timeline

3.0 STORMWATER PROGRAM ORGANIZATIONAL CHANGES

3.1 New Organizational Structure

The overall stormwater program consists of three primary functions:

- O&M of current drainage and water quality infrastructure
- Design and construction of new stormwater capital projects to address flooding, erosion, and water quality concerns
- Management of activities required by the MS4 permit

Until late in 2015, these three functions were performed by three separate groups within the City Public Works Department. O&M was performed by the Streets Division; capital projects were delivered by the Capital Improvement Program Engineering Program Division; and MS4 activities were managed by a small team in City Engineering.

The City has formed a new Stormwater Division to consolidate most core functions for MS4 permit compliance. The Public Works organization chart with the new Stormwater Division is shown in **Figure 3-1**. The previous Streets Division has been renamed the Operation and Maintenance Division to more accurately reflect its function. Delivery of stormwater capital projects will continue to be the responsibility of the Capital Improvement Program Engineering Program Division.

This reorganization is underway. Stormwater permit compliance activities will be reorganized under three groups:

- Water Quality
- Development and Erosion Control
- Stormwater Projects

The groups' functions are shown in **Figure 3-2**. The Water Quality group is responsible for implementing the municipal, residential, commercial/industrial, illicit discharge, monitoring, and public education BMP activities. The Development and Erosion Control group is responsible for implementing the construction program, including development submittal review and construction site inspections. The Stormwater Projects group is responsible for coordinating O&M and capital project delivery being performed in other divisions and for stormwater management planning

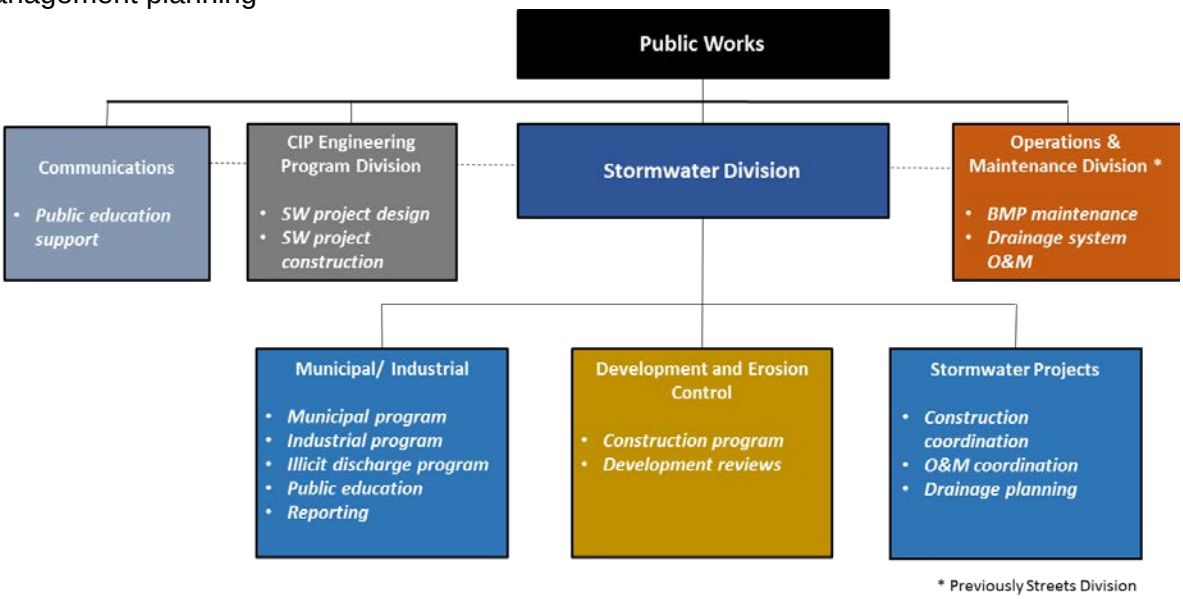


Figure 3-1. New Stormwater Division and Other Public Works Divisions

Water Quality	Development & Erosion Control	Stormwater Projects	Administration

- Municipal Facility BMP implementation
- Municipal BMP inspections
- Industrial Inspections
- Industrial Enforcement
- Residential / Commercial BMPs
- Private BMP Inspections
- Private BMP Enforcement
- Spill response program
- Stormwater monitoring program
- Training for SW Division inspectors and reviewers
- Training for other departments
- Tracking and Reporting
- Public Outreach and Communications
	- Post-Development BMPs
	  - *Plan Reviews & Approvals*
	  - *Construction Inspections*
	  - *Enforcement*
	- Construction Activities
	  - *Plan Reviews & Approvals*
	  - *Inspections*
	  - *Enforcement*
	- Tracking and Reporting
		- Maintain Design Standards
		- Management,of Stormwater CIP Design and Construction
		- Stormwater Planning
		  - *Master Planning*
		  - *Drainage Basin Planning Studies*
		  - *Watershed Planning Studies*
		- Project Prioritization
		- Management of Municipal Facility BMP and Drainage System O&M Inspections
		- Management of Municipal Facility BMP and Drainage System O&M field work
			- Program Admin
			- Inter-Department Coordination
			- Reporting to CDPHE

Figure 3-2. Stormwater Division Group Functions

3.2 Staffing Changes and Additions

Implementation of the planned MS4 Program and Capital Delivery Program improvements will require additional staff resources. The City's current stormwater program (as of November 2016) is supported by 49 full- time equivalents (FTEs). The improved program will require approximately 66 FTEs. Review of other communities showed that a staff of about 50-70 FTEs is typical for a city the size of Colorado Springs (see **Appendix A**).

Figure 3-3 depicts the distribution of stormwater program staff according to their primary function. **Table 3-1** lists staff positions by their primary function in the stormwater program. **Figure 3-4** shows the distribution of stormwater staff positions between the Stormwater Division, Operation and Maintenance Division, and Capital Improvement Program Engineering Program Division.

As shown in **Figure 3-4**, the City will dedicate eight members of the street sweeping group to the stormwater program. These crew members will be cross-trained with the Operation and Maintenance Division so they can assist with drainage maintenance when needed. The City may also add one FTE to its Communications group to support public outreach and involvement activities associated with capital projects and overall stormwater messaging in the community.

Table 3-1. Stormwater Staff Aligned with Primary Stormwater Components

MS4 Program Component	Estimated FTEs Needed
Administration	1
Water Quality (Com/Res, Public Outreach, IDDE, Industrial, and Municipal Programs)	6 + 6 shared inspectors with Development and Erosion Control
Stormwater Projects	3
Development and Erosion Control (Construction, New Development and Redevelopment Programs)	5 (+6 shared inspectors with Water Quality Municipal & Industrial Program)
Stormwater Operations & Maintenance	40
Stormwater Capital Projects	5
Communications	0.25
Total	**66**

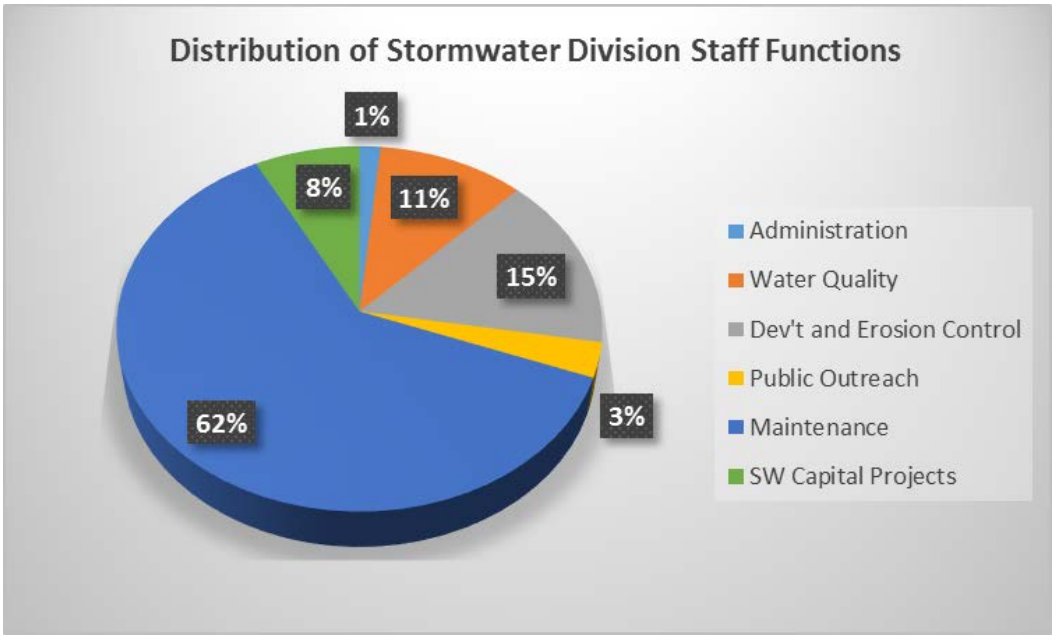


Figure 3-3. Distribution of Stormwater Division Staff by Primary Function

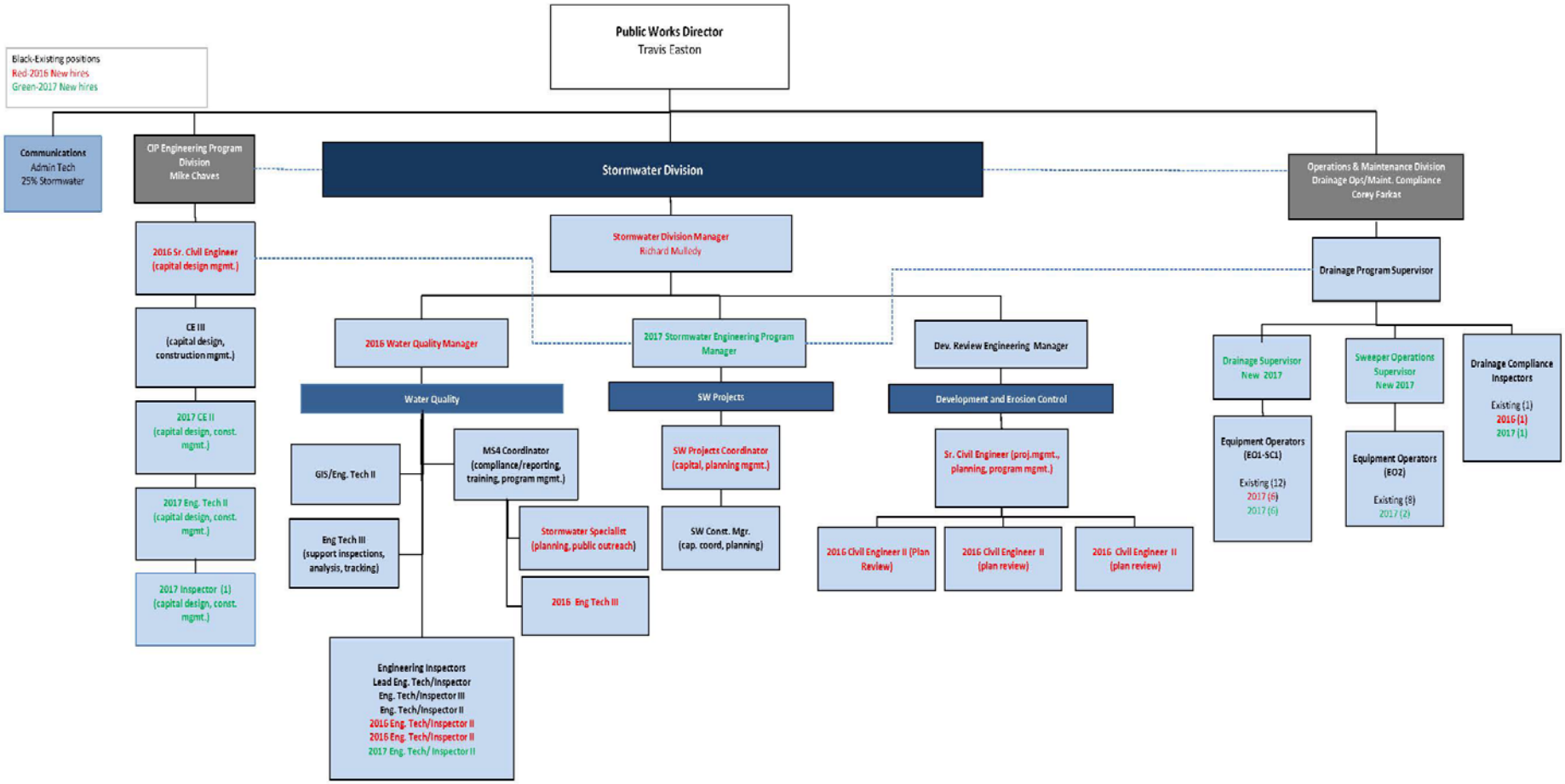


Figure 3-4. Stormwater Staff Organization Chart

The City began hiring by adding two inspectors in late 2015, and has currently (November 2016) filled 49 positions. An increase in stormwater resources from 28 FTEs to 66 FTEs cannot be accomplished immediately. The City plans to transition from the current to the proposed staff over two years. The following factors will be considered in the transition period:

- A key position that was filled in early 2016 is the Stormwater Division Manager. This individual brings immediate credibility to the program and will be directly involved in making future key hires and organizational decisions. Other key hires in 2016 have included a Water Quality Manager, Stormwater Projects Coordinator, two Senior Civil Engineers, three Civil Review Engineers, and a Stormwater Specialist.
- The City will add staff over a period of two years to ensure that the hiring process is not overwhelmed, adequate training and supervision is in place, people with the appropriate skill sets are identified, and the budget impacts are appropriately managed. **Table 3-2** shows the phased staff increases planned for 2016 and 2017.
- To accelerate upgrading of the MS4 and capital programs, the City may consider staff augmentation options for accessing additional resources for capital project delivery on an immediate but temporary basis. Under this option, staff augmentation using outside contractors would be phased out as new employees are hired.
- The City may also consider entering into a shared services agreement with CSU whereby CSU could provide capital project delivery support or other services to the City, thereby increasing efficiency and controlling costs.

Table 3-2. Phased Staff Additions for Augmenting Stormwater Division Program

Positions to be Filled in 2016	Positions to be Filled in 2017
Stormwater Division Manager	Stormwater Engineering Program Manager
Water Quality Program Manager	Civil Engineer II (PE) for Capital Improvement Program Engineering
Stormwater Projects Coordinator	Engineering Tech II (PE or EIT) for Capital Improvement Program Engineering
Stormwater Specialist	2 Engineering Inspector II
Senior Civil Engineer (PE) for Development and Erosion Control	Engineering Tech III (PE or EIT) for Municipal & Industrial
Three (3) Civil Engineer III (PE) for Development and Erosion Control	Sweeper Operations Supervisor
Senior Civil Engineer (PE) for Capital Improvement Program Engineering	Drainage Supervisor
2 Engineering Inspectors II	Drainage Inspector
Drainage Inspector	8 Equipment Operators
6 Equipment Operators	

4.0 MS4 PROGRAM IMPROVEMENT

The City's MS4 Program was developed to protect public health, safety, and the environment by complying with the conditions of the MS4 permit issued to the City by CDPHE. The MS4 permit requires the City to implement best management practices (BMPs) to minimize the effect of urban runoff on water quality. The MS4 Program addresses residential/commercial development, industrial sites, construction sites, municipal operations facilities, and illicit discharges through reviews, inspections, enforcement, and education and outreach.

The MS4 Program Improvement Plan was based on the identification of areas of improvement by City staff and outside consultants (MWH and Ben Urbonas of Urban Watersheds, LLC), comparison of the City program with other similar communities with MS4 permits, review of EPA and State audits of the City's program in 2013 and 2015, and anticipated changes to permit conditions when the City's MS4 permit is reissued in 2016. Recent program challenges are primarily due to the reduction in funding and staffing and reorganizations that have occurred since the City's Stormwater Enterprise was dissolved in 2009.

The City's goal is to have an MS4 Program with the following attributes:

- Compliant program – assures full compliance with MS4 permit conditions
- Sustainable program – has long-term sustainability in terms of financing and staffing
- Proactive program – anticipates changes in MS4 and other environmental program regulationsBeneficial program – protects and enhances water quality within the watershed
- Cost-effective program – exploits efficiencies and balances MS4 needs with capital project needs

The City's review of its stormwater program found that in general, the plans and processes currently in place are compliant with the requirements of the MS4 permit. The difficulties in recent years (since dissolution of the Stormwater Enterprise) have largely been due to lack of financial and staff resources. As described in the previous section on organization and staffing and the following section on budget, the City is aggressively addressing these areas.

The City's review found opportunities to improve the components of its MS4 Program by enhancing training, tightening enforcement, improving documentation, expanding maintenance, and addressing other specific program needs. Based on its review, the City will implement the following key improvements to its MS4 Program (see **Figure 4-1**):

- A Stormwater Management Plan/Program Description Document (PDD) will be prepared to describe the strategies, activities, BMPs, and resources used to address the MS4 permit requirements.
- Inspections of construction sites, industrial sites, municipal operations facilities, public BMPs, and waterways will be more rigorous and performed by dedicated stormwater inspectors who will receive frequent training.
- Enforcement actions will be more vigorously pursued as appropriate, and supported by the City Attorney's Office and City leaders.
- Documentation and record-keeping will be improved.
- Stormwater Division staff will train City and CSU field personnel to observe and report potential illicit discharges.
- Maintenance issues in the City's waterways will be identified and prioritized annually.
- Development reviews for permanent water quality BMPs will be more rigorous and final approvals will not be granted without an executed maintenance agreement.

- Development review staff will be provided with needed training to ensure compliance with City standards and criteria.
- Methods for citizens to report potential illicit discharges will be improved.
- Public education and outreach activities will be expanded and focus on improving the public's support for the overall stormwater management program.

Additional detail on the planned improvements to the MS4 Program can be found in **Appendix A**.

Figure 4-1. Key Elements of MS4 Program Improvement

5.0 CAPITAL PROGRAM IMPROVEMENT

The Capital Program consists of the staff, budget, and project control systems to plan, design, and construct larger-scale stormwater infrastructure projects. The purposes of the Capital Program Improvement Plan are to prepare an updated and reliable CIP List and develop a strategy and improved process for project implementation.

- There are two groups of capital projects being implemented within the Capital Program:
- City Projects: These projects will be implemented by the Public Works Department within the City.
- Creek Crossing Projects: For a number of years, CSU has planned and implemented its Sanitary Sewer Creek Crossings Program with annual expenditures averaging $3 million per year. These are projects that are specifically targeted to protect CSU facilities in danger of failing due to stormwater or other impacts (e.g., buried sanitary sewers that cross creeks that have eroded, exposing the sanitary sewers to potential failure). CSU's stream crossing projects often have significant stormwater protection features.

The City's Public Works Department and CSU currently coordinate the implementation of both of these sets of projects.

5.1 Project List

The City generated a comprehensive list of potential capital projects to consider for implementation. This list was compiled in the following manner.

City Projects: As a starting point for development of this SPIP, the Master Project List (MPL) from the October 2013, Stormwater Needs Assessment Report (SNA) produced by CH2M HILL, was carefully reviewed and evaluated along with additional City planning studies and projects identified since the SNA was completed. Through these evaluations, several deficiencies with the MPL from the SNA were identified:

- Many projects lacked adequate level of project definition or specific details.
- The SNA involved a limited project validation effort to confirm whether a project was legitimate for inclusion, but did not assess any project in detail.
- The SNA master project list is outdated and does not include projects from recent
- City planning studies, or recent emergency response projects.

The City's stormwater CIP list uses most current available information and reflects current City stormwater needs and project priorities to meet the overall objectives for the City's stormwater program.

Between August 2015 and March 2016, a set of high priority stormwater projects was developed through coordination between the City and Pueblo County. That effort was part of ongoing discussions toward a stormwater Inter-Governmental Agreement (IGA) between the City and Pueblo County, which was completed in April 2016. The firm of Wright Water Engineers (WWE), working on behalf of Pueblo County, presented projects that were proposed for inclusion in the City's stormwater CIP. These projects were identified in the Stormwater Needs Assessment report and in other sources. In addition, several ongoing City stormwater projects that have various levels of project definition were evaluated as part of this effort (see **Table 4-2, Appendix B-1**).

Creek Crossing Projects: CSU staff keep a list of projects to implement under this program. After significant rain events, CSU staff conduct a field inventory of CSU infrastructure near creeks and identify any additional projects that need implemented to protect CSU facilities.

Those projects are added to the Creek Crossings project list and reprioritized. CSU's current list of projects is shown in **Table 5-1**.

Table 5-1. Creek Crossing Project List

	Three-Year CIP Table (2016-2018)		
Project Name	Estimated Construction Start Date	Estimated Total Capital Cost	Comments
1. Monument Creek Stabilization, Phase 2	Jul-16	$820,000	In Process; Initiation and Design completed in 2015; Waiting on easements; Construction scheduled by Q3 2016 with Closeout in Q4 2016
2. Dry Creek Downstream of Dawson Drive	Mar-18	$510,000	Initiated August 2015; Design to commence Q1 2017; Construction scheduled March 2018 with Closeout May 2018
3. Clear Spring Ranch Bank Stabilization	Sep-16	$4,170,000	In Process; Intiated September 2014; Designer hired January 2015; Construction scheduled September 2016 with Closeout May 2017
4. North Douglas Creek upstream from Mark Dabling Stabilization	Feb-16	$251,000	In Process; Initiation and Design completed in 2015; Construction Scheduled February 2016 with Closeout in May 2016
5. South Douglas Creek at Sinton Pond, Crossing Elimination	Feb-16	$176,000	In Process; Initiation and Design completed in 2015; Construction Scheduled February 2016 with Closeout in May 2016
6. Monument Branch Stabilization	Oct-17	$1,100,000	Initiate January 2016; Hire Designer February 2016; Design commence June 2016; Construction scheduled Q4 2017 with Closeout Q2 2018
7. West Fork Sand Creek Drop Repair	Sep-18	$500,000	Initiate Design Q1 2018; Construction scheduled Q3 2018 with Closeout Q4 2018
8. Sand Creek stabilization at West Fork Confluence	Sep-18	$600,000	Initiate Design Q1 2018; Construction scheduled Q3 2018 with Closeout Q4 2018
9. Monument Creek Stabilization Upstream from Pikeview Intake	Apr-18	$500,000	Initiate Q2 2017; begin Design Q3 2017; Construction scheduled Q2 2018 with Closeout Q3 2018
10. Sand Creek Stabilization Upstream of Barnes Road	Apr-18	$400,000	Initiate Q2 2017; begin Design Q3 2017; Construction scheduled Q2 2018 with Closeout Q3 2018
	Total:	$9,027,000	

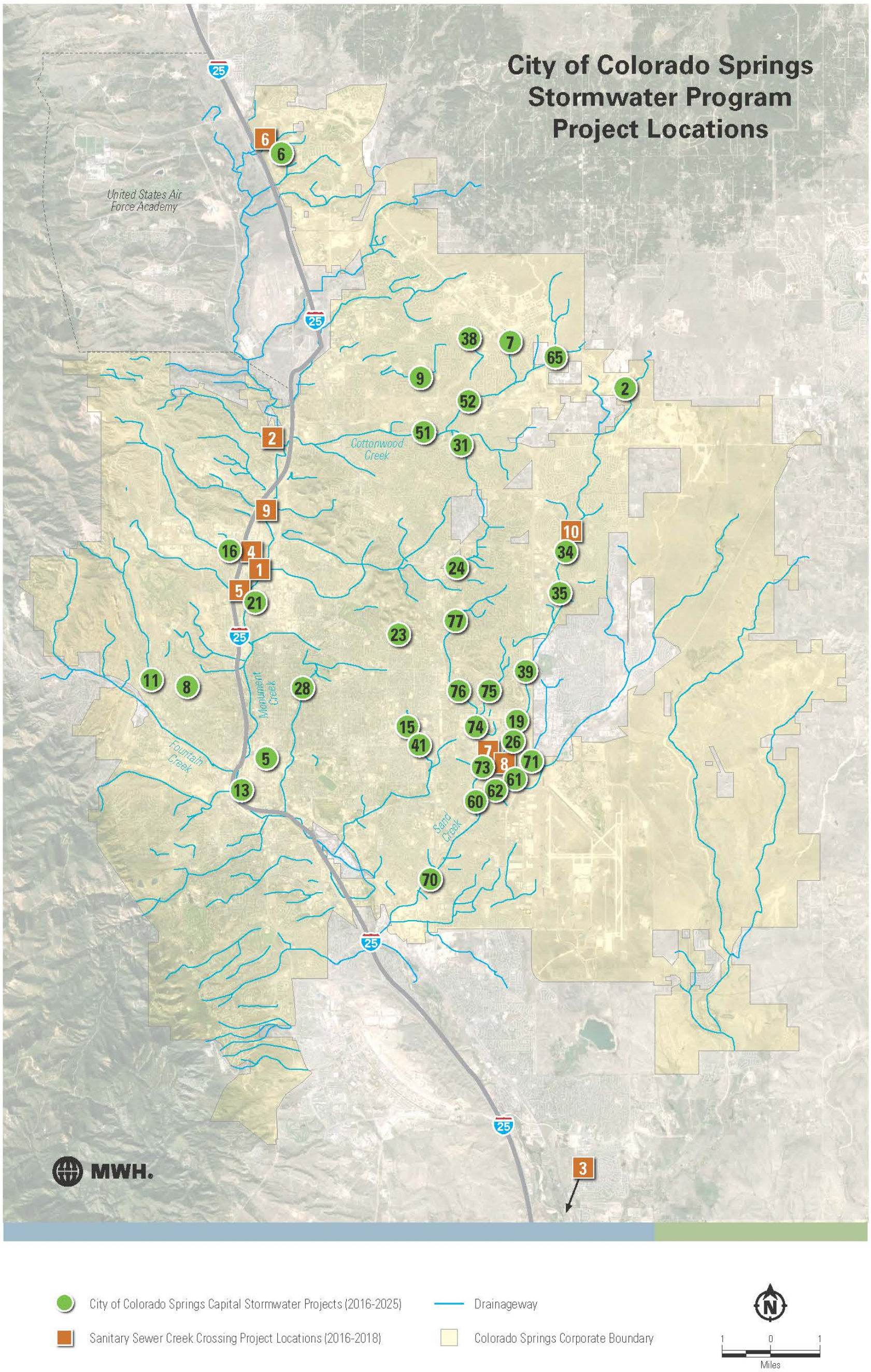
The locations of these projects are shown in **Figure 5-1**. The projects are distributed throughout the City, with a large portion of the projects located along the main drainages of Monument Creek, Sand Creek, and Fountain Creek.

5.2 Project Prioritization

The next step in development of the updated Stormwater CIP List for the City was to evaluate the City project list to arrive at a prioritized list of capital projects that make up the 20-year CIP List. This was done by rating each project according to a set of eight criteria developed collaboratively between staff from the City, the City's consultant team of MWH and Merrick & Company, and through discussion and coordination with WWE, on behalf of Pueblo County. The eight criteria fall into two groups (in no specific order with respect to priority or importance):

- Benefits to stormwater infrastructure itself and the immediately adjacent areas:
  - Project property and public safety
  - Repair/replace failing infrastructure
  - Improve appearance and/or enhance the community
  - Distribute projects within the City
- Enhancing the City's stormwater infrastructure and ability to reduce or eliminate sediment generation and transport, provide detention, and reduce the potential for flooding, thereby providing benefits to areas downstream of Colorado Springs:
  - Enhance sediment/debris capture and control
  - Reduce sediment generation/enhance soil stewardship
  - Improve water quality
  - Provide detention

Figure 5-1. Location Map for Stormwater Projects



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The criteria defined above provide a means to evaluate a given project and its characteristics to determine its ability to meet overall stormwater program objectives. Although specific criteria have been defined related to a project's function to improve water quality, all repairs, replacement and/or enhancement of stormwater infrastructure will provide a holistic water quality benefit downstream.

The capital stormwater project improvements made across the City over time will work in an integrated fashion to enhance overall water quality within the Fountain Creek watershed and beyond. Projects can provide both primary and incidental benefits for water quality protection, sediment control, and other ecological features. For example, while the primary purpose of a creek stabilization project designed to protect a sewer crossing is to prevent failure of the utility infrastructure, it can have significant incidental sediment control and water quality benefits due to reduced channel erosion and sediment transport downstream. In addition, these projects help avoid impacts to downstream water quality that would result if sewer line crossings were to fail during flooding events. The cumulative benefits from constructed projects under the City's Stormwater Program will have the effect of enhancing overall water quality.

Staff from the City, the City's consultant team, and WWE met on four occasions (November 19, 2015, December 2, 2015, December 16, 2015, and March 30, 2016) to (a) settle upon a master list of capital stormwater projects, and (b) evaluate prioritization of projects on the resulting list. The resulting list of capital projects is contained in **Table 3-1, Appendix B-1** with the following indicated:

- An "X" was placed in a column for a given criterion if a project was deemed to have met the criterion. Each project was evaluated against each of the eight criteria and rated.
- Because downstream benefits are an important factor in determining overall priority for a given capital project, the number of "X's" associated with these four "downstream" criteria were added to create a "Downstream Priority Score" for the project. That score is indicated in a separate column in the table.
- City staff flagged a subset of projects as "Critical City Projects". These were denoted by a "Yes" in that column. Reasons for this City assigning this designation include, for example, that the project is:
    - Able to address a known area of frequent and severe localized flooding
    - Ongoing and must be completed (e.g., FEMA projects). (Note: the FEMA and NRCS projects are not specifically listed, as the majority of funding comes from Federal/ State grants).
    - Able to be rapidly implemented (e.g., design is already done, or design consultant is already under contract).
- At the March 30, 2016 meeting, WWE staff prioritized the subset of 61 projects from the CIP project list that had a downstream benefit (i.e., a "Downstream Priority Score" of one or greater) in rank order.
- Finally, City and consultant staff used all of this input to establish a "City Priority Ranking" of all projects on the master CIP project list (71 projects total).

As shown in **Table 3-1, Appendix B-1**, the City's ranking represents a balance of delivering the high priority City projects while making significant progress on delivering downstream benefits. Of the 71 projects, 61 were agreed upon with WWE to have at least one downstream benefit.

Since the Sanitary Sewer Creek Crossing projects are driven by the need to protect exposed or at-risk utility infrastructure, the priority of those projects is driven by CSU staff judgment on the criticality of each project location. However, the prioritization criteria developed for the City projects also help in identifying the benefits derived from projects. Therefore, a version of the

Creek Crossing project list has been prepared with the prioritization criteria to illustrate project benefits (see **Table 5-1**).

5.3 Validation of Project Costs

The scope, features and cost estimate for each project was additionally reviewed or validated. The Sanitary Sewer Creek Crossing project costs are validated on an annual basis by CSU staff and were not separately validated as part of the effort documented in this report. The following steps were taken to validate the City projects:

- City staff compiled existing information on all projects. The source of information on a number of these projects was the SNA report. The project summary sheets contain a brief project description, location and an overview of project benefits.
- Each project was categorized based on the level of available information. Additional cost estimate analysis was completed and project costs were escalated to January 2016 dollars.
- Each project was analyzed to determine the project duration based on the applicable project delivery stages for the project.
- The project information was summarized into two-page project descriptions.

The City has three ongoing projects in the master project list that are a combination of multiple smaller projects. These include Project 0 (FEMA Projects), Project 1 (Emergency Stormwater Projects) and Project 13 (Water Quality Projects). These three items in the master project list have a budget amount to address some of the actions on these lists each year under the Stormwater Program. FEMA projects are envisioned to continue through 2018. The Water Quality Projects are envisioned to continue through 2020. The Emergency Stormwater Projects are budgeted annually through 2025.

There were two projects from the master project list for which sufficient engineering work was completed to allow full validation of the project cost estimates following the process described above. Those are: Project 2, Sand Creek Pond 3, and Project 11, Camp Creek.

There were 18 projects for which the City established an allowance, but no defined project scope had yet been developed. These include a number of projects from the SNA report where the City assumed a portion of the SNA project work would be done, but did not fully identify which portion or reach of a larger project would be done. These projects will require additional planning to determine a sufficient level of project definition to proceed with procuring design services.

The remaining projects were identified in the SNA report and the budget and scope developed therein was used. The SNA project cost estimates for these projects were escalated to 2016 levels.

5.4 Project Schedule and Cost Distribution

Once the prioritized list of capital projects was established and costs were validated, those projects and costs were scheduled over time. For the City projects, 71 projects have been identified to be completed. The top 37 projects are scheduled to be initiated within the first 10 years of the CPDP.

To help develop the project schedules, five discrete phases were defined for each project:

1. **Initiation:** Once a decision is made to advance a project, the Initiation Stage is implemented to develop a detailed design scope of work.
2. **Hire Design Consultant:** If an outside design consultant is needed, the overall project schedule must account for a procurement process.

3. **Planning/Design/Procurement:** This stage involves the engineering work needed to make broad decision about project alternatives (planning), prepare engineering plans and specifications for the selected alternative (design), and procure a construction firm to construct the project (procurement).
4. **Execution** (Construction): This stage covers the actual construction work.
5. **Closeout** (Work Package Closeout): This stage involves all the steps need to close out a construction project.

Total project costs were then distributed to each phase, for each project.

A graphical representation of the project schedules was created for both the City and Creek Crossing projects (see **Figure 5-2** and **Figure 5-3**). The five phases of each project are shown in various colors. As shown in **Figure 5-2**, there will be eight City projects underway in 2016, with a peak of 17 projects underway in 2019.

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Figure 5-2. Schedule for City Stormwater Capital Project

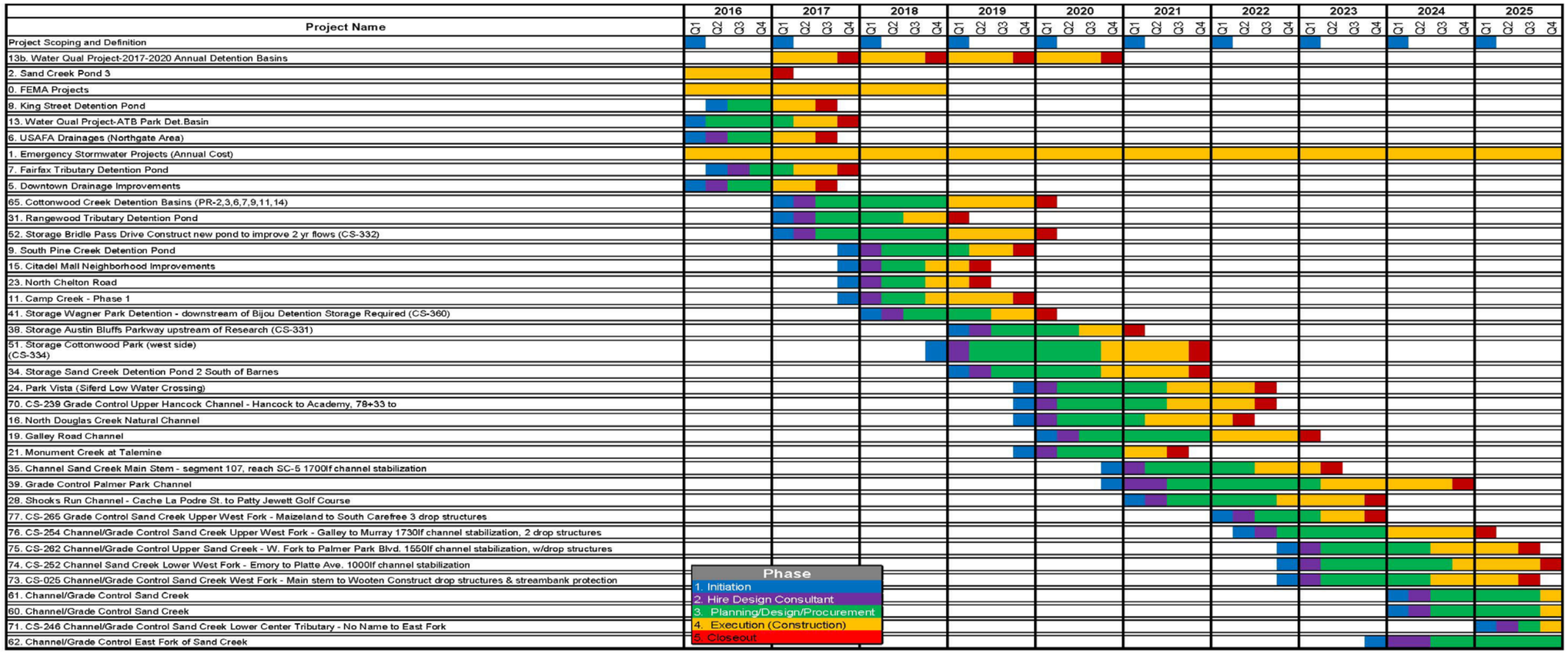

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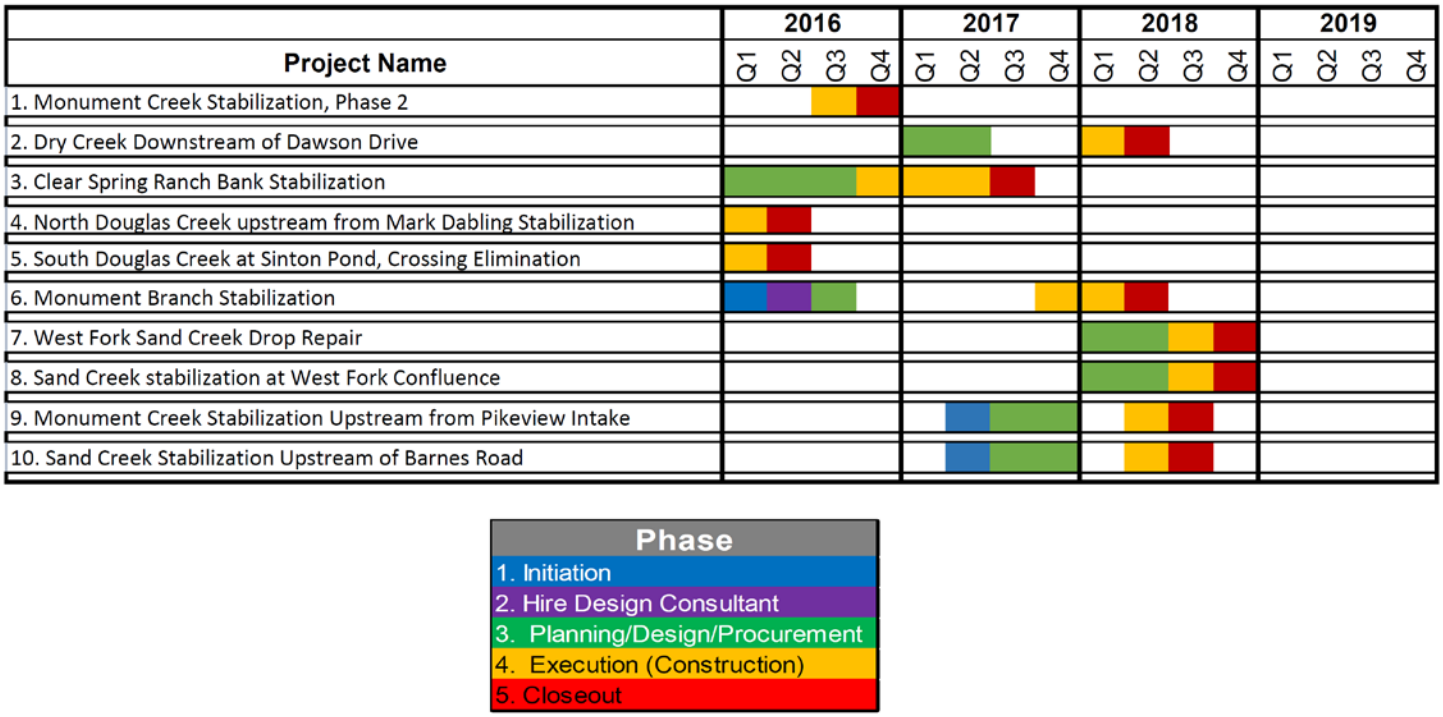
Figure 5-3. Projected Schedule for Creek Crossing Projects



6.0 PUBLIC OUTREACH AND COMMUNICATION IMPROVEMENT

The City is in the process of improving its Stormwater Program. Its primary focus is to evaluate and develop a strategy for improving two major components of the Stormwater Program -- the ongoing stormwater system operation, including the MS4 Program, and implementation of capital improvement projects for the stormwater system. To complement and support those efforts, the City has developed a strategy for improving public education and outreach related to the Stormwater Program.

6.1 MS4 Permit Requirements for Outreach

The City's MS4 permit requires the following outreach-related activities:

- Conduct educational activities to promote public reporting of illicit discharges and improper disposal (Part 1.B.1.b.4 of the MS4 permit)
- Implement public educational activities to promote proper management and disposal of potential pollutants (Part 1.B.1.b.5)
- Promote Household Chemical Waste Collection Programs (Part 1.B.1.b.6)
- Conduct educational activities for operators of Industrial Facilities (Part B.1.c)
- Conduct training and education of construction site operators (Part 1.B.1.d.4)

6.2 Assessment of and Improvements to Current Outreach Activities

In response to the requirements of the MS4 permit, City staff perform a number of public outreach activities annually. The City has assessed those current activities and identified the following areas to be the most urgent for improvement.

- **Image/Brand of Stormwater:** The single most common concern of City staff, and the trend most observed in top-of-class cities, is the need to brand "stormwater" efforts by using more direct terms—water quality, clean water, flood protection or prevention, etc. The City will rebrand its stormwater program accordingly.
- **Central Vision/Action Plan:** The stormwater activities of various City departments should be aligned to set goals and achieve necessary objectives. This is critical to properly leveraging City resources.
- **Goals, Measurement, and Reporting Success:** Within the shared vision and plan, goals must be established and performance measured, with updates and redirection at specified intervals. The top-of-class MS4 Programs from other cities set goals for each activity and measure against those goals, with year-after-year increases expected.
- **Public Hotline:** The City's MS4 permit calls for operation of a central phone number for public reporting of illicit discharges and promotion of that number. The current hotline is not dedicated to stormwater; it is part of the police department/fire department dispatch system. The City will implement a more direct hotline and promote its existence to the community.
- **Website Pages:** The City's stormwater website pages are hard to access and less communicative than they could be. The City will update and refine its stormwater website pages with a focus on content-rich graphics and useful information.
- **Annual Report:** The current template used for the Annual Report to regulatory agencies is confining and hard to populate properly. The City will create a template that is efficient for staff to populate and includes clear tracking of goals and achievements.
- **Elevation of Public Education, Outreach, and Involvement:** Currently, the stormwater communication efforts are placed in multiple departments within the City, some of them several layers down within the City's organization. The City will centralize

and/or coordinate public education, outreach, and involvement functions and elevate oversight within the Stormwater Division to a higher level with stated goals, measureable achievements and clearly stated tactics.

Overall, the City's outreach activities are sound, but with room for improvement. In particular, they have been limited by a lack of resources.

6.3 Outreach Strategy

The City has developed strategies to address the areas above, as well as strategies and tactics targeted specifically at informing the public about the City's planned capital improvement. The strategies are summarized in **Table 6-1** and specific tactics for all improvement areas are covered in the Public Education and Outreach Program (**Appendix C**). To implement these improvements, the City will add education staff within the Stormwater Division and Outreach/Involvement staff within the Communications group as part of its revitalized stormwater efforts.

Table 6-1. Summary of Public Outreach Strategy

Component	Objective	Audience	Messages
General Public Education and Outreach *Typically 1-way communication*	Inform the public and build support for the concept that "stormwater" means clean water and flood protection	• General Public • Schoolchildren • Civic groups, HOAs • El Paso/Pueblo elected leaders/staff • EPC/PC business/industry groups • Development community Government/Regulatory agencies • City/CSU employees	• Water quality and flooding prevention are life-saving concerns • Water quality and flooding prevention are the responsibility of all • We must all protect water quality by improving our behavior in small but important ways • Stormwater/drainage facilities can accompany and protect recreational amenities such as trails, bike baths and open space
MS4 Program Public Education and Outreach MS4 permit *requirements* *Typically 1-way communication*	Comply with public communication requirements of the MS4 permit Shape or improve public behavior to stop or prevent pollutants from entering the MS4	**Public as Potential Polluters** • Children • Pet/livestock owners • Auto owners • Property/lawn owners • Commercial sites with chemicals • Industrial facilities • Construction sites (development industry and others) • Targeted businesses (landscapers, mobile washers, carpet cleaners, concrete washout, auto shops, industrial)	• **We need to improve our behavior because we all need clean water** • **Report illicit discharges**, spills, dumping (Part 1.B.1.b.4) • **Manage and dispose properly** (Part 1.B.1.b.5) (pet waste, stock manure, auto supplies like oil, fertilizers, herbicides, all chemicals) • **Use Household Chemical Waste Collection Program** (Part 1.B.1.b.6) • **Be aware of and handle/manage pollutants** on sites to prevent runoff into MS4 (Part 1.B.1.c and e) • **Be aware of and manage/handle potential pollutants** (dust, runoff, chemicals) at construction site to prevent runoff into MS4 (Best Management Practices) site (Part 1.B1.d.4)

Component	Objective	Audience	Messages

Capital Project Public Involvement
 	
Typically 2-way communication
 	
May involve public role in decisions
 	
Focused on capital projects
	Capital Projects Create awareness and support for individual City projects (before, during and after project construction)
	
	Gain/maintain support and trust of people nearest projects – convert potential opponents into supporters, keep projects on time/budget
		Same General Public as above
		
		Residents of Areas Affected by Construction
			• **We are building large projects that will address flooding and water quality problems**
			  • Problem/solution – we are all part of it
			  • Projects are planned/underway
			  • The process is thoughtful and rational
			  • Public has opportunity for input
			  • Public/business support is important
			  • As projects are completed, note success
			
			• **Your needs are being considered**.
			  • We want to minimize inconvenience/maximize benefit
			  • We will listen to you/inform you
			  • Temporary inconvenience for permanent solutions

7.0 STORMWATER PROGRAM BUDGET

This section summarizes the estimated budgets for the MS4/O&M Program and the Capital Program, and ties them to the City's planned annual stormwater expenditures.

7.1 MS4/O&M Program Budget

Table 7-1 shows the estimated annual budget for the improved MS4/O&M program (Stormwater Division and directly related costs in other Public Works departments) for 2016-2020. Budgets for all years are shown in 2016 dollars prior to any escalation. **Figure 7-1** shows the distribution of the Stormwater Division budget among the main functional categories. The majority of budgeted costs are associated with the salary and benefits for the Stormwater Division staff shown previously in **Figure 3-4**.

New equipment will be needed to support the increased stormwater O&M activity. The total estimated budget for acquiring new equipment was $945,000 in January 2016. Equipment purchased in 2016 is more expensive than previously estimated, requiring more near-term expenditures on equipment. The schedule for adding new equipment will be tied to the schedule for adding new stormwater employees. Approximately $618,000 will be spent in 2016 and about $587,000 will be spent in 2017. For long-term budgeting purposes, an annual replacement budget was calculated by amortizing the cost of new equipment over the assumed useful life. For the fleet of heavy equipment and maintenance vehicles under the direction of the Stormwater Division, the annual replacement budget is $366,000 per year. The City has also committed to leasing eight new street sweepers in 2016 at an annual cost of $480,000. The cost of these street sweepers will come from the City Budget Office fleet contract, not from the stormwater program.

The maintenance and service budget in **Table 7-1** covers O&M supplies (e.g., riprap, concrete), software, and outside consulting and vendor services. The latter category includes a consultant contract to prepare a Stormwater Infrastructure Master Plan and other consultant services for miscellaneous or emergency projects. Engineering consultant costs for planning and design are included in a separate Public Works Capital Projects budget.

The program administration budget in **Table 7-1** includes the cost of facilities, office equipment, supplies, computers, communication equipment, and other similar costs that would accrue to the Stormwater Division. Estimated program administration costs were based on the City's proposed 2016 budget for the Stormwater Division, expressed on a per capita basis and escalated as the number of employees increases.

Table 7-1. Budget for Stormwater Division and Dedicated Public Works Staff

Budget Category	2016	2017	2018	2019	2020
Labor – City Employees(1)	$3,077,900	$4,753,756	$4,834,000	$4,834,000	$4,834,000
Labor – Outsourced	$0	$0	$0	$0	$0
Equipment	$618,400	$556,000	$366,000	$366,000	$366,000
Maintenance and Services(2)	$1,783,900	$1,670,000	$2,015,000	$1,570,000	$1,670,000
Program Administration(3)	$127,200	$180,200	$239,000	$239,000	$239,000
TOTAL	**$5,607,400**	**$7,159,956**	**$7,454,000**	**$7,009,000**	**$7,109,000**

Notes:

(1) Budget for 2016 and 2017 based on average of labor at beginning and end of year as the program staffs up
(2) O&M materials, consultant planning contracts, outside services, USGS monitoring
(3) Facilities, office equipment, supplies, computers, communications
(4) *All budgets are in 2016 dollars and are not adjusted for escalation*

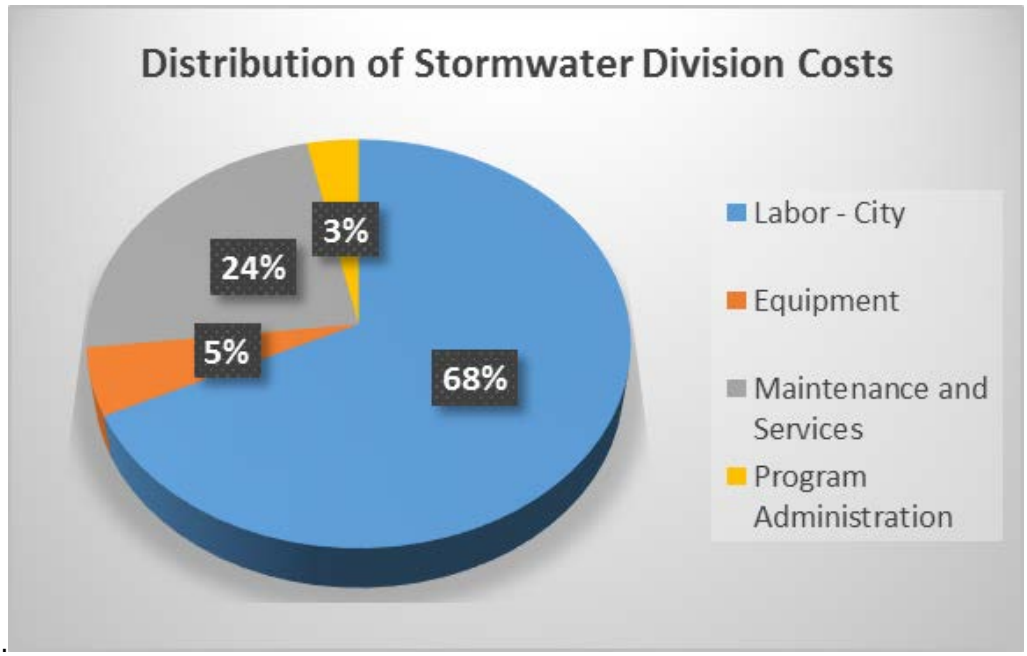


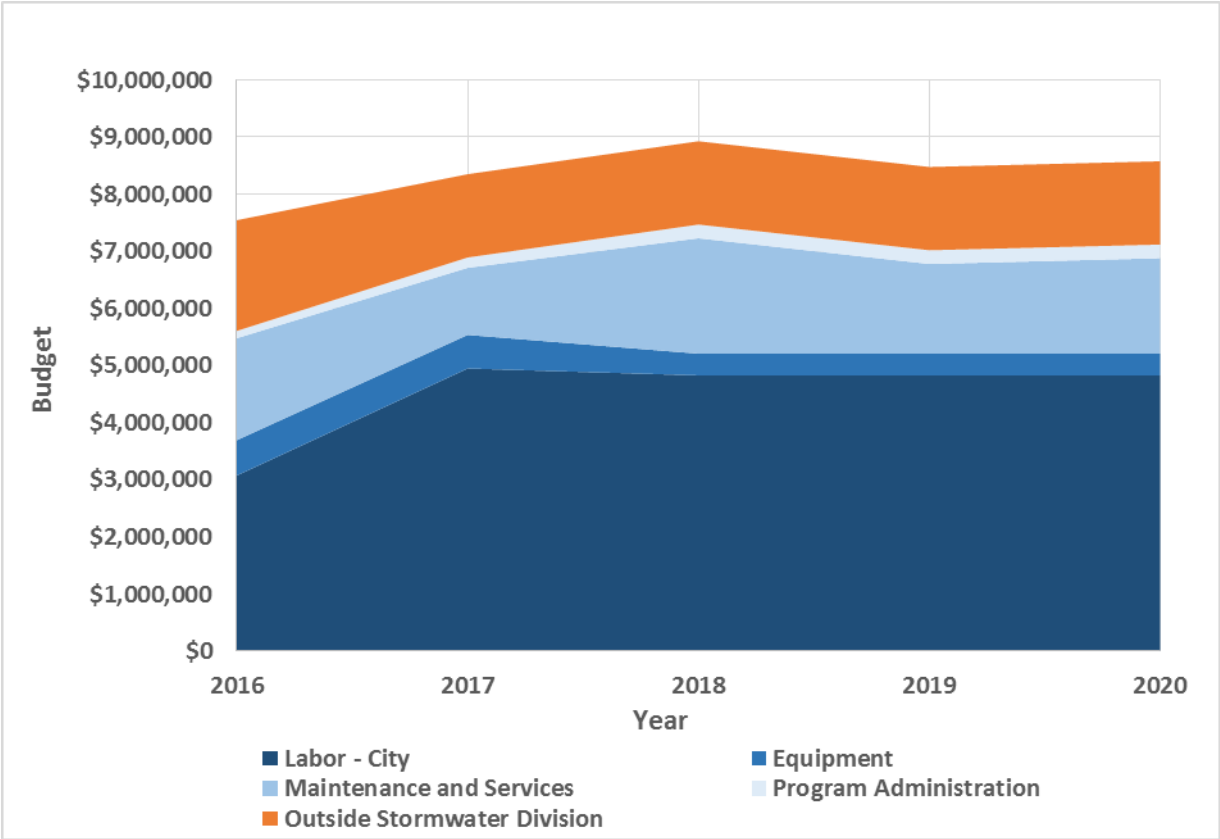
Figure 7-1. Stormwater Division Annual Budget When Division is Fully Staffed

Other City departments and CSU incur costs for activities that support the MS4 Program. These budgeted costs are summarized for 2016 in **Table 7-2**.

Average total annual MS4 stormwater program budget is summarized in **Figure 7-2** for 2016-2020.

Table 7-2. MS4/O&M Budget for Functions Performed Outside Stormwater Division

Entity/Department	Service Provided	Approximate Annual Cost
City Operation and Maintenance	Street sweeping: • 8 operators, 1 supervisor • 8 new sweepers, annual lease	$438,000 $480,000
City Fire Department	Spill response	$225,000
Colorado Springs Utilities	Creek crossing inspection and maintenance (non-capital costs)	$375,000
City – Other Departments (Communications, Human Resources)	Public outreach, human resources, asset tracking and documentation	Minimal – not included
	TOTAL	**$1,518,000**



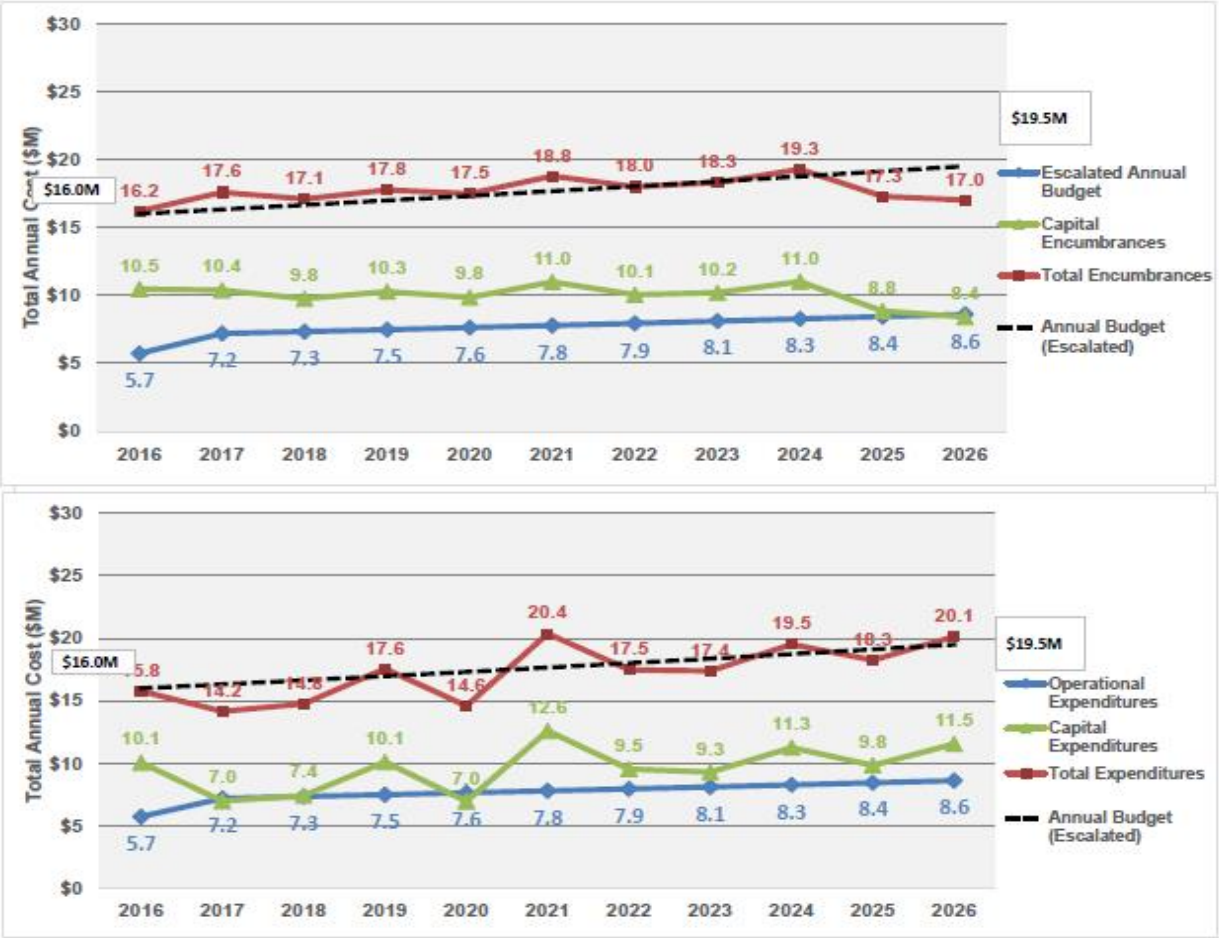
Note: Budgets are in unescalated 2016 dollars.

Figure 7-2. Summary of MS4/O&M Budgeted Costs for 2016-2020

7.2 Combined MS4 and Capital Budget for Stormwater Program

For matching City budgets to anticipated program and project costs, a 10-year cost spreadsheet model was created. The model allows planners to balance staffing levels and capital project start dates to meet the annual budget limitations. In general, funding of the MS4 Program and annual stormwater system O&M was given priority over funding of capital projects. The resulting budget distribution over time is shown in **Figure 7-3**, which shows operational expenditures (MS4/O&M program budget, including all staff costs), capital encumbrances and expenditures (cost to implement capital projects), total encumbrances and expenditures (the sum of those two), and the annual budget. (Encumbered costs are tied to the date at which major capital outlays are required by the City). This occurs at two key project milestones: when final design begins (i.e., a final design consultant contract is awarded) and when construction begins (i.e., a construction contract is awarded.)

In accordance with the IGA with Pueblo County, the average annual budget increases from $20 million to $22 million over 10 years, assuming a 2.0 percent escalation rate. The timing of the capital projects has been adjusted to produce total encumbrances that closely track the available budget. With this available budget, approximately 35 projects can be initiated in 10 years, in addition to ongoing FEMA grant-funded projects and a $1.5 million per year allowance for emergency projects. It is anticipated that this 10-year plan will be updated on an annual basis, as actual costs and progress are documented.



Note: Costs are escalated quarterly starting in January 2016.

Figure 7-3. City Stormwater Program Costs for 2016-2025, Adjusted for Assumed Escalation

With the MS4 Program and O&M requiring an average of $7.8 million when full staffed, $9.2 million from the dedicated $17 million budget from the City remains for capital projects (which does not include the CSU Sanitary Sewer Creek Crossing Program average annual contribution of $3 million). When the budget of $1,518,000 from other City departments as summarized in **Table 7-2** is included, the City budget for activities directly related to the MS4, City capital stormwater programs, and CSU Sanitary Sewer Creek Crossing Program is $21.5 million. This is shown in **Figure 7-4**.

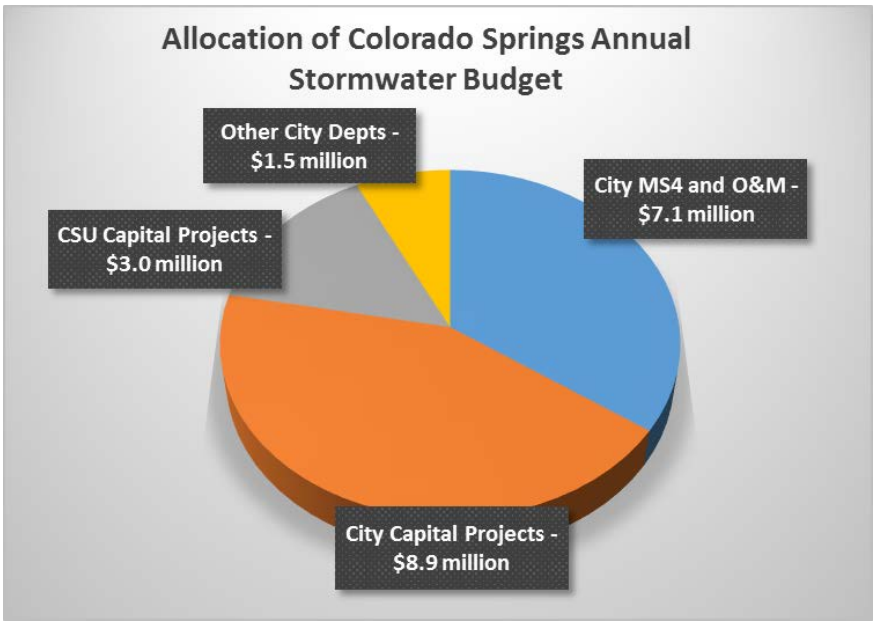


Figure 7-4. Allocation of $20.5 Million Stormwater Budget with Fully Staffed Program

In the first two years (2016 and 2017), prioritized capital projects will provide significant downstream benefits, as summarized in **Table 7-3**. The number of projects initiated with downstream benefit exceeds 70 percent of the total number of projects initiated, and their associated encumbered costs exceed 60 percent of the total encumbered cost.

Table 7-3. Summary of Downstream Benefits in 2016 and 2017

Category	2016	2017	Total
Number of Projects Initiated			
Total	8	3	11
With Downstream Benefit	5	3	8
% with Downstream Benefit	63%	100%	73%
Encumbered Costs ($ million)*			
Total	$7.224	$7.337	$14.561
With Downstream Benefit	$4.929	$4.002	$8.931
% with Downstream Benefit	68%	55%	61%

*In 2016 dollars, unescalated

7.3 Total Estimated Stormwater Expenditures in Colorado Springs

Total annual investment in stormwater management and infrastructure within the City of Colorado Springs will greatly exceed the expenditures described above for the MS4/O&M Program and the Capital Delivery Program. Stormwater related expenditures that are not covered in the $20 million average annual budget include, as examples:

- $1,518,000 in costs incurred by CSU and City departments outside of the Stormwater Division, as itemized in **Table 7-2**.
- Drainage improvements and stormwater BMPs associated with transportation projects, such as those that are part of Pikes Peak Rural Transportation Authority projects.
- Drainage improvements and stormwater BMPs on municipal facilities such as Colorado Springs Airport.
- Grants received from state and federal agencies for emergency response to floods and wildfires.

- Private investment in stormwater BMPs required by the City for approval of new residential, commercial and industrial developments under its Drainage Criteria Manual (e.g., detention basins, retention basins, bioswales, infiltration trenches, low impact development measures).

8.0 IMPLEMENTATION PLAN

Implementation of the Stormwater Program Implementation Plan will involve a number of key activities in 2016, which are summarized in **Table 8-1**. The activities are shown in four groups, illustrating those involving: the stormwater program as a whole, the MS4/O&M Program, the Capital Program, and public outreach. Detailed 3-month, 6-month, and 12-month checklists are contained in the MS4, Capital Projects, and Public Outreach TMs. As of June 2016 the items in the 3-month category have been completed and the items in the 6-month category are completed or substantially complete.

Table 8-1. Implementation Steps for 2016

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
Overall Program	• Create the new Stormwater Division and re-organize existing departments to align resources that support the Stormwater Program. • Initiate discussions with DOJ/EPA on MS4 program requirements. • Personnel: Hire Stormwater Division Manager	• Draft 2017 budget.	• Finalize 2017 budget. • Seek annual feedback from employees about the effectiveness of the program from their viewpoint. • Retain a consultant to prepare a Comprehensive Stormwater Master Plan. • Complete discussions with DOJ/EPA.	• Seek annual feedback from employees about the effectiveness of the program from their viewpoint.
MS4/O&M	• Personnel: Hire 2 new inspectors • Address 6 of 12 O&M issues identified in EPA audit and inspection reports. • Tighten requirement for executed Inspection and Maintenance reports for private BMPs • Conduct reviews of 7 residential developments approved without post-construction BMPs identified in EPA inspection. • Review enforcement protocols with inspectors. • Increase funding for USGS monitoring in 2016. • Finalize the Joint Funding Agreement with USGS.	• Upgrade stormwater inspection procedures and checklists. • Conduct refresher training for all current inspectors and City field personnel. • Investigate training resources such as manual and videos from third party vendors. • Narrow the span of control for the development review function. • Review current City ordinances and update as necessary. • Begin submitting quarterly enforcement reports to Public Works Director.	• Begin development of Stormwater Management Plan/Program Description Document. • Identify and prioritized problems and create a prioritized O&M project list for O&M Division • Improve tracking and record-keeping of public outreach activities. • Research inspection software for field application. • Investigate linking the City's asset management system software with the MS4 tracking database.	• Complete Stormwater Management Plan/Program Description Document. • Conduct refresher training annually for all inspectors. • Conduct refresher training annually for Stormwater Division staff to perform inspections. • Conduct refresher training annually for all City staff performing development reviews. • Consider additional training opportunities for developers and builders.

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
	• Designate a lead inspector to coordinate the MS4 activities. • Designate individuals within the Stormwater Division to have responsibility for tracking, documentation and record-keeping of MS4 activities. • Begin survey of all public waterways, stormwater infrastructure, and public BMPs. • Provide supplemental annual training for inspectors in City procedures for inspection documentation and importance of follow-up and Enforcement. • Review construction site BMP requirements with all construction site inspectors. • Perform an inventory and assessment of all municipal facilities to assure that a current operations and management plan is in place.	• Meet with City Attorney's Office to assume alignment of objectives on enforcement. • Develop plan for addressing the residual stormwater quality issues created by approving seven residential developments without post-construction BMPs. • Establish a formal inspection program for drainage infrastructure • Improve coordination with the Utilities Creek Crossing Program. • Begin coordination efforts with CSU Storm Patrol Program. • Conduct outreach events to the development community (e.g., "Wet Wednesdays") to inform them of the renewed emphasis on stormwater inspections and permit enforcement. • Implement an improved stormwater hotline. • Upgrade the stormwater website to include a method for citizens to report illicit discharges. • Review and update current education materials targeting industrial site owners. • Implement documentation and record keeping process and tools for MS4 activities. • Review the industrial site inspection program to identify potential modifications to improve the efficiency of using	• Maintain an inspector training database to track the training received by all staff members • Research available inspector training tools and resources to determine if these resources could be used to improve the City's program. • Investigate the use of off-the-shelf MS4 Program software for tracking and documenting activities. • Conduct refresher training for City staff reviewing development submittal and post-construction BMP plans. • Cross-train inspectors and other stormwater professionals to conduct construction site inspections.. • Cross-train other staff in Stormwater Division to conduct inspections. • Provide training to non-Stormwater Division staff that have the potential to observe and report on possible illicit discharges. • Ensure that appropriate enforcement protocols are in place, consistently utilized and appropriately tracked. • Train inspectors to emphasize the City's determination to enforce its current ordinances and policies. • Provide clear direction on enforcement steps for developers, construction site	• Develop formal construction site inspection QA/QC program. • Implement a QA/QC process to check the consistency of inspections against inspection procedures. • Update the Inspector Reference Guide to be consistent with the Drainage Criteria Manual. • Address any remaining drainage system O&M issues identified in the EPA audit. • Consider additional training opportunities for developers and builders. • Refresher training to non-Stormwater Division staff that have the potential to observe and report on possible illicit discharges. • Train Utilities O&M crews and pretreatment inspectors to observe and report possible illicit discharges when performing their normal duties. • Train Utilities' pretreatment inspectors to be aware of potential stormwater problems. • Consider recording in-house training sessions for future use. • Conduct annual meetings with municipal site operators.

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
		available resources, and to prioritize sites for inspection. • Validate USGS reporting protocols.. • Equipment: Acquire computers and related equipment as needed for new hires. • Personnel: Hire Stormwater Program Manager, Stormwater Specialist, Stormwater Operations and Maintenance Manager (Drainage Program Supervisor), GIS/Engineering Tech II, Senior Civil Engineer, and 2 Stormwater Inspectors.	owner/operators, and industrial site owner/operators. • Implement outreach to local business owners, developers, contractors, and other regulated entities. • Develop schedule to address remaining drainage system O&M issues identified in the EPA audit. • Complete survey of all public waterways, stormwater infrastructure, and public BMPs. • Document improved conditions to CDPHE and EPA. • Review capital program project prioritization, with O&M needs in mind. • Update existing educational materials targeting construction industry to reflect changes to the City's MS4 Program. • Prepare a response document describing how stormwater related issues identified with 7 residential sites audited by EPA will be addressed. • Identify improved method of tracking responses to illicit discharges. • Prioritize all municipal facilities in the MFRCP for inspections based on their potential to contribute pollutants to the MS4. • Conduct annual meetings with each municipal site operator	• Prioritize industrial site inspections to assure that those sites in business categories or locations with the greatest potential to contribute pollutants to the MS4 are inspected most frequently. • Research possible requirement for signage at development sites to tell citizens how to report evidence of sediment runoff. • Develop a QA/QC process for development submittal reviews performed by the Development and Erosion Control group. • Implement plans for addressing how stormwater related issues identified with 7 residential sites audited by EPA will be addressed. • Submit Monitoring Program reporting for 4-year analysis ending in 2014, as specified in permit. • Review monitoring program every 12 months and modify as necessary. • Equipment: Acquire computers and related office equipment as needed for new hires, 1 4WD SUV, 1 4WD pickup truck, 1 confined space van or camera truck, 1

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
			to review the importance of the stormwater program and provide training on proper municipal site operations. • Determine additional water quality monitoring requirements, if any. • Update Monitoring Plan to be consistent with MS4 Permit. • Equipment: Acquire computers and related office equipment as needed for new hires, 1 4WD SUV, I 4WD pickup truck, 1 mini excavator, 1 trailer, 1 vactor truck, 8 regenerative air and mechanical street sweepers (leased). • Personnel: Hire Engineering Inspector II (2), Water Quality Manager, Senior Civil Engineer (2), Civil Engineer II (3), Engineering Tech II, Senior Civil Engineer/PM, Drainage Inspector, and 6 Equipment Operators.	backhoe, 1 dump truck, 1 dump truck (tandem), 1 skid steer loader, 1 trailer, 1 vactor truck. • Personnel: Hire Stormwater Projects Manager, Drainage Inspector, Equipment Operators (6), Civil Engineer III, Civil Engineer II, Engineering Tech II (2).
Capital Projects	• 2016 Capital projects initiated and underway. • Draft Program Management Plan (PMP) in process with City-specific items. • Project constraints reviewed. Determine need for programmatic tracking (e.g., procurement, permits, land acquisition). • New Stormwater on-call construction contracts in place.	• Capital projects underway. • Issue design task orders to on-call engineers for required projects. • New Stormwater on-call engineering contracts in place or in procurement. • Personnel: Execute staff augmentation approach.	• Capital projects underway. • Begin annual reporting on CIP progress. • Begin annual CIP update process, resulting in an updated project list for 2017.	• Capital projects underway. • Begin implementation of draft PMP process. • Continue annual reporting on CIP progress. • Continue annual CIP update process.

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
	• Personnel: Decide whether to do any "staff augmentation" in 2016, and if so move forward with procuring outside staff			
Public Outreach	• Begin evaluation of existing tactics for effectiveness and prioritization.	• Upgrade stormwater website. • Upgrade public hotline. • Work with Police Department Dispatch to include a water pollution or spills option on its automated navigation menu for callers and retrain call takers for consistency in responding to these calls. • Conduct review of public education and outreach program. • Develop working outreach vision and begin a communications action plan for communications and education with Communications group. • Identify outreach goals and measurement techniques. • Create a measurement matrix for tracking progress. • Begin development of a separate Public Education and Outreach Program for the MS4 Program. • Secure community partner entity with at least one joint campaign or other tactic planned. • Upgrade Stakeholder Database. • Distribute household hazardous waste brochures. • Evaluate effectiveness of stormwater literacy guide,	• Implement an outreach program to local business owners, developers, contractors and other regulated entities. • Increase public reporting surrounding the MS4 Program activities, particularly related to improvements in the program ("Stormwater Spending Report", "Stormwater MS4 Program Accomplishments Report", and "Stormwater Capital Projects Accomplishments Report"). • Measure all 2016 tactics and make sure they are entered into new annual report template. • Review and revise central vision/communications action plan. • Enhance cooperative outreach tactics to the public as potential polluters: pet owners, car washers, lawn and household owners, etc. • Schedule at least one city-wide or region-wide water festival aimed at children and parents. • Secure national partner entity with at least one joint campaign or tactic planned.	• Conduct 2-3 media campaigns annually to highlight successful projects. • Continue activities started previously.

Component	Completed or In Progress First 3 Months	Completed or In Progress First 6 Months	Completed or In Progress First Year	Completed or In Progress Second Year
		DVD, brochures, etc. and reshape them accordingly. • Establish and monitor new goals for storm drain marking and Adopt-a- Waterway efforts. • Conduct monthly planning meetings with Communications.	• Establish at least monthly meetings to move public education and outreach planning and measurement along. • Identify and set a date/month for a news media campaign highlighting successful projects. • Identify a possible date for a stormwater festival in concert with CSU and El Paso County. • Begin to inventory available video assets from the City and other partners. • Complete repairs or replacement of “stormwater” pages on the City’s website. • Convert current newsletter into E-news format and get at least one E-news out on stormwater successes or challenges being met. • Hold an initial central visioning and planning meeting for stormwater education and communications staff.	

City of Colorado Springs Stormwater Program Implementation Plan

SUPPLEMENT TO APPENDIX A – MS4 PROGRAM IMPROVEMENT PLAN

TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1
2.0 STORMWATER PROGRAM STAFFING 1
3.0 MS4 AND OPERATION AND MAINTENANCE PROGRAM BUDGET 4
4.0 MS4 PROGRAM IMPROVEMENT IMPLEMENTATION PLAN SCHEDULE 6

LIST OF FIGURES

Figure S-1. Updated Stormwater Program Organization Chart 3

LIST OF TABLES

Table S-1. Update to 2016 and 2017 Stormwater Program Budgets (June 2016) 5
Table S-2. MS4 Program Improvement Implementation Plan – June 2016 7

1.0 INTRODUCTION

A Draft Colorado Springs Stormwater Program Implementation Plan was prepared in January 2016 (SPIP (January 2016 Draft)). It includes, in Appendix A of the January 2016 Draft, a detailed description of the City's planned improvements to its Municipal Separate Storm Sewer System (MS4) program. The SPIP (January 2016 Draft) and Appendix A have been used by the City since preparation as guidance for for internal stormwater program management decisions. These have been essential planning documents as the City re-invigorates its stormwater management activities.

The City has made substantial progress implementing the recommendations in the SPIP (January 2016 Draft) and Appendix A. The City has gained valuable experience with these recommendations. It has from time to time modified its planning recommendations based on that experience.

This document — a Supplement to Appendix A - MS4 Program Improvement Plan (Supplement) – describes the most significant of these modifications. This Supplement focuses upon changes to the Stormwater Division and MS4 program staffing, the Stormwater Division budget, and the schedule for implementing specific MS4 program improvements from the SPIP (January 2016 Draft). In addition, a section of the SPIP (January 2016 Draft) summarizing the City's MS4 Program is updated to reflect current accomplishments and planning. This Supplement also reflects careful consideration by the City of comments supplied by the U.S. Environmental Protection Agency concerning Appendix A of the SPIP (January 2016 Draft).

2.0 STORMWATER PROGRAM STAFFING

Figure 3-4 in the SPIP and Figure 6-1 in Appendix A (January 2016 Draft) present a proposed City stormwater program staff organization chart. The chart shows creation of a proposed Stormwater Division drawing from current Public Works MS4 staff, engineers and inspectors, and supported by existing functions in the CIP Engineering Program Division and the Operation and Maintenance Division. The total proposed stormwater program staff support across all divisions in the SPIP (January 2016 Draft) was 58 full-time equivalents (FTEs), which would be hired by the end of 2017.

In the course of forming the Stormwater Division and reorganizing functions within the Public Works Department, the City has gained a better understanding of the roles and functions of staffing needed in the Stormwater Division. The stormwater program organization chart currently being used by the City to guide staff functions, lines of reporting, and priorities for new hires is shown in **Figure S-1**. It compares to the January 2016 Draft proposed organization chart as follows.

- The new stormwater program organization will have 65 FTEs, increased from 58 FTEs in the January 2016 Draft proposal. Primary changes are:
  - Addition of 3 management positions within the Stormwater Division, reporting to the Stormwater Division Manager, to provide greater efficiency in reporting and management.
  - Elimination of 2 Engineering Tech positions.
  - Elimination of Stormwater Division responsibility to cover 0.25 FTE of the CIP Engineering Program Division Manager labor cost.
  - Addition of 6 Equipment Operators from the street sweeping group to the stormwater program staff.

- Of the 65 FTEs, 40 positions are currently filled (up from 28 in January 2016). This includes 4 existing positions that are vacant for various reasons. The City will continue to hire new staff strategically and methodically, and plans to fill all positions by the end of 2017.
- The overall organization of the Stormwater Division is very similar to what was originally proposed. Three managers are now shown over each of the three functional groups within the Division to improve efficiency of reporting to the Stormwater Division Manager, and all inspectors are now shown as reporting up through a new Water Quality Manager.
- As noted previously, the Drainage Program under the Operations and Maintenance Division now includes all the current and future street sweeper operator positions.

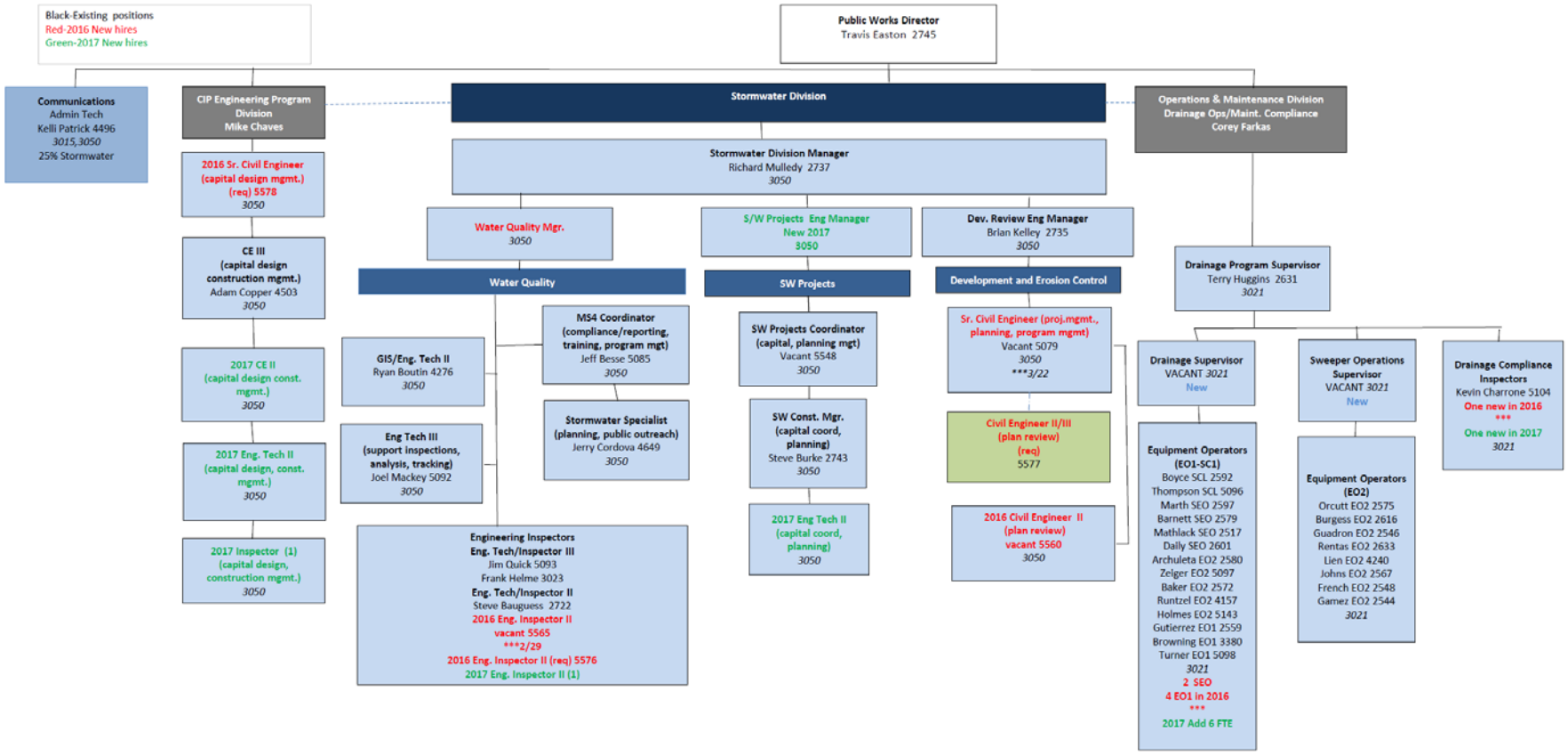


Figure S-1. Updated Stormwater Program Organization Chart

3.0 MS4 AND OPERATION AND MAINTENANCE PROGRAM BUDGET

When the January 2016 Draft SPIP was prepared, the City already had an adopted budget for 2016. Therefore some adjustments were necessary in the proposed Stormwater Division budget to adapt to the approved budget and to reflect actual costs versus assumed costs for certain staff positions, equipment, etc. In addition, reallocation of some costs between the Capital and O&M categories was necessary to align with the City budgeting process.

The 2017 budget process began in May 2016. Experience in the first 5 months of 2016 influenced preparation of a draft 2017 Stormwater Division budget to reflect current priorities and needs.

The Stormwater Division budget and estimated costs for other stormwater program activities as proposed in the January 2016 Draft are shown in Section 7 of the SPIP and Section 8 of Appendix A. Proposed budgets are provided for the first five years of the new Stormwater Division (2016-2020). Based on the first 5 months of implementing the new program and the constraints imposed by the previously approved 2016 City budget, the following key budget adjustments have been needed and are reflected in the following tables.

- Labor costs for new hires are higher than estimated in the January 2016 Draft. This affected the draft 2017 budget and shifted more cost into the Labor category.
- Costs for certain professional services and studies primarily related to capital projects were moved from the MS4/O&M portion of the budget to the Capital Projects portion of the City budget to reflect City policy for tracking those costs. This affected the draft 2017 budget by reducing the Services budget for the MS4/O&M portion of the Stormwater Division.
- The adjusted budget for the Services line item includes consultant time to support the City in improving its stormwater program until the full complement of Stormwater Division staff can be hired and trained. This has the largest effect on the 2016 budget.
- Actual equipment costs have been almost twice the cost estimated in the SPIP (January 2016 Draft). The 2016 and 2017 equipment budgets are similar to what was proposed in the SPIP (January 2016 Draft), but the actual cost for acquiring all required equipment will have to be spread out over more years in order to acquire all the required equipment.

The original and revised budgets for the Stormwater Division and dedicated Public Works staff for 2016 and 2017 are shown in **Table S-1**. This updates the information for 2016 and 2017 shown in Table 7-1 in the SPIP and Table 8-2 in Appendix A (January 2016 Draft). Overall the actual budgeted expenditures for 2016 and 2017 are very close to what was planned in the January 2016 Draft.

Table S-1. Update to 2016 and 2017 Stormwater Program Budgets (June 2016)

Budget Item	Proposed 2016 Budget in January 2016	Actual 2016 Budget in June 2016	Proposed 2017 Budget in January 2016	Draft 2017 Budget in June 2017	Comments
Labor - City Employees	$3,052,000	3,077,898	$4,302,000	$4,950,075	
Labor – Outsourced	$0	$0	$0	$0	
Equipment	$453,000	$618,377	$422,00	$587,400	Includes heavy equipment and minor equipment
Maintenance and Services	$1,667,000	$1,783,909	$2,165,00	$1,175,000	
Maintenance	$540,000	$703,601	$600,000	$615,000	Includes supplies and materials, including MFRCP costs; staff time is in Labor category
Services	$1,127,000	$1,080,308	$1,565,000	$560,000	Includes consultant support, specialists, USGS monitoring cost share, public outreach
Program Administration	$136,000	$127,211	$181,000	$180,225	Includes office equipment, supplies, non-labor costs
2016 Labor, Equipment, O&M, Program Admin	**$5,308,000**	**$5,607,395**	**$7,065,000**	**$6,892,700**	2016 budget includes $310,367 rolled over from 2015

When the proposed overall stormwater program budget including both capital and MS4/O&M services was prepared for the SPIP (January 2016 Draft), it was assumed that the City would supplement internal labor with outside services for staff augmentation to provide the same level of effort as would be generated with the full suite of positions envisioned in the Stormwater Division organization chart. This option was not possible due to limitations in the previously approved 2016 budget and capital project obligations associated with the Pueblo County Intergovernmnetal Agreement (IGA) related to the Southern Delivery System. This change is reflected in the updated overall Stormwater Division budget in Figure 7-3 of the SPIP and Figure 5-1 in Appendix B.

4.0 MS4 PROGRAM IMPROVEMENT IMPLEMENTATION PLAN SCHEDULE

Section 9 in Appendix A describes a plan for implementing the proposed improvements to the MS4/O&M portion of the City's stormwater program over the 2016-2017 time period. Section 8 in the SPIP (January 2016 Draft) shows the schedule for proposed improvements to the MS4/O&M, Capital, and Public Outreach in 2016.

As the City implemented stormwater program improvements in the first half of 2016, it has rearranged some priorities. These changes are based upon a better understanding of program realities internally as well as external drivers including the Pueblo County IGA and coordination with EPA and the State of Colorado. As a result, the proposed implementation schedule in Table 9-1 of Appendix A has been adjusted based on accomplishments to the relase of this Supplement and current plans for the next 18 months. The revision is presented in **Table S-2**.

One of the key activities for the first year is to start a Stormwater Infrastructure Master Plan (SIMP). As described in Appendix A, this would be a compilation and update of past information on stormwater capital and O&M projects and planning studies and would put all projects on the same foundation. The City may expand the SIMP to include a database of permanent Best Management Practices used in the City.

Table S-2. MS4 Program Improvement Implementation Plan – June 2016

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Organization Changes	• Create the new Stormwater Division and re-organize existing departments to align resources that support the Stormwater Program		
Staff Additions	• 2 Stormwater Inspectors • Stormwater Program Manager • Stormwater Specialist • Stormwater Operations and Maintenance Manager (Drainage Program Supervisor) • GIS/ Engineering Tech II • Senior Civil Engineer	• Water Quality Manager • Senior Civil Engineer (2) • Engineering Inspector II (2) • Civil Engineer II (2) • Drainage Inspector • Equipment Operators (6)	• Engineering Tech II • Drainage Inspector • Equipment Operators (6) • Senior Civil Engineer/ PM • Civil Engineer II • Engineering Tech II • Engineering Tech II
Equipment Additions	• Computers and related office equipment as needed for new hires	• Computers and related office equipment as needed for new hires • 1 4WD SUV • 1 4WD pickup truck • 1 mini excavator • 1 trailer • 1 vactor truck • 8 regenerative air and mechanical street sweepers (leased)	• Computers and related office equipment as needed for new hires • 1 4WD SUV • 1 4WD pickup • 1 confined space van or camera truck • 1 backhoe • 1 dump truck • 1 dump truck (tandem) (1 in 2018) • 1 skid steer (1 in 2018) • 1 trailer (in 2018) • 1 vactor truck (in 2018)

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Stormwater Management Plan		• Begin Stormwater Management Plan	• Complete Stormwater Management Plan
Inspections	• Designate a lead inspector to coordinate the MS4 activities. • Upgrade stormwater inspection procedures and checklists.	• Identify and prioritize problems and create a prioritized O&M project list for O&M division • Implement a QA/QC process to check the consistency of inspections against inspection procedures. • Update the Inspector Reference Guide to be consistent with the Drainage Criteria Manual. • Research inspection software for field application.	
Enforcement	• Review enforcement protocols with inspectors. • Ensure that appropriate enforcement protocols are in place, consistently utilized and appropriately tracked. • Review current City ordinances and update as necessary. • Begin submitting quarterly enforcement reports to Public Works Director. • Meet with City Attorney's Office to assure alignment of objectives on enforcement.	• Train inspectors to emphasize the City's determination to enforce its current ordinances and policies. • Provide clear direction on enforcement steps for developers, construction site owners/operators, and industrial site owner/operators. • Implement outreach to local business owners, developers, contractors, and other regulated entities.	

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Documentation and Record-Keeping	• Designate individuals within the Stormwater Division to have responsibility for tracking, documentation and record-keeping of MS4 activities. • Implement full documentation and record keeping process and tools for MS4 activities.	• Investigate linking the City's asset management system software with the MS4 tracking database. • Improve tracking and record-keeping of public outreach activities • Investigate the use of off-the-shelf MS4 Program software for tracking and documenting activities.	
Training	• Conduct refresher training for all current inspectors and City field personnel • Conduct refresher training for City staff reviewing development submittals and post-construction BMP plans • Investigate training resources such as manuals and videos from third party vendors.	• Maintain an inspector training database to track the training received by all staff members • Research available inspector training tools and resources to determine if these resources could be used to improve the City's program. • Cross-train other staff in Stormwater Division to conduct inspections. • Provide training to non-Stormwater Division staff that have the potential to observe possible illicit discharges. • Train Utilities O&M crews to observe and report possible illicit discharges when performing their normal duties. • Train Utilities pretreatment inspectors to be aware of potential stormwater problems • Consider recording in-house training sessions for future use.	• Conduct refresher training annually for all inspectors. • Conduct refresher training annually for Stormwater Division staff to perform inspections. • Conduct refresher training annually for all City staff performing development reviews. • Consider additional training opportunities for developers and builders.

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Planning		• Retain a consultant to prepare a Comprehensive Stormwater Master Plan. • Seek annual feedback from employees about the effectiveness of the program from their viewpoint.	• Seek annual feedback from employees about the effectiveness of the program from their viewpoint.
Stormwater Operation and Maintenance Program	• Address 6 of 12 O&M issues identified in EPA audit and inspection reports. • Begin survey of all public waterways, stormwater infrastructure, and public BMPs. • Establish a formal inspection program for drainage infrastructure • Improve coordination with the Utilities Creek Crossing Program. • Formally coordinate efforts with CSU Storm Patrol Program.	• Develop schedule to address remaining drainage system O&M issues identified in the EPA audit and inspection reports that require capital project solutions. • Complete survey of all public waterways, stormwater infrastructure, and public BMPs. • Document improved conditions to CDPHE and EPA. • Review capital program project prioritization, with O&M needs in mind.	• Address remaining drainage system O&M issues identified in the EPA audit and inspection reports that don't require capital project solutions (may require Corps of Engineers permits).
Construction Program	• Provide supplemental annual training for inspectors in City procedures for inspection documentation and importance of follow-up and enforcement. • Review construction site BMP requirements with all construction site inspectors • Conduct outreach to the development community (e.g., "Wet Wednesdays") to inform them of the renewed emphasis on stormwater inspections and permit enforcement. • Cross-train inspectors and other stormwater professionals to conduct construction site inspections. • Develop formal inspection QA/QC program.	• Update existing Inspector Reference Guide. • Update existing educational materials targeting construction industry to reflect changes to the City's MS4 Program. • Add requirement for signage at development sites to tell citizens how to report evidence of sediment runoff	• Consider additional training opportunities for developers and builders.

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Residential / Commercial Program	• Tighten requirement for executed Inspection and Maintenance reports for private BMPs • Conduct reviews of 7 residential developments approved without post-construction BMPs identified in EPA inspection. • Narrow the span of control for the development review function • Develop plans for addressing the residual stormwater quality issues created by approving 7 residential developments without post-construction BMPs • Provide refresher training to the City's staff involved in development reviews.	• Develop a QA/QC process for development submittal reviews performed by the Development and Erosion Control group • Prepare a response document describing how stormwater related issues identified with 7 residential sites audited by EPA will be addressed.	• Implement plans for addressing the residual stormwater quality issues created by approving 7 residential developments without post-construction BMPs
Industrial Program	• Review and update current educational materials targeting industrial site owners. • Review the industrial site inspection program to identify potential modifications to improve the efficiency of using available resources, and to prioritize sites for inspection.	• Prioritize industrial site inspections to assure that those sites in business categories or locations with the greatest potential to contribute pollutants to the MS4 are inspected most frequently. • Train other City department staff to observe and report potential illicit discharges. • Train CSU pretreatment staff to observe and report potential illicit discharges.	
Municipal Facility Program	• Perform an inventory and assessment of all municipal facilities to assure that a current operations and management plan is in place	• Prioritize all municipal facilities in the MFRCP for inspections based on their potential to contribute pollutants to the MS4. • Conduct annual meetings with each municipal site operator to review the importance of the stormwater program and provide training on proper municipal site operations.	• Conduct annual meetings with each municipal site operator

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Illicit Discharge Program	• Implement an improved stormwater hotline. • Upgrade the stormwater website to include a method for citizens to report illicit discharges. • Advertise methods for citizens to report illicit discharges.	• Train other City department staff to observe and report potential illicit discharges. • Train other CSU creek crossing maintenance staff to observe and report potential illicit discharges. • Identify improved method of tracking responses to illicit discharges	• Refresher training for other City department staff • Refresher training for CSU creek crossing maintenance staff
Public Education and Outreach Program	• *Completed in late 2015:* Conducted review of public education and outreach program • Develop working outreach vision and begin a communications action plan for communications and education with Communications group. • Identify outreach goals and measurement techniques. • Create a measurement matrix for tracking progress. • Upgrade stormwater website. • Upgrade public hotline. • Begin evaluation of existing tactics for effectiveness and prioritization. • Develop a separate Public Education and Outreach Program for the MS4 Program. • Secure community partner organizations with at least one joint campaign or other tactic planned. • Upgrade stakeholder database. • Schedule at least one citywide or region-wide water festivals aimed at children and parents.	• Implement an outreach program to local business owners, developers, contractors, and other regulated entities • Increase public reporting surrounding the MS4 Program activities, particularly related to improvements in the program (“Stormwater Spending Report”, “Stormwater MS4 Program Accomplishments Report”, and “Stormwater Capital Projects Accomplishments Report”). • Measure all 2016 tactics and make sure they are entered into new annual report template. • Review and revise central vision/communications action plan. • Enhance cooperative outreach tactics to the public as potential polluters: Pet owners, car washers, lawn and household owners, etc. • Secure national partner entity with at least one joint campaign or tactic planned.	• Conduct 2-3 media campaigns annually to highlight successful projects. • Continue activities started previously.

Intended Period of Implementation			
Program Element	**Completed or In Progress**	**6 to 12 Months**	**12 to 24 Months**
Public Education and Outreach Program	• Distribute household hazardous waste brochures. • Evaluate effectiveness of stormwater literacy guide, DVD, brochures, etc. and reshape them accordingly. • Establish and monitor new goals for storm drain marking and Adopt-a-Waterway efforts. • Conduct monthly planning meetings with Communications. • Convert current newsletter into E-news format and get at least one E-news out on stormwater successes or challenges being met.		
Monitoring Program	• Increase funding for USGS monitoring in 2016 • Finalize the Joint Funding Agreement with USGS. • Validate USGS reporting protocols. • Determine additional water quality monitoring requirements, if any. • Submit Monitoring Program reporting for 4-year analysis ending in 2014, as specified in permit.	• Update Monitoring Plan to be consistent with MS4 Permit.	• Review monitoring program every 12 months and modify as necessary.

Colorado Springs Stormwater Program

MS4 PROGRAM IMPROVEMENT PLAN REPORT

Appendix A to the Stormwater Program Implementation Plan Report

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TABLE OF CONTENTS

Page No.

EXECUTIVE SUMMARY 1

1.0 INTRODUCTION 10

2.0 BACKGROUND 11
- 2.1 Colorado Springs MS4 Program 11
- 2.2 MS4 Program Reviews by EPA and CDPHE 12
- 2.3 Comparison with Other MS4 Entities 13

3.0 STRATEGY FOR IDENTIFYING AND PRIORITIZING MS4 PROGRAM IMPROVEMENTS 14

4.0 MS4 PROGRAM ORGANIZATIONAL CHANGES 16
- 4.1 Current Stormwater Organization 16
- 4.2 Proposed Organization within City Departments 16

5.0 PROGRAM ENHANCEMENTS 21
- 5.1 General MS4 Program Activity Improvements 21
- 5.2 Specific MS4 Program Component Improvements 26

6.0 STAFFING CHANGES 36
- 6.1 Current Staff Resources 36
- 6.2 MS4 Program Staff Additions 36
- 6.3 Transition in Staffing Level 40

7.0 EQUIPMENT ADDITIONS 42
- 7.1 Current Equipment Resources 42
- 7.2 Equipment Needs 42

8.0 STORMWATER PROGRAM BUDGET 43
- 8.1 Labor Budget 43
- 8.2 New Equipment Budget 44
- 8.3 Maintenance and Services Budget 44
- 8.4 Administration Budget 46
- 8.5 Budget Summary 46

9.0 IMPLEMENTATION PLAN 50

APPENDIX A-1 – MAINTENANCE PROBLEMS IDENTIFIED BY EPA
APPENDIX A-2 – MONITORING PROGRAM
APPENDIX A-3 – MS4 PROGRAM REVIEW TECHNICAL MEMORANDUM
APPENDIX A-4 – ESTIMATE OF STAFFING NEEDED TO PERFORM THE REQUIRED FUNCTIONS OF ALL MS4 PERMIT ACTIVITIES
APPENDIX A-5 – STORMWATER PROGRAM LABOR, EQUIPMENT AND MAINTENANCE, AND SERVICES DETAIL TABLES

LIST OF TABLES

Table ES-1. Budget for Stormwater Division and Dedicated Public Works Staff.....7
Table ES-2. MS4 Budget for Functions Performed Outside Stormwater Division 8
Table 5-1. Monitoring Plan Improvement Activities.....34
Table 6-1. Stormwater Program Staff Aligned with Primary MS4 Program Components.....40
Table 6-2. Phased Staff Additions for Augmenting Stormwater Division Program 41
Table 8-1. Other Items for MS4 Program Budget 45
Table 8-2. Budget for Stormwater Division and Dedicated Public Works Staff 47
Table 8-3. MS4 Budget for Functions Performed Outside Stormwater Division.....48
Table 9-1. MS4 Program Improvement Implementation Plan 51

LIST OF FIGURES

Figure ES-1. New Stormwater Division and Other Public Works Divisions and Groups.....2
Figure ES-2. Stormwater Division Group Functions 3
Figure ES-3. Stormwater Program Staffing Needs by Functional Area.....5
Figure ES-4. Distribution of Stormwater Division Budgets among Functional Areas.....7
Figure ES-5. Summary of MS4 Program Budgeted Costs.....8
Figure 4-1. Current Organization of Stormwater Functions in City Departments.....16
Figure 4-2. Positions of Stormwater Division in Public Works Organization Chart.....17
Figure 4-3. Stormwater Program Organization that Maximizes Consolidation of Resources 18
Figure 4-4. Stormwater Program Organization that Maximizes Use of Shared Resources.....18
Figure 4-5. Stormwater Division Group Functions.....20
Figure 4-6. New Stormwater Division and Other Public Works Divisions.....20
Figure 6-1. Stormwater Program Staffing Needs by Functional Area 37
Figure 8-2. Summary of MS4 Program Budget for All City and CSU Activities 48

EXECUTIVE SUMMARY

Introduction

The City of Colorado Springs, Colorado (City), supported by outside consultants MWH Americas, Inc. and Ben Urbonas (Urban Watersheds LLC), conducted a comprehensive review of its Municipal Separate Storm Sewer System (MS4) Program. The review was performed between September and December 2015. The purpose of the review was to identify areas needing improvement and then to develop an improvement plan for satisfactorily addressing those areas. This report presents the resulting MS4 Program Improvement Plan.

Background

The City's MS4 Program was developed to protect public health, safety and the environment by complying with the conditions of the MS4 Permit issued to the City by the Colorado Department of Public Health and Environment. The MS4 Permit requires the City to implement best management practices so as to minimize the effect of urban runoff on water quality. The MS4 Program addresses residential/commercial development, industrial sites, construction sites, municipal operations facilities, and illicit discharges through reviews, inspections, enforcement, and education and outreach.

The MS4 Program improvement plan is based on the identification of areas of improvement by City staff and outside consultants, comparison of the City program with other similar communities with MS4 permits, review of EPA audits of the City's program in 2013 and 2015, and anticipated changes to permit conditions when the permit is reissued in 2016. Recent program challenges are primarily due to the reduction in funding and staffing and re-organizations that have occurred since the City's Stormwater Enterprise was dissolved in 2010.

In a separate, parallel effort, the City developed a plan for implementing a prioritized list of capital stormwater projects and reviewed its public education and outreach program. The results of these three studies are in a separate Stormwater Program Implementation Plan report.

Strategy for Identifying and Prioritizing MS4 Program Improvements

The City's goal is to have an MS4 Program with the following attributes:

- Compliant program – assures full compliance with MS4 Permit conditions
- Sustainable program – has long-term sustainability in terms of financing and staffing
- Proactive program – anticipates changes in MS4 and other environmental program regulations
- Beneficial program- protects and enhances water quality within the watershed
- Cost-Effective program – exploits efficiencies and balances MS4 needs with capital project needs

Planned MS4 Program improvements were prioritized for completion within the following four timeframes:

- First 30 days (i.e., January 2016), as well as those actions that the City has already undertaken and completed
- First 1 to 6 months (February – June 2016)
- First 6 to 12 months (July – December 2016)
- First 12 to 24 months (January – December 2017)

Organizational Changes to Consolidate Core Functions

In order to more effectively focus on stormwater program improvements, the City will form a new Stormwater Division to consolidate the majority of core functions for MS4 Permit compliance. The Public Works organization chart with the new Stormwater Division is shown in **Figure ES-1**. The previous Streets Division is being renamed the Operation and Maintenance Division to more accurately reflect its function.

This reorganization is underway. Stormwater activities will be reorganized under three groups:

- Municipal/Industrial,
- Development and Erosion Control, and
- Stormwater Projects.

The groups' functions are shown in **Figure ES-2**. The Municipal/Industrial group is responsible for implementing the municipal, residential, commercial/industrial, illicit discharge, monitoring, and public education BMP activities. The Development and Erosion Control group is responsible for implementing the construction program, including development submittal review and construction site inspections. The Stormwater Projects group is responsible for coordinating O&M and capital project delivery being performed in other divisions and for stormwater management planning.

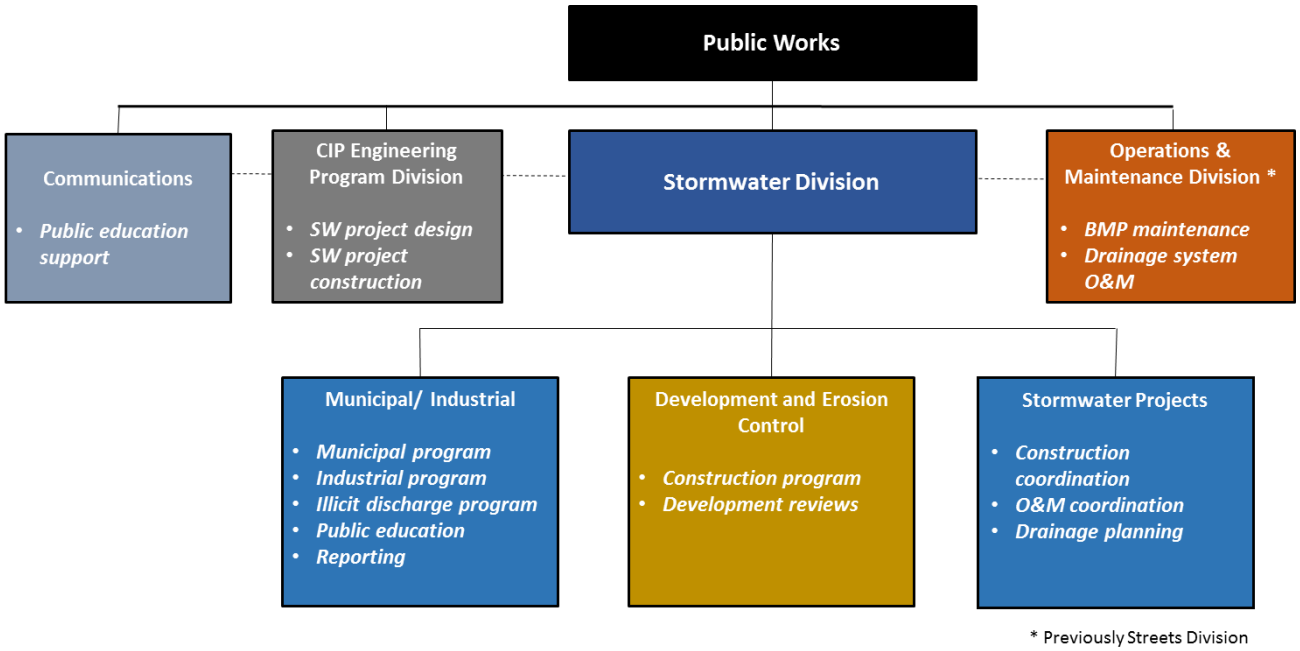

Figure ES-1. New Stormwater Division and Other Public Works Divisions and Groups

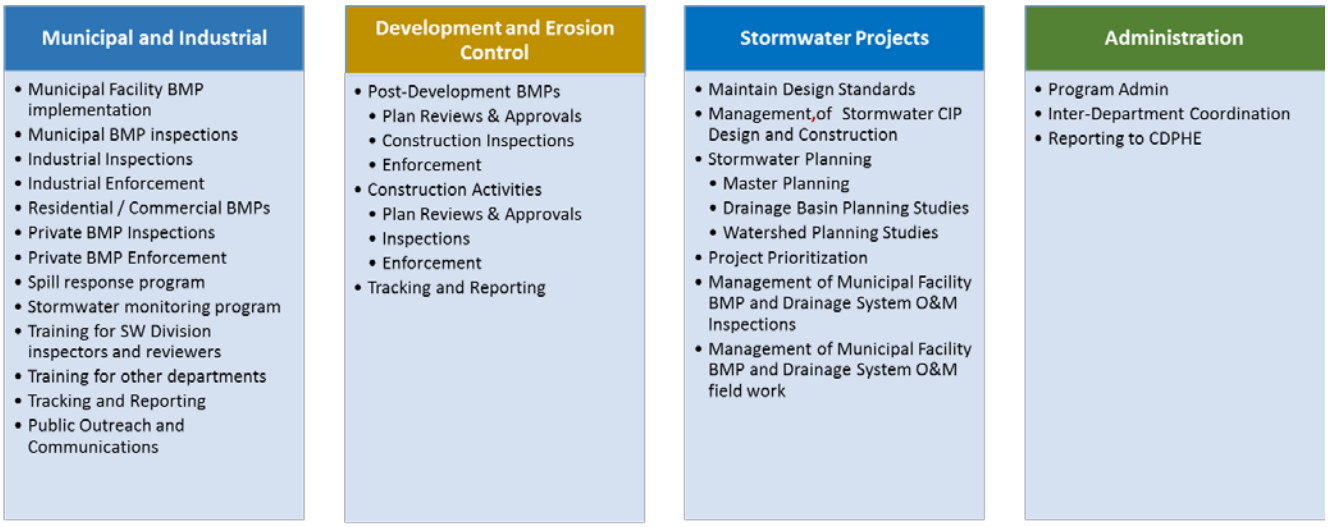

Figure ES-2. Stormwater Division Group Functions

A few MS4 Program activities will remain in other existing City groups, where functions and efficiencies suggest that approach. Street sweeping will continue to be the responsibility of the Operation and Maintenance Division. Spill response will continue to be the responsibility of the Fire Department and Operation and Maintenance Division.

Colorado Springs Utilities will continue to perform channel inspection and stabilization projects under its Sanitary Sewer Creek Crossing program. United States Geological Survey will continue to perform wet and dry weather runoff monitoring required by the MS4 Permit.

MS4 Program Enhancements

The City will implement the following key improvements to its MS4 Program, which are described in greater detail later in this report.

- A Stormwater Management Plan will be prepared to describe the strategies, activities, BMPs, and resources used to address the MS4 Permit requirements.
- Inspections of construction sites, industrial sites, municipal operations facilities, public BMPs, and waterways will be more rigorous and will be performed by dedicated stormwater inspectors who will receive frequent training.
- Enforcement actions will be more vigorously pursued as appropriate, and supported by the City Attorney's Office and City leaders.
- Documentation and record-keeping will be improved.
- Stormwater Division staff will train City and Utilities field personnel to observe and report potential illicit discharges.
- Maintenance issues in the city's waterways will be identified and prioritized annually.
- Development reviews for permanent water quality BMPs will be more rigorous and final approvals will not be granted without an executed maintenance agreement.
- Development review staff will be provided needed training to insure compliance with City standards and criteria.
- Methods for citizens to report potential illicit discharges will be improved.
- Public education and outreach activities will be expanded and will focus on improving the public's support for the overall stormwater management program.

Staffing Changes and Additions

Implementation of the planned MS4 Program improvements will require additional staff resources. The City's current stormwater program is supported by 28 full-time equivalents (FTEs). The improved program will employ approximately 58 FTEs. Review of other communities showed that a staff of approximately 50-70 FTEs is typical for a city the size of Colorado Springs.

Figure ES-3 shows the distribution of stormwater staff positions between the Stormwater Division, Operation and Maintenance Division, and CIP Engineering Program Division. The City plans to transition from the current to the proposed staff level over two years. The key new position to fill is the Stormwater Division Manager. This position has been advertised and the Public Works Director will soon hire this important public official.

In addition to the changes shown in **Figure ES-3**, the City will dedicate 8 members of the street sweeping group to the stormwater program. These crew members will be cross-trained with the Operation and Maintenance Division so they can assist with drainage maintenance when needed.

Additional Equipment Needs

The addition of new maintenance staff and inspectors will require the acquisition of additional equipment. New equipment will include:

- Track skids with mower attachments (2)
- Mini Excavator
- Tandem axle dump trucks with rock beds (2)
- Towmaster backhoe trailers (2)
- Backhoe
- Vactor trucks (2)
- F550 dump bed truck
- F350 four door crew trucks (5)

Improved Stormwater Program Budget

Table ES-1 shows the estimated annual budget for the improved stormwater program (Stormwater Division and directly related costs in other Public Works departments) for 2016-2020. Budgets for all years are shown in 2016 dollars. **Figure ES-4** shows the distribution of the Stormwater Division budget among the main functional categories.

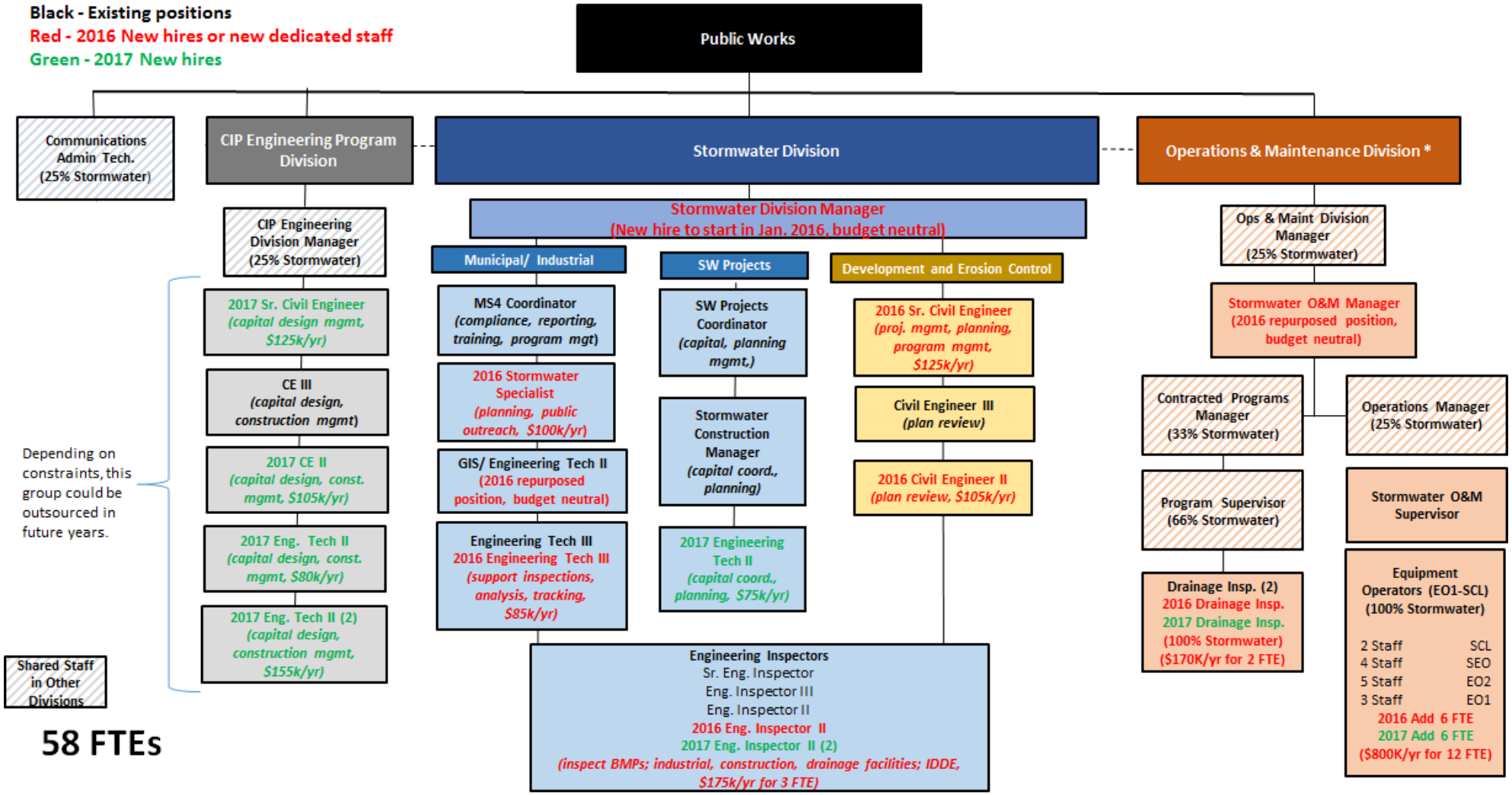

Figure ES-3. Stormwater Program Staffing Needs by Functional Area

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Table ES-1. Budget for Stormwater Division and Dedicated Public Works Staff

Budget Category	2016	2017	2018	2019	2020
Labor – City Employees(1)	$3,052,000	$4,302,000	$4,834,000	$4,834,000	$4,834,000
Labor – Outsourced	$0	$0	$0	$0	$0
Equipment	$453,000	$422,000	$366,000	$366,000	$366,000
Maintenance and Services(2)	$1,667,000	$2,160,000	$2,015,000	$1,570,000	$1,670,000
Program Administration(3)	$136,000	$181,000	$239,000	$239,000	$239,000
TOTAL	**$5,308,000**	**$7,065,000**	**$7,454,000**	**$7,009,000**	**$7,109,000**

Notes:

(1) Budget for 2016 and 2017 based on average of labor at beginning and end of year as the program staffs up
(2) O&M materials, consultant planning contracts, outside services, USGS monitoring
(3) Facilities, office equipment, supplies, computers, communications
(4) All budgets are in 2016 dollars and are not adjusted for inflation

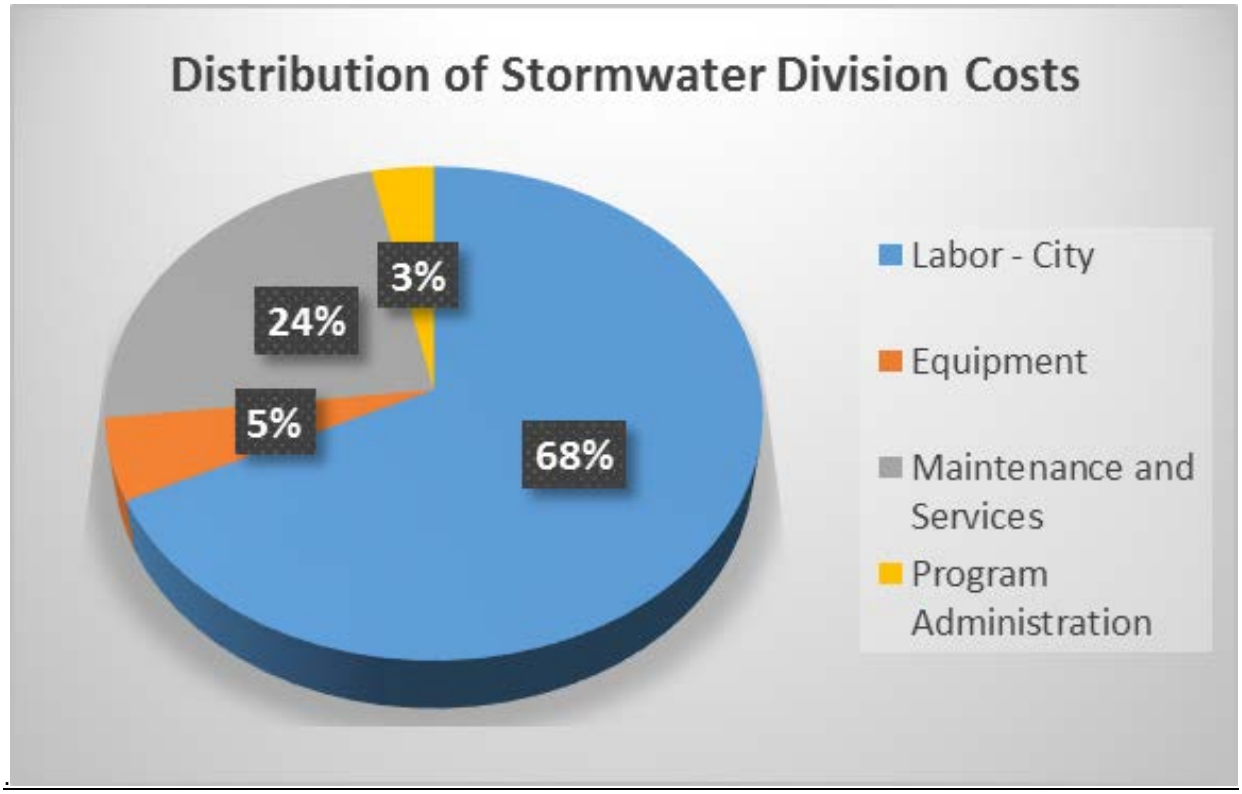

Figure ES-4. Distribution of Stormwater Division Budgets among Functional Areas

Other City departments and Colorado Springs Utilities incur costs for activities that support the MS4 Program. These budgeted costs are summarized for 2016-2020 in **Table ES-2** in 2016 dollars. The total City and CSU annual budget for MS4 stormwater related activities is summarized in **Figure ES-5** for 2016-2020.

Table ES-2. MS4 Budget for Functions Performed Outside Stormwater Division

Entity/Department	Service Provided	Approximate Annual Cost
City Operation and Maintenance	Street sweeping: • 9 staff (8 operators, 1 supervisor) • Leasing 8 new street sweepers in 2016	$438,000 $480,000
City Fire Department	Spill response	$225,000
Colorado Springs Utilities	Creek crossing inspection and maintenance (non-capital costs)	$375,000
City – Other Departments (Communications, Human Resources)	Public outreach, human resources, asset tracking and documentation	Minimal – not included
	TOTAL	**$1,518,000**

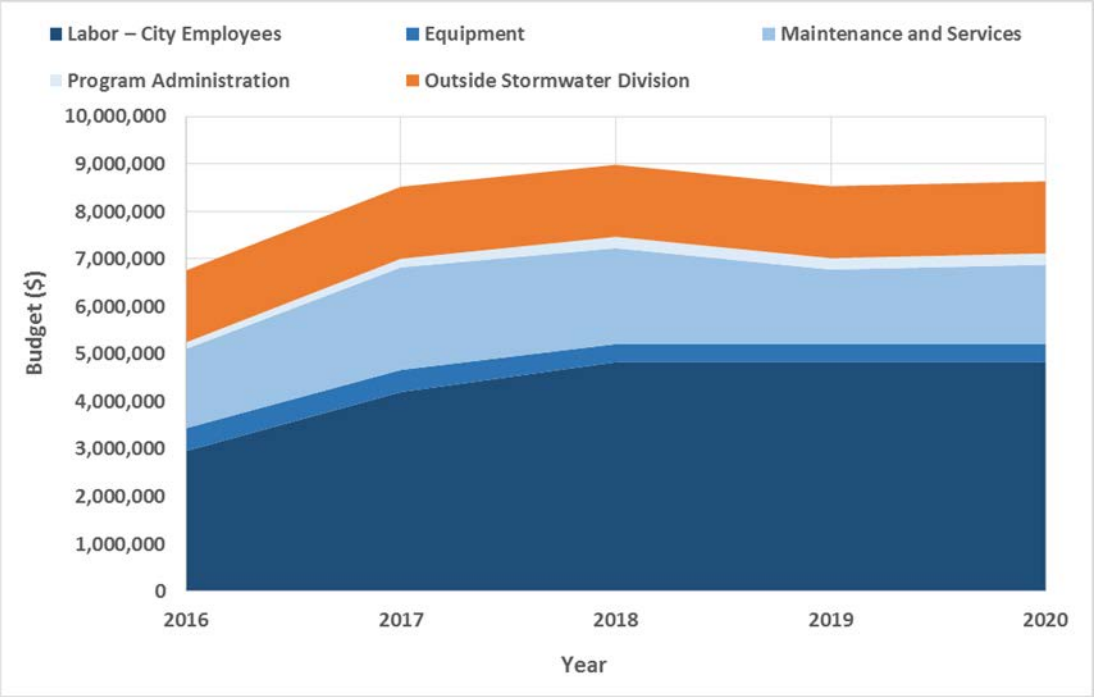

Figure ES-5. Summary of MS4 Program Budgeted Costs

MS4 Program Improvement Implementation Plan

Planned improvements to the MS4 Program will be phased in over 2016 and 2017. The majority of program changes will be accomplished in 2016; hiring and equipment purchases will be split between 2016 and 2017.

High priority actions have immediate benefits, are strategic and, in some cases, represent “low hanging fruit.” High priority actions to be completed within the first six months of 2016 include the following.

- Establish the Stormwater Division and fill the Stormwater Division Manager position.
- Fill the five staff positions prioritized for the first six months of 2016 (Stormwater Program Manager, Stormwater Specialist, Stormwater Operation and Maintenance Manager, Senior Civil Engineer, GIS/Engineering Tech II).
- Begin preparing a Stormwater Management Plan to document MS4 Program strategies and proposed activities; this will be completed by the end of 2016.
- Designate a lead inspector to coordinate all MS4 inspection activities.
- Begin a survey of all public waterways, stormwater infrastructure, and public BMPs, and prioritize problem areas for treatment.
- Determine a schedule to address all remaining waterway maintenance issues identified in the 2013 and 2015 inspection reports.
- Ensure appropriate enforcement protocols are in place and coordinate with the City Attorney’s Office for support of needed enforcement actions.
- Investigate the benefits of using off-the-shelf MS4 program software for tracking and documenting activities, or developing our own software.
- Conduct refresher training for all current inspectors and development reviewers and all new hires for those positions.
- Develop solutions to address seven residential developments that EPA asserts were approved without permanent water quality BMPs.
- Develop a comprehensive public education and outreach strategy that addresses MS4 Program needs as well as positive overall stormwater messaging.
- Upgrade the existing stormwater website and stormwater hotline to improve information available to the public and improve methods of public reporting of potential illicit discharges.
- Identify public education measurable goals and measurement techniques.

1.0 INTRODUCTION

This MS4 Program Improvement Plan report presents the City of Colorado Springs' plan for improving its Municipal Separate Storm Sewer System Program (MS4 Program). The purpose of this comprehensive program review and resulting improvement plan is to document the current status of MS4 permit activities and to identify MS4 Program improvements to be implemented by the City of Colorado Springs (City). This effort will allow the City to: (1) assure a program is in place that fully meets MS4 permit requirements; (2) protect public safety and the environment; (3) respond to concerns identified in recent MS4 Program reviews by Colorado Department of Public Health and Environment (CDPHE) and the Environmental Protection Agency (EPA); and (4) identify appropriate levels for resource allocations within the MS4 Program, taking into account the City's enhanced stormwater program and budget for 2016 and future years.

In this report, the term "MS4 Program" refers to all the activities necessary to comply with the Municipal Separate Storm Sewer System Permit (MS4 Permit) issued to the City by CDPHE. It includes stormwater best management practices, inspections, enforcement, public education and outreach, and numerous other activities as described in Section 2.1. It also includes maintenance of the existing stormwater infrastructure system for purposes of water quality management (including erosion and sedimentation control). Notably, however, the "MS4 Program" described in this report does not include other substantial stormwater activities and investments undertaken by the City. These include, for example, stormwater projects at the City's airport, those associated with the Pikes Peak Rural Transportation Authority, and those associated with building major road projects and other transportation infrastructure. The latter aspects of the City's stormwater program are not addressed in this MS4 Program Improvement Plan report because they are not directly related to compliance with the City's MS4 Permit.

The report also does not address the City's construction of new capital stormwater projects. Potential capital projects are under intensive review by the City and others. The capital projects portion of the stormwater program will be described in a separate technical report prepared by the City.

The MS4 program assessment and program improvements are based on review of: (i) the current MS4 permit, (ii) recent MS4 Annual Reports, (iii) EPA/CDPHE program audits/inspections in 2013 and 2015, (iv) all aspects of the existing program by the City, MWH and others, (v) federal and state guidance, and (iv) successful stormwater initiatives in other communities. It was developed in close cooperation with City staff at all levels.

This MS4 Program Improvement Plan is prepared by the City of Colorado Springs with support from an outside contractor, MWH Americas, Inc. (MWH). Mr. Ben Urbonas, Urban Watersheds LLC, has worked closely with the City, and has provided expert advice and review of recommendations.

2.0 BACKGROUND

This section provides brief background information on the City's MS4 Program. Additional information is presented in a separate *MS4 Program Review TM* (November 9, 2015), which was prepared by MWH and is **Appendix A-3** to this report.

2.1 Colorado Springs MS4 Program

The MS4 Program was developed by the City and is updated from time to time to comply with the current MS4 permit issued by CDPHE. The first MS4 permit was issued to the City in 1997; the current permit was issued in 2011. The current permit is scheduled for renewal in 2016.

The City's MS4 permit requires implementation of best management practices (BMPs) in the following program areas:

- Program Management – develop, implement, and enforce a Stormwater Management Program. This is an overarching program in the MS4 Permit.
- Commercial/Residential Management Program – require BMPs (e.g., onsite detention in areas of new urban development) to minimize impacts of new development on water quality and flood control.
- Illicit Discharges Management Program – identify and eliminate illicit discharges to the stormwater system such as spills, dumping, and sanitary sewer cross connections.
- Industrial Facilities Program – require implementation of BMPs on private industrial facilities to minimize impact of runoff and illicit discharges on water quality.
- Construction Site Program – require implementation of BMPs at construction sites to minimize impact of runoff on water quality and sediment loads.
- Pollution Prevention/Good Housekeeping for Municipal Operations Program – implement structural and maintenance BMPs to minimize impacts of runoff from municipal sites on water quality.
- Legal Authority – provide adequate authority to implement and enforce all elements of the MS4 Program.
- Resources – provide adequate finances, staff, equipment, and support capabilities for the MS4 Program.
- Total Maximum Daily Loads (TMDLs) – require compliance with a TMDL or waste load allocation (WLA) for discharge from the MS4 to a waterbody with a TMDL or WLA.
- Monitoring Program – perform wet and dry weather monitoring to characterize receiving water quality and track MS4 Program effectiveness.
- Reporting Requirements – prepare and submit Annual Reports documenting the MS4 Program compliance with the permit.
- Public Education and Outreach Activities – promote awareness and understanding of, and support for, stormwater program efforts by the general public and special interest groups (e.g., landscapers, mobile cleaning businesses). Public Education and Outreach is not listed as a separate program in the MS4 Permit in effect from 2011 – 2016; instead, it is a subcomponent of other programs.

Prior to 2006, the City administered MS4 Program activities through its Public Works Department. In 2006, the City formed the Stormwater Enterprise (SWENT), a City enterprise with a fee-based funding source for the purpose of constructing stormwater infrastructure, maintaining existing stormwater facilities, and performing the activities required by the MS4 Permit. SWENT consolidated many stormwater functions in a single department and provided a dedicated funding source.

Notwithstanding these benefits, the citizens of Colorado Springs and nearby areas have been willing in the past to support a separate stormwater entity. In 2009, the voters within the City

adopted an ordinance hostile to the then-existing SWENT. The City Council then decided to defund the SWENT organization. At that time, responsibility for the MS4 Program returned to the Public Works Department. In 2014, the citizens of Colorado Springs and the remainder of El Paso County narrowly voted to defeat a measure to create a regional stormwater authority within El Paso County that would have been funded through an impervious surface based fee. This defeat occurred despite substantial support for the initiative from elected officials and other leaders within El Paso County.

This historical perspective provides important background for the strategies adopted in this ongoing improvement effort. That said, the City is committed to improving its MS4 Program such that it will be as good as or better than when SWENT was operating.

2.2 MS4 Program Reviews by EPA and CDPHE

EPA and CDPHE have conducted recent reviews of the City's MS4 Program. In particular, EPA performed a permit audit in 2013 and a follow-up inspection in August, 2015. Inspectors identified findings in this audit and subsequent inspection that describe deficiencies in the City's programs, most particularly a need for additional inspections, staff training, drainage system maintenance, enforcement of stormwater-related ordinances, and improved record-keeping and documentation. In general, concerns from the regulatory agencies focused on implementation and execution of program activities as opposed to deficiencies in the components of the programs themselves.

The City is committed to improving its MS4 Program in order to address all of the EPA and CDPHE findings. As a result, the City will commit additional personnel and financial resources, improve training and enforcement procedures, and address other program areas of concern to EPA and CDPHE. The purpose of this MS4 Improvement Program report is to describe why and how those improvements will be accomplished.

The proposed MS4 Program improvements described in this report are forward-thinking and are expected to allow compliance with permit changes that may be implemented by EPA and CDPHE in the foreseeable future. The current MS4 Permit expires in 2016. Based on review of CDPHE's new MS4 general permit and the direction EPA wants to take the stormwater program nationally, the new permit may be stricter in a number of areas, including:

- Implementing water quality BMPs for existing urban development
- Addressing runoff from industrial sites
- Improving documentation of program activities
- Implementing additional public education and outreach measures
- Developing pollutant removal standards
- Implementing runoff reduction standards
- Developing a nutrient source reduction program

The Colorado Water Quality Control Division is evaluating the promulgation of new standards for E. coli and nutrients in streams near Colorado Springs; these standards may be exceeded by background levels in non-point sources and stormwater runoff inside or outside the City. This is discussed in a subsequent section on the City's proposed monitoring program. The City will use the planned improvements described in this report to prepare for these upcoming changes.

2.3 Comparison with Other MS4 Entities

The City examined the size of resource allocations of other cities and utilities to their MS4 programs. This permitted a determination of typical ranges of program capital budget and staffing levels. This comparison is summarized in a separate *MS4 Program Review TM (*November 9, 2015), included with this report as **Appendix A-3**.

A wide range of MS4 program per capita budgets and staffing levels exist in Colorado cities that operate under permits issued by the State. The wide range is due to a number of factors. These factors include type of internal organization; geographical extent and hydrological/ geological/ climatological features of the community; amount of construction activity; ability to share resources in different departments; complexity of stormwater system; and commitment to water quality management. In addition, it appears from our review that not all MS4 programs meet their MS4 permit requirements in the most efficient manner.

Thus, the level of specific financial commitments by other communities is not so much a target for the City as it is an indication of general level of effort required, because Colorado Springs is different from other communities for the reasons just described.

Nevertheless, this review of other programs is helpful, and suggests a general range of investments in areas where such a monetary commitment is necessary in order to have a compliant MS4 program. In addition, the previous Colorado Springs Stormwater Enterprise (SWENT) that operated from 2007 through 2009 was used by the City as a point of departure for possible future budget and staffing levels.

The MS4 program comparative review is summarized as follows.

- Comparisons are not exact, but based on per capita spending by other large communities in Colorado and EPA Region 8, a MS4 Program annual budget for a City like Colorado Springs could be expected to fall in the range of $7 million to $16 million per year. This annual budget would include a specific stormwater division budget plus the value of activities provided by other City departments or outside entities that are directly linked to MS4 permit compliance activities. It does not include the cost of stormwater capital projects.
- Based on per capita staffing by other large communities in Colorado and EPA Region 8, Colorado Springs stormwater staffing could be expected to be in the range of 50 to 70 full-time equivalents (FTEs).
- When the SWENT existed, it had a budget allocation of about $8 million per year for MS4 and O&M related activities, with 30 assigned staff and about 60-65 total FTEs when one includes contributions from other City departments.

3.0 STRATEGY FOR IDENTIFYING AND PRIORITIZING MS4 PROGRAM IMPROVEMENTS

This report presents proposed improvements to the City's current MS4 Program that the City intends to implement. Improvements are presented for the overall MS4 program components; organizing activities within the City departmental structure; staffing; equipment; and budget resources. Planned improvements are based on experience with best practices from other MS4 programs, response to findings by EPA and CDPHE, experience under SWENT, and experiences of other MS4 entities in Colorado.

The following criteria have been used by the City to identify and prioritize improvements to its MS4 Program.

- **Compliant Program.** Proposed program changes are based on full compliance with MS4 Permit requirements. The City will thereby protect water quality and reduce runoff peaks and volumes — to protect its citizens and neighbors and to meet the requirements of the MS4 Permit.
- **Sustainable Program.** Proposed changes will create a stormwater program that is sustainable in the long term. That is, the program will be sustainable in terms of financing, staff commitments, and other activities. The program must satisfy statutory and regulatory requirements while meeting practical, social and economic priorities within the City and also regionally.
- **Proactive Program.** Proposed program changes are developed with the future in mind, and not just as a response to past program audits and reviews. This criterion includes anticipating future changes to the CDPHE stormwater permitting program, as well as regional water quality management issues such as new water quality standards and non-point source load allocations. In particular, CDPHE's new general MS4 permit was reviewed to identify significant differences compared to the City's current permit. This is described in Section 2.2.
- **Beneficial Program.** Proposed program changes will result in a stormwater management program that protects and enhances water quality in Colorado Springs and downstream areas that receive runoff from the City. This will help meet water quality standards and improve the quality of life for residents in Colorado Springs and neighboring communities.
- **Cost-Effective Program.** Proposed program changes will exploit efficiencies in cross-training and appropriate sharing of resources among City departments and outside resources. Program improvements are developed with the understanding that the City has stormwater quality, O&M and capital improvement stormwater project needs at the same time, and that available funds must be allocated to support all of these important efforts.

Program improvements have been prioritized for completion within the following four timeframes:

- First 30 days – Immediate changes that set the stage for the following program improvements
- First 1 to 6 months - Relatively easy changes with significant benefits; regulatory priorities related to public health, safety and welfare; responses to EPA/CDPHE comments; low-hanging fruit
- First 6 to 12 months - Mid-term changes; systematic or process changes that are needed in the longer term
- First 12 to 24 months – Changes with minor benefits; changes that require a longer time to implement

- Section 9 of this report presents the timeframe within which the City intends to implement each of the planned MS4 Program changes described in the following sections.

4.0 MS4 PROGRAM ORGANIZATIONAL CHANGES

4.1 Current Stormwater Organization

The various elements of the City's MS4 Program are currently distributed throughout several City departments. This is shown in **Figure 4-1**. While this type of organizational framework is common in cities like Colorado Springs without separate stormwater utilities, it makes coordinating and tracking MS4 Program activities challenging.

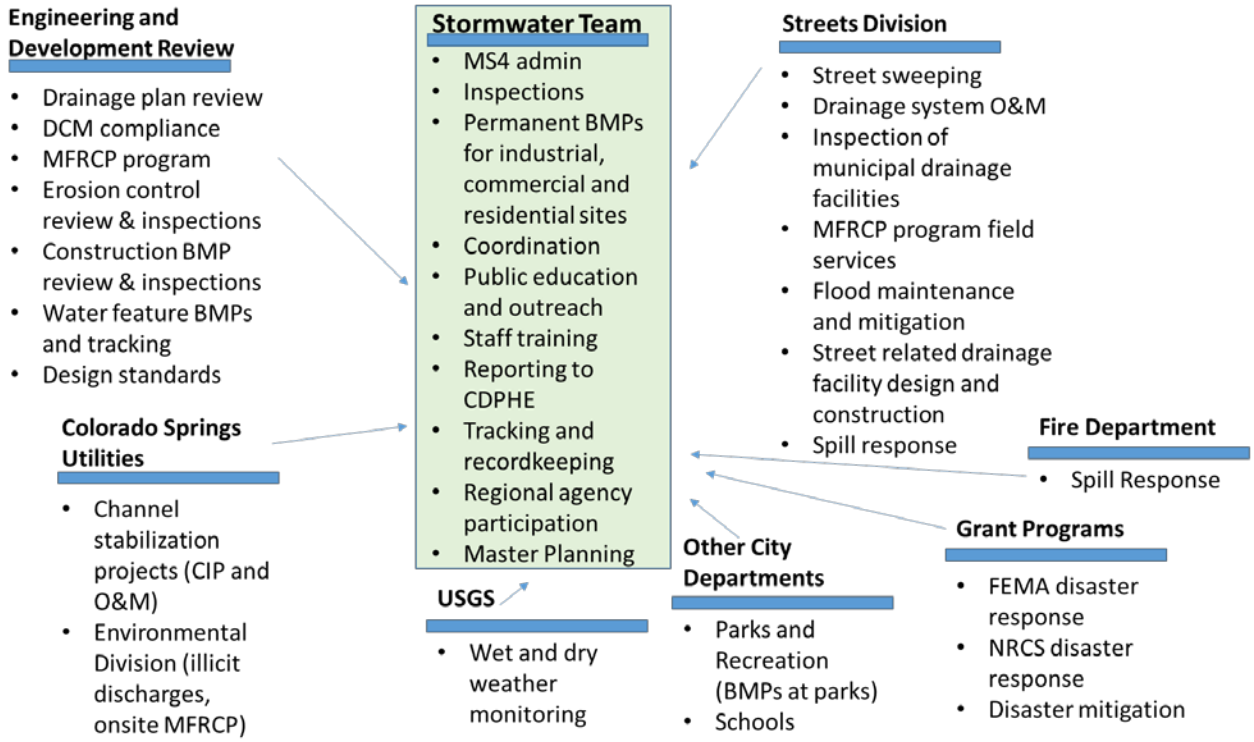

Figure 4-1. Current Organization of Stormwater Functions in City Departments

4.2 Proposed Organization within City Departments

In order to improve efficiency, communication and lines of authority, the City will establish a new Stormwater Division under the Public Works Department. This new division will be at the same level as the City Engineering Division and Operation and Maintenance Division (formerly called the Streets Division), and its manager will report to the Public Works Director. Current and proposed high-level organization charts are shown in **Figure 4-2**. This organizational structure elevates the Stormwater Division, giving it a higher profile within the City and providing it with dedicated resources. In addition, it adds to operational efficiency and support within the Public Works Department.

The City acknowledges that another way to develop a stormwater program for Colorado Springs that meets the goals of being compliant, sustainable, proactive, beneficial and cost-effective is to create a separate stormwater utility. This organizational approach would place stormwater functions in one entity and would be supported by a dedicated stormwater funding tax or fee within the City. As described in Section 2.1, however, the City had such a stormwater utility

when SWENT existed between 2006 and 2009. SWENT was disbanded following a City-wide vote. A few years later the voters of El Paso County, including the City, rejected the creation of a stormwater utility and dedicated tax in November 2014. For these reasons, the creation of a separate stormwater utility was considered during the preparation of this MS4 Improvement Plan but it is not adopted by the City as an organizational strategy. Such a utility is not supported by the citizens of Colorado Springs at this time.

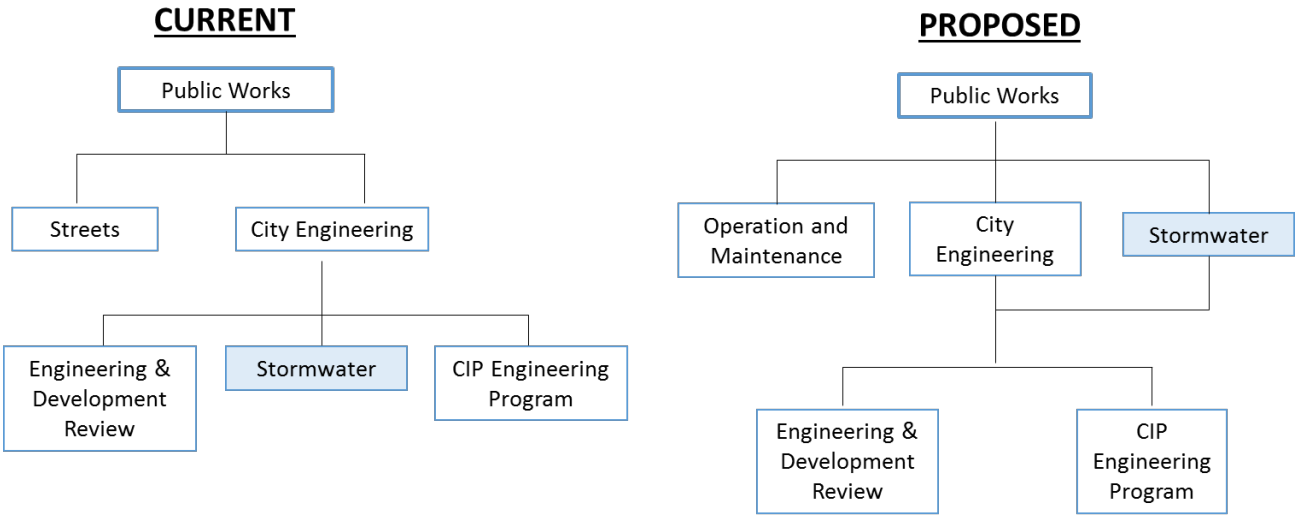

Figure 4-2. Positions of Stormwater Division in Public Works Organization Chart

Two options are available for assigning staff, resources and responsibilities in meeting the various requirements of the MS4 Program:

- **Consolidated Resources** – Move all possible staff, resources and responsibilities for anything related to the MS4 Program under the Stormwater Division. In this option, shown in **Figure 4-3**, existing staff with stormwater responsibility in the Operation and Maintenance, Engineering and Development Review, and Public Communications groups would be transferred to the new Division. All stormwater-related capital project design, infrastructure operation and maintenance (O&M), development reviews, street sweeping, as well as all direct MS4 Permit compliance functions, would locate under the Stormwater Division. This option has the benefit of the clearest lines of authority and simplest reporting structure. It also simplifies the process of reporting annually to CDPHE and EPA on the activities performed in compliance with the MS4 Permit.
- **Shared Resources** – Maintain existing capital, O&M, and development review functions in their current departments (Capital Programs, Operation and Maintenance, and Engineering and Development Review, respectively). In this option, shown in **Figure 4-4**, most current functions would remain with their current departments, and new resources would be added primarily to the Stormwater Division to improve MS4 Permit compliance. This option allows for strong functional efficiencies within departments (e.g., maintenance of street-related drainage facilities would remain within the Operation and Maintenance Division, and review of new development plans for appropriate use of post-development BMPs would remain within the Engineering and Development Review Division). However, it requires coordination between the expanded Stormwater Division and other City departments, and makes tracking of MS4 Permit activities somewhat more challenging.

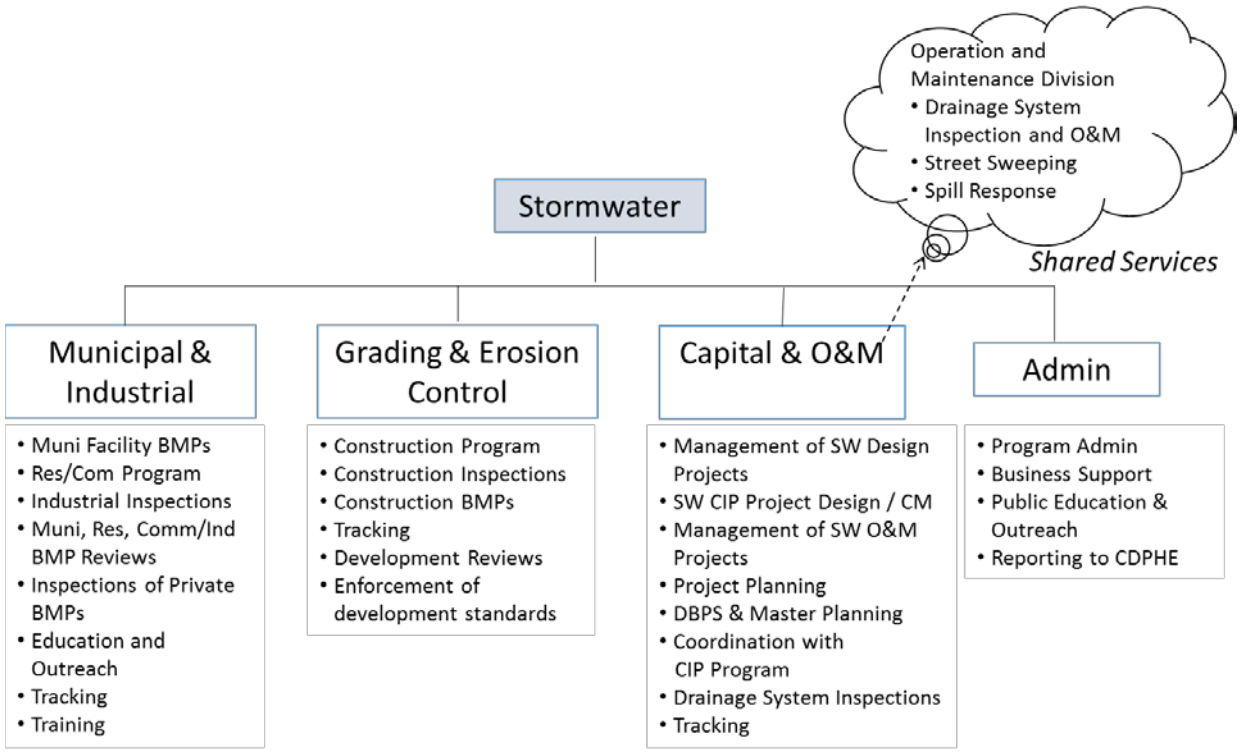

Figure 4-3. Stormwater Program Organization that Maximizes Consolidation of Resources

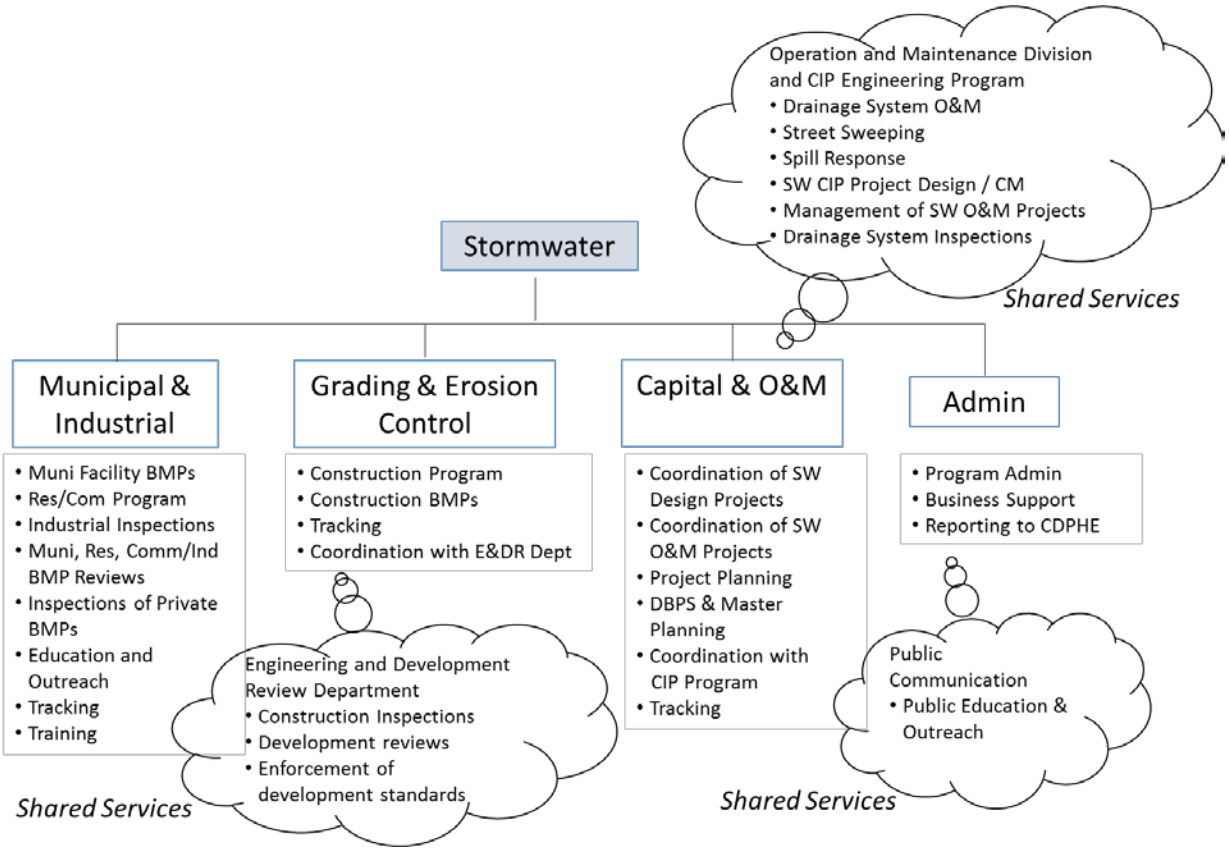

Figure 4-4. Stormwater Program Organization that Maximizes Use of Shared Resources

The City will adopt a combination of the Consolidated Resources approach and the Shared Resources approach because of the efficiencies associated with delivering capital projects and performing maintenance activities for stormwater projects using the same teams of people performing those tasks for other City infrastructure (i.e., streets). The organizational structure the City will adopt is shown in **Figure 4-5** and **Figure 4-6** . It has the following characteristics.

- Stormwater activities are organized under three groups – Municipal/Industrial, Development and Erosion Control, and Stormwater Projects. The Municipal/Industrial group is responsible for implementing the municipal, residential, commercial/industrial, illicit discharge, monitoring, and public education BMP activities. The Development and Erosion Control group is responsible for implementing the construction program, including development submittal review and construction site inspections. The Stormwater Projects group is responsible for coordinating O&M and capital project delivery being performed in other departments and for stormwater management planning.
- While still relying on resources from other City departments, the organizational structure provides clearer lines of authority for MS4 Program responsibilities. This is a benefit for efficiently executing the program.
- The Engineering and Development Review Division that is responsible for performing post-construction BMP reviews of development plans will be brought under the Stormwater Division and largely incorporated into the Development and Erosion Control group. Staff members in this group will be dedicated to the Stormwater Program so adequate resources are always available for reviews, and to maintain consistency in the review process.
- The Operation and Maintenance Division (formerly called the Streets Division) will continue to be responsible for conducting O&M for drainage facilities and for street sweeping. However, closer oversight will be provided by the Stormwater Projects group to assure the needs of the MS4 Program are met.
- The CIP Engineering Program under Public Works will continue to be responsible for the design, permitting, and construction of large capital stormwater projects along with transportation and other infrastructure projects. However, specific staff members in this group will be dedicated to supporting the Stormwater Program; that is, the same individuals will be responsible for all stormwater projects. This will maintain consistency in overall capital project delivery within the City while also driving efficiency in stormwater project implementation. Stormwater Division staff will set project priorities and coordinate with the designers and project managers in the CIP Engineering Program group.
- Public education and outreach related to the MS4 Program will be performed by Stormwater Division staff specifically dedicated to this task. General communications support will be available from the Public Communications Department as requested.
- All MS4-related inspectors will be consolidated and dedicated in the Stormwater Division. This includes inspectors for illicit discharges, municipal sites, industrial sites, construction sites, post-construction O&M and public drainage infrastructure.
- Stormwater planning, including preparation of Drainage Basin Planning Studies, will be performed by the Stormwater Projects group of the Stormwater Division.
- The Stormwater Division will be responsible for MS4 Program tracking, record-keeping, and reporting to CDPHE.

Creation of the Stormwater Division and realignment of most MS4 functions under this new Division is a high priority action. It will immediately improve lines of authority and

communication, and improve consistency in implementing inspections, training and enforcement. Creation of the Stormwater Division is already underway and will be completed within the first 30 days of 2016.

Figure 4-5. Stormwater Division Group Functions

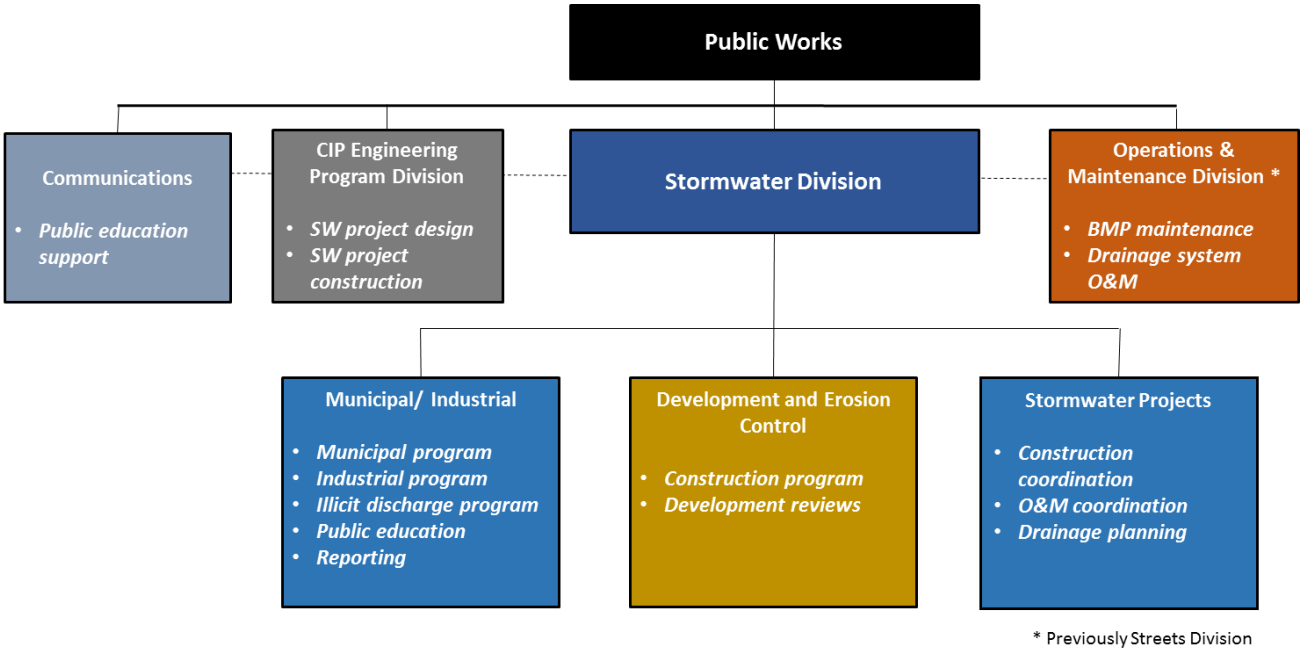

Figure 4-6. New Stormwater Division and Other Public Works Divisions

5.0 PROGRAM ENHANCEMENTS

This section presents planned modifications to the City's current MS4 Program. It describes these improvements in general categories that relate to multiple programs within the City's overall permit compliance framework. It also describes planned improvements in the specific program categories identified in the MS4 Permit and in past inspections.

5.1 General MS4 Program Activity Improvements

This section describes planned improvements to general MS4 Program activities that span multiple program components. These are:

- Stormwater Management Plan
- Inspections
- Enforcement and Legal Authority
- Documentation and Record-keeping
- Training

5.1.1 Stormwater Management Plan

The City does not currently have a single document that describes how it is addressing each of the MS4 Permit requirements. Typically, communities have a Stormwater Management Plan (SWMP) that provides detailed descriptions of strategies, activities, BMPs, and resources used to address the MS4 permit requirements. A SWMP describes the specific actions the individual community will take to comply with the general requirements in the MS4 permit. In the case of the City of Colorado Springs, descriptions of the various programs developed to comply with its MS4 Permit have been prepared over time, but these descriptions may not be current and are not all compiled in a single reference document.

The City will prepare a SWMP to describe the activities it performs to address each of the MS4 Permit requirements. The SWMP will include the following types of information:

- A description of the City's overall strategy for complying with its MS4 Permit.
- A description of the specific BMPs (e.g., programs, activities, regulations, policies, etc.) that are adopted to address each of the major permit requirements.
- A description of the City's legal authority to administer and enforce the BMPs adopted for MS4 Permit compliance.
- A description of the positions or departments responsible for implementing each BMP.
- A schedule for implementing any new BMPs.
- Technical memoranda to document specific policy or program decisions (e.g., technical description of the stormwater monitoring program).

The City will review model SWMPs from other communities for guidance. Examples include the SWMP for Las Vegas Valley, Nevada, and Standard Urban Stormwater Mitigation Plans (SUSMP) by any of the major California cities. The SWMP will be made available to City staff, regulatory agencies, and the regulated community. The SWMP will be reviewed annually along with an annual internal review of the entire MS4 program, and will be updated as needed.

5.1.2 Inspections

The MS4 Program includes inspections of municipal facilities (i.e., municipal infrastructure, maintenance yards, equipment storage facilities, and material storage facilities), construction sites, industrial sites, private and publically-owned post-development BMPs, and existing drainage infrastructure. Currently these inspections are performed by staff in three City departments. These departments are: Stormwater, Engineering and Development Review, and Streets/Operation and Maintenance.

In order to improve consistency and efficiency in inspections, all MS4-related inspections will be consolidated and performed by dedicated MS4 Program inspectors of the Stormwater Division. This will provide Stormwater Division managers with adequate resources to perform all permit-required inspections. It will also facilitate inspector training activities.

Under the improved MS4 program Stormwater Division inspectors will be tasked with:

- Inspecting municipal facilities such as public works maintenance/storage yards for proper installation and maintenance of BMPs
- Inspecting construction sites for compliance with their Stormwater Pollution Prevention Plan and for evidence of untreated discharges to the MS4
- Inspecting industrial sites for appropriate use of BMPs to control illicit discharges
- Inspecting post-development BMPs (e.g., stormwater detention basins) installed on public and private property for proper construction, operation and maintenance
- Inspecting the City's drainage facilities to identify potential illicit discharges and maintenance needs

Inspectors and Stormwater Division staff will be responsible for tracking, record-keeping, and reporting problems for enforcement. These activities are described in the following sections.

Other improvements to the stormwater inspection program include the following.

- The City will implement a Quality Assurance/Quality Control (QA/QC) process to check the consistency of inspections against inspection guidelines, check-lists, etc. MS4 managers, or their designees, will perform QA/QC checks of 10 percent of the construction site inspections, industrial site inspections, and municipal facility inspections conducted during the year.
- A Lead Inspector will be designated to coordinate the activities of all MS4 inspections, including assuring all inspectors are current in their training and in tracking all inspection activities. Consolidating this responsibility in one individual will promote consistency and a clear line of authority for inspectors.
- The City's current Inspector Reference Guide, which provides guidance to inspectors on how to conduct inspections for construction sites, was created in 2009. It will be updated to be consistent with the City's new Drainage Criteria Manual. Inspection check-lists will be reviewed and modified based on the new MS4 policies and processes and the new Drainage Criteria Manual. Inspection checklists from other communities (e.g., California Stormwater Quality Association, Nevada Department of Transportation) will be reviewed as models.
- The City will maintain an inspector training database to track the training received by all staff members and to be sure all inspectors are current in their training. Training program improvements are described in Section 5.1.5. This is especially significant with the addition of new inspectors to the MS4 Program.
- The City will research available inspector training tools and resources from other agencies and vendors to determine whether these resources could be used to improve the City's current training program.
- The City will expose inspectors to the full breadth of the MS4 Program so they understand how their inspections fit into the overall stormwater management goals. They will be cross-trained in development submittal reviews, BMP design, and other MS4 components so they can perform their inspections with more awareness of the "big picture" in stormwater management. Similarly, office staff (e.g., plan reviewers and

designers) will be educated in inspection protocols and field practices so they have an appreciation of the challenges of performing this critical element of the MS4 Program.

- The City will train other stormwater professionals in the Stormwater Division in the process for performing inspections. This will have two benefits: (1) it will give those other professionals a good understanding of the inspection process and its challenges; and (2) it will create a pool of other potential inspectors to fill gaps in temporary staffing shortages. In addition, the City may train staff in other departments (e.g., Operation and Maintenance) if needed to expand the pool of qualified inspectors.
- The City will be purchasing new inspection software that will enable more efficient capture of inspection data in the field, communication with the inspection team, and inspection scheduling.
- Annually, as an integral part of the MS4 Program, the City will seek feedback from its inspectors about the effectiveness of the program from their viewpoint. The City will seek advice from inspectors about how to improve their functions within the MS4 Program. In particular this will include input on support from City management and elected officials when enforcement actions are necessary.

5.1.3 Enforcement

City stormwater ordinances prohibit illicit discharges to the MS4 and require implementation of BMPs at construction sites, industrial sites, and sites of new urban development. In the past, enforcement of these ordinances by the City has been inconsistent. The City acknowledges the need for greater commitment to enforcing City ordinances at the upper levels of City management.

Current City stormwater ordinances will be reviewed and updated as necessary to be consistent with the current MS4 Permit and with the proposed Stormwater Division organization.

Creating a separate Stormwater Division with a manager reporting directly to the Public Works Director will elevate the profile of stormwater management within City government, and will provide a stronger platform for gaining the necessary political and administrative support to enforce the various City stormwater ordinances. In addition, consolidating inspection activities within the Stormwater Division will help to give inspectors and other officials the support they require to engage in enforcement actions and document results.

Enforcement will be improved by using dedicated stormwater inspectors who are focused, from a mission perspective, on gaining compliance with MS4 Program requirements. Training of inspectors will emphasize the City's determination to enforce its current ordinances and policies. Training will provide clear direction on the steps in the City's enforcement process for construction site owner/operators, industrial site owner/operators, and dischargers of illicit pollutants to the MS4. Training will include presentations by City officials in the City Attorney's office and upper level officials in the stormwater program. These presentations will emphasize the City's commitment to — and support for — enforcement in its stormwater program.

In the past, the City's approach to working with the regulated community has been heavily weighted towards seeking compliance rather than imposing punishment. That is, City staff worked with developers, contractors and industrial site owners to encourage proper selection, installation and maintenance of BMPs appropriate to their sites. If problems were found, the emphasis was on education and correction as opposed to enforcement. While education and, as appropriate in conformance with the compliance manual, a correction-oriented approach will continue to be an important parts of the City's program, much more emphasis will be placed upon enforcement. City inspectors will be trained on application of the enforcement protocol

found in the Drainage Criteria Manual. Inspectors will be instructed to initiate that process when members of the regulated community fail to comply with City stormwater ordinances and policies. Inspectors will be supported clearly and overtly in their enforcement efforts by their managers and by City officials in higher positions.

The City will implement an outreach program to local business owners, developers, contractors, and other regulated entities so as to ensure that they are aware of the stormwater program requirements and the City's intent to assure compliance with those requirements, including the imposition of stop work orders or penalties where necessary. Public statements by elected officials in the City will describe the City's commitment to enforcement of its stormwater program.

The City Attorney's Office will have an important role in improving the level of enforcement of stormwater ordinances within the City. The new Stormwater Division manager and the City Attorney's Office will coordinate closely to assure that objectives are aligned and enforcement protocols are clearly specified, supported and followed.

The Public Works Director will receive a comprehensive enforcement report from the stormwater program quarterly. This enforcement report also will be sent to the City Attorney and the City's Chief of Staff.

5.1.4 Documentation and Record-Keeping

The City developed a robust process and tools for tracking and documenting MS4 activities prior to and during the SWENT era. These processes and tools are still being used, and include:

- Grading and Erosion Control database for tracking construction site inspection and enforcement process
- Engineering Review Database for tracking development plan submittals and reviews
- GIS database to track post-construction BMP features, inspections and compliance
- Industrial site database
- GIS and Access database for tracking and documenting illicit discharge responses

Documentation and record-keeping for MS4 Program activities have been a challenge for current City stormwater staff due to significant staff turnover, dissolution of the SWENT, and distribution of MS4 Program activities over several City departments. These factors also hamper staff's ability to maintain the aforementioned tools and respond to information and data requests from regulatory agencies.

The City is committed to full implementation of existing documentation and record-keeping processes and tools for MS4 activities. In addition, the following improved processes and tools for documentation and record-keeping will be adopted.

- The City's Stormwater Division will consolidate more of the MS4 Program functions within a single group, and will improve communication and coordination with other City departments that retain some of the MS4 functional responsibilities. This will improve efficiency in documenting program activities.
- Designated individuals within the Stormwater Division will have clearly assigned responsibility, included in job descriptions, for tracking, documentation and record-keeping related to all MS4 Program activities.
- The City will investigate use of off-the-shelf MS4 Program software for tracking and documenting program activities, to determine whether such software could improve the efficiency of tracking and documenting MS4 activities. If it can, it will be acquired. This may include investigating the following products:

    - MS4Web by CBI Systems
    - MS4 Front by Houston Engineering
    - PermiTrack MS4 by PermiTrack
    - Cityworks by Azteca Systems
- The City will investigate linking the City's asset management system software with the MS4 program tracking database. This will improve the City's ability to track infrastructure related activities (e.g., inspections and O&M work) and maintain consistent sets of data for infrastructure across the various City departments.

5.1.5 Training

Frequent training of City inspectors, O&M crews, and other staff involved in the MS4 Program is a requirement for achieving the desired program results. The City will implement the following practices to improve its overall stormwater training program.

- An improved training program will be implemented for all inspectors for construction sites, industrial sites, and privately owned BMPs. This is particularly important because the City will hire several new inspectors to complete the staffing profile described in Section 6. Training will include methods of performing inspections; proper BMP selection and installation; methods of educating the regulated community during inspections; enforcement protocols; methods of documenting inspections; and appropriate record-keeping.
    - Training in City processes and procedures will be performed by current, experienced Stormwater Division staff. Technical training will be supplemented by external stormwater training specialists and resources, such as LATD, CDOT, and Altitude Training for construction site BMPs, and Colorado Stormwater Center, Colorado Association of Stormwater and Floodplain Managers, National Stormwater Center for BMP design and maintenance criteria, and others as appropriate.
    - MS4 inspectors will receive refresher training annually.
    - Consolidating the inspection responsibilities within the new Stormwater Division will provide needed consistency.
- As described previously, other professionals in the Stormwater Division will be trained in the methods and processes of performing stormwater inspections. This will improve their ability to understand and interact with inspectors, and create a broader pool of inspectors to respond to temporary staffing shortages.
- The training program will be extended to include non-Stormwater Division staff that have the potential to observe and report on possible illicit discharges and other problems when out in the field performing other duties. This will apply to Operation & Maintenance Division personnel who perform maintenance of detention ponds and other BMPs and man-made and improved waterways; CIP Engineering personnel who manage stormwater construction projects; and building inspectors. Staff training will include information on typical locations of illicit discharges, common evidence of illicit discharges and spills, potential non-performing BMP/LID facilities, and how to report observations to the proper authorities for response and cleanup.
- The City will train Utilities O&M crews to observe and report possible illicit discharges when performing their normal field duties. The City will also train Utilities pretreatment inspectors to be aware of potential stormwater problems when they are performing their pretreatment inspections of selected industrial sites. This is described more fully in Section 5.4.2 Industrial Program.

Training resources such as manuals and videos are available from third-party vendors, and will be investigated to see if they would be good supplements to materials currently used by the City

for training. It is expected that most training will be performed by lead members of the Stormwater Division as part of their job duties.

The City will investigate video recording its in-house training sessions, especially its sessions for newly hired inspectors. It will also investigate video recording of welcomes from elected officials to new hires in the stormwater program, with emphasis on support for the program and commitment to enforcement and training. These videos can enhance training efficiency, especially with the number of new hires called for in this MS4 Program Improvement Plan.

5.2 Specific MS4 Program Component Improvements

5.2.1 Stormwater Operation and Maintenance Program Improvements

The City will increase investment of time and resources in the maintenance of existing waterways and stormwater improvements. Limited staff and financial resources have hampered the ability of the City to provide adequate stormwater maintenance services in recent years. The situation was exacerbated by the impacts of the Waldo Canyon and Black Forest fires, and the recent heavy rainfall events of 2013 and 2015 (wettest May in recorded history).

As described in the following sections on staffing and budget improvements, the City will increase resources allocated to stormwater system O&M. The following improvements will be made to the O&M program.

- The number of drainage system maintenance personnel will be increased. This is described further in the Staffing Changes section below.
- The City will perform a comprehensive inspection and inventory of the condition of all public waterways and stormwater infrastructure to identify areas system-wide that need attention due to erosion and sedimentation caused by municipal runoff, accumulation of debris, frequent flooding, or failed infrastructure. Specific attention will be paid to areas examined during the 2013 and 2015 agency audits/inspections. Problems will be assessed and prioritized to assure Operation & Maintenance staff and resources are directed toward the most critical problem areas first. A project prioritization list will be completed within the first 6 months of Program Improvement Plan implementation.
- After performing the initial condition assessment, the City will continue to operate a regular inspection program for its drainage infrastructure so problems can be identified and prioritized promptly. The condition of drainage infrastructure and waterways may be tracked utilizing the City's current asset management system or a new management system developed specifically for the MS4 Program.
- The City undertook a capital program review in 2012-2013 that resulted in a prioritized list of capital projects (the 2013 Stormwater Needs Assessment). Many of these projects address rehabilitation of previously constructed drainage infrastructure. The prioritization will be reviewed again by the City, with O&M needs in mind to assure that major rehabilitation projects are given high priority in order to protect other infrastructure and waterway stability.
- Colorado Springs Utilities ("CSU" or "Utilities") has two maintenance-related programs that benefit the MS4 Program. The City will improve coordination and integration with these programs to provide benefits to the MS4 Program as follows.
    - The Creek Crossing Program of CSU implements channel stabilization projects to protect Utilities sewer and water lines that cross creek channels. These projects stabilize eroding channels, reducing erosion and downstream sediment transport and allowing for re-establishment of functioning floodplains and healthy riparian vegetation. The City will improve coordination with the CSU Creek

Crossing Program to find opportunities to leverage the Utilities projects with City capital waterway projects.
    - The CSU Storm Patrol Program sends Utilities maintenance crews out after significant storm events to assess conditions at their infrastructure stream crossings and follow up with maintenance activities or capital projects if needed. The City also has a program to do post-storm inspections. City and Utilities staff meet to discuss their findings, but coordination can be improved. The City will work with Utilities to more formally coordinate the two activities in terms of locations inspected, criteria used for assessments, frequency of mobilization, and/or sharing results.
- EPA identified a number of specific maintenance problems within the City stormwater service area during its 2013 and 2015 inspections. The City is already addressing those problem areas using the drainage maintenance crews in its Operation and Maintenance (Streets) Division. **Appendix A-1** contains an inventory of the maintenance issues identified in the EPA inspections. This lists 12 problem areas. As of December 17, 2015, six of these have been resolved or are currently being addressed by City maintenance crews and are anticipated to be resolved by the end of January. Others must be solved with capital projects that require engineering designs and contractors. These remaining O&M projects are assigned to the Operation and Maintenance Division and are expected to be addressed by the end of 2016.

5.2.2 Construction Site Program Improvements

The construction site program consists of reviewing development submittals for proper planning of construction BMPs, and inspecting construction projects to ensure BMPs are properly installed and maintained. This section describes improvements the City will make to its construction site inspection program. Review of development submittals is covered in a separate section of this MS4 Program Improvement Plan report.

The City has examined problems with BMP selection, installation and maintenance by contractors; and inadequate enforcement of construction site BMP violations by the City. Program improvements to address these concerns and implement other upgrades desired by the City are described below.

- The Stormwater Division staffing plan described in Section 6 increases the number of stormwater inspectors from two in November 2015 to seven by 2017. Four other stormwater professionals in the Stormwater Division could also perform inspections when needed. This addresses the staffing limitations that at times have affected the number of construction site inspections that can be performed. The City recognizes that the level of construction activity in the city can vary significantly from year to year based on general economic conditions and other factors. This is reflected in the flexible staffing plan in this Improvement Plan that will provide cross-training of inspectors and other stormwater professionals to respond to short-term increases in the number of construction site inspections to be performed in a given year.
- Creation of the Stormwater Division will consolidate all municipal, industrial and construction inspectors in one City department. This will improve the City's ability to train and manage the inspectors responsible for construction site inspections. It will also improve the consistency of the inspections performed.
- Inspectors take classes from the Colorado Local Technical Assistance Program (LTAP), Colorado Department of Transportation, and Altitude Training (through Red Rocks Community College). This technical training will continue. It will be supplemented with annual training in City procedures for inspection documentation and the importance of

follow-up and enforcement. The MS4 program managers will track and document inspectors' performance.

- The City has an existing Inspector Reference Guide that outlines the different types of grading and erosion control inspections, timelines for inspecting, and the enforcement process. This Guide will be reviewed and updated as necessary to be consistent with the current Drainage Criteria Manual, the new City stormwater organization, and the City's emphasis on contractor compliance and enforcement.
- City Engineering and Development Review supervisory staff currently provide oversight inspections to verify that grading and erosion control inspections are being performed properly. This QA/QC oversight practice will continue, and will be performed by supervisors in the new Stormwater Division. All work will be appropriately documented.
- The local development community must be made aware of the City's emphasis on construction site BMP compliance and enforcement. The City will reach out to this component of the regulated community to assure that it understands the importance of construction site runoff management and the likelihood of enforcement for non-compliance. This will occur through the current "Wet Wednesdays" outreach events to the development community sponsored by the City stormwater group, and other events specifically designed to gain support for the improved stormwater program.
- The City will review its existing educational materials targeting the local construction industry and update them as needed to reflect changes to the MS4 Program.

5.2.3 Residential/Commercial Program Improvements

<u>Development Review Process Improvements</u>

The City has guidelines for performing review of development submittals to assure they comply with the Drainage Criteria Manual and the requirement to incorporate post-construction BMPs into the site design. The City uses a web-based Engineering Review Database in which reviews of development submittals are tracked. It can include data on review status, site information and photographs, and can be accessed by the public. Development reviews are currently performed by the Engineering and Development Review group in Public Works.

The City will address consistency in the process for requiring post-construction BMPs at new residential developments. It will assure that its 4-Step process for reviewing development submittals is followed in all cases. The following improvements will be made to the current development submittal review process.

- The development review function will continue to be performed by plan review staff, but those positions will be moved into the new Development and Erosion Control group in the new Stormwater Division. Plan reviews will be performed by individuals dedicated to performing stormwater reviews. This will assure that they are properly focused on reviewing development submittals for stormwater issues.
- The Stormwater Division will provide refresher training on an annual basis for all City staff performing development reviews. This training will include the proper approach for reviewing development submittals for MS4 Program compliance, sound engineering of the BMP/LID facilities being provided and their placement that meet the Drainage Criteria Manual guidance, and the requirements for record-keeping.
- The Stormwater Division will develop a QA/QC process to assure that the checklist used by the Development and Erosion Control group for reviewing development submittals is used properly and consistently. The QA/QC process will generate a record of the checks performed.

- Prior to adoption of a new Drainage Criteria Manual in 2014, the City did not require implementation of permanent (post-construction) water quality BMPs for certain classes of low density residential development. With adoption of the 2014 Drainage Criteria Manual, the City's policy requires post-construction BMPs associated with all new residential and commercial development over 1 acre. The Public Works Director has confirmed that this policy had been and will continue to be followed and that no waivers will be granted.
- The City currently has a policy requiring execution of Inspection and Maintenance (IM) agreements with developers or private landowners when new post-construction BMPs are constructed. The IM agreements commit the landowners to properly inspecting and maintaining their BMPs, and reporting annually to the City. In the past some final certificates of occupancy have been granted without the IM agreement being executed. The City will tighten its development approval process to assure that final approvals are not granted without an executed IM agreement.

<u>Addressing Past Residential Development Constructed without Permanent BMPs as Cited in EPA and CDPHE Reports</u>

EPA and CDPHE have noted in audit and inspection reports seven residential development projects approved without permanent water quality BMPs. The residential development sites noted by EPA and CDPHE are listed below.

- Indigo Ridge North at Stetson Ridge
- Indigo Ranch at Stetson Ridge
- The Mountain Preserve
- Cathedral Ridge at Garden of the Gods Rd
- Signature Point at Garden of the Gods Rd
- Austin Ridge Development
- Parkview at Spring Creek Filing No. 2

The City will investigate the regulatory circumstances associated with each of these developments and their potential water quality impacts. For each site, the City will report on the background and timing of development approvals, how the City intends to proceed now concerning stormwater controls at the site, and why the City has reached its conclusion as to how to go forward. The results from this investigation will be presented in a separate report by the City, and the City will confer with EPA and CDPHE concerning its findings and approaches for these development sites.

5.2.4 Industrial Program Improvements

The two main components of the MS4 Program related to industrial sites are inspection and education. The City has an industrial site inspection program that incorporates about 1,180 industrial sites. Each year the City reviews its database of industrial sites and calls each business to be sure they are still active. This includes the list of industrial sites that applied for and received coverage under the CDPHE general industrial permit.

The City performed 383 industrial site inspections in 2014. Staffing limitations meant that 703 sites were not inspected during the year. The City has a mailing list of all the businesses in the regulated categories, and distributes appropriate educational material on the stormwater program to industrial site owners annually based on the type of industrial operations being performed.

The past EPA inspection and audit found few issues with the City's industrial program. Industrial sites were found to have conditions common to most industrial sites (e.g., evidence of past spills) and some site owners were not aware of the stormwater program. The City has improved its process for distributing educational materials to site owners annually to address the awareness issue. However, the lack of inspectors or other staff available to perform industrial inspections must be addressed.

The City will make the following improvements to its industrial program.

- The Stormwater Division staffing plan described in Section 6 includes four existing stormwater inspectors (two of which were hired in late 2015) and the future addition of three more stormwater inspectors. Four other stormwater professionals in the Stormwater Division could also perform inspections when needed. This addition of staff will address staffing limitations that previously limited the number of industrial inspections performed in the past few years.
- Creation of the Stormwater Division will consolidate all municipal and industrial stormwater inspectors in one City department. This will improve the ability to train and manage the inspectors responsible for industrial site inspections, and improve the consistency of the inspections performed.
- Colorado Springs Utilities performs pretreatment inspections of industrial sites that require pretreatment permits to discharge wastewater to the sanitary sewer system. Utilities has pretreatment inspectors who go onsite to inspect industrial facilities for their sewer discharges. Currently these inspectors have information related to the stormwater program but are not specifically trained in how to respond to stormwater issues. The City will train Utilities pretreatment inspectors to identify potential stormwater issues so they can be additional "eyes and ears in the field" at industrial sites. Training will include typical stormwater issues to be aware of at commercial and industrial sites, educational material that can be provided to site owners, and the proper approach to notifying Stormwater Division staff of any problems that require follow-up.
- A significant part of the industrial program involves the distribution of stormwater education materials to industrial site owners. Materials cover topics such as MS4 permit requirements and proper use of typical industrial site BMPs. The City will review its current educational materials and update them if needed to reflect current industry standards and the new MS4 program priorities. The City will investigate expanding options for distributing materials via email and other social media techniques.
- The City will review the industrial site inspection program to identify potential modifications to improve the efficiency of using available resources, and to prioritize sites for inspection. The City has 1,180 businesses in its industrial site database. Not all categories of businesses "are contributing or have the potential to contribute a substantial pollutant loading to the municipal storm sewer system" (MS4 Permit Part B.1.c). The City will prioritize industrial site inspections to assure that those sites in business categories or locations with the greatest potential to contribute pollutants to the MS4 are inspected most frequently.

5.2.5 Municipal Facility Program Improvements

The City's Municipal Facility Runoff Control Program (MFRCP) was developed to manage runoff from municipal facilities. The MFRCP is a strength of the current MS4 Program. EPA expressed concern that the City is not implementing MFRCP procedures at some municipal facilities that also have industrial permits.

The City will improve the MFRCP as follows.

- The City will perform an inventory and assessment of all municipal facilities (e.g., maintenance yards, office complexes, equipment and material storage yards) to assure that a current operations and management plan is in place and that it covers all activities on the site.
- Consolidation of inspectors with the new Stormwater Division will improve the ability to conduct municipal site inspections with adequately trained inspectors.
- The City will prioritize all municipal facilities in the MFRCP for inspections based on their potential to contribute pollutants to the MS4. Sites with high priority will be inspected more frequently (e.g., once per year, or more often if appropriate), while other sites with low priority may be inspected less frequently. This will devote inspection resources to the sites with the greatest potential to adversely affect the MS4.
- City inspectors will meet annually with each municipal site operator to review the importance of the stormwater program and provide training on proper municipal site operations and BMPs to control site runoff.

5.2.6 Illicit Discharge Detection and Elimination Program

The objective of the City's Illicit Discharge Detection and Elimination (IDDE) program is to identify and eliminate illicit discharges to the MS4. Illicit discharges can occur from a wide variety of sources including spills, illegal dumping, cross connections with the sanitary sewer, improper material disposal, and poor housekeeping practices. Currently the stormwater team and the Operation and Maintenance Division within Public Works respond to illicit discharges, and the Fire Department responds to hazardous material spills.

The City recognizes potential issues with IDDE inspector training, record-keeping, follow-up/enforcement, and codes. The previously described improvements to the City's training, documentation and enforcement practices will address IDDE program issues identified by EPA and CDPHE. In addition, the City will implement the following improvements to its IDDE program.

- Creating the Stormwater Division with dedicated stormwater inspectors as described previously will improve the consistency and accountability of staff trained to respond to illicit discharges.
- Consolidating MS4 activities in the Stormwater Division and providing an appropriate level of staffing as described previously will improve the ability to respond quickly and appropriately to reports of illicit discharges. This will also create a centralized location and standardized process for tracking and documenting IDDE program activities along with other components of the MS4 program.
- As described in the Public Education and Outreach Program section, the City will improve the efficiency of the current stormwater complaint hotline and website for receiving citizen complaints regarding illicit discharges. Complaints will be directed to Stormwater Division staff for follow-up. This will assure they are addressed in a timely manner. Records will continue to be kept of all complaints and follow-up activities.
- A key to an effective IDDE program is to have as many trained "eyes and ears" in the field as possible. The City Stormwater Division will train other City department staff to observe and report potential illicit discharges as part of their normal work duties. This includes staff of the Operation and Maintenance Division (stormwater and streets crews), CIP Engineering Program (engineers managing construction projects), building department (building inspectors), and the Fire Department hazardous spill responders. The City will also train Colorado Springs Utilities maintenance crews, industrial pretreatment inspectors, and project engineers to observe and report potential illicit discharges.

- Many of the current and proposed public education and outreach activities are directed toward increasing public awareness and modifying public behavior to decrease the frequency of illicit discharges. As described in the Public Education and Outreach section, the City will improve tracking and record-keeping for these activities and will explore ways to test their effectiveness generating positive changes in public behavior.

5.2.7 Public Education and Outreach Program Improvements

The City's MS4 public education and outreach activities are a strong element of the current stormwater program. Current public education and outreach activities include:

- Approximately 175 school presentations to 4,000 – 5,000 students annually
- Watershed display for use at student and stakeholder presentations
- "Ditch Playing in Ditches" flood safety campaign (brochures, PSAs, advertisements)
- Hotline to report illicit discharges
- Dedicated stormwater website
- Proper waste disposal brochures and public service announcements (PSAs)
- Household Chemical Waste Collection program
- Pesticides, Herbicides and Fertilizers program (presentations, brochures at nurseries and home improvement stores)
- Adopt-A-Waterway program (25 groups, 3 cleanups/month)
- Storm drain marking program (500 volunteers annually)
- Scoop the Poop program
- Stream signs to identify key waterways
- Newsletter
- "Wet Wednesdays" monthly outreach to development community

A separate review of public education and outreach activities and requirements is being conducted by the City as part of the overall stormwater improvement program review and is addressed in a separate report. This will consider MS4 Program public education and outreach measures as well as public communication strategies for improving the community's understanding of, and appreciation for, the importance of stormwater management to public safety and environmental quality. High-level recommendations from this review are provided below.

Currently public education and outreach activities are part of the other MS4 Program components; there is not a formal public education and outreach program that is required under the current MS4 Permit. In order to elevate the visibility of public education and outreach as part of the City's MS4 activities, the Stormwater Division will develop a separate Public Education and Outreach Program as a part of the MS4 Program. This was a part of previous City MS4 permits, and is a common element of most MS4 permits, but is not a requirement of the current permit. Developing a separate MS4 Public Education and Outreach Program will focus attention on this important component and facilitate tracking of related activities during the year.

The City will also increase public reporting surrounding the MS4 Program activities, particularly related to improvements in the program. Informing the citizens of Colorado Springs and neighboring communities of the benefits of stormwater control and the specific activities accomplished each year will help build public legitimacy and support for the improved program. Public reporting will consist of three components:

- "Stormwater Spending Report" prepared by the City Finance Department to document spending on the MS4 Program and other related stormwater activities. This report will

update the original stormwater spending report and narrative for 2004 through 2014 prepared by Public Works/Engineering on March 13, 2015.

- "Stormwater MS4 Program Accomplishments Report" prepared by the Stormwater Division to describe important achievements in implementing BMPs, conducting educational programs, etc. It will include metrics describing the progress toward implementing the planned MS4 Program improvements.
- "Stormwater Capital Project Accomplishments Report" prepared by the Stormwater Division to describe capital projects and major O&M activities completed and their benefits to citizens of the City and its neighbors.

Other key improvements to the MS4 public education and outreach program as identified in the Public Education and Outreach report will include:

- Collaborate with the City Communications group to develop a coordinated approach to stormwater public outreach for water quality and flood management.
- Identify public outreach goals and measurement techniques, and create a measurement matrix for tracking progress.
- Update the City's stormwater website to contain more current and useful information, and to serve as a better way for citizens to report potential illicit discharges.
- Update the illicit discharge hotline to direct calls to the Stormwater Division.
- Update website and hotline to permit reporting of apparent problems with existing stormwater management facilities such as inlets, BMPs, pond, basins, etc.
- Continue strong documentation of public outreach activities, and explore methods of measuring their effectiveness in changing public awareness and behaviors.
- Upgrade existing stakeholder database.
- Explore partnerships with other local and national stormwater interest groups.
- Convert the current stormwater newsletter to an E-news format.
- Conduct media campaigns annually to highlight successful programs and projects.

5.2.8 Monitoring Program Improvements

The City currently contracts with the United States Geological Survey (USGS) to conduct wet weather and dry weather monitoring required by the MS4 Permit. The City participates with Colorado Springs Utilities and other entities to fund USGS regional water quality monitoring activities.

Before 2012, the MS4 monitoring program had a broader scope than the current program with regard to the number of sites sampled, the frequency of sampling, and the list of constituents analyzed. Budget cuts during the recent recession forced reductions by the City in its contribution to the USGS monitoring program. Although Colorado Springs Utilities increased its contribution to the USGS program to partially compensate for the drop in City funding, the cut-back still required USGS to scale back its wet and dry weather monitoring activities to support the MS4 Program.

There are several regional water quality issues that could affect stormwater and wastewater operations of the City. These issues should be considered by the City and CSU when expanding the current USGS regional water quality monitoring program so the planned MS4 Program sample collection and analysis effort can be leveraged in support of addressing these water quality concerns as well. These issues include the following.

- A potential water quality standard and Total Maximum Daily Load (TMDL) determination for *E. coli* in Fountain Creek Basin is being developed by CDPHE. The primary source of the *E. coli* in Fountain Creek and its tributaries is avian waste from bird roosting on

bridges over streams, as reported in investigations by the USGS. Nevertheless, urban surface runoff may be one of the mechanisms by which the *E. coli* is delivered to receiving waters.

- CDHPE has developed nutrient standards that will take effect in 2022. High background levels in non-point sources or stormwater may affect waste load allocations assigned to Utilities' wastewater discharges when TMDLs are developed for nutrients, which may in turn require additional nutrient removal in Utilities' wastewater treatment plants. Thus, it will be important to have a good understanding of the potential contribution of stormwater to background nutrient concentrations to properly inform the TMDL process.
- EPA is indicating that temperature standards will not be adjusted despite possible future changes in ambient water and air temperature associated with climate change. This may make it more difficult to meet temperature standards in the future. Again, having credible supporting data on non-point and stormwater contributions to receiving water temperature will be important for development of appropriate site specific standards and/or pollutant loading allocations.

The current USGS monitoring program for MS4 support will be expanded to return it to the level prior to the recent budget cuts. The City will increase funding to approximately $300,000 per year beginning in 2016. The program will be more proactive in preparing for the future water quality issues in the Fountain Creek watershed as listed above. The City stormwater team will coordinate with Utilities and other regional entities to determine how the regional monitoring program can be performed efficiently to meet water quality permitting needs and expanded to address emerging issues. For a more detailed discussion of proposed changes to the monitoring program, see **Appendix A-2**.

It is understood that the monitoring plan is a living document and will be changed as permit requirements, budget and resources change. **Table 5-1** lists proposed actions to improve the overall monitoring program. Not all of these are specific permit requirements, but they will move the City in the direction of having a more robust, pro-active program. See **Appendix A-2** for a detailed description of these recommendations.

Table 5-1. Monitoring Plan Improvement Activities

	Item	Completion Date	Responsibility
1	Finalize the Joint Financial Agreement (JFA) with USGS	December 31, 2015	City, CSU
2	Update Monitoring Plan to be in compliance with MS4 Permit.	2nd Quarter 2016	City Stormwater Division
3	Submit 4-yr summary of USGS data ending in 2014	2nd Quarter 2016	Stormwater Division, USGS
4	Validate USGS reporting protocols	2nd Quarter 2016	Stormwater Division, USGS
5	Determine additional water quality requirements	3rd Quarter 2016	Stormwater Division
6	Review Monitoring Plan	Every 12 months	Stormwater Division
7	Additional staffing	1st Quarter 2016	Stormwater Division

8	Modify the scope of Monitoring Program as needed	December 31, 2016	Stormwater Division, USGS, Others
9	Regional water quality involvement	Continuous	Stormwater Division

5.2.9 Other Activities

Street sweeping is an important source control BMP for the municipal and residential/commercial programs. It prevents pollutants from entering the municipal storm sewer system. Street sweeping is the responsibility of the Operation and Maintenance Division (previously Streets Division). Major arterial streets are swept an average of once a month, and residential streets are swept an average of twice per year. An average of 7,800 lane miles in public streets are swept every year, and approximately 1,200 cubic yards of leaves, trash and debris are removed from the MS4. The City will improve the street sweeping by replacing old street sweepers with new regenerative sweepers. The City currently plans to lease eight new regenerative street sweepers in 2016. At this time the City is not planning other improvements to its street sweeping program.

The CSU Sanitary Sewer Creek Crossing Program (SSCC) was established to systematically inspect, evaluate, prioritize, repair and/or replace affected Utilities infrastructure that cross minor and major drainages. The objective of the SSCC is the protection of utility infrastructure while at the same time providing stream bank protection and stabilizing creeks and drainages so that degradation does not continue to occur. Many, though not all, of the capital projects managed under the SSCC program are effective at reducing erosion and sediment transport, and encouraging establishment of healthy riparian vegetation that provides water quality benefits. At this time, CSU is not planning any significant modifications to its SSCC program.

6.0 STAFFING CHANGES

This section describes the staffing profile needed for the City's Stormwater Division. It describes the planned staff mix designed to have a fully compliant MS4 Program. It includes a transition plan to achieve that mix in approximately two years.

6.1 Current Staff Resources

At present over 40 City staff members contribute in some manner to fulfilling the requirements of the MS4 Program. For the majority of 2015, the level of direct MS4 Program staffing was approximately 28 FTEs. These resources are summarized as follows:

- 1 Senior Civil Engineer – 1 FTE (manage stormwater program and coordinate with other City departments)
- 1 Stormwater Quality Coordinator – 1 FTE (coordinate and conduct stormwater quality related activities)
- 1 Lead Inspector – 1 FTE (perform stormwater inspections)
- 1 Senior Engineer – 1 FTE (coordinate stormwater projects)
- 1 Field Operator – 1 FTE (perform field inspections and O&M)
- 3 Asset Management group engineers – 0.25 FTE (maintain drainage facility asset management database)
- 1 Engineer and 6 Engineering Techs in Engineering and Development Review Department – 3.5 FTE (development reviews and building site inspections)
- 21 O&M personnel in Streets Division – 18.5 FTE (drainage facility inspection and maintenance)
- Public Communications Department – 0.1 FTE (public outreach support)

Two new inspectors were added to this group in late 2015.

6.2 MS4 Program Staff Additions

Meeting the objectives of the City's stormwater program will require additional staff resources. As points of comparison, the stormwater program had about 60-65 FTEs during the height of the SWENT operations, and cities of similar size typically have in the range of 50 to 70 FTEs. Documentation for this range is described in greater detail in the *MS4 Program Review TM* in **Appendix A-3**.

A proposed staffing profile for the core components of the Stormwater Program was developed by the City based on several factors, including:

- Comparison with the SWENT
- Comparison with other municipal MS4 Programs
- Capital project requirements to meet the City's goals for improving its stormwater infrastructure. The City is currently reviewing projects identified in the 2013 Stormwater Needs Assessment, projects desired by neighboring governments, and new information on project needs.
- A bottom-up estimate of the level of effort required to comply with the provisions of the current MS4 permit and anticipated changes in the next permit

The proposed initial staff profile for the core stormwater functions is shown in **Figure 6-1**. As described in Section 4, staff will be assigned primarily to the new Stormwater Division. A significant number of other positions are located in the Operation and Maintenance Division (previously called the Streets Division), and the CIP Engineering Program Division. Existing positions are in black; planned new positions are in red (hire in 2016) or green (hire in 2017).

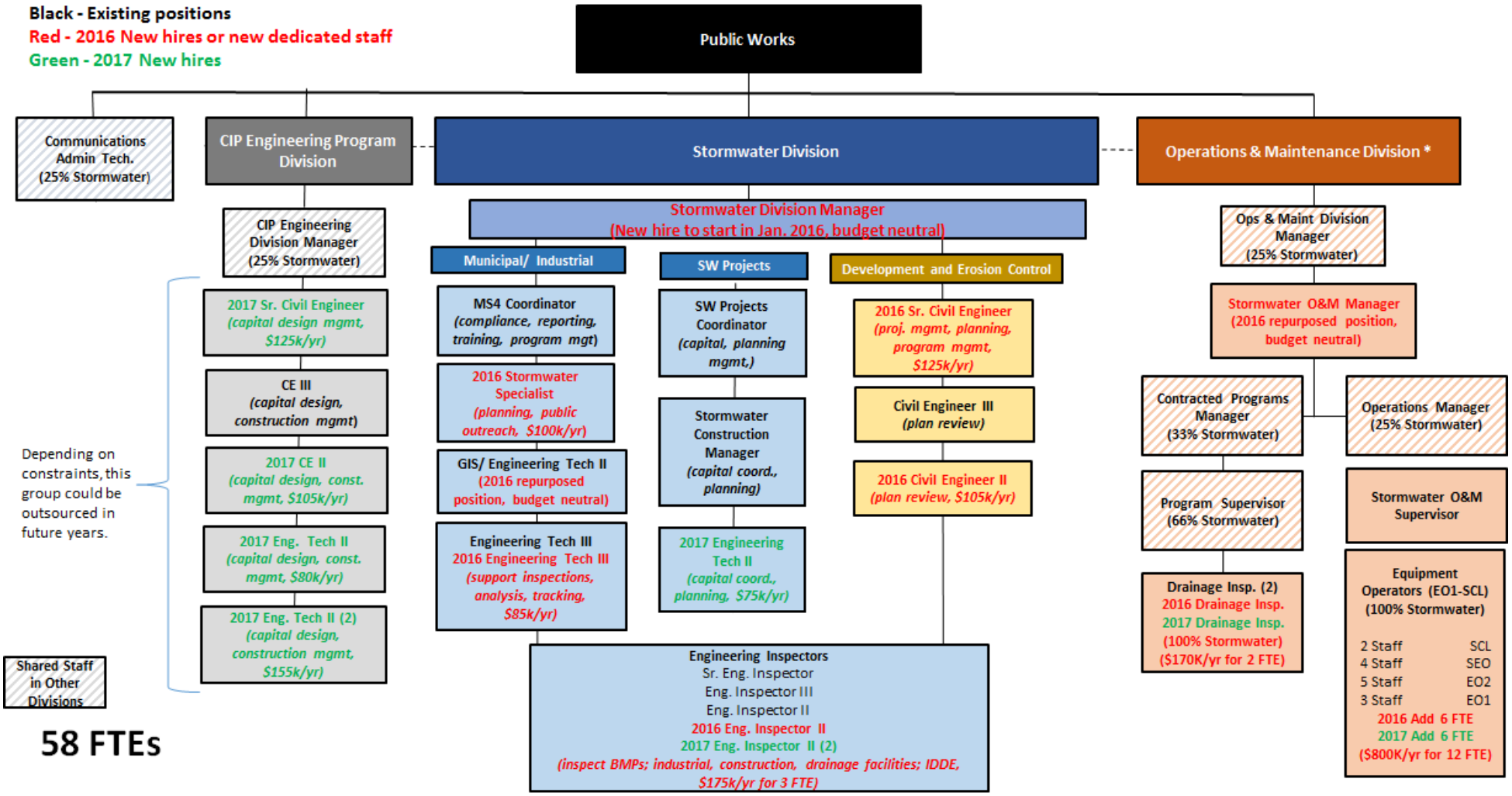

Figure 6-1. Stormwater Program Staffing Needs by Functional Area

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The bottom-up estimate of FTEs needed to implement the required MS4 programs appropriately is shown in **Appendix A-4**. It shows that approximately 57 FTEs are necessary to accomplish the annual program activities. This agrees well with the City's plan to have approximately 58 staff in the Stormwater Division, supplemented by staff in other departments.

The resource requirements for the core stormwater program consist of 58 FTEs representing contributions from about 66 City employees. This includes staff required to implement the proposed capital improvement program for stormwater facilities as well as the other activities required for MS4 Permit compliance. This is an initial staffing profile target for a robust, complete MS4 Program for Colorado Springs. As positions are filled and a Stormwater Program Manager develops guidance and direction for the program across department boundaries, staffing needs will be adjusted as needed to meet the terms of the MS4 Permit.

A number of other City and Utilities personnel are not shown in Figure 6-1 but currently have job duties that provide significant benefits to the MS4 Program. These positions will continue to reside in their current departments, and the work activities will continue to contribute to the City's MS4 permit compliance. These include the following.

- As noted previously, street sweeping is an important BMP for the municipal and residential/commercial programs. Street sweeping crews are in the Operation and Maintenance Division. The street sweeping crews are currently comprised of 12 street sweeper operators and 6 other crew members. Under the stormwater program reorganization, eight members of the street sweeping team will be dedicated to stormwater functions. They will be cross-trained in O&M procedures so they can assist with drainage maintenance when they have down-time from their street sweeping duties or when particularly significant maintenance problems occur.
- Spill response will continue to be performed by Fire Department and Operation and Maintenance Division crews. Proper and timely spill response is an important BMP in the illicit discharge detection and elimination program.
- Colorado Springs Utilities will continue to perform channel stabilization projects, post-storm channel inspections, illicit discharge response, maintenance of BMPs on its facilities, and pre-treatment inspections at industrial sites. Management of channel stabilization capital projects and O&M is performed by the CSU Sanitary Sewer Creek Crossing Program, which currently has a staff of 3 people (2.5 FTEs). Utilities will also partner with the City in public education and outreach activities that have linkages to the water and wastewater system.

In addition, USGS will continue to provide the personnel needed to collect and analyze wet and dry weather water quality samples.

The following summarizes the number of new positions to be filled in order to complete the Stormwater Program staffing profile. Most of these are new positions, but some will be created by dedicating an existing position fully to the Stormwater Program.

- Stormwater Program Manager – 1 FTE
- Stormwater Specialist – 1 FTE
- Engineers – 5 FTEs
- Engineering Technicians – 5 FTEs
- Inspectors: New Position – 5 FTEs
- Equipment Operators – 12 FTEs
- GIS Technician – 1 FTE

Table 6-1 lists the number of FTEs in the enhanced Stormwater Program organized by the primary MS4 program component to which they contribute.

Table 6-1. Stormwater Program Staff Aligned with Primary MS4 Program Components

MS4 Program Component	Estimated FTEs Needed
Administration (Managers)	1.5
Municipal & Industrial (Com/Res, Public Outreach, IDDE, Industrial, and Municipal Programs)	5 + 6 shared inspectors with Development and Erosion Control
Stormwater Projects	3
Development and Erosion Control (Construction, New Development and Redevelopment Programs)	3 + 6 shared inspectors with Municipal & Industrial
Stormwater Operations & Maintenance	33
Stormwater Capital Projects	6
Communications	0.25
Total	**58**

6.3 Transition in Staffing Level

An increase in stormwater resources from 30 FTEs to 58 FTEs cannot be accomplished immediately. The following factors will be considered in the transition period.

- The key position to fill first is the Stormwater Program Manager. This individual will bring immediate credibility to the program, and will be involved in making key hires and organizational decisions. As of late December 2015 this position has already been posted, and the interview process is underway.
- The City will staff up over a period of 2 years to ensure that the hiring process is not overwhelmed, adequate training and supervision are in place, people with the appropriate skill sets are identified, and the budget impacts are appropriately managed. **Table 6-2** shows the phased staff increase planned for 2016 and 2017.
- In order to accelerate upgrading of the MS4 and capital program, the City may consider staff augmentation options for accessing additional resources for capital project delivery on an immediate but temporary basis. Under this option, staff augmentation utilizing outside contractors would be phased out as new employees are hired.
- The City may also consider entering into a shared services agreement with Utilities to provide capital project delivery support or other services, thereby increasing efficiency and controlling costs.

Table 6-2. Phased Staff Additions for Augmenting Stormwater Division Program

Positions to be Filled in 2016	Positions to be Filled in 2017
Stormwater Division Manager	Senior Civil Engineer (PE) for CIP Engineering
Stormwater Specialist	Civil Engineer II (PE) for CIP Engineering
Senior Civil Engineer (PE) for Development and Erosion Control	3 Engineering Tech II (PE or EIT) for CIP Engineering
Civil Engineer II (PE) for Development and Erosion Control	Engineering Tech II (PE or EIT) for Stormwater Projects
Engineering Tech III (PE or EIT) for Municipal & Industrial	2 Engineering Inspectors II
Engineering Inspector II	Drainage Inspector
Drainage Inspector	6 Equipment Operators
6 Equipment Operators	

7.0 EQUIPMENT ADDITIONS

7.1 Current Equipment Resources

The City currently has the following equipment resources available for use in the support of MS4 Program needs and for drainage system cleaning and maintenance.

- Excavators with thumbs (2)
- Excavator with mower attachment
- D5 Dozer
- 938 Front end loader
- 966 Front end loader with teeth
- Volvo front end loader with mower attachment
- Backhoe
- Tracked skids with mower attachments (3)
- Vermeer wood chipper
- John Deere tractor with brush hog mower
- Tandem axle dump trucks with rock beds (2)
- Single axle dump trucks (2)
- Towmaster backhoe trailer (2)
- Vactor trucks (2)
- F550 dump bed truck
- 18 foot flatbed utility trailer
- F350 four door crew trucks (2)
- Semi tractors (2)
- Lowboy trailers (2)
- End dump trailer
- Flow boy trailer
- Confined space van

7.2 Equipment Needs

Based on the planned addition of 14 drainage maintenance FTEs, the City Operation and Maintenance Division will need the following additional equipment.

- Track skids with mower attachments (2)
- Mini Excavator
- Tandem axle dump trucks with rock beds (2)
- Towmaster backhoe trailers (2)
- Backhoe
- Vactor trucks (2)
- F550 dump bed truck
- F350 four door crew trucks (2)

The Stormwater Division will be adding five new inspectors and five office positions. Three new pickup trucks will be purchased to support this team. Acquisition of equipment will be phased in based on the rate of hiring new Operation and Maintenance crews. In addition, the City has committed to replacing eight existing street sweepers with new regenerative street sweepers in 2016. Street sweeping is an important part of the City's MS4 drainage maintenance program, as it reduces the amount of trash, sediment and grit and associated pollutants that enter catch basins and drain inlets. The cost of these street sweepers will come from the City's fleet services contract held by the City Budget Office, and will not come out of the Stormwater Program budget.

8.0 STORMWATER PROGRAM BUDGET

This section presents a breakdown of the budgeted costs of the City's improved MS4 Program. This is the budget needed to comply with the Colorado Springs MS4 Permit based on current practices and the program improvements described in this report. Budgeted costs for 2016 through 2020 are presented in the categories of Labor, Equipment, Maintenance and Services, and Administration.

Development of an estimated MS4 Permit compliance budget must reflect the fact that program activities are performed in a variety of internal City departments and by external entities. For purposes of this report the MS4 Program budget information is presented considering the following two functional groups.

- Stormwater Division – Budgeted costs of activities performed by the Stormwater Division are estimated in detail. The Stormwater Division is where the core MS4 Program activities will occur and this is where most of the MS4 Permit compliance costs will be captured in the City's budget. In addition, the program improvements are primarily focused on the actions that will be the responsibility of this group.
- Other Public Works Divisions and External Entities – Budgeted costs for stormwater activities borne by other City departments and external entities are provided where available. Examples are the street sweeping activities of the Operation and Maintenance Division; spill response activities by the Fire Department; and O&M activities by CSU's Sanitary Sewer Creek Crossing program.

Budgets in this section are presented in 2016 dollars for current and future years. Budget values in this section have not been escalated for inflation to assist with comparison among annual budgets as program improvements are implemented over time. In practice the City has committed to adjusting the stormwater budget upward to account for inflation. Escalation for inflation is addressed in the overall Stormwater Program Implementation Plan report, which is a separate report that integrates the MS4 Program and O&M budget with the budget for stormwater capital projects.

8.1 Labor Budget

The annual labor budget was estimated by the City for the staffing profile depicted in **Figure 6-1**. This figure shows the personnel in the Stormwater Division and in other Public Works divisions that will have positions dedicated to support the stormwater program. Average salaries provided by the City for each City labor category represented in the chart were used to determine base salary expenses for new employees. Base budgetss were increased by a factor of 40 percent to account for employee benefits and other direct costs of labor. Actual salaries with benefits were used for the budget for existing employees.

Budgeted labor costs accruing to the Public Works divisions responsible for the stormwater program were determined based on the percentage of each employee's time dedicated to MS4 Program or capital stormwater project activities. This percentage was also used to estimate the FTEs available to the Stormwater Division. With the reorganization described in Section 4, most of the MS4 functions are now under the Stormwater Division. For staff members assigned to the Stormwater Division and those residing in other groups but fully dedicated to stormwater functions, a full 1.0 FTE was used. For Operation and Maintenance Division personnel dedicated fully to drainage system O&M and CIP Engineering Division personnel dedicated fully to stormwater capital project design, construction and management, it was assumed each employee would represent 1.0 FTE for the stormwater program. Other groups were assumed to contribute partial FTEs as shown in **Table 6-1**.

Appendix A-5 shows the build-up of the labor budget for the stormwater program. The estimated annual labor budget when the program is fully functional is approximately $4.83 million in 2016 dollars.

It is possible that the City will contract with outside consultants to assist internal staff in the CIP Engineering Program Division with delivery of capital stormwater projects until all stormwater related positions are filled. This decision would depend on the number and magnitude of capital stormwater projects to be initiated in 2016 and the potential for assigning other City staff to manage those projects. The cost of any potential staff augmentation is not included in this Stormwater Division labor budget.

As noted in Section 6, the MS4 program will be supported by staff resources outside of the Stormwater Division. The budget for staff in other City divisions and in Colorado Springs Utilities is estimated as follows.

- Eight operators and one supervisor in the street sweeping group in the Operation and Maintenance will be assigned to stormwater. The annual budget for street sweeping crews assigned to stormwater is approximately $438,000.The City Fire Department spill response annual budget is $225,000.
- The Colorado Springs Utilities Sanitary Sewer Creek Crossing team annual labor budget is $225,000 for 3 staff positions.

8.2 New Equipment Budget

Based on typical costs for trucks and heavy maintenance equipment, the total estimated budget for acquiring new equipment is $945,000. The schedule for adding new equipment will be tied to the schedule for adding new stormwater employees. Approximately $453,000 will be spent in 2016 and about $422,000 will be spent in 2017. Details of the budgeted costs of new equipment are provided in **Appendix A-5**.

For long-term budgeting purposes, an annual replacement budget was calculated by estimating the useful life of each piece of equipment. The purchase cost was amortized over the assumed useful life to determine an annual replacement budget. For the fleet of heavy equipment and maintenance vehicles under the direction of the Stormwater Division, the annual replacement budget is $366,000 per year.

As noted previously, the City has committed to leasing eight new street sweepers in 2016 at an annual cost of $480,000. The budget for these street sweepers will come from the City Budget Office fleet contract, not from the Stormwater Program.

The annual budget for supplies and equipment used by CSU to perform creek maintenance and conduct inspections is $225,000.

The cost of equipment used by the Fire Department for hazardous material spills response is not included in the Stormwater Program budget and is not reported herein.

8.3 Maintenance and Services Budget

Potentially significant expenditures that are not accounted for in the labor, equipment, or administration budgets were estimated based on past experience and anticipated level of effort for future MS4 Program activities. These generally fall into the categories of Maintenance and Services. The non-labor maintenance budget includes materials needed for drainage system O&M work; examples include concrete, riprap and aggregate, revegetation materials, and other

materials for channel stabilization. Services include outside consulting or vendor services associated with MS4 Program activities. Costs in this category include:

- the City's contribution to the USGS monitoring program under the Joint Funding Agreement;
- public education and outreach related costs (e.g., PSAs, printing)
- consultant costs for Drainage Basin Planning Studies;
- updates to the Drainage Criteria Manual s; and
- allowance for miscellaneous expenses for outside services or products such as MS4 program tracking software, field equipment for inspectors, and consultant services to assist with emergency situations such as wildfires or floods.

An important component of this category is funding for a Comprehensive Stormwater Infrastructure Master Plan for the city to support the capital projects side of the overall stormwater program. This master plan will integrate updates to all current Drainage Basin Planning Studies; the 2013 Stormwater Needs Assessment that prioritized capital stormwater projects; the results of the planned system-wide waterway inspection and assessment; the projects required to address concerns of the City's neighbors; and the current Drainage Criteria Manual. The Master Plan project is scheduled to start in 2016 and be to be completed in 2018.

The Maintenance and Services average annual budget is summarized in **Table 8-1** and **Appendix A-5**. The budget is shown for 2016 through 2020 in 2016 dollars. The Maintenance and Services budget will increase as the drainage infrastructure system expands.

Table 8-1. Other Items for MS4 Program Budget

Category	Activity Description	Annual Budget in 2016 Dollars				
		2016	2017	2018	2019	2020
MS4 Program Outside Services	USGS monitoring contract Public outreach Contracts and special services	$300,000 $160,000 $100,000	$300,000 $160,000 $100,000	$300,000 $160,000 $100,000	$300,000 $160,000 $100,000	$300,000 $160,000 $100,000
Engineering Services	Drainage Basin Planning Study consulting services	$170,000	$200,000	$200,000	$200,000	$200,000
	Criteria Manual Updates ($50,000 every 5 years)	$0	$0	$0	$0	$50,000
	Comprehensive Stormwater Infrastructure Master Plan	$300,000	$700,000	$500,000	$0	$0
	Miscellaneous Studies	$100,000	$100,000	$100,000	$100,000	$100,000
Maintenance Projects	Supplies for O&M projects performed by City crews	$540,000	$600,000	$655,000	$710,000	$760,000
	TOTAL	**$1,667,000**	**$2,165,000**	**$2,015,000**	**$1,570,000**	**$1,670,000**

8.4 Administration Budget

The Administration budget includes all office operations and incidental non-labor costs associated with operating the Stormwater Division within the City governmental structure. Office operations include space charges, office supplies, office maintenance and equipment, utilities, communications and cell phones, membership and dues, travel expenses, and other miscellaneous minor costs. It was assumed that the Stormwater Division would be charged a pro-rata share of these types of expenses incurred by the City General Fund.

The City's proposed 2016 budget for the City Engineering (Stormwater) group and the Streets Division (new Operations and Maintenance Division) was used to estimate the administration budget. Budgeted office and other administration expenses for those two groups were summed and then divided by the number of existing FTEs in these groups (26) to determine an administration cost of $4,124 per FTE. The total Stormwater Division annual administration budget for the planned 58 FTEs is estimated to be approximately $239,000.

It is noted that the SWENT administration budget was considerably higher. This is because the SWENT budget included a great deal more separate facility and support services costs, as well costs for a customer service and billing department. The Stormwater Division will be more closely integrated with other City services and will not have a separate financial group as SWENT did, and so its overall administration budget is considerably lower.

Administration costs for non-Stormwater Division City personnel in the Operation and Maintenance Division and Fire Department, as well as the Colorado Springs Utilities administration costs for personnel involved in the creek maintenance program have not been estimated. They are minimal compared to the other stormwater program costs described in this report.

8.5 Budget Summary

Table 8-2 summarizes the recommended MS4 Program budget for the Stormwater Division and dedicated Public Works staff for the next five years beginning in 2016. This budget is based on the following assumptions.

- Budgets in this table are based on 2016 dollars and are not escalated for inflation. The separate Colorado Springs Stormwater Program Implementation Plan, which integrates MS4 Program improvements and Capital Program improvements with the City's proposed stormwater budget, incorporates effects of inflation.
- The City will fulfill the staffing requirements through a combination of repurposing existing personnel and new hires. Any potential staff augmentation to assist with delivery of capital stormwater projects is not included in the budget in **Table 8-2**.
- Staffing levels are assumed to stabilize after 2017. However, after two or three years of operating under the new system the City will have a better idea of the level of service that can be provided by the currently proposed staff profile and whether adjustment in needed resources in certain program areas will need to occur. Adjustments in program staff may be made based upon this information.
- Additional equipment will be added over the next two years to coincide with the addition of operation and maintenance equipment operators and field crews. The budget for eight street sweepers scheduled for acquisition in 2016 totals $480,000 but is not included in **Table 8-2** because this cost will not accrue to the Stormwater Program.

Table 8-2. Budget for Stormwater Division and Dedicated Public Works Staff

Budget Category	2016	2017	2018	2019	2020
Labor – City Employees(1)	$3,052,000	$4,302,000	$4,834,000	$4,834,000	$4,834,000
Labor – Outsourced	$0	$0	$0	$0	$0
Equipment	$453,000	$422,000	$366,000	$366,000	$366,000
Maintenance and Services(2)	$1,667,000	$2,160,000	$2,015,000	$1,570,000	$1,670,000
Program Administration(3)	$136,000	$181,000	$239,000	$239,000	$239,000
TOTAL	**$5,308,000**	**$7,065,000**	**$7,454,000**	**$7,009,000**	**$7,109,000**

Notes: All budgets are in January 2016 dollars and are not adjusted for inflation

(1) Budget for 2016 and 2017 based on average of labor at beginning and end of year as the program staffs up
(2) O&M materials, consultant planning contracts, outside services, USGS monitoring
(3) Facilities, office equipment, supplies, computers, communications

Figure 8-1 shows the distribution of budgeted Stormwater Division costs among the main functional areas.

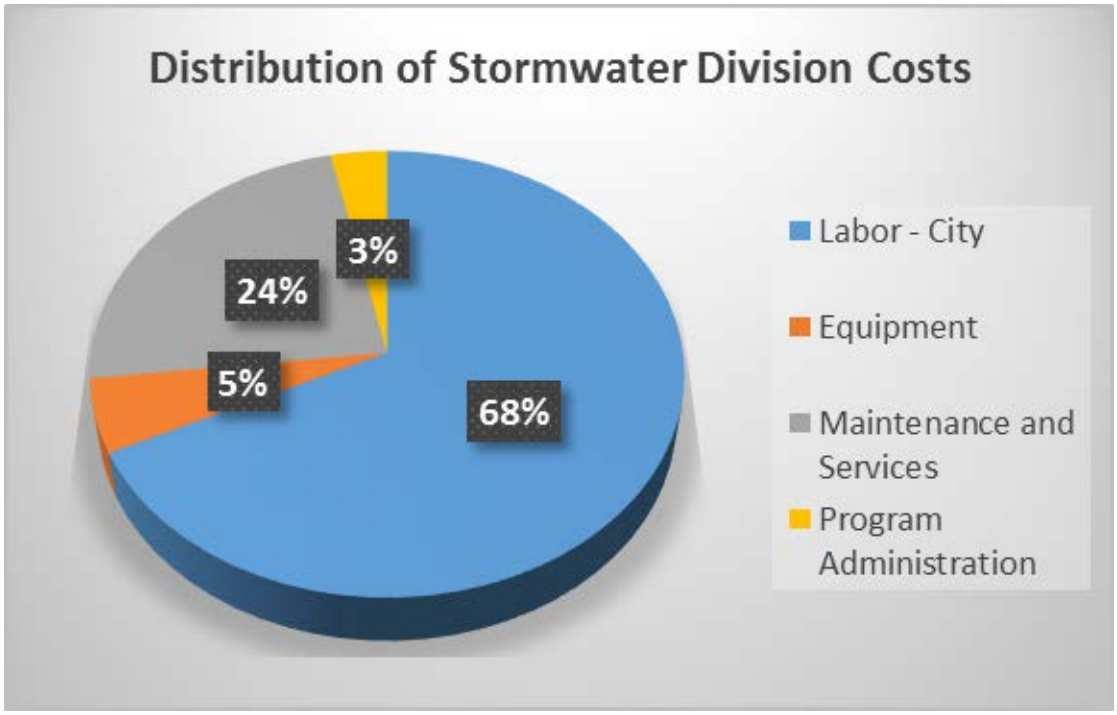


Figure 8-1. Distribution of Stormwater Division Budget among Key Functional Areas when Stormwater Division is Fully Staffed

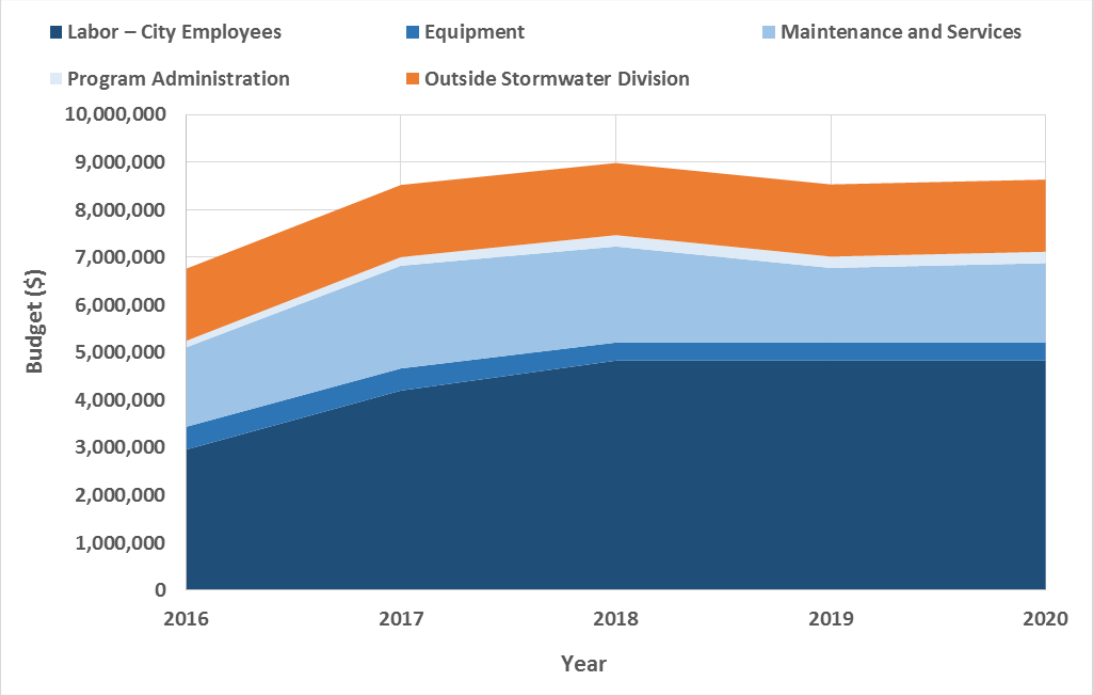
The budget in **Table 8-2** only includes the direct costs attributable to the Stormwater Division and the costs from other Public Works divisions providing direct stormwater services. As noted previously, other City departments and enterprises contribute substantial services and resources important to an effective MS4 Program, including, as examples, street sweeping by the Operation and Maintenance Division, spill response by the Fire Department. Colorado

Springs Utilities also contributes to the MS4 Program. Estimates of the budget contributions from these entities are summarized in **Table 8-3**.

Table 8-3. MS4 Budget for Functions Performed Outside Stormwater Division

Entity/Department	Service Provided	Approximate Annual Cost
City Operation and Maintenance	Street sweeping: • 8 operators, 1 supervisor • 8 new sweepers, annual lease	 $438,000 $480,000
City Fire Department	Spill response	$225,000
Colorado Springs Utilities	Creek crossing inspection and maintenance (non-capital costs)	$375,000
City – Other Departments (Communications, Human Resources))	Public outreach, human resources, asset tracking and documentation	Minimal – not included
	TOTAL	**$1,518,000**

The total MS4 stormwater program budget for the Stormwater Division, other City departments, and CSU is summarized in **Figure 8-2** for 2016-2020. A peak in the budget occurs in 2018; this is the first year of full staffing, and it includes a portion of the budget for the $1.5 million Stormwater Infrastructure Master Plan that is spread over 2016-2018 (see **Table 8-1**).



Note: Budgets are in January 2016 dollars.

Figure 8-2. Summary of MS4 Program Budget for All City and CSU Activities

It is important to note that total investment in stormwater within the City of Colorado Springs greatly exceeds the expenditures shown in **Table 8-2** and **Table 8-3**. Other publicly financed stormwater activities are associated with construction of capital projects by the City, construction of capital projects by CSU, application of grant funds to respond to natural disasters such as the Waldo Canyon fire and the 2013 floods, and drainage improvements associated with other infrastructure improvements such as roadways (e.g., funded by PPRTA) and Colorado Springs Airport. In addition the private community makes a substantial investment in stormwater management through construction and maintenance of private BMPs and drainage improvements. A discussion of total community-wide stormwater costs is included in the separate Stormwater Program Implementation Plan report.

9.0 IMPLEMENTATION PLAN

All of the significant MS4 Program Improvement Plan actions described in the preceding sections were organized into an implementation plan based on the timeframe during which the City intends to perform the actions. Four timeframes were identified for tracking implementation of program improvements:

- First 30 days (i.e., January 2016), as well as those actions that the City has already completed
- First 1 to 6 months (February – June 2016)
- First 6 to 12 months (July – December 2016)
- First 12 to 24 months (January – December 2017)

High priority actions will be accomplished immediately if possible, and not later than within the first 6 months of 2016. High priority actions are those actions that will have high impact relative to mitigating stormwater quality impacts; address critical findings documented in the EPA audit and inspection reports; provide immediate benefit; or are “low-hanging fruit” activities that can be accomplished easily while providing significant benefits.

Table 9-1 presents the MS4 Program Improvement Plan implementation schedule.

Table 9-1. MS4 Program Improvement Implementation Plan

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
General MS4 Program Activity Improvements				
Organization Changes	• *Completed in late 2015:* Planned for creation of new Stormwater Division • Create the new Stormwater Division and re-organize existing departments to align resources that support the Stormwater Program			
Staff Additions	• *Completed in late 2015:* Hired 2 new inspectors	• Stormwater Program Manager • Stormwater Specialist • Stormwater Operations and Maintenance Manager (Drainage Program Supervisor) • GIS/ Engineering Tech II • Senior Civil Engineer	• Engineering Tech III • Engineering Inspector II • Civil Engineer II • Drainage Inspector • Equipment Operators (6) • Engineering Tech II	• Engineering Inspector II • Engineering Tech II • Drainage Inspector • Equipment Operators (6) • Senior Civil Engineer/ PM • Civil Engineer II • Engineering Tech II
Equipment Additions		• Computers and related office equipment as needed for new hires	• Computers and related office equipment as needed for new hires • 1 4WD SUV • 1 4WD pickup • 1 confined space van or camera truck • 1 backhoe • 1 dump truck • 1 dump truck (tandem) • 1 mini excavator • 1 skid steer • 1 trailer • 1 vactor truck • 8 regenerative air and	• Computers and related office equipment as needed for new hires • 1 4WD SUV • 1 4WD pickup • 1 dump truck (tandem) • 1 skid steer • 1 trailer • 1 vactor truck

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
			mechanical street sweepers (leased)	
Stormwater Management Plan		• Begin development of Stormwater Management Plan	• Complete Stormwater Management Plan	
Inspections	• Designate a lead inspector to coordinate the MS4 activities.	• Upgrade stormwater inspection procedures and checklists. • Research inspection software for field application.	• Identify and prioritize problems and create a prioritized O&M project list for O&M division • Implement a QA/QC process to check the consistency of inspections against inspection procedures. • Update the Inspector Reference Guide to be consistent with the Drainage Criteria Manual.	
Enforcement	• *Completed in late 2015:* Reviewed enforcement protocols with inspectors.	• Ensure that appropriate enforcement protocols are in place, consistently utilized and appropriately tracked. • Review current City ordinances and update as necessary. • Begin submitting quarterly enforcement reports to Public Works Director. • Meet with City Attorney's Office to assure alignment of objectives on enforcement.	• Train inspectors to emphasize the City's determination to enforce its current ordinances and policies. • Provide clear direction on enforcement steps for developers, construction site owners/operators, and industrial site owner/operators. • Implement outreach to local business owners, developers, contractors, and other regulated entities.	

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Documentation and Record-Keeping	• Designate individuals within the Stormwater Division to have responsibility for tracking, documentation and record-keeping of MS4 activities.	• Investigate the use of off-the-shelf MS4 Program software for tracking and documenting activities.	• Implement full documentation and record keeping process and tools for MS4 activities. • Investigate linking the City's asset management system software with the MS4 tracking database. • Improve tracking and record-keeping of public outreach activities	
Training		• Conduct refresher training for all current inspectors and City field personnel • Conduct refresher training for City staff reviewing development submittals and post-construction BMP plans • Investigate training resources such as manuals and videos from third party vendors.	• Maintain an inspector training database to track the training received by all staff members • Research available inspector training tools and resources to determine if these resources could be used to improve the City's program. • Cross-train other staff in Stormwater Division to conduct inspections. • Provide training to non-Stormwater Division staff that have the potential to observe possible illicit discharges. • Train Utilities O&M crews to observe and report possible illicit discharges when performing their normal duties. • Train Utilities pretreatment inspectors to be aware of potential stormwater problems • Consider recording in-house training sessions for future use.	• Conduct refresher training annually for all inspectors. • Conduct refresher training annually for Stormwater Division staff to perform inspections. • Conduct refresher training annually for all City staff performing development reviews. • Consider additional training opportunities for developers and builders.

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Planning	• *Completed in late 2015:* Conducted comprehensive review of entire MS4 program and developed improvement plan	• Retain a consultant to prepare a Comprehensive Stormwater Master Plan.	• Seek annual feedback from employees about the effectiveness of the program from their viewpoint.	• Seek annual feedback from employees about the effectiveness of the program from their viewpoint.
Specific MS4 Program Component Improvements and Equipment Needs				
Stormwater Operation and Maintenance Program	• *Completed in late 2015:* Addressed 6 of 12 O&M issues identified in EPA audit and inspection reports. • Begin survey of all public waterways, stormwater infrastructure, and public BMPs.	• Establish a formal inspection program for drainage infrastructure • Improve coordination with the Utilities Creek Crossing Program. • Formally coordinate efforts with CSU Storm Patrol Program.	• Develop schedule to address remaining drainage system O&M issues identified in the EPA audit and inspection reports that require capital project solutions. • Complete survey of all public waterways, stormwater infrastructure, and public BMPs. • Document improved conditions to CDPHE and EPA. • Review capital program project prioritization, with O&M needs in mind.	• Address remaining drainage system O&M issues identified in the EPA audit and inspection reports that don't require capital project solutions (may require Corps of Engineers permits).

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Construction Program	• Provide supplemental annual training for inspectors in City procedures for inspection documentation and importance of follow-up and enforcement. • Review construction site BMP requirements with all construction site inspectors	• Conduct outreach to the development community (e.g., "Wet Wednesdays") to inform them of the renewed emphasis on stormwater inspections and permit enforcement. • Cross-train inspectors and other stormwater professionals to conduct construction site inspections. • Develop formal inspection QA/QC program.	• Update existing Inspector Reference Guide. • Update existing educational materials targeting construction industry to reflect changes to the City's MS4 Program. • Add requirement for signage at development sites to tell citizens how to report evidence of sediment runoff	• Consider additional training opportunities for developers and builders.
Residential / Commercial Program	• *Completed in late 2015:* Tightened requirement for executed Inspection and Maintenance reports for private BMPs • *Completed in late 2015:* Conducted reviews of 7 residential developments approved without post-construction BMPs identified in EPA inspection. • Narrow the span of control for the development review function	• Develop plans for addressing the residual stormwater quality issues created by approving 7 residential developments without post-construction BMPs • Provide refresher training to the City's staff involved in development reviews.	• Develop a QA/QC process for development submittal reviews performed by the Development and Erosion Control group • Prepare a response document describing how stormwater related issues identified with 7 residential sites audited by EPA will be addressed.	• Implement plans for addressing the residual stormwater quality issues created by approving 7 residential developments without post-construction BMPs

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Industrial Program		• Review and update current educational materials targeting industrial site owners. • Review the industrial site inspection program to identify potential modifications to improve the efficiency of using available resources, and to prioritize sites for inspection.	• Prioritize industrial site inspections to assure that those sites in business categories or locations with the greatest potential to contribute pollutants to the MS4 are inspected most frequently. • Train other City department staff to observe and report potential illicit discharges. • Train CSU pretreatment staff to observe and report potential illicit discharges.	
Municipal Facility Program	• Perform an inventory and assessment of all municipal facilities to assure that a current operations and management plan is in place		• Prioritize all municipal facilities in the MFRCP for inspections based on their potential to contribute pollutants to the MS4. • Conduct annual meetings with each municipal site operator to review the importance of the stormwater program and provide training on proper municipal site operations.	• Conduct annual meetings with each municipal site operator
Illicit Discharge Program	• Implement an improved stormwater hotline. • Upgrade the stormwater website to include a method for citizens to report illicit discharges.	• Advertise methods for citizens to report illicit discharges.	• Train other City department staff to observe and report potential illicit discharges. • Train other CSU creek crossing maintenance staff to observe and report potential illicit discharges. • Identify improved method of tracking responses to illicit discharges	• Refresher training for other City department staff • Refresher training for CSU creek crossing maintenance staff

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Public Education and Outreach Program	• *Completed in late 2015:* Conducted review of public education and outreach program • Develop working outreach vision and begin a communications action plan for communications and education with Communications group. • Identify outreach goals and measurement techniques. • Create a measurement matrix for tracking progress. • Upgrade stormwater website. • Upgrade public hotline. • Begin evaluation of existing tactics for effectiveness and prioritization.	• Develop a separate Public Education and Outreach Program for the MS4 Program. • Secure community partner organizations with at least one joint campaign or other tactic planned. • Secure national partner entity with at least one joint campaign or tactic planned. • Upgrade stakeholder database. • Schedule at least one citywide or region-wide water festivals aimed at children and parents. • Distribute household hazardous waste brochures. • Evaluate effectiveness of stormwater literacy guide, DVD, brochures, etc. and reshape them accordingly. • Establish and monitor new goals for storm drain marking and Adopt-a-Waterway efforts. • Conduct monthly planning meetings with Communications. • Convert current newsletter into E-news format and get at least one E-news out on stormwater successes or challenges being met.	• Implement an outreach program to local business owners, developers, contractors, and other regulated entities • Increase public reporting surrounding the MS4 Program activities, particularly related to improvements in the program ("Stormwater Spending Report", "Stormwater MS4 Program Accomplishments Report", and "Stormwater Capital Projects Accomplishments Report"). • Measure all 2016 tactics and make sure they are entered into new annual report template. • Review and revise central vision/communications action plan. • Enhance cooperative outreach tactics to the public as potential polluters: Pet owners, car washers, lawn and household owners, etc.	• Conduct 2-3 media campaigns annually to highlight successful projects. • Continue activities started previously.

Program Element	Intended Period of Implementation			
	First 3 Months, or Already Completed in Late 2015	3 to 6 Months	6 to 12 Months	12 to 24 Months
Monitoring Program	• *Completed in late 2015:* Agreed to increase funding for USGS monitoring in 2016 • Finalize the Joint Funding Agreement with USGS.	• Validate USGS reporting protocols. • Determine additional water quality monitoring requirements, if any. • Submit Monitoring Program reporting for 4-year analysis ending in 2014, as specified in permit.	• Update Monitoring Plan to be consistent with MS4 Permit.	• Review monitoring program every 12 months and modify as necessary.

The following are high priority actions described in this report.

- Create the new Stormwater Division and re-organize existing departments to align resources that support the Stormwater Program more directly under the new Division.
- Fill the new position of Stormwater Division Manager.
- Address remaining drainage system O&M issues identified in the EPA audit and inspection reports (many issues have already been addressed), that do not require Corps of Engineers 404 permits. This will include the following steps.
    - Conduct inspections of each site to document actual problems and their causes.
    - Develop conceptual solutions.
    - Determine whether solutions are capital projects (which require formal designs and selection of design engineer and contractor) or O&M projects (which can be performed with in-house personnel and equipment).
    - Assign projects high priority within the capital or O&M programs. For capital projects, this requires coordinating with downstream neighbors.
- Begin a comprehensive survey of all public waterways, stormwater infrastructure, and public BMPs. Identify and prioritize problems and create a prioritized O&M project list for use by the Operation and Maintenance Division.
- Hire, or begin the hiring process, for the new staff positions identified for 2016.
- Develop a plan for addressing the seven residential developments that were approved without post-construction BMPs as identified by EPA in their audit/inspection reports.
- Upgrade stormwater inspection program.
    - Refresh training for all current inspectors and City field personnel in proper stormwater practices. This should include how to conduct and document inspections based on current City criteria, how to initiate enforcement processes, and how to identify potential illicit discharges to the drainage system in the field.
    - Review and update all inspection checklists.
    - Hire two new stormwater inspectors.
- Upgrade residential/commercial development review process.
    - Refresh training for development plan reviewers to assure proper evaluation of proposed construction and post-construction BMPs.
    - Ensure that appropriate enforcement protocols are in place, consistently utilized, and appropriately tracked.
- Upgrade methods for citizens to report illicit discharges.
    - Implement an improved stormwater hotline.
    - Upgrade the current stormwater website to include a method for citizens to report illicit discharges.
    - Advertise the availability of these two resources.
- Begin development of the City's Stormwater Management Plan (SWMP) to document all aspects of the MS4 Program.
- Conduct outreach events to the development community to inform of them of the renewed emphasis on stormwater inspections and permit enforcement.
- Retain a consultant to work with the City to prepare a Comprehensive Stormwater Infrastructure Master Plan.

The majority of planned MS4 Program improvements will be completed within the first year. The main activities that will extend into 2017 are completing the hiring process to fill out the Stormwater Division and other dedicated stormwater positions in other Public Works divisions, and purchase of equipment needed to support those positions. Hiring and equipment acquisition will be spread over two years to assure that the MS4 Program ramps up in an efficient,

thoughtful manner and to allow the City to manage the significant increase in budget allocated to the stormwater program.

APPENDIX A-1 – MAINTENANCE PROBLEMS IDENTIFIED BY EPA

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Appendix A-1: Summary of Maintenance Problems from EPA Inspections of Colorado Springs MS4 System

Site	Problem	Description	Solution	Reference	Proposed Schedule
Downstream from the Flying Horse Pond Filing 26, along Monument Branch	Extreme channel erosion	During the inspection, it did not appear that the City was following the four-step process as described in its Drainage Criteria Manual, Volume 2. For example, extreme channel erosion was observed downstream from the Flying Horse Pond Filing 26, along Monument Branch. The erosion was observed by inspectors south of the TCA school (see photos 17 to 24 of the Construction Oversight photo log). Along Monument Branch, there were limited areas of riprap and there was an area that had a destroyed erosion control blanket. In addition, water quality capture volume was not being considered and implemented on all sites. For example, the sites with the residential waivers did not account for water quality capture volume.	Design and implement a channel stabilization and erosion control project	EPA (2013)	End of 2016. May require design and contractor assistance.
CS- 141- Shooks Run Channel near confluence with Fountain Creek	Construction and maintenance issues.	Unmaintained rip-rap boulders and channel lining. Rip-rap boulders, concrete debris, and waste scattered throughtout the channel.	Perform maintenance on riprap lining of channel, embankment slope lining, and concrete retaining wall	EPA (2015)	December 2015 (weather permitting)
CS- 016 Location No.2- S. Douglas Creek channel/grade control and stream stabilization	Creek bank and culvert pipe overtopping. Channel erosion and scouring. Accumulated debris and deposition of sediment near crossing. Unmaintained concrete bank stabilization measure. Non compliance with DCM Vol 1 and 2.	A deteriorated concrete bank stabilization measure implemented in-stream of S. Douglas Creek, erosion, scouring, and deposition of sediment in the creek bottom, as well as trash and debris within Douglas Creek. Creek bank and culvert pipe ovetopping, channel erosion and scouring, and accumulated debris and deposition of sediment near the Texas Crossing. The plans/drawings outlining the specifications and details for Texas Crossing were not in compliance with DCM Vol1 and Vol 2 and did not have inspection and maintenance requirements to ensure continue functioning of the Crossing. Unmaintained concrete bank stabilization measure with pieces of conrete debris scattered in Douglas Creek Channel. Trash and debris were observed within Douglas Creek at the time of inspection.	Concrete bank stabilization measure will be maintained to avoid excess debris accumulation and proper functioning of Douglas Cr. Revisit design of Texas crossing to avoid overtopping of culvert pipe, erosion and debris accumulation.	EPA (2015)	December 2015 (weather permitting)
CS- 017 Location No. 1- N. Douglas Creek Channel/ grade control and stream stabilization	Maintenance issues.	Lack of maintenance for in-stream stabilization measures, significant sediment deposition in the Douglas Creek channel and Mark Dabling Boulevard box culvert and debris within the creek. Significant deposition of sediment, geotextile fabric, and boulders were observed in Douglas Creek within the vicinity of the project.	Instream stabilization measure will be repaired and channel will be cleared of debris.	EPA (2015)	December 2015 (weather permitting)
CS- 017 Location No. 2- N. Douglas Creek Channel/ grade control and stream stabilization	Erosion, scouring, sediment and maintenance issues.	Stretch of N. Douglas Creek downstream of the I-25 box culvert outlet to just below the Norfolk Southern railroad bridge was observed with significant erosion, scouring, concrete debris, and unmaintained bank stabilization measures. Lack of source control BMPs to address flow attenuation and channel degradation.	Bank stabilization measure will be repaired and channel will be maintained and cleared of debris.	EPA (2015)	December 2015 (weather permitting)
CS- 015 Storm drain outlet	Erosion and sedimentation, lack of source control BMPs and flow energy dissipation practices, and inspection and maintenance issues.	Significant erosion downgradient of a storm drain outlet at the intersection of S. Rockrimmon Boulevard and Rim View Drive. The inspection team observed a lack of source control BMPs for flow attenuation associated with stormwater runoff from the upgradient private residential development areas and City streets. The storm drain outlet lacked energy dissipation practices to minimize erosion and sediment transportation. There were major inspection and maintenance issues with storm drain inlet, outlet, and tributary channel.	Maintenance will be performed on storm drain outlet and channel	EPA (2015)	Mid 2016
CS- 222 Rockrimmon Channel at Pro Rodeo Drive	Deteriorated and aging infrastructure along with inspection, maintenance, and sediment issues.	Long-term deterioration of Rockrimmon Channel along with a deteriorated MS4 outfall located downstream of the intersection of Rockrimmon Boulevard and Pro Rodeo Drive. Concrete and metal rebar debris from unmaintained and deteriorated concrete drop structure in the channel. Erosion and scouring of the channel bank in the vicinity of the in-stream structure and outfall. Sediment deposition in the channel along with an unmaintained Rockrimmon Channel tunnel rock lining. Poor inspection and maintenance activities at the location.	Rockrimmon Channel will be repaired. Concrete and debris will be removed from the channel and other necessary maintanence wil be performed	EPA (2015)	Mid 2016. Requires engineering design and construction contract
CS- 022	Erosion and scouring issues.	Residence and private property impacted by stormwater runoff from the City's Pebblewood at Pinecliff subdivision MS4 outfall located upgradient of the property. Significant erosion and scouring downgradient of the City's MS4 outfall including the formation of a large ravine and numerous erosion gullies. Lack of maintenance and inspection of the MS4 infrastructure. Unclear if the remediation plans include source control or water quality	Proposed remediation plans include the addition of a stormwater pipe to convey stormwater flows below the City's MS4 outfall directly to the Popes Valley drainage and subsequently to Monument Creek.	EPA (2015)	Mid 2016. Requires engineering design and construction contract

Appendix A-1: Summary of Maintenance Problems from EPA Inspections of Colorado Springs MS4 System

Site	Problem	Description	Solution	Reference	Proposed Schedule
CS- 022		control BMPs and what entity would be responsible for the long-term inspection and maintenance of the proposed infrastructure improvements. It was not clear if the remediation process was based on the four step process as outlined in the City's DCM Vol 2. Below are the steps: Step 1- Runoff reduction practices. Step 2- BMPs with WQCV. Step 3- Stabilize Drainageways. Step 4- Need for industrial/commercial BMPs.			
CS- 060- Hancock Expressway Drainage	Conveyance channel and culvert- installation and maintenance issues.	The Peterson Field concrete lined conveyance channel and culvert pipe beneath Hancock Expressway near Claredon Drive did not appear to be properly installed and maintained. Trash, debris, unmaintained/deteriorated concrete lining, and accumulated sediment was observed within the concrete lined conveyance channel and on the trash rack at the culvert pipe inlet beneath Hancock Expressway.	Regrade culvert pipe beneath Hancock Expressway. Repair or replace Petersen Field concrete channel. Maintain channel and trash rack.	EPA (2015)	Maintenance in December 2015. Construction in Mid 2016. Requires engineering design and construction contract.
CS- 130- Concrete lined MS4 conveyance channel to Sand Creek	Unmaintained /deteriorated conveyance channel.	Unmaintained/deteriorated concrete lined MS4 conveyance channel with accumulated sediment and dense vegetative growth located along Hancock Expressway between King Scoopers, Astrozon Boulevard, and Sand Creek. A deteriorated Sand Creek bank stabilization control near the MS4 conveyance channel outfall to Sand Creek and deposition of sediment and rip-rap boulders scattered above and within Sand Creek downgradient of a constructed in-stream drop structure.	Repair or replace concrete channel along Hancock Expressway and Sand Creek bank stabilization control	EPA (2015)	Mid 2016. Requires engineering design and construction contract
CS- 137- MS4 conveyance to Spring Creek	Installation/ maintenance issues with MS4 conveyance. Environmental issues.	An MS4 culvert CMP pipe conveyance at the Teal Court cul-de-sac that had not been maintained and significant deposition of sediment in Spring Creek. Accumulated sediment and debris was observed at the culvert pipe inlet, outlet, and within the pipe itself. An overland conveyance from the Teal Court culvert pipe outlet to a second culvert CMP pipe outlet into what appeared to be a wetland area with no clear connection to the adjacent Spring Creek.	Perform maintenance for removal of sediment, trash and debris in Spring Creek and CMP. Research potential wetland impact.	EPA (2015)	Mid 2016 if wetland impact must be addressed; earlier if not wetland issues.
CS- 362 Spring Creek near 3667 E. Bijou Street	Maintenance issues.	A Spring Creek box culvert embankment stabilization control had not been maintained and accumulated sediment on Bijou Street directly adjacent to storm drain inlets which drain directly to Spring Creek. No street cleaning activities were performed by the City.	Maintain bank stabilization control at Spring Creek box culvert. Perform street sweeping on Bijou St.	EPA (2015)	December 2015 (weather permitting)

Abbreviations used:
BMP: Best Management Practice
CMP: Corrugated Metal Pipe
CDPHE: Colorado Department of Public Health and Environment
Colorado Discharge Permit System (CDPS)
CSU: Colorado Springs Utility
DCM: Drainage Criteria Manual
EPA: Environmental Protection Agency
EDB: Extended Detention Basin
IDDE: Illicit Discharge Detection and Elimination
IM: Inspection and Maintenance
MA: Maintenance Agreement
MS4: Municipal Separate Storm Sewer System
NPDES: National Pollutant Discharge Ellimination System
References:
EPA's NPDES Permit Program MS4 Inspection. February 4-7, 2013.
EPA's NPDES Permit Program MS4 Inspection. August 18-19, 2015.

APPENDIX A-2 – MONITORING PROGRAM

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WATER QUALITY MONITORING PROGRAM IMPROVEMENTS FOR CITY OF COLORADO SPRINGS MUNICIPAL SEPARATE STORM SEWER SYSTEM PROGRAM

1.0 INTRODUCTION

The City of Colorado Springs (City) developed a Monitoring Plan in 2012 to comply with its Individual Municipal Separate Storm Sewer System Discharge Permit (MS4 Permit). This program was reviewed by MWH and the City as part of the comprehensive assessment of MS4 Permit compliance activities. This report details:

- the monitoring requirements in the permit and the EPA monitoring inspection findings from August 2013;
- the components of the current monitoring program;
- proposed changes to the current monitoring program; and
- an implementation plan for the proposed changes to the monitoring program.

2.0 PERMIT REQUIREMENTS

The City holds an Individual Discharge Permit, permit number COS-00004 which authorizes discharges to waters of the United States. The MS4 Program was developed by the City to comply with the MS4 permit issued by CDPHE. The first MS4 permit was issued to the City in 1997; the current permit was issued in 2011 and is scheduled for renewal in 2016.

The current permit requirements for stormwater monitoring are listed in the permit under Section D Monitoring Program, and are reproduced below.

A. MONITORING PROGRAM

The permittee shall continue to implement its current MS4 wet weather monitoring program to assess wet weather conditions and other discharges from the MS4, particularly urban stormwater effects on state waters associated with discharges from the permittee's MS4. The permittee shall develop and implement a dry weather outfall screening, in accordance with this section.

1. MONITORING PLAN

a. The plan must continue to meet the following minimum requirements:

1) address wet weather conditions, particularly urban stormwater effects on receiving waters associated with discharges from the permittee's MS4;

2) include a clear statement of goals and have components that address the goals of the monitoring program;

3) be able to be expanded over time as inter-related municipal stormwater discharges are included as MS4 permittees;

4) commitment of a level of resource expenditure that is commensurate with the monitoring plan; and

5) include Selenium and E. coli monitoring.

b. *Contents of Monitoring Plan*

1) *Site selection, including criteria and procedures used.*
2) *Final methodology and protocols for each component, including, but not limited to, such factors as:*
   a) *Constituents and analytical methods;*
   b) *Frequency for monitoring and sampling;*
   c) *Description of potential revision to activities currently performed by the USGS in the event of that agency's decreased involvement; and*
   d) *Quality control and quality assurance protocols.*

c. *MS4 Dry Weather Outfall Selenium and E coli Monitoring Plan*

For those parts of the permittee's MS4 that directly discharge to the impaired portions of segments COARF001a, COARF002a, COARF004 and COARF006 of Fountain Creek, the permittee shall develop, document and implement a dry weather monitoring plan targeted at identifying the source (e.g., geographic areas or land use) and scope (e.g., geographical extent of contamination, seasonality, and contaminant levels) of the impairment. The monitoring is required for only those portions of impaired segments and only for those parameters (e.g., Escherichia coli ("E. coli") and/or selenium) causing the impairment. Segments that are removed from the list of impaired waterbodies shall not be subject to outfall monitoring requirements.

The plan shall be submitted to the Division by August 31, 2012, and implemented by August 31, 2013. The plan shall include the following components:

1) *Definitions: For the purpose of this subsection (I.D.1(c)), the following definitions apply:*
   a) *Dry Weather Discharge: A discharge not resulting from surface runoff from rain or snowmelt events.*
   b) *Outfall: the point where a municipal separate storm sewer discharges to State Waters.*

2) *Selenium monitoring is not required for MS4 outfalls that are not reasonably expected to receive groundwater or alluvial water infiltration that has the potential for selenium contributions from contact with strata identified as having elevated selenium concentrations. The permittee shall document Outfalls of Concern meeting this exclusion for which selenium monitoring will not occur.*

3) *Identification of Dry Weather Flows: The plan shall include processes to identify and document all outfalls with dry weather discharges that persist during periods with little to no irrigation contributions. It is not necessary to include submerged outfalls. Initial identification of outfalls with dry weather flows shall be completed by March 31, 2014. Identification of additional outfalls may occur during the permit term, in accordance with the Selenium and E. coli Monitoring Plan.*

Dry weather flows that are less than five gpm as determined through estimation methods are considered negligible and do not need to be identified.

4) *Identification of Outfalls of Concern: The plan shall include processes to identify and track Outfalls of Concern. Initial identification of Outfalls of Concern shall be completed by March 31, 2014. Identification of additional outfalls may occur during the permit term, in accordance with the Selenium and E. coli Monitoring Plan.*

   Outfalls of Concern shall include the following outfalls, at a minimum, unless removed in accordance with subparagraph (5), below:

   a) *All outfalls with greater than a 36" or equivalent having dry weather flows identified in accordance with subparagraph (3), above.*

   b) *All outfalls with smaller than a 36"diameter or equivalent having dry weather flows identified in accordance with subparagraph (3), above that are determined to have significant dry weather discharge conditions. Significant dry weather discharge conditions may include flow rates that are substantially elevated relative to the outfall size and the flow rate of any nearby outfalls, and discharges likely to be resulting from a cross connection based on qualitative observations.*

5) *Outfall Monitoring: The plan shall identify processes to monitor dry weather flows at Outfalls of Concern to determine, at a minimum, estimated flow rates, potential dissolved selenium concentration and E. coli densities (cfu/100ml). For segment COARF004 only, dry weather flows less than 20 gpm as determined through estimation methods do not need to be monitored. All Outfalls of Concern shall be monitored a minimum of four times between the period April 1, 2014 through March 31, 2016, with a minimum of one sample collected that represents each calendar quarter. Outfalls with smaller than a 36" diameter or equivalent that do not have concentrations exceeding stream standards in the first two sampling events do not require additional sampling. These outfalls of concern could be removed from the monitoring program. The Selenium and E. coli Monitoring Plan shall include procedures for scheduling monitoring events to obtain samples that are reasonably representative of the dry-weather discharges at the outfall.*

6) *Analysis: The permittee shall perform an analysis of available data on selenium and E. coli densities in the MS4 and the 303(d) listed segments of Fountain Creek as referenced in Part I.D.I.c, and review the implementation of the requirements of this section (I.D.1.c). The analysis/review will assess the permittee's progress towards identifying the source and scope of selenium and E. coli densities in dry weather discharges from the MS4. The permittee shall document the process and results for this analysis by April 1, 2017.*

2. *Monitoring Reporting and Evaluation*

a. *Annual Reporting*

The permittee shall submit a Monitoring Annual Report to the Division by June 1 of each year, covering the previous January 1 through December 31. The report shall include:

1) *Summary of monitoring program.*
2) *Tabulated data generated from the stormwater monitoring program described above. In the report for year four, a trend analysis of the data collected to date for the Wet Weather Monitoring Program shall be included.*
3) *Summary of the monitoring program work to date, any problems with the protocol or selected sampling locations, and recommendations for any changes to the monitoring program.*
4) *Identification of water quality improvements or degradation*

For required constituents (E. coli and selenium), monitoring results shall be reported in a format approved by the Division, which may include discharge monitoring report (DMR) forms (EPA form 3320-1) or by using the Division's Net-DMR service (when available).

b. *Reporting for Year Four*

The report submitted in year four of the permit, submitted by June 1, 2015, covering January 1, 2014 through December 31, 2014, shall include:

1) *information required by subsection a., above;*
2) *an assessment of the impact of wet-weather discharges on CCS area's State waters, and an assessment of the changes over time. This assessment shall be based on all currently available information collected by the permittee in accordance with the MS4 permit and during current and past permit terms; and*
3) *a proposal for a monitoring program for the next permit term.*

3. *General Monitoring and Sampling Requirements*

The permittee shall comply with the following requirements for all monitoring required by this permit, except for field analysis which may be conducted as part of the Illicit Discharges Management Program (Part I.B.1.b of the permit). Where field analysis does not involve analytical methods approved under 40 CFR Part 136, the applicant shall document a description of the method used, including the name of the manufacturer of the test method along with the range and accuracy of the test. Documentation shall be included in the program description update in accordance with Part I.B.1.b(2)(b).

a. *Analytical and Sampling Methods for Monitoring*

The permittee shall install, calibrate, use and maintain monitoring methods and equipment, including biological and indicated pollutant monitoring methods. All sampling shall be performed by the permittee according to specified methods in 40 C.F.R. Part 136; methods approved by EPA pursuant to 40

C.F.R. Part 136; or methods approved by the Division, in the absence of a method specified in or approved pursuant to 40 C.F.R. Part 136. When requested in writing, the Division may approve an alternative analytical procedure or any significant modification to an approved procedure.

The analytical method and PQL chosen for monitoring required by this permit shall be one that can measure at or below the applicable receiving water standard. If all analytical methods and corresponding PQLs are greater than the applicable receiving water standard, then the analytical method with the lowest PQL shall be used.

The present lowest PQLs for specific parameters, as determined by the State Laboratory (November 2008) are provided below. If the analytical method cannot achieve a PQL that is less than or equal to the stream standard, then the method, or a more precise method, must achieve a PQL that is less than or equal to the PQL in the table below. A listing of the PQLs for organic parameters that must meet the above requirement can be found in the Division's Practical Quantitation Limitation Guidance Document, July 2008.

These limits apply to the total recoverable or the potentially dissolved fraction of metals.

Parameter	Practical Quantitation Limits	Parameter	Practical Quantitation Limits, mg/l
Aluminum	50 µg/l	Mercury	0.1 mg/l
Ammonia	1 mg/l	Mercury (low-level)	0.003 mg/l
Arsenic	1 µg/l	Nickel	50 µg/l
Barium	5 µg/l	N-Ammonia	50 µg/l
Beryllium	1 µg/l	N Nitrate/Nitrite	0.5 mg/l
BOD / CBOD	1 mg/l	N-Nitrate	50 mg/l
Boron	50 µg/l	N-Nitrite	10 mg/l
Cadmium	1 µg/l	Total Nitrogen	O.5 mg/l
Calcium	20 µg/l	Phenols	100 mg/l
Chloride	2 mg/l	Phosphorus	10 mg/l
Chlorine	0.1 mg/l	Radium 226	1 pCi/l
Total Residual Chlorine		Radium 228	1 pCi/l
DPD	0.10 mg/l	Selenium	1 mg/l
Amperometric	0.05 mg/l	Silver	0.5 mg/l
Chromium	20 µg/l	Sodium	0.2 mg/l
Chromium, Hexavalent	20 µg/l	Sulfate	5 mg/l
Copper	5 µg/l	Sulfide	0.2 mg/l
Cyanide (Direct I Distilled)	10 µg/l	Total Dissolved	10 mg/l
Cyanide, WAD+A47	5 µg/I	Total Suspended	10 mg/l
Fluoride	0.1 mg/l	Thallium	1 mg/l
Iron	10 µg/l	Uranium	1 mg/l
Lead	1 µg/l	Zinc	10 mg/l

Magnesium	*20 µg/l*	*Nonylphenol*	*10 mg/l*
Manganese	*2 µg/l*	*Nonylphenol D7485*	*0.33 mg/l*

b. The permittee shall establish and maintain records for all monitoring required by Part I.D.1(c) of this permit. Those records shall include the following:

1) The date, type, exact location, and time of sampling or measurements;
2) The individual(s) who performed the sampling or measurements;
3) The date(s) the analyses were performed;
4) The individual(s) who performed the analyses;
5) The analytical techniques or methods used;
6) The results of such analyses; and
7) Any other observations which may result in an impact on the quality or quantity of the discharge as indicated in 40 CFR 122.44 (i)(l)(iii).

The permittee shall retain for a minimum of three (3) years records of all monitoring information, including all original strip chart recordings for continuous monitoring instrumentation, all calibration and maintenance records, copies of all reports required by this permit and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Division or EPA.

c. If the permittee monitors discharges addressed in Part I.D.1.c for E. Coli or selenium more frequently than required by the permit, using approved test procedures or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of data to the Division.

3.0 EPA INSPECTION FINDINGS

The EPA conducted an inspection of the Colorado Springs MS4 Program from February 4 -7, 2013. During its inspection, EPA reported several potential deficiencies with the monitoring program. A summary of those are listed below.

- Finding: I MN – Retention of Sampling and Analytical Data Records
- Finding: 2 MN – Lack of Awareness of 40 CFR 136 Requirements and Review of Monitoring Data to Ensure These Requirements Are Met
- Finding: 3 MN – Incomplete Data Collection and Annual Reporting
- Finding: 4MN – CDPHE Approval Not Obtained for Monitoring Program Plan Modifications

The City responded to the EPA inspection findings on June 28, 2013. Below are the details of the inspection findings, the corrective action(s) and the City's response.

EPA Review Findings – Monitoring (MN) Review Findings

Finding 1MN – Retention of Sampling and Analytical Data Records

The wet weather sample monitoring and analysis for the City was implemented primarily by the USGS. At the time of the inspection, the USGS was providing summary reports of results to the City but was not submitting specific sampling information such as laboratory analytical reports or sampling information (e.g. sampling date/time, preservation method, personnel performing sampling, etc.). During the inspection, it was identified that the City did not request or maintain any of the detailed records of the sampling and analysis performed by the USGS.

Permit Requirements:
Part I.D.3b of the Permit effective 11/01/11 – 10/31/16 states, "The permittee shall establish and maintain records for all monitoring required by Part I.D.1(c) of this permit. Those records shall include the following:

1) *The date, type, exact location, and time of sampling or measurements;*
2) *The individual(s) who performed the sampling or measurements;*
3) *The dates(s) the analyses were performed;*
4) *The individual(s) who performed the analyses;*
5) *The analytical techniques or methods used;*
6) *The results of such analyses; and*
7) *Any other observations which may result in an impact on the quality or quantity of the discharge as indicated in 40 [Code of Federal Regulations] CFR 122.34(i)(l)(iii).*

The permittee shall retain for a minimum of three (3) years records of all monitoring information, including all original strip chart recordings for continuous monitoring instrumentation, all calibration and maintenance records, copies of all reports required by this permit and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Division or EPA."

Corrective Actions:
The City shall develop a procedure for obtaining and maintaining monitoring records for sampling and analysis as required by the Permit. Submit a copy of the procedure which addresses this permit requirement to the EPA and CDPHE.

Recommendations:
None.

City Response to Corrective Action:
The USGS has been keeping the records specified in Part I.D.3b of the Permit, and will begin providing these records to the City. The procedure for obtaining and maintain monitoring records for sampling and analysis will be reviewed and revised, if necessary, to reflect submittal of all monitoring records to the City annually.

Finding 2MN – Lack of Awareness of 40 CFR 136 Requirements and Review of Monitoring Data to Ensure These Requirements Are Met
During the inspection, the City personnel managing the monitoring program appeared to be unfamiliar with the 40CFR Part 136 method requirements specific to the sampling and analysis procedures being performed under the City's monitoring plans. In addition,

there was no mechanism in place for City personnel to evaluate monitoring data to ensure that 40CFR 136 requirements were being met.

Permit Requirements:
Part II.B.3a of the Permit effective 03/04/03 – 02/28/09 (administratively extended) and Part I.D.3a of the Permit effective 11/01/11 -10/31/16 state that "Monitoring must be conducted according to test procedure approved under 40 CFR 136, unless other test procedure have been approved by the Division (61.8(4)(j))." And "All sampling shall be performed by the permittee according to the specific methods in 40 CFR Part 136; methods approved by EPA pursuant to 40 CFR Part 136; or methods approved by the Division, in the absence of a method specified in or approved pursuant to 40 CFR Part 136.", respectively.

Corrective Actions:
None.

Recommendations:
It is recommended that the City implement an internal quality control mechanism and procedures to ensure that the sampling and analysis performed to meet permit requirements meets the 40CFR136 requirements.

City Response to Recommendations:
The City will review the procedures for sampling and analysis to ensure that the requirements of 40CFR136 are met.

Finding 3MN- Incomplete Data Collection and Annual Reporting
The benthic data collected as part of the City's wet weather monitoring plan was not reported in the 2011 Annual Report. In addition, the morphological data was not collected in 2010. Morphological data was collected in March 2011 but was not reported in the 2011 Annual Report. The 2011 Annual Report indicated that the data collected in 2011 would not be reported until the 5-year wet weather summary was submitted.

Permit Requirements:
Part I.D.1.a of the Permit effective 03/04/04 – 02/28/09 (administratively extended) states that "Cross-sections shall be monitored at least once each year" as related to the "Qualitative Monitoring of Stream and riparian Zones within the MS4 and Receiving Waters - Morphological Assessment."

Part I.F. of the Permit effective 03/04/04 – 02/28/09 (administratively extended) states that "The permittee shall prepare an annual system wide report to be submitted by April 1of each year, covering the previous January 1 through December 31" and that the report shall include "A summary of the data, including numeric monitoring data that is accumulated throughout the reporting year."

Part I.D.2.a. of the Permit effective11/01/11 - 10/31/16 states that "The permittee shall submit a Monitoring Annual Report to the Division by June 1 of each year, covering the previous January 1 through December 31" and that the report shall include a "Summary of the monitoring program work to date..."

Corrective Actions:

The City shall implement a mechanism to ensure that all of the required monitoring identified in the Permit and within the City's CDPHE approved monitoring plan(s) is performed and that all data collected during the reporting year are included in the Annual Report submitted to CDPHE. The City shall submit a description of how this issue will be addressed as well as the morphological data collected March 2011 to the EPA and CDPHE.

***Recommendations**:*
None.

City Response to Corrective Actions:
The City has submitted an "edited" version of the wet weather monitoring data for the last couple of years, but has collected cross-sectional and benthic data in accordance with permit requirements. The City will revise the contents of the annual report format to include all benthic and monitoring data collected for wet weather monitoring beginning with the 2013 Annual Report in accordance with permit requirements.

Finding 4MN – CDPHE Approval Not Obtained for Monitoring Program Plan Modifications
At the time of the EPA's inspection, the City personnel could not provide documentation that they had received approval for the modifications made to the City of Colorado Springs Municipal Storm Sewer System Permit (COS-000004) Monitoring Plan prior to implementing it. The original plan was prepared 12/13/12 and revised 05/21/03 but the plan being implemented by the City was prepared 8/31/12.

Part 7, "Potential Modifications" of the City of Colorado Springs Municipal Storm Sewer System Permit (COS-000004) Monitoring Plan prepared 8/31/12 states that "The CCS monitoring program must be afforded the flexibility to:

1) *Adopt new techniques as they are developed.*
2) *Modify existing techniques in response to information gained through implementation of the program.*
3) *Modify monitoring site locations and/or analyses if data reveals the program would be enhanced by doing so.*

For this program to remain flexible, it may be necessary to make minor adjustments during implementation without prior approval of the CDPHE. Examples of these changes could include changing the location of a monitoring site or modifying the sampling frequency for bacteria, all while maintaining a consistent level of effort. The CDPHE will be notified of these minor adjustments in the Annual Report. This is not consistent with the program modification requirements of the Permit.

Permit Requirements:
Part I.C.3 of the Permit effective 11/01/11 – 10/31/16 states,

"Program Modification

a. *The approved Programs shall not be modified by the permittee without the prior approval of the Division.*
b. *Modifications shall not become enforceable permit conditions until such time as the modifications are approved.*

c. Modification requests and/or notifications shall be signed in accordance with Part I.G."

Corrective Actions:
In order to comply with the Permit requirements, the City shall obtain formal approval for the City of Colorado Springs Municipal Storm Sewer System Permit (COS000004) Monitoring Plan prepared 8/31/12. The language referenced above from Part 7, "Potential Modifications" shall be removed or modified such that it complies with the permit requirement and ensures that all modification, including "minor adjustments", are formally approved by the CDPHE prior to being implemented. The City shall submit the modified plan to the CDPHE for approval along with a courtesy copy to the EPA.

Recommendations:
None.

City Response to the Recommentations:
The City of Colorado Springs will revise the Montioring Plan prepared 8/31/12 in accordance with permit requirements to ensure that all modications includieng "minor adjsustments" are formally approved by the CDPHE prior to implementation. The City will also submit the Monitoring Plan to the CDPHE to obtian formal approval of the montitoring plan prepared 8/31/12 that includes redlines of the effective permit revised 5/21/03 such that changes can be easility tracked.

4.0 CURRENT MONITORING PROGRAM

The City's current MS4 monitoring program relies on the United States Geological Survey (USGS) to conduct wet and dry weather monitoring. The City participates with Colorado Springs Utilities (Utilities) and other entities in funding USGS regional water quality monitoring activities through a Joint Funding Agreement.

Prior to 2012, the MS4 monitoring program had a broader scope than the current program in terms of the number of sites sampled, the frequency of sampling, and the list of constituents analyzed. Budget cuts required the City to cut back on its contribution to the USGS monitoring program. The cutback required USGS to scale back its wet and dry weather monitoring activities to support the MS4 Program, despite increased contribution from Colorado Springs Utilities.

The current Monitoring Plan includes three locations that are monitored for storm events as well as baseflows:

1) Fountain Creek near Colorado Springs/FOCR at 33rd Street (07103700)
2) Monument Creek above Woodmen Rd (07103970)
3) Fountain Creek below Janitell Rd (07105530)

Routine water quality monitoring occurs four times per year. Routine monitoring includes nutrient, sediment, sulfate, and metals testing four times a year; and ammonia (total), conductance, DO, pH, temperature and turbidity 12 times per year. Refer to the sample schedule chart at the end of this report. Permit requirements state that all Outfalls of Concern shall be monitored a minimum of four times between the period of April 1, 2014 through March 31, 2016, with a minimum of one sample collected that represents each calendar quarter.

Storm samples are collected for one or two storm events each summer. Monument Creek above Woodman Rd is also monitored for daily suspended sediment from August to September. Typical constituents monitored at mainstream locations are listed below.

Selected Constituents of Concern	
Arsenic, total	Manganese, dissolved
Boron, total	Selenium, total
Boron, dissolved	Selenium, dissolved
Calcium, dissolved	Sulfate, dissolved
Copper, total	Suspended Sediment
Copper, dissolved	Phosphorus, total
Lead, total	Orthophosphorus, dissolved
Magnesium, dissolved	Nitrite + Nitrate, dissolved
Nickel, total	Ammonia, dissolved
Zinc, total	Nitrogen, total
Zinc, dissolved	E.Coli, colonies/100mLs
Manganese, total	

USGS performs Benthic Macroinvertebrate surveys and Stream Habitat Assessments in the fall of each year at the mainstream locations.

Selenium and E.Coli monitoring is required within impaired reaches. Since the permit was issued, selenium was removed from the list of impairments for segments within Colorado Springs. The following segments are listed as impaired for E.Coli:

- COARF001a Fountain Creek and tributaries above Monument Creek
- COARF002a Fountain Creek, Monument Creek to Hwy 47
- COARF0004 Tributaries to Fountain Creek
- COARF006 Monument Creek from National Forest to Fountain Creek (May through October only)

The City was to identify and document outfalls within the impaired segments that have dry weather discharges that persist during periods of little to no irrigation return flow contributions. The City was to track the location of the dry weather discharges and estimate the flow rate. If an outfall has a dry weather flow greater than 5 gpm, it was to be included as an outfall of concern. Outfalls of concern are monitored four times between the period of April 1, 2014 and March 31, 2016.

The Monitoring Plan lists the minimum requirements of the annual report which is due June 1st of each year covering the period from January 1 to December 31 of the prior year. In year 4 of the permit, the annual report that was due on June 1, 2015, must include additional information. This was not completed and is addressed in the following sections.

5.0 PROPOSED MONITORING PROGRAM CHANGES

In the EPA inspection findings from August 2013, a number of documentation and reporting issues were identified relating to the monitoring program. Monitoring Plan modifications are necessary to be in compliance the MS4 Permit.

It is also recommended that the current monitoring program to be expanded to be more proactive in preparing for future water quality issues in the Fountain Creek watershed. In

anticipation of emerging issues, the City Stormwater Division should coordinate with Colorado Springs Utilities and other regional entities to determine how the regional monitoring program can be expanded. Monitoring Program changes in these two categories are described below.

Changes to Monitoring Plan Based on Permit Compliance

MWH has reviewed the current (2012) Monitoring Plan, the current MS4 Permit, and the EPA inspection findings from August 2013. Based on the review of these documents, it appears that there are a number of opportunities for improving the current Monitoring Plan. The following includes a list of items to address in a revised Monitoring Plan.

1. Retain sampling and analytical data records. Include in the Monitoring Plan the procedure for obtaining and maintaining monitoring records as required by the permit. Submit a copy of the procedures to the EPA and CDPHE.

2. Implement improved tracking and reporting mechanism to ensure that all of the required monitoring identified in the Permit and within the City's CDPHE approved Monitoring Plan is performed and that all data collected during the reporting year are included in the Annual Report submitted to CDHPE.

3. Conduct Quality Control. The current plan states that all samples will be collected in compliance with standard USGS Quality Control and Quality Assurance procedures. The City is responsible for ensuring that property quality control standards are being met. At a minimum, attach a copy of the quality control and assurance procedures as part of the Monitoring Plan. Evaluate the procedures to ensure that they are in compliance with 40 CFR 136. Provide training for stormwater staff in 40 CFR 136 method requirements.

4. Obtain formal approval for the Monitoring Plan. The language of "potential modification" shall be removed or modified such that it complies with the permit requirement and ensures that all modifications, including "minor adjustments", are formally approved by CDPHE before being implemented. Submit the modified plan to CDPHE for approval along with a courtesy copy to the EPA.

5. Document the site selection, including criteria and procedures used to identify the monitoring locations. The current Monitoring Plan does not provide any information as to why the monitoring locations were chosen. This may be in the original Monitoring Plan; if so it should be repeated in the current plan for completeness.

6. Identify of the outfalls of concern for dry weather monitoring. Include the methods used to determine flow rate, and an analysis of each outfall within the impairment sections. This may be in the original Monitoring Plan; if so it should be repeated in the current plan for completeness.

7. Document general monitoring and sampling requirements. (Section 1.D.3 of the MS4 Permit) The analytical and sampling methods for monitoring should be included in the Monitoring Plan. This states that all sampling shall be performed by the permittee according to specified method in 40 CFR 136 or methods approved by the CDPHE. The table showing the practical quantitative limits for each constituent should be included.

Regional Emerging Issues

There are also several regional water quality issues on the horizon that could affect stormwater and wastewater operations of the City and Utilities. Currently, these issue are not requirements of the MS4 Permit nor the Monitoring Plan. A new permit will be issued in October of 2016, this new permit may include monitoring requirements that address emerging water quality issues, and therefore, the Monitoring Plan may require revision. The City should be aware of the following issues and modify the Monitoring Plan as necessary.

- A potential water quality standard and Total Maximum Daily Load (TMDL) determination for *E. coli* in Fountain Creek Basin is being developed by CDPHE. Non-point discharges including stormwater have been shown to be large contributors of *E. coli* in Fountain Creek and tributaries. Although the primary source was determined to be avian based on a previous investigation by the USGS, stormwater runoff is a primary mechanism by which the *E. coli* is conveyed to receiving waters.

- CDHPE has developed nutrient standards that will take effect in 2022. Non-point discharges and stormwater have been shown to be large contributors of nitrogen and phosphorus in Fountain Creek and tributaries. High background levels in non-point sources and stormwater may affect wasteload allocations assigned to Utilities' wastewater discharges when TMDLs are developed for nutrients, which may in turn require additional nutrient removal in Utilities' wastewater treatment plants.

- EPA is indicating that temperature standards will not be adjusted despite changes in ambient water and air temperature associated with climate change. This will make it more difficult to meet temperature standards in the future.

Understanding the background levels of *E. coli*, nutrients, and temperature in stormwater will assist regulators and the local community in assigning reasonable wasteload allocations in TMDL processes.

6.0 IMPLEMENTATION PLAN

It is understood that the Monitoring Plan is a living document and will be changed as the permit requirements, environmental conditions, budgets and resources change. This section lists items that should be included in the overall monitoring program update. Not all of these are permit requirements, but will move the City in the direction of having a more robust, pro-active program.

1. **Finalize the Joint Financial Agreement (JFA).** The City has contracted with the USGS to provide dry and wet weather monitoring. The costs of this program are shared among Utilities, City Engineering, and the Southern Delivery System (SDS) Program. The JFA documents the scope of work for USGS and how the costs for the program are shared. The JFA for 2016 is expected to be finalized by December 31, 2015.

2. **Update Monitoring Plan to be in Compliance with MS4 Permit.** A number of additions to the current Monitoring Plan and reporting process are needed in order to be in compliance with the current MS4 Permit, see section 5, items 1-7 above. These should be adopted immediately in 2016.

3. **USGS Reporting for 2014 Calendar Year.** A monitoring program annual report that was due on June 1, 2015 was not submitted. This report must be completed immediately and submitted to CDPHE.

4. **Implement Internal Quality Control Procedures**. An internal quality control mechanism and procedure should be established to ensure that the sampling and analysis performed meet the requirement of the permit and 40 CFR 136. Include the USGS quality control procedures in the Monitoring Plan, and establish a procedures to review that all data received meets the quality control protocols.

5. **Establish USGS Reporting Protocols**. To ensure compliance with the MS4 Permit and to avoid any missed deadlines, the reporting protocols must be reinforced with USGS. The reports must include at a minimum the items listed in the permit; however, any additional information that relates to water quality should be reported to the new Stormwater Division. This information may be valuable if additional requirements or TMDL standards are established in the new permit.

6. **Investigate Potential Additional Water Quality Requirements.** The City's current MS4 Permit is set to expire on October 31, 2016. It is anticipated that the new permit will have additional water quality requirements. Being aware of these potential changes are key in budget planning and Monitoring Plan modifications.

7. **Review Monitoring Plan**. Review the Monitoring Plan, the outfalls of concern, and the information received from USGS to determine if any changes are necessary. Report any changes to CDPHE for review as required by the permit.

8. **Assure Staff Responsibility.** Designate a City Stormwater Division position that would be responsible for verifying adherence to the Monitoring Plan, permit compliance, and reviewing the data received from USGS.

9. **Consider Expanding Scope of Monitoring Program**. The goal is to increase the level of service of the monitoring program to facilitate a proactive approach to water quality. This can be accomplished by the addition of monitoring sites, addressing the emerging issues, expanding the list of constituents sampled, increasing frequency, and analyzing the data for any trends.

10. **Regional Water Quality Involvement.** The City should be aware of any emerging issues that may affect the water quality issues in Colorado Springs and downstream. The following regional agencies may be a resources for the City. The City should plan on attending meetings and being involved in the water quality monitoring and analysis activities of these regional organizations:

    - Fountain Creek Watershed Flood Control and Greenway District
    - El Paso County
    - Pueblo County

USGS is an expensive partner for providing monitoring and laboratory services. The City has investigated other possibly less expensive options for obtaining these services in the past. For example, Utilities has a water quality laboratory that might be an option for conducting analyses for certain constituents in dry weather samples (dry weather sampling can be scheduled, opposed to wet weather sampling that requires 24/7 availability of laboratory services). To date

the City has not found another sampling and analysis option that would meet the technical monitoring requirements of the MS4 permit.

The following table summarizes the implementation steps, a proposed completion date, and the responsible entity.

No.	Item	Target Completion Date	Responsibility
1	Finalize the Joint Financial Agreement (JFA)	December 31, 2015	City of Colorado Springs, CSU
2	Update Monitoring Plan to be in Compliance with MS4 Permit.	March 31, 2016	Colorado Springs Stormwater Division (SWD)
3	USGS Reporting for 2014 Calendar Year	March 31, 2016	SWD, USGS
4	Implement Internal Quality Control Procedures	March 31, 2016	SWG, USGS
5	Establish USGS Reporting Protocols	June 30, 2016	SWD, USGS
6	Investigate Potential Additional Water Quality Requirements	September 30, 2016	SWD
7	Review Monitoring Plan	Every 12 months	SWD
8	Assure Staff Responsibility	March 31, 2016	SWD
9	Consider Expanding Scope of Monitoring Program	December 31, 2016	SWD, USGS
11	Regional Water Quality Involvement	Continuous	SWD

APPENDIX A-3 – MS4 PROGRAM REVIEW TECHNICAL MEMORANDUM

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Colorado Springs Stormwater Program
APPENDIX A-3

MS4 Program
Technical Memorandum No. 1 – Final

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TABLE OF CONTENTS

Page No.

EXECUTIVE SUMMARY 1

1.0 INTRODUCTION 4
- 1.1 Purpose 4
- 1.2 Authorization 4

2.0 MS4 PERMIT OVERVIEW 4

3.0 COLORADO SPRINGS MS4 PROGRAM DESCRIPTION 4
- 3.1 Stormwater Program History 4
- 3.2 Current Program Components 6

4.0 RECENT PROGRAM EVALUATIONS 8
- 4.1 EPA 2013 Inspection 8
- 4.2 EPA 2015 Inspection 8
- 4.3 MWH Evaluations 9

5.0 COMPARISON WITH OTHER COMMUNITIES 13

6.0 SUMMARY OF IDENTIFIED PROGRAM DEFICIENCIES 17
- 6.1 Overview 17
- 6.2 Financial Commitment 18
- 6.3 Staff Commitment 18
- 6.4 Individual Program Deficiencies 19

7.0 NEXT STEPS 20
- 7.1 City Activities Underway 20
- 7.2 Next Steps 21

APPENDIX A – EPA/CDPHE FINDINGS, RESPONSE, AND PROPOSED ACTIONS

APPENDIX B – POTENTIAL RESOURCING NEEDS (STAFFING AND MATERIALS/ EQUIPMENT NOTES)

APPENDIX C – COMPARISON TO OTHER MS4 PROGRAMS

APPENDIX D – NOTABLE ITEMS FROM HIGH-LEVEL REVIEW OF 2014 ANNUAL REPORT 24

LIST OF TABLES

Table 4-1. Deficiency Characterization and Potential Resourcing Needs 11
Table 4-2. Findings with Reference to the Previous MS4 Permit (2004 – 2009) 12
Table 4-3. Permit Compliance Schedule – Activities in Progress 13
Table 5-1. Stormwater Program Budgets for Selected EPA Region 8 Stormwater Agencies.....15

LIST OF FIGURES

Figure 3-1. Colorado Springs Stormwater Timeline 6
Figure 3-2. Distribution of MS4 Activities in Various City Departments 7
Figure 4-1. Total Number of Findings by Category in EPA Stormwater Inspection Report 8
Figure 4-2. Mapping of EPA Findings to MS4 Programs and Action Categories.....9
Figure 5-1. Range of Possible CIP and Non-CIP Expenses for Colorado Springs Based on Similar Cities 17
Figure 7-1. Current Actions by the City to Improve MS4 Program 20

EXECUTIVE SUMMARY

The purpose of the City of Colorado Springs (City) Municipal Separate Storm Sewer System (MS4) Program Review is to identify and document the needed program enhancements based on the City's current MS4 permit (MS4 Permit 2011 - 2016) compliance activities and requirements of the current MS4 permit. The results of the MS4 Program Review will be used to prepare a plan for improving the City's MS4 Program such that previous comments on the MS4 Program by the Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) are addressed and all requirements of the permit are satisfied.

The MS4 Program Review is based on:

- Discussions with City stormwater and public works staff,
- Review of a 2013 EPA audit of the MS4 Program and the City's response,
- Review of Annual Reports and other supporting information on the current MS4 Program,
- Review of the August 2015 EPA inspection report,
- Summary of additional EPA and CDPHE discussions in 2015, and
- Comparative analysis with other municipalities with MS4 permits in Colorado and EPA Region 8.

This review process was initiated in September of 2015 and includes information available at the time of this report. Results of the MS4 Program Review are summarized as follows:

Program Gap. EPA/CDPHE identified 20 findings or corrective actions spanning seven components of the MS4 Program in the 2013 audit, which were validated by MWH. The required corrective actions are more related to implementation of the MS4 Program, as opposed to the MS4 Program components themselves. That is, the primary deficiencies are associated with situations in which the City has not adequately executed the various activities it intended to perform to meet the MS4 permit conditions.

The key types of actions needed to address the identified deficiencies include: improved documentation, stricter enforcement measures, better stormwater staff training, and maintenance improvements. The additional level of effort to address these deficiencies will require additional resources (staff, budget, materials, and equipment).

The City has recently taken steps to address program deficiencies by hiring a new Civil Engineer III to perform reviews of development submittals; improving development review processes; improving training of inspectors for illicit discharge detection; and budgeting funds to add new street sweepers for the Streets Division.

Financial Gap. The current City budget for specific MS4 Program activities is just over $3 million per year, including operation and maintenance (O&M) activities associated with the drainage system. Based on comparison with per capita spending by similar cities, Colorado Springs' annual MS4 and O&M related expenditures may be expected to be in the range of $7 million to $16 million per year. This is a large range due to the unique factors associated with different communities (e.g., size, level of development activity, number of industrial businesses, extent and complexity of urban drainage system, environmental awareness, fiscal policies, and

program efficiencies). In addition, the City is spending less than similar communities for the overall stormwater program (non-CIP, CIP, and O&M activities). Current annual expenditures are approximately $8 million per year. Based on per capita spending by similar cities, Colorado Springs could be expected to have a total stormwater budget in the range of $22 million to $27 million per year. By comparison, the annual Colorado Springs Stormwater Enterprise (SWENT) budget was about $16 million per year between 2007 and 2009 when SWENT was in existence. It is important to note that a smaller budget does not necessarily mean that the program is not as effective as one with a larger budget; it may be more efficient in implementing some program elements. Nonetheless, the City must significantly increase funding of its stormwater program to meet the requirements of the current MS4 permit.

Staffing Gap. The City currently has over 40 staff involved at least part time with the MS4 Program, with five staff dedicated to the MS4 Program. A total of 28 full-time equivalents (FTEs) contribute to performing MS4 Program activities. Based on a comparison to other Colorado cities with stormwater programs, Colorado Springs could be expected to have about 60 – 70 FTEs involved in its stormwater program. SWENT employed about 30 people, and another 30-35 City staff supported stormwater activities on a shared-time basis. The City must significantly increase staff resources assigned to its stormwater program to meet the requirements of the current MS4 permit. It is important to note that any staffing expansion will not be completed overnight and will require planning and a period of time to fully implement.

Administrative Gap. EPA/CDPHE noted a deficiency in the commitment of the City to adequately carry out enforcement measures against private construction site and industrial site owners/operators who violate the terms of the stormwater permit. They also identified the lack of adequate commitment of financial and personnel resources to the stormwater program. The City must maintain strong support for the MS4 Program at the executive and management level, as well as by elected officials, to make the necessary MS4 Program improvements and sustain those improvements in future years.

Next steps for developing the MS4 Program improvement plan include:

- Prepare a financial plan to meet the MS4 Program needs.
- Prepare a staffing plan to meet the MS4 Program needs.
- Prepare a recommended stormwater program organizational framework to show how an enhanced stormwater program could be managed within the City department structure, including which costs would accrue to the stormwater program versus other City departments.
- Continue to maintain communication with elected officials on impacts to the community (such as improved implementation of stormwater quality design standards, stricter enforcement, etc.) and maintain their support.
- Prepare a transition plan for adding staff resources and making organizational changes in phases.
- Identify areas requiring narrower spans of control to introduce greater accountability among staff involved in MS4-related activities.
- Secure adequate resources (staff, materials, and equipment); this could include near-term staff augmentation.

- Perform a detailed quality control audit of each MS4 permit program (Commercial/ Residential Management Program, Illicit Discharges Management Program, Industrial Facilities Program, etc.) to confirm compliance status and provide assurance that the findings are resolved both in the short and long term.
- Enhance the current illicit discharge training plan to include all City employees that interact with the stormwater program.
- Issue Requests for Proposals/Invitations for Bid documents for key capital projects that have planning and engineering completed.

1.0 INTRODUCTION

1.1 Purpose

The purpose of the City of Colorado Springs (City) Municipal Separate Storm Sewer System (MS4) Program Review is to identify and document the needed program enhancements based on the City's current MS4 permit (MS4 Permit 2011 - 2016) compliance activities and the requirements of the current MS4 permit. The results of the MS4 Program Review will be used to prepare a plan for improving the City's MS4 Program such that previous comments on the MS4 Program by the Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) are addressed and all requirements of the permit are satisfied.

1.2 Authorization

This MS4 Program assessment was prepared by MWH Americas, Inc. (MWH) as part of its City of Colorado Springs Stormwater Program Improvement Plan contract with Hill and Robbins P.C.

2.0 MS4 PERMIT OVERVIEW

MS4 permits give municipalities the authorization to discharge stormwater to waters of the United States as long as certain conditions are met. MS4 permits require implementation of best management practices (BMPs) to minimize the impact of existing and new development, construction, and industrial activities on water quality to the maximum extent practicable. The (EPA administers the MS4 Program under the authority of the Clean Water Act. In Colorado, EPA delegated the MS4 permitting authority to CDPHE. The current MS4 permit was issued to the City by CDPHE in 2011 and is in effect until 2016, unless administratively extended.

MS4 permits have general requirements for particular categories of management programs, as described in Section 3.2. However, the specific activities comprising each of those programs are selected by the individual permittee based on its own unique circumstances and capabilities. For example, the MS4 permit requires a public education and outreach program, but the specific measures used to educate and reach out to the public and important stakeholders are not listed in the permit, but are a decision of the permittee. As a result, there is considerable variability from community to community in how the MS4 permit requirements are actually implemented, how much budget and staff are committed, and which municipal government departments are involved.

During development of this Technical Memorandum (TM), City staff were briefed that the new draft general MS4 permit developed by the State has more onerous requirements than the City's current permit (effective since 2011). Since the current permit expires in 2016, unless administratively extended, the City should be preparing now to respond to stricter permit terms.

3.0 COLORADO SPRINGS MS4 PROGRAM DESCRIPTION

3.1 Stormwater Program History

The City's MS4 Program has been in effect since the first permit was issued to the City by CDPHE in 1997. The City has been responsible for implementing the stormwater program since its inception. Renewed and revised permits were issued in 2004 and 2011.

The City's overall stormwater program has evolved over time in response to changes in local conditions and priorities. **Figure 3-1** is a timeline of key milestones in the City's stormwater program history over the past 20 years. The following milestones are of particular importance to this MS4 Program assessment.

- Colorado's Taxpayer Bill of Rights (TABOR), passed in 1992, and amendments provide limits on the authority of governments to raise money through new taxes and on the amount of increased revenue governments can spend. TABOR, combined with the fiscally conservative tendencies of the Colorado Springs electorate, significantly limits the amount of money the City can spend on public works programs like the MS4 Program.
- The Colorado Springs Stormwater Enterprise (SWENT) was formed by the City in 2005 and operated from 2007 to 2009, when it was terminated in response to a public election. The SWENT performed many of the MS4 Program activities – others remained the responsibility of other City departments – as well as implementing stormwater capital projects. SWENT was funded by a dedicated stormwater fee. Under SWENT, the MS4 Program was well structured, adequately funded, and effective. After Colorado Springs voters passed an amendment that resulted in termination of SWENT in 2009, all stormwater management functions returned to the City Public Works and other departments and financial obligations returned to the City's General Fund. Since that time, funding and staff levels have been cut back significantly.
- The prolonged recession that began in the late 2000s significantly affected City revenues and its ability to fund public works programs and maintain staffing levels.
- Natural disasters, such as the Waldo Canyon Fire in 2012 and the September 2013 floods, required City stormwater staff to focus on disaster response, including application for mitigation grants and administration of the projects funded by those grants.
- EPA performed an audit of the City's MS4 Program in 2013 and found deficiencies in the way the Program was being implemented (see Section 3.2).
- A City-funded Stormwater Needs Assessment Report created in 2013 identified a backlog of over $688 million in stormwater infrastructure.
- The City adopted a new Drainage Criteria Manual (DCM) in 2014 that included a section on stormwater quality policies and design of BMPs. The DCM includes a policy that post-development runoff cannot exceed pre-development runoff conditions.
- In November 2014, an effort to create a new regional stormwater authority, including Colorado Springs, El Paso County, and other smaller communities in El Paso County, was rejected by the voters.
- In January 2015, recognizing that additional resources were needed to adequately address current stormwater problems and the backlog of capital projects, Colorado Springs City Council expressed support for allocating $16 million per year for 10 years to the stormwater program, and Colorado Springs Utilities expressed support for another $3 million per year for a total of $19 million per year.
- In 2015, two meetings (as of the date of this document) were held with City staff, EPA, and CDPHE to discuss the MS4 Program status.

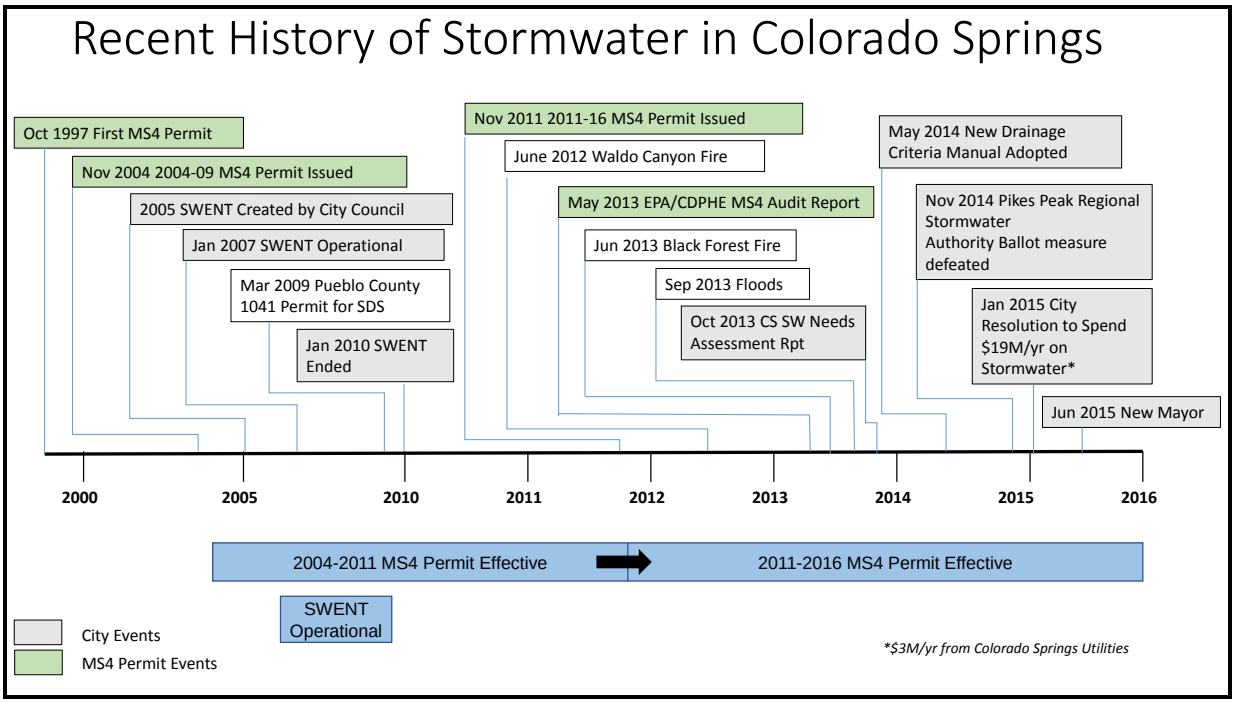

Figure 3-1. Colorado Springs Stormwater Timeline

3.2 Current Program Components

The City's MS4 permit has the same functional areas as all MS4 permits issued by CDPHE under the authority of EPA and the Clean Water Act. The permit requires implementation of BMPs in the following areas:

- Program Management – develop, implement, and enforce a Stormwater Management Program. This is an overarching program in the MS4 Permit (2011 – 2016).
- Commercial/Residential Management Program – require BMPs in areas of new urban development (e.g., onsite detention) to minimize impacts of new development on water quality.
- Illicit Discharges Management Program – identify and eliminate illicit discharges to the stormwater system such as spills, dumping, and sanitary sewer cross connections.
- Industrial Facilities Program – require implementation of BMPs on private industrial facilities to minimize impact of runoff and illicit discharges on water quality.
- Construction Site Program – require implementation of BMPs at construction sites to minimize impact of runoff on water quality and sediment loads.
- Pollution Prevention/Good Housekeeping for Municipal Operations Program – implement structural and maintenance BMPs to minimize impacts of runoff from municipal sites on water quality.
- Legal Authority – provide adequate authority to implement and enforce all elements of the MS4 Program.
- Resources – provide adequate finances, staff, equipment, and support capabilities for the MS4 Program.

- Total Maximum Daily Loads (TMDLs) – require compliance with a TMDL or waste load allocation (WLA), if permittees discharge to a waterbody with a TMDL or WLA.
- Monitoring Program – perform wet and dry weather monitoring to characterize receiving water quality and track MS4 Program effectiveness.
- Reporting Requirements – prepare and submit Annual Reports documenting the MS4 Program compliance with the permit.
- Public Education and Outreach Program – promote awareness and understanding of stormwater quality issues by the general public and special interest groups (e.g., landscapers, mobile cleaning businesses). Public Education and Outreach is not listed as a separate program in the MS4 Permit (2011 – 2016); instead, it is a subcomponent of other programs.

The approach adopted by the City to address the requirements of each of these programs is defined in program descriptions provided in Annual Reports to CDPHE.

Implementation of the current elements of the City's MS4 Program is distributed throughout several City departments, which is shown in **Figure 3-2**. While this is common in many cities like Colorado Springs without separate stormwater utilities, it makes coordination and tracking of MS4 Program activities challenging.

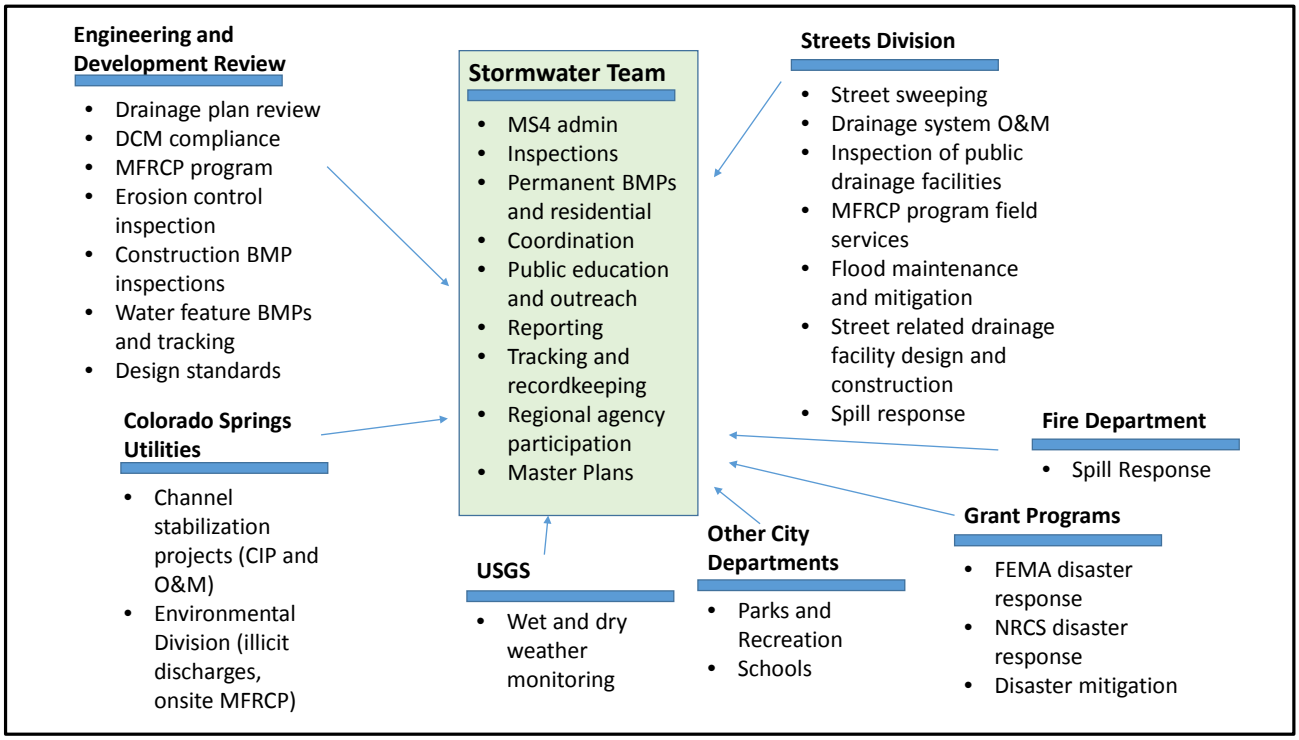

Figure 3-2. Distribution of MS4 Activities in Various City Departments

4.0 RECENT PROGRAM EVALUATIONS

4.1 EPA 2013 Inspection

EPA conducted an audit of the MS4 Program on February 4-7, 2013. In May 2013, EPA and CDPHE issued a Municipal Stormwater Inspection Report (Report) to the City documenting findings from the inspection of the MS4 Program. The findings included the following information: narrative, permit requirements, corrective actions, and recommendations.

Figure 4-1 shows the number of findings received, organized by the programs in which they are managed. A total of 20 findings were issued that span seven programs. It is important to note that two findings were listed in the Report as applying to a Post-Construction Program; these are categorized in the Commercial/Residential Management Program herein. The City submitted a Summary of Corrective Actions and Response to EPA and CDPHE on June 28, 2013, which documented the responses to the corrective actions noted.

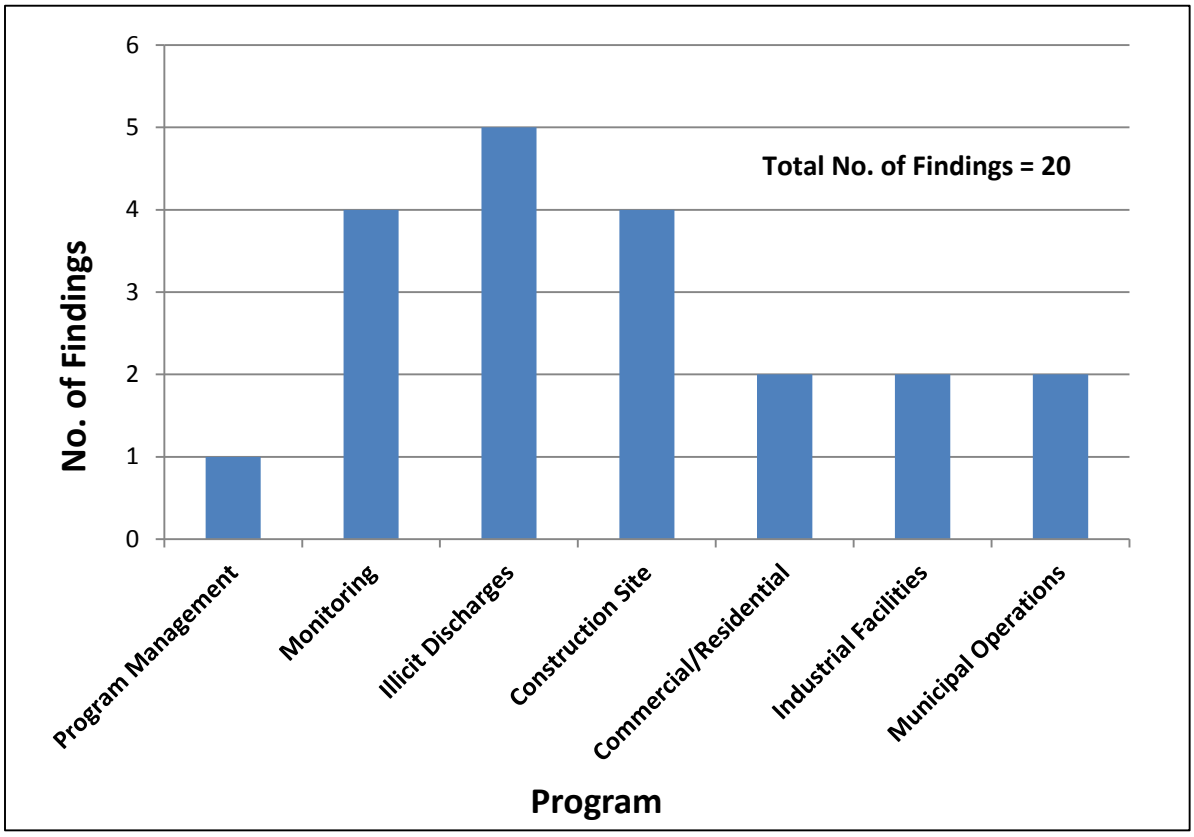

Figure 4-1. Total Number of Findings by Category in EPA Stormwater Inspection Report

4.2 EPA 2015 Inspection

In August 2015 EPA conducted a follow-up inspection to determine whether progress had been made in improving the MS4 Program in response to the 2013 program audit. This inspection found many of the same problems as described in the 2013 audit, including inconsistent application of development guidelines requiring BMPs for new development; incomplete

inspections of construction and industrial sites; and inadequate training of inspectors and city field staff. In particular, the inspection report documented many cases of insufficient drainage system maintenance that represented public safety as well as water quality concerns. EPA concluded that substantial progress had not been made in addressing the problems raised in the audit.

4.3 MWH Evaluations

4.3.1 Evaluation of EPA/CDPHE Municipal Stormwater Inspection Report and Current Status

The City's response to corrective actions identified the actions that were in progress or were proposed to address the findings. Some findings required one main action and others required multiple actions due to the level of effort to implement the program. A matrix displaying the findings, response, and proposed actions is included in **Appendix A**. The responses indicated in **Appendix A** were the original responses from the City to the audit findings. It is recommended that the City review each finding during the first quarter of 2016 to confirm the findings are complete or when implementation will commence. **Figure 4-2** shows a summary of the types of actions (i.e., inspection, training, etc.) identified by the City and MWH to address the Report findings. The numbers displayed in the circles represent the number of findings in the program that are addressed by the action. The purpose of this graphic is to visually identify key types of actions that are required to resolve findings from multiple programs.

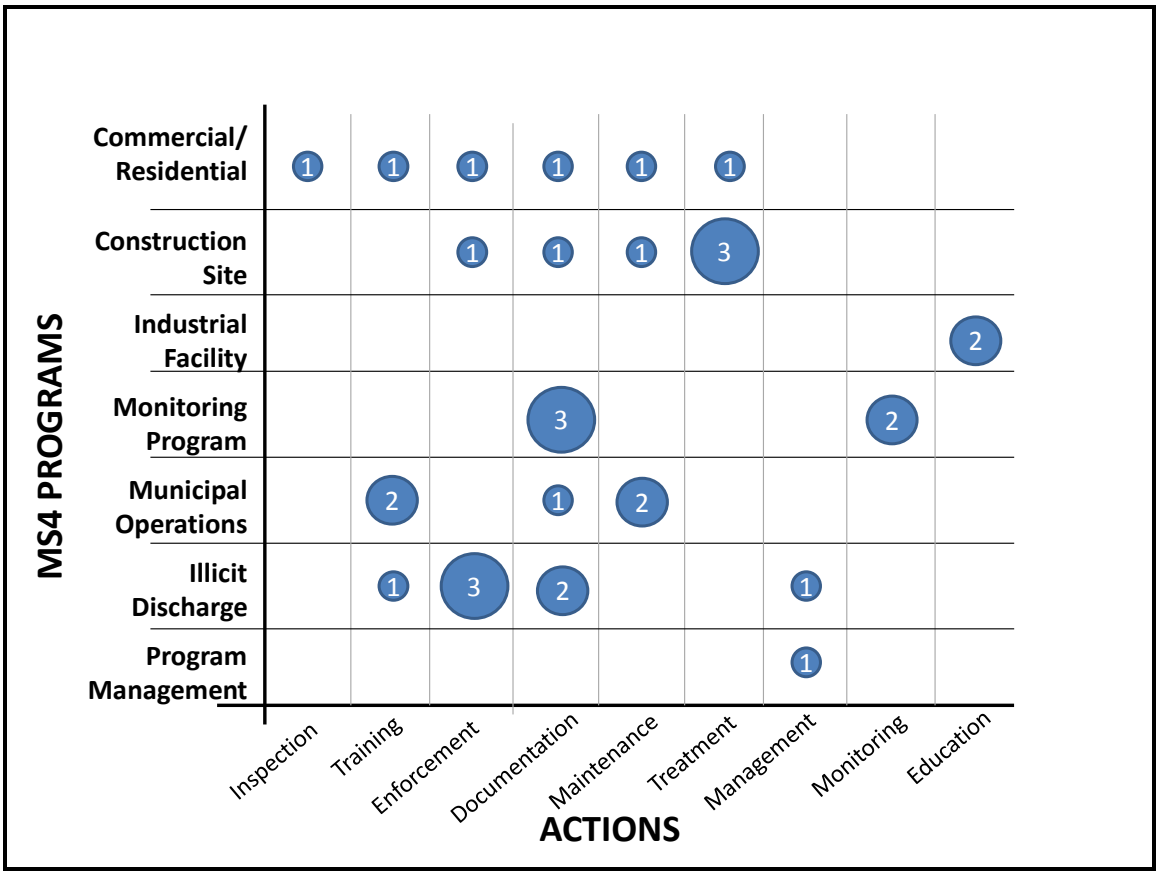

Figure 4-2. Mapping of EPA Findings to MS4 Programs and Action Categories

Based on the data distribution in **Figure 4-2**, the number of EPA findings for each of the MS4 Programs is listed below;

- Program Management (1 finding)
- Commercial/Residential Management Program (2 findings)
- Illicit Discharges Management Program (5 findings)
- Industrial Facilities Program (2 findings)
- Construction Site Program (4 findings)
- Pollution Prevention/Good Housekeeping for Municipal Operations Program (2 findings)
- Legal Authority (0 findings)
- Resources (0 findings)
- TMDLs (0 findings)
- Monitoring Program (4 findings)

The key actions identified by EPA include:

- Documentation (5 programs, 8 findings)
- Enforcement (3 programs, 5 findings)
- Training (3 programs, 4 findings)
- Maintenance (3 programs, 4 findings)

It is important to note that some findings may result in other actions not stated in the City's response. For example, more enforcement may result in further inspections and training, which are a result of the action. Furthermore, findings are only attributed to one program, although there are some instances of findings having impacts on other programs. An example is the finding in the Monitoring Program that references insufficiency in the Annual Report. Finally, even though the treatment action is spread across only two programs, the resolution will require substantial resources (infrastructure and staffing).

MWH used the EPA/CDPHE findings and City responses to identify whether the deficiency is related to a program description, implementation, or combination of both. In addition, potential resourcing needs (staffing and materials/equipment) were identified for each finding. Details of this assessment are included in **Appendix B**. The status of responses to the findings can be classified as not started (NS), in progress (IP), and complete (C). In discussions with City staff, actions to respond to all findings are either in progress or complete. It is recommended that the City initiate a detailed review and audit of the status of the findings and the program, to provide assurance that the findings are resolved both in the short and longer term.

Table 4-1 characterizes each finding for deficiency, potential resourcing needs, and status.

In review of the EPA/CDPHE findings, multiple references were made by EPA to the previous MS4 Permit (2004-2009), which was administratively extended until the new permit came into effect in 2011; see **Table 4-2**. In discussions with City staff, the MS4 Program is being implemented solely on the basis of the MS4 Permit (2011 – 2016), not the previous MS4 permit that had differing permit requirements. It is recommended that the City confirm with CDPHE/EPA that the MS4 Permit (2011 – 2016) is a standalone MS4 permit for the program and the terms of the MS4 Permit (2004 – 2009) is no longer applicable.

Table 4-1. Deficiency Characterization and Potential Resourcing Needs

Finding	Deficiency		Potential Resourcing Needs		Status		
	Program	Implementation	Staffing	Materials/ Equipment	NS	IP	C
Finding 1PM - Communication and Program Priority Concerns	X	X	X			X	
Finding 1MN - Retention of Sampling and Analytical Data Records		X	X	X		X	
Finding 2MN - Lack of Awareness of 40 CFR 136 Requirements and Review of Monitoring Data		X	X	X		X	
Finding 3MN - Incomplete Data Collection and Annual Reporting		X	X	X		X	
Finding 4MN - CDPHE Approval Not Obtained for Monitoring Program Plan Modifications		X	X	X			X
Finding 1ID - Lack of Illicit Discharge Training		X	X	X		X	
Finding 2ID - "Potential Illicit Discharge" Record Keeping		X	X	X			X
Finding 3ID - Illicit Discharge Database Operating Procedures		X	X	X		X	
Finding 4ID - Illicit Discharge Code Update		X	X				X
Finding 5ID - Illicit Discharge Mitigation Procedures		X	X	X		X	
Finding 1CS - Residential Waivers Issued for Water Quality Control Measures		X	X	X			X
Finding 2CS - Neither the City nor the Developer of Flying Horse Pond Filing 26 Were Maintaining the Pond		X	X	X		X	
Finding 3CS - The City has Allowed for At Least Two Water Quality Control Structures in State Waters		X	X	X		X	
Finding 4CS - The City Does Not Appear to Implement the Four-step Process Listed in its Manual		X	X	X		X	
Finding 1ND - Extended Detention Basin Required Design Elements Not Being Implemented		X	X	X		X	
Finding 2ND - Repeat Violations of BMPs on New Construction Sites Have Not Been Escalated		X	X	X		X	
Finding 1IF - Inadequate Industrial Facilities Program Plan Implementation		X	X	X			X
Finding 2IF - Recommendation for Industrial Facilities Program Implementation		X	X	X		X	
Finding 1PP - Update Municipal Facilities Runoff Control Plan		X	X	X			X
Finding: 2PP - Inadequate Operations and Maintenance Procedures		X	X	X		X	

Note: NS – Not Started; IP – In Progress; C – Complete

Table 4-2. Findings with Reference to the Previous MS4 Permit (2004 – 2009)

Program	Finding	Findings Reference
Program Management	Program Level Coordination (Finding 1PM)	Part I.B.3 of the Permit effective 11/01/11 - 10/31/16 and Part I.B.3 of the Permit effective 03/04/04 - 02/28/09 (administratively extended) state that "The permittee shall provide adequate finances, staff, equipment, and support capabilities to implement... the Stormwater Management Program."
Monitoring Program	CFR and Data Review (Finding 2MN)	Part II.B.3a of the Permit effective 03/04/04 - 02/28/09 (administratively extended) and Part I.D.3a of the Permit effective 11/01/11 - 10/31/16 state that "Monitoring must be conducted according to test procedures approved under 40 CFR 136, unless other test procedures have been approved by the Division (61.8(4)(j))." and "All sampling shall be performed by the permittee according to specific methods in 40 C.F.R. Part 136; methods approved by EPA pursuant to 40 C.F.R. Part 136; or methods approved by the Division, in the absence of a method specified in or approved pursuant to 40 C.F.R. Part 136.", respectively.
Monitoring Program	Incomplete Data and Reporting (Finding 3MN)	Part I.D.1.a. of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states that "Cross-sections shall be monitored at least once each year" as related to the "Qualitative Monitoring of Stream and riparian Zones within the MS4 and Receiving Waters - Morphological Assessment." Part I.F. of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states that "The permittee shall prepare an annual systemwide report to be submitted by April 1 of each year, covering the previous January 1 through December 31" and that the report shall include "A summary of the data, including numeric monitoring data that is accumulated throughout the reporting year." Part I.D.2.a. of the Permit effective 11/01/11 - 10/31/16 states that "The permittee shall submit a Monitoring Annual Report to the Division by June 1 of each year, covering the previous January 1 through December 31" and that the report shall include a "Summary of the monitoring program work to date ... "
Illicit Discharge & Detection Elimination Program	Lack of Training (Finding 1ID)	Part I.B.1.c.3)c) of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states, "A staff training program for field investigation and elimination of potential illicit discharges, illegal dumping and illicit connections identified by the ongoing field screening program, complaints, or other sources, shall continue to be implemented." Part I.B.1.b.2) c) of the Permit effective 11/01/11 - 10/31/16 states, "The permittee shall continue to implement a program to train municipal staff to recognize and appropriately respond to illicit discharges observed during typical duties. The program must address who will be likely to make such observation and therefore receive training, and how staff will report observed suspected illicit discharges."

4.3.2 Evaluation of Permit Compliance Schedule

A permit compliance schedule is included in the MS4 Permit (2011 – 2016). During a Gap Analysis Workshop held on September 28, 2015, the status of completed/active permit conditions was reviewed with City staff. Based on the discussion, the only permit condition still in progress as shown on the schedule is listed in **Table 4-3**.

Table 4-3. Permit Compliance Schedule – Activities in Progress

Permit Condition	Activity	Deliverable	Date Due	Status
Part I.D.1.c(6) Selenium and E Coli Monitoring Plan: Outfall Monitoring	Annual Analysis of Selenium and E Coli Data	Report in 2016 Annual Monitoring Report	June 1, 2017	Activity is in progress and is on schedule

4.3.3 Evaluation of 2014 Annual Report

A high-level review was performed of the 2014 Annual Report as part of the review of potential MS4 Program deficiencies. **Appendix D** presents a brief description of the 2014 Annual Report contents and notable items (with recommendations) from the high-level review. Review of the Annual Report did not disclose any new MS4 Program deficiencies that were not already evident from review of EPA/CPDHE review documents and discussions with City staff. The notable items in **Appendix D** may have applicability in multiple sections, so it is recommended that a detailed review of the Annual Report relative to the MS4 Permit requirements be performed in the future to assure that all reporting requirements are satisfied.

5.0 COMPARISON WITH OTHER COMMUNITIES

MWH collected and summarized data on stormwater program resources allocated by other cities to assist Colorado Springs in planning improvements to its stormwater program. The research involved comparing budget and staffing data for MS4 programs and drainage and stormwater programs of cities that are similar to Colorado Springs in terms of size, geography, and stormwater functions.

Information was gathered from three sources:

- A previous report on regional stormwater program organization options prepared by Summit Economics
- Internet research
- Contacts with municipal entity staff

The comparison analysis was described in the MS4 Stormwater Program - MS Comparison with Other Cities Technical Memorandum, which is found in **Appendix C** and summarized in the following paragraphs[1].

There is a wide range of stormwater program budgets and staffing levels currently employed by Colorado municipalities to meet the needs of MS4 programs, operation and maintenance (O&M) programs, and capital improvement programs. This range is large because of the unique factors

[1] Some of the data in **Appendix C** on current City budget and staff has been superseded by the data provided in this TM.

associated with different communities (e.g., size, level of development activity, number of industrial businesses, extent and complexity of urban drainage system, environmental awareness, fiscal policies, and internal department organizations). In addition, communities are not consistent in what they include when they report MS4 Program costs or staffing commitments.

Despite the variability in methods of tracking and reporting program costs and levels of effort, this data was used to develop comparative ranges of budgets and staffing levels for consideration when evaluating the status of the City's current stormwater program. Findings are summarized as follows:

- The typical range of per capita annual stormwater program funding for agencies in Colorado and EPA Region 8 is $30 per year to $80 per year, with a mid-range value of about $50 per year (see **Table 5-1)**. This covers all stormwater functions, including MS4 programs, O&M activities, and design and construction of stormwater capital projects. The largest stormwater entities for which data was collected – Denver, Aurora, SEMSWA, and Salt Lake City – all have annual per capita spending between $50 and $60 per capita per year. When applied to the City's 2014 population of 445,830, this suggests a possible total stormwater program budget in the range of $22 million to $27 million per year.
- Non-Capital Improvement Plan (CIP) related stormwater activities –i.e., MS4 Program activities – typically comprise about 30 to 60 percent of total stormwater program budgets for agencies in Colorado. For Colorado Springs, this suggests a non-CIP budget of $7 million to $16 million (see **Figure 5-1**).
- Staffing commitments to stormwater programs by other cities indicated a typical staffing level of about 15 full time equivalents (FTEs) per 100,000 people. Based on comparison with other municipalities, the total commitment of staff resources to the stormwater program for Colorado Springs could be 60 – 70 FTEs, including staff performing planning, design, construction management, O&M, street sweeping, outreach, and all MS4 Program functions. Many of these staff may not be in a stormwater group, but could be in other City departments.
- If SWENT is used as a basis for the City's stormwater program improvements, the total stormwater program budget would be about $16 million, the non-CIP budget would be about $8 million, and the staffing level would be about 30 FTEs in a stormwater group plus another 30 – 35 staff assigned to other city departments (e.g., streets, engineering, and development review). Note that these values are consistent with the comparisons to other similar Colorado communities summarized above.

Table 5-1. Stormwater Program Budgets for Selected EPA Region 8 Stormwater Agencies

Agency	Capital Improvement Projects Budget	Non-CIP Stormwater Related Activities Budget	Total Stormwater Drainage Program Budget	% CIP Budget	% Non-CIP Budget	Year	Population	Stormwater Drainage Program Budget per Capita	Reference
City and County of Denver	$5,750,000	$32,362,900	$38,112,900	15	85	2014	663,862	$57.41	Mayor's 2014 Budget
City of Aurora	*	*	$19,547,104	*	*	2011	332,593	$58.77	Summit Economics Report, 2012
Southeast Metro Stormwater Authority	$3,250,000	$4,661,303	$7,911,303	41	59	2015	140,000	$56.51	Annual Budget, 2015
Urban Drainage Flood Control District	$10,590,333	$10,259,688	$20,850,021	51	49	2013	2,300,000	$9.07**	2013 Budget Adoption Five Year CIP- 2010-2014
City of Fort Collins	$5,865,249	$11,082,804	$16,948,053	35	65	2015	158,600	$106.86	Biennial Budget, 2015-2016
Salt Lake City	$4,894,000	$6,517,270	$11,411,270	43	57	2015	190,884	$59.78	Mayor's Recommended Budget 2014-2015
Lakewood	$1,296,000	$1,819,000	$3,115,000	42	58	2014	147,214	$21.16	Stormwater Management Utility 2014 Annual Report
City of Pueblo	$563,833	$2,756,167	$3,320,000	17	83	2014	108,249	$30.67	2014 Annual Budget
Westminster	$2,602,000	$806,000	$3,408,000	76	24	2015	110,945	$30.72	Proposed 2015/2016 Biennial Budget
City of Greeley	$2,200,000	$2,014,429	$4,214,429	52	48	2014	98,596	$42.74	Biennial Budget 2013-2014
Average funding per capita – with/without UDFCD								$47.37 / $51.62	
Median funding per capita – with/without UDFCD								$50.00 / $56.51	

** Information not available*

*** Not a good comparison with Colorado Springs; UDFCD costs are shared by all municipalities in the Denver Metro area.*

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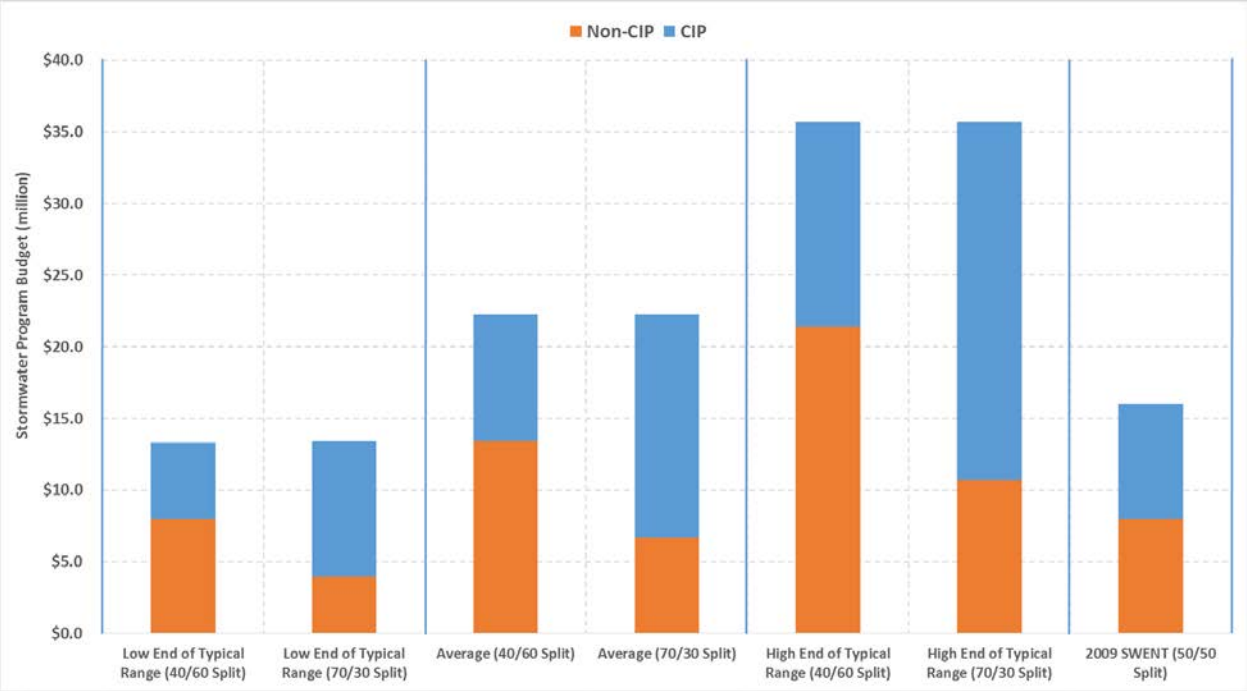

Figure 5-1. Range of Possible CIP and Non-CIP Expenses for Colorado Springs Based on Similar Cities

Because of the wide range of data presented in this comparative analysis, the findings should be used only as indicators of the general budget and staffing status of the City's current stormwater program. It is expected that commitments of resources to the City's program should fall within the general range of commitments of resources in other similar communities in Colorado and EPA Region 8. MWH is continuing to research information from other communities to assist in the development of budget and staffing improvement options for the City.

6.0 SUMMARY OF IDENTIFIED PROGRAM DEFICIENCIES

6.1 Overview

The required corrective actions for the MS4 Program identified by EPA/CDPHE are more related to implementation of the MS4 Program, as opposed to the MS4 Program components themselves. That is, the primary deficiencies are associated with situations in which the City has not adequately executed the various activities it intended to perform to meet the MS4 permit conditions. This overarching deficiency can be addressed by focusing on execution of programs as agreed to with CDPHE in the Annual Reports.

The key types of actions to address the identified deficiencies include: improved documentation, stricter enforcement measures, better stormwater staff training, and maintenance improvements. The additional level of effort to address these deficiencies is expected to require additional resources (staff, budget, and materials/equipment).

Staff turnover and attrition is a contributing factor to current MS4 Program deficiencies. As the MS4 Program is re-organized, a commitment to training staff and documentation will assist in the long-term program sustainability.

A deficiency was noted in the commitment of the City to adequately carry out enforcement measures against private construction site and industrial site owners/operators who violated the terms of the stormwater permit. City management has communicated the need for the MS4 Program to elected officials and has gained political support, as the MS4 Program will impact additional City residents and businesses.

It is noted again that during the period of the SWENT operations, the City had a well-organized, funded, and staffed MS4 Program that was compliant with the terms of the MS4 permit. City staff who inherited the day-to-day operations related to the MS4 Program since the SWENT have attempted to do the right thing with increasingly limited resources. Allocating adequate resources to the program is key to addressing current deficiencies.

6.2 Financial Commitment

The current City budget for specific MS4 Program activities is just over $3 million per year. This includes the cost of activities directly related to the MS4 Program, such as inspections, maintenance, BMP tracking, monitoring, etc. Based on comparisons with similar cities, the Colorado Springs annual non-CIP expenditures would be expected to be in the range of $7 million to $16 million. Given the fact that MS4 functions are distributed throughout several City departments, MS4 program costs that could be accounted for would likely be at the low end of that range even with a more robust program that EPA would find acceptable.

The MS4 Program costs do not include stormwater capital projects funded under the City's CIP Engineering Program group, or PPTRA-funded drainage and flood control projects. They also do not include outside grant funding received by the City for natural disaster response to the Waldo Canyon Fire, the Black Forest Fire, and the September 2013 floods. However, even when costs of these activities are added to the $3 million stormwater program budget, the financial commitment to the overall stormwater program in Colorado Springs is less than the $22 million - $27 million per year range that could be expected based on per capita spending by similar communities. It is also less than the $16 million per year budget under SWENT. It is important to note that a smaller budget does not necessarily mean that the program is not as effective as one with a larger budget; it may be more efficient implementing some program elements.

This information highlights what EPA identified regarding the deficiency in the City's funding commitment to produce and sustain an effective MS4 Program. However, it is noted that increased spending does not guarantee a better program, and municipalities that have higher per capita expenditures on MS4 programs do not necessarily have more effective programs. Nonetheless, it is apparent that Colorado Springs must increase funding of its stormwater program to meet the requirements of the current MS4 permit because the current expenditures are not sufficient to maintain MS4 permit compliance.

6.3 Staff Commitment

The City currently has over 40 staff involved with the MS4 Program, including five dedicated staff, which totals 28 full-time equivalents (FTEs). Most of these are shared with the Streets Division, the Engineering and Development Review group, and the CIP Engineering Program. Based on a comparison to other Colorado cities with stormwater programs, Colorado Springs

may be expected to have about 60 – 70 FTEs involved in its stormwater program. SWENT employed 30 people and 30 - 35 staff in other departments participated in various aspects of stormwater management. It is important to note that any staffing expansion will not be completed overnight and will require planning and a period of time to fully implement.

Based on this information and the deficiencies identified in reviewing current MS4 Program activities, staffing levels for the City are not sufficient to meet the needs of the permit. The current number of FTEs would have to be at least doubled (through staff augmentation or new hires) to provide the level of service necessary to support a MS4 Program for a city the size of Colorado Springs.

6.4 Individual Program Deficiencies

As described in **Section 4**, the EPA/CDPHE findings are spread throughout many portions of the MS4 Program. Using the results of the Gap Analysis, notes from previous review meetings with EPA and CDPHE, and feedback from City staff, the following is a compilation of deficiencies in specific programs:

- Program Issues
  - Not enough staff to run an MS4 Program in a city this size
  - Need for additional capital investment and equipment
  - Failure to focus on water quality objectives
  - Need to be proactive
- Commercial/Residential Management and-Post Construction Program Issues
  - Not achieving program goals
  - BMPs must be designed/constructed correctly
  - Enforcement procedures not followed
- Construction Site Program
  - Lack of BMP maintenance
  - Not implementing four-step review process
- Illicit Discharge Detection and Elimination Program
  - Lack of inspector training and record-keeping
  - Lack of standard operating procedures (SOPs) for addressing illicit discharges
- O&M Issues in Multiple Programs
  - Some designs approved by the City do not work properly
  - Maintenance agreements are not enforced
  - Failure to maintain infrastructure
- Enforcement Issues in Multiple Programs
  - Lack of enforcement has led to apathy in regulated community
  - Current codes are not strictly applied
- Documentation Issues in Multiple Programs
  - Lack of documentation was noted across multiple programs
- Training Issues in Multiple Programs

    - Lack of training and not knowing procedures was noted in multiple programs
- Community Engagement Issues
    - Need more outreach to developers
    - Need more outreach to industries

7.0 NEXT STEPS

7.1 City Activities Underway

The City is taking a number of near-term steps to improve deficiencies in its stormwater program. These are shown in **Figure 7-1** and include:

- Process Improvements – The Engineering and Development Review Department has modified its development submittal review process to ensure appropriate reviews for MS4 purposes. The City has increased training for inspectors and has added new BMPs for the Illicit Discharge Program.
- Financial Commitment – The City has committed to spend $19 million per year (including $3 million per year from Colorado Springs Utilities) on its dedicated stormwater activities and stormwater capital projects. The City has budgeted to purchase eight new street sweepers next year.
- Staffing Commitment – The City is hiring a new Civil Engineer III in 2015 and a new Inspector in 2016. The City intends to fill a position for a new Stormwater Program Director in 2016.
- Political Commitment – The new City administration is committed to addressing the City's stormwater needs, including the need to have a fully compliant MS4 Program.

In addition, Colorado Springs Utilities provided the funding for MWH's contract to review the current situation, develop a Stormwater Program Implementation Plan, and help the City allocate the $19 million per year to the required stormwater capital and non-capital functions.

Figure 7-1. Current Actions by the City to Improve MS4 Program

7.2 Next Steps

The purpose of this Gap Analysis is to identify areas of the current MS4 Program that need improvement to meet the requirements of the MS4 permit. Based on the results of this analysis, the next steps are associated with developing and then implementing a plan to improve the MS4 Program and the overall stormwater program. These steps include:

- Prepare a financial plan to meet the MS4 Program needs.
- Prepare a staffing plan to meet the MS4 Program needs.
- Prepare a recommended stormwater program organizational framework to show how an enhanced stormwater program could be managed within the City department structure, and which costs would accrue to the stormwater program versus other City departments.
- Continue to maintain communication with elected officials on impacts to the community (such as improved implementation of stormwater quality design standards, stricter enforcement, etc.) to maintain support.
- Prepare a transition plan for adding staff resources and making organizational changes in phases.
- Identify areas requiring narrower spans of control to introduce greater accountability.
- Secure adequate resources (staff, materials, and equipment); this could include near-term staff augmentation.
- Perform a detailed quality control audit of each MS4 permit program (Commercial/ Residential Management Program, Illicit Discharges Management Program, Industrial Facilities Program, etc.) to confirm compliance status and to provide assurance that the findings are resolved both in the short and long term.
- Develop and implement a training plan for all City employees that interact with the stormwater program.
- Issue Requests for Proposals/Invitations for Bid documents for key capital projects that have planning and engineering complete.

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APPENDIX A – EPA/CDPHE FINDINGS, RESPONSE, AND PROPOSED ACTIONS

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MUNICIPAL SW INSPECTION REPORT					
Programs/Components	**EPA/CDPHE Finding ID**	**EPA/CDPHE Finding Description**	**Permit Requirements Section**	**Action**	**City Response**
Program Management (PM) Review Findings	Finding 1PM - Communication and Program Priority Concerns Related to the City's Program Reorganization	During the EPA's inspection, the City personnel indicated that the City's Engineering Division had undergone a major reorganization in the 4th Quarter of 2012 which divided personnel and resources used to implement the MS4's Stormwater program. The new structure involved the reassignment of city personnel, previously dedicated solely to the implementation of the City's Stormwater program, into other City programs. It also increased the range of duties performed by those that were reassigned. The City's personnel indicated that the division of the staff into separate programs resulted in some communications/coordination issues. In addition, the personnel were no longer primarily focused on Stormwater program duties and priorities.	Part I.B.3 of the Permit effective 11/01/11 - 10/31/16 and Part I.B.3 of the Permit effective 03/04/04 - 02/28/09 (administratively extended) state that "The permittee shall provide adequate finances, staff, equipment, and support capabilities to implement. .. the Stormwater Management Program."	❒ Training ❒ Inspection ❒ Enforcement ❒ Documentation ❒ Maintenance ❒ Treatment ✓ Management ❒ Monitoring ❒ Education	Since the City's Stormwater Enterprise was disbanded in 2009, stormwater management activities have been re-distributed among the Engineering and Capital Divisions within the Public Works Department Coordination and communication among the stormwater office and field staff has been effective, but could be improved. The Development Review and Stormwater Team, which currently manages the stormwater and MS4 programs, coordinates with the Capital Team to manage capital and design projects, the Asset Management Team for certain aspects of the Illicit Discharges Management Program, and the Inspection Team for field inspections related to the Construction Sites Program. Short term, the Development Review and Stormwater Team intends to move the field inspectors related to the Construction Sites Program back under the control of the Development Review and Stormwater Team to enhance control and coordination. Long term, the City is exploring funding solutions for the stormwater program that include a stormwater utility and a regional stormwater authority similar to the Southeast Metro Stormwater Authority (SEMSWA).
Monitoring (MN) Review Findings	Finding 1MN - Retention of Sampling and Analytical Data Records	The wet weather sample monitoring and analysis for the City was implemented primarily by the USGS. At the time of the inspection, the USGS was providing summary reports of results to the City but was not submitting specific sampling information such as laboratory analytical reports or sampling information (e.g. sampling date/time, preservation method, personnel performing sampling, etc.). During the inspection, it was identified that the City did not request or maintain any of the detailed records of the sampling and analysis performed by the USGS.	Part I.D.3b of the Permit effective 11/01/11 - 10/31/16 states, "The permittee shall establish and maintain records for all monitoring required by Part I.D.l(c) of this permit. Those records shall include the following: 1) The date, type, exact location, and time of sampling or measurements; 2) The individual(s) who performed the sampling or measurements; 3) The dates(s) the analyses were performed; 4) The individual(s) who performed the analyses; 5) The analytical techniques or methods used; 6) The results of such analyses; and 7) Any other observations which may result in an impact on the quality or quantity of the discharge as indicated in 40 [Code of Federal Regulations] CFR 122.34 (i)(l)(iii). The permittee shall retain for a minimum of three (3) years records of all monitoring information, including all original strip chart recordings for continuous monitoring instrumentation, all calibration and maintenance records, copies of all reports required by this permit and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested	❒ Training ❒ Inspection ❒ Enforcement ✓ Documentation ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The USGS has been keeping the records specified in Part LD.3b of the Permit, and will begin providing these records to the City. The procedure for obtaining and maintaining monitoring records for sampling and analysis will be reviewed and revised, if necessary, to reflect submittal of all monitoring records to the City annually.
Monitoring (MN) Review Findings	Finding 2MN - Lack of Awareness of 40 CFR 136 Requirements and Review of Monitoring Data to Ensure These Requirements Are Met	During the inspection, the City personnel managing the monitoring program appeared to be unfamiliar with the 40 CFR Part 136 method requirements specific to the sampling and analysis procedures being performed under the City's monitoring plans. In addition, there was no mechanism in place for City personnel to evaluate monitoring data to ensure that the 40 CFR 136 requirements were being met.	Part II.B.3a of the Permit effective 03/04/04 - 02/28/09 (administratively extended) and Part I.D.3a of the Permit effective 11/01/11 - 10/31/16 state that "Monitoring must be conducted according to test procedures approved under 40 CFR 136, unless other test procedures have been approved by the Division (61.8(4)(j))." and "All sampling shall be performed by the permittee according to specific methods in 40 C.F.R. Part 136; methods approved by EPA pursuant to 40 C.F.R. Part 136; or methods approved by the Division, in the absence of a method specified in or approved pursuant to 40 C.F.R. Part 136.", respectively.	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ✓ Monitoring ❒ Education	The City will review the procedures for sampling and analysis to ensure that the requirements of 40 CFR 136 are met
Monitoring (MN) Review Findings	Finding 3MN - Incomplete Data Collection and Annual Reporting	The benthic data collected as part of the City's wet weather monitoring plan was not reported in the 2011 Annual report. In addition, the morphological data was not collected in 2010. Morphological data was collected in March 2011 but was not reported in the 2011 Annual Report. The 2011 Annual Report indicated that the data collected in 2011 would not be reported until the 5-year wet weather summary was submitted.	Part I.D.1.a. of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states that "Cross-sections shall be monitored at least once each year" as related to the "Qualitative Monitoring of Stream and riparian Zones within the MS4 and Receiving Waters - Morphological Assessment." Part I.F. of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states that "The permittee shall prepare an annual systemwide report to be submitted by April 1 of each year, covering the previous January 1 through December 31" and that the report shall include "A summary of the data, including numeric monitoring data that is accumulated throughout the reporting year." Part I.D.2.a. of the Permit effective 11/01/11 - 10/31/16 states that "The permittee shall submit a Monitoring Annual Report to the Division by June 1 of each year, covering the previous January 1 through December 31" and that the report shall include a "Summary of the monitoring program work to date ... "	❒ Training ❒ Inspection ❒ Enforcement ✓ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City has submitted an "edited" version of the wet weather monitoring data for the last couple of years, but has collected cross-sectional and benthic data in accordance with permit requirements. The City will revise the contents of the annual report format to include all benthic and monitoring data collected for wet weather monitoring beginning with the 2013 Annual Report in accordance with permit requirements.
Monitoring (MN) Review Findings	Finding 4MN - CDPHE Approval Not Obtained for Monitoring Program Plan Modifications	At the time of the EPA's inspection, the City personnel could not provide documentation that they had received approval for the modifications made to the City of Colorado Springs Municipal Storm Sewer System Permit (COS-000004) Monitoring Plan prior to implementing it. The original plan was prepared 12/13/02 and revised 05/21/03 but the plan being implemented by the City was prepared 8/31/12. Part 7, "Potential Modifications" of the City of Colorado Springs Municipal Storm Sewer System Permit (COS-000004) Monitoring Plan prepared 8/31/12 states that "The CCS monitoring program must be afforded the flexibility to: 1. Adopt new techniques as they are developed. 2. Modify existing techniques in response to information gained through implementation of the program. 3. Modify monitoring site locations and/or analytes if data reveals the program would be enhanced by doing so. For this program to remain flexible, it may be necessary to make minor adjustments during implementation without prior approval of the CDPHE. Examples of these changes could include changing the location of a monitoring site or modifying the sampling frequency for bacteria, all while maintaining a consistent level of effort. The CDPHE will be notified of these minor adjustments in the Annual Report." This is not consistent with the program modification requirements of the Permit.	Part I.C.3 of the Permit effective 11/01/11 - 10/31/16 states, Program Modifications a. The approved Programs shall not be modified by the permittee without the prior approval of the Division. b. Modifications shall not become enforceable permit conditions until such time as the modifications are formally approved. c. Modification requests and/or notifications shall be signed in accordance with Part I.G."	❒ Training ❒ Inspection ❒ Enforcement ✓ Documenting ❒ Maintenance ❒ Treatment ❒ Management ✓ Monitoring ❒ Education	The City of Colorado Springs will revise the Monitoring Plan prepared 8/31/12 in accordance with permit requirements to ensure that all modifications, including ''minor adjustments'; are formally approved by the CDPHE prior to implementation. The City will also submit the Monitoring Plan to CDPHE to obtain formal approval for the monitoring plan prepared 8/31/12, that includes redlines of the effective permit revised 05/21/03 such that changes can be easily tracked.

Illicit Discharge Detection and Elimination (IDDE) Program Review Findings	Finding 1ID - Lack of Illicit Discharge Training	The City's Illicit Discharge Detection and Elimination (IDDE) Program document, issued 10/1/2012 and revised 01/21/2013, states that "Code Enforcement has the authority to investigate and enforce wastewater discharge complaints on private property from City Code, Chapter 6, Neighborhood Vitality/Community Health." The Colorado Springs Fire Department HMRT has a non-emergency potential spill notification system available to citizens and City personnel to call to report a potential illicit discharge. Calls received are screened for appropriate response and follow-up. Spills identified as Hazardous Material (HazMat) spills were handled by the HMRT and non-HazMat spills were referred to the CCS Code Enforcement. On 2/6/13, the EPA inspectors performed a site visit of the call center at the Colorado Springs Police Operations Center. Lisa Mitchell, Training manager, met with the EPA inspectors and described the process for how calls were received and distributed for response. Ms. Mitchell indicated that all nonHazMat spill calls were sent to the CCS Code Enforcement for follow-up. At the time of the inspection, Lisa Ross, Senior Engineer, indicated that the City's program had not developed formal IDDE stormwater specific training for the CCS Code Enforcement personnel that responded to these calls. The City's IDDE Program document identifies the Fire Marshal and the CSU Industrial Pretreatment Section as the entities responsible for performing "preventative inspections" for identifying illicit discharges. The Colorado Springs Fire Department, CSU, the Regional Floodplain Administration, the CCS Public Works and the CCS Code Enforcement were responsible for responding to IDDE issues. The Regional Floodplain Administration had no direct involvement in IDDE response. Information on spills and discharges identified by the Regional Floodplain Administration employees was forwarded on to	Part I.B.1.c.3)c) of the Permit effective 03/04/04 - 02/28/09 (administratively extended) states, "A staff training program for field investigation and elimination of potential illicit discharges, illegal dumping and illicit connections identified by the ongoing field screening program, complaints, or other sources, shall continue to be implemented." Part I.B.1.b.2)c) of the Permit effective 11/01/11 - 10/31/16 states, "The permittee shall continue to implement a program to train municipal staff to recognize and appropriately respond to illicit discharges observed during typical duties. The program must address who will be likely to make such observation and therefore receive training, and how staff will report observed suspected illicit discharges."	✓ Training ❒ Inspection ❒ Enforcement ✓ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City will update the procedures to train municipal staff to implement the IDDE program by identifying the personnel responsible for implementing the program and tracking them in perpetuity to ensure that they have been trained initially and continue to receive training updates. New employees will be identified at least quarterly so that training may be initiated. The City will also update the IDDE program to refine the entities involved in the program and to remove the entities that are not Procedures for coordinating with other entities will also be revised and refined, as necessary, to ensure that the IDDE program is implemented consistently throughout the CCS.
Illicit Discharge Detection and Elimination (IDDE) Program Review Findings	Finding 2ID - "Potential Illicit Discharge" Record Keeping	According to Ryan Bouton, Engineering Technician II, no documentation was being maintained for investigations of potential illicit discharges that were later determined not to be "illicit discharges".	Part I.B.1.b.2)d) of the Permit effective 11.01.11 - 10/31/16 states, "A record of all reported illicit discharges and the permittee's response shall be maintained."	❒ Training ❒ Inspection ❒ Enforcement ✓ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City will keep a record of all reported illicit discharges beginning in June, 2013.
Illicit Discharge Detection and Elimination (IDDE) Program Review Findings	Finding 3ID - Illicit Discharge Database Operating Procedures	At the time of the inspection, Mr. Bouton provided an overview of Source Identification and Mapping database used by the City to track illicit discharge reports and investigations. All identified illicit discharges were tracked with GIS and entered into the database. The GIS information was used to track past spills and identify repeat offenders. Entries into the database included information such as the case number, date reported, date evaluated, event time, date entered into the database, event location (e.g., the address, city, State and zip code), quantity, reporting party and type of spill. Mr. Bouton had received training on the use of the database from a City employee that was no longer with the program. It appeared that Thomas Repp, a former City employee, had input non-IDDE investigated discharge information into the database in the past but Mr. Bouton was no longer performing that task. There were no written procedures or training documents for inputting information into the database.	N/A	✓ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City will develop a written standard operating procedure that explains the collection and documentation of information pertaining to illicit discharges and the population of the IDDE database.
Illicit Discharge Detection and Elimination (IDDE) Program Review Findings	Finding 4ID - Illicit Discharge Code Update	Part 2, 3.8.201.B.2 of the Discharge Prohibitions of the Article 8 Stormwater Quality Management and Discharge Control Code lists discharges from potable water sources, individual street washing and uncontaminated water from irrigation system meter pits as allowable discharges. These are not listed as allowable non-stormwater discharges within the Permit and the City did not have documentation of prior approval from CDPHE to list them as such. Part 2, 3.8.201.B.4 of the Discharge Prohibitions of the Article 8 Stormwater Quality Management and Discharge Control Code states, "With written concurrence to the City Council by ordinance, resolution or motion, the City Engineer may exempt in writing other on stormwater discharges which are not a source not of pollutants to the City's MS4 or waters of the United States." This is not consistent with the permit requirements for approval of additional allowable non-stormwater discharges.	Part I.B.1.b.l)b) of the Permit effective 11/01/11 - 10/31/16 states, "Unless identified by either the permittee or the Division as significant sources of pollutants to the State Waters, the following sources of non-stormwater discharges are excluded from the definition of "illicit discharge": landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration to separate storm sewers, uncontaminated pumped ground water, foundation drains, single family residential under drain systems, lawn watering, individual residential car washing, individual residential swimming pool and hot tub discharges, water-line flushing, flows from riparian habitats and wetlands, and water incidental to street sweeping (including associated sidewalks and medians) that is not associated with construction." Part I.B.1.b.l)c) of the Permit effective 11/01/11 - 10/31/16 states that "The initial list and additions or modification to the list must be approved in accordance with Part I.C.3 of the Permit." Part I.C.3 of the Permit effective 11/01/11 - 10/31/16 states, "Program Modifications a. The approved Programs shall not be modified by the permittee without the prior approval of the Division. b. Modifications shall not become enforceable permit conditions until such time as the modifications are formally approved. c. Modification requests and/or notifications shall be signed in accordance with Part I.G."	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ✓ Management ❒ Monitoring ❒ Education	The City has negotiated revised language for Article 8 with CDPHE to achieve consistency with the permit requirements. A copy of the updated Article 8 will be supplied to the EPA upon approval from CDPHE

Illicit Discharge Detection and Elimination (IDDE) Program Review Findings	Finding 5ID - Illicit Discharge Mitigation Procedures	Conoco Gas Station Site Visit: On 2/6/13, the EPA inspectors joined Mr. Bouton on an illicit discharge follow-up inspection at the Conoco Gas Station located on the corner of Palmer Park Boulevard and Potter Drive. The incident was reported to the City on 2/5/13 at approximately 1:30am. The City was informed that approximately 100 gallons of gasoline was spilled onto the pavement while an underground tank at the site was being refueled. It was estimated that 20 to 50 gallons of gasoline discharged into the MS4's storm drain system. Mr. Bouton coordinated with the State of Colorado's Department of Labor and Employment Oil and Public Safety Division to respond to the incident and directed the responsible party(s) to perform clean-up to mitigate the discharge. At the time of the follow-up inspection, it appeared that all clean-up activities had concluded. The EPA inspectors observed traces of the dry absorption chemical cleaning product on the pavement at the spill location (see photos 258-260 of IDDE Oversight photo log). There was also a sheen observed in a nearby storm sewer drain that had received the discharge (see photos 261 and 262 of IDDE Oversight photo log). Mr. Bouton indicated that he would follow up with the responsible party to request additional clean-up of the site upon returning to the City office. It was brought to Mr. Bouton's attention that the weather conditions were overcast and snow was forecasted that afternoon. The EPA inspectors and Mr. Bouton left the site at 2:08 p.m. Snow began to fall in the area around 3:00pm, at which time Mr. Bouton had yet to contact the responsible party to instruct them to clean-up the residual materials observed at the site. During the follow-up inspection, Mr. Bouton indicated that the City did not have any established procedures for clean-up of a site should the responsible party not comply in a timely manner with the City's requests to respond (e.g. clean-up needed prior to/during precipitation events). Due to reservations about removing the responsibility of performing clean-up activities from the responsible	Part I.B.1.b.l) of the Permit effective 11/01/11 - 10/31/16 states that "The permittee shall continue to implement an ongoing program to detect and eliminate the source of the illicit discharges (or to confirm that the discharge no longer meets the definition of an illicit discharge) and improperly disposed materials into the MS4 in accordance with this program area and mitigate as required by I.B.1.b (2). Elimination of an illicit discharge shall include measures as necessary to address the source to prevent an ongoing discharge (e.g., cleaning up a spill, fixing a leak, removing a cross connection). The permittee shall review current City code to ensure it is adequate to meet this requirement, make revisions if necessary by October 1, 2012, and notify the Division that this requirement has been met and if the City Code was revised in the following Annual report, due April 1, 2013." Part I.B.1.b.3) of the Permit effective 11/01/11 - 10/31/16 states that "The permittee shall implement procedures to prevent, contain and respond to spills that may discharge or have discharged into the MS4 that are not composed entirely of stormwater except sources that are excluded from the definition of "illicit discharge in accordance with Parts I.B.1.b(l)(b), (c), and (d)."	✓ Training ❒ Inspection ✓ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City's IDDE procedure will be modified to include specific steps to be taken by City staff in response to an illicit discharge, including a timeline for response by the perpetrator of the illicit discharge, and response actions to be instigated by the City in the event that the perpetrator's response actions fail to eliminate the discharge and/or to adequately clean up the illicit discharge. A copy of the procedure will be submitted to CDPHE and EPA for review and approval in accordance with the permit requirements.
Construction Site Runoff Control Program (CS) Review Findings	Finding ICS - Residential Waivers Issued for Water Quality Control Measures Without Required Justification	During the inspection, it was identified that, since 2008, seven water quality BMP waivers have been issued to developments. City code states that, when a city engineer determines that water quality impacts were minimal and water quality BMPs were impractical for a development, the site will be granted a waiver from the water quality BMPs based on submittal of sufficient justification. During the inspection, EPA inspectors reviewed the master development drainage plans provided to the City by development applicants for the seven residential waivers issued. The required justifications were not provided by the applicants or the city engineer to meet the waiver requirements as outlined in City code. Furthermore, issuance of these waivers does not appear to comply with requirements in the City's MS4 permit, issued by the CDPHE. The City provided information on the seven developments that were issued water quality BMP waivers since 2008, that were also explained to be above 2 acres in size. The information is summarized in the table below (see tab 2): The "Drainage Report Submittal Date" represents the date that the waiver is considered and the "Drainage Report Issue Date" represents the date the waiver is finalized. A representative from the City's engineering group responsible for reviewing development plans explained that it was standard procedure to grant residential lot waivers (zoned R-1 6000) exempting permanent water quality feature requirements. Applicants used a mathematical calculation to determine development density based on the density of the entire proposed development, incorporating concentrated areas averaged with no-build areas. The City provided no analysis or documentation to support that the densities proposed from these calculations were protective of stormwater quality.	The CDPHE permit in Part I (B) (I)(a)(2) and (a) states, "The permittee must implement and enforce a program to address storm water runoff from projects for which construction activities disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale that discharge into the MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts. The permittee must: Implement and document strategies which include the use of structural and/or non-structural BMPs appropriate for the community, that address the discharge of pollutants from projects, or that follow principles of lowimpact development to mimic natural (i.e., pre-development) hydrologic conditions at sites to minimize the discharge of pollutants and prevent or minimize adverse in-channel impacts associated with increased imperviousness. Strategies must include specific consideration to require BMPs that address specific pollutant sources associated with projects for industrial and commercial land uses determined to have an increased potential to cause an impact on storm water runoff quality. Minimum technical requirements for required structural BMPs shall be documented and be based on those specified in the Drainage Criteria Manual Volume II or equivalent and be in accordance with good engineering, hydrologic and pollution control practices ... " City Code 7.7.906 B.3. states, " ... all sites zoned R estate (residential), R-1 6000 (Single-family residential), R-1 9000 (single-family residential), R-2 (two-family residential) and DFOZ (design flexibility overlay - base zone must be R, R-1 6000 or R-1 9000) that include total development/redevelopment areas of two (2) acres or larger will be reviewed on a case by case basis that will include an assessment of impacts from storm water runoff from the new development to State Waters and a determination of the need for any additional permanent water quality BMPs. Sites for which City Engineering determines water quality impacts to State waters are minimal and permanent water quality BMPs are impractical will be granted a waiver, based on the submittal of sufficient justification ... "	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ✓ Treatment ❒ Management ❒ Monitoring ❒ Education	The City has updated Drainage Criteria Manual Volume 2 to require all new development and redevelopment projects for which construction activities disturb greater than one (1) acre to implement permanent BMPs. The residential waiver for certain residential zoning designations is no longer applicable. The City will also update City Code to reflect this change.
Construction Site Runoff Control Program (CS) Review Findings	Finding 2CS - Neither the City nor the Developer of Flying Horse Pond Filing 26 Were Maintaining the Pond as Required in the Permit and Private Construction Procedures Allowed for the Potential of Post-Construction Control Maintenance to be Overlooked.	During the inspection, neither the City nor the developer of the Flying Horse Pond Filing 26 was aware of the maintenance status of the pond and who had maintenance responsibility. Discussions revealed that no one had been maintaining the pond. Representatives from the City explained that the developer was responsible for constructing the pond and maintaining it. After a portion of the development draining into the pond was completed, the developer could apply for a probationary inspection, after which the City could inspect the pond and then authorize a 2-year probationary period. During the 2-year probationary period, financial assurances would be reduced and maintenance would be performed by the developer until a final inspection of the facility was performed at the end of the 2-year period. Representatives from the City explained that it was incumbent on the developer to request the final inspection that would remove the facility from the probationary period at the end of two years. From that point on, the City would maintain the pond. At the time of the EPA's inspection, the City relied on the developer to contact the City to ask for the probationary period to begin on a particular structure and for the final inspection to end the probationary period. If the developer did not notify the City, there was a risk that the maintenance of the structure could be overlooked (e.g., Flying Horse Pond Filing 26) with no one handling the maintenance. The request for the probationary inspection for the Flying Horse Pond Filing 26 was issued by the developer on February 4, 2008, but neither the developer nor the City initiated the final inspection in February 2010. According to City records, the City had not performed the final inspection of the pond which would release it from the developer's purview and turn it over to the City to maintain. As of February 6, 2013, no one had been maintaining the pond and the representatives of the developer explained that they had not done so for "some time." A letter from the City to CDPHE dated August 24, 2001, summarized a discussion between the two entities regarding long-term maintenance of post-construction BMPs. Representatives from CDPHE explained that the "Colorado Springs' permit requires the development and enforcement of controls to	The CDPHE permit in Part I(B)(1)(a)(2)(d) states, "Implement and document procedures, including procedures to enforce the requirements to maintain BMPs when necessary, to ensure adequate longterm operation and maintenance of BMPs consistent with the Permittee's program requirements. Any modification to the BMP design shall be documented prior to the modification occurring ... " The CDPHE permit in Part 1(B)(1)(d)(3)(a) states, "The permittee shall document and continue to implement procedures for inspection and enforcement of control measures at construction sites to the extent allowable under State and local law. The required documents shall include the following: procedures to ensure that BMPs are being installed and maintained in accordance with subsection (2), above, the approved plan, and that sediment sources, materials, equipment maintenance areas (including fueling) and other significant sources of pollution have been addressed ... "	❒ Training ❒ Inspection ✓ Enforcement ✓ Documenting ✓ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City will update its land development procedures to proactively track the construction and maintenance of permanent BMPs such that probationary acceptance and final acceptance are requested of the developer by the City in accordance with the Permit and the land development code. The revised procedure will ensure that permanent (i.e. post-construction) BMPs are properly designed, constructed, and maintained for both private and public installations.

Construction Site Runoff Control Program (CS) Review Findings	Finding 3CS - The City has Allowed for At Least Two Water Quality Control Structures to be Placed in State Waters	During the inspection, it was observed that the Flying Horse Pond Filing 26 and the First and Main Town Center commercial development water quality control features were likely constructed in State Waters. Discussion with City engineering staff revealed that they place water quality control structures in State waters under certain circumstances. A letter from the City to CDPHE dated August 24, 2001, summarized a discussion between the two entities regarding the placement of water quality control structures in State Waters. In the letter, representatives from the CDPHE state that "Discharge is defined by the regulation to mean the introduction or addition of a pollutant into State Waters." The letter also states " .. .it is the EPA's and the Division's interpretation of requirements that BMPs for post construction be placed prior to discharge to State Waters." Furthermore, the letter states, "If the storm water runoff will discharge into a State Water prior to reaching BMPs, including natural drainage ways being utilized by Colorado Springs as part of their MS4, this may be a violation of the Regulation and the City's permit...Colorado Springs' program needs to be clarified to incorporate this requirement, and ensure that all State Waters are addressed." The First and Main Town Center development drainage report for Filing 16 was received by the City on February 2, 2012. In the water quality section of the drainage report, it was stated that water quality measure for this site were provided within Sand Creek Detention Pond Number 1. In the plan design memorandum, it was stated, "The detention basin located lowest in the Sand Creek Drainage Basin is referred to as Sand Creek Detention Basin Number 1. The detention basin is proposed as a regional detention basin to be located along Sand Creek north of Constitution Avenue ... A water quality pool has been proposed for Sand Creek Detention Basin Number 1 to trap sediment." During the inspection, the City provided photos of the detention basin in Sand Creek for on-site review by the EPA inspector. The Flying Horse Pond Filing 26 also appeared to be located in State Waters. In the development drainage report it was stated, " ... water quality features will be provided in the in-line regional	The CDPHE permit in Part I(B) states, "The permittee must develop, implement, and enforce a COPS Stormwater Management Program, in accordance with Part I.B of this permit, designed to reduce the discharge of pollutants from the MS4 to the "maximum extent practicable" (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Colorado Water Quality Control Act (25-8-101 et seq., C.R.S.) and the Colorado Discharge Permit Regulations (61). Implementation of Best Management Practices (BMPs) consistent with the provisions of the COPS Stormwater Management Program and the other requirements in this permit constitutes compliance with the standard of reducing pollutants to the MEP." The CDPHE permit in Part II (A)(8) states, "The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has reasonable likelihood of adversely affecting human health or environment." The City Drainage Criteria Manual, Volume 2 has resolution 135-02 which has codified the manual as part of City code requirements. Section 4.1 of the manual states, " ... the intent is water quality capture volume facilities be located prior to the storm water runoff being discharged to State Waters." Section 2.0 of the manual also states, " ... storm water runoff quality can have significant impacts on the receiving waters that affect not only the aquatic ecosystem, but also the quality of our communities."	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ✓ Treatment ❒ Management ❒ Monitoring ❒ Education	The City's revised Drainage Criteria Manual Volume 2 (DCM) strongly encourages offline water quality ponds to ensure that water quality is obtained before stormwater runoff reaches State Waters. Although the DCM permits the use of online water quality facilities, these facilities must be designed to capture and treat all of the site runoff as well as the runoff from the entire upstream basin using fully developed conditions. Online water quality facilities are " ... only recommended if the offsite watershed has less impervious area than that of the onsite watershed. " Furthermore, the DCM states ". .. when water quality BMPs are constructed in 'Waters of the State; they must be accompanied by upstream treatment controls and source controls. " As the City updates and revises its drainage basin planning studies (master plans for each watershed}, the focus of water quality capture volume will be to treat runoff on a sub-watershed basis, before runoff reaches waters of the state. In some cases, fees have already been collected from developers for on-line water quality ponds, and development itself has precluded any possibility of providing water quality upstream of State Waters. Jn these cases, upstream treatment controls and source controls will be mandatory to meet the requirements of the Permit
Construction Site Runoff Control Program (CS) Review Findings	Finding 4CS - The City Does Not Appear to Implement the Four-step Process Listed in its Drainage Criteria Manual. Volume 2, Which Includes Run-off Reduction Practices. Stabilizing Drainage Ways, Providing Water Quality Capture Volume and Considering the Need for Industrial and Commercial BMPs.	During the inspection, it did not appear that the City was following the four-step process as described in its Drainage Criteria Manual, Volume 2. For example, extreme channel erosion was observed downstream from the Flying Horse Pond Filing 26, along Monument Branch. The erosion was observed by inspectors south of the TCA school (see photos 17 to 2:4 of the Construction Oversight photo log). Along Monument Branch, there were limited areas of riprap and there was an area that had a destroyed erosion control blanket. In addition, water quality capture volume was not being considered and implemented on all sites. For example, the sites with the residential waivers did not account for water quality capture volume.	The City Drainage Criteria Manual, Volume 2 has resolution 135-02 which has codified the manual as part of City code requirements. Section 4.1 of the manual states, " ... This chapter contains guidance and requirements for the selection and siting of structural BMPs for new development and significant redevelopment. The guidance is provided within the context of the four-step process to be followed for new site development and significant redevelopments: Step 1 - employ runoff reduction practices, Step 2 - stabilize drainage ways, Step 3 - provide water quality capture volume, Step 4 - consider the need for industrial and commercial BMPs."	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ✓ Treatment ❒ Management ❒ Monitoring ❒ Education	The City's Four-Step Process to Minimize Adverse Impacts of Urbanization, as included in the Stormwater Management and Planning Section of the DCM, Volume 2, is intended to minimize the impacts of smaller, more frequent storm events as a tool to achieve MS4 permit requirements. Although this comment addresses overarching stormwater quality issues, and belongs in the PostConstruction/New Development/Re-development Program Review findings, the City recognizes the importance of implementing the Four-Step Process. Many adverse impacts to the drainageways within the City's MS4, however, are a result of larger storm events beyond the scope of water quality BMPs, highly erosive soils, steep terrain, and a limited overall implementation period (rvJO years) for the program. Although multiple influences contribute to the eroded status of the City's drainage system, the City acknowledges that improvements to the stormwater program are desirable to ensure MS4 permit compliance and to reflect environmental stewardship. The City strongly encourages runoff reduction practices, especially in new development areas where land is available to accommodate runoff reduction BMPs, and attempts to convince developers that minimizing directly connected impervious areas will enhance water quality. The City requires treatment of the Water Quality Capture Volume and stabilization of drainageways (Steps 2 and 3), and encourages developers to implement BMPs that provide specific removal of pollutants that might be associated with certain types of development (i.e. gas stations, car washes, and others). The City has enough re-development sites in high- and medium-density areas that have never provided water quantity or quality BMPs to make future implementation of water quantity/quality BMPs beyond practicality for those sites. Although the City cannot reasonably require re-development sites to incorporate the four-step process, the City will work with owners
Post-Construction: New Development/Re-Development Program (ND) Review Findings	Finding 1ND - Extended Detention Basin (EDB) Required Design Elements Not Being Implemented	Required design elements for extended detention basins were not being implemented as outlined in the City Drainage Criteria Manual, Volume 2. These design elements were necessary to achieve efficient pollutant removal and included a presedimentation forebay, inlet pipe, top stage, bottom stage, low flow channel and outlet with trash rack. During the inspection, a representative from the City engineering group responsible for reviewing development plans confirmed that a "good portion" of the EDBs serving the MS4 did not meet the specification criteria outlined in Volume 2. The City allowed for flexibility with the design specifications of EDBs. If elevation or limited parcel size limited the ability to implement an EDB according to specifications, the City engineering group did not require the addition of other BMPs to provide for equivalent treatment.	The CDPHE permit in Part I(B) (I)(a)(2) states, "The permittee must implement and enforce a program to address stormwater runoff from projects for which construction activities disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale that discharge into the MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts. Minimum technical requirements for required structural BMPs shall be documented and be based on those specified in the Drainage Criteria Manual Volume II or equivalent and be in accordance with good engineering, hydrologic and pollution control practices; use an ordinance or other regulatory mechanism to address post-construction runoff from projects and to implement the requirements of this section, I.B.l.a(2), to the extent allowable under State or local law; implement and document procedures to determine if the BMPs required under Item (a), above, are designed and installed in accordance with program requirements ... " City Code 7.7. 1504.A. states, " ... Erosion and storm water quality control plans shall require the design, implementation and maintenance of BMPs as set forth in the most recent version of the Drainage Criteria Manual, Volume 2: Stormwater Quality Policies, Procedures And Best Management Practices, and shall include plan elements as set forth in the manual. .. " City Code 7.7. 1505. States, "Any land disturbance by any owner, developer, builder, contractor or other person shall comply with the basic grading, erosion and storm water quality requirements and general prohibitions as listed below. In many cases, this will require the design, implementation and maintenance of BMPs as specified in the manual, even if an erosion and stormwater quality control plan is not required ... " The City Drainage Criteria Manual, Volume 2 has resolution 135-02 which has codified the manual as	❒ Training ❒ Inspection ❒ Enforcement ✓ Documenting ✓ Maintenance ✓ Treatment ❒ Management ❒ Monitoring ❒ Education	The City has begun the work necessary to compile a spreadsheet summary of the land development projects larger than 1 acre that were approved after 2009 for which the City provided or is providing oversight. The City acknowledges that components of certain water quality BMPs were waived or otherwise omitted with certain land development projects, but strives to incorporate BMPs in all development projects as a steward of our environment. Lately, the City has struggled through several reorganizations that have impacted the stormwater program, but has tried very hard to ensure that BMPs are required, designed, constructed, and properly maintained. The City will review the current practices for granting waivers and variances for BMP components, and revise to comply with permit requirements.

Post-Construction: New Development/Re-Development Program (ND) Review Findings	Finding 2ND - Repeate Violations of BMPs on New Construction Sites Have Not Been Escalated in Accordance With the Permit or Internal Enforcement Procedures in a Mannger to Achieve Compliance with Permit Requirements	Standard operating procedures titled Colorado Springs Stormwater Inspector Enforcement Guide outline necessary enforcement steps to be taken by City staff. The first page of this guide outlines the enforcement steps that should be taken when erosion and sediment control BMPs were not installed or maintained appropriately. The first step was a verbal notice reflecting the violations found during a routine inspection. The second step was a verbal notice during a follow-up inspection, which should be done approximately two business days following the routine inspection. Next, a letter of noncompliance is issued if deficiencies were not repaired after the routine and first follow-up inspections. The deficiencies were to be repaired immediately following the receipt of the noncompliance letter, with City staff returning to the site for a second follow-up inspection within approximately two business days. Subsequently, a stop work order "can be" issued when the deficiencies listed in the letter of noncompliance have not been completed. Additionally, this step explains that "if the deficiencies are not completed during the stop work order and within the timeframe allowed, a demand of the financial assurance is done so the City of Colorado Springs can complete the work." A permit revocation is issued if the developer fails to comply with the stop work order and the owner must resubmit a Grading Plan or Erosion and Stormwater Quality Control Plan. A notice and Order is issued if the City needs to collect funds to abate the violation. Finally, a municipal summons is used when the developer has failed to comply with the stop work order or notice of permit revocation and order. During inspection discussions and upon review of the enforcement database, it was evident that the City did not follow enforcement steps in a timely fashion as outlined in its own internal procedures and as required in the Permit as well as in City code. The Villa Mirage development was found to have noncompliance issues associated with inadequate silt fencing dating back to November 25, 2008. City inspectors continued to document failure to properly	The CDPHE permit in Part I(B)(I)(d)(3) states, " ... The permittee shall document and continue to implement procedures for inspection and enforcement of control measures at construction sites to the extent allowable under State and local law. The required documents shall include the following: enforcement provisions to ensure compliance with requirements as defined in CCS ordinances and rules and approved plans, and to ensure effective operation and maintenance of BMPs. Procedures must include specific processes and sanctions to minimize the occurrence of, and obtain compliance from, chronic and recalcitrant violators of control measures ... " City Code 7.7. 1508 states, " ... whenever the City Engineer has inspected or caused to be inspected any grading or land disturbance and has declared a nuisance to the public health, safety and welfare or if the City Engineer has determined noncompliance with this part, the City Engineer shall cause enforcement measures and/or other remedies to be undertaken ... " City Code 7.7. 1509 states, " ... the City Engineer shall have enforcement measures and remedies, including but not limited to those listed below, available with respect to declaring a nuisance to the public health safety and welfare or determining noncompliance of this part ... " The City Drainage Criteria Manual, Volume 2 has resolution 135-02 which has codified the manual as part of City code requirements. Section 3.5 of the manual states, " ... there are several situations where the City may determine that more aggressive action is necessary to get the site into compliance with its permit.. .Another instance that may result in more aggressive action is when the history of the contractor/owner/developer suggests that a more formal action is necessary. Problems that may warrant such action include: where the same problem is reoccurring at the site; where the site appears to be having frequent minor problems; or the individuals involved have a history of noncompliance. There are several options for formal action that are available to the City. Table CS-1	✓ Training ✓ Inspection ✓ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City acknowledges that in several instances, enforcement procedures were not followed with respect to the timelines mandated by the MS4 Permit because of staff turnove~ morale issues, and a stagnant economy. New stormwater program leadership will highlight the need to follow through with the inspection process and to ensure that the City secures adequate financial collateral in the event that BMPs need to be installed by the City because the developer is unable to do so.
Industrial Facilities (IF) Program Review Findings	Finding 1IF - Inadequate Industrial Facilities Program Plan Implementation	During the inspection one of seven facilities, visited by Jeff Besse, Stormwater Specialist in the Department of Public Works Engineering, and an EPA inspector to evaluate the City's Industrial/Commercial education and outreach, was not aware of the City's auto repair program. The EPA inspector visited the following facilities to gauge the City's outreach: • AutoTech Plaza (409 W. Filmore) • Advanced Auto Parts (2930 W. Filmore) • O'Reiley Auto Parts (433 E. Filmore) • Jiffy Lube (3003 N. Nevada) • Jiffy Lube (201 S. Nevada) • Goodyear Tire and Service (125 S. Nevada) • O'Reiley Auto Parts (141 E. Old Broadmoor Road) Only the Goodyear Tire and Service's manager was unaware of the City's program. The manager also seemed unaware of the requirements to protect stormwater related to how to respond to major spills at the site. Mr. Besse explained the requirements and provided the manager with a copy of the City's commercial oil outreach material	Part 1.B.1 of the Permit effective 11/01/11 - 10/31/16 states, "The permittee shall continue to implement a program to promote proper management of industrial sites regarding stormwater quality and industrial best management practices. The program shall provide education and outreach on pollutants in stormwater discharges to municipal systems from industrial facilities that the permittee determines are contributing or have the potential to contribute a substantial pollutant loading to the municipal storm sewer system." In the City's Industrial Facilities Program document, dated August 26, 2005, it states that the City is targeting "Industrial and commercial businesses in CCS" for education and outreach. The program document states that the City will conduct a mailing to the following industrial facilities once per permit term: concrete, auto repair, and carpet cleaners.	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ✓ Education	Currently, the Corrective Action to the City reads: Implement the approved "Industrial Facilities Program" plan for industrial facility education/outreach activities to auto repair facilities as outlined in the City's current plan. Provide the EPA and the CDPHE with a summary, including a timeline, of how the City intends to comply with its current plan, or revise it After further email correspondence with David Gwisdalla of the EPA, it was determined that the mentioned ''auto repair facilities" should be changed to "carpet cleaner industries. " The City intends to comply with the MS4 Permit and will mail out and distribute brochures for the carpet cleaning industry.
Industrial Facilities (IF) Program Review Findings	Finding 2IF - Recommendation for Industrial Facilities Program Implementation	During the inspection, Mr. Besse stated that rather than being sent to the carpet cleaning facilities directly, carpet cleaning facilities were provided information as needed, which was primarily when a company had an issue with IDDE. This was due to the frequency in which the carpet cleaning facilities change owners/operators.	Part I.B.1 of the Permit effective 11/01/11 - 10/31/16 states, "The permittee shall continue to implement a program to promote proper management of industrial sites regarding stormwater quality and industrial best management practices. The program shall provide education and outreach on pollutants in stormwater discharges to municipal systems from industrial facilities that the permittee determines are contributing or have the potential to contribute a substantial pollutant loading to the municipal storm sewer system." In the City's Industrial Facilities Program document, dated August 26, 2005, the City is targeting education and outreach towards "Industrial and commercial businesses in CCS." The program document states that the City will conduct a mailing to the following industrial facilities: concrete, auto repair, and carpet cleaners once per permit term.	❒ Training ❒ Inspection ❒ Enforcement ❒ Documenting ❒ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ✓ Education	The City will create an outreach brochure specifically for the carpet cleaning industry. Brochures will be distributed annually to carpet cleaners in the City. Each year, all carpet cleaners in the City will be contacted to confirm that they are still In business. Brochures will then be distributed accordingly.
Pollution Prevention (PP)/Good Housekeeping for Municipal Operations Program Review Findings	Finding 1PP - Update Municipal Facilities Runoff Control Plan (MFRCP)	The City maintained a MFRCP for each municipal facility. During the inspection, the EPA reviewed 11 of the 42 facilities with an emphasis on evaluating the implementation of the MFRCP based upon department ownership, complexity of the site and proximity to surface water. The photographs provided for this finding can be found in the C. Springs MS4 P2 Photo Log (COS00004). The EPA reviewed the following sites: Parks and Recreation. Patty Jewett Golf Course Maintenance Facility (1150 E. Caramillo Ave.) During the inspection of the Patty Jewett Golf Course Maintenance Facility, the site and its relevant best management practices (BMPs) appeared to be installed and well maintained. The only issue noted was that the floor dry used to cleanup spilled fuel at the site was normally stored in a red container adjacent to the fueling area (photo 663); this container was empty during the inspection. According to site staff, during the winter, the facility stored the floor dry in a separate container indoors to prevent it from freezing. No other concerns were noted with the facility in relation to the site's implementation of the MFRCP. Streets, Briargate Service Center (2385 Briargate Blvd.) The site appeared to have been recently maintained (photo 664) and was overall in good condition. The site had minor staining under equipment parking areas. Discharge point number six (DP6) had a permanent BMP installed (a large grate inlet) with hay bale protection to reduce sediment from going into the inlet (photo 665). At DP6, below the outlet, rock and soil staining from what appeared to be salt was evident (photo 666). No other concerns were noted with the facility in relation to the site's implementation of the MFRCP. CSU, Pinkerton Service Center (7710 Durant Dr.) The site was in good condition in relation to its MFRCP. Three items related to material storage,	Part I.B.l.e.2.a of the Permit effective 11/01/11-10/31/16 states, "The permittee shall continue to document and implement Municipal Facility Runoff Control Plans (MFRCPs) for the following permittee-owned and/or operated facilities that do not have independent CDPS Stormwater permits. New MFRCPs shall be developed for any new qualifying facilities. Facilities may be grouped together by type, and one MFRCP may be developed for each group. i) vehicle maintenance facilities (maintenance includes equipment rehabilitation, mechanical repairs, painting, fueling and lubrication); ii) asphalt and concrete batch plants which are not already individually permitted; iii) solid-waste transfer stations; iv) exposed stockpiles of materials, including stockpiles of road deicing salt, salt and sand, sand, rotomill material." Part I.B.l.e.2.c.iii of the Permit effective 11/01/11-10/31/16 requires the MFRCP to include a "Description of the potential pollutant sources include an evaluation of that potential ... " for each site. Part I.C 3.a of the Permit effective 11/01/11-10/31/16 requires that "The approved Programs shall not be modified by the permittee without the prior approval of the Division."	✓ Training ❒ Inspection ❒ Enforcement ✓ Documenting ✓ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The Parks and Recreation Central Mechanics Facility MFRCP has been updated (Attachment 1) to include connectivity between inlets and outfalls, to show the sewer discharge of the site '.s" equipment washwater system, and to reference the concrete storage. A map and site plan is included (Attachment 2). The City will submit the revised MFRCP to CDPHE for review and approval by the end of July, 2013. In addition, the requested photos for CSU, Pinkerton Service Center are included to address the following findings: 1. Trans Guard Hydraulic Tract Fluid canister was moved to the transformer storage area on February 5, 2013, and was then removed from the site and properly disposed of. On February 6, 2013 the stained soil was dug out and disposed of properly. 2. Spill was covered with floor dry. After the petroleum was absorbed by the floor dry, used absorbent was swept up and disposed of properly. 3. The spill kit dry absorbent containers were filled on February 6, 2013. Also included is a copy of the finalized inspection report for the Reet Management's inspection of the Fontanero Service Center on February 6, 2013 which was performed with the EPA inspector (Attachment 3). Finally, the sedimentation pond at the Police Impound Lot was cleaned out recently and will be inspected annually and dredged when necessary (Attachment 4). The City will review the SOP for the Briargate Service Center for specific means of reducing salt discharge from site activities.

Pollution Prevention (PP)/Good Housekeeping for Municipal Operations Program Review Findings	Finding: 2PP - Inadequate Operations and Maintenance Procedures	The City did not implement the operations and maintenance procedures developed in compliance with the MS4 permit at facilities with an existing industrial stormwater permit. The City staff stated that an industrial stormwater permit for a facility covered the entire facility. Therefore, the MS4 program's operations and maintenance procedures were not required to cover them. This is contrary to the scope of the industrial stormwater general permit. The industrial stormwater permits are designed to regulate only industrial activities and do not permit other operations and maintenance (O&M) related activities conducted by the City staff if they are not covered as a regulated industrial activity. The City maintains the following NPDES related industrial stormwater permits: •Colorado Springs Airport (COR341602), 7770 Milton E. Proby Pkwy, Suite 50, Sand and Gravel Permit Stormwater Permit •Sand Creek Recycling Center (COR341241), 3890 Colorado State Hwy 85-87 South, Sand and Gravel Permit Stormwater Permit • Las Vegas Street WWfF (COR090069), 703 E. Las Vegas St., Stormwater Industrial Permit • Drake Power Plant (COR090551), 700 S. Conejos St., Stormwater Industrial Permit • Birdsall Power Plant (COR090552), 213 Nichols Blvd., Stormwater Industrial Permit •Transit Maintenance & Storage Facility (COR009016), 1145 Transit Dr., Stormwater Industrial Permit • Colorado Springs Airport (COR900730), 7770 Milton E. Proby Pkwy., Suite 50, Stormwater Industrial Permit As an example, the City of Colorado Springs Airport's 2012 stormwater certification statement for its general permit coverage under the Stormwater Discharges Associated with Industrial Activities (Colorado Permit Number: COR900000) described the activities covered by the industrial permit. The certification statement dated June 27, 2012, for the industrial activities under standard industry	Part I.B.I.e.1 of the Permit effective 11/01/11-10/31/16 states, "The program must include a list of facilities the permittee owns or operates that are subject to separate coverage under COPS permits for discharges of stormwater associated with industrial activity. The requirements of subsection (2) and (3), below, do not apply to stormwater discharges authorized by these separate permits." The CDPS Permit No. COR900000, Part I.A.I.a.i, allowable discharges states, "Stormwater discharges associated with industrial activity for any primary industrial activities and co-located industrial activities, as defined in Appendix C (Definitions and Abbreviations) and identified in Appendix A (Facilities and Activities covered) ... " The CDPS Permit No. COR900000, Appendix C, for Stormwater Discharges Associated with Industrial Activity states, " ... the discharge from any conveyance that is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. Except for the provision of 61.3(2)(c) that addresses construction activities associated with oil and gas operations or facilities, the term does not include discharges from facilities or activities excluded from the NPDES program under 40 CFR Part 122 or the COPS program under Regulation No. 61. For the categories of industries identified in this permit, the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. See 5 CCR 1002-61.3(2)(e)."	✓ Training ❒ Inspection ❒ Enforcement ❒ Documenting ✓ Maintenance ❒ Treatment ❒ Management ❒ Monitoring ❒ Education	The City recognizes that certain stormwater management activities are not specifically addressed by the industrial stormwater permits issued to the industrial sites referenced in the Audit Report Discharges from the City's permitted industrial facilities are covered by various stormwater discharge permits/ and each permitted facility has a site-specific Stormwater Management Plan (SWMP) that includes descriptions of practice-based and structural control measures intended to reduce all identified potential pollutants from the site. The City has created and implemented site specific Operation and Maintenance Standard Operating Procedures (SOPs) to address the non-industrial operations at each industrial site. City and Colorado Springs Utilities staff are responsible for implementation of the site specific SOPs for non-industrial activities. The Airport will reference the City MS4 O&M SOP that apply to any non-industrial activities on the Airport including street sweeping/ municipal parking lo~ large outdoor festivals and events and snow storage. Specific procedures identified in the aforementioned SOPs will be added to the Airport SWMP control measures if applicable to Airport non-industrial activities. Finally, after further evaluation of the Las Vegas Street WWTF, we have determined that the East Storage Yard is not an industrial activity directly related to the Las Vegas Street WWTF or defined in Section T of COR900000. Although this portion of the site has developed O&M SOP~ the appropriate method of permitting for this activity would be through the City's MFRCP program. Colorado Springs Utilities is actively permitting this area with the City, and will subsequently remove this area's outfall from the CDPS Permit Certification.

APPENDIX B – POTENTIAL RESOURCING NEEDS (STAFFING AND MATERIALS/EQUIPMENT) NOTES

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MS4 Program - Gap Analysis
Findings and Responses – Potential Resourcing Needs
Date: 9/28/2015

Purpose
The purpose for these notes is the following:
- Identify Programs in which findings were reported
- Identify actions required to implement the program (based on findings)
- Serve as back-up information for budgeting development

1. Program Management
- **Program Level Coordination (Finding 1PM)**
  - **Action Categories**
    - **Managing**
      - Staffing Resources: Stormwater Lead for Municipal and Industrial, Stormwater Lead for Development, Grading, and Erosion Control, regular MS4 Program meetings (monthly), regular management briefings (monthly)
      - Materials/Equipment: None

2. Commercial/Residential Management Program
- **Permanent BMPs on NDR (Finding 1ND)**
  - **Action Categories**
    - **Documenting**
      - Staffing Resources: Track permanent BMPs on private property and in State Waters, track inspections, IT personnel
      - Materials/Equipment: File Storage (cloud or server, hardcopies)
    - **Maintaining**
      - Staffing Resources: perform inspections (routine and follow-up), perform enforcement measures
      - Materials/Equipment: cleaning equipment, disposal, vehicle/gas for travel
    - **Treating**
      - Staffing Resources: review new Drainage Manual and update design standards as necessary, educate regulated community
      - Materials/Equipment: education materials
- **EDB Design Elements not Implemented (Finding 2ND)**
  - **Action Categories**
    - **Training**
      - Staffing Resources: Develop training procedures and materials for inspection and enforcement process, train trainers, set-up training sessions
      - Materials/Equipment: Training materials and annual updates, File Storage (cloud or server, hardcopies)

        - **Inspecting**
            - Staffing Resources: Perform inspections and follow-up
            - Materials/Equipment: vehicle/gas travel, File Storage (cloud or server, hardcopies)
        - **Enforcing**
            - Staffing Resources: brief management on enforcement requirements, procedures on enforcement measures (stop work, City to perform, etc).
            - Materials/Equipment: vehicle/gas travel, File Storage (cloud or server, hardcopies)

3. Illicit Discharge & Detection Elimination Program

- **Lack of Training (Finding 1ID)**
    - **Action Categories**
        - **Training**
            - Staffing Resources: Develop training procedures, Develop training materials, train trainers, set-up training sessions, coordinate with other stakeholders, departments, and regulated community
            - Materials/Equipment: Training materials and annual updates, venue, vehicle/gas travel, File Storage (cloud or server, hardcopies)
        - **Documenting**
            - Staffing Resources: track initial and annual training sessions, report annually
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
- **Discharge Record Keeping (Finding 2ID)**
    - **Action Categories**
        - **Documenting**
            - Staffing Resources: track discharges (actually and non-IDDE), report annually
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
- **Database Training (Finding 3ID)**
    - **Action Categories**
        - **Training**
            - Staffing Resources: Develop database training procedures, Develop training materials, train trainers
            - Materials/Equipment: Training materials and annual updates, File Storage (cloud or server, hardcopies)
- **Code Updates (Finding 4ID)**
    - **Action Categories**
        - **Managing**
            - Staffing Resources: Review IDDE codes annually and confirm changes with CDPHE
            - Materials/Equipment: None

- **Illicit Discharge Mitigation Procedures (Finding 5ID)**
    - **Action Categories**
        - **Training**
            - Staffing Resources: Develop procedures (timeline and sequence)Develop training procedures, Develop training materials, train trainers, set-up training sessions, coordinate with other stakeholders, departments, and regulated community
            - Materials/Equipment: Materials for procedures, training materials and annual updates, venue, vehicle/gas travel, File Storage (cloud or server, hardcopies)
        - **Enforcing**
            - Staffing Resources: brief management and update codes/ordinances as necessary
            - Materials/Equipment: File Storage (cloud or server, hardcopies)

4. Industrial Facilities Program

- **Inadequate Industrial Facilities Plan Implementation (Finding 1IF)**
    - **Action Categories**
        - **Educating**
            - This was a misinterpretation during the audit.
- **Recommendation for Industrial Facilities Plan Implementation (Finding 2IF)**
    - **Action Categories**
        - **Educating**
            - Staffing Resources: Develop outreach materials, contact regulated community, maintain records
            - Materials/Equipment: Develop, review and update materials, mailers, vehicle/gas travel, File Storage (cloud or server, hardcopies)

5. Construction Site Program

- **Water Quality Control Measures (Finding 1CS)**
    - **Action Categories**
        - **Treating**
            - Staffing Resources: review and update design standards, educate regulated community, brief management on no waivers
            - Materials/Equipment: education materials, infrastructure, vehicle/gas for travel
- **Maintenance of Water Quality Control Measures (Finding 2CS)**
    - **Action Categories**
        - **Maintaining**
            - Staffing Resources: perform inspections (routine and follow-up), perform enforcement measures
            - Materials/Equipment: cleaning equipment, disposal, vehicle/gas for travel

        - **Enforcing**
            - Staffing Resources: brief management and update codes/ordinances as necessary
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
        - **Documenting**
            - Staffing Resources: database tracking of new WQCMs (phases – construction, completion, maintaining), report annually
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
- **Water Quality Control Measures in State Waters (Finding 3CS)**
    - **Action Categories**
        - **Treating**
            - Staffing Resources: new WQCM plan reviews, installations
            - Materials/Equipment: infrastructure
- **Water Quality Control Measures 4-step Process (Finding 4CS)**
    - **Action Categories**
        - **Treating**
            - Staffing Resources: WQCM plan reviews for the 4-step process
            - Materials/Equipment: infrastructure

6. Pollution Prevention for Municipal Operations Program

- **Update MFRCP (Finding 1PP)**
    - **Action Categories**
        - **Training**
            - Staffing Resources: Develop training procedures and materials for storing documentation and maintenance materials, train trainers, set-up training sessions (initial and refresher)
            - Materials/Equipment: Training materials and annual updates, File Storage (cloud or server, hardcopies)
        - **Documenting**
            - Staffing Resources: track initial and annual training sessions, track and monitor MFRCP compliance (QA/QC), report annually
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
        - **Maintaining**
            - Staffing Resources: perform internal inspections (routine and follow-up), provide training materials to staff, update MFRCPs as necessary
            - Materials/Equipment: vehicle/gas for travel
- **Inadequate Operations and Maintenance Procedures (Finding 2PP)**
    - **Action Categories**
        - **Training**
            - Staffing Resources: Develop training procedures and materials for stormwater pollution prevention for Maintenance Facilities, train trainers, set-up training sessions (initial and refresher)
            - Materials/Equipment: Training materials and annual updates, File Storage (cloud or server, hardcopies)

        - **Maintaining**
            - Staffing Resources: perform internal inspections (routine and follow-up), provide training materials to staff, update O&Ms as necessary
            - Materials/Equipment: vehicle/gas for travel

Monitoring Program

- **Sampling/Analysis Records (Finding 1MN)**
    - **Action Categories**
        - **Documenting**
            - Staffing Resources: Develop and periodically review procedures, review sampling and analysis reports, IT personnel
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
- **CFR and Data Review (Finding 2MN)**
    - **Action Categories**
        - **Monitoring**
            - Staffing Resources: review sampling and monitoring plan, review sampling and analysis (QC of field procedures), IT personnel
            - Materials/Equipment: File Storage (cloud or server, hardcopies), vehicle/gas for travel
- **Incomplete Data and Reporting (Finding 3MN)**
    - **Action Categories**
        - **Monitoring**
            - Staffing Resources: review sampling and analysis, IT personnel
            - Materials/Equipment: File Storage (cloud or server, hardcopies)
- **Monitoring Program Modifications (Finding 4MN)**
    - **Action Categories**
        - **Monitoring**
            - Staffing Resources: review program requirements.
            - Materials/Equipment: File Storage (cloud or server, hardcopies)

APPENDIX C – COMPARISON TO OTHER MS4 PROGRAMS

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MWH

BUILDING A BETTER WORLD

MEMORANDUM

Colorado Springs Stormwater Program
Memorandum

To: Jeff Besse

CC: John Buttz, Jeff Schulz, Mark Pifher

Date: October 13, 2015

From: Chip Paulson

Reviewed by: Angie MacKinnon

Subject: Information on Stormwater Programs in other Similar Cities

INTRODUCTION

This memorandum provides a summary of the comparative stormwater program research performed by MWH to assist Colorado Springs in planning improvements to its stormwater program. The research involved comparing budget and staffing data for municipal separate stormwater sewer system (MS4) programs and drainage and stormwater programs of cities that are similar to Colorado Springs in terms of size, geography, and stormwater functions.

Information was gathered from three sources:

- A previous report on regional stormwater program organization options prepared by Summit Economics
- Internet research
- Contacts with municipal entity staff

It is noted that comparison of budget and staffing data for different communities can provide only approximate information for comparative purposes. Many factors affect the need for MS4 program resources, including how a utility is organized, the efficiency of inter-departmental coordination, amount of new development, number of industrial sites, and others. Higher budgets do not guarantee more effective programs. However, this information should still be useful when evaluating the current Colorado Springs MS4 program.

BUDGET COMPARISONS

Summary of Previous Comparative Information for Colorado Communities from Summit Economics Report

Summit Economics prepared a report summarizing regional stormwater institutional challenges and possible solutions for Fountain Creek Watershed Flood Control and Greenway District, Colorado Springs Utilities, El Paso County, and Pikes Peak Regional Water Authority (Summit Economics, 2012). This report included data comparing budgets for stormwater programs in other Colorado cities.

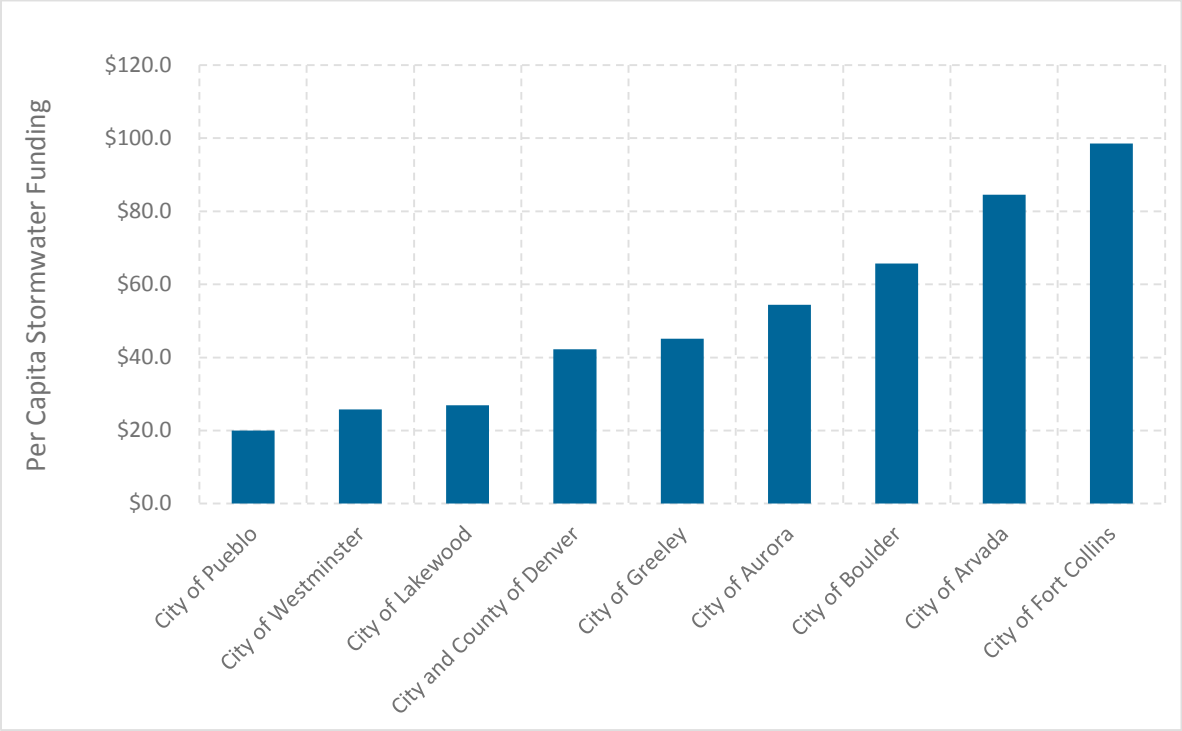
Table 1 shows a summary of annual stormwater management funding levels associated with various Front Range municipalities that were evaluated as a part of the Summit Economics study. All of the cities have to comply with either Phase 1 or Phase 2 MS4 program requirements. Data in this table includes total funding for capital projects and non-capital activities such as O&M and MS4 programs allocated by the municipalities. In the case of municipalities located within the jurisdiction of Denver Urban Drainage and Flood Control District (UDFCD), the values in the table do not include any UDFCD spending on O&M or capital projects in those areas.

The typical range of per capita annual stormwater program funding is $25/yr to $80/yr, with a mid-range per capita value of about $45/yr. The variation in stormwater program spending is large across the communities evaluated, and reflects many different factors including community priorities, age of infrastructure, amount of city already developed, and local economic vitality. Figure 1 provides a graphical representation of total annual per capita stormwater funding commitments for Colorado municipalities that were evaluated as a part of the Summit Economics study.

TABLE 1. PER CAPITA STORMWATER MANAGEMENT FUNDING FOR AGENCIES IN COLORADO

Agency	2010 Population	Total Annual Funding	Annual Funding Per Capita
City and County of Denver	605,722	$25,568,800	$42.21
City of Aurora	327,020	$17,800,000	$54.43
City of Fort Collins	144,417	$14,229,352	$98.53
City of Lakewood	143,208	$3,850,024	$26.88
City of Pueblo	106,739	$2,755,000	$25.81
City of Arvada	106,643	$9,016,908	$84.55
City of Westminster	106,459	$2,128,000	$19.99
City of Boulder	97,948	$6,435,755	$65.71
City of Greeley	93,287	$4,211,679	$45.15
Average funding per capita			*$51.47*
Median funding per capita			*$45.15*

Source: Summit Economics, 2012
Total Annual Funding values adjusted to remove contributions from UDFCD



Source: Summit Economics, 2012

FIGURE 1. TOTAL PER CAPITA STORMWATER PROGRAM FUNDING COMMITMENTS FOR COLORADO MUNICIPALITIES

Colorado Springs Stormwater Enterprise Funding

The City of Colorado Springs' former Stormwater Enterprise (SWENT) generated annual funding of $36.11 per capita in its last year of operation in 2009. The per capita number is lower than the average funding generated by other stormwater agencies located in the Front Range urban corridor and Colorado in general, as noted in the Summit Economics report. Table 2 compares SWENT funding with these two groups of stormwater agencies.

TABLE 2. COMPARISON OF ANNUAL PER CAPITA SWENT FUNDING TO OTHER COLORADO STORMWATER AGENCIES

Entity	Average Annual Funding per Capita
Colorado Springs Stormwater Enterprise 2009	$36.11
Front Range Stormwater Agencies	$51.47
Colorado Stormwater Agencies	$52.17

Source: Summit Economics, 2012

Current Analysis of Other Stormwater Programs

MWH researched the current staffing and budget commitments of stormwater entities similar to Colorado Springs in EPA Region 8. This was done to validate and expand upon the research presented in the Summit Economics report, and to document the percentage of capital vs non-

capital expenditures in typical municipal budgets for drainage and stormwater functions. The following agencies were selected for the research:

- City of Aurora
- City and County of Denver
- City of Fort Collins
- City of Greeley
- City of Lakewood
- City of Pueblo
- Salt Lake City
- Southeast Metro Stormwater Authority (SEMSWA)
- Denver Urban Drainage Flood Control District (UDFCD)
- City of Westminster.

Most of these agencies were also included in the Summit Economics study from 2012. UDFCD was included in the research because it covers all the Denver metro area entities – Denver, Aurora, Lakewood, etc. - and supplements their drainage budgets by performing some of the planning and capital improvement project tasks at a regional level. However, it is noted that UDFCD does not have responsibility for other MS4 program functions such as street sweeping, public outreach, development review, and industrial inspections. SEMSWA provides stormwater management services for drainage and flood control functions including the MS4 program within the City of Centennial and small portions of Arapahoe and Douglas counties.

Table 3 shows the total stormwater drainage program budgets for the agencies analyzed by MWH for this evaluation along with their CIP and Non-CIP expenditure portions. The Non-CIP stormwater related activities include drainage O&M, planning, MS4 inspections, BMP programs, enforcement, and engineering & administration. The costs included in this category vary from entity to entity. In most cases this value was derived by subtracting the stormwater CIP funding value from the total stormwater program funding value.

All the selected agencies track their stormwater related budgets in different ways, and budgets include expenses from stormwater related programs in different departments. Most of the agencies have a majority of their stormwater staff working in departments other than a dedicated stormwater department, such as the water department, public works department, parks, recreation & open space department, fire department, etc. This makes it difficult to identify programs that specifically relate to compliance with the MS4 permits and their corresponding costs. The variability in documentation between entities and the uncertainty whether all costs have been captured makes the comparison between different agencies challenging and the results of the analysis imprecise.

The data for per capita stormwater program costs collected by MWH validates the data in the Summit Economics report. Most stormwater program budgets fall within the $30.00 to $60.00 per capita range, with an average of about $50.00 per capita. Figure 2 provides a graphical representation of total annual per capita stormwater funding commitments for the agencies that were analyzed by MWH as a part of this study. Note that UDFCD is different from the other stormwater agencies for the reasons given previously.

TABLE 3. STORMWATER PROGRAM BUDGETS FOR SELECTED EPA REGION 8 STORMWATER AGENCIES

Agency	Capital Improvement Projects Budget	Non-CIP Stormwater Related Activities Budget	Total Stormwater Drainage Program Budget	% CIP Budget	% Non-CIP Budget	Year	Population	Stormwater Drainage Program Budget per Capita	Reference
City and County of Denver	$5,750,000	$32,362,900	$38,112,900	15	85	2014	663,862	$57.41	Mayor's 2014 Budget
City of Aurora	*	*	$19,547,104	*	*	2011	332,593	$58.77	Summit Economics Report, 2012.
Southeast Metro Stormwater Authority	$3,250,000	$4,661,303	$7,911,303	41	59	2015	140,000	$56.51	Annual Budget, 2015.
Urban Drainage Flood Control District	$10,590,333	$10,259,688	$20,850,021	51	49	2013	2,300,000	$9.07	2013 Budget Adoption Five Year CIP- 2010-2014
City of Fort Collins	$5,865,249	$11,082,804	$16,948,053	35	65	2015	158,600	$106.86	Biennial Budget, 2015-2016.
Salt Lake City	$4,894,000	$6,517,270	$11,411,270	43	57	2015	190,884	$59.78	Mayor's Recommended Budget. 2014-2015.
Lakewood	$1,296,000	$1,819,000	$3,115,000	42	58	2014	147,214	$21.16	Stormwater Management Utility. 2014 Annual Report.
City of Pueblo	$563,833	$2,756,167	$3,320,000	17	83	2014	108,249	$30.67	2014 Annual Budget
Westminster	$2,602,000	$806,000	$3,408,000	76	24	2015	110,945	$30.72	Proposed 2015/2016 Biennial Budget.
City of Greeley	$2,200,000	$2,014,429	$4,214,429	52	48	2014	98,596	$42.74	Biennial Budget 2013-2014
Average funding per capita – with/without UDFCD								$47.37 / $51.62	

Median funding per capita – with/without UDFCD	$50.00 / $56.51	

**information not available*

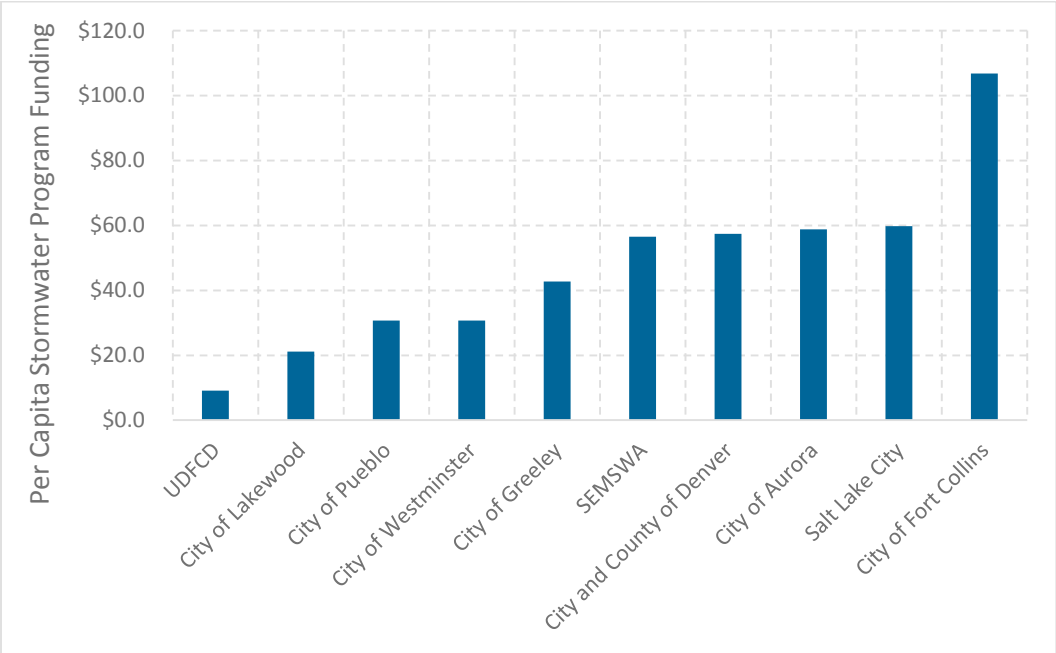
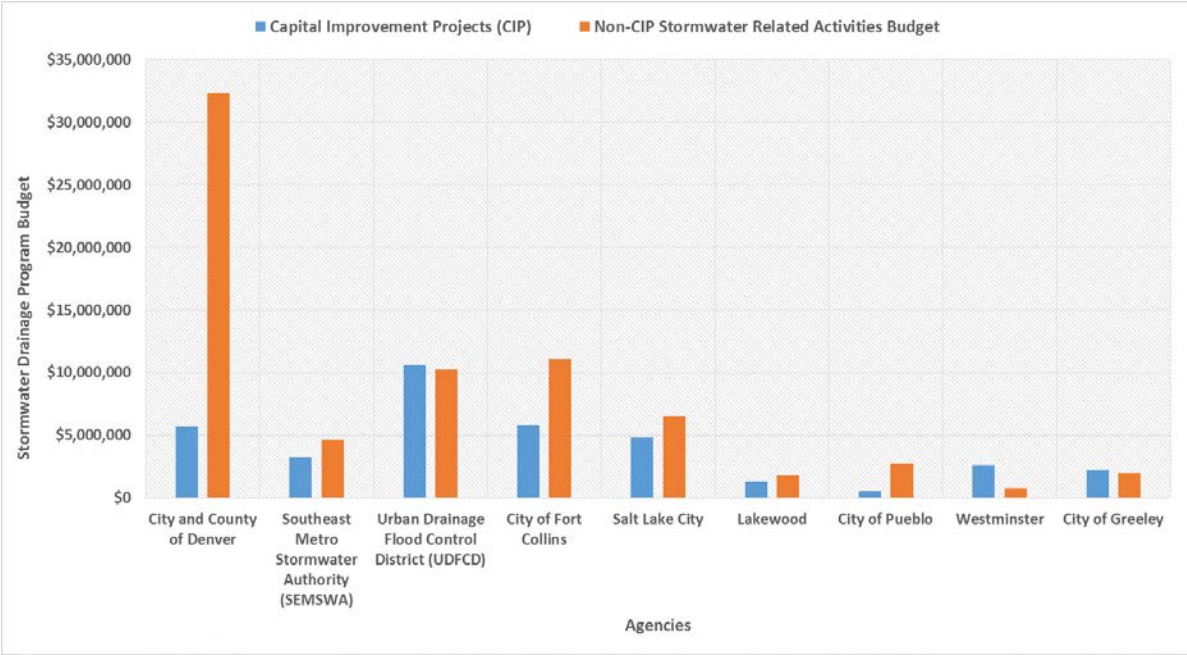


FIGURE 2. PER CAPITA TOTAL STORMWATER PROGRAM FUNDING FOR SELECTED EPA REGION 8 AGENCIES

The agencies with available data for distribution of their stormwater drainage program budget between CIP and Non-CIP stormwater related activities were identified and their budget values were used to create Figure 3. The Non-CIP portion of the stormwater drainage program budget is higher than the CIP budget for most of the agencies, but there is a very wide range in the data. The CIP and Non-CIP stormwater activities related budgets for selected agencies that exhibit a typical range of distribution of total stormwater budget between the two categories is shown in Table 4. Using this data to derive a typical CIP/Non-CIP budget distribution gives a range from about 40%/60% to about 70%/30%.



Note: City of Aurora is not shown in the plot as the CIP and the non CIP distribution of the budget for the agency is not available.

FIGURE 3. DISTRIBUTION OF TOTAL STORMWATER DRAINAGE PROGRAM BUDGET BETWEEN CIP AND NON-CIP STORMWATER RELATED ACTIVITIES FOR SELECTED AGENCIES

TABLE 4. RANGE OF PERCENT DISTRIBUTIONS OF TOTAL STORMWATER DRAINAGE PROGRAM BUDGET BETWEEN CAPITAL IMPROVEMENT PROJECTS AND MS4 AND OTHER PROGRAMS FOR SELECTED CITIES

Agency	Capital Improvements Portion (%)	Non-CIP Stormwater Related Activities (%)
City of Fort Collins	35%	65%
Salt Lake City	42%	58%
UDFCD	50%	50%
City of Westminster	76%	24%

Estimate of Colorado Springs Stormwater Program Budget Based on Comparison with Other Communities

Total stormwater budgets for various agencies evaluated in the past study by Summit Economics and included in this research were used to derive representative budget metrics useful for comparison with stormwater program budget options being considered for Colorado Springs. Per capita values for different metrics were applied to the 2014 Colorado Springs population of 445,830 (U.S. Census Bureau) to estimate the associated total stormwater program budget. Results are shown in Table 5. In this table “Low End of Typical Range” refers to a rounded value near the lower end (but not the minimum) of the per capita spending range

of all the entities evaluated. “High End of Typical Range” refers to a rounded value near the upper end (but not the maximum) of the per capita spending range of all the entities evaluated. “Average” is a rounded approximation of the average per capita spending of all the entities evaluated.

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TABLE 5. RANGE OF TOTAL STORMWATER PROGRAM BUDGETS FOR COLORADO SPRINGS

Range	Per Capita Cost	Total Stormwater Program Budget
Low End of Typical Range	$30.00	$13.4 million
Average	$50.00	$22.3 million
High End of Typical Range	$80.00	$35.7 million
2009 SWENT	$36.11	$16.1 million

The typical range of the distribution of total stormwater program budgets between CIP and Non-CIP activities was used to estimate a potential range of CIP and Non-CIP budgets for the Colorado Springs stormwater program. Table 6 shows a possible range for the Colorado Springs total stormwater drainage program budget and the range of CIP and Non-CIP portions of the budget. Figure 4 is a graphical representation of the range of possible distributions between CIP and Non-CIP stormwater budgets for Colorado Springs.

TABLE 6. RANGE OF TOTAL STORMWATER DRAINAGE PROGRAM BUDGET AND ITS DISTRIBUTION BETWEEN CIP AND NON-CIP PORTIONS FOR COLORADO SPRINGS

Range	Total Stormwater Program Budget (million)	CIP Portion of Budget (million)		Non-CIP Portion of Budget (million)	
		40/60 Split	**70/30 Split**	**40/60 Split**	**70/30 Split**
Low End of Typical Range	$13.4	$5.3	$9.4	$8.0	$4.0
Average	$22.3	$8.9	$15.6	$13.4	$6.7
High End of Typical Range	$35.7	$14.3	$25.0	$21.4	$10.7
		50/50 Split		**50/50 Split**	
2009 SWENT	$16.1	$8.0		$8.0	

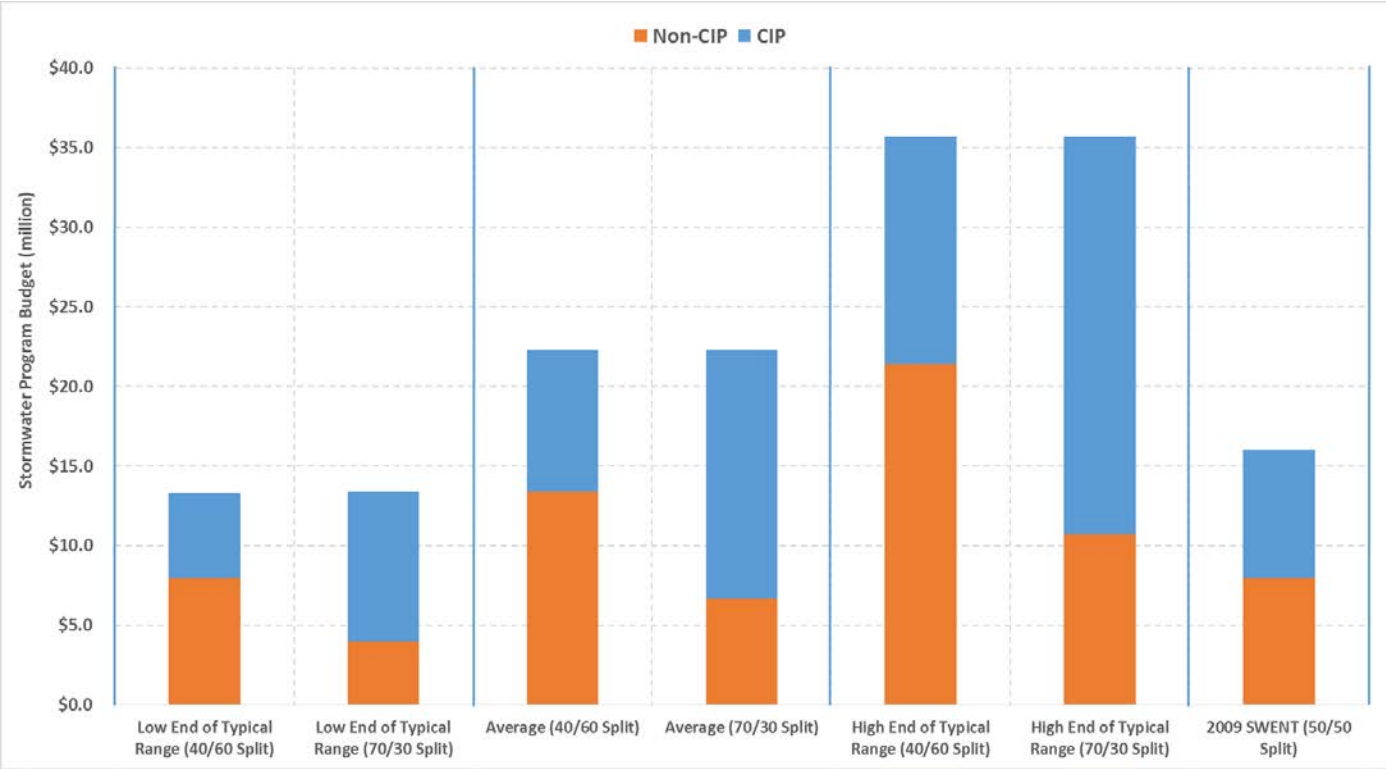

FIGURE 4. RANGE OF TOTAL STORMWATER DRAINAGE PROGRAM BUDGET AND ITS DISTRIBUTION BETWEEN CIP AND NON-CIP PORTIONS FOR COLORADO SPRINGS

STAFFING COMPARISON

The Summit Economics report does not include information on staffing levels at the agencies researched for that study. MWH gathered that information where available for the agencies researched for this analysis. Information on the number of full-time equivalents (FTEs) employed by stormwater utilities for various purposes, including the management, operations, engineering and maintenance of their stormwater programs, was only available for a few agencies. Table 7 shows the FTE numbers for the stormwater agencies in their most current available budget and staffing related publications. Note that the data for UDFCD is not typical of other municipal entities because they do not perform an inspection, enforcement or O&M functions, and complete capital projects using a small staff managing numerous consultant contracts for design and construction.

TABLE 7. FULL-TIME EQUIVALENTS IN STORMWATER PROGRAMS

Agency	Full Time Equivalents	FTEs per 100,000 people
Urban Drainage Flood Control District (UDFCD)	23	1.0
City of Fort Collins	23	14.5
Salt Lake City	28	14.7

City of Pueblo	20	18.5
City of Greeley	21	21.5

Using a typical value of 15 FTEs per 100,000 people as a benchmark, the Colorado Springs program could require about 60-70 FTEs including all MS4, design, construction, O&M, and administration functions.

The SWENT had a dedicated full-time staff of 30 people. However, this was supplemented by numerous staff in other departments that were responsible for stormwater related activities. For example, street sweeping staff and equipment were in the Streets Department, and development reviews to assure proper implementation of construction and post-construction BMPs were performed by the Engineering and Development Review Department.

SUMMARY

There is a wide range of stormwater program budgets and staffing levels currently being employed by Colorado municipalities to meet the needs of MS4 programs, O&M programs, and capital improvement programs. Despite the variability in program costs and levels of effort, this data was used to develop comparative ranges of budgets and staffing levels to be considered when evaluating improvements to the Colorado Springs stormwater program. Findings are summarized as follows:

- The typical range of per capita annual stormwater program funding for agencies in Colorado is $30/yr to $80/yr, with a mid-range value of about $50/yr. When applied to current Colorado Springs population this suggests a possible total stormwater program budget in the range of $13 million to $36 million per year, with an average value of $22 million.
- Non-CIP related stormwater activities typically comprise about 30% to 60% of total stormwater program budgets for agencies in Colorado. For Colorado Springs this suggests a non-CIP budget of $4 million to $21 million.
- Based on comparison with other municipalities, the total commitment of staff resources to the stormwater program could be on the order of 60 – 70 FTEs, including staff performing planning, design, construction management, O&M, street sweeping, outreach, and all MS4 program functions. Many of these staff may not be in a stormwater group but could be in other City departments.
- If SWENT is used as a basis for Colorado Springs stormwater program improvements, the total stormwater program budget would be about $16 million, the non-CIP budget would be about $8 million, and the staffing level would be about 30 FTEs in a stormwater group plus staff assigned to other city departments.

Because of the wide range of data presented in this comparative analysis, these findings should be used only as rough approximations of the budget and staffing needs for the Colorado Springs stormwater program. Many factors affect the need for MS4 program resources, including how a utility is organized, the efficiency of inter-departmental coordination, amount of new development, number of industrial sites, and others. Higher budgets and more assigned staff do not guarantee more effective programs, and all specific MS4 program activities are unique to an individual community. Nonetheless, it is expected that commitments of resources

to the Colorado Springs program should fall within the general range of commitments of resources in other similar communities in Colorado and EPA Region 8.

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City and County of Denver, Mayor's 2014 Budget.

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City of Pueblo, 2014 Annual Budget.

City of Greeley, Colorado Operations and Capital Improvement Plan. Biennial Budget 2013-2014.

David C. Agee. Southeast Metro Stormwater Authority Annual Budget Fiscal Year Ending December 31, 2015. October, 2014.

Lakewood Public Works Department, Stormwater Management Utility 2014 Annual Report. March, 2015.

Salt Lake City, Mayor's Recommended Budget Fiscal Year 2014-2015.

Summit Economics LLC. White Paper Exploring Potential Solutions to Regional Stormwater Challenges. June, 2012.

The Urban Drainage and Flood Control District 2013 Budget Adoption. October, 2012.

The Urban Drainage and Flood Control District Five Year Capital Improvement Plan- 2010 through 2014.

Westminster, Proposed 2015/2016 Biennial Budget.

APPENDIX D – NOTABLE ITEMS FROM HIGH-LEVEL REVIEW OF 2014 ANNUAL REPORT

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2014 Annual Report - Notable Items from High-Level Review

Section	Brief Description	Notable Items
Introductory Section	1. Introduction 2. Permit Requirements 3. Difficulties or Concerns	Under Difficulties or Concerns, it was noted that, "There were few significant concerns or obstacles in meeting compliance requirements of the MS4 permit. Minor concerns affecting the Permit Terms and Conditions in 2014 are addressed in the individual sections." It is recommended that the minor concerns be compiled and reviewed by City staff as part of the new stormwater program implementation.
Section 1	1. Commercial/Residential Management Program 2. Illicit Discharges Management Program 3. Industrial Facilities Program 4. Construction Sites Program 5. Pollution Prevention/Good Housekeeping for Municipal Operations Program 6. Monitoring Program	For the Industrial Facilities, the following is noted for 2015: "Continue implementation of plan submitted to CDPHE on 8/26/05". It is recommended that this plan and the current implementation be reviewed, because the plan is over 10 years old and the permit requirements changed between the last permit (2004-2009) and current permit (2011-2016).
Section 2	1. Changes to the Stormwater Management Programs 2. Cross-References 3. Update on Areas Added to the MS4	No "substantial changes" are listed for the following: 1. Commercial/Residential Management Program 2. Illicit Discharges Management Program 3. Industrial Facilities Program 4. Construction Site Program 5. Pollution Prevention/Good Housekeeping for Municipal Operations Program
Section 3	1. Assessments of Controls 2. Fiscal Analysis	Funding shown in Section is from the General Fund for 2014 and 2015.
Section 4	1. Summary of Data	No "substantial changes" are listed for the following: 1. Commercial/Residential Management Program 2. Illicit Discharges Management Program 3. Industrial Facilities Program 4. Construction Site Program

Section	Brief Description	Notable Items
Section 5	1. Municipal Facility Runoff Control Program (MFRCP) 2. Operation and Maintenance	"The 2014 compliance inspections indicated that overall the facilities conformed to the requirements of the Runoff Control Plan."
Section 6	1. Summary of Educational Activities	Public Education and Outreach is not managed as a separate program. The following is a list of educational topics in 2014: 1. Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal. 2. Public Educational Activities to Promote Proper Management and Disposal of Potential Pollutants 3. Household Chemical Waste Collection Programs 4. Industrial Facilities Program 5. Training and Education for Construction Site Operators.
Section 7	4. Annual Expenditures and Budgets	2014 Budget = $1,398,944 2014 Expenditures = $1,283,316 6. 2015 Budget = $1,519,694
Section 8	5. Summary of Enforcement Actions and Inspections	Industrial Facilities Program "In 2014, the City of Colorado Springs Fire Prevention, Hazardous Materials Section completed 383 Hazardous Materials Management Plan Permit inspections, issued 345 HAZMAT permits, of which 57 are pending inspections. Staffing shortages resulted in 703 facilities not being inspected. EDR/Stormwater staff coordinated through discussions using phone and email with both the City of Colorado Springs Fire Prevention, Hazardous Materials Section and the Industrial Pretreatment group regarding ongoing coordination on potential stormwater issues."

APPENDIX A-4 – ESTIMATE OF STAFFING NEEDED TO PERFORM THE REQUIRED FUNCTIONS OF ALL MS4 PERMIT ACTIVITIES

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Program/Tasks	Labor Hour Requirements	Staff Mix	No. FTEs
Stormwater Program Management			3
Administration			**3**
Program Management and Administration		Program Director, 2 Office Staff	3
Stormwater Operations and Maintenance			29
Stormwater Ops and Maintenance			**29**
SWD SW Projects Management		Senior Engineer , Engineer	2
Conduct annual inspection of entire system, conduct post-storm inspections, prioritize problems	500 hr Enr, 200 hr Sr Engr		
Track progress on about 20 concurrent projects, perform or consult on 4 minor designs/mo	300 hr Engr, 150 hr Sr Engr		
Coordinate with O&M Division, coordinate with CIP Engineering Division, internal coordination in SWD	200 hr Engr, 300 hr Sr Engr		
Tracking and reporting	100 hr Engr, 200 hr Sr Engr		
Maintenance of Structural Controls and Drainage System			
Drain inlet cleaning, detention basin cleaning, channel maintenance, rehab and repair	Based on SWENT staffing level	3 3-person crews 4 4-person crews 2 supervisors	27
Commercial/Residential Management Program			2.8
Development and Erosion Control			**2.8**
New Development and Redevelopment			
Drainage Criteria Manual review and training	Sr Enr (200 hr), Engr (200)	Senior Engineer, Engineer	0.3
Development submittal review for post-construction BMPs	50 submittals x 1 wk/submittal Engr, Engr Tech 50/50	Engineer, Engineering Tech	1
Private BMP tracking, inspections, enforcement	200 current BMPs x 2 day/BMP	Engineer, Engineering Tech, Inspector	0.5
Group management, SWD coordination, training, admin	Sr Enr (200 hr), Engr (200), Engr Tech (200)	Senior Engineer, Engineer, Engr Tech	0.5
Asset tracking	20 hr/mo	Engineer, GIS Specialist	0.2
Documentation and tracking	40 hr/mo	SWQ Coordinator, GIS Specialist	0.3
Illicit Discharges Management Program			3.4
Municipal and Industrial			**3.4**
Management (group management, coordination within SWD, coordination with other City departments)	80 hr/mo	Senior Engineer	0.5
Illicit Discharge Detection and Elimination			
Respond to and track complaints, follow up on inspections, respond to WQ data, reporting	1 FTE	SWQ Coordinator, Engineer, Inspector	1
Conduct inspections	1 FTE	Engineering Tech	1
Asset tracking	40 hr/mo	Engineer, GIS Specialist	0.3
Procedures to Prevent, Contain, and Respond to Spills	40 hr/mo	SWQ Coordinator, Engineer	0.3
Educational Activities for Managing and Reporting Discharge of Pollutants	40 hr/mo	Outreach Specialist	0.3
Industrial Facilities Program			3.1
Municipal and Industrial			**3.1**
Management (group management, coordination within SWD, coordination with other City departments)	80 hr/mo	Senior Engineer, Engineer	0.5
Conduct industrial site inspections, training	500 inspections x 1 day	SWQ Coordinator, Inspectors	2
Prparation and distribution of information to industrial sites	40 hr/mo	SWQ Coordinator, Outreach Specialist	0.3
Asset tracking	40 hr/mo	Engineer II, GIS Specialist	0.3
Construction Site Program			6.7
Development and Erosion Control			**6.7**
Management (group management, coordination within SWD, coordination with other City departments)	80 hr/mo	Senior Engineer, Engineer	0.5
Ordinance, Procedures, and Planning Review/Updates	80 hours per year	Engineer	0.1

Review/Updates of BMP Documents	160 hours per year	Engineer	0.2
Review Development Submittals for construction BMPs	50 submittals x 2 day/submittal	Engineer, Engineering Tech	0.5
Site Inspection/Enforcement	2014 ~ 4100 Inspections. 220 D * 4 per D = 880 inspections per year. 4.65 FTEs.	Inspectors	5
Training and Education	4 days contractor training, 4 day new inspector training x 2 new inspectors/yr, 1 day refresher training x 5 inspectors	SWQ Coordinator, Inspectors	0.1
Asset tracking	40 hr/mo	Engineer, GIS Specialist	0.3
Pollution Prevention/Good Housekeeping for Municipal Operations			1.5
Municipal and Industrial			**1.5**
Management (group management, coordination within SWD, coordination with other City departments)	40 hr/mo	Senior Engineer, Engineer	0.3
MFRCPs (review O&M plans, inspections, training, education)	XX sites x 5 day/site	SWQ Coordinator, Inspector	1
O&M Procedures	160 hours/year	SWQ Coordinator	0.1
Asset tracking	20 hr/mo	Engineer, GIS Specialist	0.1
Monitoring Program			0.3
Municipal and Industrial			**0.3**
Manage USGS JFA (coordinate with USGS, coordinate with other partners)	4 wk/yr	Senior Engineer	0.1
Analysis (review/analyze data, interpret findings, coordinate with IDDE inspections)	8 wk/yr	SWQ Coordinator, Engineer Tech	0.2
Public Education and Outreach Program			1.6
Municipal and Industrial			**1.6**
Manage MS4 Public Education and Outreach Program	40 hr/mo	SWQ Coordinator	0.3
Execute MS4 Public Education and Outreach (ads, schools, media, brochures, web site, community events)	1 FTE	SWQ Coordinator, Outreach Specialist	1
Coordinate with City-wide stormwater messaging	40 hr/mo	SWQ Coordinator	0.3
Capital Projects			5.5
Stormwater Capital Projects			**5.5**
Manage SW PM and design team; coordinate with SWD; QA/QC	80 hr/mo	Senior Engineer	0.5
Flood Management and Water Quality Project Contracts (planning, design, contract management)	10 projects x 3 projects/person	Engineer, Engineer Tech	3
Internal design of minor projects	10 projects x 5 projects/person	Engineer, Engineer Tech	2
Totals			
Administration (Manager, Administrators)			3
Municipal & Industrial (Commercial/Residential, Public Outreach, IDDE, Industrial, and Municipal Programs)			10
Development and Erosion Control (Construction, New Devt and Redevt Programs)			10
Stormwater Operations & Maintenance			29
Stormwater Capital Projects			6
Total			57

APPENDIX A-5 – STORMWATER PROGRAM LABOR, EQUIPMENT AND MAINTENANCE, AND SERVICES DETAIL TABLES

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Build-up of Labor Cost for Stormwater Program

				Existing Stormwater Program			Proposed Stormwater Program*									
Division	Sub-Division	Job/Role on Org Chart	City Job Classification	Existing Staff	SW Prgm %	SW Prgm FTE	Average Annual Salary Cost	Proposed Number of Staff	Stormwater Program Staff (y/n)	Other City Department	SW Prgm %	Proposed SW FTEs	Hire Year (0-existing, 1-1st Qtr 2016, 2-by end of 2016, 3-by end of 2017)	Total Annual Salary Cost	Average Annual Burdened Cost	Responsibilities
MS4 Program																
	Municipal / Industrial															
		MS4 Coordinator	Stormwater Quality Coordinator	1	100%	1.0	$ 74,916	1	Y		100%	1.00	0	$ 74,916	$ 104,882	Coordinate MS4 permit compliance activities; tracking and reporting; coordinate with regulatory agencies
		Stormwater Specialist	Stormwater Quality Coordinator				$ 71,429	1	Y		100%	1.00	1	$ 71,429	$ 100,000	MS4 education and outreach; planning
		GIS/ Engineering Tech II	GIS Analyst, I				$ 50,459	1	Y		100%	1.00	1	$ 50,459	$ 70,643	GIS support to stormwater team
		Engineering Tech III	Engineering Tech III	1	100%	1.0	$ 60,684	1	Y		100%	1.00	0	$ 60,684	$ 84,958	Support site inspections, analysis, and tracking.
		Engineering Tech III	Engineering Tech III				$ 60,714	1	Y		100%	1.00	2	$ 60,714	$ 85,000	Support site inspections, analysis, and tracking.
		Senior Engineering Inspector	Program Coordinator	1	100%	1.0	$ 66,000	1	Y		100%	1.00	0	$ 66,000	$ 92,400	Construction site inspections and enforcement management.
		Engineering Inspector III	Engineering Tech III	1	100%	1.0	$ 60,984	1	Y		100%	1.00	0	$ 60,984	$ 85,378	Construction site inspections and enforcement
		Engineering Inspector II	Engineering Tech II	1	100%	1.0	$ 41,666	1	Y		100%	1.00	0	$ 41,666	$ 58,332	Inspection of BMPs, industrial facilities, construction sites, drainage facilities, and IDDE.
		Engineering Inspector II	Engineering Tech II				$ 41,666	1	Y		100%	1.00	2	$ 41,666	$ 58,332	Inspection of BMPs, industrial facilities, construction sites, drainage facilities, and IDDE.
		Engineering Inspector II	Engineering Tech II				$ 41,666	2	Y		100%	2.00	3	$ 83,332	$ 116,665	Inspection of BMPs, industrial facilities, construction sites, drainage facilities, and IDDE.
	Stormwater Projects															
		Stormwater Projects Coordinator	Engineering Division Manager	1	50%	0.5	$ 120,000	1	Y		100%	1.00	0	$ 120,000	$ 168,000	Manage the Stormwater Infrastructure sub-program including budget and staff
		Stormwater Construction Manager	Engineer II	1	50%	0.5	$ 71,228	1	Y		100%	1.00	0	$ 71,228	$ 99,719	Coordinate with capital on stormwater projects, BMP planning and design
		Engineering Tech II	Engineering Tech II				$ 53,571	1	Y		100%	1.00	3	$ 53,571	$ 75,000	Coordinate with capital on stormwater projects, BMP planning and design
	Development and Erosion Control															
		Senior Civil Engineer	Senior Engineer				$ 89,286	1	Y		100%	1.00	1	$ 89,286	$ 125,000	Program Management, planning and project management
		Civil Engineer III	Engineer III	1	100%	1.0	$ 71,228	1			100%	1.00	0	$ 71,228	$ 99,719	Plan Review
		Civil Engineer II	Engineer II				$ 75,000	1	Y		100%	1.00	2	$ 75,000	$ 105,000	Plan Review
Operations & Maintenance Program																
		Operations & Maintenance Division Manager	Streets Operations Manager	1	25%	0.3	$ 112,704	1	N	O&M	25%	0.25	0	$ 28,176	$ 39,446	Manage stormwater O&M for stormwater permit; coordinate with Streets on priorities and scheduling
		Stormwater Operations & Maintenance Manager	Streets Operations Manager				$ 93,158	1	N	O&M	100%	1.00	1	$ 93,158	$ 130,421	Manage stormwater O&M for stormwater permit; coordinate with Streets on priorities and scheduling
		Contracted Programs Manager	Streets Program Supervisor	1	33%	0.3	$ 76,968	1	N	O&M	34%	0.34	0	$ 26,169	$ 36,637	
		Operations Manager	Streets Program Supervisor	1	25%	0.3	$ 73,584	1	N	O&M	25%	0.25	0	$ 18,396	$ 25,754	
		Program Supervisor	Streets Program Supervisor	1	66%	0.7	$ 67,072	1	N	O&M	66%	0.66	0	$ 44,268	$ 61,975	Manage drainage inspection staff.
		Stormwater Operations & Maintenance Supervisor	Streets Program Supervisor	1	100%	1.0	$ 70,764	1	N	O&M	100%	1.00	0	$ 70,764	$ 99,070	Manage drainage inspection staff.
		Drainage Inspector	Maintenance Tech II	2	100%	2.0	$ 60,714	2	N	O&M	100%	2.00	0	$ 121,428	$ 169,999	Drainage facilities inspections
		Drainage Inspector	Maintenance Tech II				$ 60,714	1	N	O&M	100%	1.00	2	$ 60,714	$ 85,000	Drainage facilities inspections
		Drainage Inspector	Maintenance Tech II				$ 60,714	1	N	O&M	100%	1.00	3	$ 60,714	$ 85,000	Drainage facilities inspections
		Equipment Operators	Maintenance Tech II	14	100%	14.0	$ 47,619	14	N	O&M	100%	14.00	0	$ 666,666	$ 933,332	Perform street maintenance, drainage system maintenance, and street sweeping
		Equipment Operators	Maintenance Tech II				$ 47,619	6	N	O&M	100%	6.00	2	$ 285,714	$ 400,000	Perform street maintenance, drainage system maintenance, and street sweeping
		Equipment Operators	Maintenance Tech II				$ 47,619	6	N	O&M	100%	6.00	3	$ 285,714	$ 400,000	Perform street maintenance, drainage system maintenance, and street sweeping

Capital Projects															
Capital Projects															
	CIP Engineering Program Manager	Senior Engineer	1	25%	0.3	$ 101,184	1	N	CIP Engr	25%	0.25	0	$ 25,296	$ 35,414	Manage stormwater CIP and planning activities; coordinate with CIP Engineering stormwater team
	Senior Civil Engineer/ PM	Senior Engineer				$ 89,286	1	N	CIP Engr	100%	1.00	3	$ 89,286	$ 125,000	Capital Design Manager. Design and manage construction of major CIP stormwater projects
	Civil Eng III	Engineer III	1	25%	0.3	$ 85,056	1	N	CIP Engr	100%	1.00	0	$ 85,056	$ 119,078	Capital design and construction management. Design and manage construction of major CIP stormwater projects
	Civil Engineer II	Engineer II				$ 75,000	1	N	CIP Engr	100%	1.00	3	$ 75,000	$ 105,000	Capital design and construction management. Design and manage construction of major CIP stormwater projects
	Engineering Tech II	Engineering Tech II				$ 57,143	1	N	CIP Engr	100%	1.00	2	$ 57,143	$ 80,000	Design and manage small CIP projects; drainage basin planning
	Engineering Tech II	Engineering Tech II				$ 55,357	2	N	CIP Engr	100%	2.00	3	$ 110,714	$ 155,000	Design and manage small CIP projects; drainage basin planning
Overall Program															
Administration															
	Stormwater Program Director	Engineering Division Manager				$ 144,000	1	Y		100%	1.00	1	$ 144,000	$ 201,600	Manage overall stormwater program team and budget
	Communications Admin Tech	Public Communications Tech	1	10%	0.1	$ 50,160	1	N	City Comm	25%	0.25	0	$ 12,540	$ 17,556	Support public outreach for stormwater program
Total			**32**		**26.09**		**62**				**58.00**		**$ 3,453,078**	**$ 4,834,310**	

* Proposed Stormwater Program FTEs and Costs include the existing staff.

City of Colorado Springs

Capital Outlay for Stormwater Program

Vehicle/Equipment	Description	Use	2008 Cost	2016 Cost	Number Existing	Number Needed 2016	Number Needed 2017	Total	2016 Budgeted Expense	2017 Budgeted Expense	Total Budgeted Expense	Lifespan (years)	Replacement Cost	Annual Replacement Fund Cost*
Computer														
Computers and Networks				$ 25,000.00		1		1	$ 25,000	$ -	$ 25,000	3	$ 26,000.00	$ 8,666.67
Furniture and Fixtures				$ 10,000.00		1		1	$ 10,000	$ -	$ 10,000	3	$ 10,000.00	$ 3,333.33
Machines and Apparatus				$ -		1		1	$ -	$ -	$ -	3	$ -	$ -
Total					**0**	**3**	**0**	**3**	**$ 35,000**	**$ -**	**$ 35,000**		**$ 36,000.00**	**$ 12,000.00**
Cars, Pickups														
4WD SUV	4WD SUV	CIP Design staff/engineers, MSDP Eng. Techs. Project site visits, investigate drainage complaints, storm sewer inventory, MSDP field activities, public meetings.	$25,000	$28,000		1	1	2	$ 28,000	$ 28,000	$ 56,000	5	$ 29,000	$11,600
4WD Pickup	F350 four door crew trucks	Eng. Inspector Vehicle. Use to inspect new development construction sites, drainage facilities, storm sewers, channels, detention ponds, etc.	$20,000	$22,000	2	1	1	4	$ 22,000	$ 22,000	$ 44,000	5	$ 23,000	$18,400
Confined Space Van	Confined Space Van	Specialized van. Includes specialized safety equipment for crews to enter storm sewer manholes, pipes, vaults, box culverts, underground confined spaces. Breathing apparatus, sniffers, cables/ropes, wenches, etc.	$110,350	$122,000	1			1	$ -	$ -	$ -	5	$ 128,000	$25,600
				$0				0	$ -	$ -	$ -	5	$ -	$0
Total					**3**	**2**	**2**	**7**	**$ 50,000**	**$ 50,000**	**$ 100,000**		**$180,000**	**$55,600**
Heavy Equipment														
Backhoe	Backhoe				1	1		2	$ -	$ -	$ -	10	$ -	$0
Bulldozer	D5 Dozer	Large bulldozer/earth moving equipment	$345,000	$380,000	1			1	$ -	$ -	$ -	10	$ 418,000	$41,800
Dump Trailer	End Dump Trailer				1			1	$ -	$ -	$ -	10	$ -	$0
Dump Truck	F550 Dump Bed Truck				1	1		2	$ -	$ -	$ -	10	$ -	$0
Dump Truck (Single Axle)	Single Axle 2 ton Dump	Material hauling to/from concrete open channel and catch basin repair/rehabilitation projects. Tow small tailored equipment to project sites.	$60,000	$66,000	2			2	$ -	$ -	$ -	10	$ 73,000	$14,600
Dump Truck (Tandem)	Tandem axel dump truck w/ rock beds	Large Dump Truck. Material hauling to/from drainage projects (large material/large loads). Tow equipment to project sites.	$140,000	$154,000	2	1	1	4	$ 154,000	$ 154,000	$ 308,000	10	$ 169,000	$67,600
Excavator	Excavator w/ Mower Attachment				1			1	$ -	$ -	$ -	10	$ -	$0
Excavator	Excavators w/ thumbs				2			2	$ -	$ -	$ -	10	$ -	$0
Flow boy Trailer	Flow Boy Trailer				1			1	$ -	$ -	$ -	10	$ -	$0
Large Tractor/Front End Loader	Front End Loader (938)	Large tractor/front end loader. Earthwork, excavations, move and load materials on large construction projects (i.e. rock drop structures, detention ponds, creek improvements).		$325,000	1			1	$ -	$ -	$ -	10	$ 358,000	$35,800
Large Tractor/Front End Loader	Front End Loader (966) w/ Teeth	Large tractor/front end loader. Earthwork, excavations, move and load materials on large construction projects (i.e. rock drop structures, detention ponds, creek improvements).	$295,000	$325,000	1			1	$ -	$ -	$ -	10	$ 358,000	$35,800
Large Tractor/Front End Loader	Front End Loader (Volvo) w/ mower attachment	Earthwork, excavations, move and load materials on large construction projects (i.e. rock drop structures, detention ponds, creek improvements).			1			1	$ -	$ -	$ -	10	$ -	$0
Lowboy Trailer	Lowboy Trailer	Haul ATV to project sites, creeks, drainageways, channels	$2,500	$3,000	2			2	$ -	$ -	$ -	10	$ 3,000	$600

Vehicle/Equipment	Description	Use	2008 Cost	2016 Cost	Number Existing	Number Needed 2016	Number Needed 2017	Total	2016 Budgeted Expense	2017 Budgeted Expense	Total Budgeted Expense	Lifespan (years)	Replacement Cost	Annual Replacement Fund Cost*
Mini Excavator	Mini Excavator	Clean creeks, drainageways, channels. Small excavation work. Move and load materials. Mow ditches.				1		1	$ -	$ -	$ -	10	$ -	$0
Semi Tractor	Semi Tractor				2			2	$ -	$ -	$ -	10	$ -	$0
Skid Steer	Tracked Skids w/ mower attachment	Clean creeks, drainageways, channels. Small excavation work. Move and load materials. Mow ditches.	$52,000	$58,000	3	1	1	5	$ 58,000	$ 58,000	$ 116,000	10	$ 64,000	$32,000
Street Sweeper				$400,000				0	$ -	$ -	$ -	10	$ 440,000	$0
Tractor	John Deer Tractor w/ brush hog mower	Earthwork, excavations, move and load materials on large construction projects (i.e. rock drop structures, detention ponds, creek improvements).			1			1	$ -	$ -	$ -	10	$ -	$0
Trailer	Towmaster Backhoe Trailer	Haul Skid Steer/ backhoe to project sites.	$8,500	$10,000	2	1	1	4	$ 10,000	$ 10,000	$ 20,000	10	$ 11,000	$4,400
Utility Trailer	18 foot flatbed Utility Trailer				1			1	$ -	$ -	$ -	10	$ -	$0
Vactor Truck				$150,000	2	1	1	4	$ 150,000	$ 150,000	$ 300,000	10	$ 165,000	$66,000
Wood Chipper	Vermeer Wood Chipper				1			1	$ -	$ -	$ -	10	$ -	$0
				$0				0	$ -	$ -	$ -	10	$ -	$0
Total					**29**	**7**	**4**	**40**	**$ 372,000**	**$ 372,000**	**$ 744,000**		**$2,059,000**	**$298,600**
Capital Outlay Total									**$457,000**	**$422,000**	**$879,000**		**$2,275,000**	**$366,200**
Quarterly Costs									**$114,250**	**$105,500**	**$219,750**			**$91,550**

* Annual Replacement Fund is to be allocated annually for the eventual replacement of capital outlay. The purpose of this fund is to avoid a large expenditure when one or more equipment item needs to be replaced.

City of Colorado Springs

Operations & Maintenance Costs

Category	Item	Description	Annual Costs										
MS4 Program			**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
	USGS	USGS Dry and Wet Weather Monitoring	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000
	Public Outreach	Public Outreach materials and media costs	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000
	Contracts and Special Projects	From 2016 budget; miscellaneous outside services	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000
	MS4 Tracking Software	Software to organize tasks, track progress, document work	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
	Total		**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**	**$ 560,000**
Engineering Studies													
	Drainage Basin Planning Studies (DBPS)	Shooks Run, North Monument Creek, Others based on priority	$ 170,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000
	Criteria Manual Updates	5-year review and update of DCM					$ 50,000					$ 50,000	
	Comprehensive Drainage Master Plan	Integration of DBPSs, updated to DCM criteria	$ 300,000	$ 700,000	$ 500,000								
	Miscellaneous Studies	Misc engineering or planning studies; emergency work	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
	Total		**$570,000**	**$1,000,000**	**$800,000**	**$300,000**	**$350,000**	**$300,000**	**$300,000**	**$300,000**	**$300,000**	**$350,000**	**$300,000**
Maintenance Projects		**Maintenance Projects not included in CIP**											
	Infrastructure	Maintenance Projects not included in CIP	$ 500,000	$ 550,000	$ 600,000	$ 650,000	$ 700,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000
	Materials	Aggregate, asphalt, machinery, paint, etc.	$ 10,000	$ 15,000	$ 20,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000
	Services	Maintence Services	$ 5,600	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
	Equipment	Minor equipment and equipment rental	$ 21,377	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000
	Total		**$536,977**	**$600,000**	**$655,000**	**$710,000**	**$760,000**	**$810,000**	**$810,000**	**$810,000**	**$810,000**	**$810,000**	**$810,000**
Total Operations & Maintenance Costs			**$1,666,977**	**$2,160,000**	**$2,015,000**	**$1,570,000**	**$1,670,000**	**$1,670,000**	**$1,670,000**	**$1,670,000**	**$1,670,000**	**$1,720,000**	**$1,670,000**
Quarterly			$416,744	$540,000	$503,750	$392,500	$417,500	$417,500	$417,500	$417,500	$417,500	$430,000	$417,500

Colorado Springs Stormwater Program

APPENDIX B
CAPITAL PROGRAM DELIVERY PLAN REPORT

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TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1
- 1.1 Purpose 1
- 1.2 Project Categories 1
- 1.3 Capital Improvements Project (CIP) List 1
- 1.4 Development of CPDP 2

2.0 BACKGROUND 3
- 2.1 Capital Projects 3
- 2.2 Project Delivery Stages 4
- 2.3 Definition of Cost Escalation 5

3.0 PROJECT PRIORITIZATION 7
- 3.1 Prioritization Criteria 7
- 3.2 Project Prioritization 9

4.0 DEVELOPMENT OF PROJECT INFORMATION 12
- 4.1 Definition of Capital Cost Components 12
- 4.2 Validation Approach 13
- 4.3 Assessment of City Capital Stormwater Project Costs 13
- 4.4 Capital Stormwater Project Validation 15
- 4.5 Assessment of Creek Crossing Project Costs 16

5.0 CAPITAL PROJECT SCHEDULES AND COST DISTRIBUTION 17
- 5.1 Schedule Assumptions 17
- 5.2 City Project Cost Distribution 17
- 5.3 Creek Crossing Project Cost Distribution 18
- 5.4 Project Schedules 18
- 5.5 Project Locations 20

6.0 NEXT STEPS 21
- 6.1 By End of the First Three Months 21
- 6.2 By End of the First Six Months 21
- 6.3 By End of the First Year 22
- 6.4 Annual CIP Planning Process 22

APPENDIX B-1 – TABLES AND FIGURES

APPENDIX B-2 – PROJECT SUMMARY SHEETS

LIST OF TABLES (APPENDIX B-1)

Table 1-1. Summary of City Capital Improvement Projects List
Table 2-1. August 2015 Stormwater Capital Project List
Table 2-2. Wright Water Engineers Project List
Table 2-3. Utilities Creek Crossing Project List
Table 3-1. City Capital Project Prioritization
Table 3-2. Creek Crossing Project Benefits
Table 4-1. Definition of Capital Cost Components
Table 4-2. City Capital Project Costs

LIST OF FIGURES (APPENDIX B-1)

Figure 2-1. IHS Global Insight Index Trends
Figure 5-1. Summary of Cost Model
Figure 5-2. City Costs for 2016-2025
Figure 5-3. Schedule for City Stormwater Capital Projects
Figure 5-4. Schedule for Creek Crossing Projects
Figure 5-5. Location Map for Stormwater Projects
Figure 5-6. History of City Drainage Basin Master Plans

1.0 INTRODUCTION

1.1 Purpose

The City of Colorado Springs (City) is in the process of conducting a comprehensive review of its Stormwater Program. The purpose of the review is to identify areas of improvement and develop a comprehensive plan to address them. The Stormwater Program Implementation Plan (SPIP) documents the City's approach to addressing MS4 permit requirements and capital stormwater infrastructure needs throughout the City.

The purpose of this component of the SPIP, the Capital Program Delivery Plan (CPDP), is to document a delivery strategy for identified capital stormwater projects that are needed to meet the City's overall goals of building and maintaining stormwater infrastructure as part of the Stormwater Program. The CPDP provides the following components that will serve to guide the City's implementation of stormwater infrastructure projects moving forward:

- A prioritized Capital Improvements Projects (CIP) master list. The City has collaborated with Wright Water Engineers (WWE), a consultant to Pueblo County, to develop and identify projects with substantial benefits to Colorado Springs' downstream neighbors.
- An implementation approach to complete the top priority stormwater capital projects from the CIP over the next 10 years, including estimated costs, project start year and implementation schedules, and annual budget requirements.
- A draft Program Management Plan (PMP) detailing the processes and procedures to be followed for delivering stormwater capital projects in a coordinated, programmatic manner, achieving efficiency in cost and schedule. The draft PMP is bound separately from this report.

1.2 Project Categories

Two categories of capital projects are being implemented as part of the City's Stormwater Program:

- **City Projects:** These capital stormwater improvement projects will be implemented by the City's Public Works Department under the direction of the Stormwater Division. They include a variety of project types and configurations that provide channel stabilization, peak flow attenuation, sediment capture and stormwater quality enhancements.
- **Utilities Creek Crossing Projects**: These projects will be implemented by Colorado Springs Utilities (CSU or Utilities) in close coordination with the City's Stormwater Division. These projects will protect CSU facilities that cross or parallel open channels and are at risk of failing due to stormwater runoff impacts (e.g., buried sanitary sewers that cross creeks that have eroded, exposing the sanitary sewers to potential failure). These projects will benefit the stormwater program by reducing stream erosion and channel degradation.

1.3 Capital Improvements Project (CIP) List

The evaluations documented herein yielded a prioritized list of capital stormwater projects, which resulted in the CIP List shown in **Table 1-1, Summary of City of Colorado Springs Capital Improvements Projects List**, **Appendix B-1**. Table 1-1 is a summary listing of the CIP master

list that includes all the projects that were prioritized by the City in collaboration with WWE. This summary listing excludes various additional items of information used in the rating and prioritization process. This report documents the approach used to identify, screen and select the capital projects in Table 1-1, along with the methodology for updating project costs and sequencing projects to establish the 10-year project delivery plan.

1.4 Development of CPDP

The City of Colorado Springs developed this CPDP with contracted assistance from MWH Americas, Inc. and Ben Urbonas (Urban Watersheds LLC).

2.0 BACKGROUND

There have been numerous watershed and planning studies completed over the years that assessed the stormwater needs for the City. In October 2013, CH2M HILL completed a Stormwater Needs Assessment Report (SNA) for the City of Colorado Springs. The SNA involved identification and review of over 18 stormwater master plans and studies previously completed by the City. That process yielded a Master Project List and projected total capital costs to complete that list of well over $500 million. As a starting point for development of this SPIP, the Master Project List (MPL) from the SNA was carefully reviewed and evaluated along with additional City planning studies and projects identified since the SNA was completed. Through these evaluations, several deficiencies with the MPL from the SNA were identified:

- Many projects lacked adequate level of project definition or specific details.
- The SNA involved a limited project validation effort to confirm whether a project was legitimate for inclusion, but did not assess any project in detail.
- The SNA master project list is outdated and does not include projects from recent City planning studies, or recent emergency response projects.

During the latter part of 2015 and early 2016, as part of an Inter-Governmental Agreement (IGA) negotiation between Pueblo County, the City of Colorado Springs and its utility enterprise, Colorado Springs Utilities, a series of meetings were held between the IGA parties and their respective consulting engineers. These meetings were designed to discuss projects included in the SNA and other studies in order to prioritize a list of projects to be included in an updated City Stormwater CIP list that could be included as part of the final IGA. The resulting project list was used in the development of this CPDP. The processes followed for developing the updated Stormwater CIP list during the IGA negotiation meetings are discussed further in Section 3.0.

The City's stormwater CIP list presented in this CPDP uses most current available information and reflects current City stormwater needs and project priorities to meet the overall objectives for the City's stormwater program. The following sections document the evaluations conducted and explain the development of the City's updated capital stormwater program.

2.1 Capital Projects

The following is an overview of the capital projects that have been considered for inclusion in the City's Stormwater CIP:

- **City Projects:** In August 2015, an initial set of high priority stormwater projects was developed through coordination between the City and Pueblo County (see **Table 2-1 August 2015 Stormwater Capital Project List, Appendix B-1**). That effort was part of the recently completed stormwater IGA between the City and Pueblo County. The firm of Wright Water Engineers (WWE), working for Pueblo County, presented projects that were proposed for inclusion in the City's stormwater CIP. These projects were identified in the SNA report and in other sources (see **Table 2-2 Wright Water Engineers Project List, Appendix B-1**). In addition, several ongoing City stormwater projects that have various levels of project definition were evaluated as part of this effort.

- **Utilities Creek Crossing Projects:** CSU has planned and implemented its "Sanitary Sewer Creek Crossings Program," with annual expenditures averaging $3 million/year. CSU staff maintain a list of projects to implement under this program. That list is updated at least annually based on effects of storm events on utility infrastructure that crosses or parallels waterways. An evaluation and risk rating of each creek crossing location has been conducted by CSU over the last several years and was completed in 2015 for all existing crossings. Ratings are based on stream and watershed conditions, amount of pipe cover, pipe size and type, and existing hardening or protection measures. Each crossing is assigned a re-inspection frequency (ranging from 1 to 10 years) based on risk level with the highest risk crossings inspected following each significant storm event. CSU staff review rainfall and stream gauge data following significant runoff events and conduct inspections of utility infrastructure near creeks to identify additional projects that need to be implemented to protect CSU facilities. Those projects are added to the Creek Crossings project list and the list is reprioritized. CSU's current list of projects is shown in **Table 2-3 Utilities Creek Crossing Project List** (**Appendix B-1**).
- **Financing:** For purposes of this report, it was assumed that the projects will be implemented over time on a "pay as you go" basis. No debt financing is assumed.
- **Templates:** The capital project delivery guidelines, procedures and standards developed by the Utilities Southern Delivery System (SDS) Program were used as a model for the City's Stormwater Program PMP.

2.2 Project Delivery Stages

Capital projects are typically delivered in discrete phases, termed "delivery stages." Following City of Colorado Springs terminology and assuming a design-bid-build delivery method, the following five stages have been established for use in developing the project sequencing and annual CIP cost forecasting summarized in this report.

1. **Initiation:** Once a decision is made to advance a project, the Initiation Stage is implemented to develop a detailed design scope of work. The design may be outsourced via a Request for Proposals (RFP) for design services provided by an outside design consultant, or may be performed with internal City personnel (if appropriate and available).
2. **Hire Design Consultant**: If an outside design consultant is needed, the overall project schedule must account for a procurement process, including RFPs, evaluating submittals, conducting interviews, and contract negotiations with the selected consultant. This process generally takes between four to six months to complete.
3. **Planning/Design/Procurement**: This stage involves the engineering work needed to make broad decisions about project alternatives (planning), preparing engineering plans and specifications for the selected alternative (design), and procuring a construction firm to construct the project (procurement).
4. **Execution** (Construction): This stage covers the actual construction work, beginning from notice to proceed to substantial completion through final completion of the construction efforts.
5. **Closeout** (Work Package Closeout): This stage involves the steps needed to closeout a construction project.

2.3 Definition of Cost Escalation

Project capital costs developed in prior studies have been reviewed and escalated to January 2016 dollars. As those costs are distributed over the 10-year period, they have also been escalated on a quarterly basis to the year in which they are initiated. A cost escalation index was selected after considering various industry-standard available indices and used to quantify the cost escalation factor.

2.3.1 Choosing a Cost Escalation Index

Colorado Springs has in the past, through CSU, relied on two industry standard indices to regularly update projections of construction costs of the Utilities SDS project. The indices CSU used are Engineering News-Record's National Construction Cost Index (ENRCCI) and IHS Global Insight's non-residential Construction Index. The IHS Global Insight index was used for forward forecasting cost escalation from current periods to future periods.

IHS Global Insight is a worldwide company offering economic and financial analysis, forecasting, and market intelligence using a combination of expertise, models, data, and software. The information it supplies is valuable to the Stormwater Program, as it projects national construction cost index values and annual percentage change on a quarterly basis over two years, and then annually for subsequent years.

The IHS Global Insight index is valid for capital projects in the Stormwater Program because: (1) it includes pricing for construction labor, structural steel, steel fabrication, and cement, all of which are common elements of stormwater capital projects, and (2) an independent, long-term escalation projection is available from IHS Global Insight to use in estimating an escalation factor for future costs.

For these reasons, the Stormwater Program will use the IHS Global Insight index for all capital cost escalation calculations.

2.3.2 Establishing an Cost Escalation Factor

The cost estimates previously prepared for each of the individual projects in the Stormwater CIP were done in different studies, at different times, and using different basis of cost estimating. Therefore, the capital project cost estimates from the prior stormwater studies had to be updated to a more reliable and consistent basis. To accomplish this, the project costs developed in the previous studies from 2012 and 2013 were escalated forward to the 2016 report period. The annual escalation rate, derived from the IHS Global Insight data, and used in updating the capital project cost estimates was divided by four to derive a quarterly escalation rate used in the cost model developed as part of this update of the City's Stormwater Program. The prior study project costs were then escalated quarterly to arrive at the updated 2016 cost for each project.

The following trends are seen in the IHS Global Insight index data and were considered in evaluating the appropriate level of capital cost escalation to apply for the update to the City's Stormwater Program CIP (see **Figure 2-1 IHS Global Insight Index Trends, Appendix B-1**):

- Over the last five years (2011-2015), the IHS Global Insight index ranged from -2.6 percent to +3.2 percent, with an average of 1.45 percent.
- From 2016 and forward, IHS Global Insight predicts an upward trend in costs ranging from +2.1 percent to +3.7 percent, with an average of +3.2 percent. (It should be noted

that the City of Colorado Springs will continue to evaluate the cost escalation rate in future years to account for changing economic conditions.)

Evaluation of the index trends described above was necessary in order to establish an appropriate cost escalation rate that addresses factors that affect future Stormwater Program project costs. Based on these trends, an annual median value cost escalation rate of 3.4 percent was determined to be appropriate for the projects under the Stormwater Program and was initially used in forecasting 2016 estimated project costs forward to a project's future start year. This equated to a 0.85 percent quarterly increase in capital project costs. However, based on the commitments included in the IGA between Pueblo County and the City issued in May 2016, an annual median value cost escalation rate of 2.0 percent for capital projects was identified and was used for the purposes of cost escalation factoring in the cost modeling described herein. This equates to a 0.50 percent quarterly increase in capital project costs. The cost model performed the cost escalation computations on a quarterly basis to best reflect accurate estimates of future project capital costs.

3.0 PROJECT PRIORITIZATION

The next step in development of the updated Stormwater CIP list for the City was to evaluate and prioritize the two capital project lists referenced in section 2.1 to arrive at a single list of capital projects that make up the 20-year Stormwater CIP list. This was done by rating each project according to a set of eight criteria. These eight criteria were developed collaboratively between City staff, the City's consultant team of MWH and Merrick and Company, and through discussion and coordination with WWE on behalf of Pueblo County.

3.1 Prioritization Criteria

The following eight criteria are not presented in any specific order with respect to priority or importance. The initial four criteria focus on more localized benefits that may be realized from the repair/replacement or enhancement of stormwater infrastructure within the City of Colorado Springs. While these criteria specifically focus on more localized benefits, projects meeting these four criteria may also contribute benefits to downstream areas due to overall improvement of the stormwater system and enhanced water quality.

The final four criteria specifically address project characteristics that produce a downstream benefit, specifically to meet Pueblo County requests, as settled upon with WWE through the coordination effort. These final four criteria address project characteristics that reduce sediment generation, improve water quality, capture transported sediments and provide stormwater detention for peak flow attenuation. The following describe the attributes of each of the eight criteria applied to rate the identified capital stormwater projects.

Protect property and public safety
This criterion relates to the basic function of containing stormwater within storm drains, channels and/or basins to minimize or reduce the risk of flooding-related property damages or endangering people's lives. Examples would be increasing channel capacity, stabilizing a channel embankment to prevent further erosion, or increasing the size of a stormwater detention basin. The City of Colorado Springs Drainage Criteria Manual (DCM) includes guidance on appropriate levels of protection for different drainage basin sizes and types of drainage infrastructure.

Repair/replace failing infrastructure
This criterion applies to infrastructure that has reached the end of its useful life either due to age or damage, and must be repaired or replaced in order for the facility to continue to perform its intended function. An examples would be a lined concrete channel where the concrete has deteriorated thereby allowing erosion of the subgrade materials.

Improve appearance and/or enhance the community
Stormwater channels, detention/retention basins, and floodplains are often designed to be multi-use facilities creating public amenities, providing visual enhancement, wildlife habitat and recreational opportunities. An example would be a stream that is kept in a relatively natural state and has a recreational trail next to it.

Distribute projects within the City
Stormwater improvement needs exist throughout the City of Colorado Springs. It is important that capital improvements be made throughout the City, in order to provide stormwater protection benefits and a similar level of service to all areas within the City boundaries. This will enhance public support of stormwater control efforts. As such, the City must advance a

program of stormwater capital improvements that achieve goals while providing improvements over time throughout the City.

Enhance sediment/debris capture and control
Proposed sediment capture and control projects must facilitate settling of sediment and debris (e.g., downed vegetation) from channels that have elevated sediment and debris loads, or in watershed areas that contribute to those channels. The project must also provide a means for routine maintenance and removal of sediment captured and stored in the facility or drainage feature. The objective is to minimize the excess volume of sediment transported downstream.

Reduce sediment generation/enhance soil stewardship
One key method to reduce sediment generation is through bank stabilization. The goal is to stabilize channel banks that are currently actively eroding and contributing additional sediment load to the channel. Eroding channel reaches where bank erosion is worsening, as documented with historic photographs, aerial imagery, or topographic data, will receive higher priority.

A second key method to reduce sediment generation is through channel grade control. Proposed channel grade control projects must stabilize and/or reduce the gradient of channels that are currently degrading. The proposed channel grade control features must take into consideration the geomorphology of the channel and its equilibrium channel slope. Eroding channel reaches where channel incision is worsening, and/or where a substantial inventory of sediment is readily available to be mobilized, as documented with historic photographs, aerial imagery, or topographic data, will receive higher priority. This has an incidental benefit of also providing some degree of water quality enhancement.

Another key method to reduce sediment generation is to provide for channel restoration and/or floodplain preservation. To do so, proposed projects must preserve, expand, or otherwise enhance existing floodplains. This has an incidental benefit of also providing some degree of water quality enhancement.

A final key method to reduce sediment generation is to implement soil stewardship measures throughout the watershed to reduce soil erosion and the volume of sediment transported in the Fountain Creek channel.

Improve water quality
Stormwater mobilizes and transports pollutants from the watershed surface and from the drainage system itself, and can adversely affect receiving water quality. Water quality improvement benefits are typically associated with projects such as stormwater basins with Water Quality Capture Volume (WQCV) features, Low Impact Development (LID) strategies such as bioretention and grass swales, preservation of riparian and wetland vegetation in drainageways to filter runoff and induce sediment deposition, and other specific approaches where transport of pollutants in stormwater is reduced by facilitating the capture and removal of sediment and associated pollutants prior to being discharged downstream.

Provide detention
Detention provides a method for reducing downstream peak flow rates such that post-development flows more closely resemble pre-development conditions in basins where detention is provided. Proposed detention projects will provide full spectrum detention as

defined in the City's Drainage Criteria Manual. Within the Fountain Creek watershed, proposed projects located in basins that have channels with active bed or bank erosion will receive higher priority.

The criteria defined above provide a means to evaluate a given project and its characteristics to determine its ability to meet overall stormwater program objectives. Although specific criteria have been defined related to a project's function to improve water quality, all repair, replacement and/or enhancement of stormwater infrastructure will provide a holistic water quality benefit downstream.

The capital stormwater project improvements made across the City over time will work in an integrated fashion to enhance overall water quality within the Fountain Creek watershed. Projects can provide both primary and incidental benefits for water quality protection, sediment control, and other ecological features. For example, while the primary purpose of a creek stabilization project designed to protect a sewer crossing is to prevent failure of the utility infrastructure, it can have significant incidental sediment control and water quality benefits due to reduced channel erosion and sediment transport downstream. In addition, these projects help avoid impacts to downstream water quality that would result if sewer line crossings were to fail during flooding events. The cumulative benefits from constructed projects under the City's Stormwater Program will have the effect of enhancing overall water quality.

3.2 Project Prioritization

The overarching objectives of the proposed projects, with respect to the Fountain Creek watershed, are to: (1) reduce downstream flooding potential by reducing peak flow rates; (2) reduce the generation and transport of sediment in excess of natural equilibrium conditions; and reduce downstream concentration of pollutants found in run-off. Each of the proposed projects within the City are to be designed in accordance with the requirements of the DCM.

After rating the projects using the eight criteria listed above, proposed projects may be assigned higher priority by giving consideration to the following factors: (1) the project is deemed time-sensitive due to project-specific factors (e.g., project addresses critical infrastructure protection, project is connected to another City Public Works project, project has FEMA or NRCS funding); (2) the project is located on a tributary to Fountain Creek or on the main stem of Fountain Creek in reaches with observable channel bed or bank erosion; or (3) the potential for the project to be rapidly implemented (e.g., a design is already underway or completed).

City staff, the City's consultant team, and WWE met on four occasions (November 19, 2015, December 2, 2015, December 16, 2015, and March 30, 2016) to (a) settle upon a master list of capital stormwater projects, and (b) evaluate prioritization of projects on the resulting list. The list of projects was developed by combining information from the following source studies or investigations:

- August 2015 Projects: The August 2015 Stormwater Projects (**Table 2-1 August 2015 Stormwater Capital Project List, Appendix B-1**), which were numbered 0 through 31 in the master project list.
- WWE Projects: Of the 43 projects initially presented by WWE at the November 19, 2015 meeting (**Table 2-2 Wright Water Engineers Project List, Appendix B-1**), 10 were already listed in **Table 2-1.** These 10 projects were not repeated, but a "WWE" annotation was added to these 10 project names to track their origin on the master project list. The remaining 33 WWE projects are numbered 32 through 64 in the master project list.

- Additional WWE Projects: At the meeting on December 16, 2015, WWE introduced an additional 13 projects identified through research into older prior studies. These projects were added and evaluated and were numbered 65 through 77 in the master project list.

Using the eight criteria presented above, participants developed a prioritized version of the master project list, included herein in **Table 3-1 City Capital Project Prioritization** (**Appendix B-1**), with the following designations:

- An "X" was placed in a column for a given criterion if a project was deemed to have met the criterion. Each project was evaluated against each of the eight criteria and rated.
- Because downstream benefits are an important factor in determining overall priority for a given capital project, the number of "X's" associated with these four "downstream" criteria were added to create a "Downstream Priority Score" for the project. That score is indicated in a separate column in the table.
- City staff flagged a subset of projects as "Critical City Projects". These were denoted by a "Yes" in that column. Reasons for this City assigning this designation include, for example, that the project is:
    - Able to address a known area of frequent and severe localized flooding
    - Ongoing and must be completed (e.g., FEMA projects). (Note: the FEMA and NRCS projects are not specifically listed, as the majority of funding comes from Federal/ State Grants).
    - Able to be rapidly implemented (e.g., design is already done, or design consultant is already under contract).

At the December 16, 2015 meeting, WWE staff prioritized the subset of 59 projects from the master project list that had a downstream benefit (i.e., a "Downstream Priority Score" of one or greater) in rank order. Five of the original 78 projects on the list (numbered from 0 to 77) were deleted that were identified by the meeting participants as being duplicated, considered an operations and maintenance activity, included in other identified projects, not included in the SNA verified project list, or related to repair of existing developed infrastructure. The remaining 14 projects included on the master project list at the end of the meeting were not identified by WWE with at least one downstream benefit.

Following the December 16, 2015 meeting with WWE, City and consultant staff used all of this input to establish a "City Priority Ranking" of all projects on the master project list. As shown in **Table 3-1 City Capital Project Prioritization** (**Appendix B-1**), the City's ranking represents a balance of high priority City projects with those projects rated with the highest downstream benefits score.

At the March 30, 2016 meeting, WWE, City and consultant staff reviewed the compiled master project list to agree on a 1-year (2016), 5-year (2016-2020) and 20-year (2016-2035) prioritized list of capital projects. Two projects from the original list of 73 projects were deleted by the meeting participants and agreed to be completed with emergency stormwater projects related funding. Two additional projects were identified by WWE to have downstream benefits that were not identified during the previous analysis. The final list of prioritized capital projects included a total of 71 projects, 61 of which were identified by the meeting participants to have at least one downstream benefit. The top priority projects identified and scheduled for completion in the first two years of the delivery plan are discussed in Section 5.4.

CSU's Sanitary Sewer Creek Crossing Program (SSCCP) identifies projects that respond to the need to protect exposed or at-risk utility infrastructure. The prioritization of those projects has typically been determined by CSU staff based on their judgment of the criticality of each utility crossing project location. These projects are in addition to the identified City Stormwater Program capital projects and integrate stormwater considerations into the creek crossing protection designs. The prioritization criteria developed for the City capital projects were determined to also have applicability to the projects identified through the SSCCP. Therefore, the SSCCP project list has been re-evaluated in light of these criteria to better illustrate project benefits from these crossing projects in meeting overall City Stormwater Program objectives (see **Table 3-2 Creek Crossing Project Benefits, Appendix B-1**).

4.0 DEVELOPMENT OF PROJECT INFORMATION

Information about each of the City's capital stormwater projects was compiled and documented. The scope, features and cost estimate for each project was reviewed or validated as part of this effort.

The SSCCP project costs are validated on an annual basis by CSU staff, and were not separately validated as part of the effort documented in this report. CSU staff typically query the SSCCP project database one or more times annually to evaluate the top 20 projects with the highest rating and risk scores and reprioritize as necessary with other known priority projects based on current inspection data.

4.1 Definition of Capital Cost Components

The capital costs presented in this report include typical cost components for project implementation including planning, engineering, permitting and construction. Capital costs shown herein are based on a conceptual level of project definition and, for most of the projects, no design engineering has yet been performed. As such, the costs should be considered planning level costs to be refined once engineering and design efforts have been performed.

The components of the overall project capital costs are summarized in **Table 4-1 Definition of Capital Cost Components** (**Appendix B-1**) and discussed below:

- **Construction Value:** The "estimated construction cost" is usually derived using rough quantity estimates and unit cost factors. A "construction contingency" is then added to account for constructed items that have not been identified during early planning stages.
- **Soft Costs:** Soft costs are non-construction items that are incurred over the course of project implementation. They are defined as a percentage of the Construction Value. The soft cost percentage values shown in **Table 4-1 Definition of Capital Cost Components** (**Appendix B-1**) were established based on past City experience and MWH's experience on other programs. The following soft costs have been defined for this work:
    - **City Staff Costs:** Various City staff will work on the capital projects (e.g., stormwater engineers, administrative staff and procurement staff) so this cost category is accounted for in the in the overall project cost estimates.
    - **City Staff Augmentation:** This involves hiring outside consultants to augment existing City staff to help implement a project. This includes outside program management or other support services.
    - **Design:** Cost associated with hiring an engineering consulting firm to perform preliminary and final design services for the project.
    - **Construction Management:** Cost associated with hiring an engineering or construction management firm to provide construction management services.
    - **Engineering Services during Construction:** Cost associated with having a design engineering firm support City staff during the construction phase. These services are often provided by the same firm that performs the design.
    - **Legal:** City legal staff provide legal input to projects such as for contract reviews.
    - **Land Transactions:** Capital projects often require acquisition of land rights including rights-of-way, temporary construction easements, permanent easements, and fee title land purchases. The City's practice is to accrue these costs against

projects. Each project cost estimate includes costs for land acquisition as appropriate.

- **Project Contingency:** The project contingency addresses overall uncertainty that exists regarding the scope and project cost at the planning stage. It is multiplied by the sum of the Construction Value and Soft Costs. For the purposes of this document, project contingency has been defined in two components:
  - **Design Contingency:** Accounts for uncertainty related to design since project definition is limited to the planning stage. Design Contingency is set at 25 percent in the early planning phase and typically decreases as the design progresses and uncertainty about project costs is reduced.
  - **Construction Changes Contingency:** Accounts for changes that occur after a construction contract is bid and a contract is awarded. It covers risk of change orders and claims. This contingency ranges from 10 to 15 percent.
- **Escalation**: Project overall capital costs have been escalated as previously described. Escalation computations were included within the cost spreadsheet model presented later in this report.

4.2 Validation Approach

The following steps were taken to validate the City projects:

- City staff provided available information on each project, as listed in **Tables 1-1 City Capital Improvement Projects List and 2-1 August 2015 Stormwater Capital Project List** (**Appendix B-1**). The source of information on a number of these projects was the SNA report, which was also the initial source of project information for **Table 2-2 Wright Water Engineers Project List** (**Appendix B-1**). This information was compiled into project summary sheets for each project (included in **Appendix B-2**). The project summary sheets contain a brief project description, location and an overview of project benefits.
- Each project was categorized based on the level of available information. Additional cost estimate analysis was completed and all project costs were escalated to January 2016 dollars.
- Each project was analyzed to determine the project duration based on the applicable project delivery stages for the project.
- The project information was summarized into two-page project descriptions.

4.3 Assessment of City Capital Stormwater Project Costs

The City's capital stormwater project costs are summarized in **Table 4-2 City Capital Project Costs** (**Appendix B-1**), which contains the following information for the projects included on the master project list:

- Project number and name
- If the project was identified from **Table 2-1 August 2015 Stormwater Capital Project List** (**Appendix B-1**) that estimated total capital cost is shown.
- Information on the project obtained from the SNA which included:
  - Associated SNA project number

- Class A or B determination per SNA (Class A projects had more available information than Class B).
- Associated SNA project cost

- Comments summarizing conclusions about to what extent each project was validated
- Validated cost as described in this report, expressed in 2016 dollars
- Indication as to whether the project has potential to be "fast tracked." A project has that potential if it meets any of these conditions:
  - Design is complete and the project is ready to bid for construction
  - The City has a design consultant under contract and can immediately begin design
  - The project is small enough to use the existing City On-Call Engineering Contract to engage a design firm (the existing contract is limited to less than $100,000 in design fee, which is roughly equivalent to a capital cost less than $2.0 million).
  - The City has a recent similar design that it can adapt with minimal additional design effort using City staff (i.e., no outside design consultant procurement needed).

The City has two ongoing projects in the master project list that are a combination of multiple smaller projects. These include Project 0 (FEMA Projects) and Project 1 (Emergency Stormwater Projects). These two items in the master project list have a budget amount to address some of the actions on these lists each year under the Stormwater Program. FEMA projects are envisioned to continue through 2018. The Emergency Stormwater Projects are budgeted annually through 2025.

The FEMA projects consist of repair of damaged channels and infrastructure related to the Presidential Disaster Declaration for 2013 flooding and May-June 2015 rain events. The City is currently working with FEMA to prepare project worksheets for identified projects resulting from these events. Natural Resource Conservation Service (NRCS) projects have also been identified. The budget amounts shown are forecasted grant match dollar amounts; the City is required to contribute approximately 25 percent of the overall costs when seeking outside grant funding to augment Stormwater Program budgets. The budgeted grant match included in the CIP is based on receiving a similar level of FEMA funding in the future.

The Emergency Stormwater Projects consist of ongoing repairs of damaged infrastructure that involve a level of complexity and cost beyond a typical O&M activity. The annual budget is allocated to address unplanned emergency projects and community related projects that arise over the course of a fiscal year. The budget estimate is based on the City's past experience with these projects, with an assumed allocation of the emergency stormwater projects budget of 15 percent for detention-type projects, 25 percent for channel stabilization and grade control projects, and 60 percent for other stormwater infrastructure improvements.

There were only two projects from the master project list for which sufficient engineering work was completed to allow full validation of the project cost estimates following the process described above. Those are: Project 2, Sand Creek Pond 3, and Project 11, Camp Creek.

There were 18 projects for which the City established an allowance, but no defined project scope had yet been developed. These include a number of projects from the SNA report where the City assumed a portion of the SNA project work would be done, but did not fully identify which portion or reach of a larger project would be done. These projects will require additional

planning to determine a sufficient level of project definition to proceed with procuring design services.

The remaining projects were identified in the SNA report and the budget and scope developed therein was used. The SNA project cost estimates for these projects were escalated to 2016 levels following the approach described previously.

4.4 Capital Stormwater Project Validation

The following contains a description of the two projects for which a detailed project validation analysis was performed.

4.4.1 Project 2—Sand Creek Pond 3

Design of the Sand Creek Pond 3 project was recently completed by Kiowa Engineering. The City released a Request for Bids for this project in November 2015 and anticipates awarding a construction contract in January 2016. The cost estimate was developed by Kiowa Engineering.

This project was originally estimated at $1,200,000 and was originally a detention basin only. The project now includes an inflow drop structure. The construction value is based on an Engineer's estimate of $1,073,000 for the detention basin and $1,378,000 for the inflow drop structure. Validation consisted of an item by item review of the costs for each bid item. Using Colorado Department of Transportation (CDOT) unit rates for individual components or bid items, the project costs were found to be approximately 88 percent of the Engineer's estimate from Kiowa. As such, it was concluded that the Engineer's estimate is reasonable and was used as the basis for development of this project's capital cost estimate ($3,076,000) for inclusion in the Stormwater Program CIP.

4.4.2 Project 11—Camp Creek

This project originally included portions of projects CS-002 and CS-003 from the SNA and involves replacing an existing concrete channel with a natural channel, including increasing hydraulic capacity of bridges crossing the creek. The City retained Wilson & Company to study this project. Wilson and Company estimated a total construction cost of $30,000,000 for the complete length of Camp Creek. Following completion of Wilson's study, City staff adjusted the project definition assuming that only a portion of the total reach of Camp Creek identified in Wilson and Company's study that did not include major bridge reconstruction would be completed. This portion included the reach from Chambers Street to Water Street. Based on the Wilson estimate, City staff pro-rated the total estimated capital cost for this shorter reach to be $4,250,000, or approximately $2,400,000 in construction value.

To validate Project 11, MWH evaluated Wilson & Company's adjusted Engineer's estimated construction value. Quantities generated from Wilson's study were compared against CDOT unit prices for each project element to produce an estimate of the total construction value. Starting with the full length Camp Creek project (capital cost estimate of $36,900,000, construction cost estimate of $30,000,000), the construction value was adjusted to align with the scope of work for the shortened reach of channel to be improved. The revised estimated construction value yielded from this analysis was computed to be $2,400,000. This confirmed the revised estimated construction value for this project as included in the master project list for the City's Stormwater Program CIP.

4.5 Assessment of Creek Crossing Project Costs

The Creek Crossing project costs are typically assessed by CSU staff by evaluating an Engineer's estimate based on construction design plans or by the order of magnitude of a project based on schematic designs. The resulting costs are summarized in **Table 2-3 Utilities Creek Crossing Project List** (**Appendix B-1**).

5.0 CAPITAL PROJECT SCHEDULES AND COST DISTRIBUTION

Once the prioritized list of capital projects was established and costs were validated, those projects and costs were scheduled over time. Seventy-one projects have been identified to be completed. The top 37 projects are scheduled to complete within the first 10 years of our CPDP.

5.1 Schedule Assumptions

To create project schedules, a number of assumptions were made, including the following:

- Project name and number
- MWH validated cost in 2016 dollars
- Three questions that relate to lengthening a project's schedule, such as estimating whether each project will need to:
  - Hire an outside design consultant
  - Acquire land (temporary or permanent easements, or fee title)
  - Address environmental documentation or permitting issues
- Estimates of the duration of each project by the five phases identified earlier. An algorithm was created to help estimate these durations as described below:
  - A project's capital cost size generally impacts its duration. The three cost categories established were <$1M, $1M-5M, and >$5M. These were termed Small, Medium, and Large Size, and durations were assumed for each phase. (Note that durations were kept to even increments of three months to allow the cost model to more easily distribute costs by quarter.)
  - For the design phase duration, if a project does not involve either land acquisition or environmental/permitting issues, then the shortest design duration is assumed. If a project involves either one or the other, then the longer design duration is assumed.
  - It is important to note that this algorithm was used to provide a rational basis for establishing an initial estimate of project durations. As specific information is developed on a given project, the algorithm values can be overridden in the cost model with more specific estimates to update and refine the CIP completion strategy over time.
- The final set of assumptions for the cost model deals with spreading a project's total capital cost over the five phases. To do so, a percentage distribution of capital costs by phase was developed. As with the phase durations, as specific information is developed on a given project, the cost distribution values can be overridden in the cost model with more specific estimates.

5.2 City Project Cost Distribution

The results and assumptions for the City projects were used to create a Microsoft Excel spreadsheet-based cost model that evaluates the variation of project start dates and enables the spread of capital costs over time by project phase. This yields a year-by-year plan of total capital expenditures required to accomplish the list of priority projects.

However, because both annual MS4 Program costs and City Capital Project costs accrue against the annual City budget, the cost model also includes annual MS4/O&M costs and balances the available budget for capital projects in a given year with costs for MS4-related

activities. Appendix A to the Stormwater Program Implementation Plan contains the *MS4 Program Improvement Report* which describes the components comprising the annual MS4/O&M costs.

The cost model contains the following components (see **Figure 5-1. Summary of Cost Model, Appendix B-1**):

- **Full Operational Expenditures** (un-escalated): A summary of the annual operational (non-capital) costs. These costs are developed in other sections within the model.
- **Capital Projects:** A list of the 37 priority project names, start dates, and capital costs. It is in this location that the project start date can be adjusted (one of the most common activities when using the model) based on the City's priority (highest priority projects scheduled first). Capital costs and duration assumptions are captured elsewhere in the model. (Note that City priority project No. 9, Sand Creek Stabilization South of Platte, is not included in this model as the project is funded through FEMA grant funds with City match dollars encumbered in 2015.)
- **Total Annual Cost** (graphics): The annual operational and capital costs, along with an overall total for both encumbrances and expenditures. This total is measured against the annual City budget.
- **Distribute Costs:** This must be activated each time a project start date is changed, to trigger the model to recalculate.
- **Operations Cost % of Labor:** This is a component of the operational expenditures. It covers miscellaneous administrative labor costs. These figures are adjusted elsewhere in the model.
- **Escalation Rates:** All costs were estimated in January 2016 dollars and escalated over time. Different escalation rates were established for Capital, Labor, and Maintenance Services & Equipment.

The model was used to shift project start dates to achieve an anticipated yearly encumbered cash flow as close as possible to the target budget for both capital and O&M expenditures. The final result is shown in **Figure 5-2 City Costs for 2016-2025** (**Appendix B-1**).

5.3 Creek Crossing Project Cost Distribution

Because the Creek Crossing projects are less complex and do not involve a blend of O&M costs, a cost model was not needed to distribute these costs over time. The cost distribution was done manually.

5.4 Project Schedules

A graphical representation of the project schedules was created for both the City and Creek Crossing projects (see **Figure 5-3 Schedule for City Stormwater Capital Projects** and **Figure 5-4 Schedule for Creek Crossing Projects, Appendix B-1**). The five phases of each project are shown in different colors to distinguish them visually. As shown in **Figure 5-3 Schedule for City Stormwater Capital Projects (Appendix B-1)**, there will be eight projects underway in 2016 (nine including Sand Creek Stabilization South of Platte), with a peak of 17 projects being initiated, already underway, or being closed out in 2019.

The top nine priority projects are scheduled and funded to commence in 2016, as seen in **Table 3-1 City Capital Project Prioritization** (**Appendix B-1**). In 2017, the next three priority projects (priority ranking 10, 11 and 12) are scheduled to commence.

The first 12 projects to be initiated in years one and two, and the reasons they were prioritized and selected, are as follows:

1) **Sand Creek Pond 3** – This project involves a new full-spectrum detention basin with a water quality capture volume, one that exceeds the minimum WQCV in the criteria manual, and a drop structure on Sand Creek. This project is needed to capture, detain and provide water quality treatment for municipal runoff from a large area of previously constructed development. This project was identified by both the City and WWE with the highest priority ranking, and meets all four downstream benefit criteria. Design of the project was completed in late 2015 and construction is anticipated to begin in 2016.
2) **FEMA Projects** – Related to the Presidential Disaster Declaration for 2013 flooding and May/June 2015 rain events, the City has worked with FEMA to secure funding to complete ongoing projects and to prepare project worksheets for future projects. These projects are critical to stabilize soils after recent emergency incidents, which also provides significant downstream benefits by preventing extreme amounts of erosion and sediment transport from wildfire burn and flood damaged areas. Furthermore, grant match dollar amounts secure additional Federal funding, thereby leveraging City resources and increasing overall program capital expenditures annually.
3) **King Street Detention Pond** – This project includes construction of a new outlet structure, improved maintenance access, and retrofit of the existing detention basin capacity and outlet structure to provide full spectrum detention and water quality enhancement. This project has a completed design and is ready for rapid implementation.
4) **Water Quality Project – America the Beautiful Park** – A new Olympic Museum development project is planned and scheduled for construction in 2016. This project allows the City to capitalize on the new development construction and construct a full spectrum detention basin that will capture and detain flows from portions of the downtown area prior to discharge to Fountain Creek.
5) **USAFA Drainages (Northgate Area)** – The Northgate area in the northern portion of the City has seen rapid urban growth over the past 20 years. Several natural drainages from this area were severely damaged in recent storms with extensive channel and bank erosion occurring. The project involves construction of channel stabilization and grade control measures along three Monument Branch tributaries. Stabilization of a Colorado Springs Utilities Sanitary Sewer Force Main along the eastern border of the USAFA is also included as part of the project work.
6) **Emergency Stormwater Projects** – In addition to the stormwater CIP master project list, the City has maintained a list of projects that are identified based on emergency-related needs and new concerns that arise over the course of a fiscal year. These typically involve localized neighborhood and/or intersection flooding, building flooding or other flooding-related needs not previously identified as part of a specific capital project. The City evaluates the prioritization of these needs on an annual basis with approximately $1.5 million per year of the capital stormwater budget to address these needs. This level of budget allocation to address these needs was determined based on the City's past experience and judgment.

7) **Fairfax Tributary Detention Pond** – This project includes design and construction of a new full spectrum detention basin that provide water quality improvements to stormwater runoff and reductions of peak flows downstream. It was selected due to its watershed location and downstream water quality benefits. .

8) **Downtown Drainage Improvements** – Pikes Peak Avenue in downtown Colorado Springs is scheduled to be resurfaced in 2016. As part of this effort, the existing stormwater conveyance system that is located within that roadway will be upsized to provide increased stormwater conveyance capacity thereby reducing flooding potential that was experienced in the area in recent past. The project is scheduled to be completed during the resurfacing activities to minimize overall costs and disturbance to adjacent properties.

9) **Sand Creek Stabilization South of Platte** – This project includes design and construction to stabilize of the existing Sand Creek channel downstream of the Platte Avenue Bridge to a point north of Karr Road. Stabilization measures are scheduled to include channel bank stabilization and installation of multiple drop structures within the channel to stabilize channel flows and reduce sediment transport. This project was selected based on awarded grant funding in 2016 from the US Federal Emergency Management Agency (FEMA) and the associated downstream benefits within the Sand Creek watershed.

10) **Cottonwood Creek Detention Basins** – This project involves design and construction of seven detention basins along Cottonwood Creek to provide a comprehensive solution for this tributary watershed to Monument Creek. Each of the planned detention basins will incorporate full spectrum detention features that provide water quality improvements to stormwater runoff and reductions of peak flows downstream.

11) **Rangewood Tributary Detention Pond** – This project includes design and construction of a new full spectrum detention basin that provide water quality improvements to stormwater runoff and reductions of peak flows downstream. It was selected due to its watershed location and downstream water quality benefits.

12) **Cottonwood Creek Detention Pond – Bridle Pass Drive** – Similar to the Rangewood Tributary Detention Pond, this project includes design and construction of a new detention basin that provide water quality improvements to stormwater runoff and reductions of peak flows downstream. It was selected due to its watershed location and downstream water quality benefits.

5.5 Project Locations

The locations of the City and Sanitary Sewer Creek Crossing projects are shown in **Figure 5-5 Location Map for Stormwater Projects** (**Appendix B-1**). The projects are distributed across the City boundaries, with a large portion of the projects located along the main trunks of Monument Creek, Sand Creek, and Fountain Creek.

In addition, a map summarizing the history of City drainage basin master plan studies is provided (see **Figure 5-6 History of City Drainage Basin Master Plans, Appendix B-1**). As shown, the City has 32 drainage basins, with drainage basin planning studies prepared as far back as 1964.

6.0 NEXT STEPS

The immediate next steps in advancing the City's Stormwater Program Implementation Plan include moving the identified priority capital projects forward in 2016. Action items were divided into three components:

- Actions to be completed within the first three months of program implementation
- Actions to be completed within the first six months
- Actions to be completed by the end of the first year

In addition, activities related to long-term CIP implementation were identified.

6.1 By End of the First Three Months

By the end of the first three months, a number of capital projects will be underway (see **Figure 5-3 Schedule for City Stormwater Capital Projects, Appendix B-1**).

The Stormwater Program's Program Management Plan (PMP) is in the process of being drafted and will provide the policy and procedural guidance for the City to manage the delivery of the projects under its Stormwater Program CIP programmatically to achieve overall program objectives. By the end of the first three months, the draft PMP will be in process to begin addressing City-specific project implementation items and will be the procedural guidance manual for delivery of projects starting in 2017.

Capital Program staff will review the projects in 2016 and identify any common issues or constraints. Based on that review, staff will determine the need for programmatic (i.e., across all projects) tracking of any issues (e.g., procurement, permits, land acquisition).

The City is in the process of implementing new stormwater on-call construction contracts. By the end of the first three months, those contracts will be in place and the on-call contractors ready and available to accept assignments to support City Stormwater Division activities.

Under the current staffing plan, there are plans to potentially add engineering staff to the capital projects group in 2016. However, the City may want to augment existing capital projects staff with consultant staff to assist with project management and/or programmatic tasks. By the end of the first three months, the City will decide whether to do any "staff augmentation" in 2016, and, if they do, will move forward with procuring outside support.

6.2 By End of the First Six Months

The City has had on-call engineering contracts in place for some time and intends to update those contracts to more specifically reflect the Capital Program needs. By the end of the first six months, the new stormwater on-call engineering contracts will be either in place or in the procurement phase.

In addition, a number of projects will be underway (see **Figure 5-3 Schedule for City Stormwater Capital Projects, Appendix B-1**). Design task orders will have either been issued to on-call engineers or in the procurement stage for a number of these projects.

The draft requirements of the PMP will be in place and a QA/QC process will begin to verify implementation of those requirements.

The staff augmentation approach if chosen will be implemented or be in the process of being implemented.

The City recognizes its need to review recently completed development projects for implementation of appropriate permanent post-construction Best Management Practices/BMPs (e.g., detention ponds, infiltration swales) consistent with the City's Municipal Separate Stormwater Sewer System (MS4) permit and Drainage Criteria Manual. This matter is discussed more fully in the MS4 Program Improvement Plan report, which is Appendix A to the SPIP.

The City is in the process of reviewing those development projects and determining whether solutions are needed to mitigate water quality impacts from runoff from those areas. A solution in some areas may potentially involve construction of capital stormwater projects to mitigate water quality impacts. Capital projects identified for that purpose may be added to the capital project list presented in this CPDP and prioritized as appropriate based on the criteria developed by the City and WWE.

6.3 By End of the First Year

Upon completion of the first year, a number of projects will be underway (see **Figure 5-3 Schedule for City Stormwater Capital Projects, Appendix B-1**).

Annual reporting on CIP progress will begin, contributing to the overall Stormwater Program reporting process.

The annual CIP planning process adopted by the City for the Stormwater Program will be implemented, resulting in an updated project list for 2017.

6.4 Annual CIP Planning Process

The City recognizes that on-going planning is necessary to address all future City stormwater planning needs. Within the MS4 Program Improvement Plan, developed as part of the SPIP, the City has planned and budgeted funds to develop a Stormwater Infrastructure Master Plan (SIMP). The purpose of the SIMP is to collect, standardize, and integrate information on water quality BMPs, stormwater capital projects, and operations and maintenance (O&M) projects needed to address current and future stormwater conditions in the City. The SIMP is scheduled to be completed in 2018 and is intended to consolidate information from various current and historical sources (i.e., drainage basin planning studies, drainage master plans, project lists, BMP inventories) into a comprehensive, uniform plan that is actionable by the City.

Upon completion of the SIMP, the stormwater CIP must be updated to reflect the most up-to-date prioritization of planned projects that incorporates new project needs that may arise in a given year based on updated planning and studies and as seasonal events may require. After completion of the SIMP, the City Stormwater Division staff will maintain and update the plan and stormwater CIP annually as necessary.

APPENDIX B-1 – TABLES AND FIGURES

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Table 1-1: City Capital Improvement Projects List

City Priority Ranking	***Colorado Springs Stormwater Program Implementation Plan*** Project Name	Capital Cost (2016$)
1	2. Sand Creek Pond 3	$3,076,000
2	0. FEMA Projects [1)]	$2,081,000
3	8. King Street Detention Pond (WWE CS-013)	$250,000
4	13. Water Quality Project--America the Beautiful Park Detention Basin [2)]	$2,500,000
5	6. USAFA Drainages (Northgate Area)	$2,000,000
6	1. Emergency Stormwater Projects [3)]	$7,500,000 (First 5 years)
7	7. Fairfax Tributary Detention Pond (WWE CS-330)	$398,000
8	5. Downtown Drainage Improvements	$2,250,000
9	26. Sand Creek Stabilization south of Platte (WWE CS-018) [5)]	$5,290,000
10	65. Cottonwood Creek Detention Basins (PR-2,6,7,9,11,14)	$2,740,000
11	31. Rangewood Tributary Detention Pond (WWE CS-333)	$750,000
12	52. Storage Bridle Pass Drive Construct new pond to improve 2 yr flows (CS-332)	$1,591,000
13	9. South Pine Creek Detention Pond (WWE CS-335)	$461,000
14	15. Citadel Mall Neighborhood Improvements (CS-374)	$1,053,000
15	23. North Chelton Road (CS-057)	$1,370,000
16	11. Camp Creek--Phase 1 (WWE CS-002 and CS-003) (Redefined) [4)]	$4,356,000
17	41. Storage Wagner Park Detention - downstream of Bijou Detention Storage Required (CS-360)	$704,000
18	38. Storage Austin Bluffs Parkway upstream of Research (CS-331)	$754,000
19	51. Storage Cottonwood Park (west side) (CS-334)	$3,768,000
20	34. Storage Sand Creek Detention Pond 2 Complete Detention Pond 2 on Sand Creek south of Barnes (CS-105)	$1,025,000
21	24. Park Vista (Siferd Low Water Crossing) (CS-232)	$3,750,000
22	70. CS-239 Grade Control Upper Hancock Channel - Hancock to Academy, 78+33 to	$1,236,000
23	16. North Douglas Natural Channel	$3,500,000
24	19. Galley Road Channel (WWE CS-258) Sand Creek between Galley and Platte Avenue	$2,000,000
25	21. Monument Creek at Talemine (CS-011)	$1,778,000
26	35. Side Channel Sand Creek - segment 107, reach SC-5 1700lf channel stabilization (CS-261)	$1,242,000
27	39. Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to (CS-259)	$6,594,000
28	28. Shooks Run Channel - Cache La Poudre St. to Patty Jewett Golf Course (CS-326)	$3,500,000
29	77. CS-265 Grade Control Sand Creek Upper West Fork - Maizeland to South Carefree 3 drop structures	$420,000
30	76. CS-254 Channel/Grade Control Sand Creek Upper West Fork - Galley to Murray 1730lf channel stabilization, 2 drop structures	$2,006,000
31	75. CS-262 Channel/Grade Control Upper Sand Creek - W. Fork to Palmer Park Blvd. 1550lf channel stabilization, w/drop structures	$1,192,000
32	74. CS-252 Channel Sand Creek Lower West Fork - Emory to Platte Ave. 1000lf channel stabilization	$2,383,000
33	73. CS-025 Channel/Grade Control Sand Creek West Fork - Main stem to Wooten Construct drop structures & streambank protection	$2,206,000
34	61. Channel/Grade Control Sand Creek (CS-040)	$3,507,000
35	60. Channel/Grade Control Sand Creek (CS-039)	$3,908,000
36	71. CS-246 Channel/Grade Control Sand Creek Lower Center Tributary - No Name to East Fork	$458,000
37	62. Channel/Grade Control East Fork of Sand Creek (CS-041)	$7,464,000
38	55. Grade Control Fountain Blvd. Channel - Chelton Rd. to Fountain Blvd., (CS-243)	$2,553,000
39	54. Grade Control Chelton Road Channel - Academy to Chelton, 96+97 (CS-241)	$1,593,000
40	69. CS-240 Channel/Storm Drain Lower Sand Creek Tributaries 2,3, and 4 - Main Stem to Academy	$867,000
41	67. CS-238 Channel/Grade Control Lower Hancock Channel - Downstream 1500lf channel stabilization, 2 drop structures	$1,247,000
42	66. CS-268 Channel/Grade Control Las Vegas St. Channel - ATSF RR to Peterson Fld Trib. 700lf channel stabilization, 2 drop structures	$1,545,000
43	72. CS-247 Channel/Grade Control Sand Creek Middle Center Tributary - Powers to No Name 300lf channel stabilization, 3 drop structures	$175,000
44	68. CS-130 Channel Hancock Expressway Channel East of Astrozon Undermining of infrastructure.	$72,000
45	20. Gold Medal Point Channel (WWE CS-339)	$750,000
46	57. Channel/Grade Control Cottonwood Creek - Academy to Union Construct flood control and stream restoration projects (CS-004)	$5,840,000
47	59. Channel/Grade Control Cottonwood Creek - Monument Creek to Academy Construct flood control and stream restoration projects. (CS-005)	$13,232,000
48	58. Channel/Grade Control Rangewood Channel - Main Stem to Balsam 7400lf channel stabilization, w/drop structures (CS-343)	$5,066,000
49	63. Channel/Grade Control Cottonwood Creek - Rangewood to Woodmen 5300lf channel stabilization, w/drop structures (CS-337)	$3,768,000
50	45. Channel/Grade Control Fountain Creek - W. Cimmaron St. to N end of Drake Power (CS-306)	$1,298,000
51	46. Channel/Grade Control Fountain Creek - N end Drake Power Plant to south end of (CS-307)	$1,941,000
52	18. Fountain Creek - Drake Power Plant to Shooks Run (WWE CS-308 and CS-309)	$2,250,000
53	43. Channel/Grade Control Fountain Creek - Shooks Run to Fountain Mutual Canal Channel stabilization, 2 drop structures (CS-310)	$11,854,000
54	53. Channel/Grade Control Fountain Creek - Fountain Mutual Canal to US 24 Bypass Channel stabilization, 2 drop structures (CS-311)	$9,921,000
55	36. Channel/Grade Control Fountain Creek - US 24 Bypass to Spring Creek Channel stabilization, 2 drop structures (CS-312)	$4,636,000
56	50. Channel/Grade Control Fountain Creek - Spring Creek to Mobile Home Park Channel stabilization, 3 drop structures (CS-313)	$3,803,000
57	32. Channel/Grade Control Fountain Creek - Mobile Home Park to N end El Pomar Sports (CS-314)	$4,235,000

City Priority Ranking	***Colorado Springs Stormwater Program Implementation Plan*** Project Name	Capital Cost (2016$)
58	33. Channel/Grade Control Fountain Creek - N end El Pomar Sports Park to S end El (CS-315)	$4,551,000
59	22. Monument Creek Mobile Home Park (CS-139)	$478,000
60	64. Channel/Grade Control Chelton Dr. Channel - Chelton Dr to Airport Rd 2400lf channel stabilization, 2 drop structures (CS-359)	$1,487,000
61	25. Pine Creek Outfall into Monument Creek (CS-047)	$1,250,000
62	49. Channel/Grade Control Templeton Gap Rd. Channel - Powers to Tutt 4400lf channel stabilization, w/drop structures (CS-342)	$3,077,000
63	40. Storage Mount Woodmen Court Drainage Sedimentation pond outfalls directly onto private property (CS-064)	$515,000
64	12. Shooks Run Improvements	$3,000,000
65	27. Shooks Run Channel - Bijou Street Culvert & Channel Stabilization (CS-054a)	$1,500,000
66	29. Shooks Run Improvements - Phase 3 (CS-054b)	$1,500,000
67	4. Old Annexation Drainage Improvements	$2,800,000
68	14. Briargate Drainage Improvements (CS-344)	$1,641,000
69	30. Skyway Area Improvements (CS-235 & CS-296)	$457,000
70	48. Channel/Storm Drain Columbia Road Drainage (CS-045)	$2,088,000
71	17. Dry Creek Channel (WWE CS-007)	$1,386,000

Footnotes:

1) Total anticipated FEMA Grant City match portion through 2018: Budgeted $1,081,000 (2016); $500,000 (2017); $500,000 (2018).
2) Total Capital Cost includes 5 detention ponds, one per year at $500,000 each between 2016-2020. First pond to be intiated with America the Beautiful Park detention basin in 2016.
3) Emergency Stormwater Projects list total capital cost (2016-2020); budgeted at $1.5 Million per year ongoing.
4) Additional channel lining removal projects along Camp Creek channel may be done as funding becomes available.
5) Funding for capital cost shown is FEMA grant funding and City grant match encumbered in 2015. No 2016 City capital contribution for this project.
6) See 2016 and 2016-2020 Project lists for additional detail on project funding.
7) Total estimated project capital cost is shown for each project. Total Stormwater Control Program yearly capital expenditures depend on the number of projects underway and the project phase(s) performed in a given year. Total yearly capital expenditures will be presented in the annual reporting of the City's Stormwater Control Program performance.

Table 2-1. August 2015 Stormwater Capital Project List

Dept Rank	Project Name	2016	2017	2018	2019	2020	Grand Total
0	Estimated 2016 Award-May 2015 Flood FEMA Grant Match	1,081,082					1,081,082
	Estimated 2017 Award-May 2015 Flood Grant Match		500,000				500,000
	Estimated 2018 Award-May 2015 Flood Grant Match			500,000			500,000
1	Emergency Stormwater Projects	1,700,000	1,200,000	1,500,000	1,500,000	1,500,000	7,400,000
2	Sand Creek Pond 3	1,200,000					1,200,000
3	Dam Repairs	400,000					400,000
4	Old Annex Drainage Improvements	1,000,000	1,800,000				2,800,000
5	Downtown Drainage Improvements	750,000	1,500,000				2,250,000
6	USAFA Drainages (Northgate area)	500,000	1,500,000				2,000,000
7	Fairfax Tributary Detention Pond	400,000					400,000
8	King Street Detention Pond	250,000					250,000
9	South Pine Creek Detention Pond	500,000					500,000
10	Erindale Drainage Improvements	500,000					500,000
11	Camp Creek	750,000	2,000,000	1,500,000			4,250,000
12	Shooks Run Improvements		500,000	1,000,000	1,500,000		3,000,000
13	Water Quality Projects	500,000	500,000	500,000	500,000	500,000	2,500,000
(blank)	Briargate Drainage Improvements				1,500,000		1,500,000
	Citadel Mall Neighborhood Improvements		250,000	3,000,000			3,250,000
	Douglas Creek Repairs				1,500,000		1,500,000
	Dry Creek Channel					1,500,000	1,500,000
	Fountain Creek - Drake Power Plant to Shooks Run					750,000	750,000
	Galley Road Channel					2,000,000	2,000,000
	Gold Medal Point Channel				750,000		750,000
	Monument Creek at Talemine					1,000,000	1,000,000
	Monument Creek Mobile Home Park				500,000		500,000
	North Chelton Road		1,500,000				1,500,000
	Park Vista (Siferd Low Water Crossing)		250,000	3,500,000			3,750,000
	Pine Creek Outfall into Monument Creek				1,250,000		1,250,000
	Sand Creek Stabilization south of Platte				2,000,000		2,000,000
	Shooks Run Channel - Bijou St. Culvert and Channel Stabilization					1,500,000	1,500,000
	Shooks Run Channel - Cache La Poudre St. to Patty Jewett Golf Course					3,500,000	3,500,000
	Shooks Run Improvements - Phase 3				1,500,000		1,500,000
	Skyway Area Improvements				500,000		500,000
	Rangewood Tributary Detention Pond					750,000	750,000
Grand Total		**9,531,082**	**11,500,000**	**11,500,000**	**13,000,000**	**13,000,000**	**58,531,082**

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Table 2-2. Wright Water Engineers Project List

10-year Plan for Colorado Springs Stormwater Infrastructure Improvements					
Year	Project Number*	Project Description*	Project Costs*	Yearly Project Costs*	Design / O&M Costs
1	CS-330	Storage Research Parkway at Powers	$ 391,832		
	CS-333	Storage Rangewood Tributary at Dublin Blvd.	$ 659,927		
	CS-335	Storage South Pine Creek Lexington at Bordeaux	$ 453,700		
	CS-314	Channel/Grade Control Fountain Creek - Mobile Home Park to N end El Pomar Sports	$ 4,171,942		
	CS-315	Channel/Grade Control Fountain Creek - N end El Pomar Sports Park to S end El	$ 4,484,154		
	CS-013	Storage King Street Detention Pond Construct new outlet structure and improve maintenance	$ 431,000		
	CS-018	Channel/Grade Control Sand Creek Downstream of Platte Construct stormwater drop structures, streambank protection	$ 2,944,535		
	CS-308	Channel/Grade Control Fountain Creek - Drake Power Plant to S. Tejon St. Channel stabilization, 1 drop structure	$ 1,784,284		
	CS-105	Storage Sand Creek Detention Pond 2 Complete Detention Pond 2 on Sand Creek south of Barnes	$ 1,000,000	$ 16,321,374	$ 3,000,000
2	CS-309	Channel/Grade Control Fountain Creek - S. Tejon St. to Shooks Run Channel stabilization, 1 drop structure	$ 2,868,916		
	CS-261	Channel Sand Creek Main Stem - segment 107, reach SC-5 1700lf channel stabilization	$ 1,224,043		
	CS-312	Channel/Grade Control Fountain Creek - US 24 Bypass to Spring Creek Channel stabilization, 2 drop structures	$ 4,567,880		
	CS-222	Channel Rockrimmon Channel at Rockrimmon/Pro Rodeo Int. Repair damage to channel at outlet	$ 97,475		
	CS-331	Storage Austin Bluffs Parkway upstream of Research	$ 742,418		
	CS-259	Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to	$ 6,496,775		
	CS-064	Storage Mount Woodmen Court Drainage Sedimentation pond outfalls directly onto private property	$ 502,000	$ 16,499,507	$ 3,000,000
3	CS-360	Storage Wagner Park Detention - downstream of Bijou Detention Storage Required	$ 693,237		
	CS-106	Channel/Grade Control Sand Creek Main Stem Phase III - Fountain Creek Confluence	$ 2,200,000		
	CS-310	Channel/Grade Control Fountain Creek - Shooks Run to Fountain Mutual Canal Channel stabilization, 2 drop structures	$ 11,678,463		
	CS-051	Storage Spring Run Detention Ponds	$ 1,618,000	$ 16,189,700	$ 3,000,000
4	CS-306	Channel/Grade Control Fountain Creek - W. Cimmaron St. to N end of Drake Power	$ 1,278,558		
	CS-307	Channel/Grade Control Fountain Creek - N end Drake Power Plant to south end of	$ 1,912,125		
	CS-021	Channel Templeton Gap Floodway Reconstruct levee and floodway.	$ 10,626,551		
	CS-258	Grade Control Galley Road Channel - Platte Ave. to Galley Rd., 270+00	$ 2,552,701	$ 16,369,935	$ 3,000,000
5	CS-045	Channel/Storm Drain Columbia Road Drainage	$ 2,037,000		
	CS-342	Channel/Grade Control Templeton Gap Rd. Channel - Powers to Tutt 4400lf channel stabilization, w/drop structures	$ 3,031,540		
	CS-313	Channel/Grade Control Fountain Creek - Spring Creek to Mobile Home Park Channel stabilization, 3 drop structures	$ 3,746,560		
	CS-334	Storage Cottonwood Park (west side)	$ 3,712,090		
	CS-332	Storage Bridle Pass Drive Construct new pond to improve 2 yr flows	$ 1,567,327		
	CS-007	Channel/Grade Control Dry Creek Channel Construct stormwater channel and stream bank protection	$ 1,352,000	$ 15,446,517	$ 3,000,000
6	CS-311	Channel/Grade Control Fountain Creek - Fountain Mutual Canal to US 24 Bypass Channel stabilization, 2 drop structures	$ 9,774,574		
	CS-241	Grade Control Chelton Road Channel - Academy to Chelton, 96+97	$ 1,569,152		
	CS-243	Grade Control Fountain Blvd. Channel - Chelton Rd. to Fountain Blvd.,	$ 2,515,203		
	CS-339	Channel/Grade Control Gold Medal Pt. Channel 550lf channel stabilization, w/drop structures	$ 1,608,572	$ 15,467,501	$ 3,000,000
7	CS-259	Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to	$ 6,496,775		
	CS-004	Channel/Grade Control Cottonwood Creek - Academy to Union Construct flood control and stream restoration projects.	$ 5,753,740		
	CS-343	Channel/Grade Control Rangewood Channel - Main Stem to Balsam 7400lf channel stabilization, w/drop structures	$ 4,990,699	$ 17,241,214	$ 3,000,000
8	CS-005	Channel/Grade Control Cottonwood Creek - Monument Creek to Academy Construct flood control and stream restoration projects.	$ 13,036,340		
	CS-039	Channel/Grade Control Sand Creek	$ 3,850,692	$ 16,887,032	$ 3,000,000
9	CS-040	Channel/Grade Control Sand Creek	$ 3,455,554		
	CS-041	Channel/Grade Control Sand Creek	$ 7,353,739		
	CS-337	Channel/Grade Control Cottonwood Creek - Rangewood to Woodmen 5300lf channel stabilization, w/drop structures	$ 3,712,090	$ 14,521,383	$ 3,000,000
10	CS-359	Channel/Grade Control Chelton Dr. Channel - Chelton Dr to Airport Rd 2400lf channel stabilization, 2 drop structures	$ 1,465,049		
	CS-002	Channel 31st Street Drainage Way, Phase 1 Replace existing undersized concrete channel with greenway. Camp Creek/Upper Fountain Creek.	$ 8,910,000		
	CS-003	Channel 31st Street Drainage Way, Phase 2 Replace existing undersized concrete channel with greenway. Camp Creek/Upper Fountain Creek.	$ 5,530,000	$ 15,905,049	$ 3,000,000
				$ 160,849,212	$ 30,000,000
			Total	$	190,849,212.00

*From **CH2M Hill. City of Colorado Springs Stormwater Needs Assessment. Prepared for the City of Colorado Springs. October 11, 2013.**

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Table 2-3. Utilities Creek Crossing Project List

Capital Project Summary

Colorado Springs Utilities (Utilities) Sanitary Sewer Creek Crossing Program

	Three-Year CIP Table (2016-2018)		
Project Name	**Estimated Construction Start Date**	**Estimated Total Capital Cost**	**Comments**
1. Monument Creek Stabilization, Phase 2	Jul-16	$820,000	In Process; Initiation and Design completed in 2015; Waiting on easements; Construction scheduled by Q3 2016 with Closeout in Q4 2016
2. Dry Creek Downstream of Dawson Drive	Mar-18	$510,000	Initiated August 2015; Design to commence Q1 2017; Construction scheduled March 2018 with Closeout May 2018
3. Clear Spring Ranch Bank Stabilization	Sep-16	$4,170,000	In Process; Intiated September 2014; Designer hired January 2015; Construction scheduled September 2016 with Closeout May 2017
4. North Douglas Creek upstream from Mark Dabling Stabilization	Feb-16	$251,000	In Process; Initiation and Design completed in 2015; Construction Scheduled February 2016 with Closeout in May 2016
5. South Douglas Creek at Sinton Pond, Crossing Elimination	Feb-16	$176,000	In Process; Initiation and Design completed in 2015; Construction Scheduled February 2016 with Closeout in May 2016
6. Monument Branch Stabilization	Oct-17	$1,100,000	Initiate January 2016; Hire Designer February 2016; Design commence June 2016; Construction scheduled Q4 2017 with Closeout Q2 2018
7. West Fork Sand Creek Drop Repair	Sep-18	$500,000	Initiate Design Q1 2018; Construction scheduled Q3 2018 with Closeout Q4 2018
8. Sand Creek stabilization at West Fork Confluence	Sep-18	$600,000	Initiate Design Q1 2018; Construction scheduled Q3 2018 with Closeout Q4 2018
9. Monument Creek Stabilization Upstream from Pikeview Intake	Apr-18	$500,000	Initiate Q2 2017; begin Design Q3 2017; Construction scheduled Q2 2018 with Closeout Q3 2018
10. Sand Creek Stabilization Upstream of Barnes Road	Apr-18	$400,000	Initiate Q2 2017; begin Design Q3 2017; Construction scheduled Q2 2018 with Closeout Q3 2018
	Total:	$9,027,000	

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Figure 2-1. IHS Global Insight Index Trends

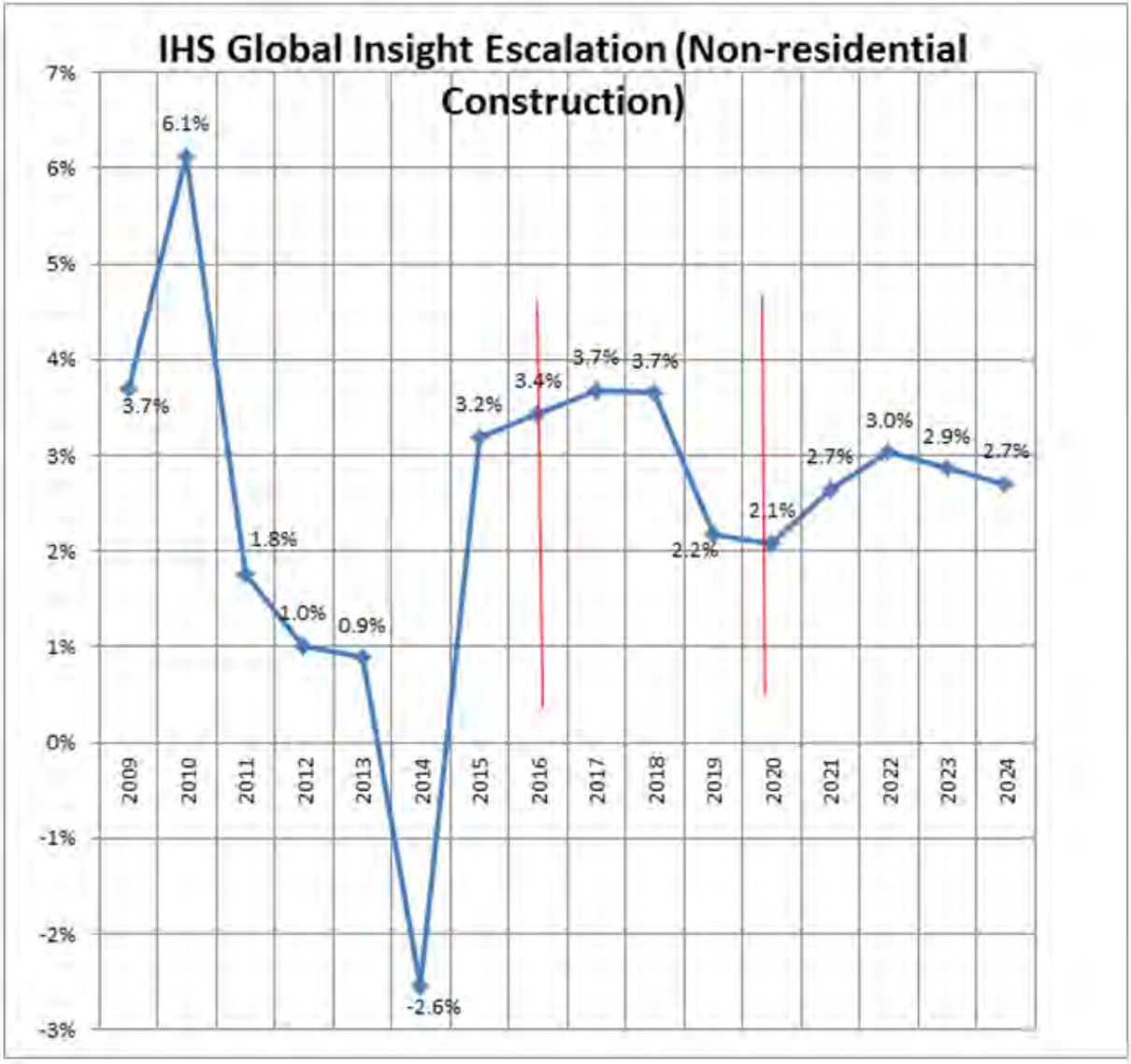

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Table 3-1: City Capital Project Prioritization

Colorado Springs Stormwater Program Implementation Plan															
	Prioritization Criteria (see notes below)										Priority Ranking				
Project Name	Total Estimated Capital Cost (2016$) [6) 7)]	Protect Public Safety/Property	Improve Failing Infrastructure	Enhance Community	Distribute Within the City	Enhance Sediment/Debris Capture	Reduce Sediment Generation/ Enhance Soil Stewardship	Improve Water Quality	Provide Detention	Downstream Priority Score	Critical City Project	WWE "Down-stream Benefit" Ranking	City Priority Ranking	Comments	Projected Project Dates
2. Sand Creek Pond 3	$3,076,000			X		X	X	X	X	4	Yes	1	1	**Readiness for Implementation.** Already out to bid; to be awarded in January 2016.	2016
0. FEMA Projects [1)]	$2,081,000	X	X	X		X	X	X		3	Yes	6	2	**Readiness for Implementation.** On-going.	2016-2018
8. King Street Detention Pond **(WWE CS-013)**	$250,000			X	X	X		X	X	3	Yes	7	3	**Readiness for Implementation.** Can re-use existing design.	2016-2017
13. Water Quality Project--America the Beautiful Park Detention Basin [2)]	$2,500,000			X		X		X	X	3	Yes	9	4	**Readiness for Implementation.** Olympics Museum under construction in 2016.	2016-2017
6. USAFA Drainages (Northgate Area)	$2,000,000	X		X			X			1	Yes	16	5	**Multiple impacts and sites.** CSU will do force main protection in project area in the future.	2016-2017
1. Emergency Stormwater Projects [3)]	$7,500,000	X	X	X						0	Yes		6	**Readiness for Implementation.** On-going annual budget.	2016-2020
7. Fairfax Tributary Detention Pond **(WWE CS-330)**	$398,000			X	X	X	X	X	X	4		5	7		2016-2017
5. Downtown Drainage Improvements	$2,250,000	X	X							0	Yes		8	**Reduce downtown flooding.** Increase pipe size in Pikes Peak Avenue. Conduct during road project scheduled in same area during 2016.	2016-2017
26. Sand Creek Stabilization south of Platte **(WWE CS-018)** [5)]	$5,290,000	X		X			X			1		22	9	**High priority.** FEMA grant funding (see footnote 5).	2016-2018
65. Cottonwood Creek Detention Basins (PR-2,6,7,9,11,14)	$2,740,000					X	X	X	X	4		2	10		2017-2019
31. Rangewood Tributary Detention Pond **(WWE CS-333)**	$750,000			X	X	X	X	X	X	4		3	11	Cottonwood Creek. Bundle with Project 20 (located next to each other).	2017-2018
52. Storage Bridle Pass Drive Construct new pond to improve 2 yr flows (CS-332)	$1,591,000			X	X	X	X	X	X	4		4	12	Include channel improvements.	2017-2019
9. South Pine Creek Detention Pond **(WWE CS-335)**	$461,000			X	X			X	X	2		14	13	Cottonwood Creek	2018-2019
15. Citadel Mall Neighborhood Improvements (CS-374)	$1,053,000	X	X	X						0	Yes		14	**Localized flooding.** Design to evaluate detention retrofit.	2018-2019
23. North Chelton Road (CS-057)	$1,370,000		X	X	X					0	Yes		15	**Localized flooding.**	2018-2019
11. Camp Creek--Phase 1 **(WWE CS-002 and CS-003)** (Redefined) [4)]	$4,356,000	X	X	X				X		1	Yes	18	16	**Readiness for Implementation.** Channel improvements. Cost shown is for downstream structure and channel restoration/lining removal.	2018-2019
41. Storage Wagner Park Detention - downstream of Bijou Detention Storage Required (CS-360)	$704,000			X	X	X		X	X	3		8	17	Spring Creek drainage	2018-2019
38. Storage Austin Bluffs Parkway upstream of Research (CS-331)	$754,000			X	X	X		X	X	3		10	18	Cottonwood Creek drainage	2019-2020
51. Storage Cottonwood Park (west side) (CS-334)	$3,768,000			X	X	X		X	X	3		11	19	Cottonwood Creek drainage	2019-2021
34. Storage Sand Creek Detention Pond 2 Complete Detention Pond 2 on Sand Creek south of Barnes (CS-105)	$1,025,000					X		X	X	3		12	20	Currently have 50 year protection. Build out to 100-year capacity.	2019-2021
24. Park Vista (Siferd Low Water Crossing) (CS-232)	$3,750,000	X		X						0	Yes		21	**Localized flooding.** Evaluate property acquistion and detention storage.	2020-2022
70. CS-239 Grade Control Upper Hancock Channel - Hancock to Academy, 78+33 to	$1,236,000					X	X			2		13	22	Desire for provision for regular sediment removal.	2020-2022
16. North Douglas Natural Channel	$3,500,000	X	X				X	X		2	Yes	15	23	Redefine project to address reach between I-25 and railroad to east. City has conceptual design for channel stabilization project.	2020-2021
19. Galley Road Channel **(WWE CS-258)** Sand Creek between Galley and Platte Avenue	$2,000,000	X		X			X			1		19	24	Portions of original scope have been completed by CSU. Additional reach to be improved.	2020-2022
21. Monument Creek at Talemine (CS-011)	$1,778,000	X		X			X			1		17	25		2020-2021
35. Side Channel Sand Creek - segment 107, reach SC-5 1700lf channel stabilization (CS-261)	$1,242,000	X		X			X			1		20	26		2021-2025
39. Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to (CS-259)	$6,594,000	X		X			X			1		21	27	On Sand Creek drainage.	2021-2025
28. Shooks Run Channel - Cache La Poudre St. to Patty Jewett Golf Course (CS-326)	$3,500,000	X	X	X				X		1		23	28	Bundled and phased with other Shooks Run.	2021-2025
77. CS-265 Grade Control Sand Creek Upper West Fork - Maizeland to South Carefree 3 drop structures	$420,000						X			1		24	29		2021-2025
76. CS-254 Channel/Grade Control Sand Creek Upper West Fork - Galley to Murray 1730lf channel stabilization, 2 drop structures	$2,006,000						X			1		25	30		2021-2025
75. CS-262 Channel/Grade Control Upper Sand Creek - W. Fork to Palmer Park Blvd. 1550lf channel stabilization, w/drop structures	$1,192,000						X			1		26	31		2021-2025
74. CS-252 Channel Sand Creek Lower West Fork - Emory to Platte Ave. 1000lf channel stabilization	$2,383,000						X			1		27	32		2021-2025
73. CS-025 Channel/Grade Control Sand Creek West Fork - Main stem to Wooten Construct drop structures & streambank protection	$2,206,000						X			1		28	33		2021-2025
61. Channel/Grade Control Sand Creek (CS-040)	$3,507,000	X		X			X			1		29	34		2021-2025
60. Channel/Grade Control Sand Creek (CS-039)	$3,908,000	X		X			X			1		30	35		2021-2025
71. CS-246 Channel/Grade Control Sand Creek Lower Center Tributary - No Name to East Fork	$458,000						X			1		31	36		2021-2025
62. Channel/Grade Control East Fork of Sand Creek (CS-041)	$7,464,000	X		X			X			1		32	37		2021-2025
55. Grade Control Fountain Blvd. Channel - Chelton Rd. to Fountain Blvd., (CS-243)	$2,553,000	X		X			X			1		33	38	Portions of original scope have been completed by CSU	2026-2035
54. Grade Control Chelton Road Channel - Academy to Chelton, 96+97 (CS-241)	$1,593,000	X		X			X			1		34	39	On main stem of Sand Creek.	2026-2035
69. CS-240 Channel/Storm Drain Lower Sand Creek Tributaries 2,3, and 4 - Main Stem to Academy	$867,000						X			1		35	40		2026-2035
67. CS-238 Channel/Grade Control Lower Hancock Channel - Downstream 1500lf channel stabilization, 2 drop structures	$1,247,000						X			1		36	41		2026-2035
66. CS-268 Channel/Grade Control Las Vegas St. Channel - ATSF RR to Peterson Fld Trib. 700lf channel stabilization, 2 drop structures	$1,545,000						X			1		37	42		2026-2035
72. CS-247 Channel/Grade Control Sand Creek Middle Center Tributary - Powers to No Name 300lf channel stabilization, 3 drop structures	$175,000						X			1		38	43		2026-2035
68. CS-130 Channel Hancock Expressway Channel East of Astrozon Undermining of infrastructure.	$72,000						X			1		39	44		2026-2035
20. Gold Medal Point Channel **(WWE CS-339)**	$750,000	X		X			X			1		40	45	Cottonwood Creek. Could bundle with Project 31 (located next to each other)	2026-2035

Table 3-1: City Capital Project Prioritization

	Prioritization Criteria (see notes below)										Priority Ranking				
Project Name	Total Estimated Capital Cost (2016$) 6) 7)	Protect Public Safety/Property	Improve Failing Infrastructure	Enhance Community	Distribute Within the City	Enhance Sediment/Debris Capture	Reduce Sediment Generation/ Enhance Soil Stewardship	Improve Water Quality	Provide Detention	Downstream Priority Score	Critical City Project	WWE "Down-stream Benefit" Ranking	City Priority Ranking	Comments	Projected Project Dates
57. Channel/Grade Control Cottonwood Creek - Academy to Union Construct flood control and stream restoration projects (CS-004)	$5,840,000	X		X			X			1		41	46	Portions of original scope may have been completed by CSU	2026-2035
59. Channel/Grade Control Cottonwood Creek - Monument Creek to Academy Construct flood control and stream restoration projects. (CS-005)	$13,232,000	X		X			X			1		42	47		2026-2035
58. Channel/Grade Control Rangewood Channel - Main Stem to Balsam 7400lf channel stabilization, w/drop structures (CS-343)	$5,066,000	X		X			X			1		43	48		2026-2035
63. Channel/Grade Control Cottonwood Creek - Rangewood to Woodmen 5300lf channel stabilization, w/drop structures (CS-337)	$3,768,000	X		X			X			1		44	49		2026-2035
45. Channel/Grade Control Fountain Creek - W. Cimmaron St. to N end of Drake Power (CS-306)	$1,298,000	X		X			X			1		45	50		2026-2035
46. Channel/Grade Control Fountain Creek - N end Drake Power Plant to south end of (CS-307)	$1,941,000	X		X			X			1		46	51		2026-2035
18. Fountain Creek - Drake Power Plant to Shooks Run **(WWE CS-308 and CS-309)**	$2,250,000	X		X			X			1		47	52		2026-2035
43. Channel/Grade Control Fountain Creek - Shooks Run to Fountain Mutual Canal Channel stabilization, 2 drop structures (CS-310)	$11,854,000	X		X			X			1		48	53		2026-2035
53. Channel/Grade Control Fountain Creek - Fountain Mutual Canal to US 24 Bypass Channel stabilization, 2 drop structures (CS-311)	$9,921,000	X		X			X			1		49	54		2026-2035
36. Channel/Grade Control Fountain Creek - US 24 Bypass to Spring Creek Channel stabilization, 2 drop structures (CS-312)	$4,636,000	X		X			X			1		50	55		2026-2035
50. Channel/Grade Control Fountain Creek - Spring Creek to Mobile Home Park Channel stabilization, 3 drop structures (CS-313)	$3,803,000	X		X			X			1		51	56		2026-2035
32. Channel/Grade Control Fountain Creek - Mobile Home Park to N end El Pomar Sports (CS-314)	$4,235,000	X		X			X			1		52	57	Fountain Creek.	2026-2035
33. Channel/Grade Control Fountain Creek - N end El Pomar Sports Park to S end El (CS-315)	$4,551,000	X		X			X			1		53	58	Fountain Creek.	2026-2035
22. Monument Creek Mobile Home Park (CS-139)	$478,000	X		X			X			1		54	59	CSU has done partial work in the area, but not the complete project.	2026-2035
64. Channel/Grade Control Chelton Dr. Channel - Chelton Dr to Airport Rd 2400lf channel stabilization, 2 drop structures (CS-359)	$1,487,000	X		X			X			1		55	60		2026-2035
25. Pine Creek Outfall into Monument Creek (CS-047)	$1,250,000	X		X			X			1		56	61		2026-2035
49. Channel/Grade Control Templeton Gap Rd. Channel - Powers to Tutt 4400lf channel stabilization, w/drop structures (CS-342)	$3,077,000	X		X			X			1		57	62		2026-2035
40. Storage Mount Woodmen Court Drainage Sedimentation pond outfalls directly onto private property (CS-064)	$515,000	X	X					X		1		58	63		2026-2035
12. Shooks Run Improvements (CS-319 through CS-329 minus CS-326)	$3,000,000	X	X	X				X		1		59	64	Bundled and phased with other Shooks Run	2026-2035
27. Shooks Run Channel - Bijou Street Culvert & Channel Stabilization (CS-054a)	$1,500,000	X	X	X				X		1		60	65	Bundled and phased with other Shooks Run	2026-2035
29. Shooks Run Improvements - Phase 3 (CS-054b)	$1,500,000	X	X	X				X		1		61	66	Bundled and phased with other Shooks Run	2026-2035
4. Old Annexation Drainage Improvements	$2,800,000	X	X	X	X					0			67	Five neighborhoods experiencing significant flooding.	2026-2035
14. Briargate Drainage Improvements (CS-344)	$1,641,000	X	X	X						0			68	Replacing failing infrastructure.	2026-2035
30. Skyway Area Improvements (CS-235 & CS-296)	$457,000	X	X		X					0			69		2026-2035
48. Channel/Storm Drain Columbia Road Drainage (CS-045)	$2,088,000	X	X	X						0			70		2026-2035
17. Dry Creek Channel **(WWE CS-007)**	$1,386,000	X		X	X					0			71	Increasing channel capacity.	2026-2035
~~42. Channel/Grade Control Sand Creek Main Stem Phase III - Fountain Creek Confluence (CS-106)~~														Not on the SNA "Validated" project list-- Appears to overlap with other validated SNA projects and may be redundant.	
~~47. Channel Templeton Gap Floodway Reconstruct levee and floodway (CS-021)~~														Delete - Channel Lining; Replacement of Existing Facilities. Removed from list, per WWE (12/16/15).	
~~78. CS-264 Channel Sand Creek Upper West Fork - Raindrop to North Carefree 2200lf channel stabilization~~														Remove from list, per WWE (12/16/15).	
~~56. Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to (CS-259)~~														Redundant with Project 39. Delete.	
~~10. Erindale Drainage Improvements~~														Change to an "Emergency "project. Likely a maintenance effort. Remove from this capital projects list.	
~~44. Storage Spring Run Detention Ponds (CS-051)~~														Not on the SNA "Validated" project list--remove.	
~~3. Dam Repairs~~														Remove from list, per WWE (03/30/16). To be completed with Emergency Stormwater Projects funding.	
~~37. Channel Rockrimmon Channel at Rockrimmon/Pro Rodeo Int. Repair damage to channel at outlet (CS-222)~~														Area identified in previous MS4 inspections. Project being completed with Emergency Stormwater Project funding in 2016. Removed from list following 03/30/16 Meeting with WWE.	

Prioritization Criteria:
1. Protect local property and public safety
2. Repair/replace failing infrastructure
3. Improve appearance and/or enhance community
4. Distribute projects within the City

Downstream benefits:
5. Enhance sediment/debris capture and control (e.g., debris basins)
6. Reduce sediment generation/Enhance soil stewardship (e.g., bank stabilization, channel stabilization, channel grade control, floodplain preservation/enhancement)
7. Improve water quality
8. Provide detention (i.e., reduce downstream flows)

Footnotes:
1) Total anticipated FEMA Grant City match portion through 2018: Budgeted $1,081,000 (2016); $500,000 (2017); $500,000 (2018).
2) Total Capital Cost includes 5 detention ponds, one per year at $500,000 each between 2016-2020. First pond to be intiated with America the Beautiful Park detention basin in 2016.
3) Emergency Stormwater Projects list total capital cost (2016-2020); budgeted at $1.5 Million per year ongoing.
4) Additional channel lining removal projects along Camp Creek channel may be done as funding becomes available.
5) Funding for capital cost shown is FEMA grant funding and City grant match encumbered in 2015. No 2016 City capital contribution for this project.
6) See 2016 and 2016-2020 Project lists for additional detail on project funding.
7) Total estimated project capital cost is shown for each project. Total Stormwater Control Program yearly capital expenditures depend on the number of projects underway and the project phase(s) performed in a given year. Total yearly capital expenditures will be presented in the annual reporting of the City's Stormwater Control Program performance.

Table 3-2. Creek Crossing Project Benefits

Colorado Springs Utilities Sanitary Sewer Creek Crossing Project Benefits

Colorado Springs Stormwater Program Implementation Plan

Prioritization Criteria (see notes below)

Project Name	Total Estimated Capital Cost (2016$)	Protect Public Safety/Property	Improve Failing Infrastructure	Enhance Community	Distribute Within the City	Enhance Sediment/Debris Capture	Reduce Sediment Generation/ Enhance Soil Stewardship	Improve Water Quality	Provide Detention	Comments	Projected Project Dates
1. Monument Creek Stabilization, Phase 2	$820,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2016
2. Dry Creek Downstream of Dawson Drive	$510,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2017-2018
3. Clear Spring Ranch Bank Stabilization	$4,170,000	X	X				X			Bank Stabilization; Also provides some incidental water quality	2016-2017
4. North Douglas Creek upstream from Mark Dabling Stabilization	$251,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2016
5. South Douglas Creek at Sinton Pond, Crossing Elimination	$176,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2016
6. Monument Branch Stabilization	$1,100,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2016-2018
7. West Fork Sand Creek Drop Repair	$500,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2018
8. Sand Creek stabilization at West Fork Confluence	$600,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2018
9. Monument Creek Stabilization Upstream from Pikeview Intake	$500,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2017-2018
10. Sand Creek Stabilization Upstream of Barnes Road	$400,000	X	X				X			Channel Stabilization and Grade Control; Also provides some incidental water quality	2017-2018
Total (2016-2018)	**$9,027,000**										

Prioritization Criteria:

1. Protect local property and public safety
2. Repair/replace failing infrastructure
3. Improve appearance and/or enhance community
4. Distribute projects within the City

Downstream benefits:

5. Enhance sediment/debris capture and control (e.g., debris basins)
6. Reduce sediment generation/Enhance soil stewardship (e.g., bank stabilization, channel stabilization, channel grade control, floodplain preservation/enhancement)
7. Improve water quality
8. Provide detention (i.e., reduce downstream flows)

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Table 4-1. Definition of Capital Cost Components

Colorado Springs Stormwater Program Implementation Plan			
Components			**Comments**
Construction Value			
Estimated Construction Cost	x		
Construction Contingency	30%	of x	
Subtotal--"Construction Value"	y		
"Soft Costs"			
City Staff Costs	0%	of Construction Value	Stormwater staff (PM, admin), contracts, procurement, O&M support. These City staff costs are not charged against CIP projects.
City Staff Augmentation	9.0%	of Construction Value	Outside consultant. Supplement City staff to handle increased project output during first year as City staffs up.
Design	10%	of Construction Value	Outside consultant. Includes conceptual and final design.
Construction Management	8.5%	of Construction Value	Outside consultant
Engineering Services During Construction	2.0%	of Construction Value	Outside consultant
Environmental & Permitting	1.7%	of Construction Value	Cost to purchase mitigation or pay permit fees. Consultant time under Program Management.
Legal	0.0%	of Construction Value	City legal staff handle these activities, and do not charge CIP projects.
Land Transactions	8.0%	of Construction Value	Easements and fee title purchases.
Subtotal--"Soft Costs"	39%		
Design Contingency	25%	of Construction Value + Soft Costs. Decreases as design progresses.	
Construction Changes Contingency	15%	of Construction Value + Soft Costs. Held constant until construction starts. Covers change orders and claims.	
Project Contingency	40%	of Construction Value + Soft Costs	
TOTAL CAPITAL COST	195%	of Construction Value, w/o escalation	

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Table 4-2: City Capital Project Costs

Colorado Springs Stormwater Program Implementation Plan

Project Name	Previous Estimated Total Capital Cost	Stormwater Needs Assessment (SNA) Information [a.k.a. CH2M Hill Study]: Associated SNA Project No.	Class A or B	Associated SNA Project Cost ($)	Comments	MWH Updated Cost (2016 $)	Potential "Fast Track" Project? (yes/no, see note)
0. FEMA Projects	$2,081,082	None	None		Projects underway. No validation. Use City budget number.	$2,081,000	No
1. Emergency Stormwater Projects	$7,500,000	None	None		Annual budget ($1.5M). No validation. Use City budget number. First 5 years shown.	$7,500,000	Yes
2. Sand Creek Pond 3	$1,200,000	None	None		Kiowa Engineering/M&S completed design; construction contract awarded early 2016; construction in process. Validated. Per City direction, now includes both pond and drop structure.	$3,076,000	Yes *Under Construction*
~~3. Dam Repairs~~	$400,000	None	None		No scope. No validation. Allowance. City to move to Emergency Stormwater Projects. Deleted from list per 03/30/16 review mtg.	$400,000	Yes
4. Old Annexation Drainage Improvements	$2,800,000	None	None		No scope. No validation. Allowance.	$2,800,000	No
5. Downtown Drainage Improvements	$2,250,000	None	None		No scope. No validation. Allowance.	$2,250,000	No
6. USAFA Drainages (Northgate Area)	$2,000,000	None	None		No scope. No validation. Allowance. *Matrix study to ID projects (early 2016).*	$2,000,000	No
7. Fairfax Tributary Detention Pond **(WWE)**	$400,000	CS-330	Class A	$391,832	No validation. Use SNA figure, escalated to 2016.	$398,000	Yes
8. King Street Detention Pond **(WWE)**	$250,000	CS-013	Class A	$431,000	No scope. No validation. Allowance.	$250,000	Yes
9. South Pine Creek Detention Pond **(WWE)**	$500,000	CS-335	Class A	$453,700	No validation. Use SNA figure, escalated to 2016.	$461,000	Yes
~~10. Erindale Drainage Improvements~~	$500,000	CS-111	Class A	$4,081,658	Changed to an "Emergency "project. Likely a maintenance effort. Deleted from list per 12/16/15 review mtg.	$500,000	Yes
11. Camp Creek **(WWE)**	$4,250,000	~~CS-002 and CS-003~~	Class A		Superceded by Wilson report. Validated.	$4,356,000	Yes
12. Shooks Run Improvements	$3,000,000	CS-319 through CS-329 minus CS-326	Class A	$19,382,364	Total in CH2M Hill for these projects is $53,901,434. Envision Shooks Run study is revisiting and prioritizing projects. No scope. No validation. Allowance.	$3,000,000	No
13. Water Quality Projects	$2,500,000	None	Class A		City to study. No scope. No validation. Allowance.	$2,500,000	No
14. Briargate Drainage Improvements	$1,500,000	~~CS-094 and~~ CS-344	Class A	$1,608,572	No validation. Use SNA figure, escalated to 2016.	$1,641,000	Yes
15. Citadel Mall Neighborhood Improvements	$1,000,000 ~~$3,250,000~~	CS-374	Class A	$1,036,997	5-Year CIP Table value changed by City. No validation. Use SNA figure, escalated to 2016.	$1,053,000	Yes
16. North Douglas Natural Channel	$1,500,000	CS-017	Class B	$930,000	Updated cost based on 2014 conceptual design cost provided by City. No validation. Allowance.	$3,500,000	Yes
17. Dry Creek Channel **(WWE)**	$1,500,000	CS-007	Class B	$1,352,000	No validation. Use SNA figure, escalated to 2016.	$1,386,000	Yes
18. Fountain Creek - Drake Power Plant to Shooks Run **(WWE)**	$2,250,000 ~~$750,000~~	CS-308a, CS-308b, CS-309a & CS-309	Class A	$6,250,666	5-Year CIP Table value changed by City. No scope. No validation. Allowance.	$2,250,000	No
19. Galley Road Channel **(WWE)**	$2,000,000	CS-258	Class A	$2,552,701	No scope. No validation. Allowance.	$2,000,000	No
20. Gold Medal Point Channel **(WWE)**	$750,000	CS-339	Class A	$1,608,572	No scope. No validation. Allowance.	$750,000	No
21. Monument Creek at Talemine	$1,750,000 ~~$1,000,000~~	CS-011	Class A	$1,752,131	5-Year CIP Table value changed by City. No validation. Use SNA figure, escalated to 2016.	$1,778,000	Yes
22. Monument Creek Mobile Home Park	$500,000	CS-139	Class B	$468,000	No validation. Use SNA figure, escalated to 2016.	$478,000	Yes
23. North Chelton Road	$1,500,000	CS-057	Class A	$1,337,000	No validation. Use SNA figure, escalated to 2016.	$1,370,000	Yes
24. Park Vista (Siferd Low Water Crossing)	$3,750,000	CS-232	Class A	$8,726,457	No scope. No validation. Allowance.	$3,750,000	No
25. Pine Creek Outfall into Monument Creek	$1,250,000	CS-047	Class B	$2,796,000	No scope. No validation. Allowance.	$1,250,000	Yes
26. Sand Creek Stabilization south of Platte **(WWE)**	$2,000,000	CS-018	Class A	$2,944,535	Scope being approved. No validation. Allowance. Current FEMA funded project to commence in 2016.	$5,290,000	Yes
27. Shooks Run Channel - Bijou Street Culvert & Channel Stabilization	$1,500,000	CS-054a	Class A	$9,275,090	Envision Shooks Run study is revisiting and prioritizing projects. No scope. No validation. Allowance.	$1,500,000	No *Wait for study*
28. Shooks Run Channel - Cache La Podre St. to Patty Jewett Golf Course	$3,500,000	CS-326	Class A	$34,519,070	Envision Shooks Run study is revisiting and prioritizing projects. No scope. No validation. Allowance.	$3,500,000	No *Wait for study*
29. Shooks Run Improvements- Phase 3	$1,500,000	CS-054b	Class A	$32,944,683	Envision Shooks Run study is revisiting and prioritizing projects. No scope. No validation. Allowance.	$1,500,000	No *Wait for study*
30. Skyway Area Improvements	$500,000	CS-235 & CS-296	Class A	$446,022	No validation. Use SNA figure, escalated to 2016.	$457,000	Yes
31. Rangewood Tributary Detention Pond **(WWE)**	$750,000	CS-333	Class A	$659,927	No scope. No validation. Allowance.	$750,000	Yes
32. Channel/Grade Control Fountain Creek - Mobile Home Park to N end El Pomar Sports (CS-314)	N.A.	CS-314	Class A	$4,171,942	WWE nominated project. Use SNA figure, escalated to 2016	$4,235,000	No
33. Channel/Grade Control Fountain Creek - N end El Pomar Sports Park to S end El (CS-315)	N.A.	CS-315	Class A	$4,484,154	WWE nominated project. Use SNA figure, escalated to 2016	$4,551,000	No
34. Storage Sand Creek Detention Pond 2 Complete Detention Pond 2 on Sand Creek south of Barnes (CS-105)	N.A.	CS-105	Class B	$1,000,000	WWE nominated project. Use SNA figure (unconfirmable MPL cost), escalated to 2016	$1,025,000	No
35. Channel Sand Creek Main Stem - segment 107, reach SC-5 1700lf channel stabilization (CS-261)	N.A.	CS-261	Class A	$1,224,043	WWE nominated project. Use SNA figure, escalated to 2016	$1,242,000	No
36. Channel/Grade Control Fountain Creek - US 24 Bypass to Spring Creek Channel stabilization, 2 drop structures (CS-312)	N.A.	CS-312	Class A	$4,567,880	WWE nominated project. Use SNA figure, escalated to 2016	$4,636,000	No
~~37. Channel Rockrimmon Channel at Rockrimmon/Pro Rodeo Int. Repair damage to channel at outlet (CS-222)~~	N.A.	CS-222	Class A	$97,475	Project being completed with Emergency Stormwater Project funding in 2016. Deleted from list per 03/30/16 review mtg.	$98,900	No
38. Storage Austin Bluffs Parkway upstream of Research (CS-331)	N.A.	CS-331	Class A	$742,418	WWE nominated project. Use SNA figure, escalated to 2016	$754,000	No
39. Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to (CS-259)	N.A.	CS-259	Class A	$6,496,775	WWE nominated project. Use SNA figure, escalated to 2016	$6,594,000	No
40. Storage Mount Woodmen Court Drainage Sedimentation pond outfalls directly onto private property (CS-064)	N.A.	CS-064	Class B	$502,000	WWE nominated project. Use SNA figure (unconfirmable MPL cost), escalated to 2016	$515,000	No
41. Storage Wagner Park Detention - downstream of Bijou Detention Storage Required (CS-360)	N.A.	CS-360	Class A	$693,237	WWE nominated project. Use SNA figure, escalated to 2016	$704,000	No
~~42. Channel/Grade Control Sand Creek Main Stem Phase III - Fountain Creek Confluence (CS-106)~~	N.A.	CS-106	Not on VPL	$2,200,000	Not on the SNA "Validated" project list. Deleted from list per 12/16/15 review mtg.	$2,233,000	No

Table 4-2: City Capital Project Costs

		Stormwater Needs Assessment (SNA) Information [a.k.a. CH2M Hill Study]					
Project Name	**Previous Estimated Total Capital Cost**	**Associated SNA Project No.**	**Class A or B**	**Associated SNA Project Cost ($)**	**Comments**	**MWH Updated Cost (2016 $)**	**Potential "Fast Track" Project? (yes/no, see note)**
43. Channel/Grade Control Fountain Creek - Shooks Run to Fountain Mutual Canal Channel stabilization, 2 drop structures (CS-310)	N.A.	CS-310	Class A	$11,678,463	WWE nominated project. Use SNA figure, escalated to 2016	$11,854,000	No
~~44. Storage Spring Run Detention Ponds (CS-051)~~	N.A.	CS-051	Not on VPL	$1,618,000	Not on the SNA "Validated" project list. Deleted from list per 12/16/15 review mtg.	$1,658,000	No
45. Channel/Grade Control Fountain Creek - W. Cimmaron St. to N end of Drake Power (CS-306)	N.A.	CS-306	Class A	$1,278,558	WWE nominated project. Use SNA figure, escalated to 2016	$1,298,000	No
46. Channel/Grade Control Fountain Creek - N end Drake Power Plant to south end of (CS-307)	N.A.	CS-307	Class A	$1,912,125	WWE nominated project. Use SNA figure, escalated to 2016	$1,941,000	No
~~47. Channel Templeton Gap Floodway Reconstruct levee and floodway (CS-021)~~	N.A.	CS-021	Class A	$10,626,551	Delete from list per 12/16/15 review mtg.	$10,786,000	No
48. Channel/Storm Drain Columbia Road Drainage (CS-045)	N.A.	CS-045	Class B	$2,037,000	WWE nominated project. Use SNA figure (unconfirmable MPL cost), escalated to 2016	$2,088,000	No
49. Channel/Grade Control Templeton Gap Rd. Channel - Powers to Tutt 4400lf channel stabilization, w/drop structures (CS-342)	N.A.	CS-342	Class A	$3,031,540	WWE nominated project. Use SNA figure, escalated to 2016	$3,077,000	No
50. Channel/Grade Control Fountain Creek - Spring Creek to Mobile Home Park Channel stabilization, 3 drop structures (CS-313)	N.A.	CS-313	Class A	$3,746,560	WWE nominated project. Use SNA figure, escalated to 2016	$3,803,000	No
51. Storage Cottonwood Park (west side) (CS-334)	N.A.	CS-334	Class A	$3,712,090	WWE nominated project. Use SNA figure, escalated to 2016	$3,768,000	No
52. Storage Bridle Pass Drive Construct new pond to improve 2 yr flows (CS-332)	N.A.	CS-332	Class A	$1,567,327	WWE nominated project. Use SNA figure, escalated to 2016	$1,591,000	No
53. Channel/Grade Control Fountain Creek - Fountain Mutual Canal to US 24 Bypass Channel stabilization, 2 drop structures (CS-311)	N.A.	CS-311	Class A	$9,774,574	WWE nominated project. Use SNA figure, escalated to 2016	$9,921,000	No
54. Grade Control Chelton Road Channel - Academy to Chelton, 96+97 (CS-241)	N.A.	CS-241	Class A	$1,569,152	WWE nominated project. Use SNA figure, escalated to 2016	$1,593,000	No
55. Grade Control Fountain Blvd. Channel - Chelton Rd. to Fountain Blvd., (CS-243)	N.A.	CS-243	Class A	$2,515,203	WWE nominated project. Use SNA figure, escalated to 2016	$2,553,000	No
~~56. Grade Control Palmer Park Channel - Galley Rd. to Palmer Park, 300+00 to (CS-259)~~	N.A.	CS-259	Class A	$6,496,775	Deleted from list per 12/16/15 review mtg. Redundant with Project 39.	$6,594,000	No
57. Channel/Grade Control Cottonwood Creek - Academy to Union Construct flood control and stream restoration projects (CS-004)	N.A.	CS-004	Class A	$5,753,740	WWE nominated project. Use SNA figure, escalated to 2016	$5,840,000	No
58. Channel/Grade Control Rangewood Channel - Main Stem to Balsam 7400lf channel stabilization, w/drop structures (CS-343)	N.A.	CS-343	Class A	$4,990,699	WWE nominated project. Use SNA figure, escalated to 2016	$5,066,000	No
59. Channel/Grade Control Cottonwood Creek - Monument Creek to Academy Construct flood control and stream restoration projects. (CS-005)	N.A.	CS-005	Class A	$13,036,340	WWE nominated project. Use SNA figure, escalated to 2016	$13,232,000	No
60. Channel/Grade Control Sand Creek (CS-039)	N.A.	CS-039	Class A	$3,850,692	WWE nominated project. Use SNA figure, escalated to 2016	$3,908,000	No
61. Channel/Grade Control Sand Creek (CS-040)	N.A.	CS-040	Class A	$3,455,554	WWE nominated project. Use SNA figure, escalated to 2016	$3,507,000	No
62. Channel/Grade Control Sand Creek (CS-041)	N.A.	CS-041	Class A	$7,353,739	WWE nominated project. Use SNA figure, escalated to 2016	$7,464,000	No
63. Channel/Grade Control Cottonwood Creek - Rangewood to Woodmen 5300lf channel stabilization, w/drop structures (CS-337)	N.A.	CS-337	Class A	$3,712,090	WWE nominated project. Use SNA figure, escalated to 2016	$3,768,000	No
64. Channel/Grade Control Chelton Dr. Channel - Chelton Dr to Airport Rd 2400lf channel stabilization, 2 drop structures (CS-359)	N.A.	CS-359	Class A	$1,465,049	WWE nominated project. Use SNA figure, escalated to 2016	$1,487,000	No
65. Cottonwood Creek Detention Basins (PR-2,3,6,7,9,11,14)	$2,673,000	None	N/A	N/A	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$2,740,000	No
66. CS-268 Channel/Grade Control Las Vegas St. Channel - ATSF RR to Peterson Fld Trib. 700lf channel stabilization, 2 drop structures	N.A.	CS-268	Class A	$1,522,257	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$1,545,000	No
67. CS-238 Channel/Grade Control Lower Hancock Channel - Downstream 1500lf channel stabilization, 2 drop structures	N.A.	CS-238	Class A	$1,228,112	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$1,247,000	No
68. CS-130 Channel Hancock Expressway Channel East of Astrozon Undermining of infrastructure.	N.A.	CS-130	Class A	$70,526	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$72,000	No
69. CS-240 Channel/Storm Drain Lower Sand Creek Tributaries 2,3, and 4 - Main Stem to	N.A.	CS-240	Class A	$853,698	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$867,000	No
70. CS-239 Grade Control Upper Hancock Channel - Hancock to Academy, 78+33 to	N.A.	CS-239	Class A	$1,218,069	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$1,236,000	No
71. CS-246 Channel/Grade Control Sand Creek Lower Center Tributary - No Name to East Fork	N.A.	CS-246	Class B	$447,000	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$458,000	No
72. CS-247 Channel/Grade Control Sand Creek Middle Center Tributary - Powers to No Name 300lf channel stabilization, 3 drop structures	N.A.	CS-247	Not on VPL	$171,000	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$175,000	No
73. CS-025 Channel/Grade Control Sand Creek West Fork - Main stem to Wooten Construct drop structures & streambank protection	N.A.	CS-025	Class A	$2,173,257	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$2,206,000	No
74. CS-252 Channel Sand Creek Lower West Fork - Emory to Platte Ave. 1000lf channel stabilization	N.A.	CS-252	Class A	$2,347,994	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$2,383,000	No
75. CS-262 Channel/Grade Control Upper Sand Creek - W. Fork to Palmer Park Blvd. 1550lf channel stabilization, w/drop structures	N.A.	CS-262	Class A	$1,174,158	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$1,192,000	No
76. CS-254 Channel/Grade Control Sand Creek Upper West Fork - Galley to Murray 1730lf channel stabilization, 2 drop structures	N.A.	CS-254	Class A	$1,976,777	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$2,006,000	No
77. CS-265 Grade Control Sand Creek Upper West Fork - Maizeland to South Carefree 3 drop structures	N.A.	CS-265	Class A	$414,128	WWE nominated project at 12/16/15 meeting. Use WWE figure, escalated to 2016.	$420,000	No
~~78. CS-264 Channel Sand Creek Upper West Fork - Raindrop to North Carefree 2200lf channel stabilization~~					WWE nominated project and deleted from list per WWE (12/16/15).		

Notes:

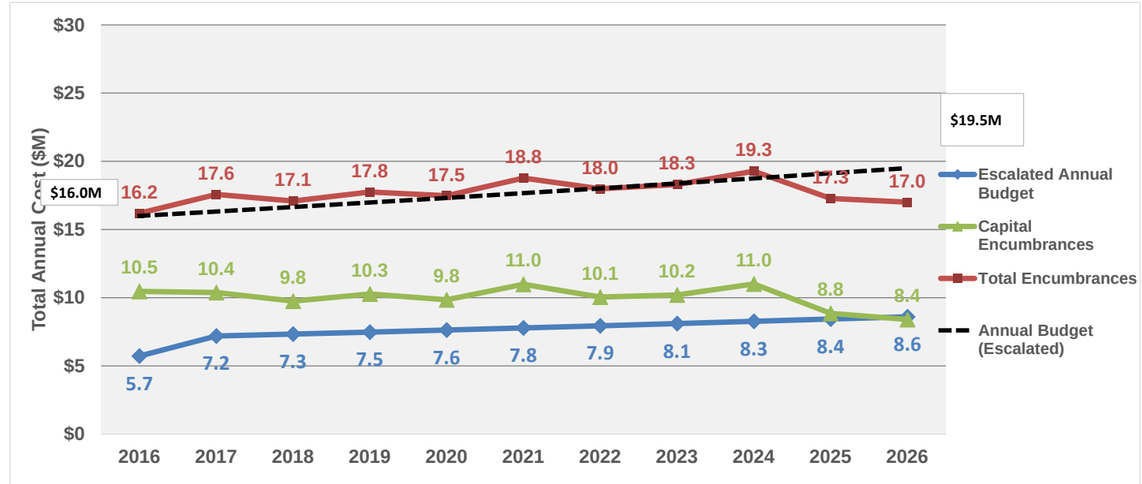
A potential "Fast Track" Project is either: (a) ready to bid, (b) has a design consultant contract already in place, (c) can use an On-Call Engineering Contract (generally limited to <$500k), or (d) can use an existing design, avoiding need to hire a designer.

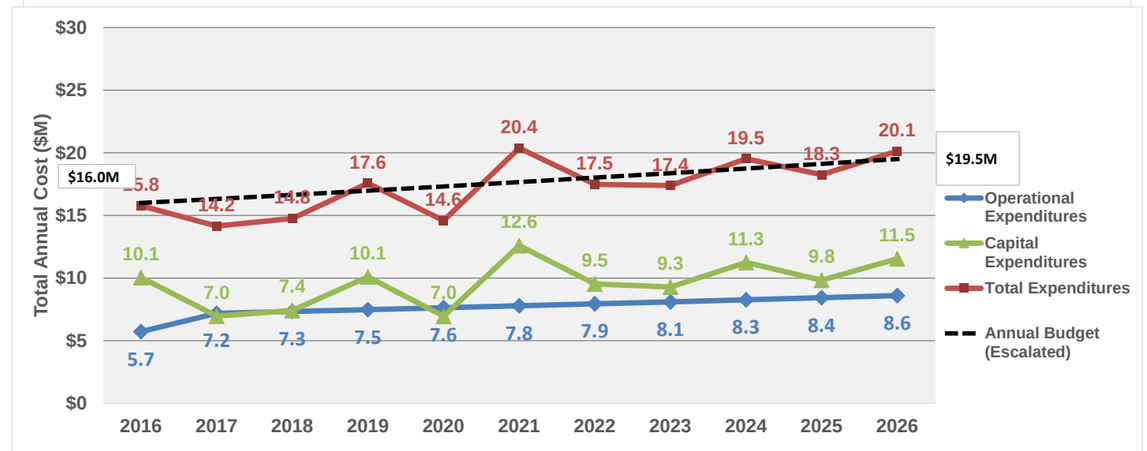
Figure 5-1: Summary of Cost Model

City's MS4/O&M Full Operational Expenditures (Unescalated)		
Labor Annual Cost (unescalated)	$	3,453,078
Administration Annual Cost (unescalated)	$	239,219
Equipment Annual Cost (unescalated)	$	366,200
Maintenance & Services Annual Cost (unescalated)	$	1,096,977
Engineering Studies	$	570,000
TOTAL	$	5,725,474

Capital Projects

Task ID	Task Name	City Priority	Estimated Start Date	Estimated Total Cost ($)
2	Sand Creek Pond 3	1	Jan-16	$3,076,000
0	FEMA Projects	2	Jan-16	$2,081,000
8	King Street Detention Pond	3	Apr-16	$250,000
13	Water Qual Project-ATB Park Det.Basin	4	Jan-16	$500,000
6	USAFA Drainages (Northgate Area)	5	Jan-16	$2,000,000
1	Emergency Stormwater Projects (Annual Cost)	6	Jan-16	$1,500,000
7	Fairfax Tributary Detention Pond	7	Apr-16	$398,000
5	Downtown Drainage Improvements	8	Jan-16	$2,250,000
65	Cottonwood Creek Detention Basins (PR-2,3,6,7,9,11,14)	10	Jan-17	$2,740,000
31	Rangewood Tributary Detention Pond	11	Jan-17	$750,000
52	Storage Bridle Pass Drive Construct new pond to improve 2 yr flows (CS-332)	12	Jan-17	$1,591,000
9	South Pine Creek Detention Pond	13	Oct-17	$461,000
15	Citadel Mall Neighborhood Improvements	14	Oct-17	$1,053,000
23	North Chelton Road	15	Oct-17	$1,370,000
11	Camp Creek - Phase 1	16	Oct-17	$4,356,000
41	Storage Wagner Park Detention - downstream of Bijou Detention Storage Required (CS-360)	17	Jan-18	$704,000
38	Storage Austin Bluffs Parkway upstream of Research (CS-331)	18	Jan-19	$754,000
51	Storage Cottonwood Park (west side) (CS-334)	19	Oct-18	$3,768,000
34	Storage Sand Creek Detention Pond 2 South of Barnes	20	Jan-19	$1,025,000
24	Park Vista (Siferd Low Water Crossing)	21	Oct-19	$3,750,000
70	CS-239 Grade Control Upper Hancock Channel - Hancock to Academy, 78+33 to	22	Oct-19	$1,236,000
16	North Douglas Creek Natural Channel	23	Oct-19	$3,500,000
19	Galley Road Channel	24	Jan-20	$2,000,000
21	Monument Creek at Talemine	25	Oct-19	$1,778,000
35	Channel Sand Creek Main Stem - segment 107, reach SC-5 1700lf channel stabilization	26	Oct-20	$1,242,000
39	Grade Control Palmer Park Channel	27	Oct-20	$6,594,000
28	Shooks Run Channel - Cache La Podre St. to Patty Jewett Golf Course	28	Jan-21	$3,500,000
77	CS-265 Grade Control Sand Creek Upper West Fork - Maizeland to South Carefree 3 drop structures	29	Jan-22	$420,000
76	CS-254 Channel/Grade Control Sand Creek Upper West Fork - Galley to Murray 1730lf channel stabilization, 2 drop structures	30	Apr-22	$2,006,000
75	CS-262 Channel/Grade Control Upper Sand Creek - W. Fork to Palmer Park Blvd. 1550lf channel stabilization,	31	Oct-22	$1,192,000
74	CS-252 Channel Sand Creek Lower West Fork - Emory to Platte Ave. 1000lf channel stabilization	32	Oct-22	$2,383,000
73	CS-025 Channel/Grade Control Sand Creek West Fork - Main stem to Wooten Construct drop structures & streambank protection	33	Oct-22	$2,206,000
61	Channel/Grade Control Sand Creek	34	Jan-24	$3,507,000
60	Channel/Grade Control Sand Creek	35	Jan-24	$3,908,000
71	CS-246 Channel/Grade Control Sand Creek Lower Center Tributary - No Name to East Fork	36	Jan-25	$458,000
62	Channel/Grade Control East Fork of Sand Creek	37	Oct-23	$7,464,000





Escalation Rates:	
Capital Cost	2.00%
Labor Cost	3.00%
Maint. Services & Equipment Cost	2.50%
Budget Escalation	2.00%

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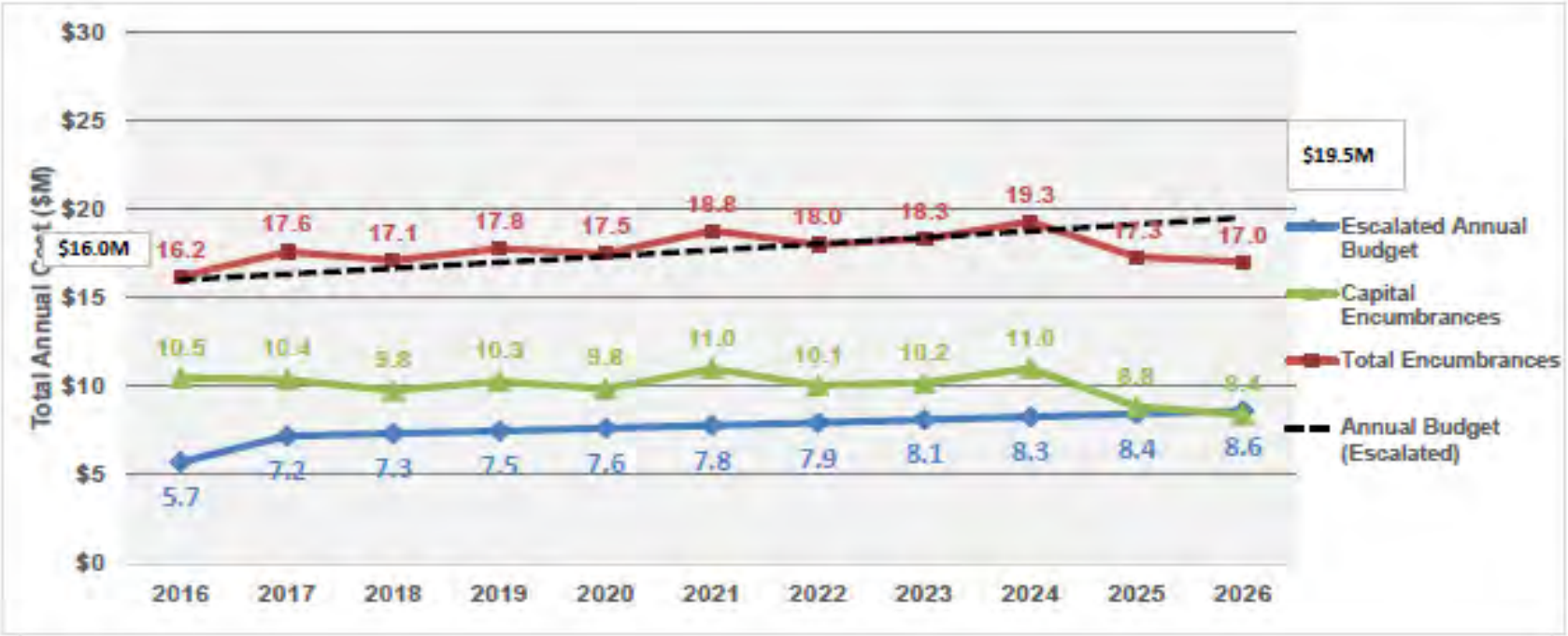
Figure 5-2. City Costs for 2016-2025



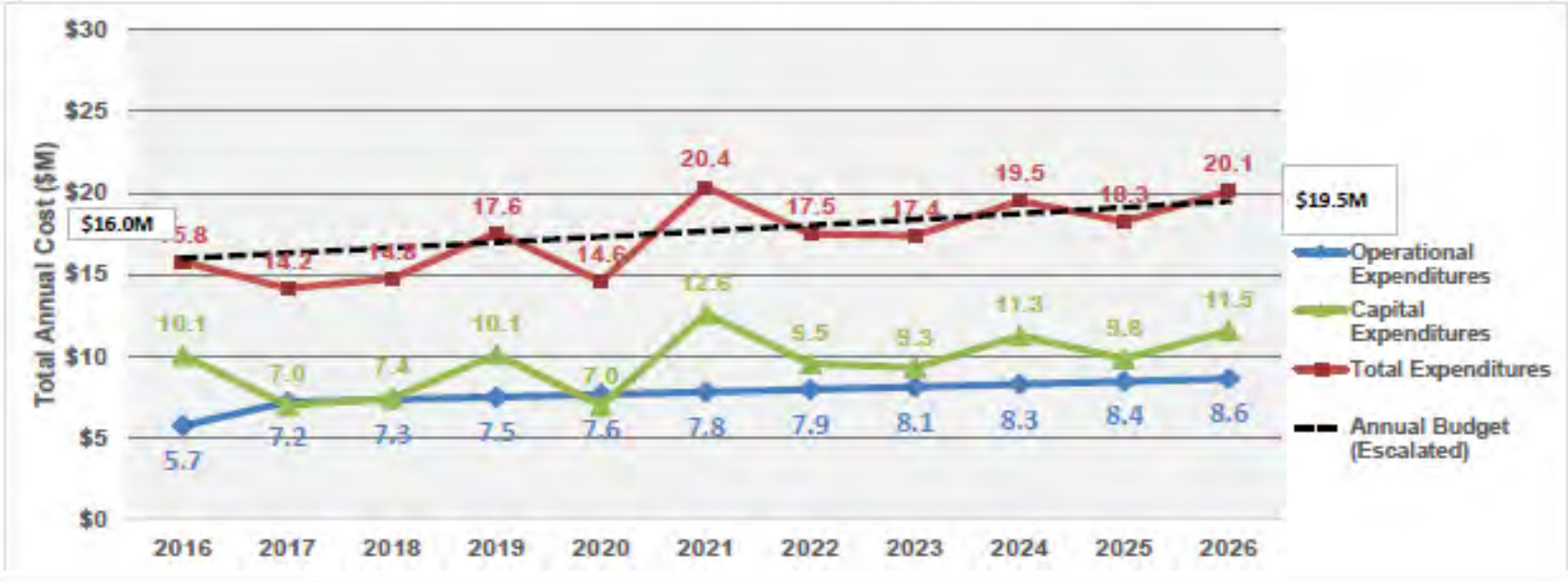


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Figure 5-3: Schedule for City Stormwater Capital Projects

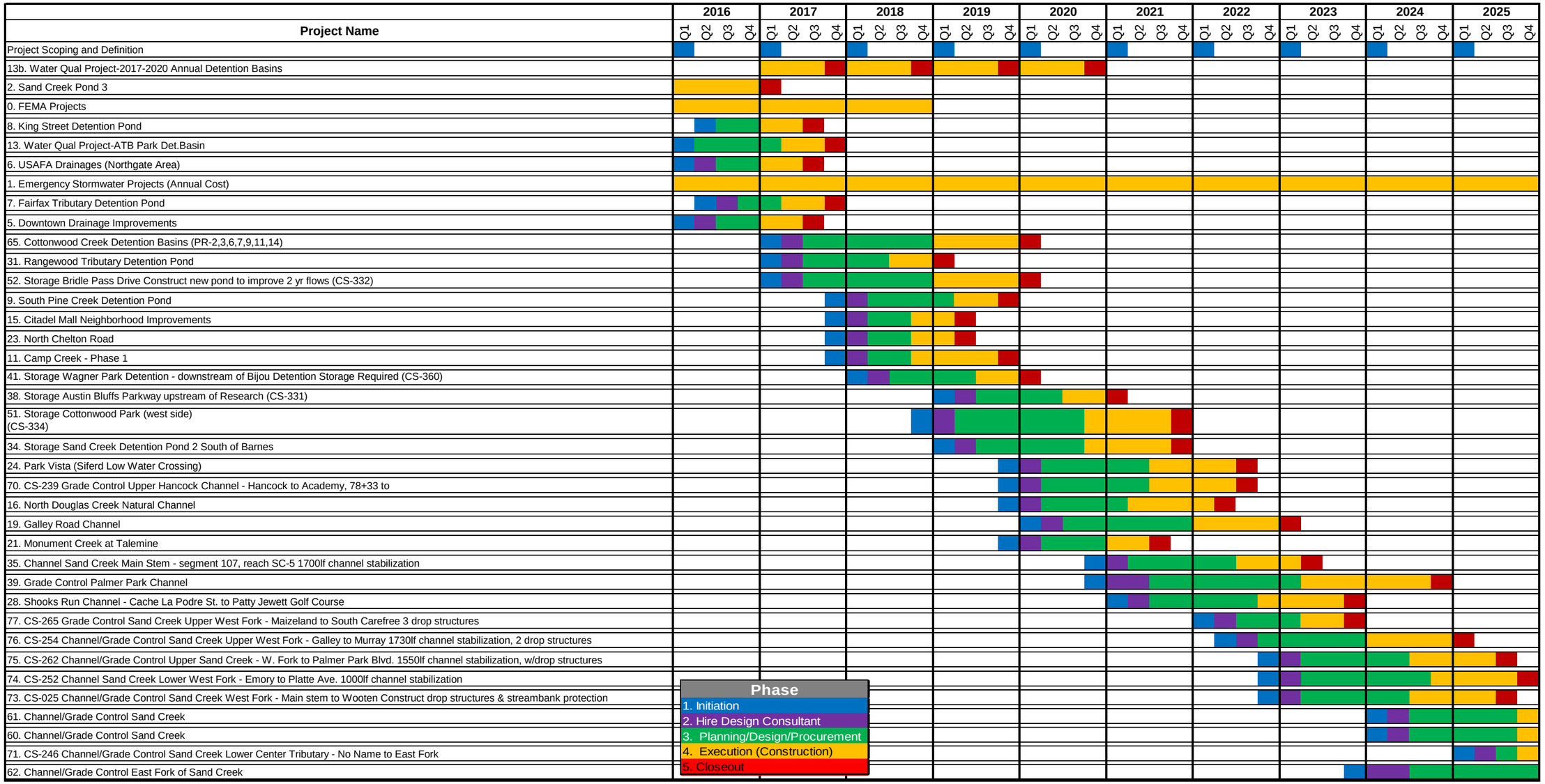

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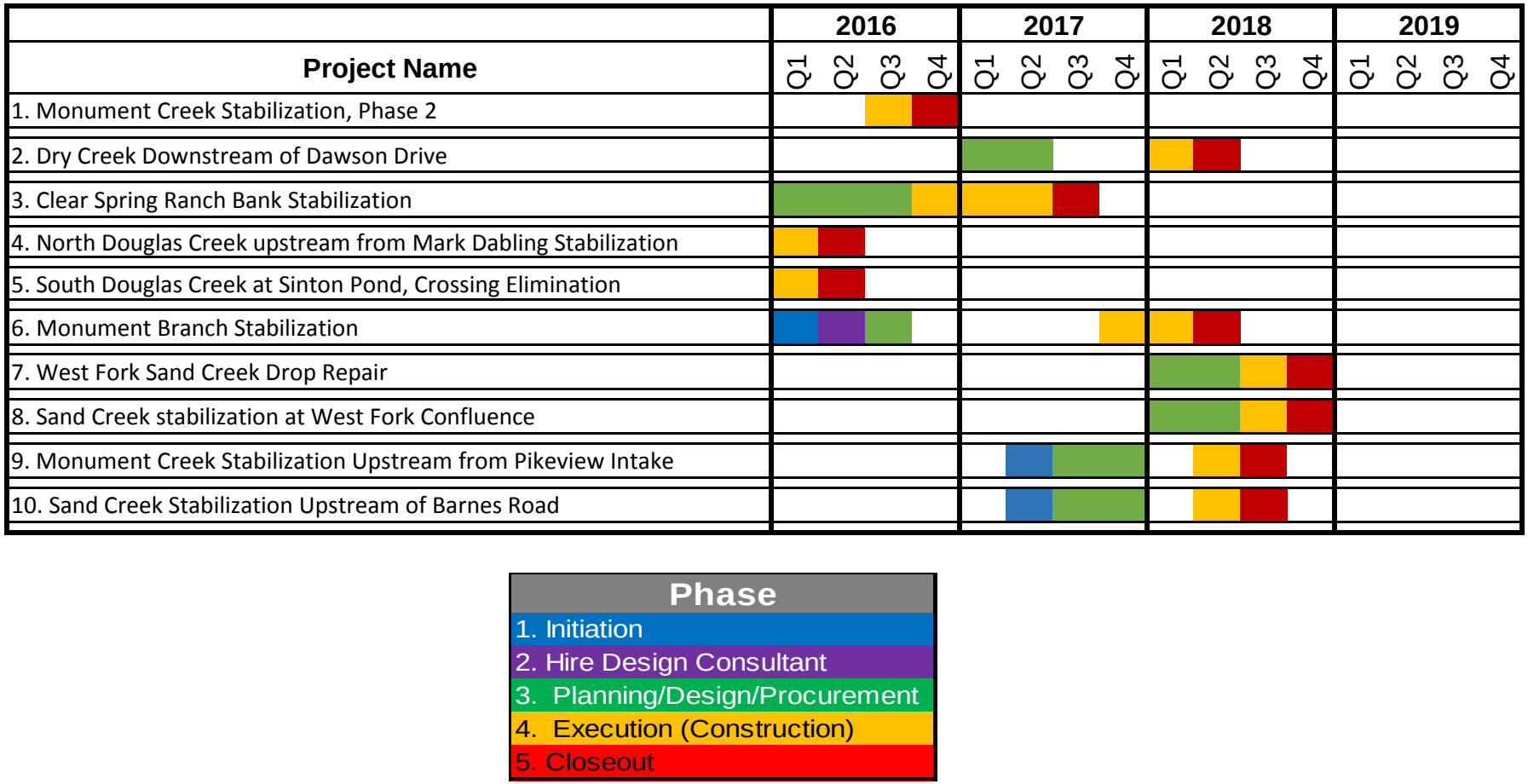
Figure 5-4. Schedule for Creek Crossing Projects



Projected Schedule - For Discussion Purposes Only

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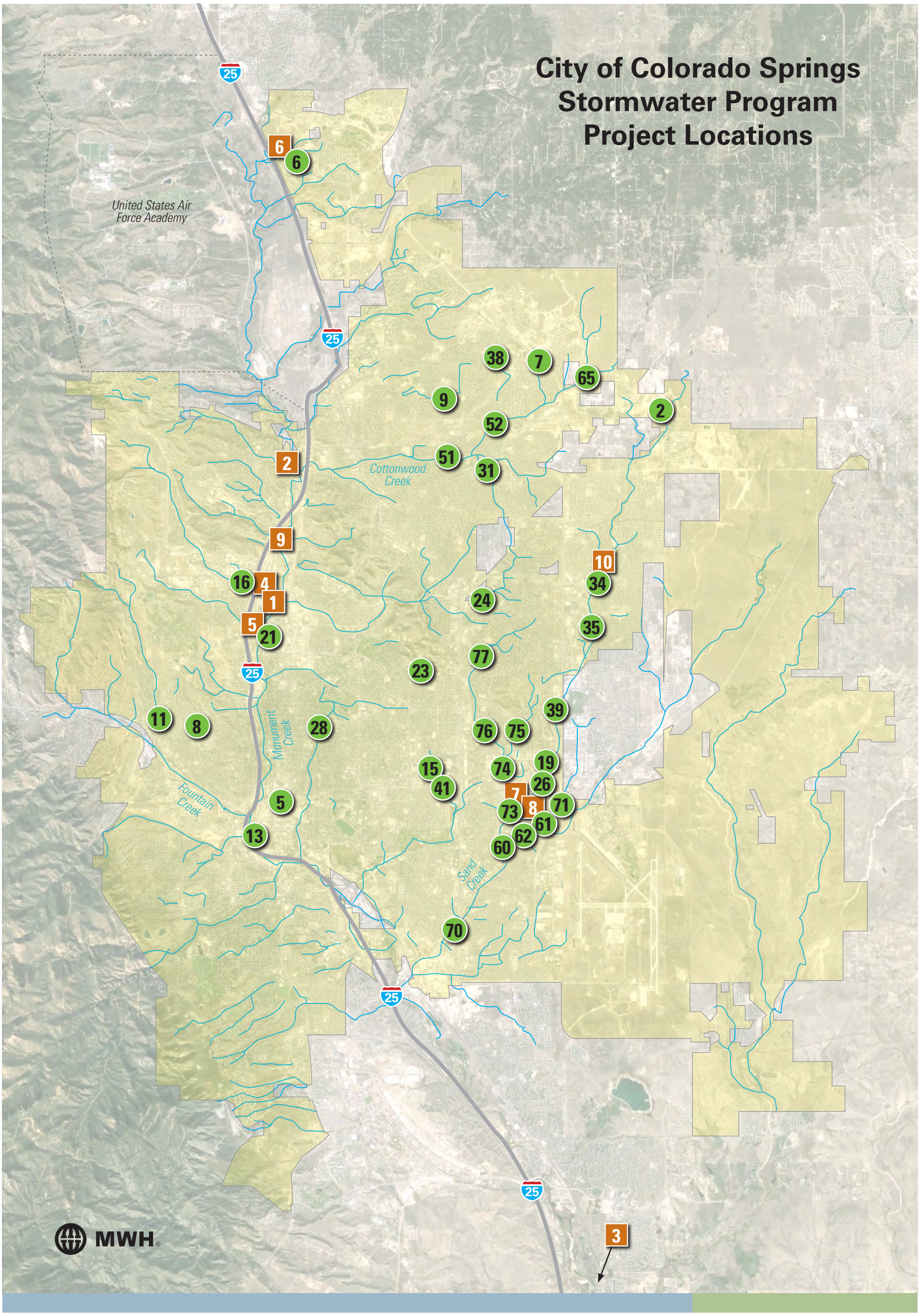
Figure 5-5. Location Map for Stormwater Projects



City of Colorado Springs Capital Stormwater Projects (2016-2025)

Sanitary Sewer Creek Crossing Project Locations (2016-2018)

Drainageway

Colorado Springs Corporate Boundary

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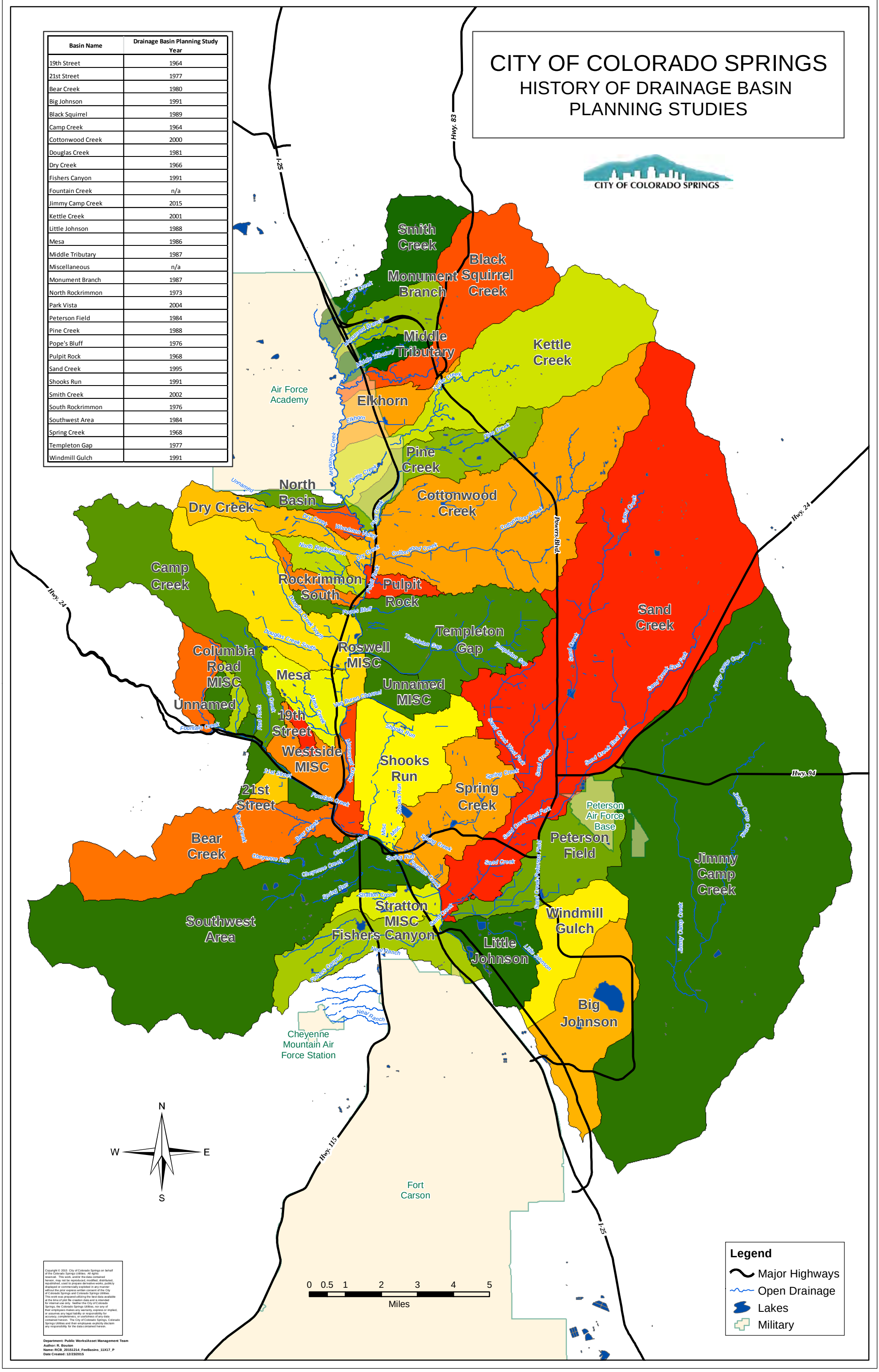
Figure 5-6. History of City Drainage Basin Master Plans



Basin Name	Drainage Basin Planning Study Year
19th Street	1964
21st Street	1977
Bear Creek	1980
Big Johnson	1991
Black Squirrel	1989
Camp Creek	1964
Cottonwood Creek	2000
Douglas Creek	1981
Dry Creek	1966
Fishers Canyon	1991
Fountain Creek	n/a
Jimmy Camp Creek	2015
Kettle Creek	2001
Little Johnson	1988
Mesa	1986
Middle Tributary	1987
Miscellaneous	n/a
Monument Branch	1987
North Rockrimmon	1973
Park Vista	2004
Peterson Field	1984
Pine Creek	1988
Pope's Bluff	1976
Pulpit Rock	1968
Sand Creek	1995
Shooks Run	1991
Smith Creek	2002
South Rockrimmon	1976
Southwest Area	1984
Spring Creek	1968
Templeton Gap	1977
Windmill Gulch	1991

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APPENDIX B-2 – PROJECT SUMMARY SHEETS

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Stormwater Capital Program
Project Summary

Project Name:	02. Sand Creek Pond 3		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	01
Estimated Capital Cost ($2016):	**Construction:** $2,420,293 **Soft Costs*:** 254,131 **Contingency:** 401,164 **Escalation:** **Total Capital:** $3,075,588 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Kiowa Engineering Estimates (Sept. 2015)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Project involves construction of a new detention pond and drop structures needed to help manage stormwater flows related to significant development north of Woodmen Road and east of Black Forest Road in northeastern portion of City.
Background:	Developer of this area was required to contribute funds to construct Sand Creek Detention Pond 2 located adjacent to Sky Sox stadium and Barnes Road. Construction of Sand Creek Detention Pond 3 has become a City responsibility. The scope of work consists of a continuation of detention work in area following completion of Sand Creek Pond 6. (D=75%; C=25%)
Project Description and Scope:	Construction of Sand Creek Detention Basin No. 3 Western Detention and Water Quality Pond (SCHEDULE A) and Sand Creek Inflow Drop Structure (SCHEDULE B)
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Sediment Generation: Stabilization of channel and/or grade control Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:

Project Name:	**0. FEMA Projects**		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**02**
Estimated Capital Cost ($2016):	**2016 Grant Match: $1,081,082** **2017 Grant Match: 500,000** **2018 Grant Match: 500,000** **Total Match: $2,081,082**	**Estimate Source:**	**City Engineering Estimate**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Repair of damaged channels and infrastructure resulting from Presidential Disasters declared for September 2013 flooding and May-June 2015 Storm Events.
Background:	Related to the Presidential Disaster Declaration for 2013 flooding and May-June 2015 rain events. City is working with FEMA to prepare project worksheets. Natural Resource Conservation Service (NRCS) projects have also been identified. Grant match dollar amounts are the estimated City's contribution (0-25%) to the costs. (C-50%; I-50%).
Project Description and Scope:	TBD - City working with FEMA to prepare project worksheets. City is additionally working with Colorado Water Conservation Board to identify NRCS related projects.
Benefits of Project:	Continued maintenance and repair of City stormwater system. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Sediment Generation: Stabilization of channel and/or grade control Water Quality: removes pollutants (heavy metals, sediment, other chemicals…)

Project Location:	Throughout Colorado Springs

Project Name:	08. King Street Detention Pond		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	03
Estimated Capital Cost ($2016):	**Construction:** $149,808 **Soft Costs*:** 28,763 **Contingency:** 71,429 **Escalation:** **Total Capital:** $250,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs 2005 Needs Assessment (2006-2010 CIP and Needs Assessment)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Retrofit existing detention pond to make it a full spectrum detention pond and outfall to provide improved water quality.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-013, located on west portion of City. Portion of original scope of work previously completed. (D=100%)
Project Description and Scope:	Construct new outlet structure and improve maintenance access. Retrofit existing detention pond to make it a full spectrum detention pond. Retrofit outfall to provide improved water quality.
Benefits of Project:	Improve public safety and improve water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:

Project Name:	13. Water Quality Projects		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	04
Estimated Capital Cost ($2016):	**Construction:** $1,282,841 **Soft Costs*:** 502,873 **Contingency:** 714,286 **Escalation:** **Total Capital:** $2,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Detention and/or water quality improvement needs in infill/redevelopment areas in Colorado Springs.
Background:	City is looking at locations in the City where water quality ponds could be constructed and used by new infill/redevelopment projects. The first proposed location is at Confluence Park. (D=100%)
Project Description and Scope:	Consultant to be hired in 2016 to design a water quality pond in America the Beautiful Park (formerly Confluence Park). $500K budgeted each year in 2016-2020. Additional projects to be designed and constructed as additional locations and/or needs are identified.
Benefits of Project:	Provide detention and/or water quality in developed downtown areas where there are currently no facilities resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	06. USAF Academy Drainage (Northgate Area)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	05
Estimated Capital Cost ($2016):	**Construction:** $1,026,273 **Soft Costs*:** 402,299 **Contingency:** 571,428 **Escalation:** **Total Capital:** $2,000,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs 2016 Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel Stabilization and Grade Control
Background:	Several natural drainages onto the USAFA from the Northgate area were severely damaged in recent storms. Matrix Design Group recently hired to prepare the Monument Creek Watershed Restoration Master Plan Study to identify most significant areas to be restored. (C=100%)
Project Description and Scope:	Project involves channel stabilization of drainages that flow onto the USAFA, including design and construction of stabilization and grade control for Monument Branch from Interstate 25 to Voyager Parkway, approximately 4,500 linear feet.
Benefits of Project:	Stabilize channels, resulting in sediment load reduction into Monument Creek. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:	

Project Name:	01. Emergency Stormwater Projects		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	06
Estimated Capital Cost ($2016):	**Construction:** $4,559,271 **Soft Costs*:** 797,872 **Contingency:** 2,142,857 **Escalation:** **Total Capital:** $7,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

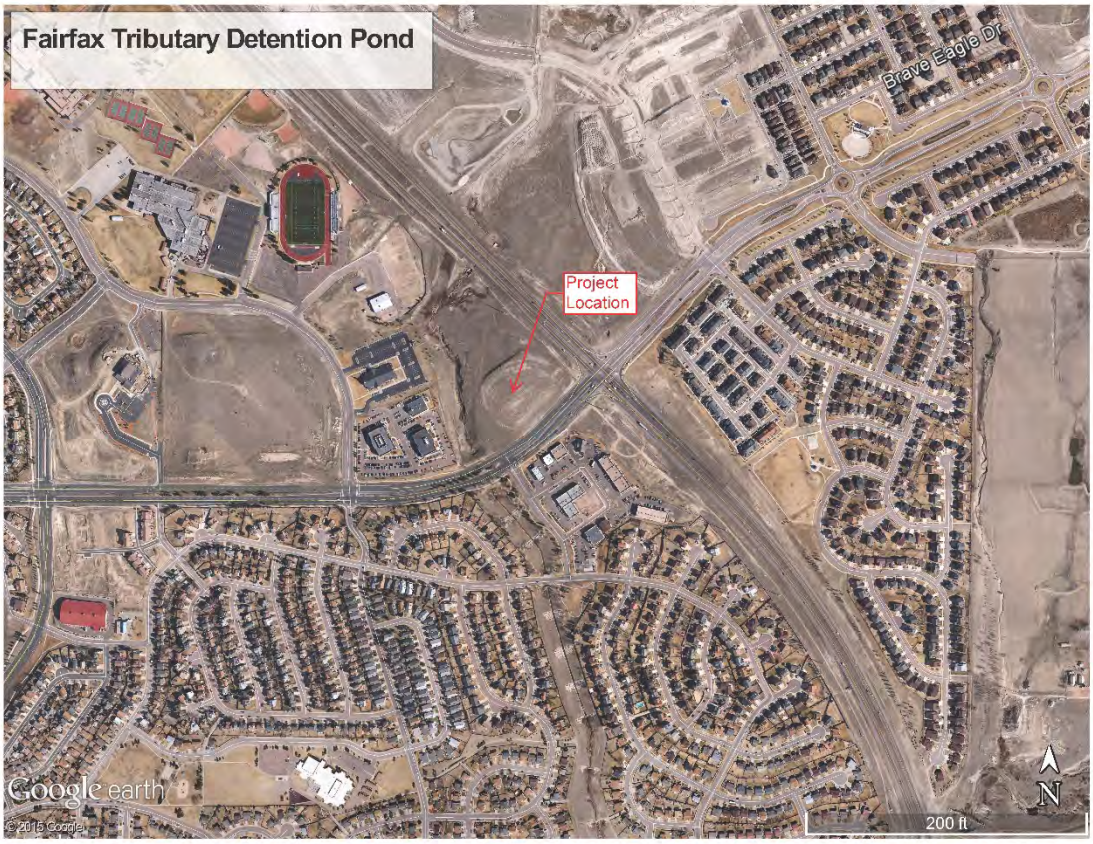
Project Need:	Repair of Damaged Infrastructure Not Previously Identified
Background:	Annual budget of $1.5M to handle unplanned, emergency and community projects that arise over the course of a fiscal year. Dollar estimate is based on City's past experience with assumed allocation of D=15%, C=25%, I=60%. Total funding shown above is for first five years (2016-2020) and extends through 2035.
Project Description and Scope:	TBD - Repair of unplanned, emergency and smaller community projects that arise over the course of a fiscal year.
Benefits of Project:	Continued maintenance of current City stormwater infrastructure. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Sediment Generation: Stabilization of channel and/or grade control Water Quality: removes pollutants (heavy metals, sediment, other chemicals…)

Project Location:	Throughout Colorado Springs

Project Name:	07. Fairfax Tributary Detention Pond		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	07
Estimated Capital Cost ($2016):	**Construction: $204,079** **Soft Costs*: 79,999** **Contingency: 107,754** **Escalation: 5,877** **Total Capital: $397,709** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Pond required to reduce peak flows in downstream direction; needed for detention for development in Briargate area.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-330, located near intersection of Research Pkwy and Powers Blvd in NE portion of City. Information based on Matrix Design Group 2010 draft Cottonwood Creek Drainage Basin Planning Study. (D=100%)
Project Description and Scope:	Design and construct new detention pond west of Research Parkway and Powers Bouldevard intersection.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	05. Downtown Drainage Improvements		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	08
Estimated Capital Cost ($2016):	**Construction:** $1,241,037 **Soft Costs*:** 366,106 **Contingency:** 642,857 **Escalation:** **Total Capital:** $2,250,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

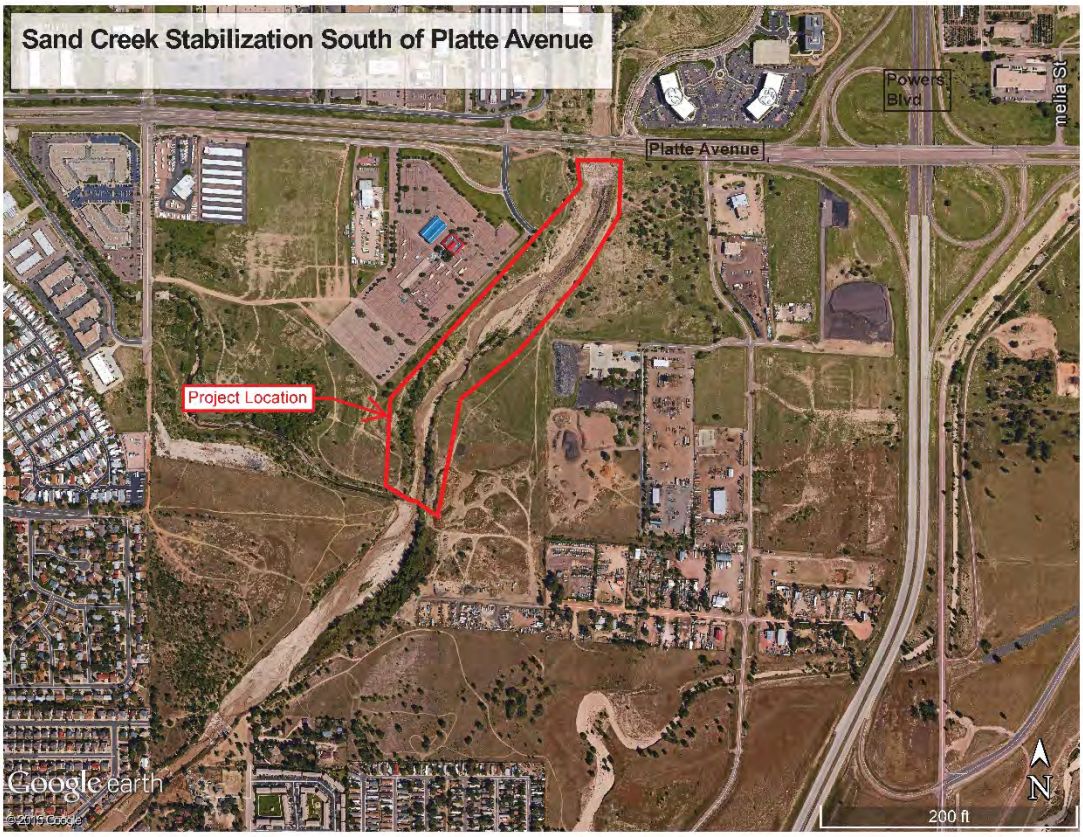
Project Need:	Control localized flooding in downtown Colorado Springs area.
Background:	Several businesses in the downtown area have experienced flooding due to lack of adequate stormwater conveyance systems. This project involves upsizing the current infrastructure system in Pikes Peak Avenue from Nevada Avenue to Shooks Run.
Project Description and Scope:	Design and construct approximately 2,500 linear feet of storm sewer conveyance system along Pikes Peak Avenue from Nevada to Shooks Run. System to be designed to handle and convey up to a 100-year storm event.
Benefits of Project:	Continued maintenance of current City stormwater infrastructure. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair.

Project Location:	

Project Name:	26. Sand Creek Stabilization South of Platte		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	09
Estimated Capital Cost ($2016):	**Construction:** $2,714,491 **Soft Costs*:** 1,064,080 **Contingency:** 1,511,429 **Escalation:** **Total Capital:** $5,290,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Channel Improvements Study (Ayres Associates, 2013)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization and grade control
Background:	Associated with Stormwater Needs Assessment project CS-018 involving stabilizing the existing channel downstream of the Platte Avenue Bridge. (C=100%)
Project Description and Scope:	Design and install improvements, including channel/bank stabilization and installation of grade control drop structures, within Sand Creek south of Platte Avenue Bridge based on proposed phasing plan. Project is funded using FEMA grant funds with City match applied in 2015.
Benefits of Project:	Stabilize channel resulting in reduction of sediment transport into Sand Creek and ultimately into Fountain Creek. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

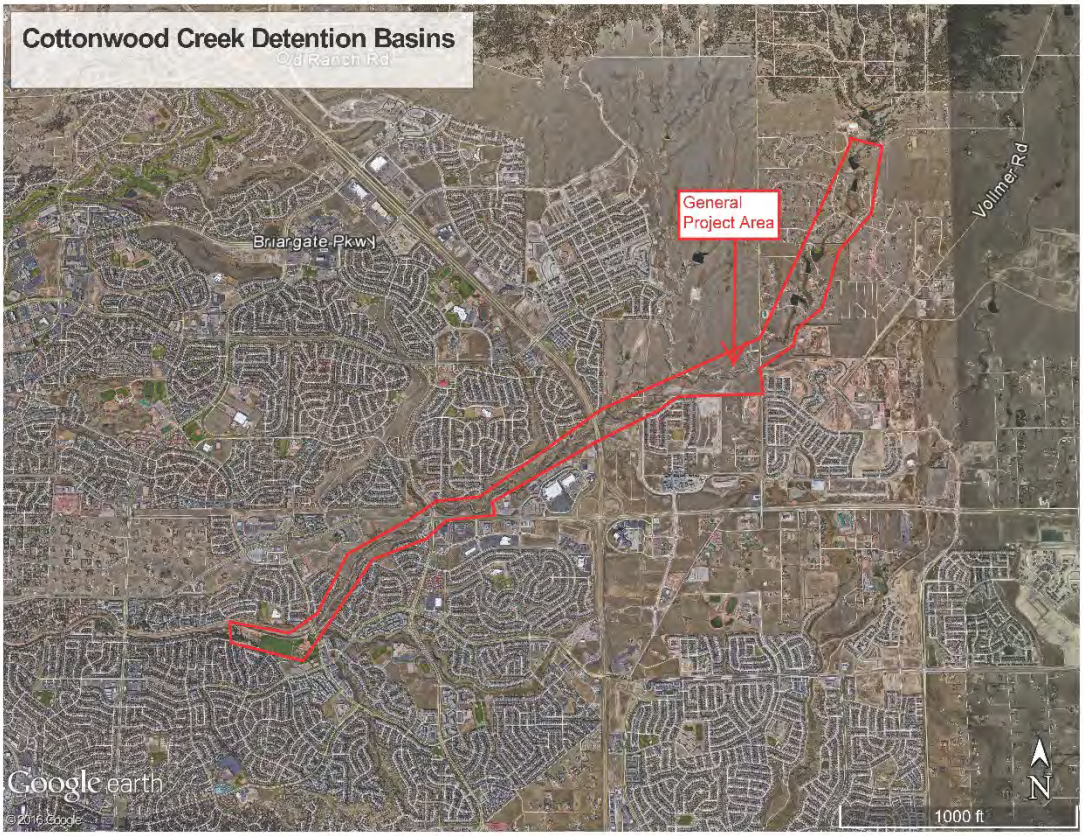
Project Location:	

Project Name:	65. Cottonwood Creek Detention Basins		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	10
Estimated Capital Cost ($2016):	**Construction: $ 1,405,904** **Soft Costs*: 551,114** **Contingency: 715,982** **Escalation: 66,825** **Total Capital: $ 2,739,825** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Wright Water Engineers (WWE) 12/16/2015**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Detention pond locations identified in older drainage basin studies along the upper portions of Cottonwood Creek that have not been constructed.
Background:	Wright Water Engineers noted six (6) detention basins along Cottonwood Creek that were identified in drainage basin planning studies conducted in the 1990s that were not constructed during development due to the prudent-line development methodology used in this area.
Project Description and Scope:	Design and construct the 6 detention ponds (identified as PR-2, PR-6, PR-7, PR-9, PR-11 and PR-14) utilizing full spectrum detention where able.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:



Project Name:	31. Rangewood Tributary Detention Pond		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	11
Estimated Capital Cost ($2016):	**Construction:** $384,852 **Soft Costs*:** 150,862 **Contingency:** 214,286 **Escalation:** **Total Capital:** $750,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Pond required to reduce peak flows in downstream direction. Needed for detention due to development in area.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-333, located near intersection of Dublin Blvd and Gold Medal Point in NE portion of City. Site selected due to land availability. (D=100%)
Project Description and Scope:	Design and construction of new full spectrum detention and water quality pond west of Dublin Blvd.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	52. Cottonwood Creek Detention Pond - Bridle Pass Drive (CS-332)		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	12
Estimated Capital Cost ($2016):	**Construction:** $ 816,316 **Soft Costs*:** 319,996 **Contingency:** 431,015 **Escalation:** 23,510 **Total Capital:** $1,590,837 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Pond required to reduce peak flows in downstream direction. Needed for detention due to development in area.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-332, located north of Bridle Pass Drive and south of Cottonwood Creek. Site selected due to land availability. (D=100%)
Project Description and Scope:	Design and construction of new full spectrum detention and water quality pond north of Bridle Pass Drive.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	09. South Pine Creek Detention Pond		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	13
Estimated Capital Cost ($2016):	**Construction: $236,302** **Soft Costs*: 92,630** **Contingency: 124,768** **Escalation: 6,806** **Total Capital: $460,506** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Pond required to reduce peak flows in downstream direction. Needed for detention due to development in area. Site selected due to land availability.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-335, located along South Pine Creek South Run at intersection of Lexington Dr and Bordeaux Dr. SNA information based on Matrix Design 2010 draft Cottonwood Creek Drainage Basin Planning Study. (D=100%)
Project Description and Scope:	Design and construct new detention pond in vacant parcel north of Lexington Drive and Bordeaux Drive intersection.
Benefits of Project:	Provide needed detention from area developments resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	15. Citadel Mall Neighborhood Improvements		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	14
Estimated Capital Cost ($2016):	**Construction: $546,780** **Soft Costs*: 205,043** **Contingency: 285,174** **Escalation: 15,555** **Total Capital: $1,052,552** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Spring Creek Drainage Basin Planning Study (URS, 1993)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	No existing storm drainage system in area, resulting in localized flooding issues.
Background:	New construction of storm drain system and/or detention pond in area of Citadel Mall; public outreach will be required. Associated with 2013 Stormwater Needs Assessment (SNA) project CS-374. (I=100%)
Project Description and Scope:	Design and install storm sewer system along Chelton Road to Dale Street with potential for detention pond on Citadel Mall property.
Benefits of Project:	Reduce flooding in area and improvement of area storm water conveyance. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity

Project Location:	

Project Name:	23. North Chelton Road		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	15
Estimated Capital Cost ($2016):	**Construction: $755,888** **Soft Costs*: 222,987** **Contingency: 358,125** **Escalation: 33,425** **Total Capital: $1,370,425** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**City of Colorado Springs 2005 Needs Assessment (2006-2010 CIP and Needs Assessment)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Control localized flooding
Background:	Associated with Stormwater Needs Assessment project CS-057 related to flooding issues on Marlborough Rd, Kent Ln, San Carlos Circle and properties on North Chelton Rd due to runoff from adjacent basin to north and inadequate storm sewer infrastructure. (I=100%)
Project Description and Scope:	Design and construction of a new storm sewer system for area.
Benefits of Project:	Continued upgrade and maintenance of current City stormwater infrastructure. Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority

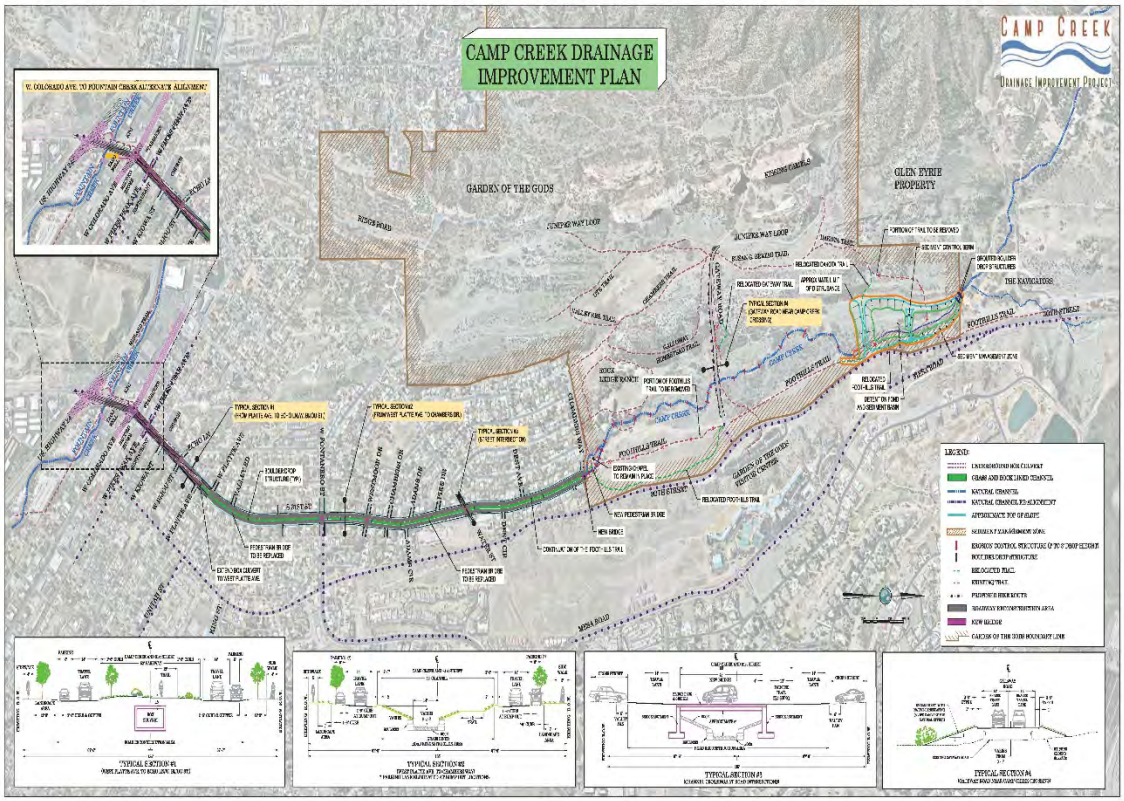
Project Location:	

Project Name:	11. Camp Creek – Phase I		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	16
Estimated Capital Cost ($2016):	**Construction: $2,371,652** **Soft Costs*: 739,955** **Contingency: 1,138,393** **Escalation: 106,250** **Total Capital: $4,356,250** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Wilson & Company and City Engineering Estimate**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Significant repairs of natural and concrete-lined channel needed from Garden of the Gods Park to confluence with Fountain Creek near Colorado Avenue.
Background:	Associated with SNA projects CS-002 and CS-003 and involves replacing an existing concrete channel with a natural channel and upsizing bridges. Additionally includes native channel stablization and detention through Garden of the Gods Park. City retained Wilson & Co. to conduct a study of the area, which estimated a total of $36M to complete. (C=25%; I=75%)
Project Description and Scope:	City to define a segment of Camp Creek that is most logical to construct and meets the target capital budget of $4.25M and commence with design (to potentially include improvements between Chambers Street and Water Street or area north of 30th Street)
Benefits of Project:	Needed maintenance of current stormwater infrastructure and upstream channel through Garden of the Gods park, resulting in sediment reduction and improved water quality to area and downstream users along Fountain Creek. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:



Project Name:	41. Wagner Park Detention – Spring Creek Downstream of Bijou (CS-360)		
Type:	**D** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**17**
Estimated Capital Cost ($2016):	**Construction: $ 361,061** **Soft Costs*: 141,536** **Contingency: 190,640** **Escalation: 10,399** **Total Capital: $ 703,636** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Spring Creek Drainage Basin Planning Study (URS, 1993)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Erosion and collapse of banks noted. Study notes that the crossing at downstream of the Pikes Peak Avenue crossing is inadequate to convey 100-year flow.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-360, located in Spring Creek drainage basin Bijou Street and Pikes Peak Avenue, East of Stanford Street and west of Delaware Drive. Identified in 2013 Stormater Needs Assessment with estimated project cost of $693,237 (D=100%)
Project Description and Scope:	Design and construction of new full spectrum detention pond in Wagner Park or possible area south of Wagner Park.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	38. Austin Bluffs Tributary Detention Pond – Upstream of Research (CS-331)		
Type:	**D** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**18**
Estimated Capital Cost ($2016):	**Construction: $ 386,676** **Soft Costs*: 151,577** **Contingency: 204,165** **Escalation: 11,136** **Total Capital: $ 753,554** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Pond required in area to reduce peak flows in the downstream direction. Needed for detention due to development in area. Site selected due to land availability.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-331, located north of Research Parkway and west of Powers Boulevard. Identified in 2013 Stormater Needs Assessment with estimated project cost of $742,418 (D=100%)
Project Description and Scope:	Design and construction of new full spectrum detention pond.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	51. Cottonwood Creek Detention Pond – West Side Cottonwood Park (CS-334)		
Type:	**D** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**19**
Estimated Capital Cost ($2016):	**Construction: $ 1,933,380** **Soft Costs*: 757,885** **Contingency: 1,020,825** **Escalation: 55,681** **Total Capital: $3,767,771** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Pond required to reduce peak flows in the downstream direction. Needed for detention due to development in area. Site selected due to land availability.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-334, located on the west end of Cottonwood Park, east of Union Boulevard and east of Rangewood Boulevard. Ientified in 2013 Stormater Needs Assessment with estimated project cost of $3,712,090 (D=100%)
Project Description and Scope:	Design and construction of new full spectrum detention pond.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	34. Sand Creek Detention Pond 2 – Detention Pond Completion (CS-105)		
Type:	**D** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**20**
Estimated Capital Cost ($2016):	**Construction: $ 525,965** **Soft Costs*: 206,178** **Contingency: 267,857** **Escalation: 25,000** **Total Capital: $ 1,025,000** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**City of Coloado Springs Engineering Department**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Existing detention pond was constructed to the 50-year flood event and does not have adequate storage capacity.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-105, located south of Barnes Road. Identified in 2013 Stormater Needs Assessment as a Class B, medium priority project with estimated unconfirmable project cost of $1,000,000 (D=100%)
Project Description and Scope:	Design and construction of existing detention pond expansion to 100-year flood event holding capcity.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:	

Project Name:	24. Park Vista (Siferd Low Water Crossing)		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	21
Estimated Capital Cost ($2016):	**Construction:** $1,924,261 **Soft Costs*:** 754,310 **Contingency:** 1,071,429 **Escalation:** **Total Capital:** $3,750,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Office

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Siferd low water crossing regularly floods across roadway resulting in hazardous driving conditions for motorists. Channel and bridge construction with the possiblilty of detention in area necessary for safe water crossing.
Background:	Associated with Stormwater Needs Assessment project C-232 related to unengineered channel with no culvert beneath roadway resulting in sheet flow from channel over roadway and back into channel on other side of road. (C=25%; I=75%)
Project Description and Scope:	Design channel and bridge improvements with the possibility for detention. The project will include the construction of a new bridge to replace the Siferd Low Water Crossing with possible design and construction of a detention pond in the area of the crossing to reduce flows.
Benefits of Project:	Provide safer water crossing across roadway and improved stormwater conveyance in area. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity

Project Location:	

Project Name:	70. Upper Hancock Channel (Sand Creek) - Hancock to Academy (CS-239)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	22
Estimated Capital Cost ($2016):	**Construction:** $ 634,411 **Soft Costs*:** 248,689 **Contingency:** 334,969 **Escalation:** 18,271 **Total Capital:** $ 1,236,340 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Channel Improvements Study (Ayres Associates, 2013)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-239. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,218,069 (C=100%)
Project Description and Scope:	Design and construction of three (3) drop structures in Upper Hancock channel (Sand Creek drainage basin) between Hancock Road and Academy Boulevard.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	16. North Douglas Creek Natural Channel		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	23
Estimated Capital Cost ($2016):	**Construction:** $1,795,977 **Soft Costs*:** 704,023 **Contingency:** 1,000,000 **Escalation:** **Total Capital:** $3,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	North Douglas Creek Supplemental Study (Matrix Design Group, 2014)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Channel stabilization and grade control.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-017 between I-25 and Monument Creek to the south. Identified in 2013 Stormater Needs Assessment with an unconfirmable estimated project cost of $930,000. North Douglas Creek Supplemental Study prepared by Matrix Design Group and Wilson & Company in 2014 estimated project cost at approximately $3.5M. Partial stabilization work between railroad crossing east of I-25 and Mark Dabling Boulevard to the southeast completed in 2015 (C=100%)
Project Description and Scope:	Design and install improvements, including channel/bank stabilization and installation of grade control drop structures, between I-25 and railroad crossing to the east. Cost estimate based on a supplemental study and conceptual design completed by Matrix Design Group in 2014 of North Douglas Creek south of I-25.
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through North Douglas Creek drainage basin near the confluence with Monument Creek. Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

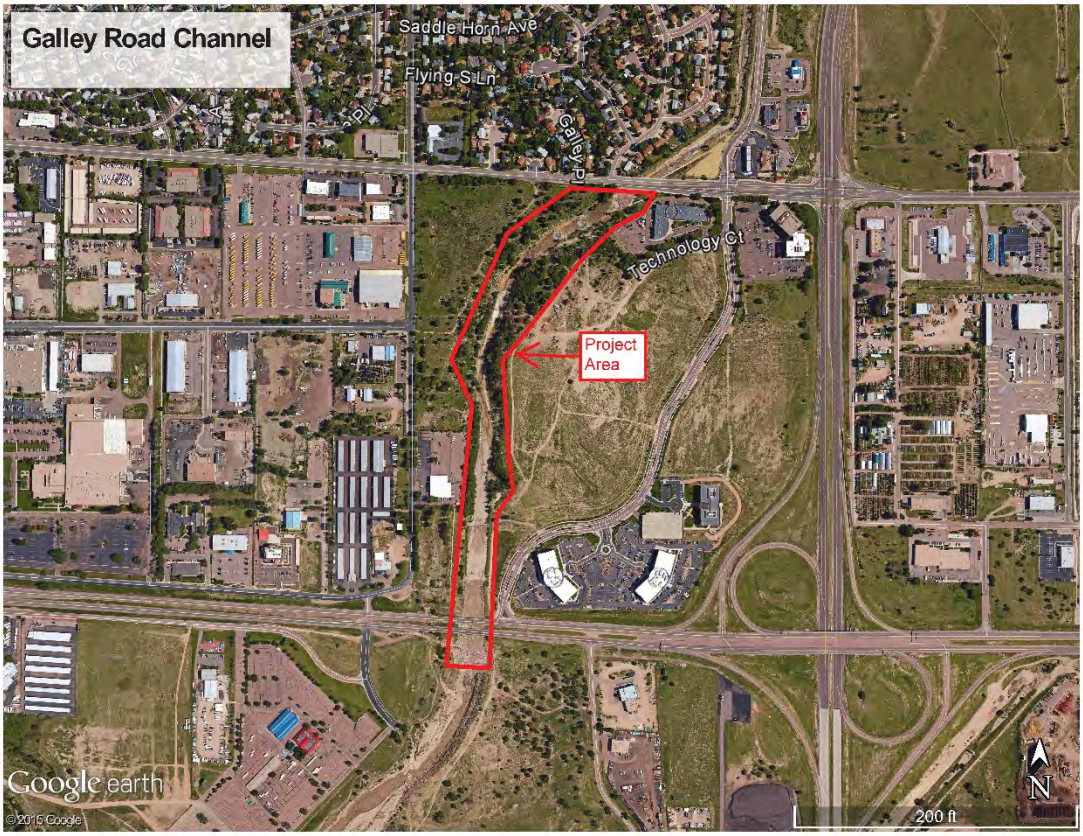
Project Location:

Project Name:	19. Galley Road Channel		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	24
Estimated Capital Cost ($2016):	**Construction:** $1,026,272 **Soft Costs*:** 402,299 **Contingency:** 571,429 **Escalation:** **Total Capital:** $2,000,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Channel Stabilization East Platte Ave to Constitution Ave (ICON Engineering, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization and grade control.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-258. (C=100%)
Project Description and Scope:	Design and construct bank stabilization and grade control structures along Sand Creek channel from Platte Avenue to Galley Road
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through Sand Creek channel in eastern portion of City. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:



Project Name:	21. Monument Creek at Talamine		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	25
Estimated Capital Cost ($2016):	**Construction: $912,568** **Soft Costs*: 357,727** **Contingency: 481,836** **Escalation: 26,282** **Total Capital: $1,778,413** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Monument Creek at Talamine Alternative Analysis (CH2M Hill, 2009)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control; stabilize eroding streambank.
Background:	Associated with Stormwater Needs Assessment project CS-011 related to exposed sanitary sewer line, steep banks near businesses, undercutting of toe of slope and bank erosion. (C=100%)
Project Description and Scope:	Design and construction of bank stabilization and grade control in identified area.
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through Monument Creek drainage basin in central portion of City above confluence with Fountain Creek. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

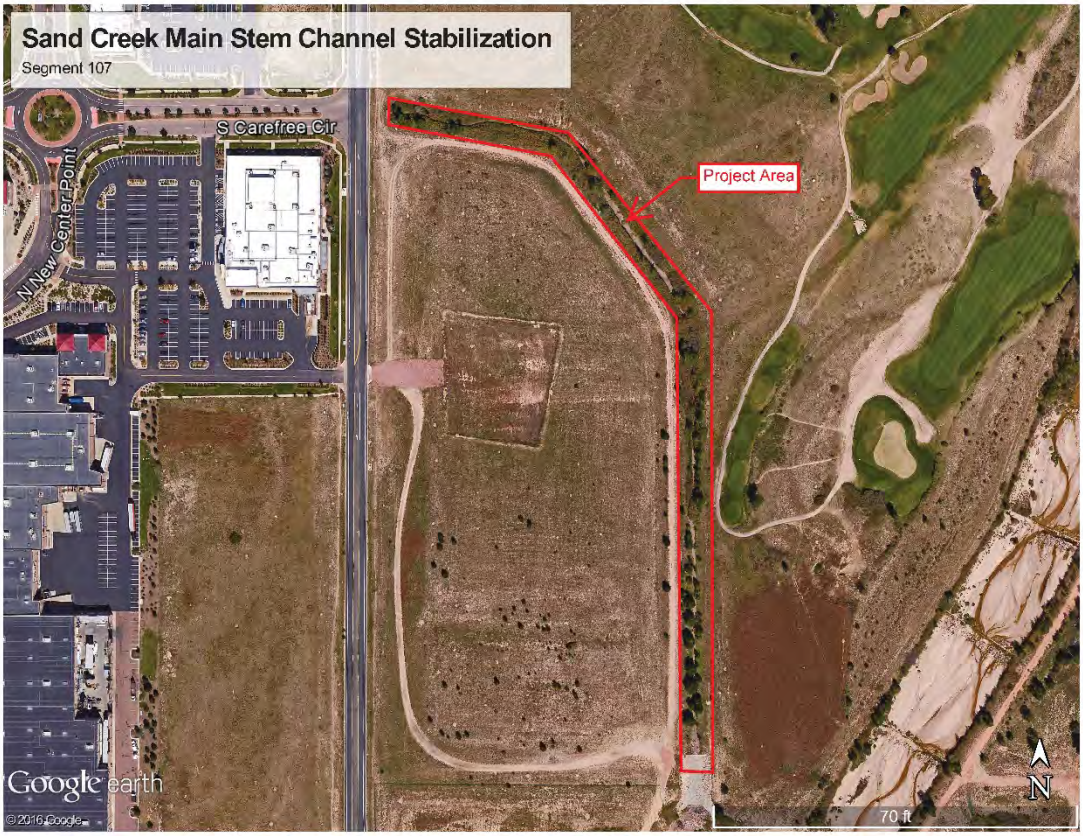
Project Location:	

Project Name:	35. Sand Creek Main Stem Channel Stabilization – Segment 107 (CS-261)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	26
Estimated Capital Cost ($2016):	**Construction: $ 637,522** **Soft Costs*: 249,909** **Contingency: 336,612** **Escalation: 18,361** **Total Capital: $ 1,242,404** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Drainage Basin Planning Study Premiminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization of 1,700 liner feet of Sand Creek tributary east of Powers Boulevard north of Constitution Avenue.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-261, located east of Powers Boulevard and north of Constitution Avenue within Sand Creek. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,224,043 (C=100%)
Project Description and Scope:	Design and construction of approximately 1,700 linear feet of channel stabilization measures along Sand Creek between Powers Boulevard and Constitution Avenue.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:



Project Name:	39. Palmer Park Channel – Galley Road to Palmer Park (CS-259)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	27
Estimated Capital Cost ($2016):	**Construction:** $ 3,383,737 **Soft Costs*:** 1,326,426 **Contingency:** 1,786,612 **Escalation:** 97,452 **Total Capital:** $6,594,227 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Stabilization East Platte Avenue to Constitution Avenue (2010, ICON Engineering, Inc.)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization along Sand Creek between Galley Road and Palmer Park Road.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-259. Identified in 2013 Stormater Needs Assessment with estimated project cost of $6,496,775 to install 13 drop structures. (C=100%)
Project Description and Scope:	Design and construction of 13 drop structures along Sand Creek channel between Galley Road and Palmer Park Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture

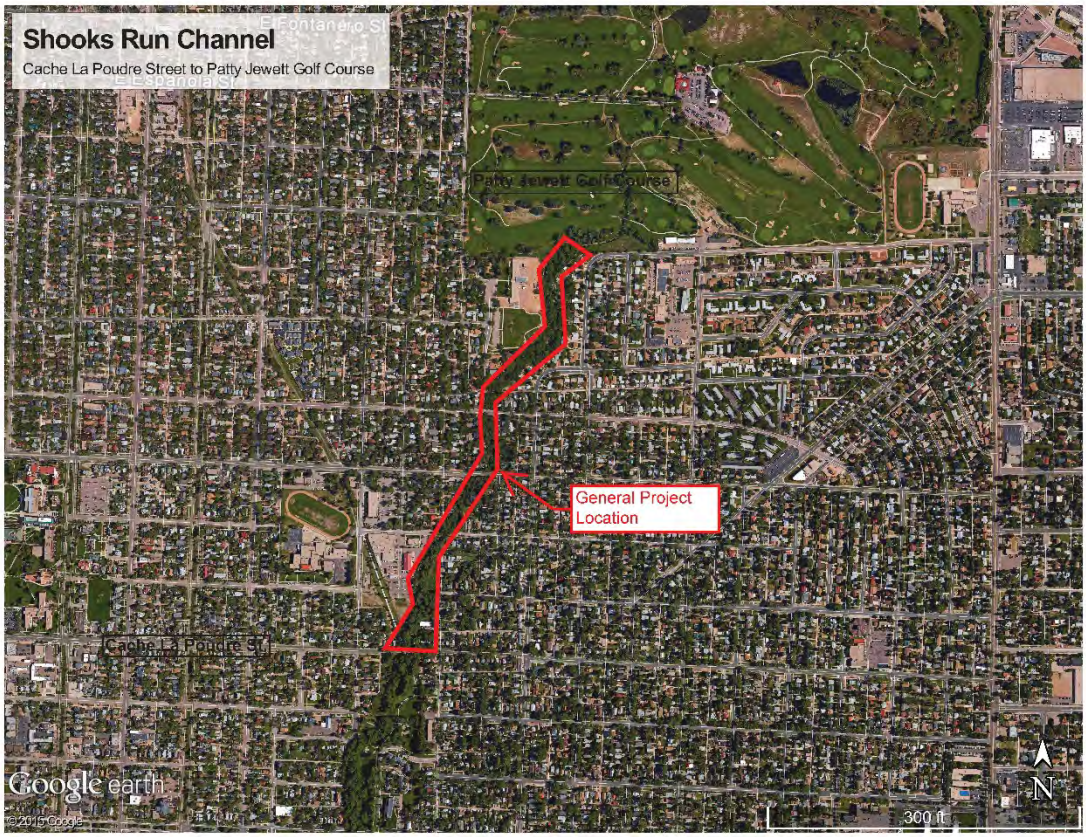
Project Location:

Project Name:	28. Shooks Run Channel - Cache La Pudre St to Patty Jewett Golf Course		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	28
Estimated Capital Cost ($2016):	**Construction:** $1,795,977 **Soft Costs*:** 704,023 **Contingency:** 1,000,000 **Escalation:** **Total Capital:** $3,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Drainage Basin Planning Study Shooks Run (Wilson and Company, 1993)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control
Background:	Associated with Stormwater Needs Assessment project CS-326 related to flooding and erosion damage due to inadequate capacity and lack of stabilization measures in existing channel in area between Cache la Poudre Street and Patty Jewett Golf Course.
Project Description and Scope:	Update to the Shooks Run Drainage Basin Planning Study is underway. City expects to have a preliminary list of projects and costs in 2017. Allowance is designated for improvements that can be implemented once the study is complete.
Benefits of Project:	Provide needed channel stabilization through the Shooks Run area which will result in sediment reduction to confluence with Fountain Creek and reduction in flooding potential in area. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:



Project Name:	77. Sand Creek Upper West Fork – Maizeland to South Carefree Circle (CS-265)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**29**
Estimated Capital Cost ($2016):	**Construction: $ 215,692** **Soft Costs*: 84,551** **Contingency: 113,885** **Escalation: 6,212** **Total Capital: $ 420,340** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-265 based on 1996 drainage basin planning study preliminary design report, located along Sand Creek Upper West Fork between Maizeland and South Carefree Circle. Identified in 2013 Stormater Needs Assessment with estimated project cost of $414,128 (C=100%)
Project Description and Scope:	Design and construction of three (3) drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	76. Sand Creek Upper West Fork – Galley Road to Murray Blvd (CS-254)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**30**
Estimated Capital Cost ($2016):	**Construction: $ 1,029,571** **Soft Costs*: 403,592** **Contingency: 543,614** **Escalation: 29,652** **Total Capital: $ 2,006,429** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-254 based on 1996 drainage basin planning study preliminary design report, located along Sand Creek Upper West Fork between Galley Road and Murray Boulevard. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,976,777 (C=100%)
Project Description and Scope:	Design and construction of 1,730 linear foot channel stabilization project including two (2) drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	75. East Branch West Fork Sand Creek- West Fork to Galley Rd (CS-262)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	31
Estimated Capital Cost ($2016):	**Construction: $ 611,541** **Soft Costs*: 239,724** **Contingency: 322,893** **Escalation: 17,612** **Total Capital: $ 1,191,770** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-262 based on 1996 drainage basin planning study preliminary design report, located along the east branch of Sand Creek West Fork from the confluence with Sand Creek West Fork to Palmer Park Boulevard. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,174,158 (C=100%)
Project Description and Scope:	Design and construction of 1,550 linear foot channel stabilization project including drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	74. Sand Creek Lower West Fork – Emory to Platte Avenue (CS-252)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**32**
Estimated Capital Cost ($2016):	**Construction: $ 1,222,914** **Soft Costs*: 479,382** **Contingency: 645,698** **Escalation: 35,220** **Total Capital: $ 2,383,214** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-252 based on 1996 drainage basin planning study preliminary design report, located along the lower west fork of Sand Creek between Emory Circle and Platte Avenue. Identified in 2013 Stormater Needs Assessment with estimated project cost of $2,347,994 (C=100%)
Project Description and Scope:	Design and construction of 1,000 linear foot channel stabilization project.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	73. Sand Creek West Fork Stabilization – Main Stem to Wooten (CS-025)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	33
Estimated Capital Cost ($2016):	**Construction: $ 1,131,905** **Soft Costs*: 443,707** **Contingency: 597,645** **Escalation: 32,599** **Total Capital: $ 2,205,856** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**City of Colorado Springs 2006-2010 Capital Improvements Program and Needs Assessment (2005)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel and bank erosion identified.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-025, located along the main stem of the west fork of Sand Creek to Wooten Road. Identified in 2013 Stormater Needs Assessment with estimated project cost of $2,173,257 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures including installation of drop structures and streambank protection.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	61. Sand Creek Stabilization – Karr to W. Fork Sand Creek Confluence (CS-040)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**34**
Estimated Capital Cost ($2016):	**Construction: $ 1,799,768** **Soft Costs*: 705,509** **Contingency: 950,277** **Escalation: 51,833** **Total Capital: $ 3,507,387** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Channel Improvements Study (Ayres Associates, 2013)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Area of Sand Creek observed to be cutting deeper year over year, threatening to undermine drop structures upstream. If lost, the drop structure directly downstream of the Platte Avenue bridge over Sand Creek would likely cause the closure of Platte Avenue at this location.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-040, with estimated project cost of $3,455,554. Drop structure at Karr Road built in 2012; according to 2013 SNA aerial photography does not indicate significant downcutting and erosion to banks (no nearby structures or infrastructure). (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Sand Creek between Karr Road and confluence with East and West Forks of Sand Creek.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

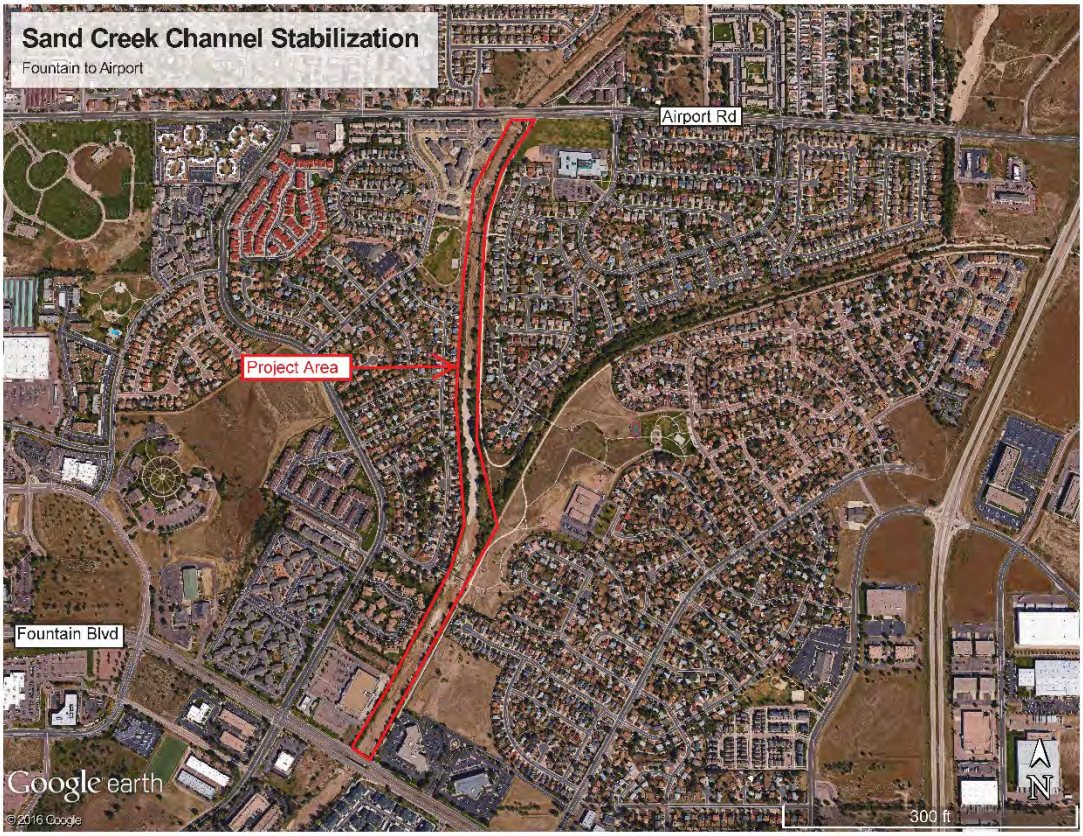
Project Location:	

Project Name:	60. Sand Creek Channel Stabilization – Fountain to Airport (CS-039)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	35
Estimated Capital Cost ($2016):	**Construction: $ 2,005,569** **Soft Costs*: 786,183** **Contingency: 1,058,940** **Escalation: 57,760** **Total Capital: $3,908,452** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Channel Improvements Study (Ayres Associates, 2013)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Aggressive cutting observed eroding banks and creek bottom in area; drop structures required to dissipate energy and limit future erosion.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-039, located between Fountain Boulevard and Airport Road. Identified in 2013 Stormater Needs Assessment with estimated project cost of $3,850,692 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Sand Creek between Fountain Boulevard and Airport Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:



Project Name:	71. Sand Creek Lower Center Tributary – No Name to East Fork Trib (CS-246)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**36**
Estimated Capital Cost ($2016):	**Construction: $ 235,106** **Soft Costs*: 92,162** **Contingency: 119,732** **Escalation: 11,175** **Total Capital: $ 458,175** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

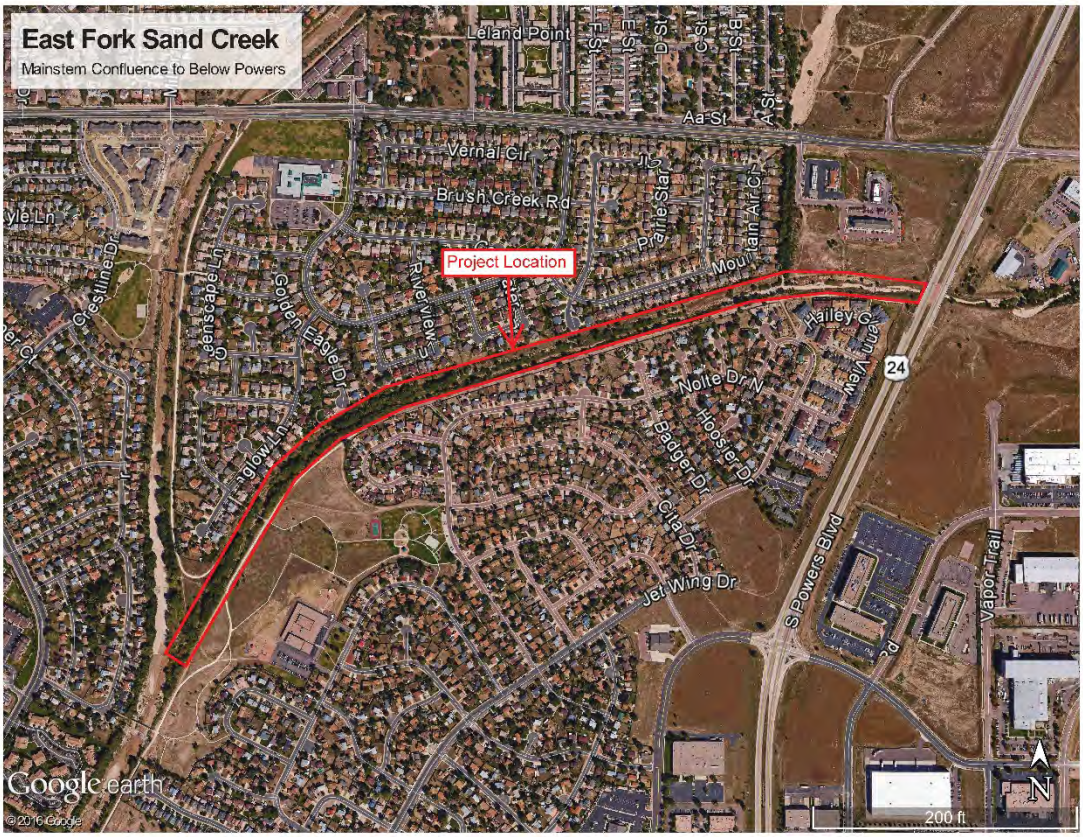
Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-246 based on 1996 drainage basin planning study preliminary design report. Identified in 2013 Stormater Needs Assessment as a Class B medium priority project with estimated project cost of $447,000 (C=100%)
Project Description and Scope:	Design and construction of 800 linear foot channel stabilization project with three (3) drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	62. East Fork Sand Creek from Mainstem Confluence to Below Powers (CS-041)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	37
Estimated Capital Cost ($2016):	**Construction: $ 3,830,073** **Soft Costs*: 1,501,388** **Contingency: 2,022,278** **Escalation: 110,306** **Total Capital: $ 7,464,045** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Channel Improvements Study (Ayres Associates, 2013)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Aggressive cutting observed eroding banks and creek bottom in area; drop structures required to dissipate energy and limit future erosion.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-041, located between Powers Boulevard and confluence with mainstem of Sand Creek. Identified in 2013 Stormater Needs Assessment with estimated project cost of $7,353,739 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Sand Creek between Powers Boulevard and confluence with mainstem of Sand Creek.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	55. Fountain Blvd Channel (Sand Creek) – Chelton Rd to Fountain Blvd (CS-243)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**38**
Estimated Capital Cost ($2016):	**Construction: $ 1,310,002** **Soft Costs*: 513,520** **Contingency: 691,681** **Escalation: 37,728** **Total Capital: $2,552,931** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Channel Improvements Study (Ayres Associates, 2013)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization along Sand Creek between Fountain Boulevard and Chelton Road.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-243. Identified in 2013 Stormater Needs Assessment with estimated project cost of $2,515,203 to install 3 drop structures. (C=100%)
Project Description and Scope:	Design and construction of 3 drop structures along Sand Creek channel between Fountain Boulevard and Chelton Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship

Project Location:

Project Name:	54. Chelton Road Channel (Sand Creek) – Academy to Chelton (CS-241)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	39
Estimated Capital Cost ($2016):	**Construction: $ 817,267** **Soft Costs*: 320,369** **Contingency: 431,516** **Escalation: 23,537** **Total Capital: $1,592,689** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Channel Improvements Study (Ayres Associates, 2013)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization along Sand Creek between South Academy Road and Chelton Road.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-241. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,569,152 to install 2 drop structures. (C=100%)
Project Description and Scope:	Design and construction of 2 drop structures along Sand Creek channel between Academy and Chelton Roads.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship

Project Location:	

Project Name:	69. Lower Sand Creek Tributaries 2, 3, and 4 - Main Stem to Academy (CS-240)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	40
Estimated Capital Cost ($2016):	**Construction:** $ 444,634 **Soft Costs*:** 174,297 **Contingency:** 234,767 **Escalation:** 12,805 **Total Capital:** $ 866,503 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-240 based on 1996 drainage basin planning study preliminary design report. Identified in 2013 Stormater Needs Assessment with estimated project cost of $853,698 (C=50%; I=50%)
Project Description and Scope:	Design and construction of 500 linear foot channel stabilization project with 1,520 linear feet of storm drain installation along reach.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	67. Lower Hancock Channel Stabilization (Sand Creek) - Downstream (CS-238)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	41
Estimated Capital Cost ($2016):	**Construction: $ 639,642** **Soft Costs*: 250,740** **Contingency: 337,730** **Escalation: 18,422** **Total Capital: $ 1,246,534** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

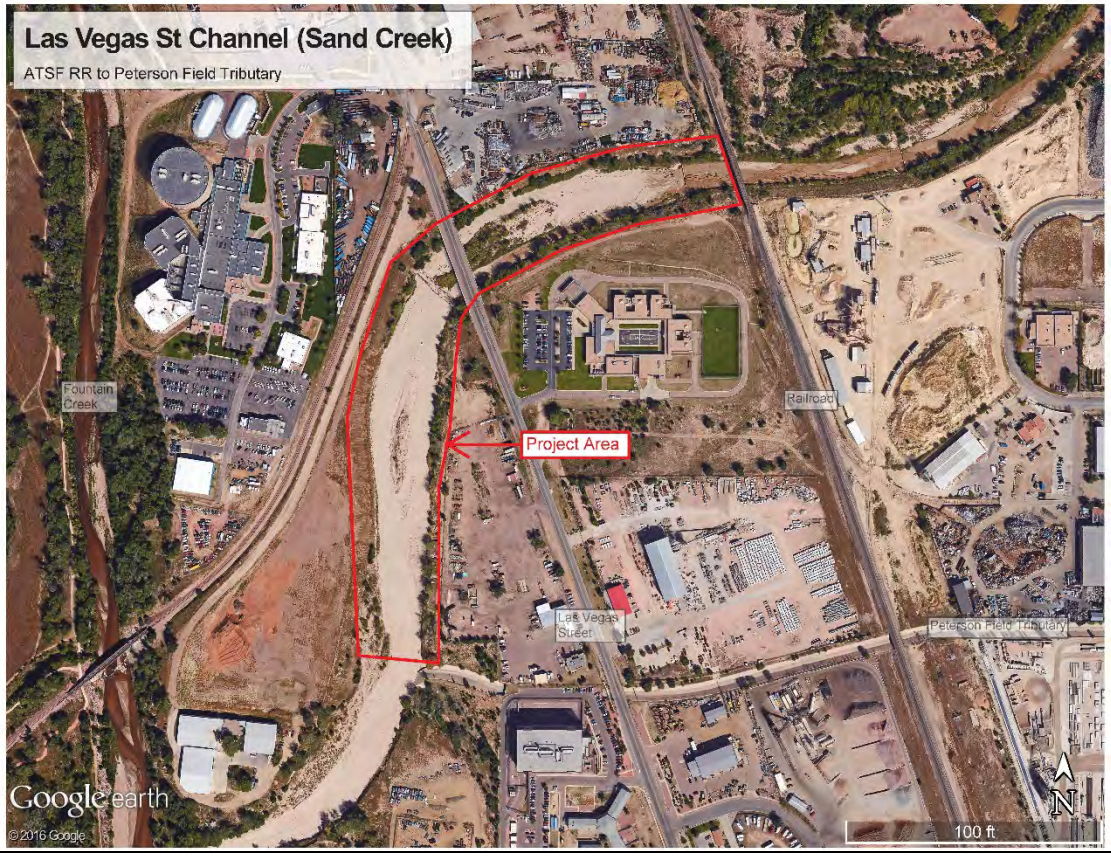
Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-238 based on 1996 drainage basin planning study preliminary design report. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,228,112 (C=100%)
Project Description and Scope:	Design and construction of 1,500 linear foot channel stabilization project with two (2) drop structures along Lower Hancock channel of Sand Creek drainage basin.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	66. Las Vegas St Channel (Sand Creek)–ATSF RR to Peterson Fld Trib (CS-268)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	42
Estimated Capital Cost ($2016):	**Construction: $ 792,842** **Soft Costs*: 310,794** **Contingency: 418,621** **Escalation: 22,834** **Total Capital: $ 1,545,091** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-268 based on 1996 drainage basin planning study preliminary design report. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,522,257 (C=100%)
Project Description and Scope:	Design and construction of 700 linear foot channel stabilization project with two (2) drop structures along Las Vegas channel (Sand Creek drainage basin).
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	72. Sand Creek Middle Center Tributary – Powers Blvd to No Name (CS-247)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**43**
Estimated Capital Cost ($2016):	**Construction: $ 89,940** **Soft Costs*: 35,256** **Contingency: 45,804** **Escalation: 4,275** **Total Capital: $ 175,275** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Sand Creek Drainage Basin Planning Study Preliminary Design Report (Kiowa Engineering, 1996)** **(Not Included in 2013 Stormwater Needs Assessment Validated Projects List)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization needed.
Background:	Included in City of Colorado Springs original Master Projects List reviewed as part of the 2013 Stormwater Needs Assessment (CS-247); however the project was not included as part of the 2013 Stormwater Needs Assessment Validated Projects List, likely because the improvements may have already been completed or partially completed. (C=100%)
Project Description and Scope:	Design and construction of 300 linear foot channel stabilization project with three (3) drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	68. Hancock Expressway Channel East of Astrozon - Sand Creek (CS-130)		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	44
Estimated Capital Cost ($2016):	**Construction: $ 36,732** **Soft Costs*: 14,399** **Contingency: 19,395** **Escalation: 1,058** **Total Capital: $ 71,584** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	SWENT Database Information

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

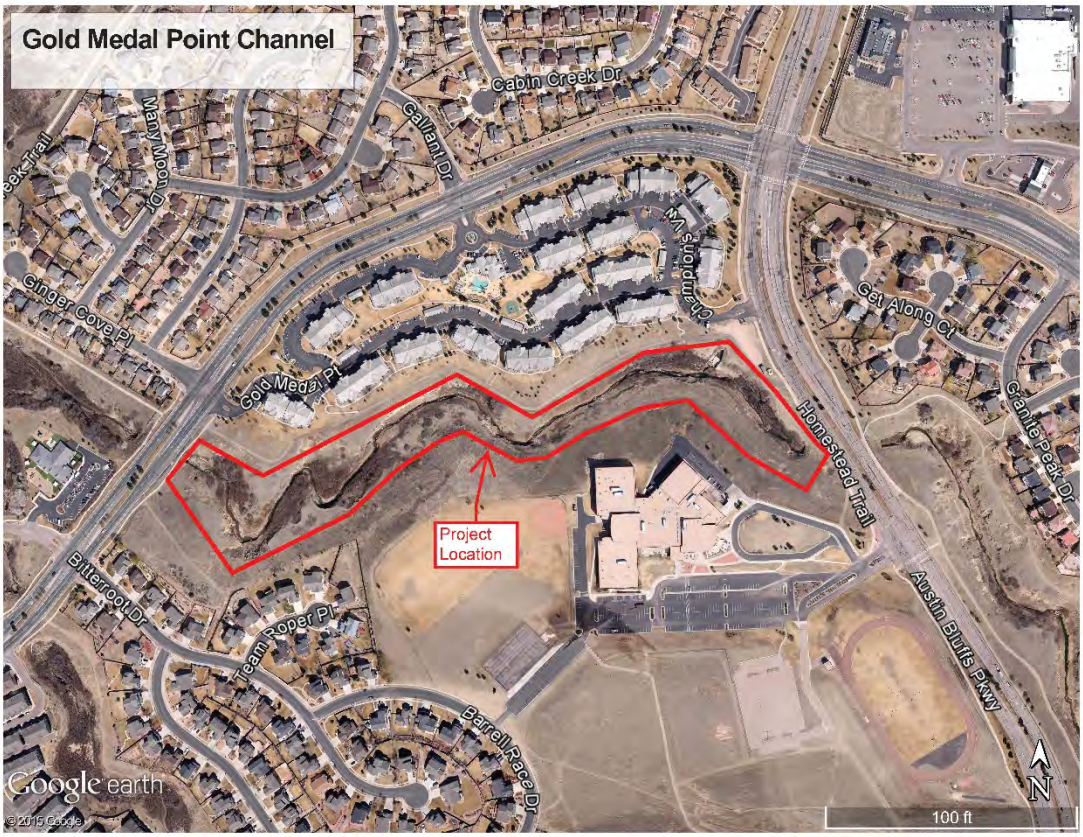
Project Need:	Undermining of infrastructure; broken concrete channel.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-130. Identified in 2013 Stormater Needs Assessment with estimated project cost of $70,526 (I=100%)
Project Description and Scope:	Repair of existing facility.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture

Project Location:

Project Name:	20. Gold Medal Point Channel		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	45
Estimated Capital Cost ($2016):	**Construction:** $384,852 **Soft Costs*:** 150,862 **Contingency:** 214,286 **Escalation:** **Total Capital:** $750,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

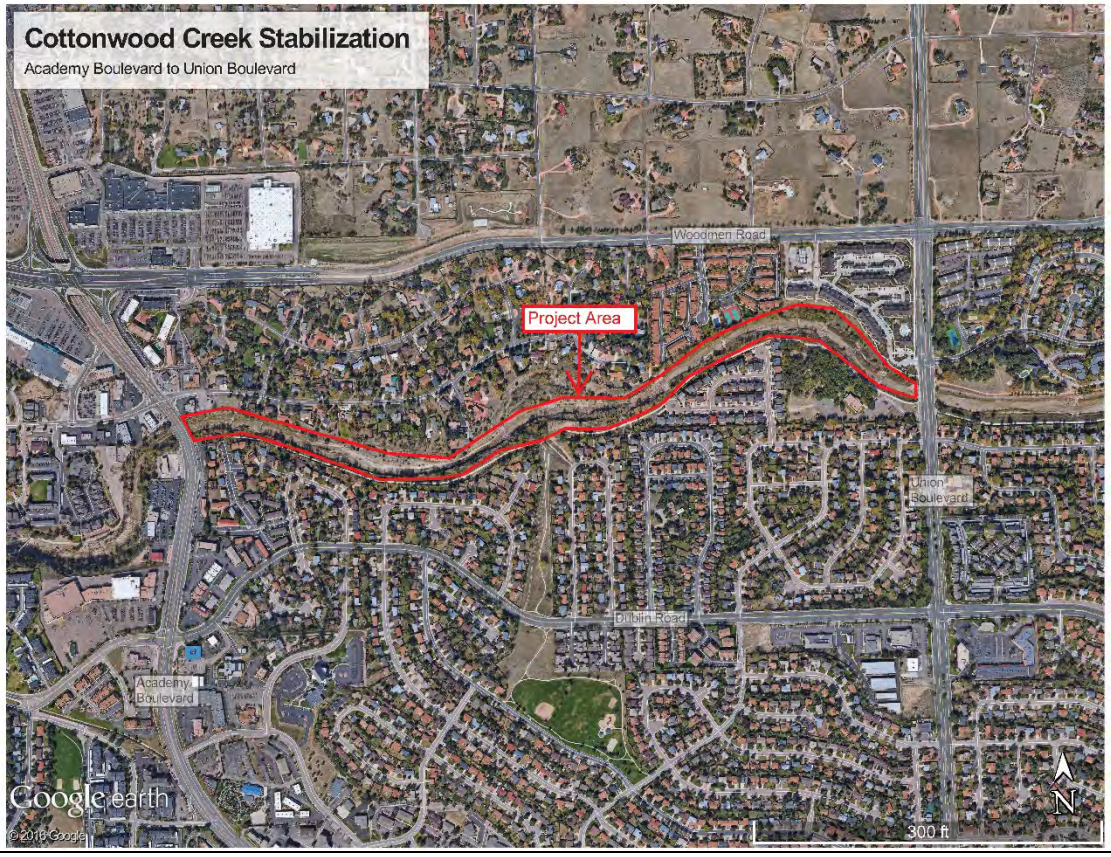
Project Need:	Channel stabilization and grade control of Cottonwood Creek south of Gold Medal Point neighborhood.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-339. (C=100%)
Project Description and Scope:	Design and construction of bank stabilization and grade control (drop structures) for 550 LF of existing channel.
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through Cottonwood Creek drainage basin in eastern portion of City. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:	

Project Name:	57. Cottonwood Creek Stabilization - Academy to Union (CS-004)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	46
Estimated Capital Cost ($2016):	Construction: $ 2,996,740 Soft Costs*: 1,174,722 Contingency: 1,582,278 Escalation: 86,306 Total Capital: $5,840,046 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek - Monument Creek to Academy Boulevard Design Report (AMEC Earth & Environmental, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Cottonwood Creek noted in study as experiencing sever erosion through this area, requiring design and construction of grade control structures and channel improvements to reduce erosion and damage to adjacent public and private property.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-004. Identified in 2013 Stormater Needs Assessment with estimated project cost of $5,753,740. (C=100%)
Project Description and Scope:	Design and construction of flood control and stream restoration projects along stretch of Cottonwood Creek between Union Boulevard and Academy Boulevard, including stabilization and construction of drop structures. (Portions of this work may have been completed since the issuance of this study).
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship

Project Location:	

Project Name:	59. Cottonwood Creek Stabilization - Monument Creek to Academy (CS-005)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	47
Estimated Capital Cost ($2016):	**Construction: $ 6,789,760** **Soft Costs*: 2,661,586** **Contingency: 3,584,994** **Escalation: 195,545** **Total Capital: $13,231,885** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Cottonwood Creek - Monument Creek to Academy Boulevard Design Report (AMEC Earth & Environmental, 2009)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

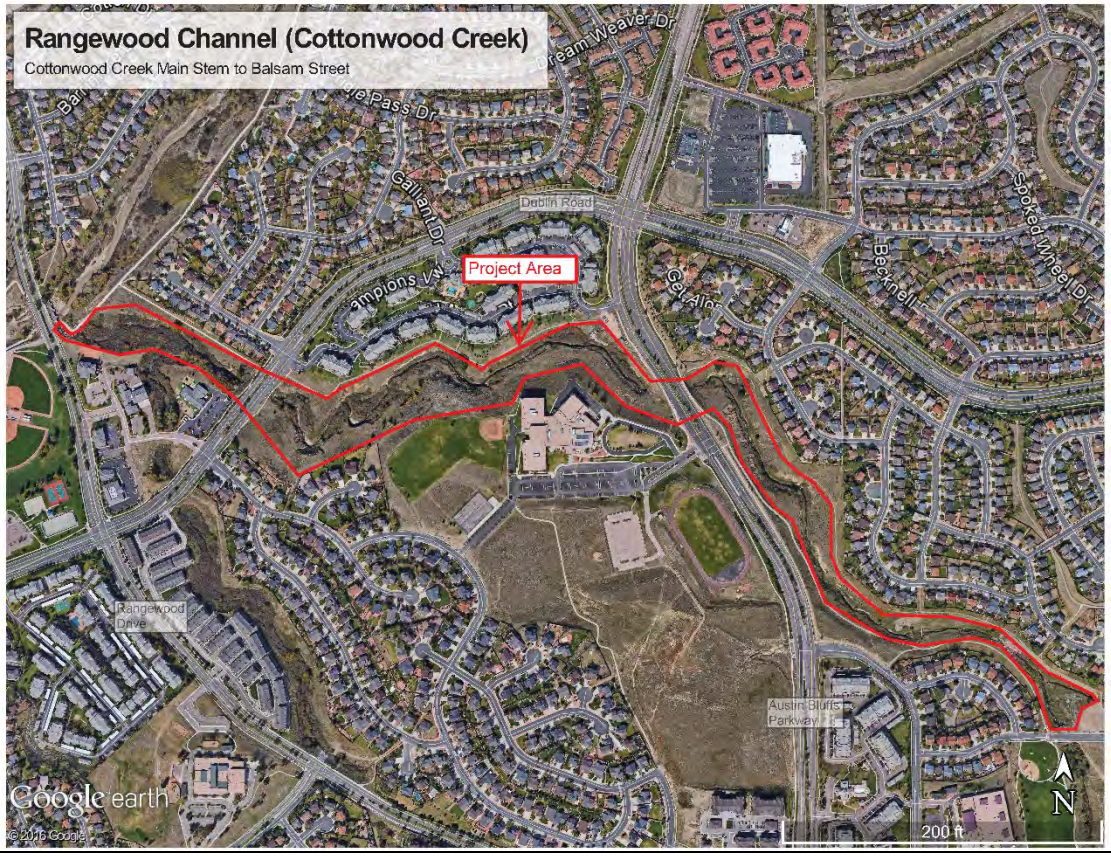
Project Need:	Cottonwood Creek noted in study as experiencing sever erosion requiring design and construction of grade control structures and channel improvements to existing facilities to reduce erosion and damage to adjacent public and private property.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-005. Identified in 2013 Stormater Needs Assessment with estimated project cost of $13,036,340. (C=100%)
Project Description and Scope:	Design and construction of flood control and stream restoration projects along stretch of Cottonwood Creek between Monument Creek and Academy Boulevard, including stabilization and construction of drop structures. (Portions of this work may have been completed since the issuance of this study).
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship

Project Location:

Project Name:	58. Rangewood Channel (Cottonwood Creek) – Main Stem to Balsam (CS-343)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	48
Estimated Capital Cost ($2016):	**Construction: $ 2,599,322** **Soft Costs*: 1,018,934** **Contingency: 1,372,443** **Escalation: 74,860** **Total Capital: $5,065,559** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel and bank instabilities noted along Rangewood Channel within the Cottonwood Creek drainage basin.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-343. Identified in 2013 Stormater Needs Assessment with estimated project cost of $4,990,699. (C=100%)
Project Description and Scope:	Design and construction of 7,400 linear foot channel stabilization project with drop structures along main stem of Rangewood Channel.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship

Project Location:	

Project Name:	63. Cottonwood Creek - Rangewood to Woodmen Stabilization (CS-337)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	49
Estimated Capital Cost ($2016):	Construction: $ 1,933,380 Soft Costs*: 757,885 Contingency: 1,020,825 Escalation: 55,681 Total Capital: $3,767,771 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel and bank instabilities identified along Cottonwood Creek between Rangewood Road and Woodmen Road.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-337, along Cottonwood Creek located between Rangewood Road and Woodmen Road. Identified in 2013 Stormater Needs Assessment with estimated project cost of $3,712,090 (C=100%)
Project Description and Scope:	Design and construction of 7,400 linear foot channel stabilization project with drop structures along Cottonwood Creek between Rangewood Road and Woodmen Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	45. Fountain Creek – W Cimmaron to N end of Drake Power Plant (CS-306 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	50
Estimated Capital Cost ($2016):	**Construction: $ 665,916** **Soft Costs*: 261,039** **Contingency: 351,603** **Escalation: 19,178** **Total Capital: $1,297,736** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Steep eroded banks identified during 2009 assessment along channel with exposed abandoned sewer line.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-306 a&b, located along Fountain Creek between West Cimmaron Street and north end of Drake Power Plant near I-25. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $1,278,558 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek between West Cimmaron Street and North end of Drake Power Plant near I-25, including drop structure construction bank reconstruction
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	46. Fountain Creek – N end Drake Power Plant to S end of Plant (CS-307 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	51
Estimated Capital Cost ($2016):	Construction: $ 995,898 Soft Costs*: 390,392 Contingency: 525,835 Escalation: 28,682 Total Capital: $1,940,807 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	High flow velocities through area resulting in erosion and downcutting of the channel between the north and south ends of the Drake Power Plant, adjacent to I-25.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-307 a&b, located along Fountain Creek between I-25 and the Drake Power Plant. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $1,912,125 (C=100%).
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek between the north and south ends of the Drake Power Plant near I-25, including grade control and outfall reconstruction.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	18. Fountain Creek - Drake Power Plant to Shooks Run		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	52
Estimated Capital Cost ($2016):	**Construction:** $1,154,557 **Soft Costs*:** 452,586 **Contingency:** 642,857 **Escalation:** **Total Capital:** $2,250,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Reduction in velocities to reduce erosion and downcutting of Fountain Creek channel and increase bank stabilization.
Background:	Associated with 2013 Stormwater Needs Assessment (SNA) projects CS-308(a&b) and 309(a&b). Projects involves the stabilization of Fountain Creek between Drake Power Plant and Shooks Run. Allowance is approximately 36% of total SNA estimate for scope. (C=100%)
Project Description and Scope:	Design and phasing of projects along Fountain Creek from Drake Power Plant to Shooks Run. Projects to include construction of bank stabilization and grade control structures.
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through Fountain Creek in central portion of City. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

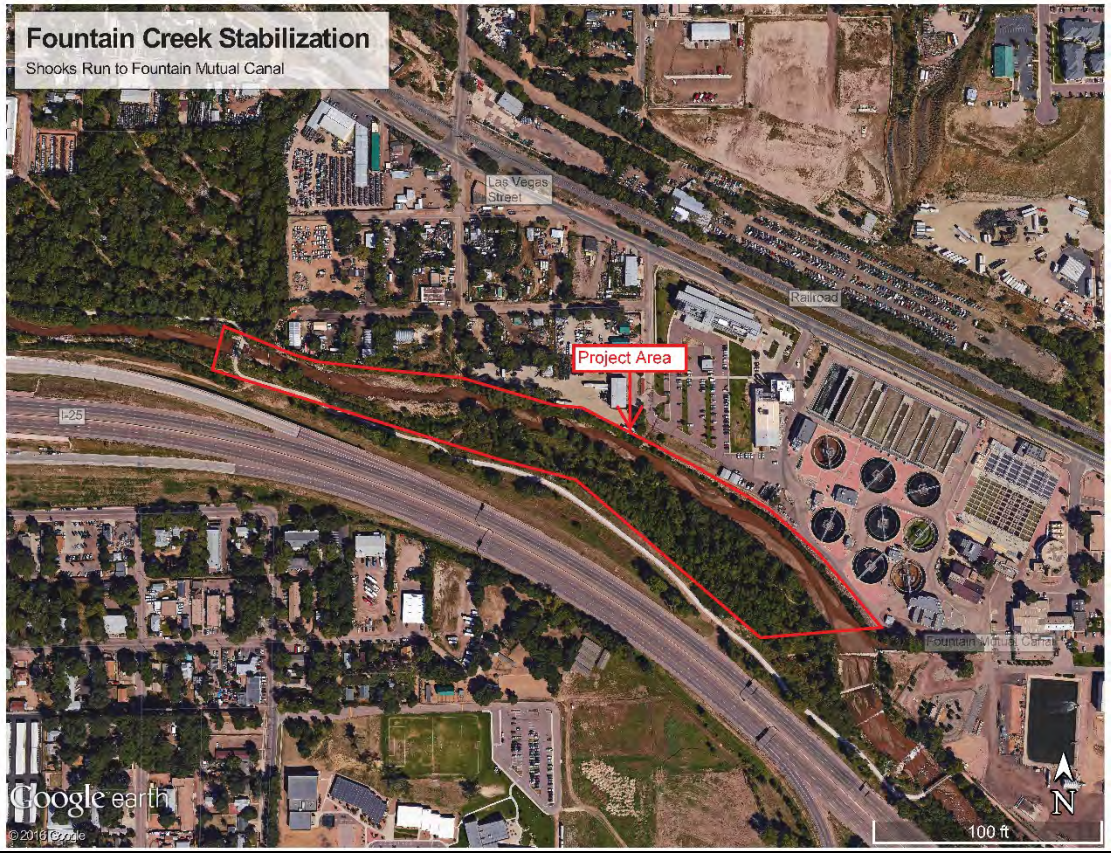
Project Location:	

Project Name:	43. Fountain Creek – Shooks Run to Fountain Mutual Canal (CS-310 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	53
Estimated Capital Cost ($2016):	Construction: $ 6,082,533 Soft Costs*: 2,384,353 Contingency: 3,211,576 Escalation: 175,177 Total Capital: $11,853,639 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Erosion and sediment deposit identified; channel banks documented as unstable during 2009 study. Channel stabilization and grade control needed along Fountain Creek through the identified area.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-310 a&b, located along Fountain Creek between Shooks Run and Fountain Mutual Canal south of the downtown Colorado Springs area along I-25. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $11,678,463 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek between Shooks Run confluence and Fountain Mutual Canal, including drop structure construction and potential property acquistions to complete scope of work.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

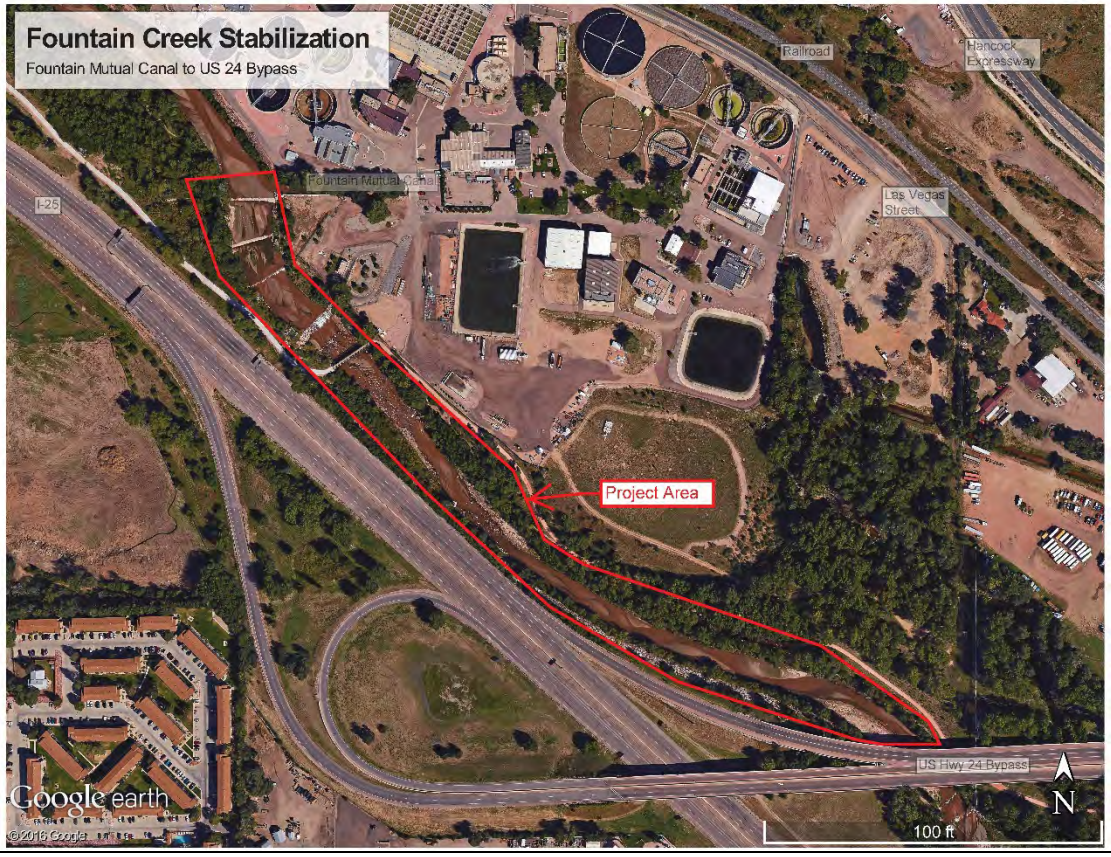


Project Name:	53. Fountain Creek - Fountain Mutual Canal to US 24 Bypass (CS-311 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	54
Estimated Capital Cost ($2016):	Construction: $ 5,090,924 Soft Costs*: 1,995,642 Contingency: 2,688,008 Escalation: 146,619 Total Capital: $9,921,193 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control needed due to high flow velocities identified resulting in erosion and downcutting of the channel, sediment deposition and unstable channel banks.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-311 a&b. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $9,774,574 (C=100%).
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek between Fountain Mutual Canal and US Highway 24 bypass, including drop structure construction and potential property acquistions to complete scope of work.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:



Project Name:	36. Fountain Creek – US 24 Bypass to Spring Creek (CS-312 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	55
Estimated Capital Cost ($2016):	Construction: $ 2,379,104 Soft Costs*: 932,609 Contingency: 1,256,167 Escalation: 68,518 Total Capital: $ 4,636,398 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Extreme erosion and safety concerns throughout the reach between US Highway 24 and Spring Creek, with vulnerability of utilities and transmission towers observed.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-312 a&b, located along Fountain Creek between US Highway 24 and Spring Creek within the city limit boundaries. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $4,567,880 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek within the city limits between US Highway 24 and Spring Creek, including a drop safety evaluation and construction of at least 2 drop structures.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	50. Fountain Creek Stabilization - Spring Creek to Mobile Home Park (CS-313)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	56
Estimated Capital Cost ($2016):	Construction: $ 1,951,333 Soft Costs*: 764,923 Contingency: 1,030,304 Escalation: 56,198 Total Capital: $3,802,758 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control needed due to vertical degradation of the stream and lateral migration of the creek identified, resulting in encroachment to existing electric transmission towers.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-313 a&b. Identified in 2013 Stormater Needs Assessment with a combined estimated project cost of $3,746,560 (C=100%).
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek between Spring Creek confluence to the north and mobile home park to the south, including channel realignment and drop structure construction.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	32. Fountain Creek – Mobile Home Park to N El Pomar Sports Park (CS-314 a&b)		
Type:	**C** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**57**
Estimated Capital Cost ($2016):	**Construction: $ 2,172,886** **Soft Costs*: 851,771** **Contingency: 1,147,285** **Escalation: 62,579** **Total Capital: $ 4,234,521** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Erosion at Circle Drive Bridge along banks exending over 800 linear feet upstream with high vertical banks observed (10' to 30' in height).
Background:	Associated with 2013 Stormwater Needs Assessment project CS-314 a&b. Identified in 2013 Stormater Needs Assessment with combined estimated project cost of $4,171,942 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along stretch of creek channel, along with construction of two drop structures, channel realignment in areas, brudge abutment protection, and bank protection.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	33. Fountain Creek – N end El Pomar Sports Park to S end of Park (CS-315 a&b)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	58
Estimated Capital Cost ($2016):	Construction: $ 2,335,497 Soft Costs*: 915,515 Contingency: 1,233,142 Escalation: 67,262 Total Capital: $ 4,551,416 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Fountain Creek Stabilization & Restoration Plan, Monument Creek to the Colorado Springs City Limit (WHPacific, 2009)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Erosion along banks of Fountain Creek adjacent to El Pomar park.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-315 a&b. Identified in 2013 Stormater Needs Assessment with combined estimated project cost of $4,484,154 (C=100%)
Project Description and Scope:	Design and construction of channel stabilization measures along Fountain Creek adjacent to El Pomar Park with fomalization of existing drop structure.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	22. Monument Creek Mobile Home Park		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	59
Estimated Capital Cost ($2016):	**Construction: $246,151** **Soft Costs*: 96,492** **Contingency: 125,357** **Escalation: 11,700** **Total Capital: $479,700** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	SWENT Database Information

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control; drainage escaping existing storm sewer system and eroding bank of Monument Creek near existing homes, a trail and a roadway.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-139. (C=100%)
Project Description and Scope:	Design and construction of bank stabilization and grade control adjacent to the Monument Creek Mobile Home Park.
Benefits of Project:	Stabilize channel and banks, resulting in sediment load reduction through Monument Creek drainage basin in central portion of City above confluence with Fountain Creek. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:	

Project Name:	64. Chelton Dr. Channel Stabilization - Chelton Dr to Airport Rd (CS-359)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	60
Estimated Capital Cost ($2016):	**Construction: $ 763,046** **Soft Costs*: 299,114** **Contingency: 402,889** **Escalation: 21,976** **Total Capital: $ 1,487,025** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Spring Creek Drainage Basin Planning Study (URS Consultants, 1993)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	1993 study identified potential scour and erosion at the channel. Existing box culvert crossing at Chelton Road was identified as inadequate in conveying 100-year flow.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-359. Identified in 2013 Stormater Needs Assessment with estimated project cost of $1,465,049 (C=100%)
Project Description and Scope:	Design and construction of 2,400 linear foot channel stabilization project with two (2) drop structures along Chelton Drive channel (Spring Creek drainage basin) between Chelton Drive and Airport Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:

Project Name:	25. Pine Creek Outfall into Mounument Creek		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	61
Estimated Capital Cost ($2016):	**Construction:** $641,420 **Soft Costs*:** 251,437 **Contingency:** 357,143 **Escalation:** **Total Capital:** $1,250,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs 2005 Needs Assessment (2006-2010 CIP and Needs Assessment)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

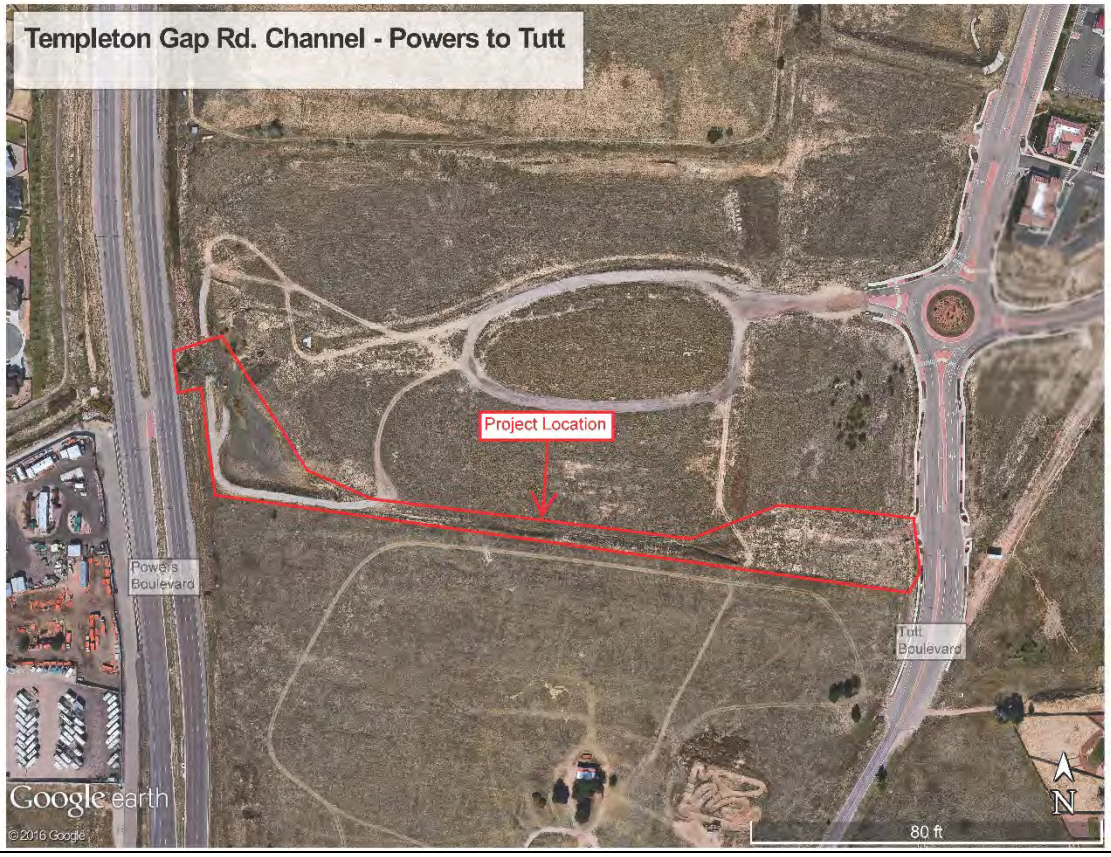
Project Need:	Channel stabilization and grade control; repair of existing facilities
Background:	Associated with Stormwater Needs Assessment project CS-047 related to severe erosion behind The Margarita at Pine Creek Restaurant (west of I-25) due to unstable bank and channel bed resulting in deep gorge formed due to erosion. (C=100%)
Project Description and Scope:	Design and construction of selective improvements to Pine Creek to protect the adjoining business, including stabilizing the south bank adjacent to the Margarita.
Benefits of Project:	Stabilize channel resulting in reduction of sediment transport into Monument Creek and ultimately into Fountain Creek. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:	

Project Name:	49. Templeton Gap Rd. Channel - Powers to Tutt (CS-342)		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	62
Estimated Capital Cost ($2016):	Construction: $ 1,578,927 Soft Costs*: 618,939 Contingency: 833,674 Escalation: 45,473 Total Capital: $3,077,013 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Channel stabilization and grade control needed due to identified instabilities along channel.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-342. Identified in 2013 Stormater Needs Assessment with estimated project cost of $3,031,540 (C=100%).
Project Description and Scope:	Design and construction of 4,400 linear feet of channel stabilization measures with drop structures east of Powers Boulevard, north of Dublin Boulevard.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:	

Project Name:	40. Mount Woodmen Court Drainage – Dry Creek (CS-064)		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	63
Estimated Capital Cost ($2016):	Construction: $ 264,034 Soft Costs*: 103,501 Contingency: 134,465 Escalation: 12,550 Total Capital: $ 514,550 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs 2006-2010 Capital Improvements Program and Needs Assessment (2005)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

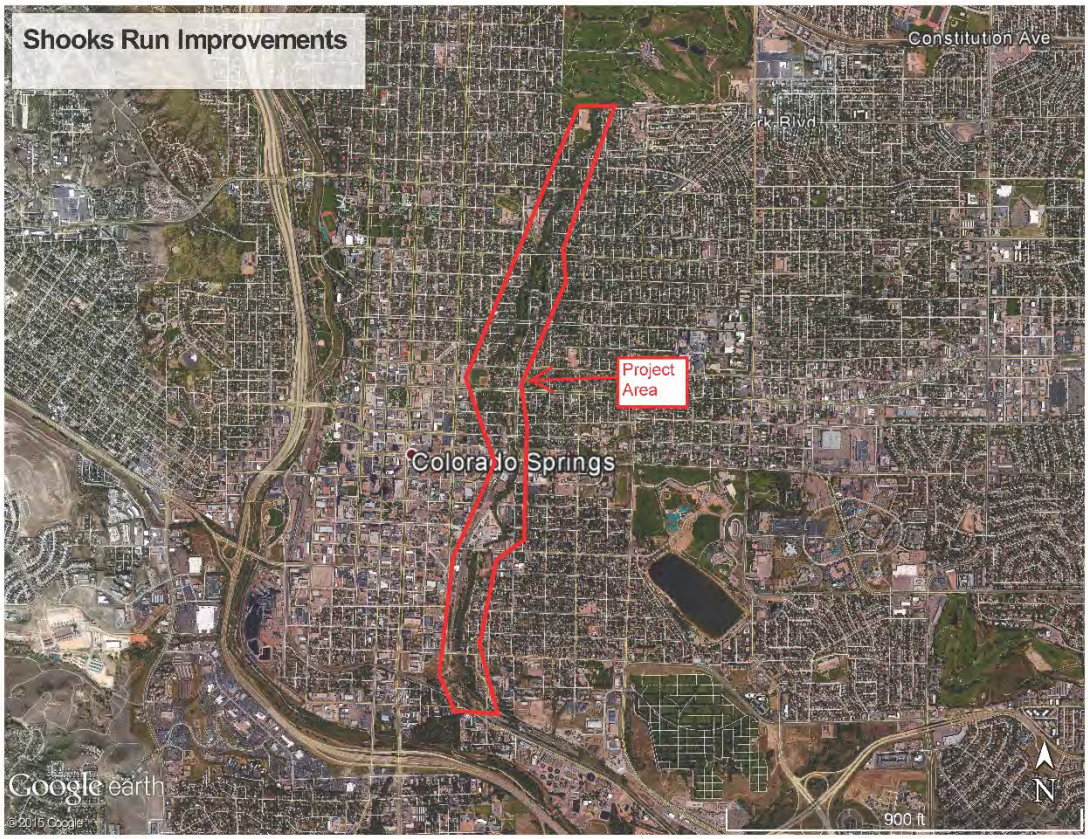
Project Need:	Sedimentation pond in Dry Creek basin outfalls directly onto private property creating a ravine. Pond outfall requires redesign. Just one property with local erosion. No structures threatened.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-064, located in northwestern portion of City in Dry Creek Drainage Basin. Identified in 2013 Stormater Needs Assessment with estimated an unconfirmed project cost of $502,000 (D=100%)
Project Description and Scope:	Repair of existing facilities.
Benefits of Project:	Provide additional detention in surrounding developed area resulting in sediment reduction and improved water quality to area and downstream users. Enhance Community: Drainage becomes an amenity Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:

Project Name:	12. Shooks Run Improvements		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	64
Estimated Capital Cost ($2016):	**Construction:** $1,539,409 **Soft Costs*:** 603,448 **Contingency:** 857,143 **Escalation:** **Total Capital:** $3,000,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Stabilization of Shooks Run drainage channel. Channel is incised and is prone to flooding.
Background:	Update to the Shooks Run Drainage Basin Planning Study is underway. City expects to have a preliminary list of projects and costs in 2017. Allowance is designated for improvements that can be implemented fairly rapidly once the study is complete.
Project Description and Scope:	TBD - No specific improvements have been identified at this time.
Benefits of Project:	Provide needed channel stabilization through the Shooks Run area which will result in sediment reduction and reduction in flooding potential. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

Project Location:	

Project Name:	27. Shooks Run Channel - Bijou Street Culvert & Channel Stabilization		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	65
Estimated Capital Cost ($2016):	**Construction:** $769,704 **Soft Costs*:** 301,725 **Contingency:** 428,571 **Escalation:** **Total Capital:** $1,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Stabilization of Shooks Run drainage channel. Channel is incised and is prone to flooding.
Background:	Associated with Stormwater Needs Assessment project CS-054a. Update to the Shooks Run Drainage Basin Planning Study is underway. Allowance is designated for improvements that can be implemented once the study is complete.
Project Description and Scope:	Consultant to focus design and construction at this location and further south. The scope will include the stabilization of Shooks Run between Bijou Street and Pikes Peak Avenue.
Benefits of Project:	Provide needed channel stabilization through the Shooks Run area which will result in sediment reduction into Fountain Creek and reduction in flooding potential in surrounding area. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

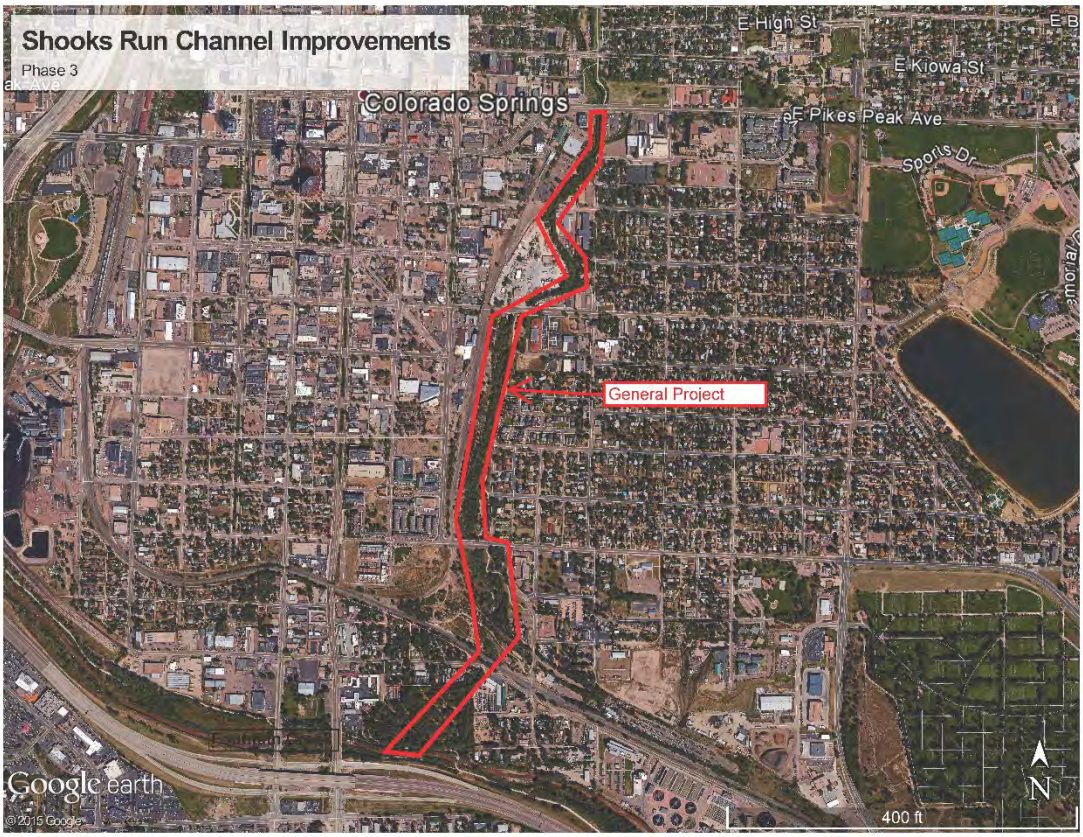
Project Location:

Project Name:	29. Shooks Run Improvements - Phase 3		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	66
Estimated Capital Cost ($2016):	**Construction:** $769,704 **Soft Costs*:** 301,725 **Contingency:** 428,571 **Escalation:** **Total Capital:** $1,500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate; Drainage Basin Planning Study Shooks Run (Wilson and Company, 1993)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Stabilization of Shooks Run drainage channel. Channel is incised and is prone to flooding.
Background:	Associated with Stormwater Needs Assessment project CS-054a and CS-054b. Update to the Shooks Run Drainage Basin Planning Study is underway. Allowance is designated for improvements that can be implemented once the study is complete.
Project Description and Scope:	Consultant to focus design and construction efforts between Bijou Street and confluence with Fountain Creek. The scope will include the stabilization of Shooks Run from Pikes Peak Avenue to Fountain Creek.
Benefits of Project:	Provide needed channel stabilization through the Shooks Run area which will result in sediment reduction into Fountain Creek and reduction in flooding potential in surrounding area. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Sediment Generation: Stabilization of channel and/or grade control

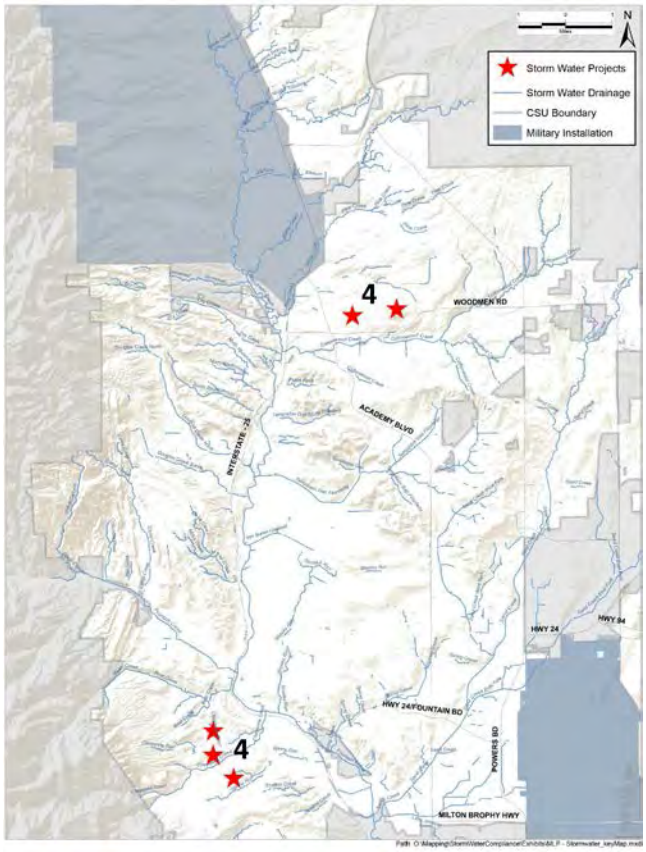
Project Location:



Project Name:	04. Old Annexation Drainage Improvements		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	67
Estimated Capital Cost ($2016):	**Construction:** $1,544,402 **Soft Costs*:** 455,598 **Contingency:** 800,000 **Escalation:** **Total Capital:** $2,800,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City Engineering Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Improved drainage conveyance in older annexed areas within City limits.
Background:	Due to recent heavy rains, older annexed areas experienced significant flooding due to lack of infrastructure. These older areas were constructed with road side ditches that have filled in over the years with sediment. Lack of adequate conveyance facilities have resulted in localized home flooding. The City plans to prioritize work for several areas including Falcon Estates, Rustic Hills, Columbine Estates, Broadmoor, and Skyway. (C=25%; I=75%)
Project Description and Scope:	TBD - City to hire a consultant to develop a prioritized phased plan for improvements along with recommended solutions and actual cost estimates.
Benefits of Project:	Improvement to localized stormwater drainage conveyance in areas of need. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority

Project Location:	

Project Name:	14. Briargate Drainage Improvements		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	68
Estimated Capital Cost ($2016):	**Construction: $904,988** **Soft Costs*: 266,971** **Contingency: 436,613** **Escalation: 32,171** **Total Capital: $1,640,743** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**Cottonwood Creek Drainage Basin Planning Study (Matrix, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Infrastructure improvements to mitigate localized flooding issues due to undersized storm sewer network.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-344 in Briargate area in the northern portion of the City. SNA information based on Matrix Design 2010 draft Cottonwood Creek Drainage Basin Planning Study. (I=100%)
Project Description and Scope:	Replacement of existing infrastructure, including approximately 3,700 feet of storm drain construction between Goddard Street and Chapel Hills Drive
Benefits of Project:	Continued maintenance of current City stormwater infrastructure. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Enhance Community: Drainage becomes an amenity

Project Location:	

Project Name:	30. Skyway Area Improvements		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	69
Estimated Capital Cost ($2016):	**Construction: $237,492** **Soft Costs*: 89,060** **Contingency: 119,470** **Escalation: 11,151** **Total Capital: $457,173** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**SWENT Database and Bear Creek Drainage Basin Planning Study (Kiowa Engineering, 1991)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Reduction in localized flooding in Skyway neighborhood.
Background:	Associated with 2013 SNA projects CS-235 and CS-296 related to replacement of 300' of 60" storm drain to prevent collapse of overlying roadway and construction of 1,930LF of 18" to 36" storm drain with inlets due to insufficient storm sewer capacity. (I=100%)
Project Description and Scope:	replacement of 300' of 60" RCP along Halleys Court road in Bear Creek drainage basin and design and construction of 1,930 LF of 18" to 36" RCP storm drain with inlets farther to the northeast of Halleys Court road.
Benefits of Project:	Reduce localized flooding and improve stormwater conveyance in the southwestern Skyway neighborhood area. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair. Distribute within the City: Project is a neighborhood high priority

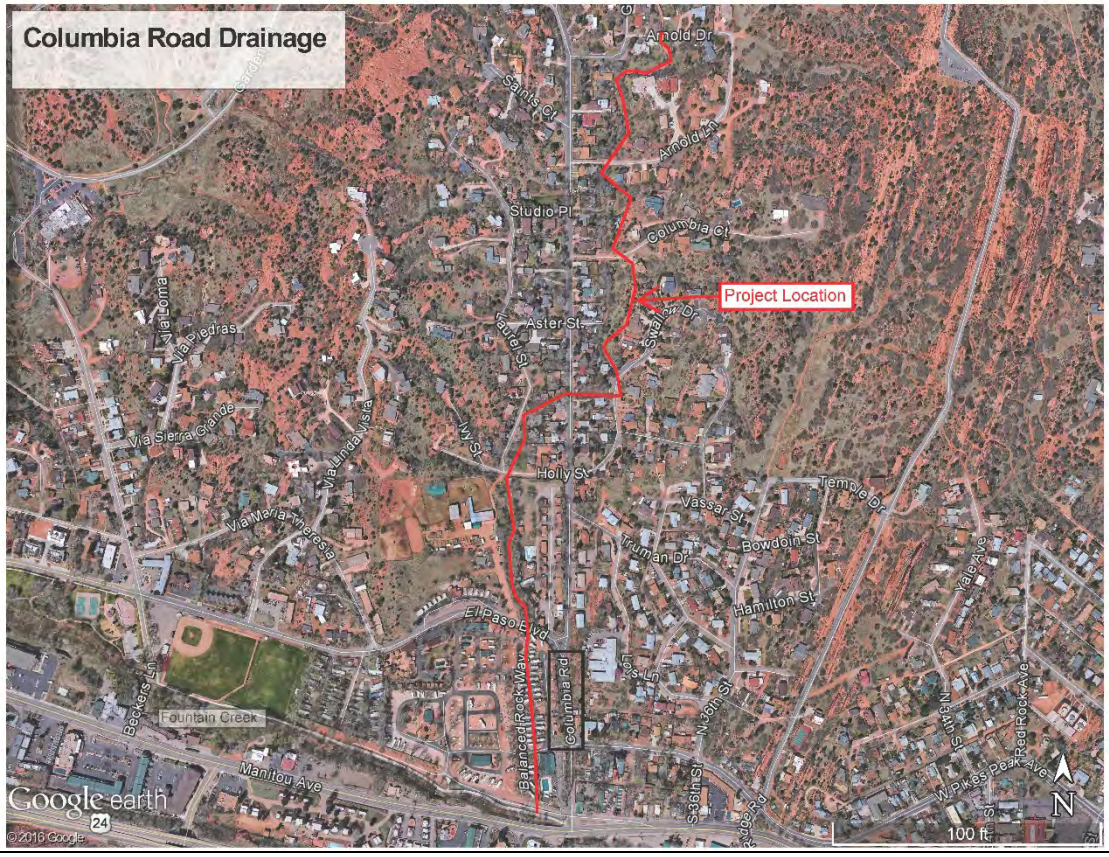
Project Location:	

Project Name:	48. Columbia Road Drainage (CS-045)		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	70
Estimated Capital Cost ($2016):	**Construction: $ 1,071,390** **Soft Costs*: 419,985** **Contingency: 545,625** **Escalation: 50,925** **Total Capital: $2,087,925** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**City of Colorado Springs 2006-2010 Capital Improvements Program and Needs Assessment (2005)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Idenfied as a nuissance and cleanup problem in 2005 assessment. No evident or imminent erosion to cause potential damage to infrastructure identified.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-045. Identified in 2013 Stormater Needs Assessment as a Class B medium priorty project with estimated project cost of $2,037,000 (C=50%, I=50%).
Project Description and Scope:	Design and construct upgraded and new storm sewer facilities in Columbia Road and upgraded channel improvements west of Columbia Road from approximately Arnold Drive to Fountain Creek.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture Reduce Sediment Generation/Enhance Soil Stewardship.

Project Location:



Project Name:	17. Dry Creek Channel		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	71
Estimated Capital Cost ($2016):	**Construction:** $754,464 **Soft Costs*:** 235,393 **Contingency:** 362,143 **Escalation:** 33,800 **Total Capital:** $1,385,800 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs 2005 Needs Assessment (2006-2010 CIP and Needs Assessment)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Improve capacity. Channel overgrown, inadequate conveyance, in need of maintenance.
Background:	Associated with Stormwater Needs Assessment project CS-007. $1.385M Escalated Value; originally identified as $1.5M on revised CIP list being encumbered in 2020. (I=100%)
Project Description and Scope:	Project to re-establish capacity of the existing Dry Creek channel from Dairy Ranch Road to Carlson Drive in northwestern portion of City.
Benefits of Project:	Improvement to localized stormwater drainage conveyance in areas of need. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority

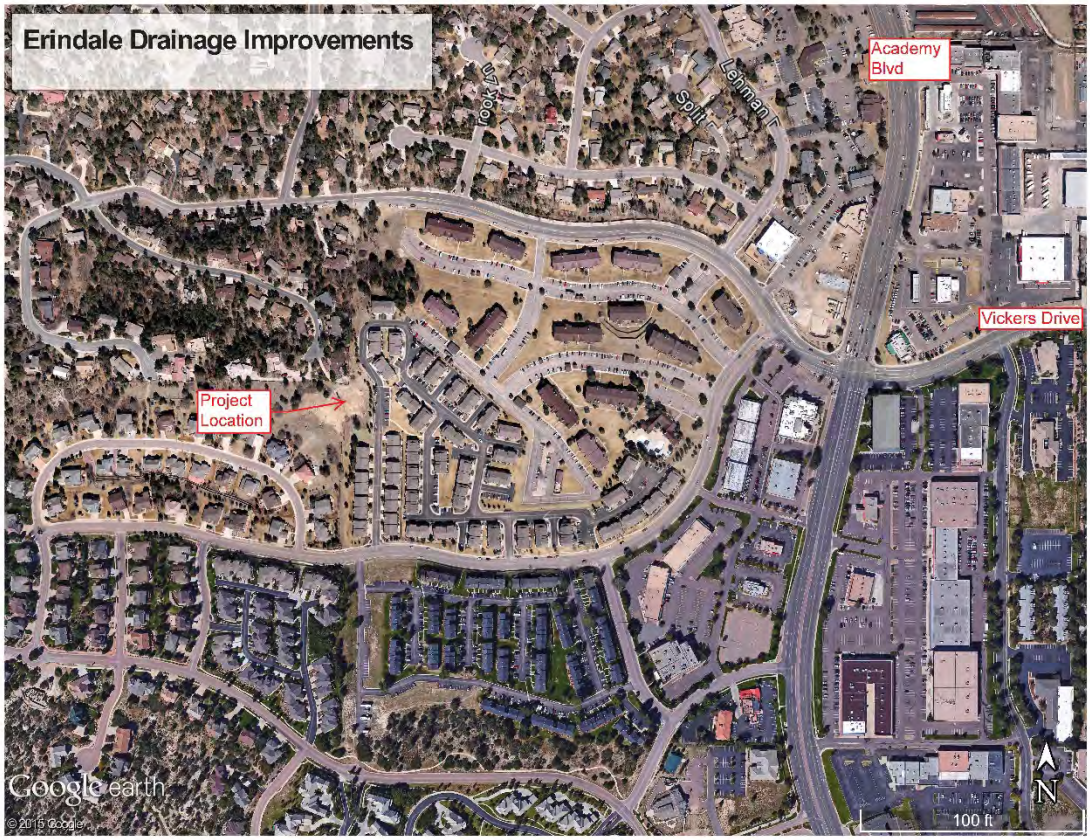
Project Location:

Project Name:	10. Erindale Drainage Improvements		
Type:	D *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	DELETED FROM PROJECT LIST (12/16/2015)
Estimated Capital Cost ($2016):	**Construction:** $272,213 **Soft Costs*:** 84,930 **Contingency:** 142,857 **Escalation:** **Total Capital:** $500,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	SWENT Database and City of Colorado Springs Estimate

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Increase capacity of existing pond. Repair erosion damage to existing channel from flows released from University Park Detention Pond. (Remove sediment from the existing detention pond along with selective improvements to the existing private channel.)
Background:	Associated with 2013 SNA Project Summary CS-111 in north-central portion of City. University Village Pond outlet has contributed to a ravine that flows downstream between homes. (D=75%; C=25%)
Project Description and Scope:	Scope to re-evaluate and re-establish detention capacity including modifications to existing outlet to provide full spectrum detention. The downstream channel to be evaluated for damage with selective improvements proposed for critical eroded areas
Benefits of Project:	Repair erosion and improve capacity in existing pond resulting in sediment reduction and improved water quality to area and downstream users. Public Safety/Property: Eliminates/reduces damage to public property Enhance Community: Drainage becomes an amenity Distribute within the City: Project is a neighborhood high priority Sediment/Debris removal: debris/sediment basin is included Water Quality: removes pollutants (heavy metals, sediment, other chemicals…) Detention: Peak flows are reduced. Captured volume is released over time.

Project Location:



Project Name:	42. Sand Creek MainStem – Fountain Creek Confluence (CS-106) - DELETED		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	REPETITIVE PROJECT DELETED FROM PROJECT LIST (12/16/2015)
Estimated Capital Cost ($2016):	Construction: $ 1,145,833 Soft Costs*: 449,167 Contingency: 605,000 Escalation: 33,000 Total Capital: $2,233,000 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	City of Colorado Springs Original Master Projects List (New SWENT 2009 project from 5 year plan) (Not Included in 2013 Stormwater Needs Assessment Validated Projects List)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Channel stabilization and grade control needed along Sand Creek from confluence with Fountain Creek northward to North Academy Boulevard.
Background:	Included in City of Colorado Springs original Master Projects List reviewed as part of the 2013 Stormwater Needs Assessment (CS-106); however the project was not included as part of the 2013 Stormwater Needs Assessment Validated Projects List, likely because the improvements appear to be included in other smaller project segments along this stretch of the Sand Creek channel. (C=100%)
Project Description and Scope:	Design and construction of channel stabilization and grade control structures along Sand Creek between the confluence with Fountain Creek and North Academy Boulevard.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture

Project Location:	Project Deleted: Not included in validated projects list.

Project Name:	44. Spring Run Detention Ponds (CS-051) - DELETED		
Type:	**D** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**DELETED FROM PROJECT LIST (12/16/2015)** **Not Included in 2013 Stormwater Needs Assessment Validated Projects List**
Estimated Capital Cost ($2016):	**Construction: $ 851,011** **Soft Costs*: 333,596** **Contingency: 433,393** **Escalation: 40,450** **Total Capital: $1,658,450** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**City of Colorado Springs Original Master Projects List** **(Not Included in 2013 Stormwater Needs Assessment Validated Projects List)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Not Provided.
Background:	Included in City of Colorado Springs original Master Projects List reviewed as part of the 2013 Stormwater Needs Assessment (CS-051); however the project was not included as part of the 2013 Stormwater Needs Assessment Validated Projects List. (D=100%)
Project Description and Scope:	Modify existing Spring Run Reservoir #2 by lowering its water surface elevation, upgrading its spillway and energy dissipater, and construct downstream channel improvements..
Benefits of Project:	Improved Detention

Project Location:	Project Deleted: Not included in validated projects list.

Project Name:	47. Templeton Gap Floodway Reconstruction (CS-021) - DELETED		
Type:	**I** *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	**Priority:**	**DELETED FROM PROJECT LIST (12/16/2015)** **Repair of Existing Infrastructure**
Estimated Capital Cost ($2016):	**Construction: $ 5,534,662** **Soft Costs*: 2,169,587** **Contingency: 2,922,302** **Escalation: 159,398** **Total Capital: $10,785,949** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	**Estimate Source:**	**Templeton Gap Levee Rehabilitation Project Construction Drawings (Anderson Consulting Engineers, 2010)**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Constructio		5. Closeout			

Project Need:	Capacity of the Templeton Gap Floodway requires upsizing to convey the 100-year event. As part of FEMA's Map Modernization program, flood protection levees are required to be certified.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-021, located along the Templeton Gap floodway. Identified in 2013 Stormater Needs Assessment with estimated project cost of $10,626,551 (I=100%).
Project Description and Scope:	Design and reconstruction of floodway and levee.
Benefits of Project:	Protect Public Safety and Property Enhance Community

Project Location:	

Project Name:	56. Palmer Park Channel – Galley Road to Palmer Park (CS-259) - DELETED		
Type:	C *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	DELETED FROM PROJECT LIST (12/16/2015) Same Project as Project 39 Above
Estimated Capital Cost ($2016):	Construction: $ 3,383,737 Soft Costs*: 1,326,426 Contingency: 1,786,612 Escalation: 97,452 Total Capital: $6,594,227 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	Sand Creek Stabilization East Platte Avenue to Constitution Avenue (2010, ICON Engineering, Inc.)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

Project Need:	Channel stabilization along Sand Creek between Galley Road and Palmer Park Road.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-259. Identified in 2013 Stormater Needs Assessment with estimated project cost of $6,496,775 to install 13 drop structures. (C=100%)
Project Description and Scope:	Design and construction of 13 drop structures along Sand Creek channel between Galley Road and Palmer Park Road.
Benefits of Project:	Protect Public Safety and Property Enhance Community Enhance Sediment/Debris Capture

Project Location:

Project Name:	03. Dam Repairs - DELETED		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	**DELETED FROM PROJECT LIST (03/30/2016)** **To be completed with Emergency Stormwater Projects funding**
Estimated Capital Cost ($2016):	**Construction: $217,770** **Soft Costs*: 67,944** **Contingency: 114,286** **Escalation:** **Total Capital: $400,000** ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	**City Budget Department**

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction		5. Closeout			

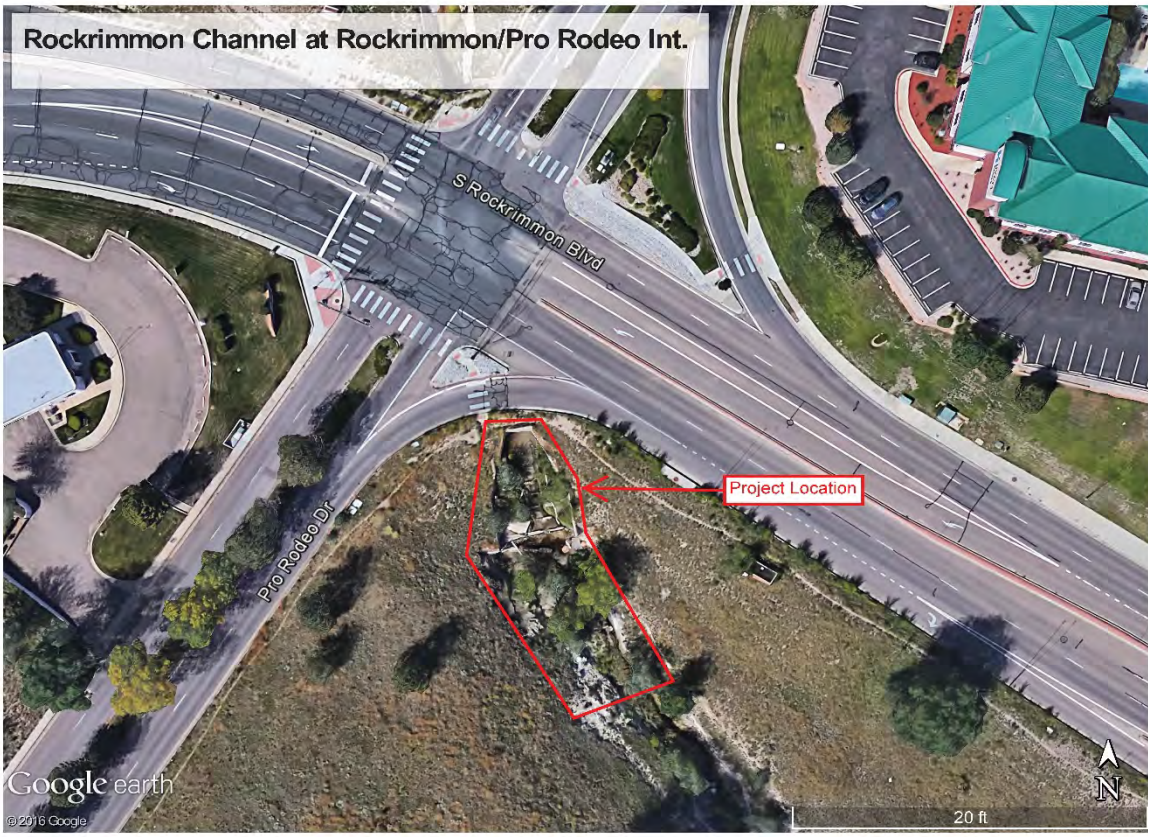
Project Need:	Project involves various dam repairs within City parks jurisdiction as identified by the State Engineer's Office and based on updated hazard classifications for eight dams.
Background:	Allowance funds designated to help complete tasks identified on the hazard classification list as well as to procure a consultant to review Quail Lake Dam. Since creation of the list, seepage at the toe of the Quail Lake Dam has occurred. (I=100%)
Project Description and Scope:	TBD - Procure A/E firm to design fixes for each dam identified and prioritize construction/repair efforts in coordination with City Parks Department.
Benefits of Project:	Repair functionality of the dams in accordance with the hazard classification findings. Public Safety/Property: Eliminates/reduces damage to public property Failing Infrastructure: Current drainage conveyance system is in need of immediate repair.

Project Location:	

Project Name:	37. Rockrimmon Channel at Rockrimmon/Pro Rodeo Int. (CS-222) - DELETED		
Type:	I *D = Detention* *C = Channel Stabilization and Grade Controls* *I = Infrastructure Improvements*	Priority:	DELETED FROM PROJECT LIST (03/30/2016) To be completed with Emergency Stormwater Projects funding in 2016
Estimated Capital Cost ($2016):	Construction: $ 50,768 Soft Costs*: 19,901 Contingency: 26,806 Escalation: 1,462 Total Capital: $98,937 ** Soft Costs include design, engineering services during construction, construction management, and environmental, permitting, legal, and land transaction costs*	Estimate Source:	PPRTA – Stantec Field Assessment (2010-2012)

Current Schedule- Start Dates:					
1. Initiation:		2. Hire Designer		3. Design	
4. Execution (Construction)		5. Closeout			

Project Need:	Rapair damage to channel at existing outlet.
Background:	Associated with 2013 Stormwater Needs Assessment project CS-222. Repair outfall (other projects shown in the area include bridge/culvert replacement and roadway improvements). Identified in 2013 Stormater Needs Assessment with estimated project cost of $97,475. Observed during 2013 and 2015 USEPA inspections. (I=100%)
Project Description and Scope:	Design and construction of new outfall outlet.
Benefits of Project:	Protect public safety and property in area and improve failing infrastructure.

Project Location:	

Colorado Springs Stormwater Program

PUBLIC EDUCATION AND OUTREACH PROGRAM REPORT

Appendix C to the Stormwater Program Implementation Plan Report

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TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1

2.0 BACKGROUND 2
- 2.1 Responsibility for Public Education and Outreach 2
- 2.2 City of Colorado Springs MS4 Permit Requirements 2
- 2.3 Review of Best Practices for Public Education and Outreach 3

3.0 ASSESSMENT OF CURRENT CITY EDUCATION AND OUTREACH PRACTICES 5

4.0 COMPONENTS OF PUBLIC EDUCATION, OUTREACH AND INVOLVEMENT 7
- 4.1 General Public Education and Outreach 7
- 4.2 MS4 Program Public Education and Outreach 7
- 4.3 Capital Project Public Involvement 8

5.0 PLANNED TACTICS FOR PUBLIC EDUCATION, OUTREACH AND INVOLVEMENT 11
- 5.1 General Outreach 11
- 5.2 MS4 Program Public Education and Outreach Tactics 14
- 5.3 Capital Project Public Involvement Tactics 17

6.0 NEXT STEPS 19
- 6.1 Interim Fixes for Immediate Needs 19
- 6.2 Within six months: 19
- 6.3 Within nine months: 20
- 6.4 Within 12 months: 21
- 6.5 Within 18 Months: 21
- 6.6 Summary 21
- 6.7 Continuous Improvement 22

7.0 REQUIRED RESOURCES 23

LIST OF TABLES

Table 4-1. Summary of General Public Education, MS4 Program Public Education, and Capital Project Public Involvement Communication Strategy 9
Table 7-1. Ongoing Public Outreach Labor Requirements* 23

1.0 INTRODUCTION

The City of Colorado Springs (City) is in the process of improving its Stormwater Program. Its primary focus is to evaluate and develop a strategy for improving two major components of the Stormwater Program -- the ongoing stormwater system operation, including Municipal Separate Storm Sewer System permit activities (MS4 Program), and implementation of capital improvement projects for the stormwater system (Capital Program). To complement and support those efforts, the City has developed a strategy for public education and outreach related to the Stormwater Program.

The three related programs for improving Colorado Springs stormwater management – the MS4 Program Improvement Plan, the Capital Project Delivery Program, and this Public Education and Outreach Program – are summarized in the Colorado Springs Stormwater Program Implementation Plan (SPIP) report. This Public Education and Outreach Program report is Appendix C to the SPIP.

Objectives of the public education and outreach strategy for the Stormwater Program include:

- Define functions and activities for public education, outreach and communications to meet the requirements of the MS4 permit.
- Define functions and activities for public education, outreach and communications in support of capital project implementation. This includes identifying strategies to promote early program successes, such as projects funded with disaster response and mitigation funds (e.g., Federal Emergency Management Agency, Natural Resources Conservation Service).
- Identify strategies to gain public acceptance of, and support for, future stormwater program investments by the City.
- Identify strategies for working with the development community and business community to increase understanding of program requirements and enhance support for low impact development, green infrastructure, and the inspection and enforcement aspects of the MS4 Program.
- Introduce and promote drainage/stormwater infrastructure as a public amenity. Stress the opportunity/result for integration of trails, bike paths, multi-use paths and open space/parks.
- Identify, develop and utilize opportunities for working with surrounding cities, municipalities and public organizations. (Colorado Springs Utilities, Fountain Creek Flood Control and Greenway District, El Paso County, City of Manitou Springs, Old Colorado City, United States Air Force Academy and other bases, Ducks Unlimited, the Sierra Club, Trout Unlimited, etc.

2.0 BACKGROUND

2.1 Responsibility for Public Education and Outreach

Public education, outreach and communications related to stormwater in the City is currently a shared responsibility of the new Stormwater Division and the Communications Group. The Stormwater Division is responsible for education and outreach activities related to stormwater management, stormwater quality, best management practices, and the effect of citizens' behavior on water quality. The Communications Group is responsible for general messaging and news media handling around City and regional stormwater issues as identified by the Mayor, City Council and the Public Works Director.

Current City stormwater public education and outreach efforts are focused primarily on activities required to comply with the MS4 permit. The MS4 public education function is carried out by one person in the Stormwater Division at this time, with occasional help from other Stormwater Division staff. The Communications Group has a staff of four people to manage all communication needs for the City; its involvement in the stormwater program is primarily related to public information associated with stormwater emergencies and other newsworthy events.

2.2 City of Colorado Springs MS4 Permit Requirements

The majority of the City's public education and outreach efforts associated with the Stormwater Program directly support the requirements of the City's MS4 permit. Those requirements include:

- Conduct educational activities to promote public reporting of illicit discharges and improper disposal (Part 1.B.1.b.4 of the MS4 permit)
- Implement public educational activities to promote proper management and disposal of potential pollutants (Part 1.B.1.b.5)
- Promote Household Chemical Waste Collection Programs (Part 1.B.1.b.6)
- Conduct educational activities for operators of Industrial Facilities (Part B.1.c)
- Conduct training and education of construction site operators (Part 1.B.1.d.4)

In response to requirements of the MS4 permit, City staff members perform a number of public education activities annually. These are listed below, along with selected public education and outreach statistics from the 2014 MS4 Annual Report.

- Maintains an Illicit Spill hotline (phone number 719-444-7000, which goes to police department dispatch). The City received 22 calls from the public in 2014.
- Conducts 150 school educational programs that reach 4,500 to 5,000 students a year.
- Participates in community events (e.g., water festivals, creek clean-up days) and conducts presentations reaching at least 800 community members.
- Distributes approximately 27,000 copies of educational brochures addressing:
    - Pet waste
    - Car washing
    - Lawn care
    - Household hazardous wastes
    - Carpet cleaners

- Pesticides, fertilizers, etc.

- Maintains public information pages on the City's website.
- Holds "Wet Wednesdays" meetings for the business community, in partnership with the Housing & Building Association (HBA) of Colorado (five held in 2015).
- Offers classes, provides brochures and supports inspectors in working with industrial, commercial and construction site operators.
- Broadcasts public service announcements on Channel 18.
- Distributes a Stormwater Literacy Guide and DVD.
- Distributes a stormwater newsletter for industrial site operators (two annually, mailed to 70 people).
- Marks storm drains to assist with pollution prevention (466 storm drains stenciled by school groups in 2014).
- Conducts an "Adopt a Waterway" program to clean up trash. In 2014, the City conducted or participated in 20 events with 1,131 participants, which resulted in collection of 377 trash bags plus 6.2 tons of trash collected during the regional Creek Week Cleanup.

2.3 Review of Best Practices for Public Education and Outreach

In developing its improvement plan for public education and outreach, the City assessed best practices conducted by other cities and stormwater agencies. Stormwater programs from two cities recently named award winners for MS4 permit compliance in contests sanctioned by the U.S. Environmental Protection Agency (USEPA) were assessed, as well as programs from several other cities and/or stormwater districts. The City reviewed outreach practices from the following entities:

- Charlotte, North Carolina, Stormwater Services, winner of the 2015 Water Environment Federation's first stormwater award, developed in cooperation with the USEPA
- City of Tacoma, Washington, also a winner of stormwater awards
- City of Fort Collins, Colorado
- Southeast Metro Stormwater Authority, Colorado, also known as SEMSWA

Based on this assessment, the following general observations were made regarding stormwater outreach best practices in the industry.

- Brand/image and messaging are aimed at pointing out public benefits in simple terms. Some cities don't even brand their efforts as "stormwater"-related; others do, but immediately tie those efforts to recognized public benefits (e.g., clean water and flood prevention) that are in plain sight on their websites and other messaging products.
- The most effective stormwater websites contain visual images supported by relatively little text, particularly at the "start" of a visitor's experience. The deeper a visitor goes into a website, the more text-heavy the content becomes. Many websites contain "before" and "after" images of projects or improvements. Text is written in bullets or short sentences, rather than complex running narrative.
- Hotlines for use by the public to report stormwater problems are dedicated to stormwater or environmental issues, as opposed to being avenues for also reporting crime, safety, transportation, or other concerns. In some cases, cities provide hotline answering

services using city staff; in other cases, cities have arranged with advocacy groups to answer phones and collect data for the city. There is no “one size fits all” approach, but dedication of adequate resources is important. No other examples were found of illicit discharge callers needing to call law enforcement numbers.

- In many city programs, partnerships are emphasized for the purpose of leveraging assets. Examples include cost-sharing for media resources, and use of volunteers for drainage system clean-up events. Partnerships should be productive, creating synergies and generating measureable results.
- Objectives and measurements of public education and outreach effectiveness are clear in many cities’ efforts. Measurements are placed prominently in the jurisdiction’s annual report, which is written in a very readable, non-bureaucratic style.

The City considered these observations when developing strategies for improving its current stormwater public education and outreach program.

3.0 ASSESSMENT OF CURRENT CITY EDUCATION AND OUTREACH PRACTICES

The City has assessed its stormwater efforts through a variety of means, including:

- Comparison against the requirements of the MS4 permit.
- Comparison with efforts of other jurisdictions that have received commendations or awards from the USEPA.
- Review of the USEPA's 2015 Audit of the City of Colorado Springs MS4 program.
- Interviews with its staff members responsible for education and outreach.

Using these sources, the City performed an assessment of key City practices for stormwater education and outreach. Results of that assessment are described below.

- **Image/Brand of Stormwater:** The single greatest concern of City staff, and the trend most observed in top-of-class cities, is the need to brand "stormwater" efforts by using more direct and positive terms — e.g., water quality, clean water, flood protection or prevention, etc. Even cities in which the term stormwater does not appear to have a negative connotation with the public (as it does in Colorado Springs) choose either to avoid the term "stormwater" or to rapidly break the term down into its constituent benefits — clean water and flood protection.
- **Central Vision/Action Plan**: The objectives and activities of various City departments for stormwater communications should be aligned in order to set goals and achieve necessary objectives. Currently, public education activities are accomplished by a single staff person within the City's Stormwater Division, which is part of the Public Works Department. More high-level, strategic communication and media handling is currently conducted by a member of the City's Communications staff who also supports communications activities in several other City departments. There is a need to develop a single, functional, shared vision and plan among the groups responsible for public communications to accomplish shared objectives. Similarly, certain communication functions are carried out in small parts by project managers, inspectors and others associated with the Stormwater Division or other City departments. Setting goals, measuring performance and reporting success are difficult in this type of dispersed model and would be improved by closer coordination among the responsible parties.
- **Goals, Measurement and Reporting Success:** Within the shared vision and plan, goals must be established and performance measured, with updates and redirection at specified intervals. Current resources have limited the ability of staff to conduct this type of effort. Tasks such as repairing or revising the website or making the hotline more functional wait while other tasks may command more resources. By setting goals and measuring performance against those goals, the path to achieving overall objectives is clearer and corrections are easier to identify. The top-of-class MS4 Programs from other cities set goals for each activity and measure against those goals, with year-after-year increases expected.
- **Public Stormwater Hotline**: The City's MS4 permit calls for operation and promotion of a central phone number for public reporting of illicit discharges. The current hotline is not dedicated to stormwater; it is part of the police department/fire department dispatch system. In addition, the hotline is not adequately promoted and is somewhat difficult and

confusing for the public to use. As a result, the current hotline may not encourage public reporting of illicit discharges and illegal dumping, as well as other polluting behaviors. In 2014, the public made 22 calls to the City reporting possible illicit discharges. The City of Charlotte, North Carolina, with a population approximately twice the size of Colorado Springs (793,000 vs. 440,000), received more than 20 times the number of calls reporting illicit discharges.

- **Website Pages:** The City's stormwater website pages represent a significant opportunity for improvement. The basic issues include the following.
    - Lack of a single menu page with introductory content – "what is stormwater and why should the public care." The stormwater page that should contain this content appears to be blank using two different browsers; it contains only a navigation bar at the left.
    - Lack of a consistent path to enter the stormwater content. Drilling down through Public Works on the City's website produces the blank menu page mentioned above; searching with the City's website search engine does not lead to that menu page, but leads to a list of pages with broken links.
    - Many pages lack "back" buttons so users get stuck and cannot go back easily.
    - Older brochures that contain dated branding are still up on the website (although not accessible) and could be replaced with public domain (e.g., USEPA) brochures for now.
    - There are pages composed largely of text written in running narrative, with long blocks of text or lists of content that may not be available due to broken links. This also serves to discourage users from learning more about the topic and/or taking helpful actions.
- **Annual Report:** The current Annual Report format appears limited in scope, and its format may lack the flexibility to report all of the good work that staff is doing to regulatory agencies and the public. To compensate for the format limitations, staff have prepared additional spreadsheets that are filed with regulatory agencies but are not always readily available to the public on the stormwater website. The City will find or adapt an Annual Report template that is easier for staff to populate and consider creating more user-friendly reports for the community.
- **Elevation of Public Education, Outreach and Involvement:** Currently, the stormwater communication efforts are placed several layers down within the City's organization. The City will elevate the three communication efforts within the Stormwater Division to a more direct reporting level with stated goals, measureable achievements and clearly stated tactics.

Action items to address these challenges are discussed in more detail in the following sections.

4.0 COMPONENTS OF PUBLIC EDUCATION, OUTREACH AND INVOLVEMENT

For purposes of clarity, three categories were established for grouping activities directed toward the public.

- General Public Education and Outreach (General Outreach),
- MS4 Program Public Education and Outreach (MS4 Education), and
- Capital Project Public Involvement (CIP Involvement).

These categories support the success of the City's Stormwater Program and are planned and executed using the same basic considerations: "What is the objective of the communication?" "Who are the audiences?" "How can messages be tailored to encourage action or behavioral change?" "What tactics will be used to deliver those messages?" The three components are defined below.

4.1 General Public Education and Outreach

General Public Outreach and Outreach (General Outreach) is typically a one-way communication process and serves an overarching purpose: to inform the public about the stormwater system and its benefits and to develop/maintain public support for efforts to reduce pollution and otherwise protect the system. While General Outreach shares some of the same audiences, messages and tactics as MS4 Education, it includes additional components as well.

The objectives of the General Outreach efforts are broad and meant to support the efforts of public education to change behavior. Public outreach messages are, in a sense, foundational and go more to educating the public on the importance and benefits of the stormwater system and how it helps to protect clean water and reduce the risk of flooding.

The audiences of the General Outreach efforts are the general public, as with MS4 Education, but are expressed at a higher, broader level, to mirror the broader, high-level messages.

The messages for the General Outreach efforts are a blend of clean water and flood protection messages – very high-level: "Water quality and flood protection are important to us all – they affect important values of life, health, safety and property concerns. They are the responsibility of the whole community."

An important component of General Outreach is to inform the public about the City's commitment through its drainage review criteria to make new development more protective of clean water and less impactful on downstream flooding. These efforts are often referred to as Low Impact Development (LID) and/or "green" development.

4.2 MS4 Program Public Education and Outreach

MS4 Program Public Education and Outreach (MS4 Education) is typically a one-way communication associated with activities required by the City's MS4 permit. This requirement is aimed at protecting water quality in streams, lakes and other bodies of water by keeping pollutants out of the MS4. Pollution in this context is associated with storm runoff and low flows containing sediment, chemicals, pet waste, trash and other materials.

The objective of the MS4 Education efforts is to meet the MS4 permit requirements, which have a primary goal of shaping and/or improving public behavior to prevent pollutants from entering the stormwater system.

The primary audience of the MS4 Education efforts is various segments of the general public: children, pet/livestock owners, automobile owners, property owners, etc. In addition, Public Education targets owners of commercial/industrial sites, owners/operators of construction sites, and specific types of businesses with the potential to pollute.

The messages of the MS4 Education efforts are tied to MS4 permit language: "We must improve our behaviors to meet federal water quality requirements – i.e., protect clean water." Those messages need to relate to specific components of the permit requirements, prompting the audiences to:

- Report illicit discharges, spills, and dumping (Part 1.B.1.b.4 of the MS4 permit)
- Properly manage and dispose of potential pollutants (pet waste, stock manure, automotive fluids, fertilizers, herbicides, all chemicals) (Part 1.B.1.b.5)
- Use the Household Chemical Waste Collection Program (Part 1.B.1.b.6)
- Be aware of and properly handle/manage pollutants on commercial and industrial sites to prevent runoff into the MS4 (Part 1.B.1.c and e)
- Be aware of and properly manage/handle potential pollutants (sediment, dust, runoff, chemicals) at construction sites to prevent runoff into the MS4 (Best Management Practices) (Part 1.B.1.d.4)

4.3 Capital Project Public Involvement

Capital Project Public Involvement (CIP Involvement) is typically a two-way communication process. For the Stormwater Program, public involvement efforts will particularly focus on individual construction projects.

The objective of the CIP Involvement efforts is to build on general education and outreach, while specifically developing awareness and support for individual capital investment projects and the capital investment program as a whole. It also includes the objective of gaining and maintaining trust from the people immediately adjacent to construction projects, those most likely to be inconvenienced during construction. In addition, it serves as a mechanism to promote citizen involvement (e.g., stream clean-up initiatives) to advance stormwater program objectives. Meeting this objective can provide a positive benefit to the construction projects by converting local residents from opponents into supporters; this can help a project stay on time and on budget.

The audiences for the CIP Involvement efforts are many of the same audiences for MS4 Education and General Outreach, but the messages are more about the need for flood protection (stormwater) efforts and related to specific projects associated with the City's planned capital investment program. One key addition to the audiences for CIP Involvement are the people most directly affected by construction: residents and businesses near the planned projects, who will need high-quality construction communication efforts to minimize the inconveniences they experience as a result of construction.

The communication strategy associated with teach of these categories is summarized in **Table 4-1**.

Table 4-1. Summary of General Public Outreach, MS4 Program Public Education, and Capital Project Public Involvement Communication Strategy

Component	Objective	Audience	Messages	Tactics
General Public Education and Outreach *Typically 1-way communication*	Inform the public and build support for the concept that "stormwater" means clean water and flood protection	• General Public • Schoolchildren • Civic groups, HOAs • El Paso/Pueblo elected leaders/staff • EPC/PC business/industry groups • Development community Government/Regulatory agencies • City/CSU employees	• Water quality and flooding prevention are life-saving concerns • Water quality and flooding prevention are the responsibility of all • We must all protect water quality by improving our behavior in small but important ways • Stormwater/drainage facilities can accompany and protect recreational amenities such as trails, bike baths and open space.	• Image/brand by benefit to public: Clean Water, Flood Protection and public amenity – not "stormwater" • Central vision and action plan that guides all staff efforts • Annual Report: Make annual reports make transparent and attractive to public/stakeholders • Dedicated public hotline • Website pages that focus on clean water and flood protection – not "stormwater" • Optimize use of the City's Channel 18 and video-making assets • Engage public support for public education and outreach plan • Identify, develop and utilize opportunities for working with surrounding cities, municipalities and public organizations. (Colorado Springs Utilities, Fountain Creek Flood Control and Greenway District, El Paso County, City of Manitou Springs, Old Colorado City, United States Air Force Academy and other bases, Ducks Unlimited, the Sierra Club, Trout Unlimited, etc.
MS4 Program Public Education and Outreach MS4 permit *requirements* *Typically 1-way communication*	Comply with public communication requirements of the MS4 permit Shape or improve public behavior to stop or prevent pollutants from entering the MS4	**Public as Potential Polluters** • Children • Pet/livestock owners • Auto owners • Property/lawn owners • Commercial sites with chemicals • Industrial facilities • Construction sites (development industry and others) Targeted businesses (landscapers, mobile washers, carpet cleaners, concrete washout, auto shops, industrial)	• **We need to improve our behavior because we all need clean water.** • **Report illicit discharges**, spills, dumping (Part 1.B.1.b.4) • **Manage and dispose properly** (Part 1.B.1.b.5) (pet waste, stock manure, auto supplies like oil, fertilizers, herbicides, all chemicals) • **Use Household Chemical Waste Collection Program** (Part 1.B.1.b.6) • **Be aware of and handle/manage pollutants** on sites to prevent runoff into MS4 (Part 1.B.1.c and e) • **Be aware of and manage/handle potential pollutants** (dust, runoff, chemicals) at construction site to prevent runoff into MS4 (Best Management Practices) site (Part 1.B1.d.4)	• Interim fixes for website and illicit discharge hotline: Fix broken links and retrain staff/revise recorded call tree • Stakeholder database: expand and update • Public as potential polluters: Educate and inform to shape/improve behavior • Continue visits to targeted businesses and facilities • Construction, commercial and industrial site operators: Educate to shape/improve behavior • Prioritize community partnerships to leverage resources • Establish other partnerships with statewide and national organizations • School programs: Continue but review balance with other tasks/requirements • Water festival: Conduct at least one with community partners • Newsletter: Convert to ENews and increase frequency • Media campaigns: Conduct 2-3 annually • Presentations to key community groups – Council of Neighbors and Organizations (CONO), Established Neighborhood or Homeowner Associations, Business Groups, and Industry Associations (4-6 annually) • Distribute Household Hazardous Waste brochures and meet with El Paso joint messaging. • Stormwater Literacy Guide and DVD: Evaluate effectiveness, set goals and track progress • Update use of brochures and re-tool to match the new branding and messaging focus • Storm drain stenciling: Continue but set goals and measure/report • Adopt a Waterway: Continue but set goals and measure/report • Low-Impact "Green" Development: inform public about implementation of the Drainage Criteria Manual and LID efforts

Capital Project Public Involvement
 	
Typically 2-way communication
 	
May involve public role in decisions
 	
Focused on capital projects
	Capital Projects
	Create awareness and support for individual City projects (before, during and after project construction)
	
	Gain/maintain support and trust of people nearest projects – convert potential opponents into supporters, keep projects on time/budget
		Same General Public as above
		
		Residents of Areas Affected by Construction
			• **We are building large projects that will address flooding and water quality problems**
			  • Problem/solution – we are all part of it
			  • Projects are planned/underway
			  • The process is thoughtful and rational
			  • Public has opportunity for input
			  • Public/business support is important
			  • As projects are completed, note success
			
			• **Your needs are being considered**.
			  • We want to minimize inconvenience/maximize benefit
			  • We will listen to you/inform you
			• Temporary inconvenience for permanent solutions
				• Inform the public about the capital projects program
				  o Mayor/council and community leaders becoming the face of program
				  o Defining capital projects for first year and beyond
				  o Explaining the rationale and funding mechanism
				  o Explaining how construction work will be done
				  o Using a strategic subset of the stakeholder database to send ENews to business and community leaders
				  o Celebrating completed projects and next steps (events, signage, website, news media, social media)
				  o Consider creation of a public task force
				  o Conduct tours of projects underway
				  o Conduct neighborhood meetings near future projects
				  o Create a Construction Hotline (may be the same as the spill hotline) to provide affected residents/businesses with a central place to report issues
				  o Cultivate and promote spokespeople from areas near projects and HOA/interest groups
				• Conduct single-project involvement activities with neighbors and residents near projects

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5.0 PLANNED TACTICS FOR PUBLIC EDUCATION, OUTREACH AND INVOLVEMENT

This section presents the planned activities or tactics for public education and outreach. The tactics are grouped into three areas:

- General Outreach tactics
- MS4 Education tactics
- CIP Involvement tactics

5.1 General Outreach

The current City stormwater education and outreach efforts contain many of the appropriate foundational components, but a more robust, well-balanced approach to Public Education, Outreach and Involvement is needed. At the highest level, the key objective for this new effort is to communicate to the community about all of the good work being done and planned at the City and to enlist public support. This communication with the public (and all stakeholders) is critical to building trust in the City for current and future efforts. The following are suggested common tactics of a robust, effective Public Education, Outreach and Involvement effort.

5.1.1 Branding/Image by Benefit

Rebranding or establishing a completely new image can be a complicated and costly affair for an organization if it focuses time and resources on logos and slogans and other techniques from the world of advertising. The City will not take that approach. Rather, re-branding or re-imaging Stormwater Division functions as <u>benefits</u> to the community could be done in a relatively straightforward way in the crafting of products such as the hotline, website pages, brochures, events and virtually all deliverables. For example, instead of website pages with the title "Stormwater," the City could use the title "Clean Water" or "Flood Protection" and develop content with that focus. Similarly, stormwater/drainage facilities should be introduced and promoted as opportunities to integrate and protect trails, bike paths, open space/parks and other public amenities. Necessary coordination with Water Resources and other water staff at Colorado Springs Utilities would not just help the Stormwater Division; it would leverage the efforts of all City (and Utilities) employees in pursuit of the same goals.

5.1.2 Central Vision and Action Plan/Internal Communication and Coordination

As introduced above, a common, communicated vision and action plan would best leverage the energy and actions of staff to achieve shared objectives. A critical component of this plan would be prioritization of tasks to guide staff efforts. For example, the MS4 program staff currently conduct 150 school programs a year – as many as three per week during the school year – but the stormwater pages on the City's website contain many broken links and the illicit discharge hotline is not promoted and difficult for the public to use. Prioritization of tasks is critical to guiding staff and/or outside resources to accomplish shared goals. Similarly, the City is exploring greater centralization of communication functions to achieve consistent goal-setting, measurement and reporting of success. One option under consideration is to hold a facilitated staff visioning and planning workshop(s) to create a communications plan and then schedule ongoing staff "core team" meetings with identified objectives. These ongoing core team meetings would occur at least monthly, but perhaps twice monthly at the outset, to produce a central vision, guiding principles and a communications plan that includes goals, measurement and reporting of success.

5.1.3 Annual Reporting

While the USEPA and CDPHE require annual reports, the City may have some latitude to meet requirements in a more transparent, readable format. The annual report is an opportunity to document the City's successes and should be prepared with an eye toward what goals were or could yet be identified for future years and measured against. Essential topics to be covered include Stormwater Spending, Stormwater MS4 Program Accomplishments and Stormwater Capital Project Accomplishments, either as three separate reports or one integrated report. One example under consideration is the Charlotte, North Carolina annual report, which is much more user-friendly and visual than the Colorado Springs report.

5.1.4 Public Hotline

The hotline, as required in the City's MS4 permit, is a central phone number for the public to use in reporting perceived illicit discharges, illegal dumping and other potential polluting activities. A hotline also could assist the City with public reporting of concerns at capital project construction sites or other stormwater concerns. The current hotline is a local city number in use for Police Department and Fire reports of a non-emergency nature (not 911.) As a result, callers about illicit spills or pollution may effectively compete with callers for law enforcement or firefighting resources on a phone line whose automated phone tree does not mention pollution or illicit spills.

The City is reviewing improvement options, including:

- Creating a dedicated number that leads to stormwater staff during the day and voicemail at night, and triggers an e-mail to staff.
- Creating a dedicated number that leads to a Public Works administrative assistant during the day and voicemail at night, which triggers an e-mail to Stormwater Division staff.
- Arranging for a community group to answer those calls – such as 211. In Charlotte, N.C., the community created 311 for stormwater-related pollution calls. A new 311 is being pursued in Colorado Springs right now, so perhaps this would work here as well.
- At a minimum: Arranging for the PD/FD dispatch's automated phone tree to contain a reference to spills or pollution and re-train dispatch staff to manage these calls effectively.

5.1.5 Website

Public access to stormwater website pages is difficult and the pages themselves are not effective communication tools. Public communication professionals consider websites to be "home base," one of the top one or two communication tools an organization can have. All outreach should drive user traffic to the website, and the website should direct interested users to additional information, and back to the website. That makes repairing broken links and updating or removing outdated content a top priority. Initially, the City intends to devote staff time to repair broken links and/or update or take down outdated content. Longer term, the City is considering creation of new pages that clearly re-brand the mission and focus of the Stormwater Program and provide many more resources to users. One option under consideration is the use of private vendors to accomplish this task.

Questions/needs that content on these website pages will address include:

- Why is protecting the MS4 important? (e.g., clean water or water quality)
- What are the pollutants that put clean water most at risk and where do they come from? (e.g., motor oil, pet waste, sediment)
- What can we each/all do to achieve that goal? (e.g., change behavior)
- How can someone report a case of possible pollution? (e.g., online form, reference hotline number)
- Why is flooding protection important? (e.g., life and property protection)
- What is the city doing about flooding protection? (e.g., operation and maintenance program, capital program)
- Where can we learn more about these issues? (e.g., link to reliable sources)

While usable, accessible content is the most important concern, the City recognizes that the presentation of information is key. Ample research indicates that users are most attracted to photos and graphics that help tell the story. The City will consider the use of photos and graphics, including "before" and "after" pictures to show initial problems and solutions. Ample visual content exists related to clean water and flooding protection – both local, familiar content and public domain content that would work in many communities. The City will consider emulating the pleasing, informative website content at Charmeck.org (Charlotte, N.C.) and SEMSWA.org.

One type of content that will be presented in its original form are stormwater-related ordinances, City Code or other laws, particularly those related to land development and building. Yet this content will be made more approachable with the addition of "Frequently Asked Questions" –style content available through related links.

The City also intends to add a critical feature to the stormwater web pages – the opportunity for users to sign up for future updates (ENews, etc.). This method can greatly add to the stakeholder database because users self-select for inclusion. They are interested in the content when the City supplies it and will tend to read it.

5.1.6 Optimize Use of City's Channel 18 and Video-Making Assets

The City owns a Cable TV Channel (Channel 18) and equipment for making videos and other products to air on Channel 18, to post on the City's website and to share with partner organizations for use on their websites, in social media, etc. This is a tremendous asset that would leverage efforts in all three areas (Education, Outreach and Involvement) and drive traffic to the City's website and hotline. The City plans an assessment of existing City videos that would naturally lead to a plan to create new videos to bridge gaps in content not otherwise available.

5.1.7 Public Support for Public Education and Outreach Plan

The City is considering providing the public with opportunities to have input into the Public Education and Outreach Plan, as well as other related best management practices. One very effective technique locally has been to engage known public groups through presentations at those groups' scheduled meetings. Examples include the Council of Neighbors and Organizations (CONO) and its member homeowner and neighborhood associations. These targeted outreach opportunities have been found to be more successful than community-wide public meetings without organizations as anchors.

5.2 MS4 Program Public Education and Outreach Tactics

5.2.1 Stakeholder Database

The City will expand and update a stakeholder database with available contact information, particularly e-mail addresses, using existing City lists, lists from CSU and Memorial Hospital (if permitted), as well as community partners such as HBA. The stakeholder database will include distinct audience groups such as car washes, dog washes and pet stores, veterinarians, paint stores, home improvement stores, farm and ranch supplies, garden centers, automotive stores, service stations, and landscaping companies. This database will be used for new eNews communications (to replace the newsletter, discussed below) and other communication at regular intervals. The goal is for several thousand recipients.

5.2.2 Public as Potential Polluters

The City will continue to identify, prioritize and educate the public and members of all stakeholder groups (pet owners, auto owners, homeowners, etc.) about pollution risks and responsibilities associated with their interest and set goals for education of each group. Staff may use GIS technologies to map these targeted entities to assist with prioritization. Specific activities include:

- Continue with visits to automotive stores, pet stores and garden stores to provide brochures or other educational materials
- Seek access to stores' e-mail lists, social media or determine whether they can send out e-mails on the City's behalf. A partnership with even one large home-improvement retailer could be very strategic.
- Hold education events at paint, automotive and other stores
- Set and document goals and achievements

5.2.3 Construction Sites, Industrial Facilities and Commercial Sites

The City will continue to identify, prioritize and educate operators and staff of construction sites, industrial facilities and commercial sites about prevention of illicit discharges, dumping and related behaviors. Staff may use GIS technologies to map these targeted entities to assist with prioritization. Specific activities include:

- Continue with the "Wet Wednesday with HBA" program but expand
- Incentivize previous participants to recruit new ones
- Discuss best practices such as placing signs at construction sites saying, "If you see erosion or runoff here, call XXX-XXXX."
- Enlist HBA leadership in recruiting and recognizing participants
- Conduct tours of regulated facilities for VIPS and community leaders as ambassadors to earn/maintain support for regulation.
- Report progress more prominently than before in Annual Report
- Set and document goals and achievements

5.2.4 Community Partnerships

The City will prioritize establishing community partnerships for the purposes of implementing shared campaigns with coordinated messaging. Potential partners include:

- Colorado Springs Utilities

- Housing and Building Association
- Association of General Contractors
- Chamber of Commerce
- El Paso County Stormwater Department and related departments
- Fountain Creek Watershed, Flood Control and Greenway District
- City of Manitou Springs
- Old Colorado City business organization
- United States Air Force Academy and other bases
- Ducks Unlimited
- Sierra Club
- Trout Unlimited
- U.S. Fish and Wildlife
- National Forest Service

5.2.5 Other Partnerships

The City will seek out and establish partnerships with other stormwater entities statewide and nationally for purposes of shared tactics and information. Such entities include:

- Southeast Metro Stormwater Authority (SEMSWA)
- Charlotte, N.C., Stormwater Program and other high-performing entities
- Colorado Stormwater Council
- Colorado LIVE LIKE YOU LOVE IT
- Keep it Clean Partnership (Colorado)

5.2.6 School Programs

The City will continue school programs – both clean water and flooding safety/awareness (Ditch the Ditches), with a new focus on:

- Balancing the level of school contact with other Stormwater communications responsibilities.
- Recruiting partner organizations to conduct some school programs to meet shared goals.

5.2.7 Festivals

The City will participate annually in at least one city-wide or region-wide water festival aimed at children and parents. One example might be to increase involvement in Creek Week Cleanup sponsored by the Fountain Creek Watershed, Flood Control and Greenway District. Such a festival would be best held at a sporting or recreational venue near a waterway.

5.2.8 Newsletter

The City will convert the twice-yearly hard copy, mailed newsletter (sent to about 70 people inside and outside the City) into a quarterly ENews dedicated to one topic per quarter. Timing would need to coincide with and leverage other efforts, such as seasonal events. Creation of a template could be a task for a vendor. The new ENews product will be e-mailed to the new, growing stakeholder list.

5.2.9 Media Campaigns

The City will conduct two to three “media campaigns” (with partner agencies or entities as appropriate) during the year. Options include conducting a water quality campaign during low-flow periods and flooding protection messages during higher flow periods. Specific activities include:

- Establish protection of clean water as a community goal
- Use public service announcements (PSAs) and City-generated or partner-generated videos on Channel 18, paid advertising, earned news stories, bus ads, bus shelter ads and social media
- Increase work with media partner (as before with KKTV Channel 11) to generate ads or PSAs for airing on commercial stations. Example: KKTV previously produced ads to support the Ditch the Ditches campaigns.
- Ask CSU to consider dedicating a bill stuffer to joint messaging

5.2.10 Presentations to Key Community Groups – Speakers Bureau

The City will create or adapt a presentation about clean water, flood protection and associated Stormwater topics and projects (PowerPoint or similar) and present it to key community groups, such as:

- Established neighborhood or homeowner associations and Council of Neighbor and Organizations (CONO).
- Business groups (Regional Business Alliance, Board of Realtors, Apartment Association, etc.)
- Industry associations and groups (development community, plumbers, painters, car washes, pool companies, hot tub companies, etc.)

A reasonable goal would be making 4-6 presentations per year.

5.2.11 Household Hazardous Waste Brochures

The City will continue distributing Household Hazardous Waste brochures and meet with El Paso County on other means of joint messaging.

5.2.12 Stormwater Literacy Guide and DVD

The City will evaluate its Stormwater Literacy Guide and DVD; if still valid, the City will set goals and track progress. One option is to re-cut the DVD into shorter segments that are more compatible with social media and website use. A good example of such a short, single topic video exists on the City of Pueblo stormwater webpage. It might be possible to arrange for co-branding of that video for shared use.

5.2.13 Brochures

The City will evaluate its use of brochures (27,000 were distributed in 2014). If this broad distribution continues, each brochure will be re-tooled to match the new branding and messaging focus on clean water and/or flood protection. USEPA maintains a large list of brochures and related materials for consideration. Retooling could be a task for an outside vendor.

5.2.14 Storm Drain Stenciling

The City will continue storm drain stenciling to support anti-pollution messaging, but will set goals and measure and report progress.

5.2.15 Adopt a Waterway Program

The City will continue the Adopt a Waterway program but set goals and measure and report progress. This program invites community groups – civic groups, schools, business groups – to adopt creeks, streams or other waterways by agreeing to hold two cleanups per year. Adopters get signage as recognition and other benefits.

5.2.16 Low-impact "Green" Development

The City will begin to inform the public and key stakeholders about its implementation of the new Drainage Criteria Manual and associated low impact development (LID) and green infrastructure efforts designed to achieve clean water objectives and reduce flooding risk. Tactics include presentations to targeted public groups such as CONO and its member HOAs; presentations to industry and business groups with specific emphasis on the HBA; and sharing of success stories with the public via the website, ENews, videos, news media stories and other means. Regarding the HBA, it would be particularly helpful to cultivate "champions" within HBA to become the public faces of a new development sensibility. HBA should be given the opportunity to "lead" in this effort – as a means of image improvement and self-policing.

5.3 Capital Project Public Involvement Tactics

5.3.1 Inform the Public about the Capital Program

Much of the City's efforts are focused on water quality-related recommendations related to compliance with the City's MS4 permit. But City staff members have observed that the public is inclined to view various parts of the City's stormwater effort as one initiative – and thus, the City will inform the public about the Capital Program (stormwater projects) as a whole. Specific activities include:

- The mayor/council and community leaders becoming the face of a rollout of new clean water and pollution protection efforts
- Promoting capital projects for first year and beyond through ENews, website, news media, Springs TV and social media
- Explaining the rationale and funding mechanism
- Explaining how construction work will be done (private industry) and help to promote procurement effort (business outreach)
- Using a strategic subset of the stakeholder database to send ENews to business and community leaders
- Celebrating completed projects and next steps (events, signage, website, news media, social media)
- Considering creation of a public task force
- Conducting tours of projects underway for VIPs and community leaders as ambassadors to earn and maintain support
- Conduct neighborhood meetings near future projects
- Create a Construction Hotline (may be the same as the spill hotline) to provide affected residents/businesses with a central place to report issues
- Cultivate and promote spokespeople from areas near projects and HOA/interest groups

5.3.2 Conduct Single-Project Involvement Activities

The City will conduct single-project-based communication and issue mitigation with property owners and neighbors in areas around projects. This tactic will include:

- Centralize this function among field liaisons as part of new project teams – not capital project managers, so they can focus on technical needs
- Deliverables for property owners and businesses that include mailings, door hangers, website map dedicated to each project
- Manage traffic impacts if any (Cone-Zone app, social media and other)

6.0 NEXT STEPS

The following next steps are envisioned for moving the public education and outreach efforts forward in 2016 and beyond.

6.1 Interim Fixes for Immediate Needs

Within 60 days:

- Fix broken links on existing stormwater webpages so that users can access content already available.

Within 90 days:

- Work with Police Department Dispatch to include a water pollution or spills option on its automated navigation menu for callers and retrain call takers for consistency in responding to these calls.

6.2 Within Six Months

- Hold an initial central visioning and planning meeting for stormwater education and communications staff with these expectations:
  - Discuss and agree on a working central vision for stormwater communications and education
  - Discuss a new brand/image, even if preliminary
  - Develop working outreach vision and begin a communications action plan for communications and education with Communications group
  - Identify outreach goals and measurement techniques
- Create a measurement matrix for tracking progress
- Upgrade stormwater website and public hotline
- Begin evaluation of existing tactics for effectiveness and prioritization
- Develop a separate Public Education and Outreach Program for the MS4 Program
- Secure community partner organizations with at least one joint campaign or other tactic planned
- Upgrade stakeholder database
- Identify an administrative assistant with skill and time to create an Excel or similar database – request content from CSU, Memorial Hospital and other City entities – also possibly El Paso County
- Schedule at least one citywide or region-wide water festivals aimed at children and parents
- Distribute household hazardous waste brochures
- Evaluate effectiveness of stormwater literacy guide, DVD, brochures, etc. and reshape them accordingly
- Establish and monitor new goals for storm drain marking and Adopt a Waterway efforts
- Conduct monthly planning meetings with Communications

- Convert current stormwater newsletter into ENews format and get at least one ENews on stormwater successes or challenges being met
- Identify social media campaign opportunities to create an “editorial calendar” of topics and timing

6.3 Within 12 Months

- Establish at least monthly meetings to move public education and outreach planning and measurement along. Items to be discussed during the meetings include:
  - Discuss and select cooperative outreach tactics to the public as potential polluters: Pet owners, car washers, lawn and household owners, etc. (Communications could/should support public education)
  - Discuss and select cooperative tactics to identify and educate operators of industrial and commercial facilities and construction sites.
  - Identify potential community partner organizations and national partner organizations and preliminary discussion of outreach to be done during first six months
- Implement an outreach program to local business owners, developers, contractors, and other regulated entities
- Identify and set a date/month for a news media campaign highlighting successful projects – likely the FEMA or EWP emergency projects. Focus on testimonials from affected property owners and residents and “before” and “after” pictures or short videos.
- Identify a possible date for a stormwater festival in concert with CSU and El Paso County
- Begin to inventory available video assets from the City and other partners
- Complete repairs or replacement of “stormwater” pages on the City’s website. The website serves as a central information repository and all other communication tactics should drive traffic to it. When users visit the website they must find content and value or they won’t come back.
  - Establish a “menu” page with basic “what is stormwater and why do we care” content. Rebrand “stormwater” pages as clean water and flooding protection pages. Introduce concept that stormwater/drainage facilities often offer recreational areas such as open space and trails and also protect such public amenities. Create up to 10 new pages displaying visual content. Emergency projects completed in 2016 (Powers Boulevard undermining, Rockrimmon home protection, concrete channel at Patty Jewett Golf Course are good content to show successes.) Also forecast upcoming Federal Emergency Management Agency (FEMA) and Emergency Watershed Protection (EWP) projects with photos of current (problem) conditions. Highlight recent flood recovery efforts such as those covered in the Upper Fountain Creek and Cheyenne Creek Restoration Master Plan. Work to ensure that modern analytics are in place to track usage of these pages.
- Increase public reporting surrounding the MS4 Program activities, particularly related to improvements in the program (“Stormwater Spending Report”, “Stormwater MS4 Program Accomplishments Report”, and “Stormwater Capital Projects Accomplishments Report”).

- Measure all 2016 tactics and make sure they are entered into new annual report template
- Review and revise central vision/communications action plan
- Secure national partner entity with at least one joint campaign or tactic planned

6.4 Within 18 Months

- Replace Police Department/Fire Department dispatch hotline with a truly dedicated stormwater hotline. Create and promote a new number that leads to stormwater staff directly during the day and takes a voicemail and generates an automated e-mail message at night. Begin call-by-call tracking of use. Preparation for a new hotline should include a script and protocols for new call takers. Also connect with CSU Customer Care and Dispatch to arrange for calls to CSU to be forwarded appropriately. Other options are included in Section 3.0.
- Conduct 2-3 media campaigns annually to highlight successful projects
- Continue activities started previously

6.5 Summary

By the end of the first 18 months, the following tactics – or replacements – are to be underway.

- Establish new brand/image for stormwater efforts for public-facing communication efforts
- Complete new, re-branded website pages and measure activity
- Implement, promote and measure new, dedicated public hotline
- Establish a working version of a central vision and an communications action plan and review periodically
- Hold planning meetings at least monthly
- Distribute quarterly ENews (water quality and flood protection messages) to growing stakeholder database (at least 1,000 names by that time)
- Evaluate existing tactics for effectiveness and balance with other tactics, including:
  - School programs (for balance with other tactics)
  - Brochures
  - Literacy Guide and DVD.
- Prepare and two execute social media campaigns
- Implement and measure the following tactics:
  - Educating the public as potential polluters
  - Educating operators of industrial/commercial facilities and construction sites. Example: At least one professional association or industry group associated with each business type on board as partner in communications, such as Housing and Building Association
  - At least one news media campaign resulting in generally positive coverage of successful projects (emergency or other capital)
- One festival planned for 2018

- Establish new goals and measure progress on storm drain marking and Adopt-a-Waterway efforts

6.6 Continuous Improvement

Upon completion of the first 18 months, the following additional ongoing tactics – or replacements – are to be complete.

- Produce new videos (city and/or coordinated partners) on a coordinated schedule.
- Review website pages at least once monthly for small updates and once since inception for overall refresh.
- Validate effectiveness of public hotline and perform anonymous calls at least monthly to review performance.
- Have measurement of all tactics nearly complete for 2016 and embedded in the shell of new annual report template.
- Review and revise central vision and communications action plan as needed.
    - Revisions will be needed
    - Include measuring component for community and other partners to have input

7.0 REQUIRED RESOURCES

Currently the Stormwater Division has one staff person responsible for implementing the MS4 program public education and outreach activities. The Communications Group provides general stormwater outreach support as needed in response to newsworthy items, emergencies, etc.

Table 7-1 presents an estimate of the hours needed for the stormwater public education and outreach tasks described in this report. The required full-time equivalent (FTE) staff level was estimated assuming an FTE provides 36 hours per week, accounting for vacation, sick time and holidays. It is estimated that at least two FTEs are needed in addition to current staff to perform the public education and outreach activities. The City plans to fulfill the one FTE in stormwater public education with two new staff working on those duties part time; additional assistance beyond what the Communications Group can perform may be fulfilled with consultant support.

Table 7-1. Ongoing Public Outreach Labor Requirements*

Task/Activities	Weekly Labor Requirement (hrs/week)
Public Education (within Public Works Stormwater Division)	
Update/maintain website pages devoted to MS4-related messages/social media	4
Maintain tracking of hotline calls, ensure follow up and reporting	2
Write/edit/format and e-mail quarterly or monthly ENews	2
Attend staff meetings/coordinate with peers	4
Conduct 3 school programs per week (current reported rate)	10
Maintain stakeholder database	1
Pursue/leverage organization partnerships	2
Plan/conduct festival(s)	2
Conduct education for construction site operators and commercial/industrial sites	8
Distribute El Paso County Hazardous Waste brochures	1
Participate in writing/editing videos and other material for Springs TV	1
Conduct education for public as potential polluters (not schools)	5
Plan/conduct storm drain stenciling/Adopt a Waterway	3
Do presentations for key community groups	4
Maintain data to feed into annual report/attack MS4 compliance	4
Total Hours	**53**
FTEs	**1.5**
Stormwater Communications (within Communications Office)	
Managing/coordinating communication strategies and activities among all Stormwater-related entities at City	8
Develop/maintain Stormwater communications plan for all Stormwater entities	2
Coordinate with other City Communications staff for information and consistency	2
Maintain/update/create website pages related to capital projects	4
Leading City Stormwater capital improvement projects outreach to public	6

Task/Activities	Weekly Labor Requirement (hrs/week)
Attend staff and construction meetings, coordinate with peers	6
Conduct presentations for key community groups about capital projects	3
Write, edit or repurpose videos and other content for Springs TV	4
Conduct news media messaging and follow up regarding capital projects	5
Train/cultivate and facilitate media interviews with subject matter experts	4
Build/maintain partner relationships with industry/business groups such as HBA	2
Manage and conduct social media campaigns for all Stormwater entities	3
Conduct neighborhood meetings near projects	2
Conduct tours of capital project sites to develop/maintain support	3
Contribute to or write quarterly or monthly Capital Projects ENews	2
Maintain data to feed into annual report	2
Build/maintain relationships with project neighbors, prevent/handle issues	8
Total Hours	**66**
Total FTEs	**1.8**

* Average requirement after initial "start-up" activities are completed -- after first year. Also assumes 80 percent available time (vacations, holidays, sick time) or 36 hours/week per FTE