

## 18. Nonpoint Source Assessment

This section will explain what the nonpoint source problems are and what is currently being done to control and mitigate their impact.

### 18.1. Agricultural Runoff

The most heavily impacted stream segments in El Paso and Pueblo Counties with respect to agricultural nonpoint source pollution are Fountain Creek Segments 2a and 2b. The two forms of agricultural nonpoint source pollution that are the most pervasive in Fountain Creek are total dissolved solids and sediment.

BMPs used to address total dissolved solids include the use of measures to increase the efficiency of irrigation water application and reduce irrigation water losses through seepage; collection and disposal of saline agricultural return flows; and desalination of drainage water from irrigated crop land. With regard to sediment, BMPs include the promotion of such techniques as contour cropping, strip cropping, field diversions, terracing, and waterway stabilization. These BMPs, along with others, are discussed in the Colorado's Nonpoint Source Management Plan (CDPHE-WQCD, 2012). The link to the plan can be found here: [www.colorado.gov/pacific/cdphe/2012-nonpoint-source-management-plan](http://www.colorado.gov/pacific/cdphe/2012-nonpoint-source-management-plan) Future projects will look at the possibility of developing pilot projects and grants to determine the effectiveness of these programs.

### 18.2. Resource Extraction

A past extraction area in the Fountain Creek Watershed with the potential to affect water quality is the former tailings pile for a gold refinery, referred to as Gold Hill Mesa, located just upstream from the confluence with Monument Creek. Ore from the mines in Cripple Creek and Victor were processed at this location. Gold Hill Mesa is located in Colorado Springs (El Paso County), and the Cripple Creek and Victor Gold Mining operations are located in Teller County. Gold Hill Mesa is 0.42 square miles in size and is located on the southern stream bank of Fountain Creek (Segment 1), between 8<sup>th</sup> and 21<sup>st</sup> Streets, approximately half a mile upstream from the confluence with Monument Creek, Gold Hill Mesa is being developed under an approved plan through the Colorado Voluntary Cleanup Program. The City of Colorado Springs approved a plan for a traditional neighborhood in the area with a soil cap over the tailings. Water quality monitoring performed by the USGS identified a source of trace elements exists between the monitoring stations located at 30<sup>th</sup> Street and 8<sup>th</sup> Street along Fountain Creek. These monitoring stations are upstream and downstream of Gold Hill Mesa,

respectively.

### **18.3. Urban/Stormwater Runoff**

Although covered as a point source under MS4 stormwater permit requirements, urban runoff is a concern and can contain numerous pollutants from various sources. Driveways, streets, and parking lots are sources of oil, grease, and other materials from automobile operation and maintenance. Winter maintenance of roadways produces loadings of sand, salts, etc., that may be discharged to local streams. The desire for green lawns can result in excess fertilizer and pesticides running off and impacting water quality. Pet wastes and failing septic systems are sources of pathogens and pollutants such as nitrogen and phosphorus. Litter, debris, and occasional spills of chemicals used in commercial or industrial activities can be washed into streams.

Urban areas have greater impervious surfaces (roofs, streets, parking lots) to accommodate growth than do undeveloped areas where more infiltration into natural soils can occur. During precipitation events, flow greater than historical discharges and pollutants deposited on urban surfaces are more easily carried into streams. Historical flows in streams have shaped channels are most often significantly increased after development and therefore new channel shapes and sizes appear in reaction to the increased quantity and energy in the stream. In addition, Fountain Creek is a highly erosive watershed and naturally carries high levels of sediment, particularly during storm events. Excessive sediments can impair streams by depositing on stream bottoms and damaging spawning habitat (reducing fish survival and growth rates), impair fish food sources, and fill in pools and habitats important to aquatic life.

#### **18.3.1. NPDES (National Pollutant Discharge Elimination System) Phase I**

A Municipal Separate Storm Sewer System (MS4) Permit (COS-000004) was issued to the City of Colorado Springs and became effective on October 12, 1997. The city is currently under a third reissued permit that originally expired in 2016 and was administratively extended until the CDPHE re-issues the city's fourth permit. The City of Colorado Springs was the fourth city in Colorado to receive this permit.

The goals and concepts of this permit are:

- To the extent possible, evaluate impacts to the receiving waters and to tributary stream health from urban stormwater.
- Require the installation and maintenance of permanent BMPs for

larger developments.

- Implement a program to address stormwater runoff from construction projects.
- Establish and maintain programs associated with illicit discharge, public education, industrial facilities, and pollution prevention for municipal operations.

As part of the city's stormwater monitoring program, the city maintains an extensive water quality monitoring network on Monument Creek, Fountain Creek and significant tributaries.

### **18.3.2. NPDES (National Pollutant Discharge Elimination System) Phase II**

In December 1999, the EPA promulgated the final Phase II NPDES stormwater regulation affecting cities/counties with populations between 10,000 and 100,000, and sites that have a maximum daily user population of at least 1,000 (Non-Standard MS4s). Permits for these communities in Colorado were initially issued in 2003. The Colorado Department of Public Health & Environment issued a General Permit for Stormwater Discharges Associated with MS4s. Phase II permits were reissued in 2008 to El Paso County, the City of Fountain, the City of Manitou Springs, the Town of Monument, the City of Pueblo, and Pueblo County. These communities, along with nonstandard (e.g., school districts and colleges) MS4 operators, are to have developed and implemented programs in six stormwater management areas:

1. Public education and outreach
2. Public participation and involvement
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post-construction stormwater management
6. Pollution prevention/good housekeeping for municipal operations

The first Phase II permit term was March 10, 2003–March 9, 2008. The second permit term was March 10, 2008–March 9, 2013.

### **18.3.3. Drainage Criteria**

The City of Colorado Springs and El Paso County *Drainage Criteria Manual* was developed in 1987 and revised in 1991 and 1994. The City of Colorado Springs has since updated this

manual to include City-specific criteria in 2002 and 2014. Subdivision regulations include performance standards for drainage and erosion control, as well as the requirement for drainage studies to be submitted with development plans.

The City of Colorado Springs Stormwater Advisory Committee acts as an advisory board to the City Council regarding subdivision codes and regulations relating to the drainage and control of flood and surface waters and the administration of subdivision storm drainage fees. The El Paso County Drainage Board acts as an advisory board and Board of County Commissioners regarding subdivision codes and regulations relating to the drainage and control of flood and surface waters and the administration of subdivision storm drainage fees.

Drainage basin boundaries are defined throughout El Paso County. Prior to development in a basin, a Drainage Basin Planning Study (DBPS) should be completed. A DBPS identifies drainage improvements for the future needs of the entire basin and estimates the costs for common improvements. Studies should be updated on an as needed. The most recent updates include the Jimmy Camp Creek DBPS (2015) and Cottonwood Creek DBPS (2019). An update to the Sand Creek DBPS is currently ongoing in the city.

The City/County Drainage Board, Colorado Springs City Council, and the El Paso County Commissioners must adopt each DBPS in their respective jurisdictions. A list of the Drainage Basin Planning Studies completed in the City of Colorado Springs is included at the website below:

<https://coloradosprings.gov/DBPS>

As part of a DBPS, the costs of needed major stormwater structures are estimated. Drainage fees are determined for each basin and collected from developers as property is platted so the costs are shared.

The city requires erosion control plans, and inspectors were hired in 2002 to monitor and enforce implementation. The county requires a drainage report and erosion control plan be submitted with the preliminary plan.

#### **18.3.4. Streamside Overlay Ordinance**

The Colorado Springs Streamside Ordinance was adopted by the Colorado Springs City Council in November 2002 and was modified in 2007. The ordinance is designed to protect the city's creeks and streams, and the ordinance regulates new developments within 100 to

200 feet of most waterways. This ordinance does not bar new development near streams but requires developments to be compatible with stream features. The ordinance precludes specific uses such as scrap yards, auto dealers, and parking garages from stream sides.

#### **18.4. Construction Runoff**

The two entities having the greatest concentration of storm drainage facilities and construction activity are the City of Colorado Springs and El Paso County. The potential for nonpoint source erosion-related impacts to Fountain and Monument Creeks is of significance based on proposed development. Major construction activity has occurred in the tributaries to Monument Creek east of the Air Force Academy, Cottonwood Creek, Sand Creek, and Jimmy Camp Creek sub-basins of the Fountain/Monument Creek drainage area. Construction runoff in these sub-basins may impact water quality in the mainstems of Monument and Fountain Creeks. Development is occurring in Black Squirrel, Kettle Creek and Middle Tributary basins to the northeast of Colorado Springs.

Requirements for controlling development-related erosion in the City of Colorado Springs are covered by both policy and regulation. This is detailed in the current City of Colorado Springs Drainage Criteria Manual, available at the following link:

<https://coloradosprings.gov/stormwater-enterprise/page/drainage-criteria-manual?mlid=6291>

Financial assurances for erosion control are required for larger sites whenever a grading plan is required to be submitted for review. Acceptable payment methods are posted in the Subdivision Policy Manual at the following link:

<https://coloradosprings.gov/public-works/page/engineering-criteria-manuals-references?mlid=6286>

El Paso County enforces erosion control plans and stormwater protection in unincorporated El Paso County. A performance bond is required for those items. Enforcement is also a problem with ordinances in Manitou Springs. A bond is not required, and the proposed improvements are often incomplete.

#### **18.5. Onsite Wastewater Treatment Systems (OWTS)**

Onsite Wastewater System (OWTS), also known as OWTS, include conventional septic systems and advanced treatment systems. The El Paso County Department of Health and Environment issues permits and inspects the installation of OWTSs.

OWTSs can provide good wastewater treatment if they are correctly designed, installed, and maintained. However, difficult soil conditions such as very rocky soils, high clay soils, or soils with a low permeability layer near the surface make the use of a conventional septic system challenging. In addition, poor maintenance, high water use, and old, undersized systems can cause OWTS failure. System failure can lead to contamination of surface water and/or groundwater.

Traditionally, maintenance of an OWTS was the responsibility of the homeowner, who may not be aware of the importance and the methods of OWTS protection and maintenance. The homeowner must recognize the importance of routine maintenance, especially regular septic tank pumping and not using more water than the system was designed to handle, as well as avoiding disposal of chemicals such as paint, bleach, oil, and grease through the wastewater system draining to the OWTS. The importance of knowing the locations of septic tanks, leach fields, vents, and piping must be stressed, and accurate records of system maintenance must be kept.

Regular inspection of a septic system is necessary, and the ability to require system inspection, repair, or replacement may be needed by local governments in order to assure the success of BMPs programs. Several options for this are in use in other parts of the country. Small utilities can provide inspection and maintenance services. Other utilities own the OWTS as well as providing services. Replacing OWTSs with sewer and centralized treatment is another option. In addition, a wide range of advanced treatment systems can provide additional treatment of the septic tank effluent before discharge to the leach field.

Improved maintenance of OWTSs begins with the education of homeowners concerning the limitations and basic operations of their systems. Homeowners need to be advised of the limited hydraulic capacity of an OWTS and of its inability to effectively handle certain substances such as caustic cleaning solutions and heavy loads of grease.

Homeowners must know proper techniques for monitoring system performance, as well as instruction in recognizing early warning signs of system failure. El Paso County routinely issues more OWTS permits per year than any other county in Colorado. It is estimated that 30,000 approved onsite wastewater systems were installed in El Paso County since 1966.

Communities do not have the organizational capacity to carry out a full-fledged program of education, inspection, and enforcement. PPACG is capable of providing direction for the educational elements of such a program but lacks the funding, authority, and capability to

perform inspections or to undertake enforcement actions. Some homeowners who know of deficiencies in their systems are reluctant to participate in a voluntary program. Renewable OWTS permits are now included in the 2007 revision of the Onsite Wastewater System Regulation, Regulation #43 and could be implemented if deemed necessary by the Board of Health.

Several alternatives were discussed regarding the best institutional form for implementing a program of BMPs for OWTS. The only general-purpose government having jurisdiction in the area with the authority to implement a mandatory septic tank maintenance program is the El Paso County Board of Commissioners. The CDPHE encourages local health departments to consider developing performance-based OWTS regulations in order to better protect water quality.

The El Paso County Department of Health and Environment is in contact with the El Paso Planning and Community Development Department and is encouraged by talks of “cluster-type” residential development. This type of development could potentially have covenants require periodic OWTS maintenance by residents. Programs that address the issues of failing onsite wastewater systems include a pilot program for licensing private firms to perform onsite wastewater system inspection, repair, and certification in lieu of the county health department; offering educational programs aimed at advising residents of water conservation and onsite wastewater systems maintenance techniques; and the temporary funding of an additional county environmental health specialist to initiate an inspection program.

El Paso County is conducting a study to determine the impacts, if any, of OWTS effluent on groundwater quality, especially in the shallow alluvial aquifer in the Upper Black Squirrel drainage basin. The groundwater study results are important not only for current water users but also for the El Paso County Planning and Community Development Department, and ultimately the Board of County Commissioners, in order to make informed development decisions within these areas. Phase I of the study was completed and Phase II is underway. If high nitrate levels associated with onsite wastewater treatment systems effluent are found, recent revisions to El Paso County regulations allow advanced treatment of onsite wastewater systems if deemed necessary to protect the health of the public. El Paso County’s subdivision regulations limit the creation of new lots with OWTSs to a minimum of 2.5 acres.

The CDPHE is currently in the process of OWTS guideline revisions that if approved will have an impact on local health department OWTS regulations. The primary focus of the guideline revisions is to establish OWTS performance standards dependent on soil conditions of the site

versus prescriptive standards that do not consider overall impacts on groundwater quality. All local health departments must revise their regulations within one year of the effective date of CDPHE guideline revisions.

## **18.6. Hydrologic Modification**

Changes in a stream's flow regimes impact the stream's carrying capacity for sediment, increase eroding to stream banks, and affect water supply. Changes to the hydrologic regime occur through construction and operation of reservoirs and diversion ditches, check dams, riffle drop structures, and channelization of flows.