

CDOT PROJECT IM 0703-294

I-70/32nd AVENUE INTERCHANGE ENVIRONMENTAL ASSESSMENT

WATER RESOURCES TECHNICAL REPORT

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TABLE OF CONTENTS

Page

List of Abbreviations and Acronyms -----iii

1.0 Introduction ----- 1

 1.1 Project Description ----- 1

 1.1.1 Proposed Action ----- 1

 1.1.2 Local Agency Projects----- 5

2.0 Clear Creek Watershed ----- 7

 2.1 Existing Clear Creek Watershed ----- 7

 2.2 Consequences and Mitigating Measures----- 10

3.0 Floodplains -----13

 3.1 Current Conditions -----13

 3.2 Consequences and Mitigating Measures-----16

4.0 Irrigation Facilities -----17

 4.1 Current Conditions -----17

 4.2 Consequences and Mitigating Measures-----18

5.0 Water Quality-----19

 5.1 Current Conditions -----19

 5.1.1 Total Daily Maximum Load-----19

 5.1.2 Municipal Separate Sewer Systems-----21

 5.1.3 Existing Water Quality and Drainage Structures -----23

 5.1.4 Existing I-70 and SH 58 Maintenance Operations -----23

 5.2 Consequences and Mitigating Measures-----24

6.0 Groundwater -----27

 6.1 Current Conditions -----27

 6.2 Consequences and Mitigating Measures-----28

7.0 Water Resources Summary Matrix -----29

8.0 References-----31

APPENDIX A STATE OF THE WATERSHED REPORT

APPENDIX B CITY STORM SEWER MAPS

APPENDIX C MS4 INFORMATION

 C-1 JEFFERSON COUNTY

 C-2 CITY OF LAKEWOOD

 C-3 CITY OF WHEAT RIDGE

 C-4 COLORADO DEPARTMENT OF TRANSPORTATION

APPENDIX D CDPHE STREAM CLASSIFICATIONS AND WATER QUALITY STANDARDS

APPENDIX E FEMA FLOODPLAIN INFORMATION AND SUPPORTING DOCUMENTS

LIST OF FIGURES

	<u>Page</u>
Figure 1-1	Project Area----- 2
Figure 1-2	Proposed Action ----- 4
Figure 2-1	Clear Creek Watershed----- 8
Figure 2-2	Hydraulic Mining in a Clear Creek Tributary during 1877 ----- 9
Figure 2-3	Impervious Area ----- 11
Figure 3-1	Existing Floodplain and Irrigation Map----- 14
Figure 3-2	Clear Creek Grade Control Structure ----- 15
Figure 3-3	Clear Creek & Adjacent Trail ----- 15
Figure 5-1	MS4 Boundaries and Clear Creek 303(d) Segments ----- 20

LIST OF TABLES

Table 7-1	Water Resources Summary Matrix ----- 29
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LIST OF ABBREVIATIONS AND ACRONYMS

BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe Railroad
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
cfs	cubic feet per second
CLOMR	Conditional Letter of Map Revision
EA	Environmental Assessment
E.coli	Escherichia coli
FEMA	Federal Emergency Management Agency
FHU	Felsburg Holt & Ullevig
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
gpm	gallons per minute
HEC	Hydraulic Engineer Circular
I-70	Interstate 70
LOMR	Letter of Map Revision
LOS	level of service
LRT	light rail
LUST	Leaking underground storage tank
MS4	Municipal Separate Storm Sewer System
NOAA	National Oceanic and Atmospheric Administration
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
PM ₁₀	Particulate matter up to 10 microns in diameter
RTD	Regional Transportation District
SH 119	State Highway 119
SH 58	State Highway 58
SWMP	Stormwater Management Plan
TMDL	total maximum daily load
UDFCD	Urban Drainage and Flood Control District
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFWS	US Department of Interior Fish and Wildlife Service
USGS	US Department of Interior Geological Survey
US 40	US Highway 40
WQCD	CDPHE Water Quality Control Division

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1.0 INTRODUCTION

In accordance with the National Environmental Policy Act of 1969 (NEPA) and its related regulations, the Federal Highway Administration (FHWA), as the Lead Agency, in cooperation with the Colorado Department of Transportation (CDOT) as the Applicant Agency, is preparing an Environmental Assessment (EA) for proposed improvements to the Interstate 70 (I-70)/32nd Avenue interchange. Several local agency projects are to be completed as separate projects. These projects include the 40th Avenue Underpass at I-70, the widening of Youngfield Avenue from 38th Avenue to 44th Avenue, and the construction of Cabela Drive from 40th Avenue to the proposed development just north of Clear Creek by the City of Wheat Ridge. Other projects include the I-70/State Highway 58 (SH 58) interchange improvements by CDOT, the construction of the Regional Transportation District (RTD) Gold Line transit facility, and improvements to the McIntyre Street/44th Avenue intersection by Jefferson County. CDOT and the City of Wheat Ridge prepared this report to provide a description of the water resources factors of the project area. The detailed information included in this report is intended to support the EA document. A summarized version of this report was incorporated into the EA.

1.1 Project Description

The I-70/32nd Avenue Interchange project is located in the western portion of the Denver metropolitan area. The EA for this interchange has a project area that extends beyond the project and includes parts of Wheat Ridge, Lakewood and unincorporated Jefferson County. The City of Arvada is located directly north of the project area.

The project area includes about two miles of I-70 from 26th Avenue to Ward Road and two miles of SH 58 from McIntyre Street to I-70. The areas adjacent to these highways are also included. The limits of the project area are shown on **Figure 1-1**. Southwest of the I-70/SH 58 interchange is an area zoned for commercial and retail development; this is where the proposed development is to be located.

A number of alternatives have been considered within this project area and one Proposed Action has been selected for analysis in the EA with the No-Action Alternative.

1.1.1 Proposed Action

The Proposed Action consists of a series of elements, which include:

- ▶ **New I-70/32nd Avenue Interchange Hook Ramps**
 - Construction of off-set hook ramps at the I-70/32nd Avenue interchange with the westbound hook ramps located north of 32nd Avenue at approximately 38th Avenue and the eastbound hook ramps located at Youngfield Street and 27th Avenue
 - Construction of a third I-70 bridge over 32nd Avenue for the I-70 westbound ramp traffic

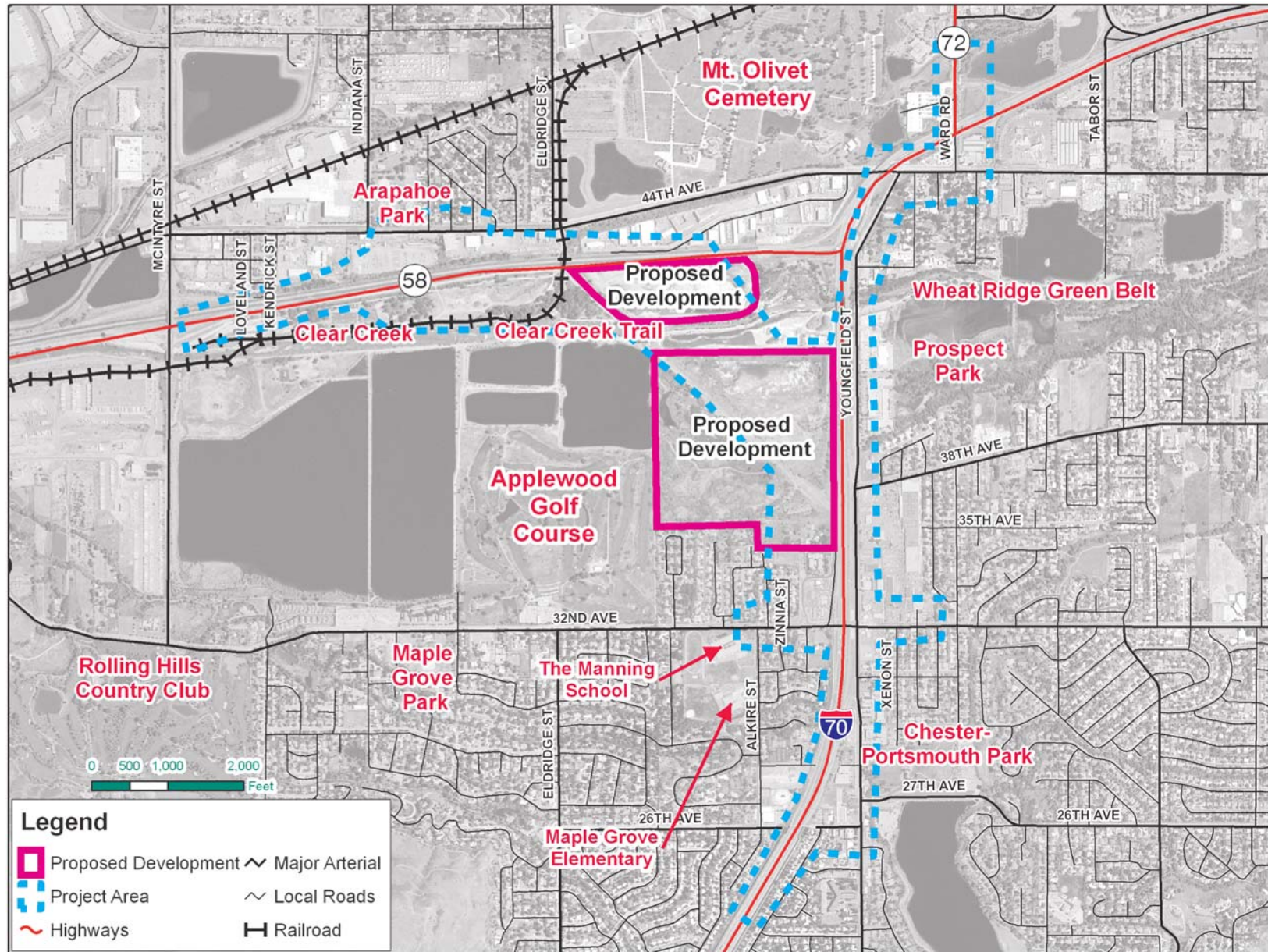


Figure 1-1
Project Area

- Closure of the existing westbound I-70 off-ramp that exits to 32nd Avenue. The existing westbound I-70 on-ramp would remain open but access would be limited to eastbound 32nd Avenue traffic only
- Reconstruction and restriping of Youngfield Street between 27th Avenue and approximately 30th Avenue to achieve a 5-lane roadway section
- ▶ **32nd Avenue Improvements**
 - Widening of 32nd Avenue between approximately Alkire Street and approximately Xenon Street and the widening of Youngfield Street between approximately 35th Avenue and 30th Avenue in the vicinity of the I-70/32nd Avenue interchange
 - Connection of Cabela Drive with 32nd Avenue west of I-70 (40th Avenue to 32nd Avenue)
- ▶ **New SH 58/Cabela Drive Interchange**
 - Construction of a new diamond interchange on SH 58 west of Eldridge Street and connection of Cabela Drive to this interchange
 - Connection of Cabela Drive with 44th Avenue north of the new interchange on SH 58
- ▶ **I-70/Ward Road Interchange**
 - Restriping of the Ward Road and westbound I-70 on-ramp intersection to add an additional southbound left turn lane onto the ramp and widen the ramp to receive this lane
 - Addition of a second right-turn lane for the eastbound I-70/Ward Road off-ramp
- ▶ **Bicycle/Pedestrian Improvements**
 - Relocation of the Jefferson County Open Space Clear Creek trail in the vicinity of the new SH 58/Cabela Drive interchange
 - Replacement of the 32nd Avenue trail detached sidewalk along the south side of 32nd Avenue from Alkire Street to Cabela Drive with an attached sidewalk
 - Improvements to pedestrian and school safety along 32nd Avenue
 - Construction of an Americans with Disabilities Act (ADA) compliant pedestrian bridge at 27th Avenue to replace the existing pedestrian bridge at 26th Avenue as part of the eastbound I-70 hook ramps
 - Provisions for Jefferson County Open Space Clear Creek trail access through the development site from 32nd Avenue
 - Wider sidewalks under I-70 on the south side of 32nd Avenue to better accommodate bicycles and pedestrians

Figure 1-2 depicts the Proposed Action.

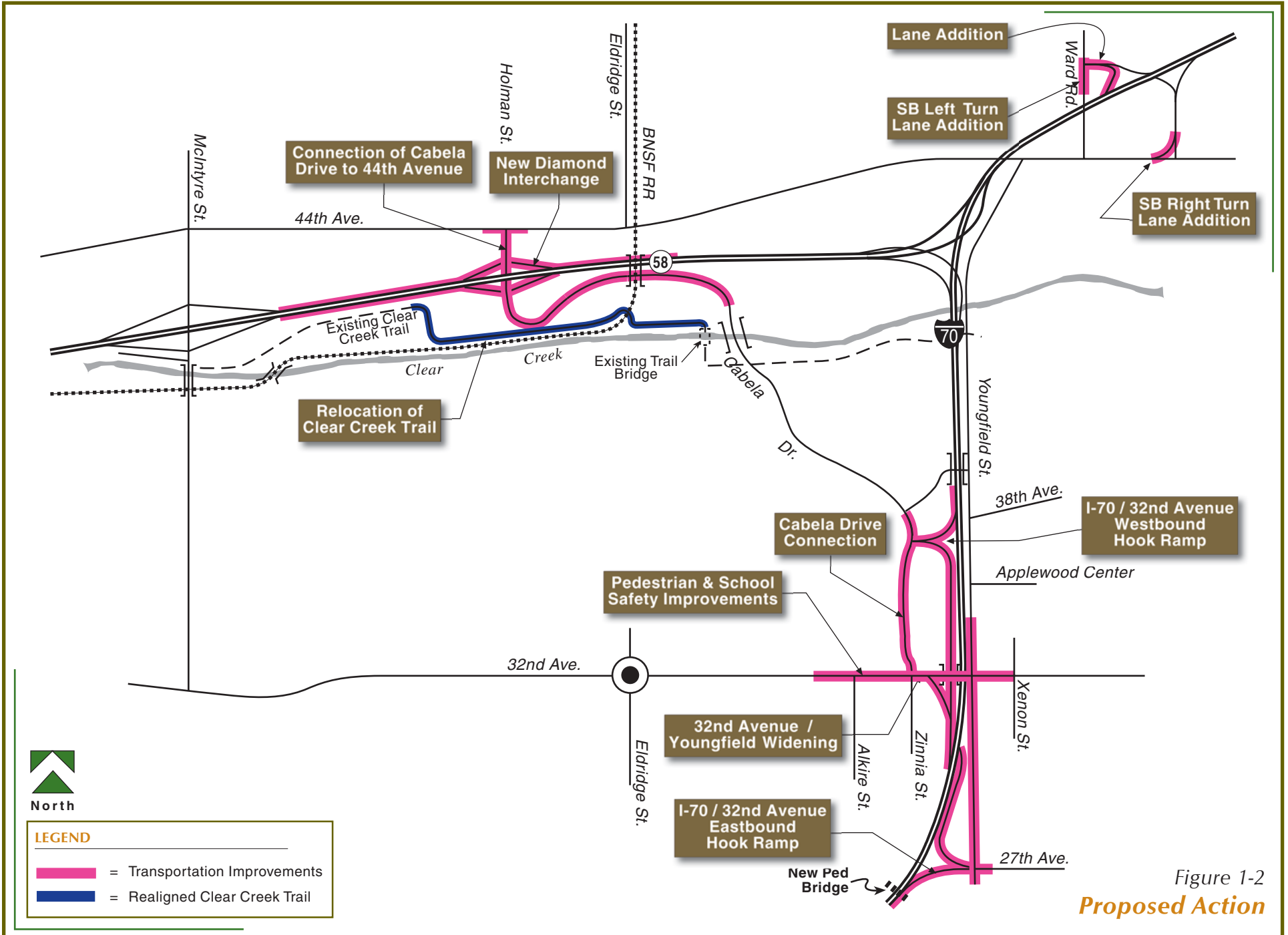


Figure 1-2
Proposed Action

1.1.2 Local Agency Projects

The City of Wheat Ridge submitted an application to CDOT for construction of a series of local agency projects that are common to each of the three alternative packages presented in the System Level Feasibility Study and that would be independent and stand on their own merits should no other improvements take place. The local agency projects do not preclude any of the alternatives evaluated in this EA. The local agency projects include:

- ▶ Construction of the 40th Avenue underpass of I-70
- ▶ Widening of Youngfield Street from 38th Avenue to 44th Avenue
- ▶ Construction of Cabela Drive from 40th Avenue to the proposed development just north of Clear Creek

These local agency projects are to be completed by the City of Wheat Ridge as separate projects that are not dependent on the interchange improvements or on federal funding and thus are included in the travel demand forecasting for the traffic analysis. Access approval through a Categorical Exclusion allowed access to interstate right-of-way to accommodate the 40th Avenue underpass of I-70 and the widening of Youngfield Street from 38th Avenue to 44th Avenue. Cabela Drive from 40th Avenue to the proposed development just north of Clear Creek is a local agency project and can proceed without FHWA and CDOT approval. As a local agency action not requiring CDOT right-of-way, FHWA/CDOT approval for construction of Cabela Drive from 40th Avenue to the proposed development just north of Clear Creek is not required; however, environmental permitting for these projects such as the Clean Water Act and other relevant environmental regulations will be the responsibility of the local agency or developer.

1.1.2.1 Youngfield Street Widening from 38th Avenue to 44th Avenue

The widening of Youngfield Street would occur from 38th Avenue north to 44th Avenue. From 32nd Avenue north to 38th Avenue, Youngfield Street is already a five lane facility; the widening of Youngfield Street would extend this cross-section further north to its terminus at 44th Avenue. The widening of Youngfield Street from 38th to 44th Avenue, from its current two lane configuration, would incorporate two additional through lanes in each direction and a center left turn lane at intersections.

The bridge over Clear Creek on Youngfield Street is wide enough for four lane usage, but currently only two lanes are being used. The barriers blocking the additional two lanes on the bridge would be removed and the bridge would begin to function as four 12-foot lanes.

The Youngfield Street improvements would also incorporate needed turn lanes at the 44th Avenue intersection such that double left turn lanes from westbound 44th Avenue and double right turn lanes from northbound Youngfield Street can be accommodated. These turn lane additions are also a common element to the three short-listed alternative packages.

1.1.2.2 40th Avenue Underpass of I-70

The 40th Avenue underpass of I-70 is proposed to be four lanes with a 10-foot sidewalk on the north side. Three lanes and the sidewalk would be initially constructed: one inbound to the proposed development and two outbound to Youngfield Street. Depending on the final extension of Cabela Drive to 32nd Avenue, this design could change slightly. The underpass would be designed to accommodate the potential future widening of I-70 and would accommodate all the improvements planned for the I-70 and SH 58 build out project by CDOT.

The 40th Avenue underpass would intersect with the Youngfield Service Road, creating an at-grade signed “T” intersection with the segment north of 40th Avenue. The southern segment of the Youngfield Service Road would not connect to 40th Avenue, but would continue to provide access to businesses located immediately north of 32nd Avenue on the service road. Access to the Jefferson County Open Space Clear Creek Trail would occur from the east via Youngfield Street through the 40th Avenue underpass to the northern portion of the Youngfield Service Road, and from the west via the proposed development roadway network.

1.1.2.3 Cabela Drive from 40th Avenue to the Proposed Development Just North of Clear Creek

The construction of Cabela Drive would include a portion of 40th Avenue extending from the 40th Avenue underpass to the west where 40th Avenue would intersect with Cabela Drive, which is a north-south roadway. 40th Avenue is proposed to be a four lane facility with adjacent sidewalks through the proposed development site. From the Cabela Drive/40th Avenue intersection to the proposed development to just north of Clear Creek, Cabela Drive would consist of four through lanes with a center turn lane and adjacent sidewalks. The Clear Creek bridge crossing of Cabela Drive would include three through lanes transitioning to a three through lane facility with a center turn lane north of Clear Creek. The proposed crossing of the Clear Creek Trail, south of Clear Creek, would be grade separated.

2.0 CLEAR CREEK WATERSHED

2.1 Existing Clear Creek Watershed

The project area is located within the 500 square mile Clear Creek Watershed of which 446 square miles lies upgradient of the project area (see **Figure 2-1**). Clear Creek originates at the continental divide 40 miles west of the project area near Loveland Pass and flows 11 miles to the east to its confluence with the South Platte River. This watershed includes parts of Jefferson County, Gilpin County, Clear Creek County and many communities including Wheat Ridge, Golden, Central City, Blackhawk, Georgetown, Silver Plume and Idaho Springs. The Mount Evans Wilderness and the Roosevelt National Forest lie in the upper mountainous areas.

Land uses in the lower reaches of the watershed around Golden and Wheat Ridge near the project area have gradually changed from prairie to grazing to farmland to urbanized areas. The current urban areas include a high percentage of residential, commercial and industrial uses. The foothills areas have experienced residential growth that is expected to continue. The population of the three counties has increased from 23,000 people in 1900, to 59,800 in 1950, to 531,100 in 2000.

The US Environmental Protection Agency (USEPA) has identified the following environmental concerns regarding this watershed:

- ▶ Metal loadings from active and inactive mining sites
- ▶ Highway construction, maintenance runoff, and direct spills from highway accidents
- ▶ Urban development and stormwater runoff
- ▶ Hydraulic modification (aggregate pits)
- ▶ Nutrient pollution from septic tanks and municipal point sources
- ▶ Channel and riparian area destruction & erosion caused by construction for urban growth
- ▶ Industrial discharge
- ▶ Leaking underground storage tanks (LUSTs)
- ▶ Water diversions

Many adverse impacts have occurred to Clear Creek as a result of direct spills from the above environmental activities. The following list tabulates a few of the more recent spills that have impacted Clear Creek's water quality.

- ▶ Low level radioactive waste from the Colorado School of Mines Research Institute, January 1992
- ▶ 3,000 gallons of sewage sludge, July 1994
- ▶ 500 gallons of diesel fuel, July 1994
- ▶ 77,000 gallons of beer, kills an estimated 50,000 fish, August 2001
- ▶ 8,000 gallons of gasoline at Dumont, kills hundreds of fish, November 2001
- ▶ 100,000 gallons of sewage at Idaho Springs over 6 hours, September 2005

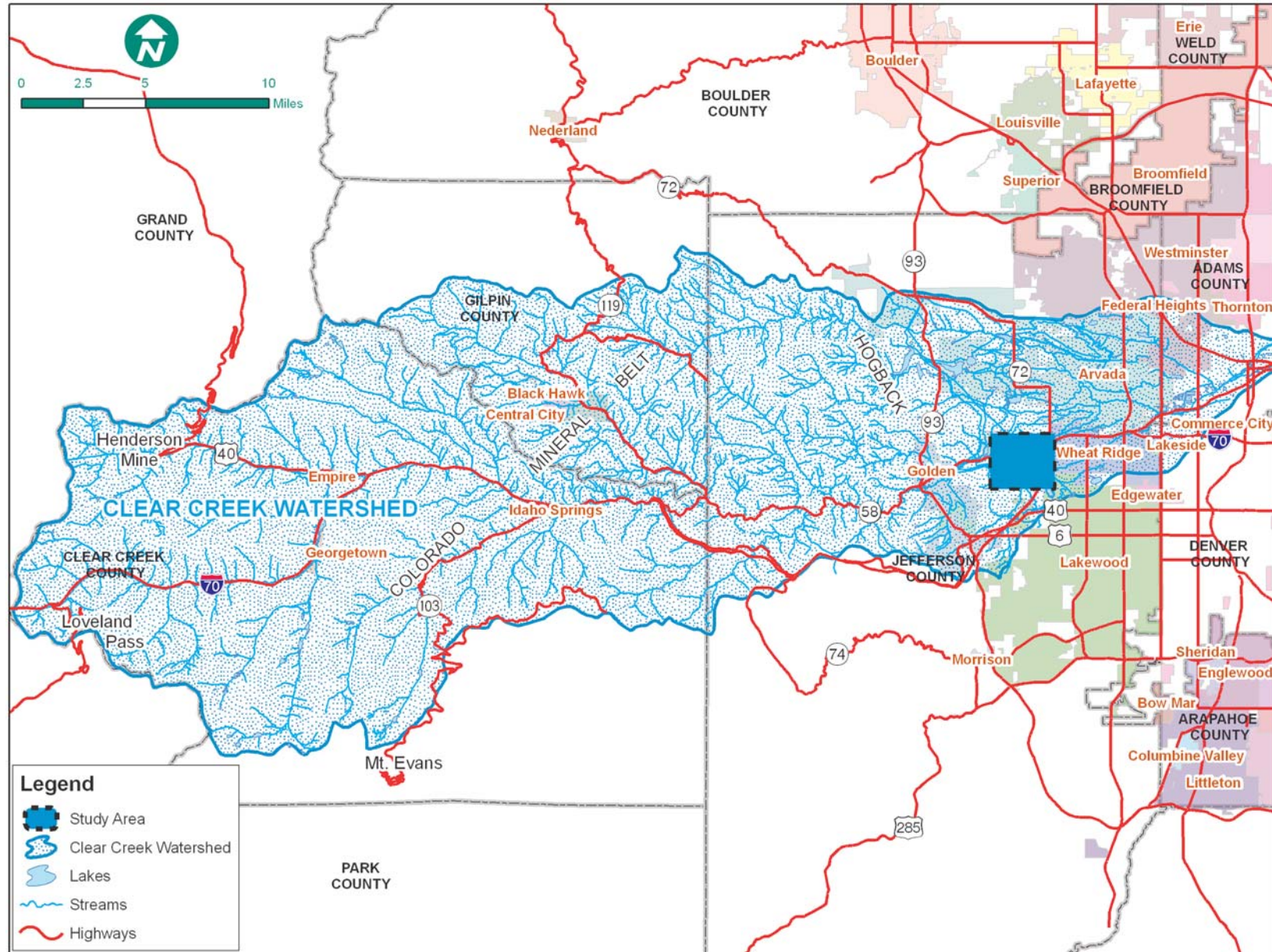


Figure 2-1

Clear Creek Watershed

The watershed has a semi-arid climate with a mean annual precipitation of about 15 inches in the lower plains areas and 18 inches in the upper mountainous areas. Most of the precipitation is derived from rainfall events during the four month period from April to July. The Clear Creek stream gauge near Golden has provided 29 years of data from 1975 to 2003. These 29 years have an average annual mean stream flow of 191 cubic feet per second (cfs). The Federal Emergency Management Agency (FEMA) has determined the peak flows for the 446 square mile watershed above the project area (FEMA 2003a). The peak flows are a 10-year flow of 3,280, a 100-year flow of 13,470 cfs, and a 500-year flow of 29,850 cfs. These peak discharges result mainly from cloudbursts during the spring and summer months and not from the spring snowmelt.

Geology within the watershed can be divided into three zones. They include the Precambrian rocks in the mountainous areas, older sedimentary rocks of the hogback area and the more recent alluvial deposits in the plains river bottom area. The Precambrian Silver Plume Granite is exposed at the Continental Divide and extends toward the Georgetown and Silver Plume areas. The Silver Plume Granite transitions to Precambrian metamorphic rocks such as gneiss and schist that extend from Georgetown toward the Dakota Hogback. The Dakota Hogback consists of Paleozoic and Mesozoic shale and sandstone that have been uplifted. They can be seen in Clear Creek Canyon west of Golden. Quaternary gravel, sand, silt and clay from stream floodplains are present near the project area. This quaternary-age material is the source for sand and gravel within the Clear Creek watershed.

The Colorado Mineral Belt extends across the above mentioned Precambrian rocks and the Clear Creek watershed. It connects Black Hawk, Central City, Idaho Springs, Empire and Georgetown. Gold, lead, zinc and copper were the principal metals mined in this region. Intense mining occurred between 1859 and 1885 and continued until the early 1950's. Limited mining is still present, principally at the Henderson Molybdenum Mine west of Empire.

Mining has caused many serious problems for this watershed. Forests were removed for support timbers in mine shafts, building materials and fuel which resulted in increased erosion.



Hydraulic mining was common in the Clear Creek and North Clear Creek stream beds as can be seen in **Figure 2-2**. During the peak mining years, mine dewatering, smelters and mine waste polluted the adjacent streams. Water still leaches out of many of the abandoned mines and mine waste dumps. In the Black Hawk area, North Clear Creek is contaminated by iron, zinc, copper, cadmium, lead and arsenic. It is so acidic that it can no longer support aquatic life in the mined areas. A 400 square mile area of the Clear Creek Basin is now part of a USEPA Superfund program.

Figure 2-2 Hydraulic Mining in a Clear Creek Tributary during 1877

The watershed has a predominance of soils that have a hydraulic soils grouping of “C” and “D” according to the U.S. Department of Agriculture (USDA) Soil Conservation Service classification system. Type “C” and “D” soils typically have slow infiltration rates due to their fine texture. The lowland soils are generally more fertile and can support a higher variety of vegetation than the more steeply sloping areas of the watershed. The upper areas have shallower soils that are marginal in supporting vegetation although many parts are forested. Disturbance of these soils due to development allows increased runoff that has a higher sediment yield. The watershed, which had roughly zero percent impervious surface near the turn of the century, has increased to about five percent impervious surface area. Most of this increase has occurred in the Golden/Wheat Ridge/Arvada areas. This results in an increased volume and total discharge of runoff from stormwater events into Clear Creek.

The 1997 State of the Watershed Report for Clear Creek is enclosed in **Appendix A**. This document provides additional information about the Clear Creek Watershed.

2.2 Consequences and Mitigating Measures

The project area is approximately 40 acres or 1/16 square mile. The watershed has an area of 500 square miles thus representing approximately 0.012 percent of the total watershed. Minor impacts on the watershed from the Proposed Action would occur due to the increased pollutant runoff associated with an increase in impervious area. Within the project area, an estimated 36.8 acres (0.058 square mile) of impervious will be added, of which 20.54 acres (0.032 square mile) are associated with the Proposed Action and 16.27 acres (0.025 square mile) are associated with other projects in the area. Contributions to impervious area from other projects in the area include approximately 6.17 acres (0.01 square mile) from CDOT planned I-70/SH 58 interchange improvements, 2.49 acres (0.004 square mile) from local agency Cabela Drive improvements, and 4.05 acres (0.006 square mile) from local agency Youngfield/ 40th Avenue underpass improvements (see **Figure 2-3**).

As stated above, the project area represents approximately 0.012 percent of the total watershed. This means that under the Proposed Action, the increase in impervious area would represent approximately 0.007 percent of the total watershed where an additional approximately 0.005 percent of impervious area would be added by other projects in the area (approximately 0.002 percent associated with CDOT planned I-70/SH 58 interchange improvements, 0.0009 percent is associated with local agency Cabela Drive improvements, and 0.001 percent associated with the local agency Youngfield/ 40th Avenue underpass improvements). Permanent drainage and water quality facilities [i.e. best management practices (BMPs)] are to be included with the final design in order to mitigate adverse impacts. The purpose of these BMPs is to mitigate the water quality of Clear Creek and restore it to a condition that is equal to or better than the current conditions.

The potential increase in stormwater flows to Clear Creek due to a major storm event would be negligible. The time to peak for a major storm from the 446 square mile watershed area upgradient of the project area is approximately 8 hours. The time to peak for any of the roadway areas would be in the 30 minute range. Since the peak timings are not close to each other, any rise in the Clear Creek channel, due to runoff from the project area, would be negligible during a major storm.

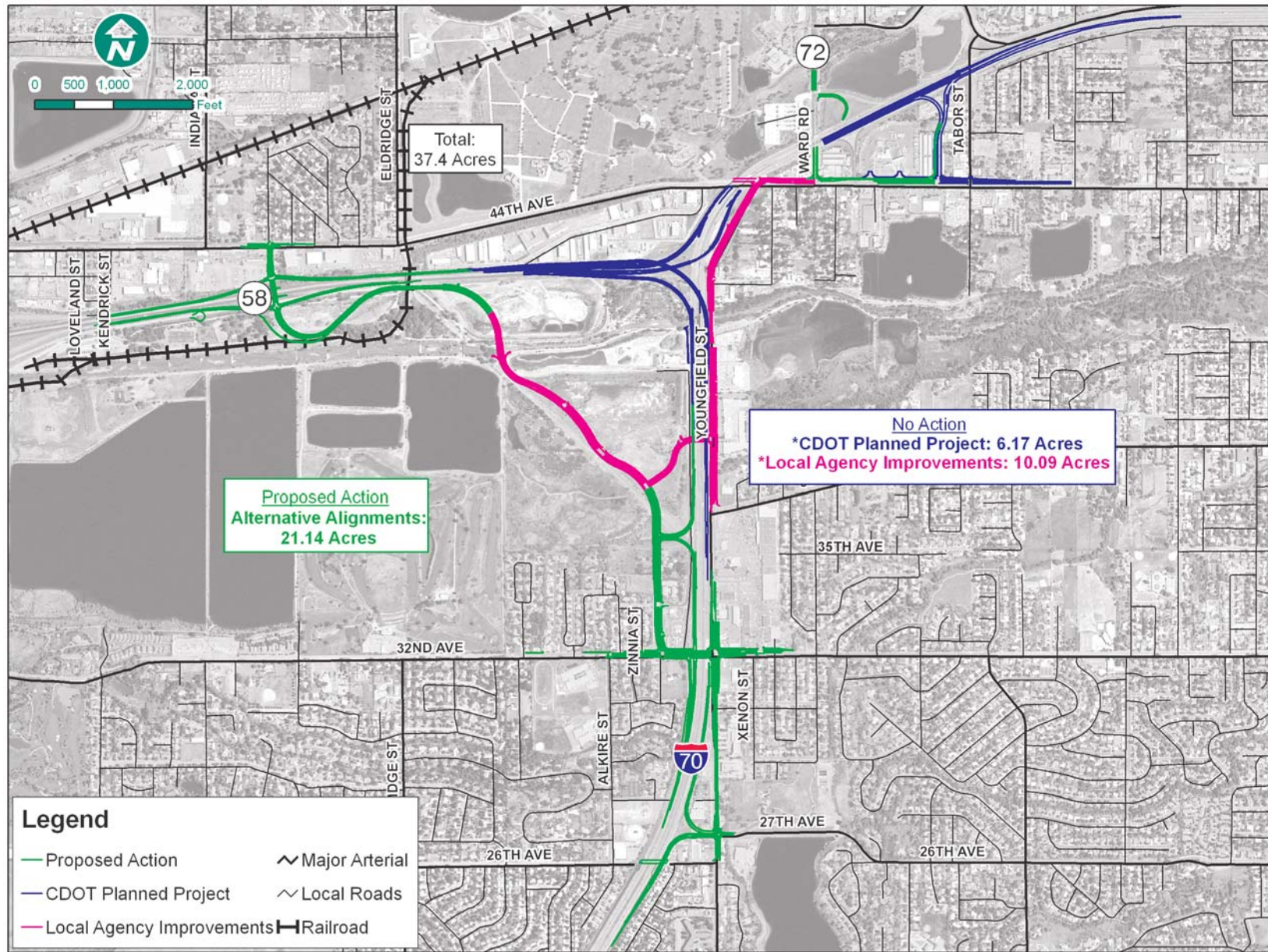


Figure 2-3
Impervious Area

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3.0 FLOODPLAINS

Executive Order 11988 – Floodplain Management (U.S. DOT Order 5650.2; 23 C.F.R. 650, Subpart A) directs all federal agencies to avoid, to the extent practicable and feasible, all short-term and long-term adverse impacts associated with floodplain modification. The Federal agencies are also to avoid direct and indirect support of development within 100-year floodplains whenever there is a reasonable alternative available. Projects that encroach upon 100-year floodplains must be supported with additional specific information.

The U.S. Department of Transportation Order 5650.2, titled “Floodplain Management and Protection,” prescribes “policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs and budget requests.” The purpose of the Flood Disaster Protection Act (42 U.S.C. 4001-4128; DOT Order 5650.2, 23 C.F.R. 650 Subpart A; and 23 C.F.R. 771) is to identify flood-prone areas and provide insurance. The Act requires purchase of insurance for buildings in special flood-hazard areas. The Act is applicable to any federally assisted acquisition or construction project in an area identified as having special flood hazards. It directs that projects avoid construction in FEMA identified flood-hazard areas, or develop a design that is consistent with FEMA regulations.

The City of Wheat Ridge, the City of Lakewood, and Jefferson County participate in the National Flood Insurance Program administered by FEMA. In conjunction with this program, they regulate development and construction activities within floodplains. FEMA requires revision of the Flood Insurance Rate Map (FIRM) for any construction or development within the floodplain that results in an increase in regulatory base flood elevations, or in an increase in floodplain boundaries. When this is anticipated by a proposed project, a Conditional Letter of Map Revision (CLOMR) must be obtained from FEMA before construction is initiated. After the project is completed, a Letter of Map Revision (LOMR) must be obtained from FEMA to finish the revision of the FIRM. A LOMR is also required when there is a decrease in base flood elevations or floodplain boundaries. Additional FEMA floodplains information and supporting documentation are provided in **Appendix E**.

In order to participate in the National Flood Insurance Program, and thereby allow citizens to acquire Federal flood insurance, the City of Wheat Ridge, the City of Lakewood, and Jefferson County have adopted these same floodplain management requirements as part of their floodplain ordinances. The Floodplain Administrator must issue a floodplain development permit prior to any construction within the floodplain. The major floodplain within the project area is Clear Creek. Existing conditions, impacts and mitigation measures are described below for this floodplain.

3.1 *Current Conditions*

Clear Creek is a perennial stream that lies south of, and parallel, to SH 58 (see **Figure 3-1**). It crosses under I-70 within the northeastern part of the project area. Much of the lower reaches of this basin has been developed. Over the years the original drainage way within the project area has been mined for sand and gravel, straightened and shaped into a semi-trapezoidal channel. It has a low stream sinuosity, slight meandering, limited riparian vegetation and steep

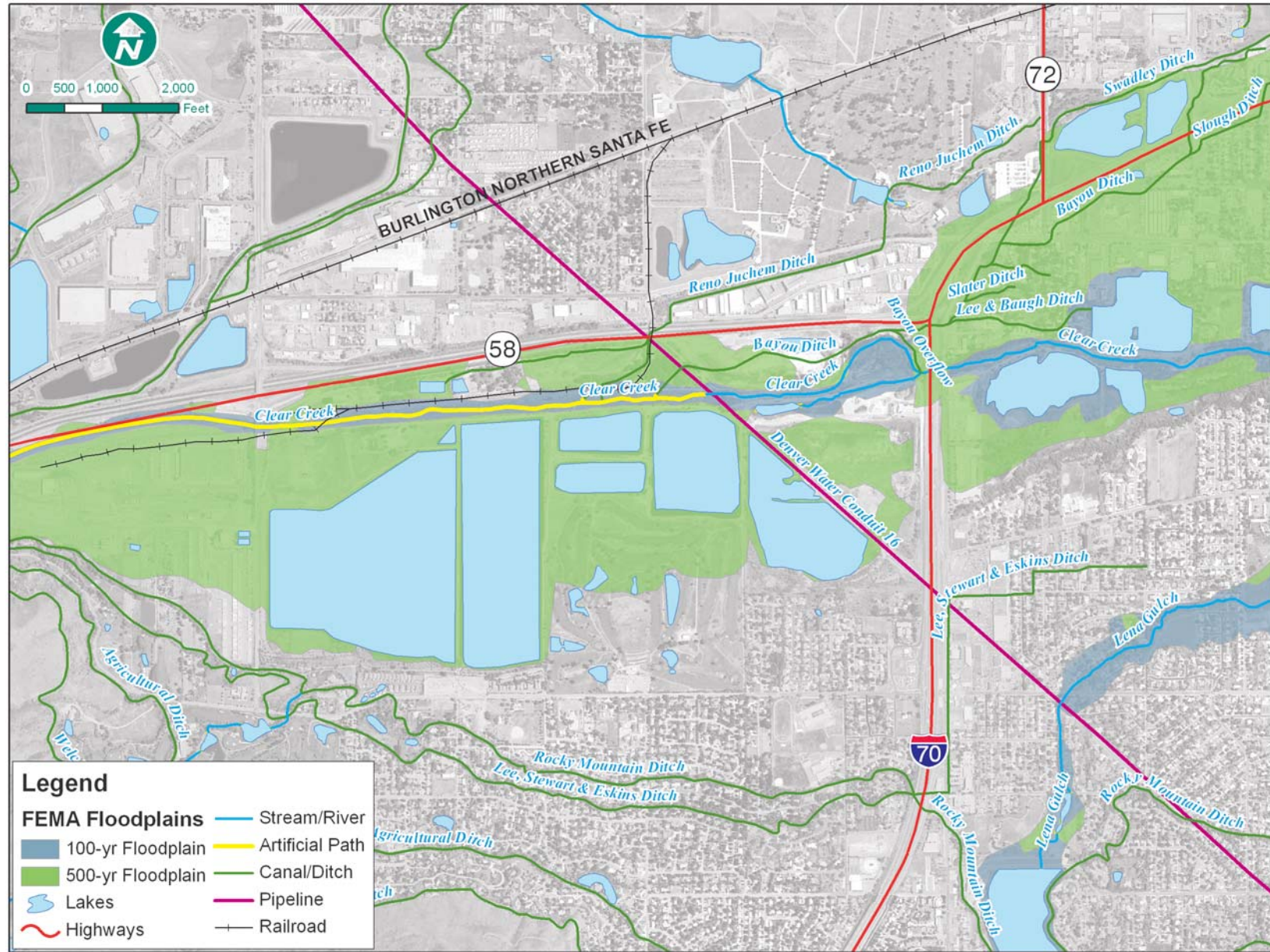


Figure 3-1

Existing Floodplain and Irrigation Map



stream banks in places. The channel has been stabilized in the project area with several grade control structures and riprap bank protection (see **Figure 3-2** and **Figure 3-3**). These measures appear to have controlled the bank erosion and channel degradation. Heavy vegetation is present in the lower areas along the banks and gradually thins in the higher bank areas.



Figure 3-2 Clear Creek Grade Control Structure



Figure 3-3 Clear Creek & Adjacent Trail

Clear Creek has a FEMA regulatory floodplain delineation based upon a 100-year flow of 13,470 cfs. FIRM panels 08059C0193 E and 08059C0194 E include the project area and delineate the current 100-year flood limits (effective date of June 17, 2003). No changes to the floodplain have been documented on the FEMA website since this effective date.

The FEMA panels delineate the portions of Clear Creek that are in flood Zone AE. Zone AE includes special flood hazard areas inundated by the 100-year flood where base flood elevations have been determined. The Zone AE areas vary in width from 200 to 750 feet within the project area (see **Figure 3-1**). The maximum flooding width occurs upstream of the I-70 bridge within the project area. The 100-year event overtops an access road that connects the SH 58 frontage road to several abandoned Clear Creek gravel pits, almost overtopping the Burlington Northern Santa Fe Railroad (BNSF) spur track to the Coors facility. The 100-year event does not overtop the existing bridges at I-70, McIntyre Street or Youngfield Street.

Areas in the over bank areas are delineated as Zone X. Zone X includes areas of the 500-year flood and areas of 100-year flood with average depths of less than 1 foot. Zone X also includes drainage areas with less than 1 square mile and areas protected by levees from the 100-year flood.

3.2 Consequences and Mitigating Measures

A segment of the Clear Creek pedestrian path will be relocated as a part of the Proposed Action. About 1400 feet of this relocation will be in the higher over-bank portions of the 100-year floodplain of Clear Creek. It is planned that the path be built at grade or lower so that the conveyance of floodwaters in Clear Creek will not be impacted. The proposed configuration would not require coordination with FEMA because the floodplain elevation would not be adversely affected. If the proposed configuration can not be constructed, and the path requires placing fill in a portion of the floodplain, then FEMA coordination will be necessary. This will be confirmed during final design. This is the only location where the Proposed Action will have potential floodplain impacts.

Of the local agency projects, the construction of Cabela Drive will impact the Clear Creek floodplain. Cabela Drive will require a new bridge over Clear Creek. Major consequences to floodplains would occur with a bridge crossing. A bridge would require placing fill in the flood fringe areas and possibly piers in the floodway. Any work will require a detailed hydraulic analysis of the existing and proposed structure. The existing bridges at I-70 over Clear Creek are 185 feet in length and a similar length structure may be required for any improvements.

Additional Clear Creek design issues include:

- ▶ The 100-year FEMA design flow of 13,470 cfs (FEMA) will be used for freeboard determinations, scour design and to ensure that velocities and Froude numbers are acceptable.
- ▶ The 500-year design flow of about 29,850 cfs (FEMA) will be used to further assess the scour design and set the depths of piles or caissons.
- ▶ The design will consider the maximum allowable backwater.
- ▶ Degradation, aggregation and scour will be determined. Adequate counter measures will be selected using FHWA criteria (Hydraulic Engineer Circulars (HEC) 18, 20 and 23).
- ▶ The design will be such that minimal disruption to the ecosystem will occur.
- ▶ The design will consider costs for construction and maintenance.
- ▶ A bridge deck drainage system will control seepage at joints and drain to a water quality feature. Bridge drains will not be allowed to drain directly into Clear Creek. Instead, bridge drains will be piped to a water quality feature prior to discharge into Clear Creek.

These issues will be accounted for in the final design for the local agency projects since a bridge crossing of Clear Creek will be required for the local agency portion of Cabela Drive.

4.0 IRRIGATION FACILITIES

4.1 Current Conditions

This section provides information about the irrigation ditches within the project area. These irrigation ditches are shown on **Figure 3-1**. Information about the irrigation ditches in the area was obtained through FHU personal communication with representatives from Consolidated Mutual Ditch Association (2005), Consolidated Ditch Company (2005), Consolidated Juchem Ditch and Reservoir Company (2005), Juchem Ditch Company (2005), and Rocky Mountain Ditch and Agricultural Ditch Company (2005). A brief description of the ditches follows.

- ▶ **Reno & Juchem Ditch** This ditch crosses SH 58 west of the Coors railroad spur track at Eldridge Street. It is a large ditch that has a priority 13 call on Clear Creek (priority 1 is highest and receives the first water). Juchem Ditch takes water from Clear Creek and conveys it north under I-70. Other ditches are laterals to this ditch. It has a low flow of 4.68 cfs, and a peak decreed flow of 25.95 cfs. The original flow was 34.57 cfs, but Arvada bought 8.61 cfs and has diverted it upstream. The peak rate is currently about 20 cfs. The irrigation season is May 1 to October 20.
- ▶ **Coors Brewing Company** has a settling pond to the north of Clear Creek at Indiana Street. This pond connects to the Juchem Ditch 3,000 feet to the east through an open channel which is used to release a small amount of treated water. Although the flows are small, they can be depended upon year round and are important during years of low irrigation flows.

The irrigation season for the following ditches is from April 1 to October 31.

- ▶ **Bayou Ditch-** This ditch is near I-70 and SH 58 and is a feeder ditch to 10 smaller ditches, such as the Wadsworth Ditch. This ditch has a priority 1 call for water rights and draws 24 cfs. However, this ditch must be designated to pass 105 cfs due to runoff. Major share holders are Arvada with 30 percent and Coors with 17 percent.
- ▶ **Wadsworth Ditch-** This ditch has a priority 1 call and a decreed flow of 3 cfs. However, this ditch conveys 1.53 cfs.
- ▶ **Lee & Baugh Ditch-** This ditch has a priority 2 call and conveys 1.9 cfs.
- ▶ **Slater Ditch-** This ditch has a priority 20 call and draws 1.8 cfs.
- ▶ **Slater/Moodey Ditch-** This ditch (combined flow with and in the same ditch as the Slater) conveys 0.98 cfs.
- ▶ **Swadly Ditch-** This ditch has a flow of 1.94 cfs.
- ▶ **Rocky Mountain Ditch-** The flow in this ditch ranges from 25 to 28 cfs. Coors is a major share holder with 70 percent of the shares.
- ▶ **Lee, Stewart & Eskins Ditch-** This ditch has a flow of 38 cfs. The ditch flows year round with a winter season from October 31 through April 1. Consolidated Mutual Water Company is a major share holder with 41 percent of the shares.

4.2 Consequences and Mitigating Measures

Consequences of the Proposed Action and local agency projects could possibly occur where the existing irrigation facilities (ditches, canals, head gates) need to be crossed or relocated. Impacts related to the Proposed Action include several ditch crossings associated with I-70/32nd Avenue Hook Ramps.

Impacts under the local agency projects include several ditch crossings associated with the construction of Cabela Drive and at least one ditch relocation associated with the I-70/SH 58 interchange improvements; no impact to irrigation facilities are expected from Youngfield/40th Avenue underpass improvements.

The irrigation facilities in the project area are shown in **Figure 3-1**. Any impact to an irrigation facility will require an in-kind replacement. Stormwaters will not be allowed to commingle with irrigation waters and the irrigation companies will be advised of any impacts that may occur to their irrigation system. The ditch companies will have the opportunity to review plans that call for impacts to their system. Any work on the irrigation facilities must occur during the non-irrigation season. Erosion control measures will be placed at irrigation ditch areas during construction. They will be removed once the site has stabilized. It is anticipated that permanent BMPs upstream of irrigation facilities will treat stormwaters. The BMPs are addressed in **Section 5.2** of this technical report.

5.0 WATER QUALITY

This section provides basic information regarding water quality. Water quality classifications and standards for Clear Creek are listed in **Appendix D**. The information within this section was derived from site visits, literature research and discussions with CDOT, Colorado Department of Public Health and Environment (CDPHE), City of Wheat Ridge, City of Lakewood, and Jefferson County staff.

5.1 Current Conditions

5.1.1 Total Daily Maximum Load

Segments of Clear Creek within the project area are listed on the CDPHE Water Quality Control Commission Regulation No. 93 for the year 2006. This is also known as the Section 303(d) list for Water-Quality-Limited segments requiring a Total Maximum Daily Load (TMDL). Colorado is required by the USEPA to list those waters for which technology-based effluent limitations and other controls are not stringent enough to implement water quality standards. They are listed and described below and are shown on **Figure 5-1**.

- ▶ **Clear Creek Segment COSPCL14b-** This segment includes all of Clear Creek from Denver Water Conduit #16 to Youngfield Street. This segment of Clear Creek is classified as an Aquatic Life Warm Water Class 2 stream. This classification includes waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species. It has an Existing Primary Contact Use (previously Recreational Classification of 1a) that includes waters in which primary contact uses have been documented or are presumed to be present. Additional beneficial uses include water supply and agriculture. It is impaired for aquatic life use and organic sediment.
- ▶ **Clear Creek Segment COSPCL15-** This segment includes Clear Creek from Youngfield Street to the confluence with the South Platte River. This segment of Clear Creek is classified as an Aquatic Life Warm Water Class 1 stream. These are waters that are currently capable of sustaining a wide variety of warm water biota, including sensitive species, or could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species. It is impaired for *Eseherichia coli* (*E. coli*), aquatic life use and organic sediment.

Clear Creek Segment COSPCL14a has been deleted from the 303d list for the year 2006. It included the mainstem of Clear Creek from the Farmers Highline Canal diversion in Golden to the Denver Water Conduit 16. The Denver Water Conduit #16 traverses the project area, entering in the northwest corner and exiting through the southeast.

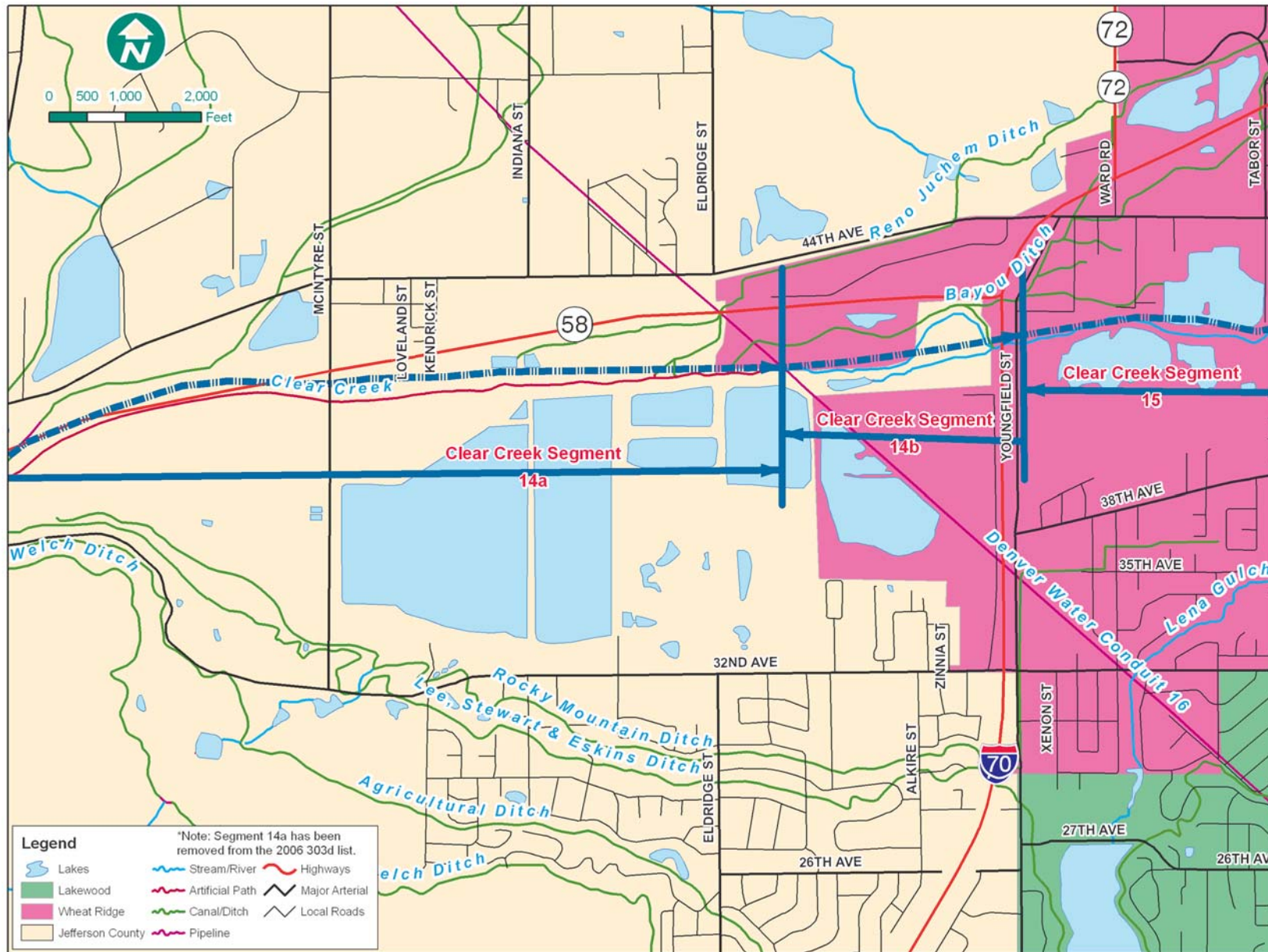


Figure 5-1

MS4 Boundaries and Clear Creek 303(d) Segments



Since Clear Creek does not achieve the water quality standards for *E. coli*, aquatic life use and organic sediment, it is listed as impaired and requires a TMDL analysis per the CDPHE - Water Quality Control Division (WQCD). Because a TMDL analysis is required for Clear Creek, CDOT designates the stream as a sensitive water. Special conditions are required when stormwater enters a water body identified as a sensitive water. The special condition for Clear Creek TMDL that will be included within this project involves additional BMPs above and beyond the BMPs used to capture 100 percent of storm water capture volume or 80 percent sediment removal efficiency. The water quality capture volume is one-half inch of rainfall over the impervious tributary area. This is approximately equal to the runoff from a two-year storm event. The additional BMPs can be flexible in nature and can include structural, non-structural, or administrative BMPs such as, but not limited to:

- ▶ Street sweeping
- ▶ Water quality monitoring program support
- ▶ Riparian vegetation enhancement
- ▶ Promoting citizen stream clean up programs
- ▶ Stenciled discharge warnings on storm drains

5.1.2 Municipal Separate Sewer Systems

CDOT, the cities of Wheat Ridge and Lakewood, and Jefferson County have received authorization from the CDPHE–WQCD to discharge stormwater under the Colorado Discharge Permit System (CDPS) in accordance to the Colorado Water Quality Control Act. The Municipal Separate Storm Sewer System (MS4) permits authorize new or existing discharges composed of stormwater (and allowable non-stormwater discharges) from CDOT, the cities of Wheat Ridge and Lakewood, and Jefferson County’s designated urbanized areas into waters of the State (**Appendix C**). The permits authorize the discharge of stormwater co-mingled with flows contributed by processed wastewater and stormwater associated with industrial activity, provided these discharges are permitted under a separate CDPS permit. The Terms and Conditions of the MS4 Permits require all entities to develop specific Stormwater Management Plans (SWMP). The development and implementation of these management plans increase the likelihood of maintaining and protecting local water quality conditions.

Work within the project area will have to comply with these MS4 permits and their regulatory-based conditions. CDOT will be responsible for managing stormwater coming from I-70, SH 58 and the CDOT right-of-way. The Cities of Wheat Ridge and Lakewood, and Jefferson County will be responsible for managing stormwater outside the CDOT right-of-way that is within their jurisdictional limits. The MS4 permit requirements for these entities have similarities and differences. The major stormwater management programs for CDOT, the cities of Wheat Ridge and Lakewood, and Jefferson County are listed below.

CDOT MS4 PERMIT COS-000005 CONTROL REQUIREMENTS

- ▶ Maintenance of Structural Controls Program
- ▶ New Development and Redevelopment Planning Program
- ▶ Public Street Maintenance Program
- ▶ Herbicide, Pesticide and Fertilizer Application Program
- ▶ Illicit Discharges Management Program

- ▶ Industrial Facilities Program
- ▶ Construction Sites Program
- ▶ Municipal Facility Runoff and Control Program

CITY OF WHEAT RIDGE MS4 PERMIT COR-090015 CONTROL REQUIREMENTS

- ▶ Public Education and Outreach
- ▶ Public Participation/Involvement
- ▶ Illicit Discharge Detection and Elimination
- ▶ Construction Site Stormwater Runoff Control
- ▶ Post-Construction Stormwater Management (for developers and not for city projects)
- ▶ Pollution Prevention/Good Housekeeping for Municipal Operations

CITY OF LAKEWOOD MS4 PERMIT COS-000002 CONTROL REQUIREMENTS

- ▶ Effectively fund, manage and coordinate implementation of the stormwater program
- ▶ Identify and eliminate illicit connections and illicit discharges to the storm drain system
- ▶ Reduce stormwater impacts associated with development and redevelopment projects- The city requires guidelines (including recommended BMPs, Stormwater Management Plans and checklists) for development projects that may significantly affect stormwater quality
- ▶ Reduce stormwater quality impacts associated with municipal activities
- ▶ Increase public knowledge about the impacts of stormwater pollution and about actions that can be taken to prevent pollution
- ▶ Increase public knowledge and understanding about the quality, quantity, sources, and impacts of urban runoff
- ▶ Evaluate the effectiveness of implemented stormwater management programs and modify them as required

JEFFERSON COUNTY MS4 PERMIT COR-090024 CONTROL REQUIREMENTS

- ▶ Public Education and Outreach on Stormwater Impacts Minimum Measures
- ▶ Public Involvement/Participation Minimum Measure
- ▶ Illicit Discharge Detection and Elimination Minimum Measure
- ▶ Construction Site Stormwater Runoff Control Minimum Measure
- ▶ Post-Construction Stormwater Management in New Development and Redevelopment Minimum Measure
- ▶ Pollution Prevention/Good Housekeeping for County Operations Minimum Measure
- ▶ Two MS4 Program elements that are similar to all of the above MS4 permits and are essential for protecting water quality, include implementing and monitoring Construction and Post-Construction Stormwater Management Control Measures. The common goals of each MS4 Program are discussed below:

- ▶ **Construction Site Stormwater Management Minimum Control Measures** - Reduce the amount of stormwater pollution from construction sites (sediment, building materials, oil, etc.). Require, review, inspect, and enforce proper management practices and material disposal on construction sites including procedures for site plan review, inspections during construction, and reporting protocols to upper level CDOT management to ensure compliance. Require construction site owners or operators to implement erosion and sediment control BMPs, and to control other waste such as discarded building materials on their sites. Construction erosion and sediment control activities will adhere to the CDPS stormwater permit requirements, CDOT's Erosion Control and Stormwater Quality guide, and CDOT's Standard Specifications for Road and Bridge Construction.
- ▶ **Post Construction Stormwater Management Minimum Control Measures** – Develop and implement comprehensive planning procedures and enforcement controls to reduce the discharge of pollutants after construction is complete from areas of new development and significant redevelopment. Develop and implement strategies which include a combination of structural and/or non-structural BMPs; ensure adequate long-term operation and maintenance of BMPs.

These program elements will essentially dictate the construction and post-construction requirements for the Proposed Action and No-Action Alternative, including the local agency projects, and minimize water quality impacts as a result of the development.

5.1.3 Existing Water Quality and Drainage Structures

Several storm sewer outfalls to Clear Creek are within the project area (**Appendix B**). They drain SH 58, I-70, 44th/Tabor, Youngfield Street and McIntyre Street. An existing City of Wheat Ridge/CDOT 54-inch storm sewer and open channel parallels I-70 and Youngfield Street at 38th Avenue and conveys stormwaters to Clear Creek.

Five water retention ponds, spanning the western boundary of the project area, store process water for Coors. These ponds are owned and maintained by Coors. A wetland pilot project, conducted by Coors and the Colorado Division of Wildlife (CDOW), is located in the northern portion of the project area.

The existing storm drainage systems within these basins have little, if any, form of water quality treatment prior to their passing into an adjacent drainage way. The watershed as a whole collects stormwater and conveys it through the area with minor water quality controls.

5.1.4 Existing I-70 and SH 58 Maintenance Operations

CDOT Region 6 maintenance personnel provided information regarding current maintenance operations for the I-70 and SH 58 segments within the project area (CDOT 2005). CDOT has applied traction sand in the past to this area, but is restricting its use due to air quality concerns for particulate matter up to 10 microns in diameter (PM₁₀). The use of traction sand has decreased over the past several years. It is now used locally where accidents have occurred due to ice or snow. Magnesium chloride (liquid) at the normal rate of 40 gallons per lane mile and solid de-icers are replacing traction sand that was normally applied at the rate of about 120 pounds per lane mile. Magnesium chloride is now being used in conjunction with Ice Slicer®, a

solid complex chloride that is applied at the normal rate of about 40 pounds per lane mile. CDOT schedules street sweeping of both I-70 and SH 58 mostly at night. Operations commence after a snowfall and at least once per month throughout the remainder of the year.

The right-of-way is mowed approximately twice per year depending upon the rainfall and the height of weeds and native grasses. A top cut is made in the first 15 feet adjacent to the roadway shoulders before June 30. After July 1st, the remainder is cut. This timing allows migratory birds adequate time to leave their nests. The current maintenance policy acknowledges that de-icing and mowing are necessary for the roadways to function properly. CDOT has modified their maintenance operations as newer technology becomes available in order to lessen the impacts of the highway on the environment.

5.2 Consequences and Mitigating Measures

Consequences that impact water quality from the Proposed Action would occur where there is erosion during construction and where roadway runoff conveys pollutants into Clear Creek. Roadway runoff typically may contain the following pollutants:

- ▶ **Sediment** – solids such as sand, silt, and clays that are washed from paved surfaces or eroded from roadway slopes and become suspended in water. Sediment due to construction is a common water quality problem.
- ▶ **Heavy Metals** – metals such as zinc and copper from fuels, brake pads, and vehicle wear. In the past, lead was a common pollutant, but the use of unleaded gasoline has now substantially reduced this roadway contaminant.
- ▶ **Magnesium chloride and salt** – de-icers used on roads for winter maintenance
- ▶ **Oil and grease** – petroleum hydrocarbons deposited by vehicles on roadways and parking lots

Work within the project area for the Proposed Action and No-Action Alternative, including the local agency projects, will comply with the MS4 permit requirements for each jurisdiction. Mitigating measures during construction will be outlined in the SWMP, which will include a detailed set of erosion control plans as part of the roadway design set. These plans will show temporary measures such as silt fences, hay bales, turf reinforcing mats, inlet protection, stabilized construction entrances and other BMPs. The exact type of measure to be taken will be determined when preliminary and final design occurs. Mitigating measures after construction has been completed, such as permanent BMPs, will also be outlined in the detailed set of erosion control plans.

These detailed plans will be reviewed during the design process by CDOT specialties including environmental, landscape, hydraulics and maintenance. Their input will be incorporated into the design. CDOT Region 6 maintenance personnel prefer water quality ponds as permanent methods. If CDOT has adequate access, they can maintain the ponds and remove the accumulated sediment. The CDOT MS4 permit requires a high rate of sediment removal and properly designed and maintained ponds can achieve that goal. CDOT Maintenance does not want water quality vaults since they are confined spaces and difficult to clean. Currently, there are only three CDOT employees that have confined space training (CDOT 2006). Other permanent methods of providing water quality will be considered. They will include landscape buffers and shallow flat swales. Although they have lesser sediment removal rate than ponds,

they can help remove sediment in peripheral areas where other options are not available (CDOT 2006).

As described above, Clear Creek is currently impaired with respect to *E. coli*. and organic matter. These are not typical pollutants in roadway runoff, and the Proposed Action will not impact Clear Creek with respect to these pollutants.

As discussed in **Section 2.2**, the increase in impervious area associated with the Proposed Action and local agency projects will be minimal. Approximately, an additional 0.007 percent of impervious area would be added to the 500 square mile watershed under the Proposed Action. Potential increase in stormwater flow to Clear Creek from roadway runoff would be negligible. Permanent drainage and water quality facilities (permanent BMPs) are to be included with the final design in order to mitigate adverse impacts to surface water within the project area. Stormwater runoff from paved surfaces currently passes into streams, channels, and drainages without any treatment. Treatment of developed runoff from areas not previously treated will result in an improvement over existing conditions.

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6.0 GROUNDWATER

This section provides information about the groundwater resources within the project area

6.1 Current Conditions

Groundwater resources within the project area include shallow alluvial aquifers and deeper bedrock aquifers such as the Denver, Arapahoe, and Laramie-Fox Hills. The uppermost bedrock aquifer underlying the site is the Denver aquifer, which is formed by the water-yielding part of the Denver Formation. *The Denver Formation* is 800 to 1,000 feet thick, with interbedded shale, silty claystone, and sandstone, as well as thin beds of coal and carbonaceous siltstone; it contains a high proportion of volcanic clasts. It is the least permeable of the aquifers in the area. It yields as much as 200 gallons per minute (gpm), from a saturated thickness of up to 350 feet. Lower yields of 20 to 50 gpm are more typical (VanSlyke 2004). The primary water-bearing zones of the Denver Formation are moderately consolidated sandstone and siltstone layers ranging in thickness from a few inches to 50 feet. Below the Denver Formation is the *Arapahoe Formation*. This is the most permeable aquifer in the area with 400 to 700 feet of sandstone and conglomeratic sandstone interbedded with shale and siltstone. It yields up to 700 gpm from a saturated thickness of up to 400 feet. High yield wells are common (VanSlyke 2004). *The Laramie-Fox Hills* aquifer underlies the Arapahoe Formation. It is moderately permeable, with a combined thickness of up to 250 to 300 feet in sandstone and shale of the lower Laramie Formation and sandstone, siltstone, and interbedded shale of the Fox Hills Sandstone; yields are up to 350 gpm.

Depths to groundwater of 0 to 250 feet are typical in the Denver Basin aquifers (Robson 1989; Robson and Banta 1995). Within the project area, depth to groundwater in young alluvial aquifers on or close to modern floodplains is typically ten feet or less below ground surface, and commonly less than five feet below ground surface. Depth to water table on higher terraces away from the modern floodplain is 10 to 20 feet or more below ground surface.

The major alluvial aquifers in the area typically consist of poorly sorted gravel, alluvial sand and clay in the floodplains and can overlap with eolian sand and silt outside the floodplain. The thickness of the alluvial aquifers is less than 20 feet below the ground surface (Topper et al. 2003).

The basic standard applicable to all groundwater in the state is that “groundwater shall be free of pollutants” that could cause harm to humans or the environment (CDPHE 2005). There are a series of basic quantitative standards for common groundwater pollutants which are based on designated uses of the groundwater as determined on an individual basis by the Water Quality Control Commission. According to the Water Quality Control Commission Regulation 42 “Site-Specific Water Quality Classifications and Standards for Ground Water,” the project area does not have a use designated for the groundwater; therefore, no specific quantitative groundwater standards are currently applicable.

Although no specific quantitative groundwater standards are currently applicable, the potential exists for residual groundwater contamination with volatile organic compounds (VOCs) and petroleum hydrocarbons to be present within the project area due to the area’s history of industrial, agricultural, and commercial land uses. Several areas associated with the proposed action were identified as having known (current & historic) or potential soil or groundwater

contamination. Details of the sites can be found in the Modified Phase 1 Environmental Site Assessment (FHU 2006).

6.2 Consequences and Mitigating Measures

The construction activity associated with the Proposed Action and local agency projects will probably require dewatering and ultimate discharge into Clear Creek. Should the groundwater be found to be contaminated it will be hauled off-site for proper disposal. Groundwater brought to the surface during dewatering activities may contain pollutants and sediment that would impact water quality standards if allowed to discharge directly to the creek. Potential temporary dewatering will require a General Permit from CDPHE for dewatering discharges which prevents direct discharge to the creek and therefore controls any possible contaminants that would have otherwise entered the creek. Temporary sedimentation ponds or filtering apparatus may be needed to remove sediment from groundwater prior to discharge. In addition, concrete washout basins will be constructed and used as needed to protect state waters, such as Clear Creek, during construction. If dewatering is necessary, groundwater brought to the surface will be managed according to Section 107.25 Water Quality Control of the *CDOT Standard Specifications for Road and Bridge Construction* (CDOT 1999).

7.0 WATER RESOURCES SUMMARY MATRIX

Table 7-1 summarizes the Existing Conditions, local agency projects, and Proposed Action impacts for floodplains, irrigation systems, water quality and groundwater resources within the project area.

Table 7-1 Water Resources Summary Matrix

Screening Measure	Existing Conditions	1. Youngfield St. Improvements 38 th to 44 th Avenue 2. 40 th Avenue Underpass 3. Cabela Drive from 40 th Avenue to just north of Clear Creek 4. I-70/SH 58 Interchange Improvements	Proposed Action 1. I-70/32 nd Avenue Hook Ramps 2. I-70/Ward Road Interchange
Floodplains- Minimization of Impacts	Floodplains found along Clear Creek.	1. No impact from Youngfield Street improvements. 2. No impacts from 40 th Avenue. 3. Cabela Drive will require a new bridge over Clear Creek which would require fill within the flood fringe areas, a deck drainage system, and other impacts to Clear Creek. 4. I-70/SH 58 impacts will be minimal and are addressed in the Finding of No Significant Impact (FONSI) (CDOT 2004).	None of the above projects will impact a regulatory floodplain
Irrigation Systems - Minimization of Impacts	Numerous irrigation systems cross the project area.	1. Youngfield will span the Wadsworth Ditch without impacts. 2. No impacts from 40 th Avenue. 3. Cabela Drive will require crossing over several ditches which would require in-kind replacement and mitigation. 4. I-70/SH 58 impacts are addressed in the FONSI (CDOT 2004). At least one ditch is expected to be impacted.	1. I-70/32 nd Hook Ramps will require crossing over several ditches which would require in-kind replacement and mitigation. Coordination and approval from the impacted ditch companies will be required. 2. A segment of the existing irrigation facilities may be required at Ward Road.
Water Quality Systems – Ability to Incorporate	Stormwater runoff from paved surfaces currently pass into the streams, channels, and drainages without any treatment.	All above CDOT and local agency projects will be required to provide a SWMP and BMP's during construction and permanent BMP's per their respective MS4 permits after construction has finished. This will include the treatment of developed runoff from areas not previously treated resulting in an improvement over existing conditions.	All above Proposed Action projects will be required to provide a SWMP and BMP's during construction and permanent BMP's per their respective MS4 permits after construction has finished. This will include the treatment of developed runoff from areas not previously treated resulting in an improvement over existing conditions to the maximum extent practicable.
Groundwater - Minimization of Impacts	Groundwater potentially exists at depths of 0 to 250 feet	All above CDOT and local agency projects will be required to obtain dewatering permits from the CDPHE prior to construction if dewatering is anticipated (subject to geotechnical investigation or construction conditions). If needed, water will be treated prior to being releasing into the Clear Creek system or hauled off-site for proper disposal.	All above Proposed Action projects will be required to obtain dewatering permits from the CDPHE prior to construction if de-watering is anticipated (subject to geotechnical investigation). If needed, water will be treated prior to being releasing into the Clear Creek system or hauled off-site for property disposal.

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8.0 REFERENCES

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APPENDIX A STATE OF THE WATERSHED REPORT

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TABLE 1

CLEAR CREEK WATERSHED FORUM ROSTER

Congressional:	Colorado Division of Minerals & Geology
John Swartout for Senator Wayne Allard	Colorado Division of Wildlife
David Smith for Representative David Skaggs	Colorado Water Quality Control Commission
	Denver Regional Council of Governments
	Metro Wastewater Reclamation District
	Urban Drainage & Flood Control District
State Legislature:	USDA Forest Service
	- Arapaho and Roosevelt National Forests
	- Clear Creek Ranger District
Senator Sally Hopper	USDA Natural Resources Conservation Service
Senator Ed Perlmutter	USDI Bureau of Land Management
Representative Moe Keller	U.S. Army Corps of Engineers
Representative Tony Grampsas	U.S. Environmental Protection Agency
Representative Bryan Sullivant	U.S. Geological Survey
Counties:	Organizations/Companies:
Adams County	Berkeley Neighborhood Association
Clear Creek County	BFI of Colorado
Gilpin County	Black Hawk Casino Owners Association
Jefferson County	Canyon Defense Coalition
	Central City Casino Association
Cities:	Clear Creek Land Conservancy
City of Arvada	Clear Creek Rafting Company
City of Black Hawk	Clear Creek Water Users Alliance
City of Central	Climax Molybdenum Company
City and County of Denver	Colorado School of Mines
Town of Empire	Conservation Services, Inc.
City of Golden	Cooley Gravel Company
Town of Georgetown	Coors Brewing Company
City of Idaho Springs	Environmental Defense Fund
City of Northglenn	Golden Earth Days Council
Town of Silver Plume	Golden Gate Canyon State Park
City of Thornton	Idaho Springs Historical Society
City of Westminster	Industrial Chemicals Corporation
City of Wheat Ridge	ITEC Mineral Inc.
	Jack Pine Mining Company
Agencies:	Mt. Vernon Country Club Metropolitan District
Colorado Department of Natural Resources	Oulette Ditch Company
- Division of Minerals and Geology	Public Service Company
- Division of Wildlife	Southeast Arvada/Jeffco Property Owners Association
- Water Conservation Board	Sundstrand Corporation
Colorado Department of Public Health & Environment	The Consolidated Mutual Water Company
- Hazardous Materials and Waste Management	The League of Women Voters
Division	Trout Unlimited
- Water Quality Control Division	Upper Clear Creek Watershed Advisory Group
Colorado Department of Transportation	Upper Clear Creek Watershed Association
Colorado Department of Local Affairs	Western Mobile, Inc.
- Division of Local Government	Wheat Ridge United Neighborhoods

Source: State of the Watershed Report 1997,
Clear Ck. Colorado, From EPA Region 8 website.

TABLE 2
CLEAR CREEK WATERSHED
PROJECT 2000 LIST

	PROJECT DESCRIPTION	LEAD AGENCY	SECONDARY PARTNERS
1	Orphan Site Demonstration Project		
2	North Empire Creek Reclamation	CDMG	Clear Creek County, EPA
3	Groundwater Contamination in Idaho Springs at Virginia Canyon	CDPHE	EPA Superfund
4	Upper Virginia Canyon Reclamation	CDMG	Local agencies
5	Idaho Springs Big Five Stream & Bank Restoration & Bike Path	Idaho Springs	EPA, CDOT
6	I-70 Erosion Problem Assessment	CDOT	
7	Waldorf Mine Clean-up	USFS	EPA, CDPHE, Clear Creek County
8	North Clear Creek Habitat Restoration	CCF	EPA, CDOW, Casino Assoc.
9	McClelland Mine Drainage Treatment	CDMG	EPA, CDPHE
10	ISDS Location and Failure Evaluation	CCF	Clear Creek & Gilpin Counties, UCCWA
11	Last Two Segments of Clear Creek Trail	Adams County	
12	Gregory Incline, National and Quartz Hill Pipeline	CDPHE	EPA Superfund, Casinos
13	Rafting and Recreation Plan	CCF	
14	Loveland Pass Hazardous Spill Assessment	CDOT	
15	Long Term Watershed Vision	CCF	
16	Lower Basin Landfill Identification /Clean-up		
17	Rockford Tunnel Reclamation		
18	Clear Creek Canyon Acquisition	Jefferson County	CCLC

	PROJECT DESCRIPTION	LEAD AGENCY	SECONDARY PARTNERS
19	Clear Creek Habitat Restoration	CCF	CDOW
20	Urban and Stormwater Assessment	DRCOG	Urban Drainage and Flood Control
21	Headwater Quality Characterization		CDOW
22	Precipitation Characterization		
23	Land Use Map Update	EPA	USFS, BLM
24	Emergency Response Plan	CDPHE	EPA, UCCWA, SLUG
25	Wetlands Identification	UCCWA	EPA
26	Water Quality and Quantity Database	WAG	State Engineers Office, EPA
27	Pozo Reclamation	DMG	
28	Georgetown Reservoir Study	USGS	EPA, CDPHE, UCCWA
29	Little Bear Mine Clean-up	USFS	Coors, EPA, CDPHE
30	Boat Chutes on 3 Low-head Dams at I-25 and I-76	CCF	CDOT, Adams & Jefferson Counties, Cities of Arvada and Wheat Ridge
31	Coordinated River Trails Plan With Stream Bank/Riparian Effort	CCF	
32	Flood Control at Silver Plume		
33	Argo Tailings Stabilization	CDPHE	EPA Superfund
34	Big Five Waste Rock Reclamation	CDPHE	CDOT, EPA Superfund
35	Quartz Hill Tailings Clean-up	CDPHE	EPA Superfund
36	Boodle Mill Reclamation	CDPHE	EPA Superfund, BLM, Central City
37	Chase Gulch Tailings Clean-up	CDPHE	EPA Superfund
38	Gregory Gulch Flume Project	Central City	EPA, CDPHE, Casinos
39	Superfund Drinking Water Project	CDPHE	EPA Superfund
40	Twins Inn Clean-up	EPA	
41	Golden Gilpin Mill Site Clean-up	CDPHE	EPA Superfund, CDMG

TABLE 3
ADOPT-A-GAGE PROGRAM

GAGE NAME	PERIOD OF RECORD	ADOPTED BY
Loveland Ski Area	May 1995 to present	Loveland Ski Area
Bakerville (staff)	Oct. 1994 to present	Standley Lake Cities
South Clear Creek above Naylor Creek	May 1996 to present	FHA
South Clear Creek above Lower Cabin Creek Res.	Oct. 1994 to present	FHA
South Clear Creek	Oct. 1994 to present	FHA
Leavenworth Creek	Oct. 1994 to present	City of Black Hawk UCCWA
Clear Creek above George-town Reservoir	July 1997 to present	EPA
Clear Creek below George-town Reservoir	July 1997 to present	EPA
Upper Clear Creek	Oct. 1994 to present	EPA
Berthoud Falls (staff)	Oct. 1994 to present	Climax Molybdenum Co. Town of Empire
Hoop Creek	April 1997 to present	CDOT
West Fork Clear Creek	Oct. 1994 to present	City of Golden
Lawson	1946 to present	Standley Lake Cities
Fall River (staff)	Oct. 1994 to present	Central City St. Mary's Water & San.
Chicago Creek	Oct. 1994 to present	City of Idaho Springs
Kermits	Oct. 1994 to present	City of Black Hawk
North Clear Creek above Chase Gulch (staff)	Oct. 1994 to present	Gilpin County
North Clear Creek	Oct. 1994 to present	City of Black Hawk
Golden	Oct. 1974 to present	Clear Creek Water Users Alliance

TABLE 4

CLEAR CREEK WATER RIGHTS PRIORITY LIST

	Priority	Approp. Date	Amount (cfs)	Accum. Amount(cfs)
AGRICULTURAL DITCH				
	2	5-15-60**	1.640	1.640
	4	5-19-60	0.675	2.315
	5	5-31-60	3.830	6.145
	7	6-14-60	1.120	7.265
	13	5-14-61	0.098	7.363
	14	6-02-61	1.120	8.483
	15	6-11-61	0.390	8.873
	21	6-01-62	0.150	9.023
	44	5-16-65	0.163	9.186
	61	11-21-74	101.540	110.726
	67	3-24-83	48.460	159.186
	75	3-27-88	55.000	214.186
BAYOU DITCH ASSOCIATION (Slough Ditch)				
Wadsworth	1	2-25-60	3.034	3.034
Lees & Baugh	2	5-15-60	3.370	6.404
Swadley	13	5-14-61	4.683	11.087
Graves North	17	6-30-61	1.750	12.837
Slater	20	5-16-62	1.800	14.637
Swadley	21	6-01-62	4.650	19.287
Sayer & Lees	22	6-14-62	7.000	26.287
Sanderson & Slater	23	7-01-62	0.900	27.187
Wolff	24	7-05-62	3.060	30.247
Wolff North	25	7-05-62	2.000	32.247
Wadsworth & Graves	26	7-10-62	1.350	33.597
Graves South	28	5-21-63	3.000	36.597
Bluff	29	5-26-63	2.600	39.197
Juchen & Oulette	30	5-28-63	1.610	40.807
Slater & Moody	32	6-20-63	1.250	42.057
Rhodes Middle	33	8-01-63	3.000	45.057
Cort & Graves	35	5-01-64	6.000	51.057
Bluff	36	5-27-64	2.400	53.457
Wolff	38	6-14-64	3.780	57.237
Lane	39	6-20-64	11.000	68.237
Wolff	43	5-06-65	2.060	70.297
Swadley	44	5-16-65	3.202	73.499
Brown & Baugh	45	5-26-65	10.000	83.499
Graves North	46	6-13-65	1.860	85.359
Rhodes South	47	7-05-65	3.160	88.519
Wadsworth	48	11-02-65	8.882	97.401
North Side	50	4-30-67	2.000	99.401
Wadsworth & Graves	60	5-05-74	4.920	104.321

	Priority	Approp. Date	Amount (cfs)	Accum. Amount(cfs)
CHURCH DITCH				
	21	6-01-62	0.900	0.900
	40	2-28-65	41.430	42.330
	44	5-16-65	1.250	43.580
	62	11-18-77	18.260	61.840
	65	11-15-78	18.850	80.690
	66	11-20-81	32.340	113.030
	72	3-16-86	100.120	213.150
	74	3-16-86	88.270	301.420
CITY OF GOLDEN				
	5	5-31-60	3.420	3.420
	10	4-30-61	1.450	4.870
	12	5-13-61	4.660	9.530
	13	5-14-61	0.844	10.374
	21	6-1-62	0.920	11.294
CLEAR CREEK & PLATTE RIVER DITCH (Lower Clear Creek Ditch)				
	18	11-01-61	49.500	49.500
	34	11-05-63	0	Transfer see Colo. Ag. Ditch
COLORADO AGRICULTURAL DITCH				
	34	11-05-63	20.560	20.560
	49	3-05-67	30.200	50.760
	59	4-05-74	31.800	82.560
CORT, GRAVES AND HUGHES DITCH				
	10	4-30-61	2.930	2.930
CROKE CANAL				
	76	3-04-1902	944.000	944.000
	76A	3-04-1902	1056.000	2000.000
FARMERS HIGH LINE CANAL				
	1	2-25-60	0.276	0.276
	3	5-16-60	1.000	1.276
	5	5-31-60	3.281	4.557
	9	7-01-60	39.800	44.357
	30	5-28-63	1.610	45.967
	32	6-20-63	2.750	48.717
	42	4-23-65	2.890	51.607
	48	11-02-65	0.808	52.415
	54	5-2		

	Priority	Approp. Date	Amount (cfs)	Accum. Amount(cfs)
	4-70	0.330	52.745	
	57	4-01-72	154.00	206.745
	68	4-01-86	191.00	397.745
	69	4-23-95	335.86	733.605
FISHER DITCH				
	16	6-29-61	35.000	35.000
KERSHAW DITCH				
	11	5-02-61	11.440	11.440
LEE, STEWARD & ESKINS DITCH				
	12	5-13-61	2.7355	2.7355
	27	4-17-63	2.180	4.9155
	51	2-23-68	4.300	9.2155
	53	3-31-69	19.770	28.9855
	56	4-13-71	6.940	35.9255
MILES AND ESKINS DITCH				
	15	6-11-61	3.610	3.610
RENO & JUCHEMS DITCH				
	13	4-14-61	0.375	0.375
	21	6-01-62	2.380	2.755
	42	4-23-65	2.890	5.645
ROCKY MOUNTAIN DITCH				
	19	5-01-62	9.210	9.210
	37	5-31-64	7.300	16.570
	41	3-31-65	47.130	63.640
	58	3-15-72	113.660	177.300
	64	3-16-78	12.700	190.000
WANNAMAKER DITCH				
	6	6-01-60	8.000	8.000
	52	11-05-68	13.000	21.000
WELCH DITCH (Golden Ditch)				
	4	5-19-60	0.225	0.225
	12	5-13-61	1.300	1.525
	55	2-11-71	26.000	27.525
	75A	6-02-1900	24.000	51.525

Source: Clear Creek Water Users Alliance
 ** All dates 1800s unless specifically noted.

TABLE 5

DECREEED IN-STREAM FLOWS

TRIBUTARY	SEGMENT (Appropriation Date)	LENGTH (Miles)	CUBIC FEET PER SECOND (cfs)
Bard Creek	headwaters to confluence w/ West Fork (7/13/1984)	7	1.50
Beaver Brook	confluence N. Beaver Brook to confluence w/ Soda Creek (12/11/1987)	3.2	0.50 (4/16-7/31) 0.25 (8/1-4/15)
Beaver Brook	confluence w/ Soda Creek to confluence w/ Clear Creek (12/11/1987)	3.0	1.50 (4/16-7/31) 1.00 (8/1-4/15)
Chicago Creek	headwaters to inlet of Chicago Creek Reservoir (3/14/1986)	2.4	1.50
Chicago Creek	downstream of Chicago Creek Reservoir Dam to confluence w/ Clear Creek (3/14/1986)	3.0	2.00
Chicago Creek	confluence w/ W. Chicago Creek to confluence w/ Clear Creek (3/14/1986)	6.5	3.50
Clear Creek (main stem)	headwaters to confluence w/ S. Clear Creek (7/13/1984)	13.5	10.00
Fall River	unnamed tributary (located by lat/long) to confluence w/ Clear Creek (7/24/1995)	8.5	5.25 (5/1-9/30) 2.00 (10/1-4/30)
Herman Gulch	headwaters to confluence w/ Clear Creek (7/13/1984)	3.5	2.00
Leavenworth Creek	headwaters to confluence w/ S. Clear Creek (11/15/1984)	7.1	1.50
Little Bear Creek	headwaters to confluence w/ Soda Creek (12/11/1987)	3.0	1.00
Mill Creek	outlet Bill Moore Lake to confluence w/ Clear Creek (11/6/1995)	6.9	4.75 (4/15-8/15) 3.25 (8/16-9/15) 1.00 (9/16-4/14)
North Clear Creek	confluence w/ Pine Creek to confluence w/ Quartz Valley Gulch (12/11/1987)	5.5	1.50
Ralston Creek	confluence w/ unnamed tributary (located by lat/long) to confluence w/ Deer Creek (9/5/1986)	7.6	0.50

Soda Creek	confl w/ unnamed tributary (located by lat/long) to confl w/ Beaver Brook (12/11/1987)	3.2	1.00
Soda Creek	confl w/ unnamed tributary to confl w/ Clear Creek (12/11/1987)	3.2	1.00
S. Chicago Creek	headwaters to confl w/ Chicago Creek (7/13/1984)	2.9	1.00
S. Clear Creek	confl w/ unnamed tributary (located by lat/long) to inlet of Lower Cabin Reservoir (12/11/1987)	2.9	3.00
W. Chicago Creek	headwaters to confl w/ Chicago Creek (7/13/1984)	7.0	1.50
W. Fork Clear Creek	headwaters to confl w/ Woods Creek (7/13/1984)	4.3	7.00
W. Fork Clear Creek	confl w/ Woods Creek to confl w/ Clear Creek (12/11/1987)	9.1	11.00 (4/1-10/31) 5.00 (11/1-3/31)
Woods Creek	headwaters to confl w/ lake (located by lat/long) (7/13/1984)	2.2	1.00

Source: Colorado Water Conservation Board

TABLE 6RECOMMENDED IN-STREAM FLOWS

TRIBUTARY	SEGMENT	LENGTH (Miles)	cfs
Clear Creek	outlet Georgetown Lake to confl w/ West Fork	2.7	25.00 (4/15-10/31) 7.0 (11/1-4/14)
Clear Creek	confl w/ West Fork to confl w/ Fall River	5.9	31.00 (4/15-10/31) 13 (11/1-4/14)
Clear Creek	confl w/ Fall River to confl w/ Chicago Creek	2.2	35.00 (4/15-10/31) 17.00 (11/1-4/14)
Clear Creek	confl w/ Chicago Creek to confl w/ North Fork	8.3	47.00 (4/15-10/31) 31.00 (11/1-4/14)
Clear Creek	confl w/ North Fork to Stream Gage at Golden	11.4	56.00 (4/15-10/31) 37.00 (11/1-4/14)
Deer Creek	headwaters to confl w/ Ralston Creek	2.3	1.00 (4/15-7/14) 0.50 (7/15-8/14) 0.30 (8/15-4/14)
Nott Creek	headwaters to confl w/ Ralston Creek	3.2	1.00 (4/15-7.14) 0.50 (7/15-8/14) 0.20 (8/15-4/14)
Ralston Creek	Homestead Ditch to Ward Road	3.3	3.00 (5/1-8/31) 1.50 (9/1-4/30)
Ralston Creek	Ward Road to Old Wadsworth Boulevard	3.8	4.00 (5/1-8/31) 1.00 (9/1-4/30)

Source: Colorado Division of Wildlife

TABLE 7

DITCH MANAGEMENT & UTILIZATION TABLE

DITCH	MANAGED BY	MAJOR SHAREHOLDERS (% Interest)
Agricultural Ditch	Agricultural Ditch and Reservoir Company	Coors Brewing Company (14%) Consolidated Mutual Water Company (37%)
Bayou Ditch Association (Slough Ditch)	Bayou Ditch Association	City of Arvada (30%) Coors Brewing Company (17%)
Church Ditch	Church Ditch Company	City of Arvada (15%) City of Northglenn (16%) City of Thornton (7%) City of Westminster (47%)
City of Golden Diversion	City of Golden	City of Golden (100%)
Clear Creek & Platte River Ditch (Lower Clear Creek Ditch)	Lower Clear Creek Ditch Company	City of Thornton (49%)
Colorado Agricultural Ditch	Colorado Agricultural Ditch Company	City of Thornton (41%)
Cort, Graves & Hughes Ditch	Rocco Pantano	City of Arvada (80%)
Croke Canal	Farmers Reservoir & Irrigation Company	City of Northglenn (20%) City of Thornton (14%) City of Westminster (39%)

Farmers High Line Canal	Farmers High Line Canal and Reservoir Company	City of Arvada (11%) Coors Brewing Company (7%) City of Thornton (16%) City of Westminster (49%)
Fisher Ditch	Fisher Ditch Company	Public Service Company (56%) City of Thornton (14%)
Kershaw Ditch	Kershaw Ditch Company	City of Westminster (76%)
Lee, Stewart & Eskins Ditch	Consolidated Mutual Water Company	Consolidated Mutual Water Company (41%)
Manhart Ditch	Manhart Ditch Company	City of Arvada (28%) City of Westminster (39%)
Miles & Eskins Ditch	Coors Brewing Company	Coors Brewing Company (100%)
Reno & Juchem Ditch	Juchem Ditch Company	City of Arvada (52%)
Rocky Mountain Ditch	Rocky Mountain Ditch Company	Coors Brewing Company (70%)
Wannamaker Ditch	Wannamaker Ditch Company	Coors Brewing Company (70%)
Welch Ditch (Golden Ditch)	Agricultural Ditch and Reservoir Company	Consolidated Mutual Water Company (56%) Coors Brewing Company (6%)

Source: Clear Creek Water Users Alliance

TABLE 8RESERVOIRS AND OWNERS

RESERVOIR	STORAGE (acre-feet)	OWNER
Braukman	102	Agricultural Ditch & Reservoir Company
Upper Chinns	100	
Lower Chinns	102	
Fall River	890	
Loch Lomond	875	
Lake Caroline	144	
Reynolds	55	
Braukman	102	
Ice Lake	511	
Hole-in-the-Ground	28	Central City
Chase Gulch	600	
Arvada	5,800	City of Arvada
Pomona #2 & #3	80	
Upper Urad	320	City of Golden
Lower Urad	252	
Idaho Springs	215	City of Idaho Springs
Reynolds	55	
Standley	42,380	Farmers Reservoir & Irrigation Company
Fairmont	979	Consolidated Mutual Water Company
Maple Grove	1,043	
Duke Lake	295	Coors Brewing Company
Rolling	26	
St. Mary's Lake	47	
Churches	48	Denver Water Board
Upper Long Lake	1,500	
Lower Long Lake	292	
Ralston	13,200	
Broad	92	Farmers High Line Canal & Reservoir Company
Hyatt	1,095	
Leyden	1,152	
Upper Beaver Brook	257	Lookout Mountain Water District
Lower Beaver Brook	30	
Lookout Mountain	100	

Upper Cabin Creek	1,577	Public Service Company
Lower Cabin Creek	1,988	
Clear Lake	590	
Copeland Lake	73	
Dewey	54	
Green Lake	270	
Murray	80	
Silver Dollar Lake	440	
Georgetown	292	Town of Georgetown
Murray	80	
Hidden Lake (Mayham)	270	Mayham Reservoir Company
Tucker Lake	586	Dever View Reservoir & Irrigation Company
Jim Baker	900	City of Westminster

Source: DAMS Database

TABLE 9
CLEAR CREEK STREAM SEGMENTS AND USE
CLASSIFICATIONS

Segment #	Segment Description	Use Classification
1	Main stem of Clear Creek, including all tributaries, lake and reservoirs, from the source to the I-70 bridge above Silver Plume.	Aquatic Life Cold Water 1 Recreation 2 Water Supply Agriculture
2	Main stem of Clear Creek, including all tributaries, lakes and reservoirs, from above Silver Plume to the Argo Tunnel discharge, except for specific listings in Segments 3 through 10.	Aquatic Life Cold Water 1 Recreation 1 Agriculture
3a	Main stem of South Clear Creek, including all tributaries, lakes and reservoirs, from the source to the confluence with Clear Creek, except for the specific listing in 3b	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
3b	Main stem of Leavenworth Creek from source to confluence with South Clear Creek.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
4	Main stem of West Clear Creek from the source to the confluence with Woods Creek.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
5	Main stem of West Clear Creek from the confluence with Woods Creek to the confluence with Clear Creek.	Aquatic Life Cold Water 1 Recreation 2 Agriculture
6	All tributaries to West Clear Creek, including all lakes and reservoirs, from the source to the confluence with Clear Creek, except for specific listings in Segments 7 and 8.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
7	Main stem of Woods Creek from the outlet of Upper Urad Reservoir to the confluence with West Clear Creek	Aquatic Life Cold Water 2 Recreation 2
8	Main stem of Lion Creek from the source to the confluence with West Clear Creek.	Aquatic Life Cold Water 2 Recreation 2
9	Main stem to the Fall River, including all tributaries, lakes and reservoirs, from the source to the confluence with Clear Creek.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
10	Main stem of Chicago Creek, including all tributaries, lakes and reservoirs, from the source to the confluence with Clear Creek.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture

11	Main stem of Clear Creek from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture
12	All tributaries to Clear Creek, including all lakes and reservoirs, from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden, except for specific listings in Segment 13.	Aquatic Life Cold Water 2 Recreation 2 Water Supply Agriculture
13	Main stem of North Clear Creek, including all tributaries, lakes and reservoirs from the source to the confluence with Clear Creek.	Aquatic Life Cold Water 2 Recreation 2 Agriculture
14	Main stem of Clear Creek from the Farmers Highline Canal diversion in Golden to Youngfield Street in Wheat Ridge.	Aquatic Life Warm Water 2 Recreation 2 Water Supply Agriculture
15	Main stem of Clear Creek from Youngfield Street in Wheat Ridge to the confluence with the South Platte River.	Aquatic Life Warm Water 1 Recreation 2 Water Supply Agriculture
16	All tributaries to Clear Creek from the Farmers Highline Canal diversion in Golden to the confluence with the South Platte River, except for specific listings in Segments 17 and 18.	Aquatic Life Warm Water 2 Recreation 2 Agriculture
17	Main stem of Ralston Creek from the source to the outlet of Arvada Reservoir, including Ralston Reservoir, Upper Long Lake and Arvada Reservoir.	Aquatic Life Cold Water 2 Recreation 2 Water Supply Agriculture
18a	Main stem of Ralston Creek from the outlet of Arvada Reservoir to the Croke Canal Diversion Structure on Ralston Creek, and the main stem of Leyden Creek from its source to the Farmers' Highline Canal diversion structure of Leyden Creek.	Aquatic Life Warm Water 2 Recreation 2 Water Supply Agriculture
18b	Main stem of Ralston Creek from the Croke Canal Diversion structure to the confluence with Clear Creek. All tributaries to Ralston Creek including all lakes and reservoirs, from the source of Ralston Creek to the confluence with Clear Creek except for specific listings in Segments 17 and 18a.	Aquatic Life Warm Water 2. Recreation 2 Agriculture
19	All tributaries to Clear Creek, including lakes and reservoirs, within the Mt. Evans Wilderness Area.	Aquatic Life Cold Water 1 Recreation 1 Water Supply Agriculture

APPENDIX B CITY STORM SEWER MAPS

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CORP.

CO

YOUNGFIELD SERVICE RD

YOUNGFIELD ST

32ND AVE

31ST

AVE

WRIGHT

WRIGHT ST

CT

WARD RD

VIVIAN CT

35TH AVE

VIVIAN DR

34TH PL

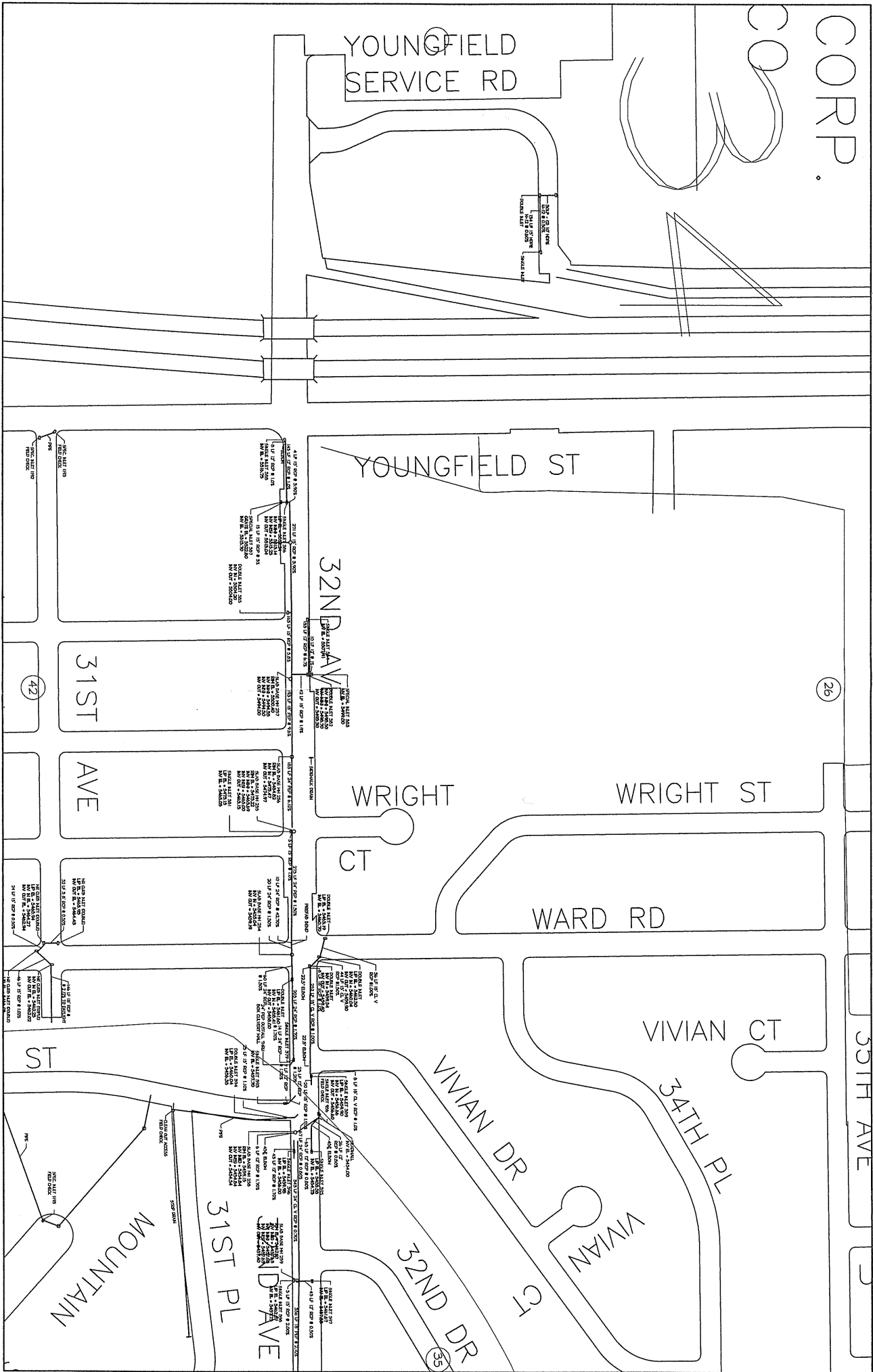
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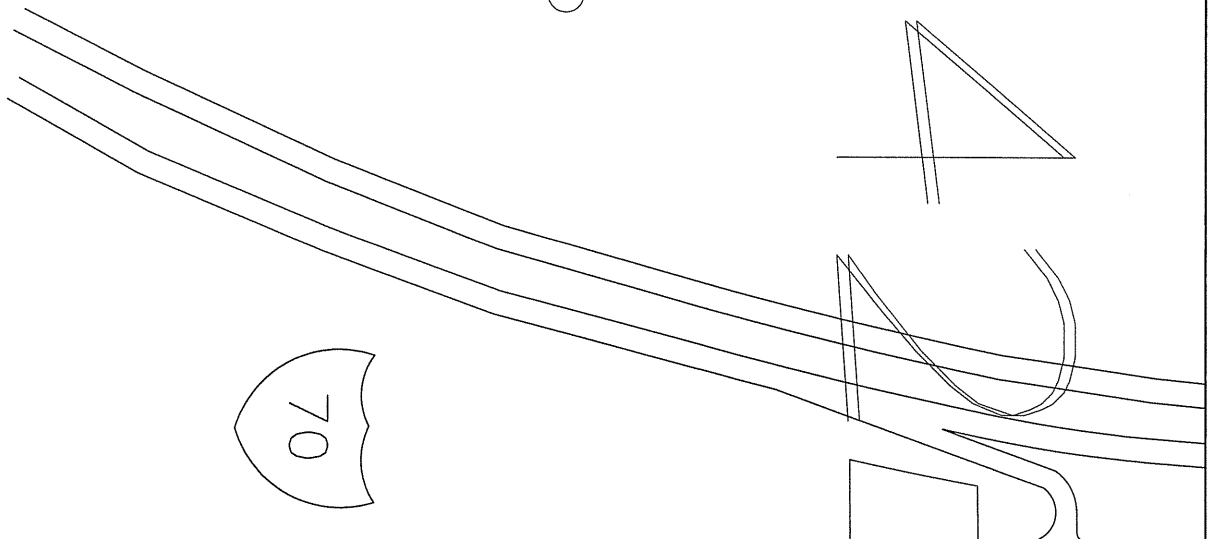
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31ST PL

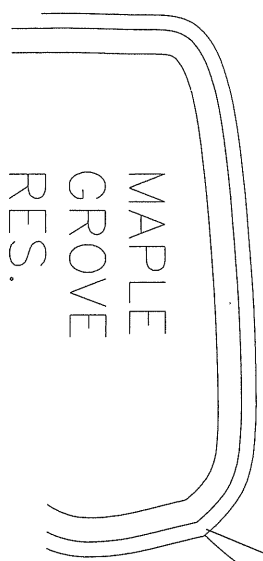
31ST AVE

MOUNTAIN





LAKEWOOD



MAPLE GROVE RES.

XENON ST

34

WRIGHT CT

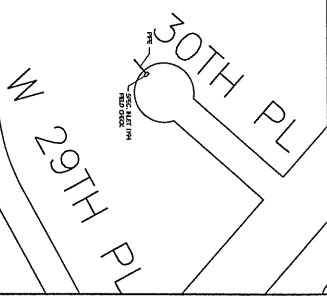
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WRIGHT ST

WARD CT

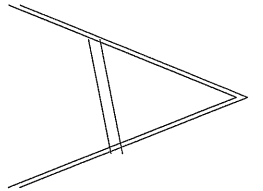
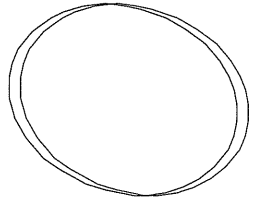
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VIVIAN



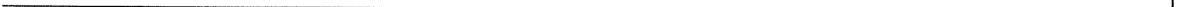
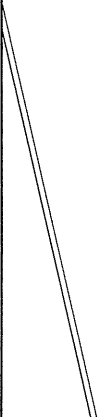
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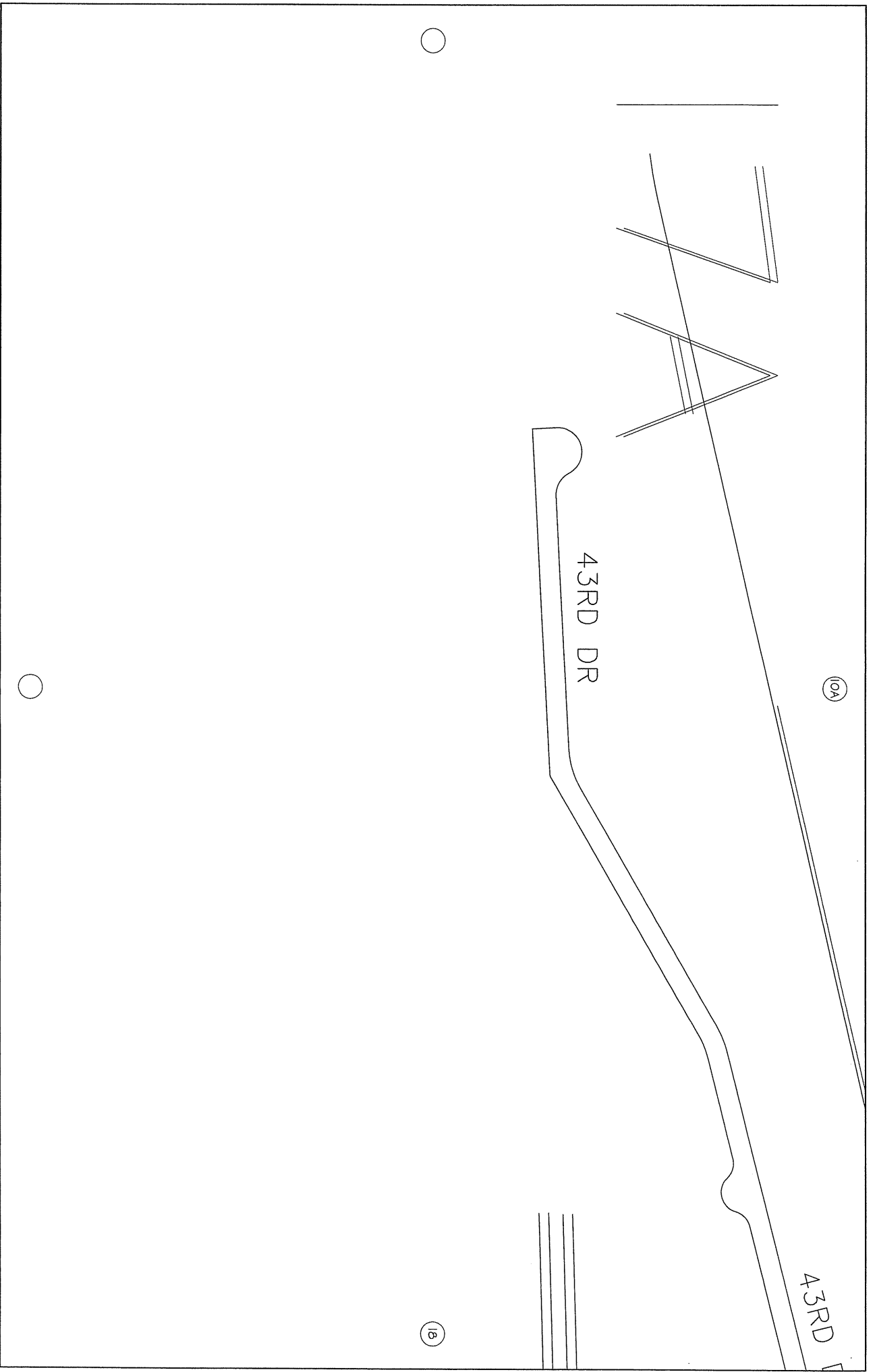
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43RD DR

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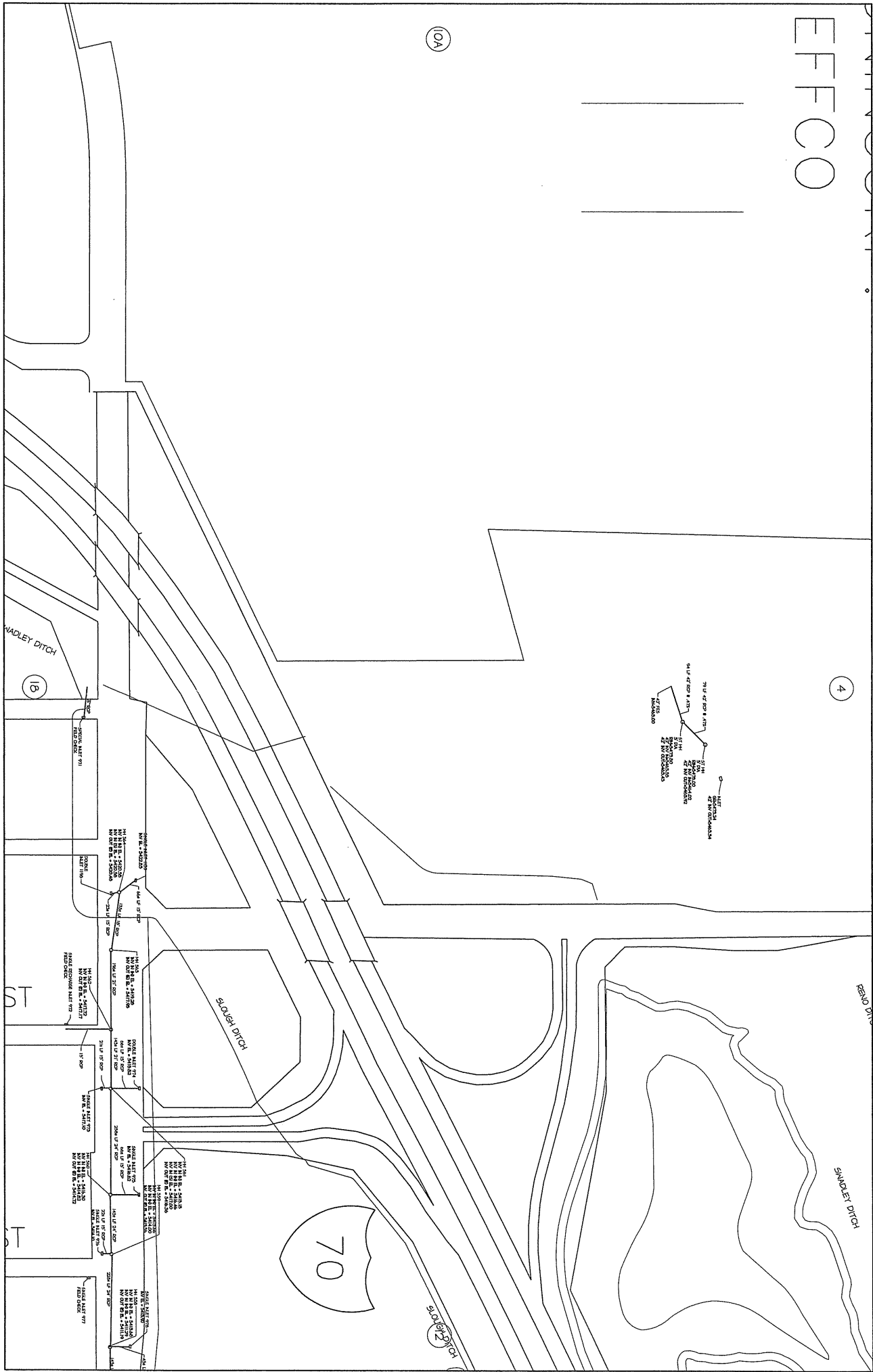
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101A



WADLEY DITCH

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SLOUGH DITCH

70

SLOUGH DITCH

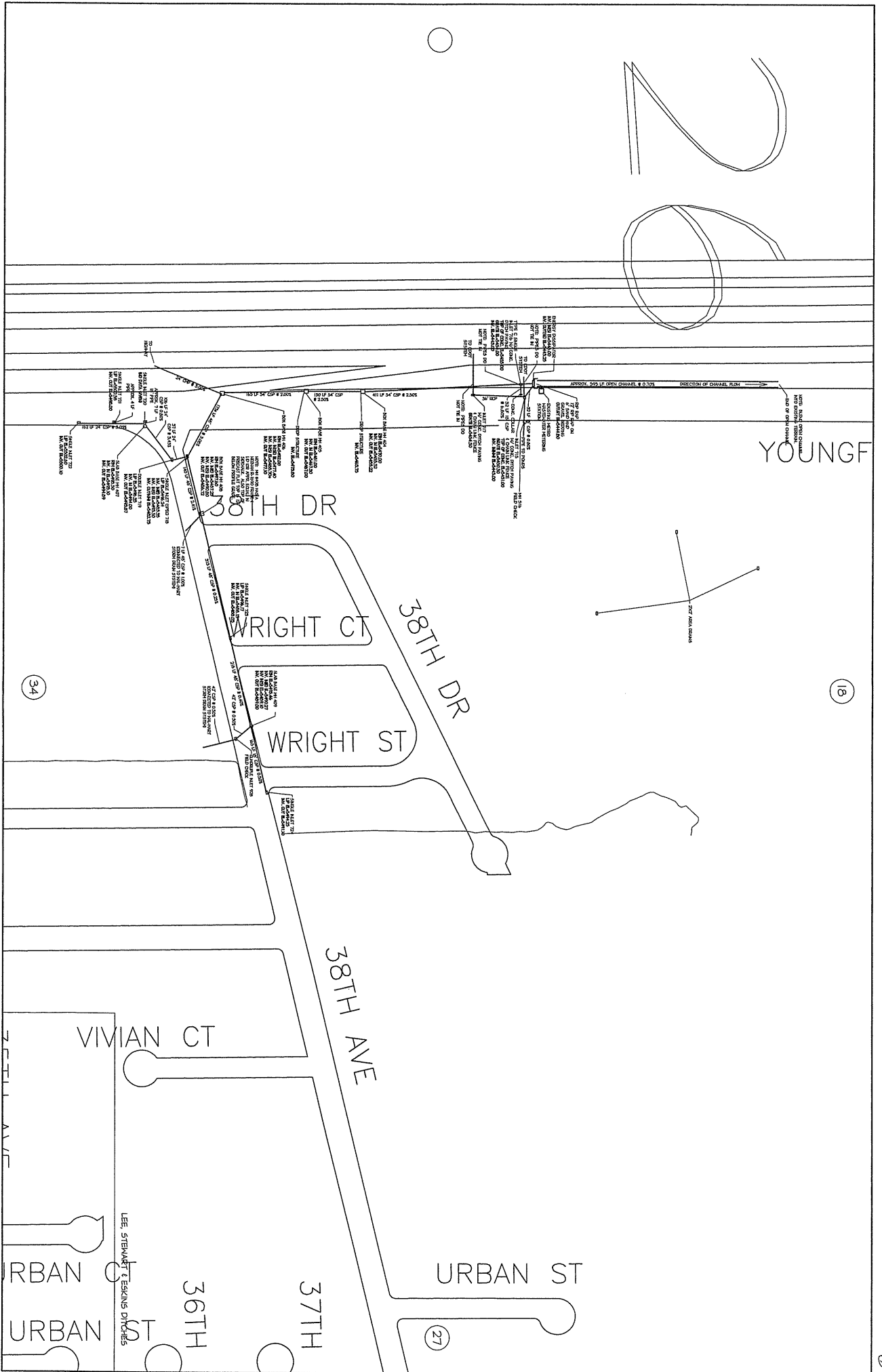
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**APPENDIX C-1 MS4 INFORMATION FOR
JEFFERSON COUNTY**

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State of Colorado General Permit Application

Stormwater Discharges Associated With
Municipal Separate Storm Sewer Systems
(MS4s)



Permit Application for Jefferson County
Stormwater Phase II
March 10, 2003
Revised December 30, 2003

TABLE OF CONTENTS

General Permit Application-----4

Attachment A - County Location Map-----7A

Attachment B - Program Perspective-----8

17 Attachment C - Public Education And Outreach On Stormwater Impacts Minimum Measure.... 10

 Goal Statement And Target Audience-----10

 Adopted Regulations And Guidelines-----10

 Existing Best Management Practices-----10

 Proposed Best Management Practices-----12

 Public Education And Outreach Measurable Goals-----13

 Area Where Program Will Be Implemented-----13

2 Attachment D - Public Involvement/Participation Minimum Measure-----14

 Goal Statement And Target Audience-----14

 Adopted Regulations And Guidelines-----14

 Existing Best Management Practices-----14

 Proposed Best Management Practices-----16

 Public Involvement/Participation Measurable Goals-----16

 Area Where Program Will Be Implemented-----16

3 Attachment E - Illicit Discharge Detection And Elimination Minimum Measure-----17

 Goal Statement And Target Audience-----17

 Adopted Regulations And Guidelines-----17

 Existing Best Management Practices-----17

 Proposed Best Management Practices-----19

 Illicit Discharge Measurable Goals-----20

 Area Where Program Will Be Implemented-----20

4 Attachment F - Construction Site Stormwater Runoff Control Minimum Measure-----21

Goal Statement And Target Audience-----21

Adopted Regulations And Guidelines-----21

Existing Best Management Practices-----21

Proposed Best Management Practices-----25

Construction Site Stormwater Runoff Control Measurable Goals-----27

Area Where Program Will Be Implemented-----27

6 Attachment G - Post-Construction Stormwater Management In New Development And
Redevelopment Minimum Measure-----29

Goal Statement And Target Audience-----29

Adopted Regulations And Guidelines-----29

Existing Best Management Practices-----29

Proposed Best Management Practices-----31

Post-Construction Site Stormwater Runoff Control Measurable Goals-----33

Area Where Program Will Be Implemented-----33

6 Attachment H - Pollution Prevention/Good Housekeeping For County Operations Minimum
Measure-----34

Goal Statement And Target Audience-----34

Adopted Regulations And Guidelines-----34

Existing Best Management Practices-----35

Proposed Best Management Practices-----36

Good Housekeeping Measurable Goals-----39

Area Where Program Will Be Implemented-----39

C-H

b. Counties only

Location map must be attached showing county boundaries, unincorporated area boundaries within the county, and urbanized area (UA) boundaries.
See Attachment A - location map

Combining the urbanized area boundary shape files provided on the Colorado State Stormwater Web page and the Jefferson County unincorporated area files does not produce a "stand alone" permit coverage map. The map areas in red are the unincorporated, urbanized areas of the county. This is the permit coverage area with the exception of State and Federal property, and other MS4's included in the red areas.

Examples of these areas are:

- Colorado Department of Transportation
- Jefferson County R-1 School District
- Foothills Park and Recreation District
- North Jeffco Park & Recreation District
- Red Rocks Community College
- Regional Transportation District

Areas not included in Jefferson County's permit coverage will be removed from the map over the five-year permit term.

A revised map will be submitted annually to indicate what areas have incorporated and are no longer part of Jefferson County's permit coverage area.

4. **All named receiving waters (state waters) within the permitted area, including other MS4s:**

- | | | |
|--------------------------|---------------------------------|------------------------------------|
| • Aqueduct | • Agricultural Ditch | • Grant B Reservoir |
| • Big Dry Creek Valley | • Wannamaker Ditch | • Crown Hill Ditch |
| • Bourbar Gulch | • McIntyre Gulch | • Lilley Gulch |
| • Church Ditch | • Welch Ditch | • Dutch Creek |
| • Croke Canal | • Rocky Mountain Ditch | • Bergen Reservoirs |
| • Farmers Highline Canal | • Slough Ditch | • Cold Springs Gulch |
| • Hyatt Lake complex | • Ward Canal | • Swadley Ditch |
| • Leyden Creek | • Lee, Stewart and Eskin Ditch | • Hine Lake |
| • Niver Canal | • Clear Creek | • Weaver Gulch |
| • Ralston Creek | • Lena Gulch | • Massey Draw |
| • Reno Ditch | • Pioneer Union Ditch | • Weaver Creek |
| • Van Bibber Creek | • Lakewood Gulch | • Johnson Reservoir |
| • Raccoon Creek | • SJCD North | • SJCD South |
| • Walnut Creek | • South Boulder Diversion Canal | • Gulches into Mount Vernon Canyon |

Other MS4's in Permitted area:

- Colorado Department of Transportation
- Jefferson County R-1 School District
- Foothills Park and Recreation District
- North Jeffco Park & Recreation District
- Red Rocks Community College
- Regional Transportation District

5. **Will another entity perform some portion or all of the six program areas for your MS4?**

No Yes If Yes, include attachment 9.e.

6. **Is this part of a Joint Application?** No Yes If Yes, complete and attach Appendix A.

7. **Resident population within the permitted area (districts use max. daily user population):**

This is an estimated number obtained with the following method:

- The unincorporated area of the county has approximately 182,000 people.
- The unincorporated area of the county has approximately 80,000 properties with structures
- The unincorporated, urbanized area of the county has approximately 48,000 properties with structures.
- The ratio of 48,000:80,000 = .6
- $182,000 * .6 = 110,000$

Resident population in permitted area is approximately 110,000.

8. **Approximate number of square miles in the permitted area:** 60

9. **Attachments.** For each of the six stormwater program areas (Public Education and Outreach, Public Participation and Involvement, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, Post-Construction Stormwater Management, and Pollution Prevention and Good Housekeeping for Municipal Operation), the following attachments must be included with this application. (See Appendix A for additional requirements for Joint Applicants.)

- Program perspective
Please see Attachment B- Program Perspective.
- General description of the program area elements
Please see six stormwater program area Attachments - C through H.
- Measurable goals for each of the program area components
Please see measurable goals in program area Attachments - C through H.
- The area of the MS4 in which each program area will be implemented (i.e., within the urbanized area only or within the entire jurisdiction)
Please see six stormwater program area Attachments - C through H.
- Legal agreement, in cases where another entity will perform one or more program area components on behalf of the permittee
Not applicable.

Attachments
C-H

10. **Stormwater Management Program Certification**

"I certify under penalty of law that a complete Stormwater Management Program, as described in the attachments to this application, has been prepared for my agency. The program areas were prepared with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Program is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said Program, including the possibility of fine and imprisonment for knowing violations."

Signature of Applicant or Authorized Agent	Date Signed
Richard M. Sheehan	Chairman Board of County Commissioners
Name (printed)	Title

11. **Signature of Applicant (legally responsible person)**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment."

Signature of Applicant or Authorized Agent	Date Signed
Richard M. Sheehan	Chairman Board of County Commissioners
Name (printed)	Title



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application Stormwater Program General Permit Description Attachment B

PROGRAM PERSPECTIVE

Jefferson County intends to protect, to the best of its ability, the waters of the United States within Jefferson County permit boundaries from further pollution, contamination, and/or degradation. To meet these objectives Jefferson County will develop, implement, and enforce a Stormwater Management Program (SWMP) designed to reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (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., CRS) and the Colorado Discharge Permit Regulation (CCR 1002-61).

Jefferson County is located in the western part of the Denver metro area. The county is a diverse front-range community comprised of residential, commercial, industrial, agricultural, and open space properties; and is linked to the Rocky Mountains central corridor of Colorado and Denver by I-70. Currently, Jefferson County has a population in the unincorporated area of approximately 180,000 and approximately 110,000 residents in the permit coverage area.

Jefferson County terrain is divided by the north/south-running hogback with foothills and mountains west of the hogback and a mixture of prairie and developed land east of the hogback. Precipitation in the county is also divided along this general line with 18-24 inches of precipitation west of the hogback and approximately 14 inches of precipitation in the eastern part of the county. The sloped terrain and granite bedrock of the mountainous portion of the county allows erosion from the higher topographical areas, sediment transport in state waters, and deposition in the lowland areas of the county. Construction and maintenance activities accelerate this natural process.

Jefferson County's water quality concerns pertain to nutrient and bacteria loading and sediment transport. There are several dozen-state waters in the permit-coverage areas that eventually flow into the South Platte River. The creeks, rivers and reservoirs, and ditches provide habitat for a wide range of plant and animal species and recreational enjoyment for residents and visitors. Ditches provide green corridors for wildlife to follow and link to other habitat areas. More importantly to those living and working in the County, these state waters are the primary sources of drinking and irrigation water, and receive stormwater runoff. Like most of the Front Range, Jefferson County has experienced extensive growth since the early 1970's with limited regard for water quality as it relates to stormwater runoff.

The six program elements are designed to evaluate the water quality areas of concern and seek improvements through public education and participation that will change resident habits. The existing county stormwater Web site will continue to be a mechanism to get information to staff and the public. The county stormwater hot line phone number is published in flyers and on the stormwater Web site. The storm drain mapping over the next five years will allow County staff and residents to trace detected illicit discharges, although pollutant sources from industrial or manufacturing activities in Jefferson County are not a major concern due to the limited number of such activities. Changes in county policies and regulations will seek to have the maximum

effect on construction and maintenance activities to further reduce erosion and sediment transport.

The county has existing best management practices (BMPs) that will be continued through the permit term. The existing best management practices and proposed new BMPs are detailed in the next section of this permit, and the county will provide a summary of the existing BMPs and measurable goals in the annual report.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment C

PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

The goal of the Jefferson County Public Education and Outreach on Stormwater Impacts Program is to provide education and guidance to local officials, county staff, citizens of, and visitors to Jefferson County on the benefits associated with comprehensive stormwater management. To achieve this goal, several existing programs will be continued or expanded and new programs will be implemented. The programs will be appropriate for all ages and provide information on how to protect waterways and improve water quality.

The requirements of the County's Public Education and Outreach Program are to:

- Distribute educational materials to the public and business communities (or conduct equivalent outreach activities) about the impacts of stormwater discharges to bodies of water.
- Inform the public and businesses of the effects on stormwater from improper waste disposal and illegal discharges.
- Develop and implement best management practices to keep the public and businesses apprised of County's Stormwater Management Program.

ADOPTED REGULATIONS AND GUIDELINES

The existing regulations and guidelines that are applicable to the implementation of the program are:

Currently there are no applicable regulations or guidelines.

EXISTING BEST MANAGEMENT PRACTICES

Jefferson County has a number of programs that are in place and will be continued and/or enhanced to meet the goals and objectives of the Public Education and Outreach program.

1. JEFFERSON COUNTY WEB SITE – The Internet is a widely used tool by the public and private sectors. The Internet URL for the Jefferson County Web site is <http://jeffco.us>. The site provides citizens and staff with general information, department contacts, news and happenings. The Jefferson County Stormwater Management Web page provides stormwater quality information to the general public, land developers and builders. The link for the Colorado Department of Transportation certified erosion control supervisor certification classes taught at Red Rocks Community College is provided on the county stormwater Web page. Updates for date sensitive information will be made as necessary.

2. LOOKOUT MOUNTAIN NATURE CENTER – Operated by the Jefferson County Open Space Department, the Center creates awareness, understanding, and conservation of Jefferson County's open spaces through year-round educational programs and exhibits. The Center prints and distributes flyers listing the environmental programs.
3. PET WASTE PROGRAM – Administered by the Open Space Department, the Program provides citizens who access Jefferson County Open Space parks and trails a mechanism to properly dispose of pet waste. This service is available at eight heavier-used open space parks. The Open Space Department has designed and deployed a dispenser that allows visitors to restock the dispenser with their own plastic bags. Additionally, Open Space has a posted Pet Excrement rule that makes it unlawful to fail to pick up and dispose of pet waste.
4. STORMWATER EDUCATION – Jefferson County provides informational sessions to county employees, elected and appointed officials, and the public. The presentation is changed to reflect the knowledge level of the audience, involvement with the regulations and anticipated interest. The county also offers specialized stormwater presentations for land developers and builders explaining the Phase II requirements and BMPs used to keep soil on site.
5. COOPERATIVE EXTENSION – The mission of Colorado State University Cooperative Extension in Jefferson County is to provide practical, research-based information and relevant educational programs to enhance the quality of life for citizens of Jefferson County. Cooperative Extension currently offers Master Gardener class and xeriscape information for the public.
6. ROONEY ROAD RECYCLING CENTER – The Center provides a low cost method to ensure that household hazardous waste chemicals are managed correctly. There is an Inter-governmental Agreement to operate this facility to serve residents and conditionally exempt small quantity generators. Arrangement can be made for Center employees to pick up waste at a residence. This door-to-door service is designed to serve disadvantaged residents, but is a service available to anyone who requests household pickup. The services of the Center are advertised.
7. MOUNTAIN GROUNDWATER RESOURCE STUDY – A collaborative study coordinated by Jefferson County Long Range Planning, United States Geological Survey, Department of Health and Environment and Jefferson County citizen volunteers. Goals of the study include assessing the amount of ground water available to residents in the foothills to determine carrying capacity and developing information to be used for long range planning and land use decisions. The study is currently in transition to the recommendation and implementation stage.
8. WRITTEN MATERIALS – Several County departments and organizations maintain their own literature and update as needed. Brochures provide citizens with answers to questions they may have, stormwater permit requirements, household tips, upcoming events, links to web sites, etc. Jefferson County Stormwater Management brochure is made available to staff, land developers, builders, and the general public by hard copy and printable form from the stormwater web page.

Jefferson County also distributes related literature that is developed by other entities, such as Urban Drainage and Flood Control District, Denver Water, League of Women Voters, and other Phase I and II jurisdictions.

9. COMMUNITY PLANS – The Jefferson County Planning and Zoning Department staff works with community advisory committees to draft community plans. The plans are based on

county regions and are guidelines to be used by the County, community, Planning Commission and land development applicants to determine if a land development proposal is in conformance with the community plan.

10. **STORMWATER HOT LINE** – Jefferson County established a dedicated phone line for citizens to receive automated stormwater information and leave complaints or ask questions. The number is provided on the Stormwater Web page. Also, the Sheriff, Zoning and Health and Environment phone numbers are all capable of receiving and directing calls accordingly.
11. **XERISCAPE PLANT EXHIBIT** – A demonstration Xeriscape plant exhibit can be found at the Jefferson County Facilities Management building located at 700 Jefferson County Parkway, Golden, Colorado.
12. **WATERSHED GROUP PARTICIPATION** – Jefferson County maintains membership in the following watershed associations by providing a combination of organization dues and staff attendance at meetings.
 - Upper Clear Creek Watershed Association
 - Bear Creek Watershed Association
 - Chatfield Watershed Authority
 - Coalition for Upper South Platte

PROPOSED BEST MANAGEMENT PRACTICES

1. STORM DRAIN MARKINGS

Storm drain markings are designed to raise public awareness of the connection between storm drains and local waters. Jefferson County will establish an annual storm drain-marking program using citizen volunteers. Jefferson County will commit to at least one formal marking program annually with at least 30 drains marked annually.

2. WATERWAY SIGNAGE

To increase the level of watershed awareness, Jefferson County will develop waterway signs focusing on waterway and watershed information and education. The waterway signs will be similar to Jefferson County Open Space trailhead information board. Jefferson County will commit to designing and installing two waterway signs by the end of the permit term.

3. NEWSPAPER INSERTS

In addition to the existing method of making stormwater literature available and giving information to citizens during the land development planning process, Jefferson County will actively distribute information. Jefferson County will print our stormwater brochure and contract with local newspapers to insert the brochure in the following publications: Columbine Courier, Canyon Courier, High Timber Times, Golden Transcript, Arvada Sentinel, Evergreen Hustler, and 285 Hustler.

4. NEWSPAPER ADVERTISEMENTS

In addition to the existing method of making stormwater literature available and giving information to citizens during the land development planning process, Jefferson County will actively distribute information. Jefferson County will purchase space in the following local

publications: Columbine Courier, Canyon Courier, High Timber Times, Golden Transcript, Arvada Sentinel, Evergreen Hustler, and 285 Hustler. The county will examine the subscription numbers to determine the number of weeks that Stormwater informational Advertisements will run to reach the approximate numbers of people in our permit coverage area. It is estimated that the informational advertisements will run in several publications starting in April and continuing through the summer months.

The stormwater brochure and any other program literature distributed in this manner will include the stormwater hotline number.

PUBLIC EDUCATION AND OUTREACH MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target Date	Activity
Year 1 December 1, 2003 <i>(Year 1 begins March 10, 2003)</i>	
Year 2 - December 1, 2004	Storm Drain Marking (Proposed Best Management Practices - #1) Newspaper Inserts (Proposed Best Management Practice - # 3)
Year 3 - December 1, 2005	Newspaper Advertisements (Proposed Best Management Practice - #4)
Year 4 - December 1, 2006	
Year 5 - December 1, 2007	Waterway signs - installation (Proposed Best Management Practices - #2)

Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Jefferson County will provide the services of the Public Education program element throughout the county.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment D

PUBLIC INVOLVEMENT/PARTICIPATION MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

The goal of the Public Participation/Involvement Program is to give the citizens of Jefferson County opportunities to play an active role in the future development and implementation of the Stormwater Management program. By participating, Jefferson County citizens will gain knowledge about water quality and become better stewards within the community by taking better care of the environment.

The requirements of the County's Public Participation/Involvement Program are to:

- Comply with state and local public notice requirements when implementing stormwater management programs. The means of public notice will attempt to reach a majority of citizens, through the use of a community publication or newspaper of general circulation; and have the general goal of creating an informed and involved public that will be more likely to support a stormwater program.

ADOPTED REGULATIONS AND GUIDELINES

The existing codes and regulations that are applicable to the implementation of the program are:

The County follows the Public Notice requirements as specified in Colorado Revised Statutes 30-28-133.

EXISTING BEST MANAGEMENT PRACTICES

Jefferson County has a number of programs that are already in place that will be used and/or enhanced to meet the goals and objectives of the Public Participation/Involvement Program.

1. LOOKOUT MOUNTAIN NATURE CENTER – Operated by the Jefferson County Open Space Department, the Center creates awareness, understanding, and conservation of Jefferson County's open spaces through year-round educational programs and exhibits. The Center prints and distributes flyers listing the environmental programs.
2. PET WASTE PROGRAM – Administered by the Open Space Department, the Program provides citizens who access Jefferson County Open Space parks and trails a mechanism to properly dispose of pet waste. This service is available at eight heavier-used open space parks. The Open Space Department has designed and deployed a dispenser that allows visitors to restock the dispenser with their own plastic bags. Additionally, Open Space has a posted Pet Excrement rule that makes it unlawful to fail to pick up and dispose of pet waste.
3. STORMWATER EDUCATION – Jefferson County provides informational sessions to county employees, elected and appointed officials, and the public. The presentation is changed to reflect the knowledge level of the audience, involvement with the regulations and anticipated

interest. The county also offers specialized stormwater presentations for land developers and builders explaining the Phase II requirements and BMPs used to keep soil on site.

- 4 COOPERATIVE EXTENSION – The mission of Colorado State University Cooperative Extension in Jefferson County is to provide practical, research-based information and relevant educational programs to enhance the quality of life for citizens of Jefferson County. Cooperative Extension currently offers Master Gardener class and xeriscape information for the public.
- 5 ROONEY ROAD RECYCLING CENTER – The Center provides a low cost method to ensure that household hazardous waste chemicals are managed correctly. There is an Inter-governmental Agreement to operate this facility to serve residents and conditionally exempt small quantity generators. Arrangement can be made for Center employees to pick up waste at a residence. This door-to-door service is designed to serve disadvantaged residents, but is a service available to anyone who requests household pickup. The services of the Center are advertised.
- 6 MOUNTAIN GROUNDWATER RESOURCE STUDY – A collaborative study coordinated by Jefferson County Long Range Planning, United States Geological Survey, Department of Health and Environment and Jefferson County citizen volunteers. Goals of the study include assessing the amount of ground water available to residents in the foothills to determine carrying capacity and developing information to be used for long range planning and land use decisions. The study is currently in transition to the recommendation and implementation stage.
- 7 COMMUNITY PLANS – The Jefferson County Planning and Zoning Department staff works with community advisory committees to draft community plans. The plans are based on county regions and are guidelines to be used by the County, community, Planning Commission and land development applicants to determine if a land development proposal is in conformance with the community plan.
- 8 STORMWATER HOT LINE – Jefferson County established a dedicated phone line for citizens to receive automated stormwater information and leave complaints or ask questions. The number is provided on the Stormwater Web. Also, the Sheriff, Zoning and Health and Environment phone numbers are all capable of receiving and directing calls accordingly.
- 9 PUBLIC NOTICE – Jefferson County has established public notice protocol. Land development sites are posted prior to public hearings, community meetings are held, and land development cases are referred to agencies and members of the public for comment. The notification requirements are detailed in the Jefferson County Land Development Regulations, Part I, Section 3. The county also publishes information in the High Timber Times, a paper having general circulation in the county.
- 10 REGULATION ADVISORY COMMITTEE (RAC) – RAC is a volunteer committee comprised of county residents, engineers and land developers. RAC members are committed to creating fair and equitable regulations in Jefferson County and reviewing regulation proposals submitted by Jefferson County staff.
- 11 ADOPT-A-HIGHWAY - Currently the right-of-way along 400 miles of roadway in Unincorporated Jefferson County is maintained by volunteers as part of the Adopt-A-Highway program. The program was established in 1991.

PROPOSED BEST MANAGEMENT PRACTICES

1. JEFFERSON COUNTY WEB SITE

The URL for the Jefferson County home page is <http://jeffco.us>. In addition to providing educational information already referenced Jefferson County will provide information on the Stormwater Web page to inform citizens on how to become involved in watershed stewardship and stormwater quality programs. Updates for date sensitive information will be made as necessary.

PUBLIC INVOLVEMENT/PARTICIPATION MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target date	Activity
Year 1 December 1, 2003 (Year 1 begins March 10, 2003)	<ul style="list-style-type: none"> Public involvement information on county Web site. (Proposed Best Management Practices - #1)
Year 2 - December 1, 2004	
Year 3 - December 1, 2005	
Year 4 - December 1, 2006	
Year 5 - December 1, 2007	

Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Jefferson County will provide the services of the Public Education program element throughout the county.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment E

ILLICIT DISCHARGE DETECTION AND ELIMINATION MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

The Illicit Discharge Detection and Elimination Program seeks improvements in both intermittent, storm-driven pollution carried into the storm sewers and illicit discharges that continue during dry weather that may be high enough to degrade and threaten aquatic life, wildlife, and human health.

The requirements of the County's Illicit Discharge Detection and Elimination Program are to:

- Develop the Storm Sewer System Map – The location of all county storm sewer outfalls in the urbanized areas and the names and locations of all state waters that receive discharges from those outfalls.
- Develop a Stormwater Control Ordinance - To the extent allowable under State or local laws, prohibit non-stormwater discharges into the storm sewer system, and implement appropriate enforcement procedures and actions.
- Develop a Plan / Implement and Enforce a Program - To detect and eliminate illicit discharges into Jefferson County's MS4. The plan must include the following three components: procedures for locating priority areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; and procedures for removing the source of the discharge.

ADOPTED REGULATIONS AND GUIDELINES

The existing codes and regulations that are applicable to the implementation of the program are:

- The Urban Drainage and Flood Control District's Storm Drainage Criteria Manual Volume III.
- Jefferson County Zoning Resolution

EXISTING BEST MANAGEMENT PRACTICES

Jefferson County has a number of programs that are in place and will be continued and/or enhanced to meet the goals and objectives of the Illicit Discharge Detection and Elimination Minimum Measure.

1. ROONEY ROAD RECYCLING CENTER – The Center provides a low cost method to ensure that household hazardous waste chemicals are managed correctly. There is an Inter-governmental Agreement to operate this facility to serve residents and conditionally exempt small quantity generators. Arrangement can be made for Center employees to pick up waste at a residence. This door-to-door service is designed to serve disadvantaged residents, but

is a service available to anyone who requests household pickup. The services of the Center are advertised.

2. STORMWATER HOT LINE – Jefferson County established a dedicated phone line for citizens to receive automated stormwater information and leave complaints or ask questions. The number is provided on the Stormwater Web page. Also, the Sheriff, Zoning and Health and Environment phone numbers are all capable of receiving and directing calls accordingly.
3. ZONING RESOLUTION – The Jefferson County Zoning Resolution is the mechanism that governs land use. Trash and graded property are the beginning of pollution into the storm drain system. Jefferson County will use the authority granted in the Zoning Resolution to address illicit discharges. State statute does not grant the county the right to eliminate historic non-hazardous illicit discharges.

The Zoning enforcement procedure is as follows: A zoning violation is reported by the public or a staff member and is investigated by zoning staff. If zoning staff verifies the zoning violation then a notice is sent to the property owner. The owner is given 30 days to correct the violation. Zoning staff may grant “reasonable” extensions if necessary. If the owner does not fix the violation, then the case is sent to the County Attorney’s Office to commence civil proceeding in court. The owner has until 5 days before the court appearance to correct the violation. If the violation is not corrected the court may assess fines, impose jail time, or injunctive relief – as specified in state statute. State statute does not allow the County to place a lien on the property to collect the fines.

4. HAZARDOUS WASTE / SPILL RESPONSE – Jefferson County Sheriff’s Office Hazmat Team responds to spills in the County right-of-way. The Critical Incident Response Section of the Jefferson County Sheriff’s Office investigates hazardous material incidents and environmental crimes including illicit discharges. This section of the Sheriff’s Department would be called upon to trace the source of an illicit discharge. Their authority to prosecute is under CRS 29-22-101 to 108 "Designated Emergency Response Authority". This statute is used to remove the source of the illicit discharge. County staff or citizens may contact the Sheriff’s Department and report an incident or suspicious observation. The county provides a stormwater hotline, but the caller is informed to call the sheriff’s office directly to report an environmental crime in progress; and is provided that number.
5. ORPHAN WASTE POLICIES – The department that picks up the waste handles any suspicious waste in the County right-of way. The material is packed, stored, profiled and then disposed through an environmental company according to the characteristics of the waste.
6. EMPLOYEE TRAINING – Jefferson County currently trains employees in Spill Prevention and Mitigation and has regular staff meetings to discuss related items. Several county departments have field staff and the county Road and Bridge department staff maintains and repairs the county storm drain system as needed. This is invaluable in detecting illicit discharges and developing priority areas. County employees are given information necessary to report or address these situations. Employees also receive hazardous materials training and certification. See Attachment H – Good Housekeeping/County Operations.
7. INDIVIDUAL SEWAGE DISPOSAL SYSTEMS - The Jefferson County Department of Health and Environment (JCDHE) administers the design and installation of septic systems in Jefferson County through the Jefferson County Individual Sewage Disposal System Regulations. The regulations prohibit surfacing effluent. The county has procedures for responding to complaints and requiring repairs to eliminate this type of illicit discharge.

8. **NITROGEN REDUCTION ONSITE WASTEWATER TREATMENT SYSTEMS** – The Jefferson County Department of Health and Environment administers the design and installation of septic systems in Jefferson County. Department of Health and Environment, Environmental Health Division has adopted nitrogen reduction requirements for septic systems to provide a higher level of effluent treatment to protect the water quality in the fractured rock, surface water regime. Jefferson County Department of Health and Environment provides opportunities for engineers, contractors, homeowners and research professors from Colorado School of Mines to propose, install and study different septic system technology that will reduce BOD, bacteria, and nitrogen species in the effluent to preserve water quality and assist with pollution prevention.

PROPOSED BEST MANAGEMENT PRACTICES

1. DEVELOP THE STORM SEWER SYSTEM MAP

Jefferson County will develop a Storm Sewer Outfall Map for the permitted (Unincorporated, Urbanized) area of Jefferson County. The Storm Sewer Outfall Map will include, to the maximum extent practicable, the location of all stormwater outfalls that are owned or operated by Jefferson County, and the subsequent state waters for each outfall. Jefferson County will map the municipal stormwater outfalls that discharge to both classified state waters and unclassified state waters (irrigation ditches, canals, and other man-made diversions). Outfall mapping will begin the first year of the permit. Mapping progress will be summarized in the annual report.

Note: Any circumstances beyond the control of the regulated entity that affect the accuracy and completeness of the Storm Sewer Outfall Map, including legal and physical access limitations, will be detailed in the end of year reporting.

2. ILLICIT DISCHARGE DOCUMENTATION/LOCATING PRIORITY AREAS

Despite the existing zoning powers granted to counties by state statute, illicit discharges do occur. Such discharges may include hazardous spills or non-hazardous discharges such as car wash water and pool drainage. County staff will perform dry weather visual screening in conjunction with construction, post-construction inspections, storm sewer maintenance inspections and mapping activities. Staff will collect information on suspect outfalls during the required outfall mapping project. Findings from these activities will be used in conjunction with existing field staff activities to further identify priority areas. Jefferson County will document these types of discharges, as we become aware of such incidents.

Note: Illegal Dumping and tracing sources is pursued through Jefferson County Sheriff's Department, as stated in this Minimum Measure, Existing Programs 4 and 5.

3. COUNTY EMPLOYEE TRAINING

Existing county employee training will be used to reduce the likelihood of improper disposal of hazardous waste materials from entering the County's storm sewer system and subsequent state waters. In addition, field-based county staff will receive information on identifying and reporting suspected illicit discharges.

4. ILLICIT DISCHARGE AND DETECTION PLAN

Jefferson County will consider the industrial areas of the county to be a priority and will add other priority locations as they are found. County staff will conduct annual visual dry weather screening of the storm drain outfalls in the industrial areas of the permit coverage area. When illicit discharges are discovered established documentation and zoning violation procedures would be followed.

ILLICIT DISCHARGE MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target date	Activity
Year 1 December 1, 2003 <i>(Year 1 begins March 10, 2003)</i>	<ul style="list-style-type: none"> • Begin storm sewer outfall map in permit coverage area. <i>(Proposed Best Management Practices - #1)</i>
Year 2 - December 1, 2004	<ul style="list-style-type: none"> • Storm Sewer Outfall Map of permit area completed <i>(Proposed Best Management Practices - #1)</i> • Illicit discharge documentation/locating priority areas <i>(Proposed Best Management Practices - #2)</i>
Year 3 - December 1, 2005	<ul style="list-style-type: none"> • Survey outfalls in industrial areas <i>(Proposed Best Management Practices - #4)</i> • Training for field-based staff on illicit discharge detection and reporting. <i>(Proposed Best Management Practices - #3)</i>
Year 4 - December 1, 2006	
Year 5 - December 1, 2007	

Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Illicit Discharge and Detection: Only the permitted area (Urbanized and Unincorporated) will be mapped. The county receives and responds to complaints throughout the county.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment F

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

The Goal of the Construction Site Stormwater Runoff Control Program is to provide information and direction to developers, contractors, and the citizens of Jefferson County, regarding stormwater quality as it relates to construction.

The requirements of the County's Construction Site Stormwater Runoff Control Program are to:

- Develop, implement, and enforce a pollutant control program to reduce pollutants in stormwater runoff to the MS4 from construction activities that result in land disturbance of one or more acres, including procedures for site plan review, inspections during construction, and penalties to ensure compliance;
- Requirements for construction site owners or operators to implement appropriate erosion and sediment control BMPs, and to control other waste such as discarded building materials; and
- Procedures for receipt and consideration of information provided by the public;
- Procedures for site inspection and enforcement of control measures.

ADOPTED REGULATIONS AND GUIDELINES

The existing regulations and guidelines that are applicable to the implementation of the program are:

- Jefferson County Land Development Regulation
- Jefferson County Zoning Resolution
- Jefferson County Storm Drainage Design and Technology Criteria Manual, 1985
- Jefferson County Roadway Design and Construction Manual
- Small Site Erosion Control Manual, Jefferson County Planning and Zoning, June 1999
- Urban Drainage and Flood Control District's Storm Drainage Criteria Manual Volume III

EXISTING BEST MANAGEMENT PRACTICES

Jefferson County has a number of programs and procedures that are already in place that will be continued and/or enhanced to meet the goals and objectives of the Construction Site Stormwater Runoff Program.

1. JEFFERSON COUNTY WEB SITE – The Internet is a widely used tool by the public and private sectors. The Internet URL for the Jefferson County Web site is <http://jeffco.us>. The site provides citizens and staff with general information, department contacts, news and happenings. Jefferson County Stormwater Management Web page provides stormwater quality information to the general public, land developers and builders. The link for the Colorado Department of Transportation certified erosion control supervisor certification classes taught at Red Rocks Community College is provided on the county stormwater Web page. Updates for date sensitive information will be made as necessary.
2. COMMUNITY PLANS – The Jefferson County Planning and Zoning Department staff works with community advisory committees to draft community plans. The plans are based on county regions and are guidelines to be used by the County, community, Planning Commission and land development applicants to determine if a land development proposal is in conformance with the community plan.
3. JEFFERSON COUNTY STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA MANUAL – Land development applications and grading activities must conform to the technical requirements of this manual.
4. INFORMATION SUBMITTED BY PUBLIC – The land development application processes include rezoning, preliminary platting, final platting, and site approval. All land development applications are heard in the public hearing forum. Information is received from the public and included in staff reports presented during land development hearings. The applicant must demonstrate that the rezoning application conforms to the recommendations of the community plan in order to have staff support.

Jefferson County staff solicits comments from adjoining property owners and outside agencies, as appropriate, during review of the land development applications.

PUBLIC NOTICE – Jefferson County has established public notice protocol. Land development sites are posted prior to public hearings, community meetings are held, and land development cases are referred to agencies and members of the public for comment. The notification requirements are detailed in the Jefferson County Land Development Regulations Part I, Section 3. The county also publishes information in the High Timber Times.

5. GRADING PERMIT – Plans are reviewed and approved by engineers in the Planning and Zoning Department and the Department of Highways and Transportation issue the Grading Permit. A grading permit is required when more than 10,000 square feet or 300 cubic yards of soil are disturbed. The applicant must provide sediment and erosion control BMPs on the plans. A detention facility to address stormwater quality and quantity may also be required.

County construction projects are under the same review protocol and each department is responsible for obtaining appropriate permits for its own construction activities. Additionally, each department is responsible for ensuring that the required inspections and documentation for sediment and erosion controls are completed.

Jefferson County staff solicits comments from adjoining property owners and outside agencies, as appropriate, during review of the grading permit applications.

Note: Jefferson County's minimum threshold for requiring a Grading Permit is stricter than the one-acre State requirement.

Grading Permit Regulation Information is included below:

1. All grading activities (except for tilling of agricultural land and work approved by the County in conjunction with a mining permit, reclamation plan, or sanitary landfill) within unincorporated Jefferson County must comply with the applicable performance standards for site grading, erosion control, natural hazards, terrain preservation, vegetation mitigation, and street/road construction.
2. Failure to comply with these performance standards results in a zoning violation.
3. In most instances, except for work being done with a grading permit or an approved plat, inspection of the graded site and enforcement of the performance standards is initiated by citizen complaint.
4. The following activities are not required to be covered under a grading permit:
 - Excavation below finished grade for a basement or building foundation
 - Trenching for underground utilities and drilling for wells and post holes
 - Grading for utility installation or maintenance within County owned and/or maintained r-o-w
 - County initiated capital improvements or maintenance projects within County owned and/or maintained r-o-w
 - Maintenance and cleaning of ditches, lakes, ponds, and water storage reservoirs
 - Maintenance and resurfacing of existing roads, trails and railroad beds.
 - Emergency work to prevent or mitigate an immediate threat to life or property
 - Projects involving the movement of less than 300 cubic yards of material and involve less than 10,000 square feet of disturbed area.
5. The following activities are required to covered under a grading permit:
 - Any activity not exempted under 1 or 4 above and involving the movement of at least 300 cubic yards or involving more than 10,000 square feet of disturbed area.
6. An activities may be eligible for a minor grading permit if all of the following are true:
 - Involves less than 1 acre of disturbed area, and
 - Is not located in an areas where the slope of the natural terrain exceeds 8%, and
 - Is not located on Green Mountain, North Table Mountain, South Table Mountain, or the Hogback, and
 - Is not located within a riparian area, critical wildlife habitat, floodplain, or geologic hazard, and
 - Will not have cuts or fills exceeding 5 vertical feet, and
 - Is not part of a case under current County review.
7. The submittal requirements for a minor grading permit include:
 - an signed agreement acknowledging the receipt of a small site grading handbook
 - fees
 - deed
 - grading and erosion control plan (simplified format)
 - application
 - performance guarantee at the discretion of the County.
8. In general, activities permitted by a minor grading permit are not inspected, except on a complaint basis.

9. The submittal requirements for other grading permits include:
- application
 - fees
 - grading plan
 - erosion control plan
 - geologic and/or soils investigation report at the discretion of the County
 - copy of application for fugitive dust permit , if applicable
 - performance guarantee
10. All of the above mentioned grading permits are issued by the Planning and Zoning Department and are approvals of the plans. For all grading permits other than minor permits, the Department of Highways and Transportation issues another grading permit to allow for the actual construction. These grading activities are subject to periodic inspection and must be complete to the satisfaction of the construction inspector before the release of the performance guarantee.

Size of Site Activities	Permit Requirement(s)
≥ 300 cubic yards	Grading Permit (Jefferson County)
≥ 10,000 square feet	Grading Permit (Jefferson County)
≥ 1 acre	Stormwater Construction Permit (CDPHE) and Grading Permit (Jefferson County)

County staff inspects the erosion and sediment control BMPs for work during the public improvement stage of construction and for work in the county right-of-way.

6. MINOR GRADING PERMIT – Minor grading permits are allowed instead of Grading Permits in the plains area of Jefferson County where the ground slope is less than 8% and cut/fill depth is less than 5 feet. See Grading Permit regulation text provided in Existing Program #5 – Grading Permit for additional information.
7. CONSTRUCTION PERMIT – All projects constructed within the County right-of-way, regardless of the applicant, are required to get a construction permit rather than a grading permit. Unless the project is just for a minor utility cut, in order to get a construction permit the applicant needs approved construction plans that include grading and erosion control, drainage, etc. The Department of Highways and Transportation approve the plans that are County funded. Planning and Zoning Department approves all other plans. If approved, a Construction Permit is issued and County staff inspects the work. Highways and Transportation inspectors conduct a pre-construction meeting and the contractor is aware that erosion control BMPs must be in place prior to site grading.

The County Inspector is authorized to inspect all work performed under the permit, including, but not limited to clearing and grubbing, compaction of subgrade, base and asphalt, forms, concrete work, structures, and materials to be used. The Inspector is present on the site to advise contractors of these standards. The Inspector has authority to reject defective materials and workmanship.

8. **PERFORMANCE STANDARDS** - Performance standards are specified in the Jefferson County Zoning Resolution. Performance standards require erosion and sediment control in any situation where erosion potential exists, regardless of whether a permit is required. Violation of this provision of the performance standards is enforced as a zoning violation, in accordance with Section 3 of the Zoning Resolution.
9. **LANDSCAPE INSPECTION** – Landscape plans are submitted during land development application. Staff reviews the plans and the site is inspected to insure compliance with the plans.
10. **CONSTRUCTION INSPECTION PROGRAM** – Department of Highways and Transportation (right-of-way) inspectors inspect construction sites with grading permits, development projects including commercial and residential uses, and transportation-related capital improvement projects. Capital construction by other departments such as Road and Bridge, Facilities, Construction Management, Open Space, and the Jefferson County Airport is inspected by those departments.

Residential and commercial sites with grading permits are also inspected by Highways and Transportation inspectors. A grading permit is required for construction on any site if more than 300 cubic yards are excavated or more than 10,000 square feet are disturbed. Inspection includes erosion and sediment controls to final stabilization, curb, gutter, sidewalk, storm sewer. For other public improvements, including detention ponds, county inspection staff performs inspection in addition to requiring third party confirmation, such as from the developer's engineer, stating that permanent BMPs were installed according to the design. Note that foundation excavation does not count toward the 300 cubic yard limitation, so grading permits are not required for most single family houses.

County construction inspectors have attended various erosion and sediment control classes and some staff have CDOT erosion control supervisor training. County employees will continue to pursue appropriate training.

PROPOSED BEST MANAGEMENT PRACTICES

1. JEFFERSON COUNTY WEB SITE

The URL for the Jefferson County home page is <http://jeffco.us>. The Web site will be expanded to include the Jefferson County Stormwater Management Program. In addition to providing education and participation information as referenced in Attachment C, Existing Best Management Practices, Jefferson County Web site No.1, Jefferson County will provide land development information on the stormwater web page. Updates for date sensitive information will be made as necessary. Jefferson County will add development references and update the stormwater web page during the permit term.

2. JEFFERSON COUNTY REGULATION CHANGES

Jefferson County will incorporate the following into county regulations:

- a) Amend the Land Development Regulation to require developers to label storm drains with a "No Dumping. Drains to Waterway." label; or install the iron grate curb insert that notifies the public that the inlet drains to a waterway.

- b) Adopt regulations to institute small construction site erosion and sediment inspection program.
- c) Adopt a regulation to require waste control (dumpsters, concrete washout areas) on construction sites.

3. JEFFERSON COUNTY LAND DEVELOPMENT TRACKING CHANGES

- a) In addition to existing land development data that is gathered and maintained in the county land development database, staff will add into the Land Development Permit Tracking Program the capability to add the State Stormwater Permit number. County staff will enter the permit number if the applicant has a state permit.
- b) Staff will add the capability to enter structural BMP information into the Land Development Permit Tracking Program. Many structural BMPs during the construction phase become permanent BMPs and will tracked for long-term function and maintenance – as required in the Post-Construction Stormwater Management Permit Element.

4. JEFFERSON COUNTY SMALL CONSTRUCTION SITE STORMWATER PERMIT

In addition to the existing county public improvement and grading permit inspection programs, the County will initiate a program that addresses erosion and sediment control and waste control procedures. This permit element applies to construction sites that are less than one acre, if the sites are part of a larger plan of development that disturbed at least one acre of ground. This program is designed to mitigate erosion and sediment transport from small construction and landscaping activities.

The following procedure (or similar procedure) will be instituted over the permit term:

- a) **Plan:** An erosion and sediment control plan will be required. This plan will include a plan view of the property with structural erosion control BMPs to be implemented. The applicant may also include written notes to accompany the plan view. The applicant will provide additional detail to explain what BMPs will be used to prevent soil from moving off the property and what BMPs will be used to correct soil moving off the property. The applicant will also detail in the erosion and sediment control plan what BMPs will be implemented for waste control requirements, such as dumpsters and concrete washout areas.

The county may allow an applicant to submit a general erosion and sediment control plan if the lots in a development are similar in character, drainage pattern and BMP needs.

- b) **Plan Review:** County staff will review and approve the Erosion and Sediment Control Plan.
- c) **Site Inspection:** County staff will not commit to inspecting every site. Staff will inspect sites based on complaints received, prior experience, site history and site sensitivity. County inspection staff will receive erosion and sediment control training.
- d) **Compliance:** Staff inspections will be documented and records maintained. To ensure compliance with small construction site requirements, Jefferson County will review compliance methods such as performance guarantees, zoning violation procedures,

and withholding building inspections. Staff will review sanctions during the development stage of this Measurable Goal.

5. CONSTRUCTION SITE MATERIALS HANDLING - SPILL PREVENTION

Jefferson County will require site operators or owners to provide for the control of chemical, petroleum and liquid and solid waste storage and concrete wash water. The waste control provisions must be included on the applicant’s erosion and sediment control plan.

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target date	Activity
Year 1 December 1, 2003 <i>(Year 1 begins March 10, 2003)</i>	<ul style="list-style-type: none"> • Add land development/construction- related information to stormwater Web page <i>(Proposed Best Management Practices - #1)</i> • Storm drain iron grate regulation <i>(Proposed Best Management Practices - #2 (a))</i>
Year 2 - December 1, 2004	<ul style="list-style-type: none"> • Adopt Erosion Control Regulation for small construction sites <i>(Proposed Best Management Practices - #2(b))</i> • Adopt waste control regulations for construction sites <i>(Proposed Best Management Practices - #2(c))</i> • Add State Stormwater permit number tracking capability into County land development database <i>(Proposed Best Management Practices - #3(a))</i> • Develop erosion control inspection program for small construction sites <i>(Proposed Best Management Practices - #4)</i>
Year 3 - December 1, 2005	<ul style="list-style-type: none"> • Add structural BMP tracking capability into County land development database <i>(Proposed Best Management Practices - #3(b))</i> • Require waste control information on grading and small construction sites <i>(Proposed Best Management Practices - #5)</i>
Year 4 - December 1, 2006	<ul style="list-style-type: none"> • Provide training for County staff conducting small construction site inspection activities <i>(Proposed Best Management Practices - #4)</i> • Begin small construction site inspection for erosion and sediment control <i>(Proposed Best Management Practices - #4)</i>
Year 5 - December 1, 2007	

Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Construction Site Runoff Control – Jefferson County currently has stricter regulations for disturbed areas and erosion/sediment control than the stormwater permit requires – as referenced in the Jefferson County Zoning Resolution Section 15. This regulation is in effect throughout the county. Jefferson County will commit to meeting the inspection and

documentation requirement for minimizing sediment transport until final stabilization, only in the permitted area. Additionally, Jefferson County will commit to adopting regulations regarding sites less than an acre but are part of a larger project only in the permitted area.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment G

POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

Jefferson County will develop, implement, and enforce a program to address the quality of stormwater discharges to the MS4 from new development and redevelopment projects that result in land disturbance of one or more acres. The requirements of the County's Post-Construction Stormwater Management Program are to:

- Develop and implement strategies which include a combination of structural and/or non-structural BMPs;
- Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law; and;
- Ensure adequate long-term operation and maintenance of BMPs.

ADOPTED REGULATIONS AND GUIDELINES

The existing regulations and guidelines that are applicable to the implementation of the program are:

- Jefferson County Land Development Regulation
- Jefferson County Zoning Resolution
- Jefferson County Storm Drainage Design and Technology Criteria Manual, 1985
- Jefferson County Roadway Design and Construction Manual
- Small Site Erosion Control Manual, June 1999
- Urban Drainage and Flood Control District's Storm Drainage Criteria Manual Volume III

EXISTING BEST MANAGEMENT PRACTICES

1. JEFFERSON COUNTY WEB SITE - The Internet is a widely used tool by the public and private sectors. The Internet URL for the Jefferson County Web site is <http://jeffco.us>. The site provides citizens and staff with general information, department contacts, news and happenings. Jefferson County Stormwater Management Web page provides stormwater quality information to the general public, land developers and builders. The link for the Colorado Department of Transportation certified erosion control supervisor certification classes taught at Red Rocks Community College is provided on the county stormwater Web page. Updates for date sensitive information will be made as necessary.

2. **COMMUNITY PLANS** - The Jefferson County Planning and Zoning Department staff works with community advisory committees to draft community plans. The plans are based on county regions and are guidelines to be used by the County, community, Planning Commission and land development applicants to determine if a land development proposal is in conformance with the community plan.

3. **JEFFERSON COUNTY STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA MANUAL** - Land development applications and grading activities must conform to the technical requirements of this manual. Jefferson County requires permanent post-construction stormwater quality best management BMPs with all new development and redevelopment except as noted below. The BMPs may be selected from the Urban Storm Drainage Criteria Manual Volume 3 and must capture and treat runoff from the 80th percentile storm event. This standard requires that, as a minimum, the developer must provide extended detention as one of the BMPs. When the permanent BMP(s) have been constructed to the satisfaction of the County construction inspector, the developer's performance guarantee is released.
 - Post-construction BMPs are not required if a variance to the stormwater detention requirement is granted. A variance for detention may be granted if the 10-year storm discharge from the site is less than or equal to 1 cfs and the total impervious area for the site does not exceed 10,000 square feet.

4. **INFORMATION SUBMITTED BY PUBLIC** - Jefferson County has established public notice protocol. Land development sites are posted prior to public hearings, community meetings are held, and land development cases are referred to agencies and members of the public for comment. The notification requirements are detailed in the Jefferson County Land Development Regulations Part I, Section 3. The county also publishes information in the High Timber Times.

5. **GRADING PERMIT** – Plans are reviewed and approved by engineers in the Planning and Zoning Department and the Department of Highways and Transportation issue the Grading Permit. A grading permit is required when more than 10,000 square feet or 300 cubic yards of soil are disturbed. The applicant must provide sediment and erosion control BMPs on the plans. A detention facility to address stormwater quality and quantity may also be required.

County construction projects are under the same review protocol and each department is responsible for obtaining appropriate permits for its own construction activities.

Jefferson County staff solicits comments from adjoining property owners and outside agencies, as appropriate, during review of the grading permit applications.

Note: Jefferson County's minimum threshold for requiring a Grading Permit is stricter than the one-acre State requirement.

Size of Site Activities	Permit Requirement(s)
≥ 300 cubic yards	Grading Permit (Jefferson County)
≥ 10,000 square feet	Grading Permit (Jefferson County)
≥ 1 acre	Stormwater Construction Permit (CDPHE) and Grading Permit (Jefferson County)

County staff inspects the erosion and sediment control BMPs for work during the public improvement stage of construction and for work in the county right-of-way.

See Program Area #4, Existing Program 5 – Grading Permit, for additional information.

6. MINOR GRADING PERMIT - Minor grading permits are allowed instead of Grading Permits in the plains area of Jefferson County where the ground slope is less than 8% and cut/fill depth is less than 5 feet. See Grading Permit regulation text provided in Existing Program #5 – Grading Permit for additional information.
7. CONSTRUCTION PERMIT – See Existing Program #7 in Construction Site Stormwater Runoff Control.
8. PERFORMANCE STANDARDS - Performance standards are specified in the Jefferson County Zoning Resolution. Performance standards require erosion and sediment control in any situation where erosion potential exists, regardless of whether a permit is required. Violation of this provision of the performance standards is enforced as a zoning violation, in accordance with Section 3 of the Zoning Resolution.
9. CONSTRUCTION INSPECTION PROGRAM – See Existing Program #10 in Construction Site Stormwater Runoff Control.
10. PLAT NOTES – Requirements of the development at the time of approval are recorded on the plat. Plat notes are enforceable according to state statute: 30-28-137 (4).

PROPOSED BEST MANAGEMENT PRACTICES

1. PROPOSED REGULATIONS

Jefferson County proposes to add the following requirements to existing regulations specified above:

- a) Amend the County regulations to require post-construction maintenance.
- b) Amend the County regulations to allow County to conduct post-construction inspections.

2. STORMWATER STRUCTURE TRACKING

As referenced in Attachment F, Proposed Best Management Practices, Jefferson County Land Development Tracking Changes No. 3, structural BMP information will be entered into the Land Development Permit Tracking Program. The structural BMPs installed during the construction phase, which become permanent BMPs, will be tracked for long-term function and maintenance.

3. POST-CONSTRUCTION SITE INSPECTION

As referenced above structural BMPs will be catalogued for future inspections, as required. Post-Construction Site Inspections will be conducted to assess and insure adequate long-term operation and maintenance of BMPs. The schedule and criteria for inspection will be developed during the permit term. The following are potential inspection criteria:

- a) Address complaints - During or after a major storm event
- b) Determine if the BMPs worked and/or determine if maintenance is needed

- c) Verify that required corrective actions have been taken
- d) Verify that proper maintenance is taking place
- e) Follow up inspection when the inspector traces an off site problem. When determined necessary by County staff.

Results of inspections will be noted on the BMPs Inspection Checklist and entered into Stormwater Database. Structural BMPs will be summarized at the end of the permit term.

4. Post-Construction Site Enforcement

It is the County's intent to work with property owners, homeowners associations, and business owners associations when problems arise. Enforcement actions by the County will be through the zoning violation process and be taken when other means of getting the site into compliance have been unsuccessful.

- a) Letter of non-compliance is given to the property owner/ homeowners associations / business owners associations;
- b) Notice of Violation letter with deadline to comply with Stormwater Management Plan is given to the property owner/ homeowners associations / business owners associations;
- c) Court Summons.

County regulations and plat notes require the permanent BMPs to be properly maintained.

POST-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target date	Activity
Year 1 December 1, 2003 <i>(Year 1 begins March 10, 2003)</i>	
Year 2 - December 1, 2004	
Year 3 - December 1, 2005	<ul style="list-style-type: none"> • Amend Land Development Regulations to require post-construction approval maintenance. <i>(Proposed Best Management Practices - #1 (a))</i> • Amend Land Development Regulations to allow county to conduct post-construction inspections. <i>(Proposed Best Management Practices - #1 (b))</i>
Year 4 - December 1, 2006	<ul style="list-style-type: none"> • Develop Database tracking for long-term BMPs <i>(Proposed Best Management Practices - #2)</i> • Enter structure information into database <i>(Proposed Best Management Practices - #2)</i>
Year 5 - December 1, 2007	<ul style="list-style-type: none"> • Initiate post-construction inspections and enforcement <i>(Proposed Best Management Practices - #3 & #4)</i>

Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Post-Construction Stormwater Management - Jefferson County will committ to meeting this requirement only in the permitted area.



Stormwater Discharges Associated With Municipal Separate Storm Sewer Systems

General Permit Application
Stormwater Program General Permit Description
Attachment H

POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR COUNTY OPERATIONS MINIMUM MEASURE

GOAL STATEMENT AND TARGET AUDIENCE

Jefferson County's Pollution Prevention/Good Housekeeping Minimum Measure will be developed with the goal of reducing stormwater runoff and pollutant contamination of stormwater runoff from county property and operations. The requirements of the County's Pollution Prevention and Good Housekeeping program are to:

- Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from county operations into the storm sewer system.
- Include employee training on how to incorporate pollution prevention/good housekeeping techniques into county operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance.
- Include employee training on proper waste recycling and disposal, and impacts of illicit discharges from county operations.
- Determine the appropriate BMPs and measurable goals for this minimum control measure.

ADOPTED REGULATIONS AND GUIDELINES

The existing regulations and guidelines that are applicable to the implementation of the program are:

- Jefferson County Land Development Regulation
- Jefferson County Zoning Resolution
- Jefferson County Storm Drainage Design and Technology Criteria Manual, 1985
- Jefferson County Roadway Design and Construction Manual
- Small Site Erosion Control Manual, June 1999
- Urban Drainage and Flood Control District's Storm Drainage Criteria Manual Volume III

EXISTING BEST MANAGEMENT PRACTICES

Jefferson County has a number of programs and procedures that are already in place that will be continued and/or enhanced to meet the goals and objectives of the Pollution Prevention/Good Housekeeping for County Operations Minimum Measure.

1. PERMIT EDUCATION – Several Jefferson County Departments have or require Construction Site Stormwater Permits and/or Industrial Stormwater Permits. Potentially affected Departments have been contacted and advised that they are responsible for permitting their own Department activities and are not covered by the County MS4 Permit. County employees will continue to receive education on stormwater permitting requirements.

Jefferson County Airport maintains an Industrial Stormwater permit and the Airport staff is responsible for maintaining compliance with the permit. Jefferson County Airport CDPS Light Industry Stormwater Permit Number COR – 010000.

2. STORMWATER EDUCATION – Jefferson County provides informational sessions to county employees, elected and appointed officials, and the public. The presentation is changed to reflect the knowledge level of the audience, involvement with the regulations and anticipated interest. The county also offers specialized stormwater presentations for land developers and builders explaining the Phase II requirements and BMPs used to keep soil on site.
3. JEFFERSON COUNTY OPEN SPACE DEPARTMENT – Founded in 1972, Jefferson County Open Space receives county sales tax revenues of a half-cent on the dollar. These funds are shared by the cities and the unincorporated areas of Jefferson County for open space purposes including: acquiring land, building trails, protecting resources and developing recreation facilities. Jefferson County Open Space purchases and preserves open space lands -- mountain vistas, parks and trails in urban and unincorporated areas, wildlife habitats, streams and lakes and historic areas. Additionally, open space areas provide natural infiltration that helps maintain water resources in the watershed and does not contribute unnaturally to stormwater runoff.
4. COUNTY FACILITY INSPECTIONS – County Departments that are involved with activities that potentially affect stormwater quality, conduct facility inspections.

The inspection records are maintained by each Department or Responsible Party and are available upon request.

5. SPILL PREVENTION CONTROL AND COUNTERMEASURES PLANS – The Road & Bridge and Fleet Departments maintain these plans. The plans satisfy the requirements of 40 CFR Part 112. Procedures for facilities include material storage procedures, loading/unloading of liquids or solids, preventative inspection of liquid containers, and correct vehicle positioning for materials transfer. Spill response procedures include identification of procedures and equipment for spill containment, manual clean-up procedures or removal by vacuum or pump systems, and the use of absorbents or gelling agents. These procedures will reduce potential pollutants in stormwater discharge. The regulations require the SPCC Plans to be updated every three years and signed off on by a registered engineer. The next update and sign off is scheduled for August 2005. Compliance with the SPCC Plans is the responsibility of Road & Bridge or Fleet Departments.

6. EMPLOYEE TRAINING – Jefferson County informs County employees of the impacts associated with illegal discharges, proper recycling and disposal of wastes from county operations, and proper installation and maintenance of BMPs. Employees are trained for:
 - a) Release and spill reporting
 - b) Containment
 - c) Clean up and disposal
 - d) 40 hr. OSHA Hazardous Materials training
 - e) 24 Hour Hazardous Material Training
7. ROADWAY MAINTENANCE – Jefferson County provides maintenance to County streets and roads. The County constructs new roadways, upgrades existing roadways, conducts repairs, salts and sands streets and conducts snowplowing activities. The County maintains salt and sand stockpiles by covering or with berns around them. Most areas of the County that have curb and gutter infrastructure receive street sweeping.
8. DRAINAGE WAY MAINTENANCE - The County conducts cleaning activities when needed to keep the drainage system functioning.
9. STORM SEWER MAINTENANCE - Jefferson County maintains the County storm drainage system. In order to keep the storm sewer system free of debris and sediment, the County provides maintenance and repairs within unincorporated Jefferson County. The County conducts cleaning activities where needed to keep the drainage system functioning. The County constructs minor improvements to this system as needed to assure adequate drainage of storm water year round.
10. COUNTY CONSTRUCTION PROJECTS - County staff or consulting engineers obtain a Stormwater Construction Permit from CDPHE when one acre or more is disturbed. The permit holder is responsible for installing the required erosion and sediment control BMPs. County staff also inspect for adherence to the Erosion Control Plan and the Performance Standards specified in the County’s Zoning Resolution.
11. COUNTY FACILITY CONSTRUCTION - Jefferson County considers the effects of impervious area from county facilities on stormwater quality and quantity. The County requires that contractors evaluate mitigation techniques such as infiltration areas, modular, porous, gravel, or grid system pavement, under parking lot chambered systems.

PROPOSED BEST MANAGEMENT PRACTICES

1. COUNTY FACILITIES MAP

A County Facilities map will be developed that identifies locations of facilities owned and maintained by the County. Examples of the facilities included are the Courts and Administration Building and the Jefferson County Road and Bridge shops. Staff will identify all facilities the County owns and maintains.

2. ROADWAY MAINTENANCE

In addition to the existing maintenance procedures, more specific data on road sanding activities will be gathered. County sanding trucks have the capability to collect data on road sanding activities by area. Information will be combined with maintenance of drainage ways and storm sewers to assess if roadway maintenance activities are contributing to drainage and storm sewer maintenance needs.

3. SEDIMENT MANAGEMENT EVALUATION

Jefferson County recognizes that because of the decomposed granite bedrock, steep slopes in the foothills, construction and maintenance activities, sediments are the County's primary stormwater quality contaminant. Storm drain maintenance activities will be compiled.

In order to plan where county resources should be spent mitigating sediment transport, staff will identify problem areas of the county and develop a comprehensive plan to manage the sediment with the ultimate goal of decreasing sediment reaching surface water.

It is anticipated that sediment management will consist of constructing sediment ponds or traps where sediment routinely collects, contacting homeowners who may be contributing to sediment transport, conduct street sweeping where curb and gutter are present and inspecting (clean out if necessary) drop structures.

4. COUNTY DEPARTMENT OPERATIONS AND MANAGEMENT PLANS

County Departments have existing operations protocol. Plans will be compiled and developed for the following sites:

Facility	County Department/ Responsible Party	Applicable Activity
Heavy Shop	Fleet Services	street and stormwater maintenance, fueling, snow & ice, material storage, fleet maintenance and landscape maintenance.
Maintenance Shop	Fleet Services	fleet maintenance
Evergreen Shop	Road and Bridge	maintenance and fueling
Lookout Mountain Shop	Road and Bridge	landscape maintenance and fueling.
Coal Creek Shop	Road and Bridge	maintenance and fueling.
Shaffers Shop	Road and Bridge	maintenance and fueling.
Central Shop	Road and Bridge	maintenance and fueling
South Shop	Road and Bridge	landscape maintenance and fueling
Critchell Shop	Road and Bridge	maintenance and fueling
Buffalo Creek	Road and Bridge	maintenance and fueling
Indian Hills	Road and Bridge	maintenance and fueling
Fairgrounds	Fairgrounds	activities
Jefferson County Airport	Jefferson County Airport	County Airport Operations and fueling,
Foothills Building	Open Space Facilities	wood working step(s), storage, welding, painting, and fueling

Rooney Road Recycling Center	Household Hazardous Waste Authority	household hazardous waste and small quantity generator recycling
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Sites without existing plans will have plans developed. The plans will include and map of the facility site and will show stormwater – related features such as: drainage ways, ditches and gulches.

5. COUNTY PROPERTY MAINTENANCE / LANDSCAPE ACTIVITIES

County property maintenance policies and procedures will be documented and evaluated. Jefferson County will document snow and ice disposal procedures. Water management will be included as well as opportunities for trying pilot programs for vegetation and xeriscaping. Pesticide/herbicide use will be summarized and included in Pollution Prevention possibilities.

GOOD HOUSEKEEPING MEASURABLE GOALS

The measurable goals listed in the table below are established to reflect the needs and characteristics of Jefferson County and the area served. The year listed under the target date is the year in which the measurable goals will be implemented after permit certification.

Target Date	Activity
Year 1 December 1, 2003 (Year 1 begins March 10, 2003)	<ul style="list-style-type: none"> • Complete facility locations map. (<i>Proposed Best Management Practices - #1</i>) • Begin compiling existing county facility operations and management plans. (<i>Proposed Best Management Practices - #4</i>) • Document exiting storm sewer maintenance activities (<i>Proposed Best Management Practices - #3</i>)
Year 2 - December 1, 2004	<ul style="list-style-type: none"> • Document existing road maintenance activities and collect road sanding data (<i>Proposed Best Management Practices - #2</i>) • Start sediment evaluation and identify sediment problem areas (<i>Proposed Best Management Practices - #3</i>) • Evaluate erosion / sediment protocol and road / storm sewer maintenance activities (<i>Proposed Best Management Practices - #3</i>) • Develop list of county facilities needing plans and develop needed plans (<i>Proposed Best Management Practices - #4</i>) • Begin compiling/documenting County property maintenance policies and procedures (<i>Proposed Best Management Practices - #5</i>)
Year 3 - December 1, 2005	<ul style="list-style-type: none"> • Prioritize problem drainage, erosion, sediment areas (Jefferson County Road and Bridge) (<i>Proposed Best Management Practices - #3</i>) • All County facilities will have county operations and management plans (<i>Proposed Best Management Practices - #4</i>)
Year 4 - December 1, 2006	<ul style="list-style-type: none"> • Research budget solutions for sediment problem areas (<i>Proposed Best Management Practices - #3</i>)
Year 5 - December 1, 2007	<ul style="list-style-type: none"> • Develop a sediment management plan (<i>Proposed Best Management Practices - #3</i>) • Complete summary of County property maintenance procedures. (<i>Proposed Best Management Practices - #5</i>)

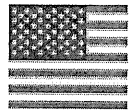
Note: Any circumstances beyond the control of the regulated entity that affect the completeness of Measurable Goals will be detailed in the end of the year reporting.

AREA WHERE PROGRAM WILL BE IMPLEMENTED

Jefferson County will meet the permit requirements only in the permitted area.

**APPENDIX C-2 MS4 INFORMATION FOR THE
CITY OF LAKEWOOD**

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LAKEWOOD'S STORMWATER DISCHARGE PERMIT

This permit was originally issued in 1996 after more than a year of discussions between representatives of the City, the Colorado Water Quality Control Division, the Urban Drainage and Flood Control District, the City of Denver and the City of Aurora. The permit incorporates extensive comments received from all interested parties on an earlier draft permit made available for public comment. Click on each section title below for more information.

- [Goals of the Municipal Stormwater Permit](#)
- [Requirements of the Stormwater Management Program](#)
- [Framework for Program Management](#)
- [Elimination of Illicit Connections and Discharges](#)
- [Development Planning and Construction](#)
- [Public Agency Activities](#)
- [Public Information and Involvement](#)
- [Monitoring](#)
- [Program Reporting and Evaluation](#)

Goals of the Municipal Stormwater Permit

- To maintain and protect the beneficial uses of water bodies within the City Of Lakewood.
- To reduce pollutants in stormwater.
- To evaluate compliance with the objectives and requirements contained in the permit and improve permit programs.

Requirements of the Stormwater Management Program

The stormwater management program is comprised of seven elements, the objectives of which are to:

1. Effectively fund, manage and coordinate implementation of the stormwater program;
- ✓2. Identify and eliminate illicit connections and illicit discharges to the storm drain system;
- ✓3. Reduce stormwater impacts associated with development and redevelopment projects;
- ✓4. Reduce stormwater quality impacts associated with municipal activities;
- ✓5. Increase public knowledge about the impacts of stormwater pollution and about actions that can be taken to prevent pollution;
- ✓6. Increase public knowledge and understanding about the quality, quantity, sources, and impacts of urban runoff; and
- ✓7. Evaluate the effectiveness of implemented stormwater management programs and

modify them as required.

Summarized below are the program elements to carry out these objectives.

1 **Framework for Program Management**

The permit designates responsibilities for managing and executing stormwater pollution reduction programs.

The City Of Lakewood's responsibilities are to:

- Work in concert with other Front Range municipalities to improve water quality in a regional manner.
- Provide staff and financial resources for the development of stormwater management programs, program components and annual reports.
- Cooperate with outside agencies for the purpose of improving stormwater quality.
- Develop and implement a Public Education Strategy.
- Implement and collect data from a wet weather stormwater monitoring program.

The City Of Lakewood is required to:

- Comply with all of the requirements of the permit and the individually approved stormwater management programs.
- Coordinate implementation of permit requirements within its own jurisdiction;

The City Of Lakewood must also prepare a summary of the personnel and fiscal resources that have been dedicated to implement the stormwater program, and demonstrate, through an ordinance or guidance document, that it possesses the legal authority necessary to control stormwater discharges within our jurisdiction.

2 **Elimination of Illicit Connections and Discharges**

The Clean Water Act requires that permits for municipal stormwater systems prohibit all discharges of "non-storm" water. Since there are many types of "non-storm" discharges that are regulated under separate permits or are not considered significant pollutant sources, the permit exempts certain discharges from the prohibition.

However, to eliminate all non-exempt discharges, The City must:

- Identify and eliminate illicit connections and illicit discharges to storm drains; and
- Facilitate the public's ability to report illicit connections and discharges.

3 **Development Planning and Construction**

This program is designed to ensure that stormwater management considerations are integrated into planning, permitting and construction of development projects. As part of this program, the City requires:

- Citywide guidelines (including recommended Best Management Practices, Stormwater Management Plans (SWMP) and checklists) for development projects that may

- significantly affect stormwater quality;
- Guidelines for use in preparing and reviewing SWMP documents; and
- Guidance for developers about stormwater management, reducing flows from development sites, and cost-effective pollution control measures.

We must also develop a program to carry out planning control measures for priority categories of development projects, and require submittal of Stormwater Management Plans for sites disturbing one acre or more, prior to issuing any grading or building permit. The City incorporates lessons learned as well as watershed and stormwater management considerations into any significant re-write of the program.

The City Of Lakewood has developed city-wide guidelines for construction projects larger than one acre that may generate significant pollutant loads,

4 **Public Agency Activities**

The City is required to develop a program to reduce the impact of municipal activities on stormwater quality. This program must include the following elements, when possible.

- Procedures to prevent and respond to spills or leaks from sewage system operations;
- Proper management, design and practices to prevent stormwater impacts from City construction projects;
- Pollution prevention plans and Best Management Plans (BMPs) for public vehicle maintenance/material storage facilities that may discharge pollutants into stormwater;
- Procedures to minimize stormwater pollution associated with landscaping activities, pools and recreation areas;
- BMPs for catch basin and storm drain maintenance;
- Street sweeping and road maintenance programs;
- A program to reduce pollutants from municipal parking lots; and
- Procedures to implement BMPs at City owned or operated facilities.

Best Management Practices (BMP's)

The Urban Drainage and Flood Control District's Storm Drainage Criteria Manual Vol. 3 contains an exhaustive list of BMP's and details in AutoCad format.

5 **Public Information and Involvement**

Education is crucial for effective stormwater management. Information and public outreach programs that encourage target audiences to implement solutions that reduce stormwater pollution are cornerstones of the permit.

Education and outreach programs are targeted to specific audiences such as residents, industrial facility operators, commercial businesses, school children, and City employees.

Outreach

The City provides materials for the general public and targeted audiences that convey information about stormwater pollution and what can be done to help solve the problem. Our program provides phone numbers for the public to report illegal dumping, distributes training materials for City employees regarding stormwater permit compliance and educational materials for industry/business.

Site Visits to Businesses and Industries

The City must implement an educational, compliance assistance program for industries and businesses that are potential sources of urban runoff pollutants. The most important component of this program is the educational site visit. Through these visits the City representative can explain the stormwater regulations, provide businesses with information about how to minimize polluted runoff, and if requested, can assist them in understanding and complying with stormwater regulations.

To reduce costs associated with instituting a new program, The City is working to coordinate this site visit program with existing programs conducted by other agencies.

A Citywide Stormwater Public Education Strategy

The City Of Lakewood implemented a citywide stormwater public education program. This program focuses on residents, school children, businesses and employees and includes a full range of outreach tools and methods for educating and training these audiences.

6 **Monitoring**

The City Of Lakewood has developed a stormwater quality monitoring program that will:

- Track water quality status and trends;
- Identify watershed-specific pollutants of concern;
- Improve the relationship between land uses and pollutant loads;
- Identify sources of pollutants and evaluate significant stormwater quality problems;
- Evaluate the effectiveness of stormwater management programs, including pollutant reductions achieved by BMPs; and
- Increase knowledge about the impacts of runoff on receiving waters.

7 **Program Reporting and Evaluation**

Reporting and evaluation of program results is crucial for effective stormwater management. Each year, on April 1, the City is required to submit an annual program progress report to the State Water Quality Control Division. This report must review the status of implementation, summarize accomplishments and implementation of BMPs, and recommend any changes to the stormwater programs or plans.

The City Of Lakewood must also submit an annual report on the results of the ongoing monitoring program. Four years after the issuance of this last permit, the City must submit a report of the data gathered to assess the effectiveness of BMPs that have been implemented, and make recommendations on performance standards. A final report on the results of the receiving water impacts assessment will also be generated.

Conclusion

City Council recognizes that reducing water pollution is important in maintaining the quality of life in Lakewood. This permit is an important step in continuing to improve the health of all

water bodies within the City. Urban runoff and the pollutants suspended in it can have a significant effect on water quality in this region.



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**APPENDIX C-3 MS4 INFORMATION FOR THE
CITY OF WHEAT RIDGE**

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Aug 04 approved

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National Pollutant Discharge Elimination System

(N.P.D.E.S.)
Phase II Permit
Revised 06/04

Prepared by
City of Wheat Ridge
Public Works Department



U.S. Environmental Protection Agency
National Pollutant Discharge Elimination System

National Pollutant Discharge Elimination System

TABLE OF CONTENTS

1. PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS.....	Page 1
1.1 Brochures and Publications	Page 1
1.2 Carnation Festival	Page 2
1.3 Storm Drain Marking	Page 2
1.4 Web Site.....	Page 2
1.5 Channel 8 Stormwater Program	Page 3
1.6 Community Disposal	Page 3
Measurable Goals	Page 3
2. PUBLIC PARTICIPATION/INVOLVEMENT	Page 5
2.1 Public Hearings	Page 5
Measurable Goals	Page 6
3. ILLICIT DISCHARGE DETECTION AND ELIMINATION	Page 6
3.1 Storm Sewer Outfall Map	Page 7
3.2 Regulatory Mechanism	Page 7
3.3 Illicit Discharge Detection and Elimination Plan	Page 7
3.4 Hazardous Waste Collection.....	Page 8
Measurable Goals	Page 8
4. CONSTRUCTION SITE RUNOFF CONTROL	Page 9
4.1 Regulatory Mechanism	Page 10
4.2 Stormwater Quality Management Plan	Page 10
4.3 Construction Site Inspections.....	Page 12
4.4 Construction Site Enforcement	Page 12
4.5 Education and Training Programs for (cont.)	Page 13
Measurable Goals	Page 13
5. POST-CONSTRUCTION STORMWATER MANAGEMENT	Page 14
5.1 Regulatory Mechanism	Page 15
5.2 Stormwater Quality Management Plan	Page 15
5.3 Post-Construction Site Inspection	Page 17

National Pollutant Discharge Elimination System

5.4 Post Construction Site Enforcement	Page 17
Measurable Goals	Page 18
6. POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS	Page 19
6.1 Municipal Facilities Map	Page 19
6.2 Municipal Facilities Stormwater Quality Plan	Page 19
6.3 Municipal Facility Inspections.....	Page 21
6.4 Municipal Employee Training	Page 21
6.5 Roadway, Drainageway, and Storm Sewer Maintenance	Page 22
Measurable Goals	Page 22

1. PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS

General Information

The Public Education and Outreach on Stormwater Impacts minimum control measure is one of six measures the *City of Wheat Ridge*, an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4), is required to include in the City Stormwater Management Program to meet the conditions of the State permit.

This section offers general guidance on how to provide education to the public and comply with this minimum control measure. The City has a wide range of flexibility in choosing how to satisfy the minimum control measure based upon unique conditions and resources.

Goal Statement and Target Audience

The goal of the Public Education Program is to provide education and guidance to the Citizens of Wheat Ridge regarding ways to improve stormwater quality. To achieve this goal, several different programs will be implemented. Some of the programs provide information as to the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil, household hazardous wastes and pet waste.

Introduction of Proposed Programs

1.1 Brochures and Publications

Stormwater Information Brochures will be handed out at the Carnation Festival, which is an annual public event in the City of Wheat Ridge. These brochures will also be placed at municipal sites year round, such as City Hall and the Recreation Center. The principal City publication that will be utilized for disbursement of Program information to all City residents and businesses is the *Wheat Ridge Connection*, which is a City newsletter that is mailed to all mail drops within the City limits six times per year.

Scope: The brochures and publications will provide information about the impacts of stormwater discharges on water bodies and the steps the general public and business can take to reduce pollutants in stormwater runoff. There will also be information and solutions on the impacts associated with illegal discharges and improper disposal of waste. Solutions include alternatives to follow to avoid polluting with pet, auto, and chemical pollutants.

A general information article on these topics will appear at least twice a year in the spring/ fall issues of the *Wheat Ridge Connection* starting in August 2004.

Stormwater information Brochures will also be available to businesses and the general public starting in September, 2004. These will be provided via desk-top distribution at City Hall as well as through Supermarkets, schools, and local businesses. The most effective method to convey the information contained in the brochures to residents &

businesses of the City is through the Wheat Ridge Connection newsletter. The information that is typically provided on readily available stormwater brochures will be disseminated into a printed form that will be formatted inside the Wheat Ridge Connection. These "brochures within a newsletter" will be provided in a separate section from the articles described above, to be distributed at least twice per year in the Wheat Ridge Connection starting March 2005.

1.2 Carnation Festival

The Carnation Festival is an annual community festival. Citizens are invited to visit the City of Wheat Ridge tent for information about City services. City staff from the Public Works Department, and other departments will be available to answer citizen questions. These events are weather permitted.

Scope: At this annual festival, the City of Wheat Ridge booth will provide general information about the City's Stormwater Management Program as it relates to NPDES by handing out brochures and addressing questions. The Carnation Festival is held annually in August. Participation at these festivals with information pertaining to stormwater quality will begin in August 2004.

1.3 Storm Drain Marking

Clean water is valued for drinking and recreation, and as a fish and wildlife habitat. Yet some people will dispose used oil, antifreeze, household or garden chemicals, as well as other toxic materials into neighborhood storm drains, not realizing that there's a connection between storm drains and local waters. Storm Drain markings are designed to raise public awareness of this connection. These markers are small plastic disks with "No Dumping – Drains to Creek or Lake" printed on them and are placed on inlets.

The City of Wheat Ridge has already completed implementation of storm drain markers on all storm inlets maintained within City Right-of-Way. The City monitors markers which have fallen off/ been removed during its regular inlet maintenance schedule.

Public? → **Scope:** Work with businesses and organizations within the City to install storm drain markers on private property and discuss pollution prevention as it relates to stormwater quality. When meeting with these groups, staff will lecture as to the association of storm drains, pollution, and local waterways. The City shall attempt to coordinate placement of at least 20 markers on applicable private property sites semi-annually (June and September). Implementation of the developed program will start in June, 2006.

1.4 Web Site

The Internet is a widely used tool by the public and private sectors. The City website can be found at www.ci.wheatridge.co.us where one can access the City of Wheat Ridge home page. General information pertaining to the City of Wheat Ridge Stormwater plan will be provided along with a web link to the Jefferson County - Rooney Road Recycling

Center (Household Hazardous Waste Storage Authority) that the City of Wheat Ridge is a member.

Scope: The City website information regarding the Stormwater Management & NPDES Program will be up at all times and revised every six months starting in December, 2005, then every June and December thereafter. Web page design development begins December, 2003. The stormwater quality web page will contain at a minimum the following information:

1. Procedures for public reporting of illicit discharges and improper disposal of wastes, including phone numbers to call and e-mail addresses to write;
2. Information on where to recycle household quantities (collection programs: Jefferson County - Rooney Road Recycling Center) of used motor oil, antifreeze, latex paint or batteries.
3. General information regarding the City Stormwater Program, including a downloadable PDF copy of the 'Wheat Ridge Stormwater Information' Brochure.

1.5 Channel 8 Stormwater Programming

An informational message pertaining to stormwater quality themes will air on the City of Wheat Ridge's cable channel. Cable is in approximately 8500 homes in Wheat Ridge.

Scope: The intent of this educational message will be to provide a basic understanding what stormwater is and how its quality is relevant to our drinking water. The program will provide an explanation of where stormwater goes. It will also stress the negative impacts of pollution on stormwater and the impacts on our drinking water. Solutions to the negative impact of pollution will be offered. The informational message may be purchased or produced by the City. In either case, customized information for the City of Wheat Ridge programs will be provided as a part each airing. It will run for approximately four weeks, starting in March and ending in April. The Stormwater message will be implemented in March, 2006.

1.6 Community Disposal Location

The City of Wheat Ridge is a participant in the Rooney Road Recycling Center. The Center is located at 15 South Rooney Road in Jefferson County, Colorado. Residents of the City of Wheat Ridge are encouraged to use this facility. The Center currently offers household recycling, tree limb disposal, electronic waste recycling, household chemical disposal, disposal for small quantity generators, and a HazMart (where citizens can pick up new or barely used products, to avoid purchasing and storing more product than they may need). The availability of this facility will be provided in the proposed 'Wheat Ridge Stormwater Information' brochure planned for yearly distribution (see Section 1.1).

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after

permit approval. For convenience, the measurable goals identified under Program Area 1 are summarized in the Table below:

Table 1. Public Education and Outreach on Stormwater Impacts Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	1. Web Page Design Development – December ➔
Year 1 – 2004	1. Bi-Annual article in Wheat Ridge Connection – August ↻ 2. Participation in Annual Carnation Festival – August ↻ 3. Brochures available to businesses and public – September ➔
Year 2 – 2005	1. Brochure information provided in WR Connection Biannually, beginning in March ↻ 2. Web Page Design Implementation – December, revised every June and December thereafter ↻
Year 3 – 2006	1. Annual Air Stormwater Message, Channel 8 Cable - March through April, then every March through April annually ↻ 2. Brochure information provided in WR Connection Biannually ↻ 3. Bi-annual Storm Drain Marking Program Implemented –June, then every June & September ↻
Year 4 – 2007	1. Brochure information provided in WR Connection Biannually ➔
Year 5** – 2008	1. Brochure information provided in WR Connection in March

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

➔ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

2. PUBLIC PARTICIPATION/INVOLVEMENT

General Information

Public Involvement/Participation minimum control measure is one of six measures the City of Wheat Ridge, an operator of a phase II regulated small Municipal Separate Storm Sewer System, is required to include in the City Stormwater Management Program to meet the conditions of the State permit.

This section offers general guidance on how to involve the public with the City's Stormwater Management Program and comply with this minimum control measure. The City of Wheat Ridge has some flexibility in choosing how to satisfy the minimum control measure based upon its unique conditions and resources.

Goal Statement and Target Audience

The goal of the Public Participation/Involvement Program is to give the citizens of Wheat Ridge opportunities to play an active role in the implementation of the program. The programs will provide an opportunity for the public to participate in activities related to stormwater quality while at the same time, gaining knowledge about pollution as it relates to water quality as well as taking care of the environment.

Introduction of Proposed Programs

2.1 Public Hearing

The City of Wheat Ridge will offer an annual public hearing for the citizens of Wheat Ridge with the City's NPDES Program as the topic for discussion. A notice of this public hearing will be published in a community publication.

The City follows all applicable state and local Public Notice requirements in implementing its stormwater program. The City Clerk is responsible for ensuring compliance with these procedures.

Public Notice is required for all new ordinances or changes to existing ordinances by City charter. The City's Public Notice requirements involve two publications of the ordinance, and require publication of the public hearing date and time. All Public Notices are published in the legal newspaper, the Wheat Ridge Transcript, a newspaper of general circulation in Wheat Ridge. In addition, agendas of Council meetings are posted in City Hall, as required by City Charter.

Wheat Ridge's Stormwater Quality ordinance, once adopted by City Council complete with the required Public Hearing provisions and all amendments to the ordinance, must be adopted by the same process.

Scope: At these meetings, the City's NPDES program will be presented to the public. Citizens will be encouraged to discuss various viewpoints and provide input concerning the many issues related to stormwater quality. Brochures relating to stormwater quality

themes will be made available to the public at these hearings. Annual public hearings pertaining to the City's NPDES program will begin in September, 2005.

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after permit approval. For convenience, the measurable goals identified under Program Area 2 are summarized in the Table below:

Table 2. Public Participation/Involvement Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	
Year 1 – 2004	
Year 2 – 2005	1. Annual Public Hearings Begin – September ↻
Year 3 – 2006	
Year 4 – 2007	
Year 5** – 2008	

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

➔ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

3. ILLICIT DISCHARGE DETECTION AND ELIMINATION

General Information

The Illicit Discharge Detection and Elimination minimum control measure is one of six measures the City of Wheat Ridge, an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4), is required to be included in the City Stormwater Management Program to meet the conditions of the state permit.

MEM

This section offers general guidance on the detection and elimination of illicit discharges. The City has some flexibility in choosing how to satisfy the minimum control measure based upon unique conditions and resources.

Goal Statement and Target Audience

The goal of the Illicit Discharge Detection and Elimination Program is to provide the City with procedures to detect and eliminate illicit discharges from the storm sewer system as well as provide enforcement measures.

Introduction of Proposed Programs

3.1 Storm Sewer System Outfall Map

A Storm Sewer System Outfall Map will be developed by City staff that identifies the major drainageways located within the City of Wheat Ridge as well as the outfall points along these drainageways. This map will be developed to demonstrate a basic awareness of the intake and discharge area of the stormwater system. It will be used to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular water bodies these flows may be affecting. The map will also provide a means of assisting City staff in responding to and tracing illicit discharges when located.

Scope: The base data has been obtained from the city's records and files. The Storm Sewer System Map will be updated by City staff or private contractor with available as-built data and completed and implemented in Map form by September 2007. If private contractors are used, they will be selected from yearly qualified on-call engineering firms. The Map will be updated on a quarterly basis. Development of the Map will begin September 2004.

3.2 Proposed Regulatory Mechanism

The purpose of a Stormwater Ordinance is to give the City the authority to safeguard persons, protect property, and prevent damage caused by illicit discharges to the environment.

Scope: The Public Works Department will prepare a draft stormwater ordinance which the City Attorney's Office will review and comment. The stormwater ordinance will allow for the City to identify and monitor illicit discharges as well as enforce penalties. The completed stormwater ordinance will be presented to City Council in October 2005, and implemented by Council on or before March, 2006.

3.3 Illicit Discharge Detection and Elimination Plan

An Illicit Discharge Detection and Elimination Plan will be implemented in accordance with the state permit. This plan will include procedures for locating, tracing, and removing the source of illicit discharges. Multiple resources will be tapped to enable the City to detect and eliminate these illicit discharges.

A list of allowable non-stormwater discharges or flows shall be provided in the Plan (landscape irrigation, lawn watering, irrigation return flow, rising ground waters,

uncontaminated ground water infiltration, pumped ground water, water line flushing, discharges from potable water sources, foundation drains, air conditioning condensation, water from crawl space pumps, footing drains, individual residential car washing, dechlorinated swimming pool discharges, and street wash water). A list of occasional incidental non-stormwater discharges such as non-commercial or charity car washes, etc. shall also be addressed in the Plan. All allowable non-stormwater discharges shall be included in the Program training and procedures for Construction inspection and enforcement.

Scope: Several of the proposed programs previously discussed are applicable to illicit discharge detection. One method that will be implemented is the web pages that were listed in Section 1.5 of the Public Education and Outreach Program. Another resource that will be used for detection will be the Storm Sewer System Outfall Map mentioned in Section 3.1 of this program.

In addition to the hotline number and outfall map, the City will perform periodic visual screenings during dry weather. Sampling will occur in areas of suspect outfalls as well as follow-up inspections as needed.

The City will enforce the Stormwater Ordinance to eliminate illicit discharges. Educational efforts made through City functions such as the Carnation Festival, brochures, and storm drain markings may serve as a deterrent to polluting. Development of the Illicit Discharge Detection and Elimination Plan will begin September 2004. Implementation of said plan will occur on or before September, 2006.

3.4 Hazardous Waste Collection

To discourage illegal illicit discharges, the City currently, and will continue to offer, a hazardous waste collection program to all citizens of Wheat Ridge.

Scope: The Jefferson County - Rooney Road Recycling Center (Household Hazardous Waste Storage Authority) accepts multiple types of hazardous waste, not limited to: House and garden chemicals; paint products; automotive fluids and batteries; and, tires. The materials collected will be recycled (e.g., used oil), used as a waste fuel (e.g., solvents), or are disposed of properly at hazardous waste facilities. To inform residents of the Jefferson County - Rooney Road Recycling Center (Household Hazardous Waste Storage Authority), it will be advertised in various City publications (per program Section 1.1, beginning with Wheat Ridge Connection publication in September, 2004).

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after permit approval. For convenience, the measurable goals identified under Program Area 3 are summarized in the Table below:

Table 3. Illicit Discharge Detection and Elimination Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	1. Ongoing participation and education of Jefferson County - Rooney Road Recycling Center open to Wheat Ridge residents (Household Hazardous Waste Storage Authority) ↻
Year 1 – 2004	1. Development of Illicit Discharge Detection and Elimination Plan begins – September → 2. Development of Storm Sewer System Outfall Map – September → 3. Promotion of Recycling Center in City Publications and Wheat Ridge Connection – September →
Year 2 – 2005	1. Stormwater Ordinance Presented to Council – October
Year 3 – 2006	1. Stormwater Ordinance Implemented by Council – March 2. Illicit Discharge Detection and Elimination Plan implemented – September
Year 4 – 2007	1. Storm Sewer System Outfall Map Completed – September, then bi-annual updates thereafter ↻
Year 5** – 2008	

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

→ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

4. CONSTRUCTION SITE RUNOFF CONTROL

General Information

The Construction Site Runoff Control minimum control measure is one of six measures the City of Wheat Ridge, an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4), is required to include in the City Stormwater Management Program to meet the conditions of the State permit.

This section offers general guidance on how to improve stormwater quality as it relates to construction and comply with this minimum control measure. The City has some flexibility in choosing how to satisfy the minimum control measure based upon unique conditions and resources.

Goal Statement and Target Audience

The goal of the Construction Site Runoff Program is to provide information and direction to developers, contractors, as well as citizens, regarding stormwater quality as it relates to construction. This program has been developed with the following objectives in mind:

- To reduce soil loss from all construction sites to the maximum extent practicable;
- Improve the water quality of storm runoff to the maximum extent practicable;
- Prevent accumulations of soil and debris in the storm sewer system of the City of Wheat Ridge originating from construction activity;
- Prevent discharges of chemicals, chemical wastes and other pollutants from leaving construction sites;
- Prevent migration of construction debris off site;
- Prevent damage to properties adjacent to construction sites arising from sediment, debris, chemical wastes or other pollutants;
- Protect state waters and wetlands from damage caused by erosion, sedimentation, chemical wastes, or other pollutants arising from construction activity.

To attain these objectives, multiple policies will be implemented in order to provide guidance and compliance to the EPA's Stormwater Phase II Final Rule. The programs listed below include general information about the proposed regulatory mechanism, the Stormwater Discharge Plan Application, erosion control plan review, inspection procedures, and construction site enforcement.

Introduction of Proposed Programs

4.1 Proposed Regulatory Mechanism

The purposes of a Stormwater Ordinance is to give the City authority to safeguard persons, protect property, and prevent damage caused by illicit discharges to the environment.

Scope: The Public Works Department will prepare a stormwater ordinance in which the City Attorney's Office will review and comment. The stormwater ordinance will allow for the City to identify and monitor illicit discharges as well as enforce penalties. The ordinance will include requirements for implementing construction & post-construction structural and/ or non-structural BMP's. As per Program Section 3.2, the stormwater ordinance will be presented to City Council in October 2005, and implemented by Council on or before March, 2006. The City will be implementing Procedures for receipt and consideration of information submitted by the Public within the Stormwater Quality Management Plan (SQMP) described in the following section.

4.2 Stormwater Quality Management Plan

The Stormwater Quality Management Plan (SQMP) that is used for this minimum control measure is the same as used in the Post-Construction Runoff Minimum Control Measure. All development, re-development, and capital improvement projects that disturb one acre or more of land are required to address erosion, sediment control, and

*SQMP same as
MCM for Post-Const
Runoff*

water quality issues. All applicants will complete a SQMP and submit it to the City of Wheat Ridge for review and approval. The information requested with the application will be used in reports required by the state.

Scope: The SQMP Packet will include the following material:

- *General Information Worksheet.* This worksheet will provide the City with basic information about the applicant and the construction activities that will take place;
- *Spill Prevention and Management Plan.* This plan will detail how spill containment will be managed and handled by the applicant;
- *Best Management Practices Report.* This report will detail the best management practices (BMP) for stormwater quality that will be implemented and maintained by the applicant during construction as well as after the project is completed;
- *Erosion Control Construction Plans.* These plans will detail the types of erosion controls and stormwater quality BMP measures that will be implemented, as well as identify the locations;
- *Stormwater Discharge Permit.* The purpose of this permit is to initiate the inspection process, ensure that the applicant is following the approved plans, and provide a record of the activity for future reports required by the state. This permit is required prior to any site grading.
- *Erosion and Sediment Control Inspection Checklist.* This is the form used by the City's Inspector as well as the contractor to inspect the site for deficiencies;
- Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- *Recommended Training for Construction Site Operators.* Along with the SQMP, the City will also include information regarding the erosion control class offered at Red Rocks Community College. This training is recommended;
- Procedures for receipt and consideration of information submitted by the Public

The UDFCD Volume III Criteria Manual – Best Management Practices dated September 1999 as amended or most current edition, shall be used as the technical reference. The SQMP application form will be available at the City of Wheat Ridge and on the City's website at www.ci.wheatridge.co.us for public access.

Prior to start of construction, the applicant shall submit a completed Stormwater Activities Management Plan Packet to the City of Wheat Ridge. The Public Works Department will conduct a review of the submitted application. The Public Works Department's review consists of reviewing all documents associated with the SQMP for completeness and the Erosion Control Plans for feasibility and compliance to City regulations.

Once the Public Works Department has approved the appropriate documents, construction must start within six months of the approval date. If the development or capital improvement project does not start construction within six months of the approval date, the applicant must submit a new SQMP application for review and approval. The Stormwater Quality Management Plan review process will be implemented in September 2006. Development of the SQMP will begin December, 2004.

4.3 Construction Site Inspections

The purpose of construction site inspections is to determine if the Erosion Control plan has been followed, the BMPs have been properly maintained, and to check if additional erosion control measures are necessary.

2 inspection / 2 weeks
Scope: A City Inspector as well as the contractor for the development or capital improvement project is required to perform a site inspection at least once every two weeks to ensure that all approved BMPs are constructed in accordance with the approved SQMP. This inspection involves a review to determine if the specified BMPs are in place and conform to the approved SQMP and Erosion Control plans. Some circumstances under which a construction inspection would be conducted include:

- a. Initial inspection of a construction site;
- b. To address complaints;
- c. During or after a major storm event to determine if the BMPs worked and/or determine if maintenance is needed;
- d. When a City Inspector returns to a site to verify that required corrective actions have been taken;
- e. Verify that proper maintenance is taking place;
- f. Verify that the BMP's required are being installed according to specifications.
- g. Follow up to a site inspection when the City Inspector traces an off-site problem;
- h. When previous site inspections have given the City reason to believe that the plan is not being implemented and/or the inspection reports have not been addressed; When determined necessary by the City.

Results of the bi-weekly inspection are noted on the Erosion and Sediment Control Inspection Checklist. It is the contractor's responsibility to provide this bi-weekly Checklist to the City. A completed Erosion and Sediment Control Inspection Checklist shall be delivered, e-mailed, or faxed bi-weekly to the Public Works Department. The blank Erosion and Sediment Control Inspection Checklist with procedures is included with the Stormwater Activities Management Plan Application packet. If the contractor fails to provide the inspection checklist, enforcement procedures may be invoked. Construction site inspections will be implemented in September, 2006.

4.4 Construction Site Enforcement

It is the City's intent to work with developers, contractors, property owners, and City personnel when problems arise at construction sites. Our goal is to assist the applicant selecting possible BMPs and encourage proper maintenance. Enforcement actions by the City will be taken when other means of getting the site into compliance have been

unsuccessful. Please note that enforcement actions during the construction phase are different than the post-construction enforcement procedures.

Scope: Construction phase enforcement begins when deficiencies are present at the existing construction site. The City may impose the following enforcement actions in the listed order:

1. Verbal warning to contractor detailing requirements for compliance;
2. Stormwater compliance form to contractor stating problems and solutions;
3. Notice of violation letter with deadline to comply with Stormwater Quality Management Plan and/or Erosion Control Plan will be given to the project owner and contractor;
4. Issuance of a stop work order

The Stormwater Discharge Permit issued under the SQMP requires the erosion controls be properly installed, maintained, and removed. The owner of the property must sign the Stormwater Discharge Permit. All correspondence relating to noncompliance is routed to the signatories on the permit and the known contractor on site at the time of violation. Construction Site Enforcement Procedures will be implemented in September 2006.

4.5 Education and Training Programs for Construction Site Operators

The City of Wheat Ridge Construction Site Operators program consists of two elements. These elements include encouraging contractors to attend the Red Rocks Community College course, and one-on-one training as part of the regular City site inspections.

Scope: Red Rocks Community College offers an erosion class aimed at construction contractors. The purpose is to educate them on the technical and regulatory requirements for sediment and erosion control. The City will encourage individuals to participate in this course by providing information on the course when the applicant obtains the Stormwater Activities Management Plan application packet. The City will also use its compliance and site inspections as an opportunity to educate contractors. When problems are found, the City Inspector will use the findings as an opportunity to inform the operator of efforts that could have been taken to avoid the problem and measures that may be taken to prevent a recurrence. The City Inspector shall also outline at project initiation/ preconstruction meetings, the City requirements for Erosion Control and the responsibility for construction site operators to control waste. Education and training programs/ opportunities for construction site operators will be implemented September 2006. Inspections and Site Enforcement Procedures will be implemented September 2006.

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after

permit approval. For convenience, the measurable goals identified under Program Area 4 are summarized in the Table below:

Table 4. Construction Site Runoff Control Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	
Year 1 – 2004	1. Development of Construction Stormwater Quality Management Plan review process – December → 2. Development of Construction Site Inspection procedures – December → 3. Development of Site Enforcement procedures – December →
Year 2 – 2005	1. Stormwater Ordinance Presented to Council – October
Year 3 – 2006	1. Stormwater Ordinance Implemented by Council – March 2. Education & Training programs implemented - September 3. Stormwater Quality Management Plan review process Implemented – September 4. Construction Site Inspections Implemented April 5. Construction Site Enforcement Procedures Implemented April
Year 4 – 2007	
Year 5** – 2008	

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

→ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

5. POST-CONSTRUCTION STORMWATER MANAGEMENT

General Information

The Post-Construction Stormwater Management minimum control measure is one of six measures the City of Wheat Ridge, an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4), is required to include in the City Stormwater Management Program to meet the conditions of the State permit.

This section offers general guidance on how to improve stormwater quality as it relates to post-construction and to comply with this minimum control measure. The City has some flexibility in choosing how to satisfy the minimum control measure based upon unique conditions and resources.

Goal Statement and Target Audience

The goal of the Post-Construction Runoff Program is to develop, implement, and enforce procedures and controls to reduce the discharge of pollutants after construction is complete. This program will be developed with the following objectives in mind:

- Improve the water quality of storm runoff to a maximum extent practicable;
- Prevent accumulations of soil and debris in the storm sewer system of the City of Wheat Ridge;
- Prevent discharges of chemicals, chemical wastes and other pollutants from leaving existing developed sites;

To attain these objectives, multiple policies will be implemented to provide guidance and compliance to the EPA's Stormwater Phase II Final Rule. The programs listed below include general information about the proposed regulatory mechanism, the Stormwater Discharge Plan Application, inspection procedures, and enforcement.

Introduction of Proposed Programs

5.1 Proposed Regulatory Mechanism

The purposes of this Stormwater Ordinance is to give the City the authority to safeguard persons, protect property, and prevent damage caused by illicit discharges to the environment.

Scope: The Public Works Department will prepare a stormwater ordinance in which the City Attorney's Office will review and comment. The stormwater ordinance will allow for the City to identify and monitor illicit discharges as well as enforce penalties. The ordinance will also include requirements for implementing construction and post-construction structural and/ or non-structural BMP's. As per program Section 3.2 and 4.1, the stormwater ordinance will be presented to City Council in October, 2005, and implemented by Council on or before March, 2006.

5.2 Stormwater Quality Management Plan

The Stormwater Quality Management Plan (SQMP) that is used in this minimum control measure is the same as used in the Construction Site Runoff Minimum Control Measure. All development, re-development, and capital improvement projects that disturb one acre or more are required to address erosion, sediment control, and water quality issues. All applicants will complete a SQMP and submit it to the City of Wheat Ridge for review and approval. The information requested with the application will be used in reports required by the State.

Scope: The SQMP Packet will include the following materials:

- *General Information Worksheet.* This worksheet will provide the City with basic information about the applicant and the construction activities that will take place;

- *Spill Prevention and Management Plan.* This plan will detail how spill containment will be managed and handled by the applicant;
- *Best Management Practices Report.* This report will detail the best management practices (BMP) for stormwater quality that will be implemented and maintained by the applicant during construction as well as after the project is completed;
- *Erosion Control Construction Plans.* These plans will detail the types of erosion controls and stormwater quality BMP measures that will be implemented, as well as identify the locations;
- *Stormwater Discharge Permit.* The purpose of this permit is to initiate the inspection process, ensure that the applicant is following the approved plans, and provide a record of the activity for future reports required by the state. This permit is required prior to any site grading.
- *Erosion and Sediment Control Inspection Checklist.* This is the form used by the City's Inspector as well as the contractor to inspect the site for deficiencies;
- Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- *Recommended Training for Construction Site Operators.* Along with the SQMP, the City will also include information regarding the erosion control class offered at Red Rocks Community College. This training is recommended;
- Procedure for receipt and consideration of information submitted by the Public

The UDFCD Volume III Criteria Manual – Best Management Practices dated September 1999 as amended or most current edition, shall be used as the technical reference.

The SQMP application form will be available at the City of Wheat Ridge and on the City's website at www.ci.wheatridge.co.us or public access.

Prior to start of construction, the applicant shall submit a completed Stormwater Activities Management Plan Packet to the City of Wheat Ridge. The Public Works Department will conduct a review of the submitted application. The Public Works Department review consists of reviewing all documents associated with the SQMP for completeness and the Erosion Control Plans for feasibility and compliance to City regulations. As a part of this program item, the City will also require a letter of certification by the design engineer stating BMP's were constructed as designed.

Inspection procedures to determine that BMP's are being installed according to specifications are included in the Construction Program Area 4.

Once the Public Works Department has approved the appropriate documents, construction must start within six months of the approval date. If the development or capital improvement project does not start construction within six months of the approval

date, the applicant must submit a new SQMP application for review and approval. The Stormwater Quality Management Plan review process will be implemented on or before September 2006.

5.3 Post-Construction Site Inspection

The purpose of post-construction site inspections is to ensure adequate long-term operation and maintenance of BMPs.

Scope: The City will perform citywide post-construction site inspection annually to ensure that all approved BMPs are maintained in accordance with the approved Stormwater Management Plan. Post Construction Site Inspections shall include a review to determine if the specified BMPs are in place. City inspection staff shall be adequately trained and/ or certified prior to implementation of Post Construction Site Inspections to allow for proper determination if BMP's are being installed correctly and following good engineering practice s.

Some circumstances under which a compliance inspection would be conducted include:

- a. Regular annual inspections;
- b. To address complaints;
- c. During or after a major storm event, to determine if the BMPs worked and/or determine if maintenance is needed;
- d. When a City Inspector returns to a site to verify that required corrective actions have been taken;
- e. Verify that proper maintenance is taking place;
- f. Follow up to a site inspection when the City Inspector traces an offsite problem;
- g. When determined necessary by the City.

Results of the annual inspection are noted on the BMP Inspection Checklist. A Microsoft Access database tracking system (or similar) shall be established to track the location of and adequacy of operation of long term BMP's implemented in accordance with the program code enforcement division. Post-Construction site inspections and a tracking system will be implemented on or before September 2006.

5.4 Post Construction Site Enforcement

It is the City's intent to work with property owners, homeowners associations, and business owners associations when problems arise. Enforcement actions by the City will be taken when other means of getting the site into compliance have been unsuccessful. Please note that enforcement actions during the post-construction phase are different than the construction site enforcement procedures. Construction site enforcement can be found in the Construction Site Stormwater Management Minimum Control Measure.

Scope: The post-construction phase enforcement begins after projects have been final accepted by the City. Over time, deficiencies may become present on a developed site. The City may impose the following enforcement actions:

1. Verbal warning to property owner/HOA /BOA detailing requirements for compliance;
2. Letter of non-compliance is given to the property owner/HOA/BOA;
3. Notice of Violation letter with deadline to comply with Stormwater Management Plan is given to the property owner/HOA/BOA;
4. Charge back to owner/HOA/BOA for value of work completed by the City of Wheat Ridge;
5. Or, apply a lien on the property involved.

The Stormwater Ordinance will require the permanent BMPs to be properly maintained by the owner. Post-construction enforcement will be implemented on or before September 2006.

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after permit approval. For convenience, the measurable goals identified under Program Area 5 are summarized in the Table below:

Table 5. Post-Construction Runoff Control Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	
Year 1 – 2004	1. Development of Stormwater Management Plan review process – September → 2. Development of Site Inspections – September → 3. Development of Enforcement procedures - September →
Year 2 – 2005	1. Stormwater Ordinance Presented to Council – October
Year 3 – 2006	1. Stormwater Ordinance Implemented by Council - March 2. Implementation of Stormwater Management Plan review process - September 3. Post Construction Site Inspections implemented – September 4. Post Construction Site Enforcement procedures implemented – September
Year 4 – 2007	
Year 5** – 2008	

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

→ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

6. POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

General Information

The Pollution Prevention/Good Housekeeping for Municipal Operations minimum control measure is one of six measures the City of Wheat Ridge, an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4), is required to include in the City Stormwater Management Program to meet the conditions of the State permit. This section offers general guidance and information on the programs the City will implement to meet the expectations of the State, which is to prevent or reduce pollutant runoff from municipal operations. The City will accomplish this by developing and implementing training, operation, and maintenance programs for parks and open space, fleet and building, construction and land disturbances, and stormwater system maintenance.

Goal Statement and Target Audience

The goal of the Pollution Prevention/Good Housekeeping Program is to prevent or reduce pollutant runoff from municipal operations into the storm sewer system.

Introduction of Proposed Programs

6.1 Municipal Facilities Map

A Municipal Facilities map will be developed that identifies locations of facilities owned and maintained by the City. Examples of the facilities included are the Recreation Center and city shops.

Scope: The Municipal Facilities map will be created which identifies the facilities and will include facility name, address, and major drainageways, and ditches that are affected. The Municipal Facilities map will be completed by December 2004 and updated on an as-needed basis.

6.2 Municipal Facilities Stormwater Quality Plan

The purpose of the Municipal Facilities Stormwater Quality Plan (MFSQP) is used to prevent/reduce pollutants in stormwater runoff at municipal sites.

The MFSQP will be developed to provide a stormwater quality plan for the following facilities. These are the municipal facilities along with a description of activities relating to maintenance with each facility:

Table 6A: Municipal Facilities

Facility	Department	Facility Activity
Public Works Shop	Public Works	Street and Stormwater maintenance; Fueling; Snow & Ice; Material Storage; Fleet Maintenance; Vehicle Wash
Parks & Recreation Shop	Parks & Recreation	Material Storage.
City Hall	City Administration	Landscape Maintenance;
Recreation Center	Parks & Recreation	Landscape Maintenance;

Scope: In order to initiate the MFSQP, it is recognized by the City that multiple structural and non-structural BMPs will need to be in place. The stormwater quality management components associated with the MFSQP is as follows:

1. *Preventative Maintenance* – requires yearly scheduled maintenance, scheduled inspections, and nonscheduled maintenance. These procedures will reduce potential pollutants in stormwater discharge by denying stormwater access to substances that could migrate with the stormwater;
2. *Good Housekeeping* – procedures for the facilities include developing and adhering to a routine schedule for clean-up of the facilities, scheduled maintenance, and posting signs and labels on storage areas and areas where spills might occur;
3. *Spill Prevention and Response Procedures* – procedures for the facility include material storage procedures, loading/unloading of liquids or solids, preventative inspection of liquid containers, and correct vehicle positioning for materials transfer. Spill response procedures include identification of procedures and equipment for spill containment, manual clean-up procedures or removal by vacuum or pump systems, and the use of absorbents or gelling agents. These procedures will reduce potential pollutants in stormwater discharge;
4. *BMPs for Pollutant Sources* – procedures for the facility include the use of BMPs for exposure minimization to storm runoff, and flow diversion practices. It is also to include the use of BMPs associated with fueling, maintenance, painting, washing, loading and unloading, storage, and proper waste disposal practices;
5. *Employee Training* – to inform City employees of the impacts associated with illegal discharges, proper recycling and disposal of wastes from municipal operations, and proper installation and maintenance of BMPs.

The Municipal Facilities Stormwater Quality Plan will be implemented in March 2006. Development of same shall begin January, 2005.

6.3 Municipal Facilities Inspections

To ensure the MFSQP is implemented correctly, inspections of the municipal facilities must be conducted. Formal site inspections will be performed in accordance with the MFSQP using the Municipal Facility Stormwater Quality Inspection form. A visual inspection of each facility site and discussions with the manager or supervisor of the facilities will be conducted by the NPDES administrator or representative. Facilities include municipal parking lots, public works shops areas, including vehicular, materials, and salt/ sand & chemical storage areas. Waste transfer areas are not owned and operated by the City of Wheat Ridge.

Scope: The site inspections will consist of reviewing each facility to determine that the following BMPs are being implemented:

- Preventive Maintenance
- Good Housekeeping
- Spill Prevention and Spill Response
- Fueling Practices
- Equipment Maintenance Practices
- Equipment Painting Practices
- Equipment Washing Practices
- Loading and Unloading Materials Practices
- Liquid Storage in Above-Ground Tanks Practices
- Outside Storage Practices of Raw Materials
- Proper Waste Disposal
- Employee Training

Copies of the completed inspection forms will be kept on file with the City's Public Works Department. The Municipal Facility Stormwater Quality Inspection forms will be submitted to the Colorado Department of Public Health and Environment, Water Quality Control Division, upon request.

The City's NPDES administrator will submit an annual report on the overall conformity of the facilities with the MFSQP as directed by the state. Copies of the inspections and annual reports will be kept at the City of Wheat Ridge Municipal Building – Public Works Department for three years, in accordance with the Federal and State regulations. The Municipal Facilities site inspections will be implemented in March 2006. Development of same shall begin January, 2005.

6.4 Municipal Employee Training

In addition to Municipal Facility Inspections, the City will conduct in-house employee training sessions and participate in training offered by the EPA, state, or other relevant organizations to ensure the MFSQP is implemented correctly. Each department will be responsible for training associated with the maintenance activities for which it is responsible.

Scope: Employee training will include training on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as park and open space maintenance, fleet and building maintenance, operation of parking lots, salt/

sand storage areas and other municipal facilities, and stormwater system maintenance. Employing training will start in March 2006. Development of the City Employee Training Program will begin January, 2005.

6.5 Roadway, Drainageway, and Storm Sewer Maintenance

To keep roadways, drainageways, and the storm sewer system free of debris and sediment, the City provides regular street sweeping, storm sewer, and waterway maintenance within the City of Wheat Ridge.

Scope: The City’s existing street and storm sewer programs provide street sweeping services to assist in keeping the drainage system clean. The City also cleans, repairs, and maintains the City’s storm sewer system and drainageways, and constructs minor improvements as needed to assure adequate drainage of stormwater year-round. These existing maintenance programs will apply to the City’s NPDES Program beginning in March 2003. Records will be kept on a monthly basis.

Measurable Goals

Measurable goals are established at the end of each program sub-section to reflect the needs and characteristics of the City of Wheat Ridge and the area served. The year listed under the target date is the year in which the program will be implemented after permit approval. For convenience, the measurable goals identified under Program Area 6 are summarized in the Table below:

Table 6B. Pollution Prevention/Good Housekeeping for Municipal Operations Measurable Goals

TARGET DATE	ACTIVITY
Year 0* – 2003	1. Regular roadway, drainageway and storm sewer maintenance programs integrated into NPDES program – March →
Year 1 – 2004	1. Create a Municipal Facilities Map – December.
Year 2 – 2005	1. Development of a Municipal Facility Stormwater Quality Plan – January → 2. Development of Municipal Inspection Procedures- January → 3. Development of Municipal Employee Training – January →

Year 3 – 2006	1. Implementation of the Municipal Facility Stormwater Quality Plan – March 2. Implementation of Municipal Facilities Site Inspections- March 3. Implementation of Municipal Employee Training – March
Year 4 – 2007	
Year 5** – 2008	

*Year 1 begins March 10, 2003

**Year 5 (permit term) ends March 9, 2008

➔ Activity continues to end of permit term, or until implemented

↻ Activity repeats to end of permit term on anniversary of Implementation or as noted

**APPENDIX C-4 MS4 INFORMATION FOR THE COLORADO
DEPARTMENT OF TRANSPORTATION**

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**AUTHORIZATION TO DISCHARGE UNDER THE
COLORADO DISCHARGE PERMIT SYSTEM**

In compliance with the provisions of the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.; the "Act"), the

COLORADO DEPARTMENT OF TRANSPORTATION

is authorized to discharge stormwater from the municipal separate storm sewer system owned and operated by the Colorado Department of Transportation. All discharges authorized herein shall be consistent with the terms and conditions of this permit.

The applicant may demand an adjudicatory hearing within thirty (30) days of the issuance of the final permit determination, per the Colorado Discharge Permit System Regulations, 61.7(1). Should the applicant choose to contest any of the terms or conditions contained herein, the applicant must comply with Section 24-4-104 CRS 1973 and the Colorado Discharge Permit System Regulations. Failure to contest such terms and conditions constitutes consent to the condition by the applicant.

This permit and the authorization to discharge shall expire at midnight, October 31, 2005.

Issued and signed this of

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

J. David Holm, Director
Water Quality Control Division

TABLE OF CONTENTS

PART I

A.	COVERAGE UNDER THIS PERMIT.....	4
1.	<u>Authority to Discharge.....</u>	4
2.	<u>Discharges Covered Under this Permit.....</u>	4
3.	<u>Permit Area.....</u>	4
B.	TERMS AND CONDITIONS.....	4
1.	<u>Stormwater Management Program Requirements</u>	4
a.	Maintenance of Structural Controls	5
b.	New Development and Redevelopment Planning Program.....	6
c.	Public Street Maintenance Program.....	7
d.	Herbicide, Pesticide and Fertilizer Program	7
e.	Illicit Discharges Program	7
f.	Industrial Facilities Program	10
g.	Construction Sites Program	10
h.	Municipal Facility Runoff Control Program.....	11
2.	<u>Legal Authority.....</u>	12
3.	<u>Resources</u>	12
C.	PROGRAM REVIEW AND MODIFICATION.....	13
1.	<u>Review and Approval of Plans and Reports</u>	13
2.	<u>Annual Program Review.....</u>	13
3.	<u>Program Modification.....</u>	13
D.	WET-WEATHER MONITORING.....	14
1.	<u>Permittee Decision and Notification</u>	14
2.	<u>Monitoring Program Approach</u>	14
3.	<u>Basis for Division Review and Approval</u>	14
4.	<u>Wet-Weather Monitoring Reopener</u>	14
5.	<u>Reporting and Evaluation</u>	15
E.	COMPLIANCE SCHEDULE.....	15
F.	REPORTING REQUIREMENTS - ANNUAL REPORT.....	17
G.	CERTIFICATION AND SIGNATURE OF REPORTS	17
1.	<u>Signatory Requirements.....</u>	17
2.	<u>Certification.....</u>	17
H.	REPORTING: WHERE TO SUBMIT	18
I.	RETENTION OF RECORDS	18
J.	DEFINITIONS	18

PART II

A. PERMITTEE RESPONSIBILITIES 20

- 1. Duty To Comply 20
- 2. Minimization of Adverse Impact 20
- 3. Proper Operation and Maintenance 20
- 4. Reduction, Loss, or Failure of Treatment Facility 20
- 5. Inspections and Right to Entry 20
- 6. Duty to Reapply 21
- 7. Duty to Provide Information 21

B. NOTIFICATION, REPORTING AND ADMINISTRATIVE REQUIREMENTS 21

- 1. Availability of Reports 21
- 2. Submission of Incorrect or Incomplete Information 21
- 3. Monitoring and Records 21

C. MODIFICATION, OR TERMINATION OF PERMITS 22

D. CONSISTENCY WITH OTHER LAWS AND REGULATIONS 23

- 1. State Laws 23
- 2. Property Rights 23
- 3. Oil and Hazardous Substance Liability 23
- 4. Removed Substances 23

E. OTHER STANDARD CONDITIONS 24

- 1. Severability 24
- 2. Fees 24

LIST OF TABLES

TABLE 1 Compliance Schedule 15

PART I

A. COVERAGE UNDER THIS PERMIT

1. Authority to Discharge

Under this permit, beginning immediately and lasting through October 31, 2005, the Colorado Department of Transportation (CDOT) is authorized to discharge stormwater and allowable non-stormwater discharges from all portions of its municipal separate storm sewer system in accordance with the approved Stormwater Management Programs, and other provisions set forth herein.

2. Discharges Covered Under this Permit

This permit authorizes new or existing discharges composed entirely of stormwater (and allowable non-stormwater discharges) from CDOT's municipal separate storm sewer system (MS4). This permit also authorizes the discharge of stormwater commingled with flows contributed by process wastewater or stormwater associated with industrial activity, provided such discharges are authorized under separate CDPS permits and are in compliance with provisions of those permits. (Definitions can be found in Part I.K. of this permit.)

3. Permit Area

This permit covers state and interstate highways and their right-of-ways within the jurisdictional boundary of CDOT served by, or otherwise contributing to discharges to state waters from, municipal separate storm sewers owned or operated by CDOT. CDOT's jurisdictional boundary is specifically limited to the cities of Aurora, Colorado Springs, Denver and Lakewood.

B. TERMS AND CONDITIONS

CDOT's compliance with all provisions of this permit will, for the term of the permit, be deemed by the Water Quality Control Division (the Division) to be in compliance with the Colorado Water Quality Control Act in effect as of the effective date of this permit. The following limitations shall apply to all discharges authorized by this permit. Any program elements that are discovered to have the potential to compromise public safety will be stayed until the program and/or permit have been amended.

1. Stormwater Management Program Requirements

CDOT shall operate the following Stormwater Management Programs. The Programs and program areas as submitted by CDOT, and all approved updates, are hereby incorporated by reference, including any additions or changes made by the Division.

CDOT shall develop all stormwater management programs required under this permit no later than 3 years after the effective date of this permit.

In addition to the terms and conditions provided for each Stormwater Management Program listed below, CDOT will continue to perform the program elements provided in the permit application or Technical Memorandum submitted to CDPHE for each program.

Discharges of stormwater shall not cause impairment of beneficial uses, or exceedances of wet weather Water Quality Standards (WQS) in receiving waters. Timely and complete implementation of the Stormwater Management Program shall constitute compliance with receiving water WQS. If receiving water standards violations occur that are determined to be attributable to CDOT activities covered under this permit, CDOT must evaluate their Stormwater

B. TERMS AND CONDITIONS

Management Program and determine what, if any, additional measures may be necessary to address the water quality concerns, and if necessary, implement additional or more effective BMPs, and submit revisions to the program that will increase the likelihood of preventing future exceedances of WQS.

a. Maintenance of Structural Controls

CDOT shall continue to implement its program of routine maintenance activities for CDOT owned structural controls to reduce pollutants (including floatables) in discharges from the MS4. The following program elements are:

- 1) Sediment, trash and debris shall be periodically removed from CDOT-owned detention facilities. The frequency of removal shall be based upon visual inspection by maintenance personnel.
- 2) Trash and debris shall be periodically removed from CDOT-owned open-channel major drainageways.
- 3) Trash and debris shall be periodically removed from CDOT-owned storm-sewer inlets on an as-needed basis at locations known to accumulate these materials. Other CDOT-owned inlets, catch basins, siphons and storm sewers shall be cleaned of debris as determined necessary by maintenance personnel.
- 4) CDOT will develop and keep updated an inventory of all permanent structural controls related to stormwater quality. The initial inventory shall be submitted to the Division no later than 12 months after the permit effective date. For the purposes of this program structural controls will be defined as:
 - a) Stormwater detention ponds
 - b) Stormwater retention ponds
 - c) Wet ponds
 - d) Constructed wetlands for water quality purposes
 - e) Sand infiltration systems
 - f) Stormceptors or similar devices
 - g) Major open channels as defined by CDOT
- 5) CDOT will establish a system for ensuring the maintenance of each of these controls at the frequencies discussed in the program submittal.

As part of the Annual Report, CDOT will report on the frequency of maintenance of the structural controls, as well as the total amount of debris removed from all CDOT owned and maintained catch basins, channels, inlets, siphons and storm sewers. The amounts will be broken down for each maintenance region. CDOT will also report on the status of the inventory.

b. New Development and Redevelopment Planning Program

CDOT shall develop and implement comprehensive planning procedures and controls to reduce the discharge of pollutants after construction is complete, from areas of new highway development and significant redevelopment and associated drainages. The program shall include the following elements:

- 1) Develop and implement a program that ensures that new highway projects and significant highway modifications are reviewed for the need to include permanent stormwater best management practices. CDOT will define significant highway modifications as part of

B. TERMS AND CONDITIONS

the program. The program shall be submitted to the Division for its approval no later than 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program.

- 2) Update the Draft 1995 Drainage Manual to require the evaluation and where feasible the incorporation of stormwater quality elements into the design of drainage systems. The updated Manual shall be submitted to the Division no later than 24 months after the permit effective date. The update will include:
 - a) A “checklist” to be completed or items added to existing checklist for all projects to ensure that the evaluation was completed, and provide the justification for the final determination.
 - b) A process for the evaluation and selection of appropriate BMPs for the project.
- 3) Update the Erosion Control and Stormwater Quality Guidance Manual to include the design and maintenance criteria for permanent best management practices. The updated Manual shall be submitted to the Division within 12 months after the permit effective date.
- 4) Identify any sensitive waters within the permitted municipalities. A list of the identified sensitive waters shall be submitted to the Division within 6 months after the permit effective date. A sensitive water is defined as follows:
 - a) The water quality segment is listed on the 303(d) list;
 - b) A total maximum daily load (TMDL) has been developed which limits the amount of the specified pollutant that is likely to be present in discharges from CDOT projects or construction; or
 - c) The stream is classified as a High Quality Class 1 or a High Quality Class 2 or an Aquatic Life Cold Water Class 1.
- 5) Evaluate the need to develop special requirements for those projects that have the potential to discharge stormwater into the sensitive waters identified. Special requirements could involve the mandatory inclusion of certain BMPs, more frequent maintenance, or inspection. A report on the evaluation shall be submitted to the Division within 24 months after the permit effective date.
- 6) As part of the Annual Report, CDOT will report on the number of reviews that were completed and summarize the BMPs that were included.

c. Public Street Maintenance Program

CDOT shall operate and maintain public streets and roads in a manner so as to reduce the discharge of pollutants (including those related to road repair, street sweeping, snow removal, sanding activities and herbicide application), in accordance with their present program.

- 1) Snow and ice management practices on streets, roads, and highways shall be implemented in a manner consistent with CDOT's current commitment to the Regional Air Quality Council Guidelines to Reduce Air Pollution from Street Sanding. These guidelines include prescriptions for sand application rate, maximum salt concentrations, calibration of sand spreaders, and sweeping of sanded streets.
- 2) Salt and sand storage practices shall be implemented as necessary to minimize, to the extent practicable, run-on, run-off and salt migration off-site.
- 3) Leaf litter and debris on all streets shall be swept a minimum of two times per year, once in the spring and once in the fall.

B. TERMS AND CONDITIONS

- 4) Sweeping of sanded streets shall be performed as soon as weather, logistics and site conditions permit after snow storms.
- 5) Sweeper wastes shall be disposed of properly. Recycling of sweeper wastes shall be considered.
- 6) If magnesium chloride is used for snow management, application practices shall be used to minimize any negative effects to state waters to the maximum extent practicable. Results of any studies on magnesium chloride shall be considered when relevant.
- 7) CDOT will be required to review the Federal Highway Administration's document, Evaluation and Management of Highway Runoff Water Quality, (June 1996, FHWQ-PD-96-032), and make any needed additions or changes to their bridge maintenance program to incorporate stormwater quality considerations, and submit such changes to the Division within 30 months of the permit effective date.

A narrative summary of the program will be included in the Annual Report.

d. Herbicide, Pesticide and Fertilizer Program

CDOT shall continue to implement its program to reduce the discharge of pollutants related to the application of herbicides, pesticides and fertilizers as described in the permit application and supplemental information. This program includes:

- 1) Herbicide use along roadways shall be minimized.
- 2) Applications of herbicides shall be performed during dry-weather periods to the extent possible, using methods to limit overspray.
- 3) CDOT shall implement a program to educate CDOT staff on the proper use, application, and disposal of herbicides, pesticides and fertilizers.
- 4) Applicators will be certified as required by the Colorado Department of Agriculture.

A narrative summary of the program will be included in the Annual Report.

e. Illicit Discharges Program

CDOT shall develop and implement an Illicit Discharges Management Program. This program shall include the following program areas.

- 1) Prevention of Illicit Discharges and Improper Disposal. CDOT shall develop and implement an ongoing program to detect and remove (or advise the discharger to the MS4 to obtain a separate CDPS permit for) illicit discharges and improperly disposed materials into the MS4, in accordance with this program area. The program shall be submitted to the Division within 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program. The program shall include the following elements:
 - a) CDOT will review their program for issuance of utility permits and make modifications necessary to ensure that there are not connections into the CDOT storm sewer system of non-stormwater discharges (except those identified in c, below), including used motor vehicle fluids and household chemical wastes.
 - b) CDOT will notify individuals applying for utility permits of the prohibition of discharging any non-stormwater discharges (except those identified in c, below) into their MS4, and refer them to the Division as needed.

B. TERMS AND CONDITIONS

- c) Unless identified by either CDOT or the Division as significant sources of pollutants to the waters of the state, the following non-stormwater discharges need not be prohibited from entering the MS4: landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration to separate storm sewers, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, individual residential swimming pool and hot tub discharges, individual residential street washing, water-line flushing, flows from riparian habitats and wetlands, and flows from emergency fire fighting activities.
 - d) The following non-stormwater discharge need not be prohibited from entering the MS4, provided appropriate control measures to minimize the impacts from this source are developed and implemented: street wash water associated with construction activities.
- 2) Ongoing Field Screening. CDOT shall develop and implement an ongoing program to screen the MS4 for illicit discharges, illegal dumping and illicit connections. The program shall be submitted to the Division within 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program. Program elements shall include the following:
- a) CDOT shall identify the location of additional known storm sewer outfalls discharging into the state waters. Investigation and inventory need not include confined-space entry. The inventory shall include the determination of whether the outfall is a "major" or "minor" outfall.
 - b) CDOT shall develop a program for performing field screening on a complaint basis and of major outfalls in areas of high potential for illicit discharges. The plan will specify those areas which are considered a high priority and specify the procedures and frequency of the screening.
- 3) Investigation of Suspected Illicit Discharges. CDOT shall develop and implement this program area to investigate and identify suspected sources of illicit connections and improper disposal. The program shall be submitted to the Division within 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program. Program elements shall include the following:
- a) The program for the investigation of illicit discharges will be developed within existing authorities.
 - b) CDOT will develop standard investigation procedures to be used to identify, report and follow up on the source(s) of illicit connections to the CDOT storm sewer system.
 - c) CDOT will develop procedures for referring unresolved illicit discharges to the Division for further action.
 - d) CDOT will report the number of illicit discharges investigated and the follow-up action taken as part of the Annual Report.
- 4) Procedures to Prevent, Contain and Respond to Spills. CDOT shall continue to implement its current program to prevent, contain and respond to spills caused by CDOT that may discharge into the MS4, in accordance with this program area. Spills caused by other parties are the responsibility of the other party; however, if no responsible party has been identified, CDOT will respond as described in their program.

B. TERMS AND CONDITIONS

5) Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal.

CDOT shall develop and implement a plan to promote and facilitate reporting of the presence of illicit connections, illicit discharges or illegal dumping of materials into the MS4 by CDOT employees and the MS4 user community (the public). The elements of this program will include:

- a) The determination of who should receive reports of illicit discharges or improper disposal into the MS4.
- b) The development of a program to educate CDOT employees and the MS4 user community on who to call if illicit discharges or improper disposal is observed.
- c) CDOT will provide a narrative of the educational activities undertaken during the year as part of the Annual Report.

6) Educational Activities to Promote Proper Management and Disposal of Toxic Materials. CDOT shall develop and implement a program, including standard operating procedures, for the collection, recycle, reuse, or proper disposal of used motor vehicle fluids (at a minimum, oil and antifreeze) and toxic materials (including paint, solvents, pesticides, herbicides and other hazardous materials) used in CDOT operations. The Annual Report will include a summary of the program.

The program shall be submitted to the Division within 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program.

f. Industrial Facilities Program

CDOT shall develop and implement a program to track the industries discharging stormwater into the CDOT storm sewer system, and deal with potential water quality issues from the industrial discharges to their system. The program shall include the following elements:

- 1) Identify priorities and procedures for inspections and/or plan reviews, and establish and implement control measures for such discharges. This program segment shall be submitted to the Division within 24 months after the permit effective date. The program shall be implemented in accordance with the implementation plan submitted with the program.
- 2) Within 3 months after the permit effective date, CDOT will develop a system to inventory new facilities.
- 3) All industrial facilities witnessed to be connected to CDOT's system by CDOT field staff during normal routine duties will be reported to CDPHE and added to the inventory.
- 4) The State Highway Utility Accommodation Code shall be amended to incorporate stormwater quality requirements, and the current form issued for facilities to connect to CDOT's system will be updated to reflect these changes, within 24 months after the permit effective date.

g. Construction Sites Program

CDOT shall continue to implement its Construction Sites Program to reduce the discharge of pollutants from its construction sites as described in the permit applications and supplemental information. Program elements include:

B. TERMS AND CONDITIONS

- 1) Procedures for site planning: CDOT shall continue to require a Stormwater Management Plan (SWMP)-like document as described in the Rationale.
- 2) Structural and Non-Structural Best Management Practices: CDOT shall continue to use the Erosion Control and Stormwater Quality Guide for CDOT as the technical criteria for BMPs. CDOT shall periodically update this manual to reflect any new information concerning BMP effectiveness as it becomes available.
- 3) Procedures for Site Inspection and Enforcement including regional Erosion Control Advisory Teams (ECATs): CDOT shall continue to implement the procedures for inspection and enforcement as described in the Rationale. At least two regional teams will be formed within 18 months of the permit effective date. Once the new teams are in place, a minimum of 60 site inspections (total number from all teams) will be performed per year, including follow-up inspections.
- 4) Training for Construction Site Operators: Training for construction site operators shall continue through the Erosion Control Supervisor class, currently held at Red Rocks Community College.

A summary of the activities undertaken by CDOT shall be included in the Annual Report. This shall include a summary of the ECAT site evaluations and outcomes, by region.

h. CDOT Facility Runoff Control Program

CDOT shall establish a Facility Runoff Control Program which will include the following elements:

- 1) The permittee shall develop and implement runoff control plans for the following CDOT-owned and/or operated facilities that do not have independent CDPS Stormwater permits:
 - a) vehicle maintenance facilities (maintenance includes equipment rehabilitation, mechanical repairs, painting, fueling and lubrication);
 - b) asphalt and concrete batch plants which are not already individually permitted;
 - c) solid-waste transfer stations;
 - d) exposed stockpiles of materials, including stockpiles of road deicing salt, salt and sand, sand, rotomill material; and
 - e) sites used for snow dumps, and/or for temporary storage of sweeper tailings or other waste piles.
- 2) The permittee shall provide a complete list of these facilities (including the address of the facility, type of operation, size of the facility, and receiving water drainage basin) within twelve (12) months of the effective date of this permit. This list shall indicate which sites are considered "major" and which are considered "minor", and set out the reasons for the designations.
- 3) Runoff control plans for "major" facilities shall contain the following:
 - a) Activity description
 - b) Facility site map
 - c) Description of potential pollutant sources, including an evaluation of that potential.
 - d) Stormwater Management Controls. The description of stormwater management controls shall address the following minimum components, including a schedule for implementing such controls:
 - Runoff control plan administrator

B. TERMS AND CONDITIONS

- Preventive maintenance
 - Good housekeeping
 - Spill prevention and response procedures
 - Best management practices for pollutant sources
 - Evaluation for non-stormwater discharges
 - Employee training
- e) Inspection procedures
- f) Reporting procedures. An Annual Report on overall conformity with the runoff control plan shall be submitted by each plan administrator to the Regional District Office by December 1 of each year.
- 4) "Minor" facilities shall be grouped together by type, and one runoff control plan shall be developed for each group. Grouped runoff control plans shall contain:
- a) Map. Show the location of each facility in the group on a map of the city.
 - b) Group Description. For each facility in the group: include the address, type of operation, size of the facility, and receiving water drainage basin.
 - c) Description of potential pollutant sources, including an evaluation of that potential.
 - d) Stormwater Management Controls. The description of the standard operating procedures or stormwater management controls shall address the following components if appropriate:
 - Preventive maintenance measures
 - Good housekeeping
 - Spill prevention and response procedures
 - Best management practices
 - Evaluation for non-stormwater discharges
 - e) Inspection Procedures.
- 5) Copies of the "major" facility runoff control plans shall be kept on the facility site and on file with the Regional District Office. They shall be submitted to the Division upon request.
- 6) Copies of the "minor" facility group runoff control plans shall be kept on file with the Regional District Office. They shall be submitted to the Division upon request.
- 7) Both major and minor facilities shall be inspected by the permittee at least once each year, after the runoff control plan is completed.
- 8) The permittee must implement the provisions of the runoff control plans required under this part as a condition of this MS4 permit. The Division reserves the right to review those plans, and to require additional measures to prevent and control pollution as needed.
- 9) Runoff control plans may be amended at any time, with the revised plans distributed as outlined in paragraphs 5 and 6, above.
- 10) The runoff control plans shall be completed and implemented according to the following schedule: 10 percent of the facilities within twelve (12) months of the effective date of this permit, another 40 percent within twenty-four (24) months of the effective date of this permit, and the remaining 50 percent within thirty-six (36) months of the effective date of this permit. A list of these facilities shall be submitted to the Division at these times.

B. TERMS AND CONDITIONS

11) The permittee shall summarize the conformity of facilities (both major and minor) with their runoff control plans in each year's Annual Report.

2. Legal Authority

The permittee shall insure that existing legal authority is maintained.

3. Resources

The permittee shall provide adequate finances, staff, equipment, and support capabilities to implement the Stormwater Management Programs.

C. PROGRAM REVIEW AND MODIFICATION

1. Review and Approval of Plans and Reports

Any plans or reports that are prepared as a condition of this permit shall be submitted to the Division for review and approval, unless submittal is not a requirement of this permit.

- a. Within 60 days of the submittal, or a later date agreed to by the permittee, the Division shall notify the permittee that the plan or report is acceptable or that it does not meet one or more of the minimum requirements of this permit.
- b. Such notification shall identify which provisions of the submittal, if any, require modification.
- c. Within 30 days of such notification from the Division, or a later date agreed to by the Division, the permittee shall make the required changes and re-submit the plan or report.
- d. If not notified otherwise by the Division within 60 days or a later date agreed by permittee, the plan is deemed acceptable and permittee may begin implementation.

2. Annual Program Review

The permittee shall conduct an annual review of the current Programs in conjunction with preparation of the Annual Report required under Part I.F. This annual review shall include:

- a. A review of Program implementation and compliance (or non-compliance) with all schedules of compliance contained in this permit;
- b. An assessment of the effectiveness of controls established by the Program;
- c. A review of dry-weather field screening results and wet-weather monitoring data; and
- d. An assessment of any Program modifications needed.

3. Program Modification

- a. The approved Programs and the technical memoranda 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.
- d. For the purpose of this specific permit, an "interim date in the schedule of compliance" shall mean dates of the submission and implementation of the programs listed in Part I.B.1. of the permit, including Part I.D. and schedules as parts of said programs which are prior to 3 years after the effective date of the permit.
- e. For the purpose of this specific permit, minor modifications will include the following and hence will not necessitate a public notice period:
 - 1) Changing the schedule of implementation in any of the programs listed in Part I.B.1. of the permit and including Part I.D. or any schedules listed as elements of these programs.

C. PROGRAM REVIEW AND MODIFICATION

CDOT shall develop all programs required under this permit not later than 3 years after the effective date of this permit.

- 2) Changes in BMPs or operations/operating procedures, as long as the new BMPs or operations/operating procedures are equally or more protective of water quality than the previous ones.
- 3) Increasing BMP usage, frequency of activities such as, but not limited to, more frequent inspections, or any change in operations that increases BMP effectiveness or provides more value in protecting water quality as determined jointly by CDOT and CDPHE, but required by CDPHE. However, CDOT, may increase BMP usage, frequency of activities such as, but not limited to, more frequent inspections, or any change in operations on its own accord without these changes becoming permanent program elements and permit requirements.

D. WET-WEATHER MONITORING

The permittee shall develop a wet-weather monitoring program for the MS4, to assess wet-weather conditions, particularly urban stormwater effects on state waters, and eventually implement this or an alternative program approved by the Division.

1. Permittee Decision and Notification

Within 6 months of permit issuance, the permittee shall notify the Division as to its commitment to develop a wet-weather monitoring program through either:

- a. direct participation with the South Platte Urban TMDL/Watershed Project monitoring subgroup and the city of Colorado Springs Monitoring Program, or
- b. an independent effort.

In making the decision CDOT will evaluate the level of funding necessary for each alternative, review funding sources, and evaluate any administrative or legal constraints.

2. Monitoring Program Approach

Based on the decision made under 1. above CDOT will submit a plan and a schedule for implementation of the chosen alternative. This will be done at the same time as item 1.

3. Basis for Division Review and Approval

In accordance with Part I.D.1, the permittee shall submit the wet weather monitoring plan (from the TMDL sub-group or the alternative) and implementation schedule to the Division for review and approval. The plan must meet the following minimum requirements:

- a. address wet weather conditions, particularly urban stormwater effects on states waters;
- b. include a clear statement of goals and have components that address the goals of the monitoring program; and
- c. commitment of a level of resource expenditure that is commensurate with the monitoring plan proposed in the application.

3. Wet-Weather Monitoring Reopener

Upon approval by the Division of the program submitted by the permittee, the wet weather monitoring program shall automatically become a condition of this permit. In the event that the

D. WET-WEATHER MONITORING

program does not meet with Division approval, following discussion with the permittee as outlined in Part I.C.1, the Division shall develop a monitoring program and implementation schedule and reopen and modify the permit, following proper administrative procedures.

4. Reporting and Evaluation

- a. Annual Reporting: The permittee shall submit a report on the monitoring program to the Division, as a part of the Annual Report. The report will include:
 - 1) Summary of any cooperative efforts
 - 2) Tabulated data generated from the monitoring program and interpretation of the data; and
 - 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.
- b. Reporting in Year Four: The Annual Report submitted in year four of the permit (submitted by October 1, 2004, covering July 2003 through June 2004), shall include:
 - 1) Items 1 through 3 above;
 - 2) An assessment of the effects of CDOT's wet weather discharges on state waters and an assessment of the changes over time; and
 - 3) A proposal for a monitoring program for the next permit term.

E. COMPLIANCE SCHEDULE

Except as provided below, compliance with the terms and conditions of this permit, specifically the Stormwater Management Program, shall be required by the effective date of this permit. CDOT shall develop all stormwater management programs required under this permit no later than three years after the effective date of this permit. Where dates in the compliance schedule and in the text of the permit conflict, the dates in the compliance schedule are deemed to be correct.

The compliance schedule detailed in Table 1, below, includes submittals of program elements and implementation of permit conditions.

In the case of required plans, the permittee shall submit the plan to the Water Quality Control Division by the specified date. A schedule of dates to accomplish various tasks related to the plan, including implementation, should also be included. The Division shall review the plans and determine if the plan contents address all the requirements as outlined in the permit in accordance with Part I.C.1. Upon approval of the implementation plan by the Division, all terms and conditions of the implementation plan, including but not limited to the compliance schedule, shall automatically become conditions of this permit.

In the case of required implementation or actions, no later than 14 calendar days following each date identified in the schedule of compliance (excluding those requiring notification within the Annual Report only), the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

TABLE 1
Compliance Schedule

Permit Condition	Activity	Deliverable	Date Due
Part I.B.1.a -Maintenance of Control Structures	CDOT will develop an inventory of all permanent structural controls related to stormwater quality.	Inventory of controls	12 months from eff. date*
Part I.B.1.b - New Development and Redevelopment Program	Develop and implement a program that ensures that new highway projects and significant highway modifications are reviewed for the need to include permanent stormwater best management practices. CDOT will define significant highway modifications as part of the program.	Program summary	24 months from eff. date
	Update the Draft 1995 Drainage Manual to require the evaluation and, where feasible, the incorporation of stormwater quality elements into the design of drainage systems	Updated Manual	24 months from eff. date
	Update the Erosion Control and Stormwater Quality Guidance Manual to include the design and maintenance criteria for permanent best management practices	Updated Manual	12 months from eff. date
	Identify any sensitive waters within the permitted municipalities.	List of sensitive waters	6 months from eff. date
	Evaluate the need to develop special requirements for those projects that have the potential to discharge stormwater into the sensitive waters identified.	Report	24 months from eff. date
	Review Federal Highway Administration's document, <u>Evaluation and Management of Highway Runoff Water Quality</u> , and make any needed additions or changes to bridge maintenance program to incorporate stormwater quality considerations.	Report	30 months from eff. date
Part I.B.1.e - Illicit Discharge Program	Develop and implement an ongoing program to detect and remove (or advise the discharger to the MS4 to obtain a separate CDPS permit for) illicit discharges and improperly disposed materials into the MS4 in accordance with this program area.	Program summary	24 months from eff. date
	Develop and implement an ongoing program to screen the MS4 for illicit discharges, illegal dumping and illicit connections.	Program summary	24 months from eff. date
	Develop and implement this program area to investigate and identify suspected sources of illicit connections and improper disposal.	Program summary	24 months from eff. date

TABLE 1 Compliance Schedule			
Permit Condition	Activity	Deliverable	Date Due
	Develop and implement a plan to promote and facilitate public reporting of the presence of illicit connections, illicit discharges or illegal dumping of materials into the MS4	Program summary	24 months from eff. date
	Develop and implement a program for the collection, recycle, reuse, or proper disposal of used motor vehicle fluids and toxic materials used in CDOT operations.	Program summary	24 months from eff. date
Part I.B.1.f - Industrial Facilities Program	Identify priorities and procedures for inspections and/or plan reviews, and establish and implement control measures for such discharges.	Program summary	24 months from eff. date
	Inventory and identify new industrial facilities that discharge stormwater into the CDOT storm sewer system.	Notification of system completion	18 months from eff. date
	Amend State Highway Utility Accommodation Code to incorporate stormwater quality requirements, and update form issued for facilities to connect to CDOT's system to reflect these changes	Code amendments	24 months from eff. date
Part I.B.1.g – Construction Sites Program	Form regional teams ECAT teams	Notification	18 months from eff. date
Part I.B.1.h – CDOT Facility Runoff Control Program	Inventory CDOT facilities	Report	12 months from eff. date
	Develop and implement plans for 10 % of facilities	Notification	12 months from eff. date
	Develop and implement plans for 40 % of facilities	Notification	24 months from eff. date
	Develop and implement plans for 50 % of facilities	Notification	36 months from eff. date
Part I.D. - Wet-Weather Monitoring	Decision on Wet Weather Monitoring Program	Notification	6 months from eff. date
	Plan and Implementation schedule	Plan	6 months from eff. date

*Effective date of the permit.

F. REPORTING REQUIREMENTS - ANNUAL REPORT

The permittee shall prepare an annual system-wide report to be submitted by October 1 of each year, covering the previous July 1 through June 30. The report shall include the following separate sections:

1. The implementation status of each the components of the Stormwater Management Programs that are established as permit conditions (status of compliance with any schedules established under this permit shall be included in this section) and shall include specific quantitative measures where possible;
2. Proposed changes to the Stormwater Management Programs that are established as permit conditions, including an update on areas added to the MS4 due to annexation or other legal means;
3. Revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application under 6.5.3(3)(b)(v) and (vi);
4. A summary of the data, including the actual monitoring data, that is accumulated throughout the reporting year;
5. Summary of educational activities;
6. Annual expenditures for the past reporting year, and budget for the next reporting year;
7. A summary of the number and nature of enforcement actions and inspections; and
8. The wet-weather reporting requirements as listed in Part I.D.

G. CERTIFICATION AND SIGNATURE OF REPORTS

1. **Signatory Requirements.** All reports required for submittal shall be signed and certified for accuracy by the permittee in accordance with the following criteria:
 - a. Principal executive officer, or ranking elected official; or
 - b. A duly authorized representative of that person. A person is a duly authorized representative only if:
 - 1) The authorizations made in writing by a person described above and submitted to the Division.
 - 2) The authorization specifies either an individual or a position as having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator superintendent, or position of equivalent responsibility for environmental matters for the City.
 - 3) If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new notice satisfying the requirements of this section must be submitted to the Division prior to or together with any reports, information or applications to be signed by an authorized representative.
2. **Certification.** Any person signing documents under paragraph 1 of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the

G. CERTIFICATION AND SIGNATURE OF REPORTS

information, the information submitted, it is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. REPORTING: WHERE TO SUBMIT

Annual reports and all other documents required by the terms and conditions of this permit shall be signed in accordance with Part I.G. of this permit and submitted to the following address:

Colorado Department of Public Health and Environment
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

I. RETENTION OF RECORDS

The permittee shall retain the latest approved version of the Stormwater Management Programs developed in accordance with Part I of this permit until at least three years after coverage under this permit terminates. The permittee shall retain all records of all monitoring information, copies of all reports required by this permit, and records of all other data required by or used to demonstrate compliance with this permit, until at least three years after coverage under this permit terminates. This period may be explicitly modified by alternative provision of this permit or extended by request of the Division at any time.

K. DEFINITIONS

1. **Best management practices (BMPs):** schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment, operating procedures, and practices to control site runoff, spillage or leaks, waste disposal, or drainage from material storage. BMPs include structural and nonstructural controls.
2. **Discharge:** the discharge of pollutants as defined in Section 25-8-103(3); also includes land application.
3. **Division:** the Water Quality Control Division of the Colorado Department of Public Health and Environment.
4. **Illicit discharge:** any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except the following: discharges specifically authorized by a CDPS permit and allowable non-stormwater discharges as discussed at Part I.B.1.b., above.
5. **Municipal separate storm sewer** means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
 - a) owned or operated by a State, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to state waters;
 - b) designed or used for collecting or conveying stormwater;
 - c) which is not a combined sewer; and
 - d) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2 and 5 CCR 1002-20, ' 4.3.7.X(3-91).

K. DEFINITIONS

6. **MS4** means municipal separate storm sewer system.
7. **Operator:** the individual who has day to day supervision and control of activities occurring at the site.
8. **Point Source:** any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. "Point Source" does not include irrigation return flow.
9. **Program** means any of the Stormwater Management Programs that are required by this permit (see part I.B. of the permit).
10. **Significant Materials** include but are not limited to: raw materials; fuels; materials such as metallic products; hazardous substances designated under section 101(14) of CERCLA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharge.
11. **State Waters:** any and all surface and subsurface waters which are contained in or flow in or through this State, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.
12. **Stormwater** is precipitation-induced surface runoff.

PART II

A. PERMITTEE RESPONSIBILITIES

1. Duty To Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Water Quality Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance or modification; or denial of a permit renewal application. Violation of the terms and conditions specified in this permit may be subject to civil and criminal liability pursuant to C.R.S. 25-8-601 through 612 and the Federal Act.

2. Minimization of Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or environment.

3. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

4. Reduction, Loss, or Failure of Treatment Facility

It shall not be a defense for a permittee in an enforcement action that it would be necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Inspections and Right to Entry

The permittee shall allow the authorized representative of the Water Quality Control Division, upon the presentation of credentials:

- a. To enter upon the permittee's premises where a regulated facility or activity is located or in which any records are required to be kept under the terms and conditions of this permit;
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit, and to inspect any monitoring equipment or monitoring method required in the permit; and
- c. To enter upon the permittee's premises in a reasonable manner and at a reasonable time to inspect and/or investigate any actual, suspected, or potential source of water pollution, or to ascertain compliance or non-compliance with the Colorado Water Quality Control Act or any other applicable state or federal statute or regulation or any order promulgated by the Division. The investigation may include, but is not limited to, the following: sampling of any discharge and/or process waters, the taking of photographs, interviewing of any person having knowledge related to the discharge permit or alleged violation, and access to any and all facilities or areas within the permittee's premises that may have any effect on the discharge, permit, or alleged violation.

A. PERMITTEE RESPONSIBILITIES

The Division shall split samples taken by the Division during any investigation with the permittee if requested to do so by the permittee.

6. Duty to Reapply

The permittee shall submit a permit renewal application at least one hundred eighty (180) days before this permit expires.

7. Duty to Provide Information

The permittee shall furnish to the Division, within a reasonable time, any information which the Division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Division, upon request, copies of records required to be kept by this permit.

B. NOTIFICATION, REPORTING AND ADMINISTRATIVE REQUIREMENTS

1. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Clean Water Act and Regulations for the State Discharge Permit System 5 CCR 1002-61, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Water Quality Control Division. As required by the Federal Clean Water Act, monitoring data shall not be considered confidential.

2. Submission of Incorrect or Incomplete Information

- a. Where the permittee failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or report to the Division, the permittee shall promptly submit the relevant information which was not submitted or any additional information needed to correct any erroneous information previously submitted.
- b. Knowingly making false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Clean Water Act, and Section 25-8-610 C.R.S.

3. Monitoring and Records

- a. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been approved by the Division. [6.9.4(10)]
- b. If the permittee monitors 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.
- c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The individual(s) who performed the sampling or measurements;
 - 3) The dates the analyses were performed;
 - 4) The individual(s) who performed the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.

B. NOTIFICATION, REPORTING AND ADMINISTRATIVE REQUIREMENTS

- d. The permittee shall retain for a minimum of three (3) years records of all monitoring information, including all 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 of the Division.

C. MODIFICATION, OR TERMINATION OF PERMITS

1. The filing of a request by the permittee for a permit modification, termination, revocation and reissuance, inactivation or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
2. Permit modification (except for minor modifications), termination or revocation and reissuance actions shall be subject to the requirements of Section 61.5(2), 61.5(3), 61.6, 61.7 and 61.15 of the Colorado Discharge Permit System Regulations.
3. This permit may be modified, suspended, or terminated in whole or in part during its term for reasons determined by the Division including, but not limited to, the following:
 - a. Violation of any terms or conditions of the permit;
 - b. Obtaining a permit by misrepresentation or failing to disclose any fact which is material to the granting or denial of a permit or to the establishment of terms or conditions of the permit; or
 - c. Materially false or inaccurate statements or information in the permit application or the permit.
 - d. A determination that the permitted activity endangers human health or the classified or existing uses of state waters and can only be regulated to acceptable levels by permit modifications or termination.
4. This permit may be modified in whole or in part for the following causes, provided that such modification complies with the provisions of 5 CCR 1002-61 regarding anti-backsliding:
 - a. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
 - b. The Division has received new information which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of different permit conditions at the time of issuance.
 - c. The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits may be modified during their terms for this cause only as follows:
 - 1) EPA has revised, withdrawn, or modified that portion of the regulation or effluent limitation guideline on which the permit condition was based, or has approved a Commission action with respect to the water quality standard or effluent limitation on which the permit condition was based; or

C. MODIFICATION, OR TERMINATION OF PERMITS

- 2) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations or effluent limitation guidelines, if the remand and stay concerns that portion of the regulations or guidelines on which the permit condition was based and a request is filed within ninety (90) days of judicial remand.
 - d. The Division determines that good cause exists to modify a permit condition because of events over which the permittee has no control and for which there is no reasonable available remedy.
 - e. When required to incorporate applicable toxic effluent limitation or standards adopted pursuant to Section 307(a) of the Federal act.
5. At the request of a permittee, the Division may modify or terminate a permit and issue a new permit if the following conditions are met:
- a. The EPA has been notified of the proposed modification or termination and does not object in writing within thirty (30) days of receipt of notification;
 - b. The Division finds that the permittee has shown reasonable grounds consistent with the Federal and State statutes and regulations for such modification or termination;
 - c. Fee requirements of Section 61.15 of the Colorado Discharge Permit System Regulations have been met; and
 - d. Requirements of public notice have been met.

D. CONSISTENCY WITH OTHER LAWS AND REGULATIONS

1. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority granted by Section 510 of the Clean Water Act.

2. Property Rights

The issuance of this permit does not convey any property or water rights in either real or personal property, or stream flows, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

3. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 (Oil and Hazardous Substance Liability) of the Clean Water Act.

4. Removed Substances

Solids, sludges, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in accordance with applicable state and federal regulations.

E. OTHER STANDARD CONDITIONS

1. Severability

The provisions of this permit are severable. If any provisions of this permit, or the application of any provision of this permit to any circumstance, are held invalid, the application of such provision to other circumstances and the application of the remainder of this permit shall not be affected.

2. Fees

The permittee is required to submit payment of an annual fee as set forth in the 1983 amendments to the Water Quality Control Act, Section 25-8-502 (l) (b), and State Discharge Permit Regulations 5 CCR 1002-61, Section 61.15 as amended. Failure to submit the required fee when due and payable is a violation of the permit and shall result in enforcement action pursuant to Section 25-8-601 et. seq., C.R.S. 1973 as amended.

**APPENDIX D CDPHE STREAM CLASSIFICATIONS AND WATER
QUALITY STANDARDS**

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STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 3	DESIG	CLASSIFICATIONS	PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS			TEMPORARY MODIFICATIONS AND QUALIFIERS	
				INORGANIC	METALS	METALS		
BASIN: CLEAR CREEK								
Stream Segment Description								
9a. Mainstem to the Fall River, including all tributaries, lakes, reservoirs, and wetlands, from the source to the confluence with Clear Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	Temporary modification: Cu(ch)=11 µg/l (dis), based on uncertainty. Expiration date of 2/28/10.
9b. Mainstem of Trail Creek, including all tributaries, lakes, reservoirs, and wetlands from the source to the confluence with Clear Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS Zn(ch)=200	Temporary modifications: Cd(ch)=4.6 µg/l, Cu(ch)=148 µg/l, Pb(ch)=7.6 µg/l I, Mn(ch)=548, Zn(ch)=1068 µg/l I, based on uncertainty. Expiration date of 2/28/10.
10. Mainstem of Chicago Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Clear Creek, except for specific listings in Segment 19.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
11. Mainstem of Clear Creek from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden, Colorado.	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	Temporary modification: Zn(ch)=339 µg/l (dis), Mn(ch)=861 µg/l (dis), based on uncertainty. Expiration date of 2/28/10.
12. All tributaries to Clear Creek, including all lakes, reservoirs and wetlands, from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden, Colorado, except for specific listings in Segments 13a and 13b.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
13a. Mainstem of North Clear Creek and Four Mile Gulch including all tributaries, lakes, reservoirs and wetlands from their sources to the lowest water supply intake located in each stream and Chase Gulch, including all tributaries, lakes, reservoirs and wetlands from its source to the confluence with North Clear Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
13b.: Mainstem of North Clear Creek including all tributaries, lakes, reservoirs and wetlands from the source to the confluence with Clear Creek, except for the specific listings in segment 13a.	UP	Aq Life Cold 2 Recreation 1a Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05	As(ac)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	Temporary modifications: Cd(ch)=6.0 µg/l (dis), Mn(ch)=5,283 µg/l (dis), Zn(ch)=1,864 µg/l (dis), based on uncertainty. Expiration date of 2/28/10.
14a. Mainstem of Clear Creek from the Farmers Highline Canal diversion in Golden, Colorado to the Denver Water conduit #16 crossing.	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=63000ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS 1.57*	
14b. Mainstem of Clear Creek from the Denver Water conduit #16 crossing to Youngfield Street in Wheat Ridge, Colorado.	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F. Coli=2000/100ml E. Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrV(acch)=TVS Cu(acch)=TVS	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS 1.57*	



STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 3	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS				TEMPORARY MODIFICATIONS AND QUALIFIERS		
			PHYSICAL and BIOLOGICAL	INORGANIC mg/l	METALS ug/l				
BASIN: CLEAR CREEK Stream Segment Description 15. Mainstem of Clear Creek from Youngfield Street in Wheat Ridge, Colorado, to the confluence with the South Platte River. 16a. Mainstem of Lena Gulch including all tributaries, lakes, reservoirs and wetlands from its source to the outlet of Maple Grove Reservoir. 16b. All tributaries to Clear Creek from the Farmers Highline Canal diversion in Golden, Colorado to the confluence with the South Platte River, except for specific listings in Segments 16a, 17a, 17b, 18a and 18b. 17a. Anavada Reservoir. 17b. Mainstem of Ralston Creek from the source to the inlet of Anavada Reservoir, including Ralston Reservoir, and Upper Long Lake. 18a. Mainstem of Ralston Creek, including all lakes and reservoirs, from the outlet of Anavada Reservoir to the confluence with Clear Creek. 18b. Mainstem of Leyden Creek and Van Bibber Creek from their source to their confluence with Ralston Creek. Mainstem of Little Dry Creek from its source to its confluence with Clear Creek. 19. All tributaries to Clear Creek, including lakes, reservoirs and wetlands, within the Mt. Evans Wilderness Area.	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.5 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVSx3, 66* SO ₄ =WS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Trec)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVSx1, 57*	Aquatic life warm 1 goal qualifier. Temporary modification: E.Coli=261/100 ml. Expiration date of 2/28/10.
	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	
	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.5	As(ch)=100(Trec) Cd(ac)=TVS CrIII(ac)=TVS CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	
	UP	Aq Life Cold 2 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l pH=6.5-9.0 F.Coli=7.0 mg/l F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	Water + Fish Organics
	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l pH=6.5-9.0 F.Coli=7.0 mg/l F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.02 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	Water + Fish Organics
	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.5 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	
	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH ₃ (ac)=TVS NH ₃ (ch)=0.10 CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.5 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	
	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH ₃ (ch)=0.02 NH ₃ (ch)=TVS CH ₃ (ac)=0.019 CH ₃ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =10 Cl=250 SO ₄ =WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac)=TVS Cu(ac)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac)=TVS Mn(ac)=TVS Ni(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac)=TVS Se(ac)=TVS Ag(ac)=TVS Zn(ac)=TVS	

* TVS x (times) the FWER (final water effect ratio) = site-specific standard.

APPENDIX E FEMA FLOODPLAIN INFORMATION AND SUPPORTING DOCUMENTS

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FLOOD INSURANCE STUDY



JEFFERSON COUNTY, COLORADO AND INCORPORATED AREAS VOLUME 1 OF 7

COMMUNITY NAME	COMMUNITY NUMBER
ARVADA, CITY OF	085072
*BOW MAR, CITY OF	080232
EDGEWATER, CITY OF	080089
GOLDEN, CITY OF	080090
*LAKESIDE, TOWN OF	080311
LAKEWOOD, CITY OF	085075
MORRISON, TOWN OF	080092
*MOUNTAIN VIEW, TOWN OF	080254
WESTMINSTER, CITY OF	080008
WHEAT RIDGE, CITY OF	085079
JEFFERSON COUNTY UNINCORPORATED AREAS	080087

*NON-FLOODPRONE COMMUNITIES

JUNE 17, 2003



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
08059CV001A

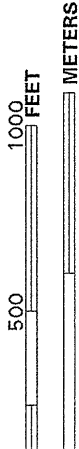
Table 4. Summary of Discharges (Cont'd)

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharges (Cubic Feet per Second)</u>			
		<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>	<u>500-Year</u>
Buffalo Creek	46.70	370	540	630	840
At confluence with Sand draw					
City Park Channel	5.68	770	1,300	1,500	2,250
At confluence with Nissen Reservoir Channel					
Clear Creek					
Above confluence with Tucker Gulch	403.80	3,470	8,010	12,420	27,430
Below confluence with Tucker Gulch	420.70	3,470	8,480	13,070	28,900
Above confluence with Ralston Creek (Shavickus)	455.00	3,710	9,750	14,520	31,000
At Kipling Boulevard	450.00 ~ 446.6 J-70	3,280	9,000	13,470	29,850
At upstream limit of detailed study	325.00	3,280	9,000	13,470	29,850
Cold Spring Gulch					
At mouth	5.07	655	1,630	2,070	4,025
0.40 mile above mouth	4.49	590	1,485	1,885	3,575
1.74 miles above mouth	1.99	285	750	960	1,900
Coon Creek					
At mouth	4.56	1,930	2,620	2,950	3,650
At Bowles Avenue	3.89	1,760	2,350	2,655	3,500
Countryside Creek					
At confluence with Walnut Creek	1.13	300	660	840	1,479
At upstream study limit	0.60	235	520	620	1,090
Cressmans Gulch					
At confluence with Tucker Gulch	1.48	230	510	710	-- ¹

¹Data not available



SCALE 1" = 500'



PANEL 0194 E

FIRM FLOOD INSURANCE RATE MAP

JEFFERSON COUNTY,
COLORADO AND
INCORPORATED AREAS

PANEL 194 OF 675

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX

JEFFERSON COUNTY, AREAS	080937	0194	E
AREA RIDGE, CITY OF	085079	0194	E
LAKWOOD, CITY OF	085075	0194	E

Notice to User: The Map Number shown below should be used for map ordering. The Community Number shown above should be used in insurance applications for the subject community.



MAP NUMBER
08059C0194 E

EFFECTIVE DATE:
JUNE 17, 2003

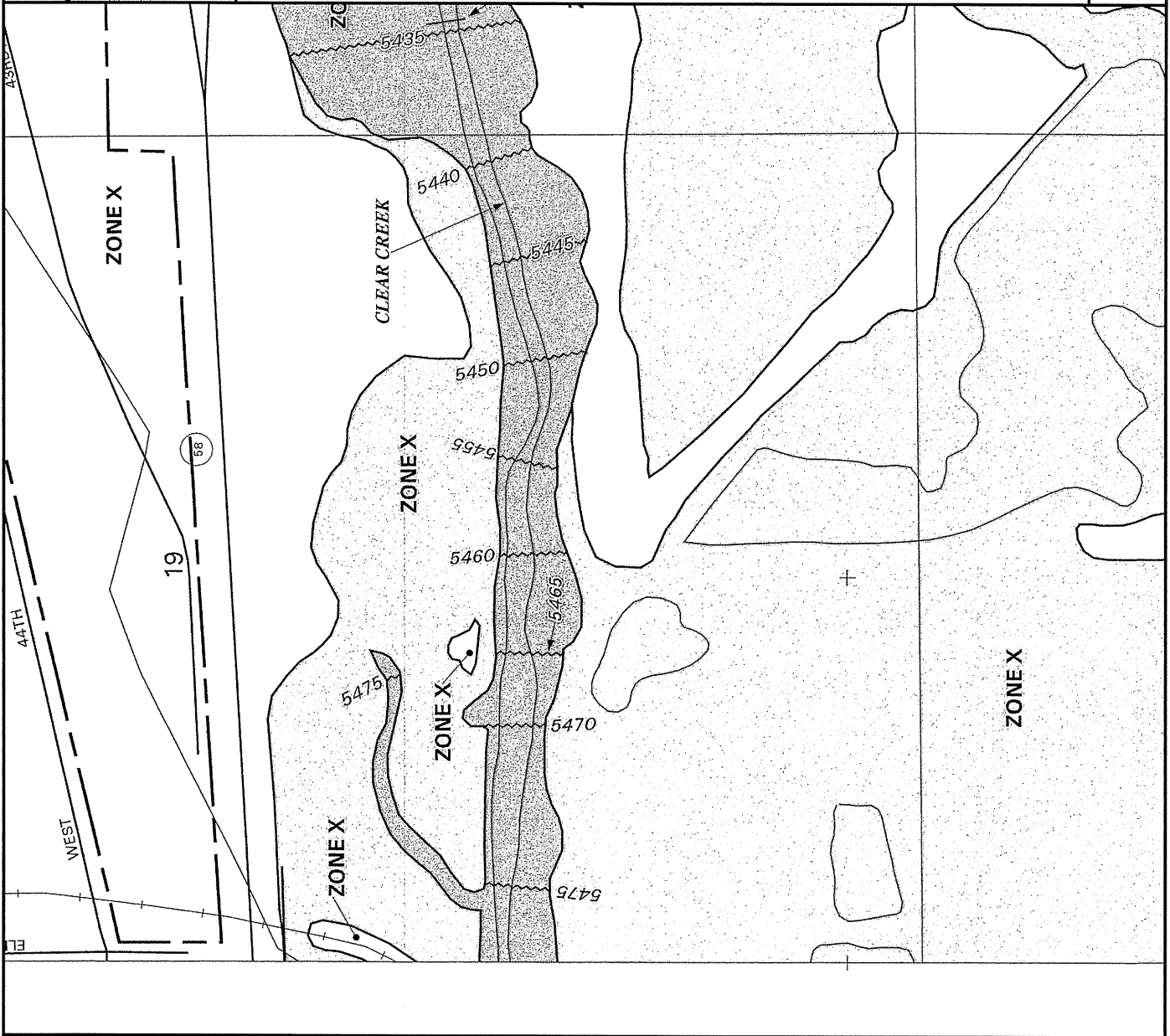
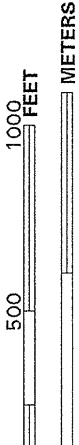
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.nsc.fema.gov





SCALE 1" = 500'



PANEL 0194 E

FIRM
FLOOD INSURANCE RATE MAP
JEFFERSON COUNTY,
COLORADO AND
INCORPORATED AREAS

PANEL 194 OF 675

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX

JEFFERSON COUNTY UNINCORPORATED AREAS	080937	0194	E
ARHEAT RIDGE, CITY OF	085079	0194	E
LANEWOOD, CITY OF	085075	0194	E

Notice to User: The Map Number shown below should be used when purchasing flood insurance. Community numbers shown above should be used on insurance applications for the subject community.

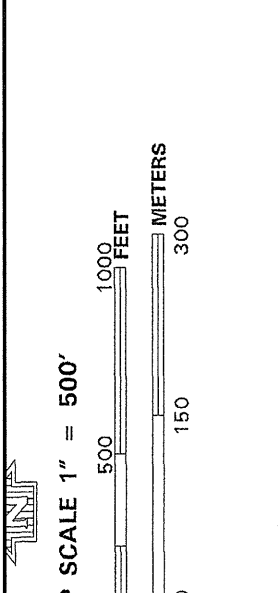


MAP NUMBER
08059C0194 E

EFFECTIVE DATE:
JUNE 17, 2003

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



PANEL 0193 E

FIRM
FLOOD INSURANCE RATE MAP
 JEFFERSON COUNTY,
 COLORADO AND
 INCORPORATED AREAS

PANEL 193 OF 675
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
 COMMUNITY NUMBER PANEL SUPERX
 JEFFERSON COUNTY, UNINCORPORATED AREAS 06087 0193 E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

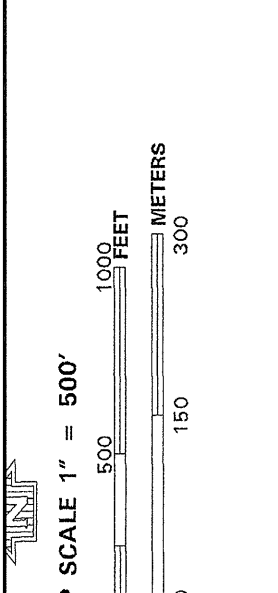
MAP NUMBER
08059C0193 E

EFFECTIVE DATE:
JUNE 17, 2003

Federal Emergency Management Agency

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PANEL 0193 E

FIRM
FLOOD INSURANCE RATE MAP
 JEFFERSON COUNTY,
 COLORADO AND
 INCORPORATED AREAS

PANEL 193 OF 675
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
 COMMUNITY: _____ NUMBER: _____ PANEL: _____ SUFFIX: _____

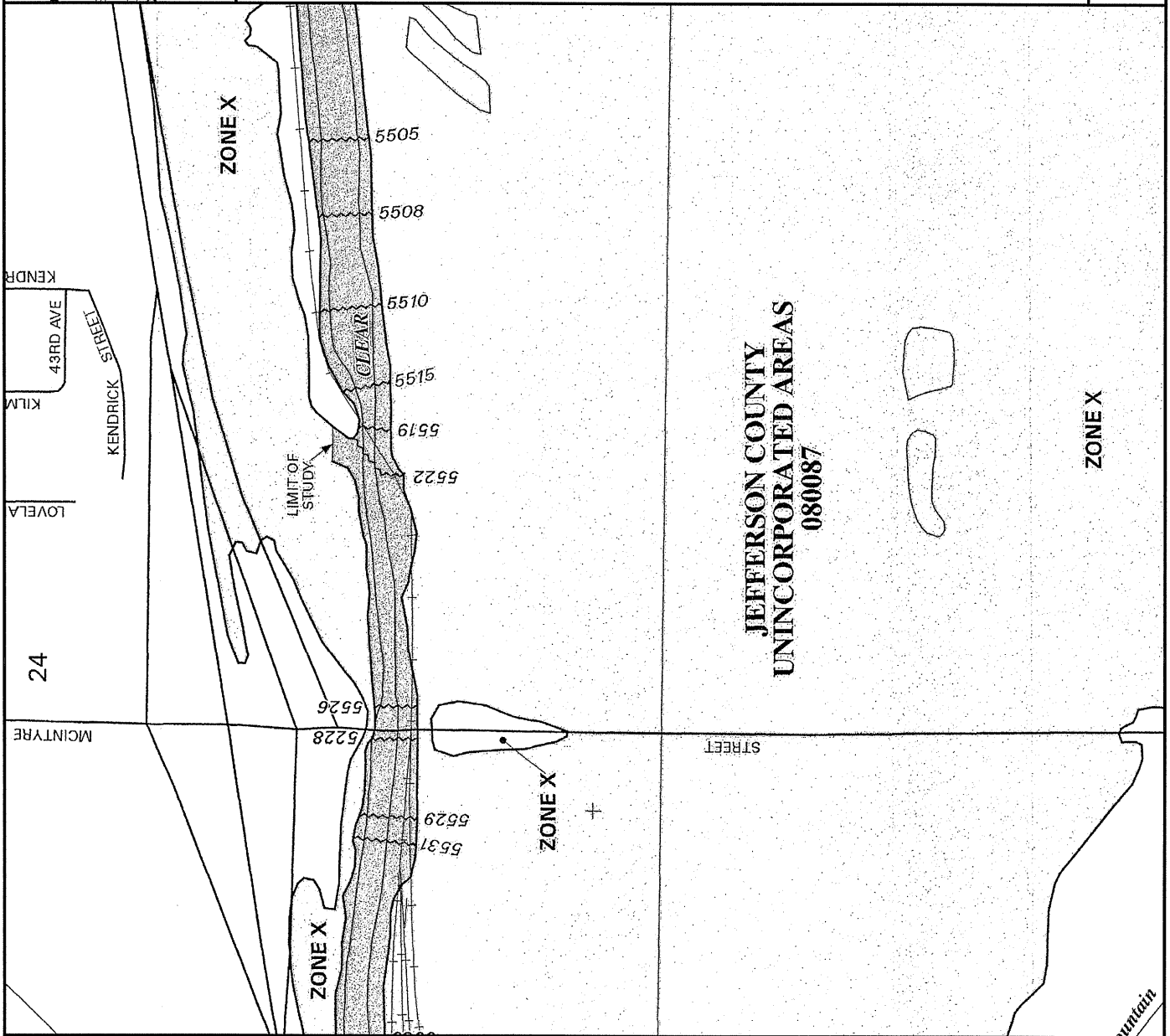
JEFFERSON COUNTY,
 UNINCORPORATED AREAS 060087 0193 E

MAP NUMBER
08059C0193 E

EFFECTIVE DATE:
JUNE 17, 2003

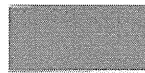
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown below should be used on insurance applications for the subject community.

LEGEND



SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AD** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.



FLOODWAY AREAS IN ZONE AE



OTHER FLOOD AREAS

- ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.



OTHER AREAS

- ZONE X** Areas determined to be outside 500-year flood plain.
- ZONE D** Areas in which flood hazards are undetermined.



Flood Boundary



Floodway Boundary



Zone D Boundary



Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.



Base Flood Elevation Line; Elevation in Feet*



Cross Section Line

(EL 987)

Base Flood Elevation in Feet Where Uniform Within Zone*

RM7_X

Elevation Reference Mark

*ML5

River Mile

*Referenced to the National Geodetic Vertical Datum of 1929

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
(FEET NGVD)									
Clear Creek A - BG ²	BH	112	1,097	11.9	5,629.7	5,629.7	5,629.7	0.0	
	BI	275	1,874	7.0	5,640.8	5,640.8	5,641.6	0.8	
	BJ	216	2,154	6.1	5,642.2	5,642.2	5,643.2	1.0	
	BK	143	990	14.4	5,647.0	5,647.0	5,647.3	0.3	
	BL	260	1,701	7.3	5,663.8	5,663.8	5,663.8	0.0	
	BM	435	2,814	4.4	5,665.5	5,665.5	5,665.5	0.0	
	BN	313	1,255	9.9	5,671.7	5,671.7	5,671.7	0.0	
	BO	169	966	12.9	5,681.6	5,681.6	5,681.6	0.0	
	BP	224	1,138	10.9	5,694.8	5,694.8	5,694.8	0.0	
	BQ	175	1,185	10.5	5,702.8	5,702.8	5,702.8	0.0	
Countryside Creek	A	20	124	6.8	5,350.1	5,350.1	5,350.1	0.0	
	B	53	123	6.8	5,353.0	5,353.0	5,353.0	0.0	
	C	104	335	2.5	5,361.0	5,361.0	5,361.0	0.0	
	D	30	104	7.2	5,369.6	5,369.6	5,369.6	0.0	
	E	56	136	5.5	5,390.3	5,390.3	5,390.3	0.0	
	F	51	92	7.2	5,400.6	5,400.6	5,400.9	0.3	
	G	141	196	3.4	5,409.9	5,409.9	5,410.0	0.1	
	H	202	191	3.5	5,420.5	5,420.5	5,420.5	0.0	
	I	48	128	4.9	5,428.5	5,428.5	5,428.5	0.0	
		1							

¹ Feet above a point 30 feet downstream of Sheridan Boulevard

² Floodway not computed

³ Feet above mouth

FLOODWAY DATA

FEDERAL EMERGENCY MANAGEMENT AGENCY
JEFFERSON COUNTY, CO
AND INCORPORATED AREAS

CLEAR CREEK - COUNTRYSIDE CREEK

Table 4. Summary of Discharges (Cont'd)

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharges (Cubic Feet per Second)</u>				
		<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>	<u>500-Year</u>	
Kerry Gulch						
At mouth	3.95	585	1,395	1,945	3,300	
At confluence with Swede Gulch	1.84	310	660	1,040	1,900	
At upstream limit of detailed study	0.96	175	460	590	1,180	
Lena Gulch						
At U.S. Highway 6	3.68	1,000	1,800	2,200	3,300	
At confluence with Apex and Jackson Gulches	2.38	900	1,500	1,810	2,600	
Lena Gulch Tributary						
At mouth	0.39	140	285	350	570	
Leyden Creek						
At Simms Street	11.80	1,000	2,000	2,500	4,000	
Below Leyden Lake	9.00	850	1,150	2,200	3,400	
Above Leyden Lake	9.00	1,500	3,000	3,750	6,200	
At Foothills Road	4.20	1,300	2,500	3,300	5,400	
Lilley Gulch						
At mouth	3.01	1,240	1,660	1,880	2,300	
Above confluence with North Branch Lilley Gulch	1.88	1,150	1,540	1,720	2,050	
At Simms Road	0.43	380	510	585	700	
Little Cub Creek						
At mouth	2.83	300	885	1,180	2,000	
Massey Draw Tributary						
At Wadsworth Boulevard	0.99	585	820	920	1,200	
At Garrison Road	0.53	370	515	570	700	

¹Data not available

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Lena Gulch								
BX	37,005 ¹	58	193	11.4	5,929.0	5,929.0	5,929.0	0.0
BY	37,465 ¹	34	86	25.5	5,937.3	5,937.3	5,937.3	0.0
BZ	38,068 ¹	30	160	13.2	5,950.3	5,950.3	5,950.3	0.0
CA	38,540 ¹	74	215	9.8	5,962.4	5,962.4	5,962.4	0.0
CB	39,119 ¹	85	222	9.0	5,992.8	5,992.8	5,992.8	0.0
CC	39,800 ¹	80	195	8.5	6,006.8	6,006.9	6,006.9	0.1
CD	40,445 ¹	79	217	8.8	6,034.4	6,034.4	6,034.4	0.0
CE	40,865 ¹	22	135	14.1	6,050.7	6,050.7	6,050.7	0.0
Leyden Creek								
A	330 ²	115	562	7.7	5,421.9	5,421.9	5,422.6	0.7
B	550 ²	130	437	9.8	5,422.9	5,422.9	5,423.0	0.1
C	495 ²	205	654	6.6	5,426.6	5,426.6	5,427.3	0.7
D	965 ²	243	619	7.0	5,427.4	5,427.4	5,428.4	1.0
E	2,055 ²	316	541	7.9	5,435.5	5,435.5	5,436.2	0.7
F	2,555 ²	170	469	9.2	5,439.1	5,439.1	5,439.8	0.7
G	2,870 ²	140	642	6.7	5,441.8	5,441.8	5,442.8	1.0
H	3,605 ²	99	380	11.3	5,448.5	5,448.5	5,448.5	0.0
I	4,270 ²	183	832	5.2	5,452.2	5,452.2	5,452.2	0.0

¹ Feet above confluence with Clear Creek ² Feet above confluence with Ralston Creek

FEDERAL EMERGENCY MANAGEMENT AGENCY JEFFERSON COUNTY, CO AND INCORPORATED AREAS	FLOODWAY DATA LENA GULCH – LEYDEN GULCH
--	--

FLOOD INSURANCE STUDY



JEFFERSON COUNTY, COLORADO AND INCORPORATED AREAS VOLUME 3 OF 7

COMMUNITY NAME	COMMUNITY NUMBER
ARVADA, CITY OF	085072
*BOW MAR, CITY OF	080232
EDGEWATER, CITY OF	080089
GOLDEN, CITY OF	080090
*LAKESIDE, TOWN OF	080311
LAKEWOOD, CITY OF	085075
MORRISON, TOWN OF	080092
*MOUNTAIN VIEW, TOWN OF	080254
WESTMINSTER, CITY OF	080008
WHEAT RIDGE, CITY OF	085079
JEFFERSON COUNTY UNINCORPORATED AREAS	080087

*NON-FLOODPRONE COMMUNITIES

JUNE 17, 2003



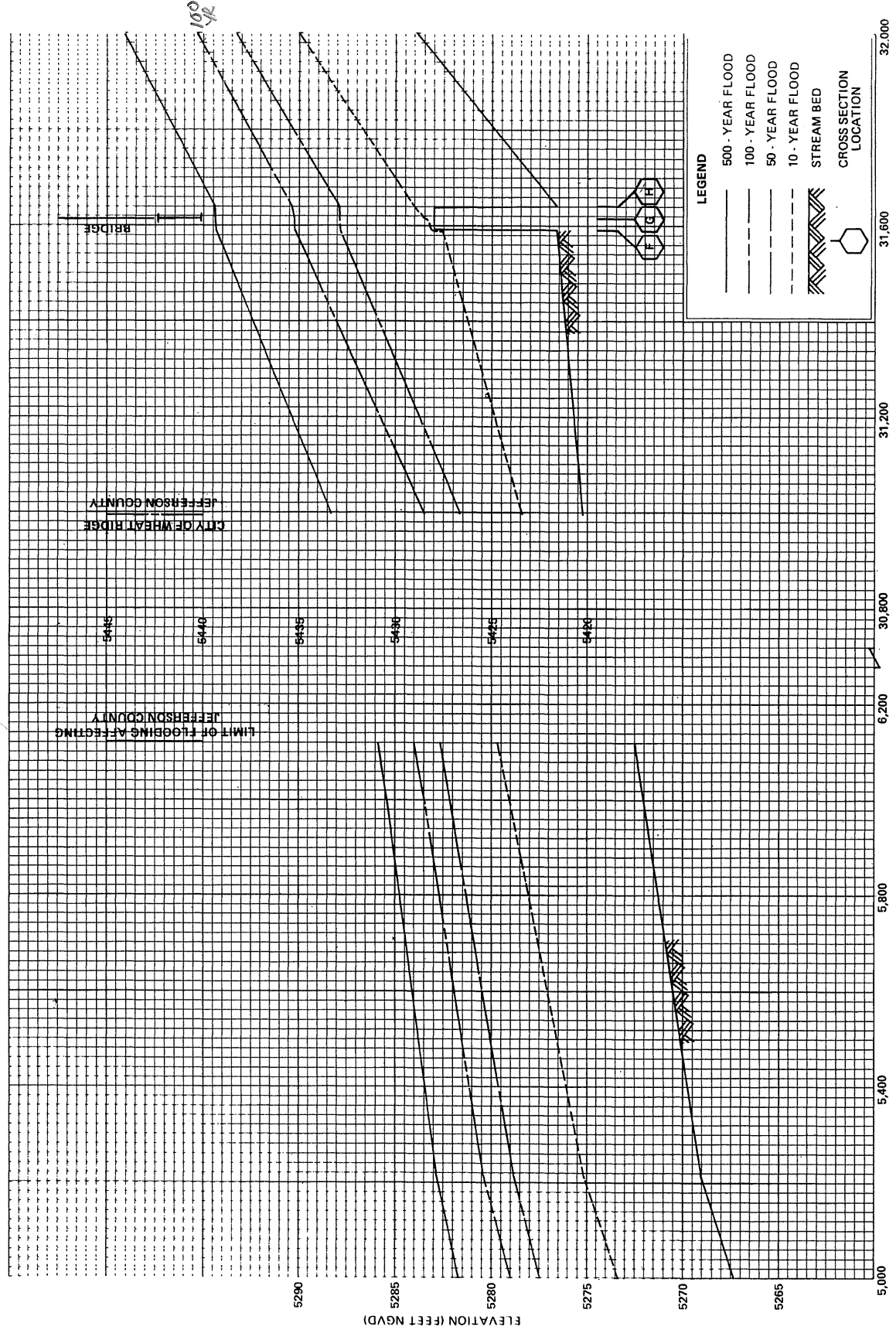
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
08059CV003A

FLOOD PROFILES

NEAR REEK

I-70



LEGEND

- 500 - YEAR FLOOD
- - - 100 - YEAR FLOOD
- · - · 50 - YEAR FLOOD
- · · · 10 - YEAR FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

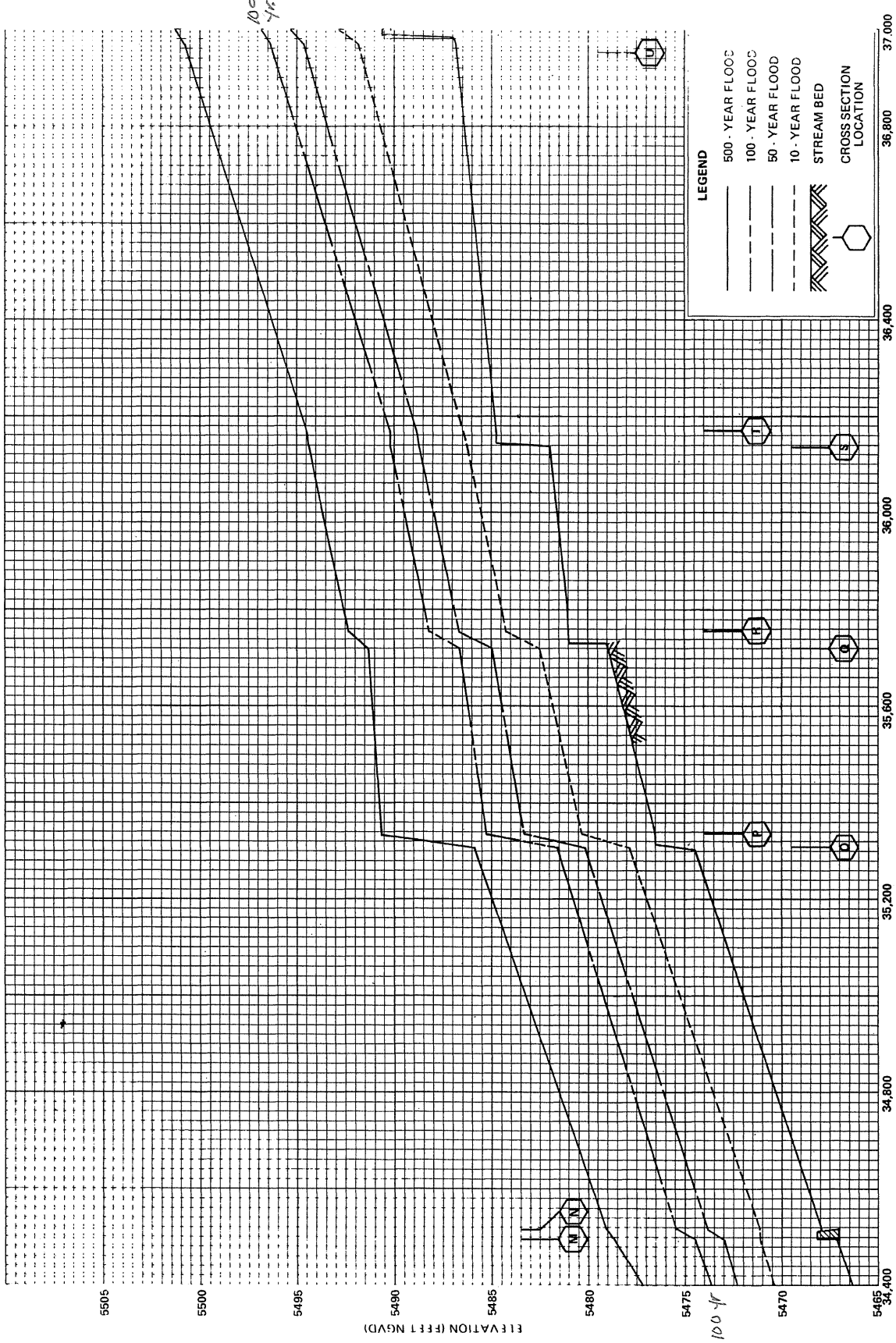
STREAM DISTANCE IN FEET ABOVE A POINT 30 FEET DOWNSTREAM OF SHERIDAN BOULEVARD

FLOOD PROFILES

EAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
JEFFERSON COUNTY CO
AND INCORPORATED AREAS

118P



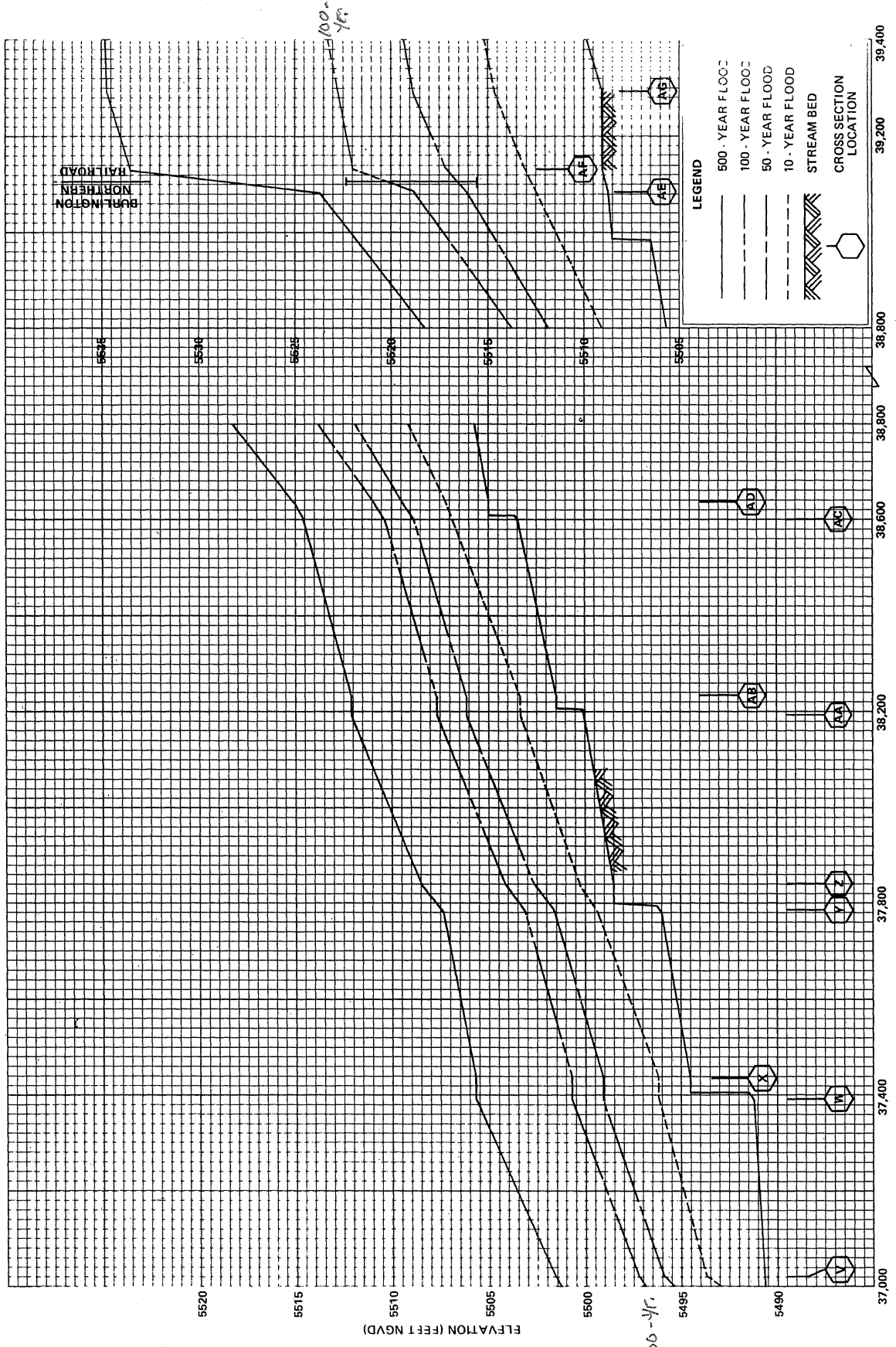
STREAM DISTANCE IN FEET ABOVE A POINT 30 FEET DOWNSTREAM OF SHERIDAN BOULEVARD

IRP16
DIVERSION?

FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
 JEFFERSON COUNTY CO
 AND INCORPORATED AREAS



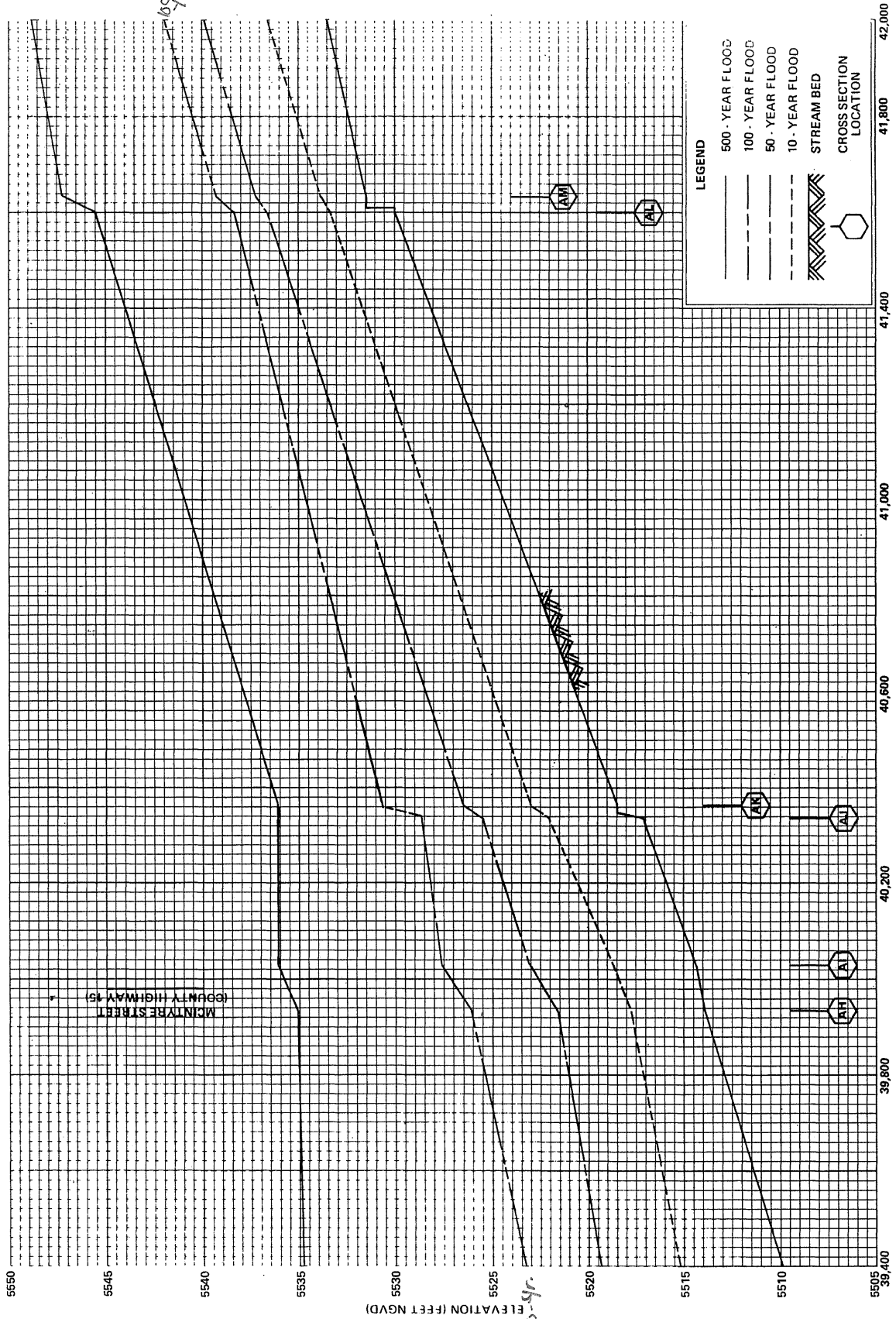
STREAM DISTANCE IN FEET ABOVE A POINT 30 FEET DOWNSTREAM OF SHERIDAN BOULEVARD

FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
JEFFERSON COUNTY CO
AND INCORPORATED AREAS

120P



MCINTYRE STREET
COUNTY HIGHWAY 15

STREAM DISTANCE IN FEET ABOVE A POINT 30 FEET DOWNSTREAM OF SHERIDAN BOULEVARD

LEGEND

- 500 - YEAR FLOOD (solid line)
- 100 - YEAR FLOOD (long dashed line)
- 50 - YEAR FLOOD (short dashed line)
- 10 - YEAR FLOOD (dash-dot line)
- STREAM BED (hatched area)
- CROSS SECTION LOCATION (circle with 'A')



Water Resources

Data Category:

Surface Water

Geographic Area:

United States

go

Calendar Year Streamflow Statistics for the Nation

USGS 06719505 CLEAR CREEK AT GOLDEN, CO.

Available data for this site

Surface-water: Annual streamflow statistics

GO

Jefferson County, Colorado Hydrologic Unit Code 10190004 Latitude 39°45'11", Longitude 105°14'05" NAD27 Drainage area 400.00 square miles Gage datum 5,695.00 feet above sea level NGVD29	Output formats HTML table of all data Tab-separated data Reselect output format
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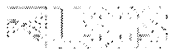
Year	Annual mean streamflow, in ft ³ /s	Year	Annual mean streamflow, in ft ³ /s	Year	Annual mean streamflow, in ft ³ /s
1975	194	1985	173	1995	324
1976	135	1986	222	1996	220
1977	104	1987	171	1997	271
1978	170	1988	164	1998	211
1979	203	1989	143	1999	257
1980	260	1990	144	2000	183
1981	105	1991	176	2001	171
1982	170	1992	160	2002	69.9
1983	324	1993	171	2003	204
1984	314	1994	129		

[Questions about data](#) [Water Webserver Team](#)
[Feedback on this website](#) [NWISWeb Support Team](#)
 Surface Water data for USA: Calendar Year Streamflow Statistics
http://waterdata.usgs.gov/nwis/annual/calendar_year?

$$\frac{5542}{29} = 191.1$$

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Water Resources

Data Category: Geographic Area:

Peak Streamflow for the Nation

USGS 06719505 CLEAR CREEK AT GOLDEN, CO.

Available data for this site

Jefferson County, Colorado Hydrologic Unit Code 10190004 Latitude 39°45'11", Longitude 105°14'05" NAD27 Drainage area 400.00 square miles Gage datum 5,695.00 feet above sea level NGVD29	<h3>Output formats</h3> <input type="text" value="Table"/> <input type="text" value="Graph"/> <input type="text" value="Tab-separated file"/> <input type="text" value="WATSTORE formatted file"/> <input type="text" value="Reselect output format"/>
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USGS 06719505 CLEAR CREEK AT GOLDEN, CO.

Year	Streamflow (cubic feet per second)
1976	1200
1977	850
1978	700
1979	1250
1980	1450
1981	1850
1982	900
1983	1400
1984	2400
1985	1550
1986	1400
1987	950
1988	950
1989	750
1990	1000
1991	1200
1992	850
1993	1150
1994	750
1995	2350
1996	1350
1997	1850
1998	1000
1999	1250
2000	1000
2001	750
2002	350
2003	1650
2004	500

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 Surface Water for USA: Peak Streamflow
<http://waterdata.usgs.gov/nwis/peak?>

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 1.99 1.71 nadww01

Clear Creek Watershed

$$T_c = \left[\frac{11.9 L^3}{\Delta H} \right]^{0.385}$$

$$T_c = \left[\frac{11.9 * 52^3}{6770} \right]^{0.385}$$

$$T_c = 8.34 \text{ hours}$$

→ Say approximately 8 hours

T_c = Time of Concentration in hours
 L = Distance of flow path in miles
 ΔH = Elevation difference from beginning of defined channel flow to site in feet

$L \sim$ for Clear Creek at I70

I-70 @ Loveland Basin	mp 213	} 31 mi.
I-70 @ US6 Cl. CK.	mp 244	
" " "	mp 257	} 15 mi.
US6 @ Golden	mp 272	
5458 Golden	mp 0	} 6 mi
" @ I-70	mp 6	
		<u>52 miles</u>

$$\Delta H = \begin{array}{l} 12,200 \text{ (Loveland Ski Basin)} \\ - 5,430 \text{ (I70 @ Wheatridge)} \\ \hline 6,770 \text{ feet} \end{array}$$

Typical Roadway Basin

$$T_c = \frac{L}{180} + 10$$

T_c = Time of Concentration in minutes
 L = Length of basin in feet
 = 1800' estimated longest length

$$T_c = \frac{1800}{180} + 10$$

$$= 20 \text{ minutes}$$

→ Say approximately 1/2 hour