ANNUAL REPORT

Phase I Stormwater Permit Annual Report July 1, 2002 through June 30, 2003

Prepared by

Colorado Department of Transportation

Municipal Stormwater Permit No.: COS-000005

October 1, 2003

ANNUAL REPORT

Phase I Stormwater Permit Annual Report

Prepared by

Colorado Department of Transportation

October 1, 2003

Contents

Section Page

Listing of Tables

Listing of Figure

Appendices

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
BMPs	Best Management Practices
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
ECAT	Erosion Control Advisory Team
ECS	Erosion Control Supervisor
FAQs	Frequently Asked Questions
FHWA	Federal Highway Administration
FRCP	Facility Runoff Control Plan
FY	Fiscal Year
IGA	Intergovernmental Agreement
MMS	Maintenance Management System
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheets
NPDES	National Pollutant Discharge Elimination System
RECAT	Regional ECAT
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Load
USFWS	U.S. Fish & Wildlife Service

Introduction

This Annual Report is being submitted in compliance with Part I.F. of the Colorado Discharge Permit System (CDPS) Permit No. COS-000005. This report covers the period from July 1, 2002, through June 30, 2003, for the Phase I permitted areas. The Phase I permitted areas include the cities of Denver, Lakewood, Aurora, and Colorado Springs as shown in Figure I-1 These cities are located within CDOT Regions 1, 2, and 6. The entire regions are not part of the Phase I area, but rather only those portions within the incorporated boundaries of the Phase I cities.

The report is arranged to correspond to the Annual Report elements listed in Part I.F. of the permit, and is divided into the following sections:

- Section 1.0 – Status of the Components of the Stormwater Management Program (Part I.F.1)
- Section 2.0 – Proposed Changes to the Stormwater Management Program (Part I.F.2)
- Section 3.0 – Revisions to Assessment of Controls and Fiscal Analysis (Part I.F.3)
- Section 4.0 – Summary of Monitoring Data (Part I.F.4)
- Section 5.0 – Summary of Educational Activities (Part I.F.5)
- Section 6.0 – Annual Expenditures and Budgets (Part I.F.6)
- Section 7.0 – Summary of Enforcement Actions and Inspections (Part I.F.7)
- Section 8.0 – Report on Wet-Weather Monitoring Program (Part I.F.8)

Each section includes a reference to the permit language and an explanation of the program status.

Phase II MS4 Permit

The Colorado Department of Transportation (CDOT) submitted an application for the CDPS Phase II Municipal Separate Storm Sewer System (MS4) Permit to the Colorado Department of Public Health and Environment (CDPHE) on March 9, 2003. Phase II requirements will be incorporated into the permit during fiscal year (FY) 2004. Phase II permit compliance schedules will start based on the date these requirements are incorporated.

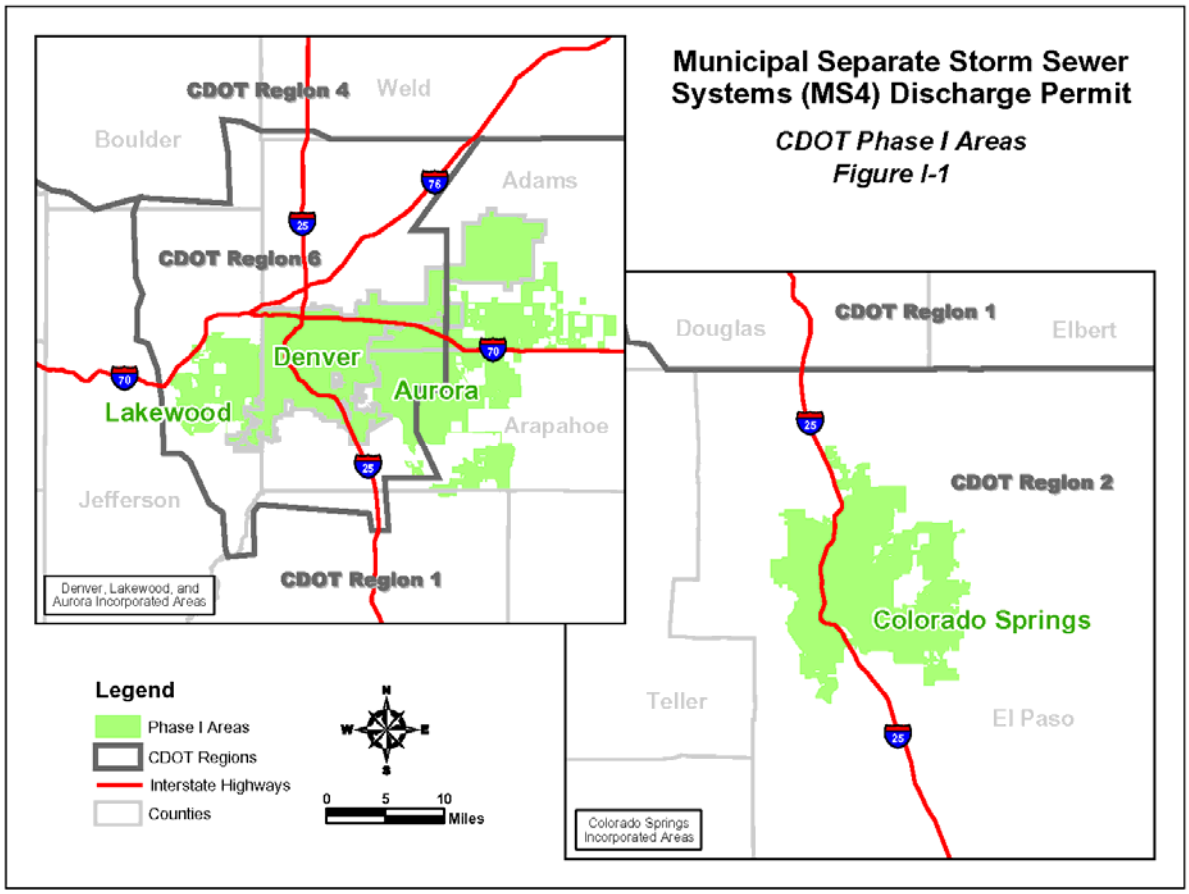

FIGURE I-1
CDOT Phase I Areas

SECTION 1.0

Status of the Components of the Stormwater Management Program (Part I.F.1)

Part I.F.1 states, "The implementation status of each [of] 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;"

The Stormwater Management Program for the Colorado Department of Transportation (CDOT), Part I.B.1 of CDOT's permit, consists of eight different programs, which will be discussed separately in this section. The eight programs that fall under the Stormwater Management Program are as follows:

- 1.1 Maintenance of Structural Controls (Part I.B.1.a)
- 1.2 New Development and Redevelopment Planning Program (Part I.B.1.b)
- 1.3 Public Street Maintenance Program (Part I.B.1.c)
- 1.4 Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)
- 1.5 Illicit Discharge Program (Part I.B.1.e)
- 1.6 Industrial Facilities Program (Part I.B.1.f)
- 1.7 Construction Sites Program (Part I.B.1.g)
- 1.8 Facility Runoff Control Program (Part I.B.1.h)

1.1 Maintenance of Structural Controls (Part I.B.1.a)

CDOT's Maintenance of Structural Controls Program provides for the maintenance of structural best management practices (BMPs). These include, but are not limited to, detention facilities, open channels, and storm sewer inlets. These devices are maintained in a manner that allows them to function as designed without excess buildup of sediment, trash, or debris.

CDOT uses the Maintenance Management System (MMS) to track maintenance activities performed on the structural controls as well as public street maintenance. CDOT has recently been in the process of updating the programming of this system. The regional information obtained regarding the maintenance activities performed has not been in a consistent format due to changes with the MMS and the availability of data. Once the new MMS is online and fully operational, a consistent method of retrieving and reporting data can be programmed into the system.

Table 1-1 presents a summary of activities that have occurred during the reporting period.

TABLE 1-1
Maintenance of Structural Controls (Part I.B.1.a)

Facility	Total Number of Units[1]	Maintenance Activity[2]	Quantity[3]
Detention, Retention, Constructed Wetland, and Water Quality Ponds	6	Trash removal, mowing,	250 pounds 108 acres
Grass Swales	2	Trash removal, mowing	100 pounds[4] 130 acres[4]
Storm Sewer Inlets	28 locations	Clean drainage structure	NA[5]
Other	1 location	Clean drainage structure, trash removal, mowing	NA[5]

[1] The total number of ponds, length of channel, number of outlets, area, etc.
[2] The type of maintenance activity performed. This could include mowing, cleaning, flushing, repairing, etc.
[3] Quantity refers to the amount of debris, trash, sediment, etc. removed from the structural controls.
[4] The grass swales and water quality pond are located within the same mile-post area; the trash removal and mowing quantities provided are for both facilities combined.
[5] Cleaning and repairing structures, such as inlets, are tracked by the number of inlets that received maintenance. Quantities of trash or debris removed are not tracked specifically for these structures.
NA=not available

An initial inventory of permanent structural controls has been submitted to the Division. The following types of structural controls related to stormwater quality are included in this inventory:

- Stormwater detention ponds
- Stormwater retention ponds
- Wet ponds
- Constructed wetlands
- Sand infiltration systems
- Stormceptors or similar devices
- Major open channels

Appendix A of this Annual Report contains a list of all controls maintained during fiscal year (FY) 2003. Four new controls were added during FY 2003. These include:

- Constructed wetlands located at I-225 and Iliff Avenue interchange
- Sand/grit separator located at I-225 and Iliff Avenue interchange
- Sand/grit separator located at I-225 and Parker Road interchange
- Water quality detention pond located at I-225 and Parker Road interchange

1.2 New Development and Redevelopment Planning Program (Part I.B.1.b)

CDOT's program submittal requirements for the New Development and Redevelopment Planning Program includes the following major elements:

- Review of new development/redevelopment for stormwater BMPs
- Update of the Draft 1995 *Drainage Design Manual* related to stormwater quality

- Update of the *Erosion Control and Stormwater Quality Guide*
- Identification of sensitive waters within the permitted municipalities
- Identification of special requirements for potential discharges to sensitive waters

The status of each of these elements will be discussed individually.

Review of New Development and Redevelopment for BMPs (Part I.B.1.b.1)

Plan Review

CDOT has developed a program for incorporating water quality elements into new highway projects and significant highway modifications. The program includes a definition of significant highway modifications and redevelopment, addresses the approach to be used for sensitive waters, and contains changes to the *Drainage Design Manual* and the *Erosion Control and Stormwater Quality Guide.*

The program was submitted to the Colorado Department of Public Health and Environment (CDPHE) on January 15, 2003. CDPHE provided comments on the program April 17, 2003. As of this report date, CDOT is still working to address a number of CDPHE's comments on the program. The latest response to CDPHE's comments was submitted August 29, 2003. It is anticipated that once these comments are addressed, the program will be finalized and the implementation process will begin. The program's implementation schedule is shown below in Table 1-2.

TABLE 1-2
New Development and Redevelopment Implementation Schedule (Part I.B.1.b.1)

Program Component	Implementation Date[1]
Incorporate material in Appendix I of program submittal into the CDOT *Drainage Design Manual*	Within 6 months
Incorporate material in Appendix II of program submittal into the CDOT *Erosion Control and Stormwater Quality Guide*	Within 6 months
Training activities to disseminate program to CDOT regional offices	Within 6 months

[1] Implementation date is based on CDPHE's final approval date of program.

Training

Workshops were conducted for CDOT personnel in anticipation of program approval. These workshops were part of the Phase II workshops discussed in Section 5.0 and were performed in each of the six regions. The workshops provided information on the requirements of the Phase I and Phase II stormwater regulations, and the approach CDOT will be using to comply with those requirements. After final approval of the program, another round of training workshops is envisioned to disseminate changes in the approved program, and specific implementation criteria. Over time, periodic refresher training is also anticipated.

Update of the Draft 1995 *Drainage Design Manual* Related to Stormwater Quality (Part I.B.1.b.2)

The submitted program will become a chapter in CDOT's *Drainage Design Manual*, while the BMP application guidelines will comprise a chapter in CDOT's *Erosion Control and Stormwater Quality Guide*. Once the CDPHE comments on the program are adequately addressed, these chapters will be finalized and distributed to CDOT staff and others.

In addition, CDOT has undertaken updating other chapters in the *Drainage Design Manual* unrelated to stormwater quality. Significant effort and resources have been brought to bear on review of the proposed changes and production of the revised manual. The approach to updating the manual was to use the yet-to-be-released American Association of State Highway and Transportation Officials (AASHTO) *Model Drainage Manual* as a base document upon which to build the revisions to CDOT's manual. The program chapters related to stormwater quality will be disseminated throughout CDOT once CDPHE's comments on the program are fully addressed. The schedule for updating the manual is shown in Table 1-3. It is anticipated that the update to the remaining chapters of the manual unrelated to the program will be completed no later than January 31, 2004.

TABLE 1-3
Update of 1995 *Drainage Design Manual* Schedule (Part I.B.1.b.1)

Schedule Item	Status[1]	Anticipated Completion Date
Review existing CDOT *Drainage Design Manual* and evaluate other drainage manuals	Complete	July 2001
Finish *Drainage Design Manual* chapters related to New Development Program requirements	Complete; addressing CDPHE's comments	October 2003
Develop remaining *Drainage Design Manual* chapters	Under development	November 2003

[1] Status is the work done to date, if any.

Update of the *Erosion Control and Stormwater Quality Guide* (Part I.B.1.b.3)

In FY 2002, CDOT updated the sections of the *Erosion Control and Stormwater Quality Guide* addressing temporary BMPs for construction. These sections were printed and distributed in October 2002. The *Erosion Control and Stormwater Quality Guide* is available on CDOT's Water Quality web-site and also through the CDOT Bid Plans office.

CDOT has completed the process of developing a chapter in the *Erosion Control and Stormwater Quality Guide* to include the application guidelines and general design criteria for permanent BMPs. This chapter was submitted to CDPHE on January 15, 2003, as Appendix II of the New Development and Redevelopment Program submittal. This chapter is ready for distribution to CDOT staff once CDPHE approves the overall program.

Identification of Sensitive Waters within the Permitted Municipalities (Part I.B.1.b.4)

No changes have been made since the identification was completed in July 2001 and reported in the FY 2001 Annual Report.

Identification of Special Requirements for Potential Discharges to Sensitive Waters (Part I.B.1.b.5)

CDOT proposed a procedure for addressing special requirements related to potential discharges into sensitive water in the program submittal of January 15, 2003. CDPHE had comments on this portion of the program, which CDOT and CDPHE are currently working to resolve. Once CDPHE approves this program element, the program will be implemented pursuant to the schedule outlined in Table 1-2.

1.3 Public Street Maintenance Program (Part I.B.1.c)

The following elements of CDOT's Public Street Maintenance Program may impact stormwater quality:

- Snow and ice management
- Salt and sand storage
- Magnesium chloride or other chemical deicer application practices
- Sweeping leaf litter and debris
- Sweeping sanded streets
- Disposal of sweeper waste

CDOT's Public Street Maintenance Program is summarized in the following paragraphs. The current program effectively controls discharges into the stormwater system.

General Maintenance

As stated in CDOT's *Erosion Control and Stormwater Quality Guide*, the following BMPs are used for maintenance activities:

- Do not use herbicides unless unavoidable.
- Use low-release fertilizers.
- Follow manufacturers' instructions for insecticides.
- Avoidance of sand blasting during high-wind days.
- Use floating straw or boom-type collectors when painting bridges.
- Minimize soil disturbances.
- Avoid accidental spill and improper disposal of solvents.
- Ensure proper disposal of cleaned material and waste products.
- Minimize the creation of dust by adding moisture.
- Avoid certain repairs such as bridge deck, paved ditches, etc., during high-precipitation warnings.
- Ensure proper operation of wastewater treatment and sludge disposal systems.
- Provide adequate litter receptacles for rest areas.

- Perform periodic inspections of storage tanks for leaks.
- Perform street sweeping as soon as practicable after snowstorms.
- Revegetate bare soil areas adjacent to highways.
- Implement litter control programs.

Street Sweeping

CDOT performs mechanical sweeping of sand, dirt, and debris from paved surfaces, shoulders, curbs and gutters, and median barriers to ensure roadway drainage, assure public safety, maintain the environmental and aesthetic quality of the roadway, and minimize air pollution concerns. CDOT uses a database to track information on the quantity of sand, gravel, or magnesium chloride that is applied per mile, which roads and highways are swept or sanded, and how much material is removed from the streets. Sanding and deicing materials are tabulated within each transportation region. The information is contained in CDOT's MMS, which tracks the general location, date, and quantity of application.

Snow and Ice Control

One of CDOT's highest priorities is the removal of snow from state highways. CDOT applies deicing materials in accordance with the Department's Procedural Directive 1055.2 (Application of Abrasives and Deicers). Abrasives and deicers are applied in accordance with the following requirements of the directive:

- Do not cast abrasives into or against other vehicles on the road.
- Place stockpiles containing salt or melting agents in covered storage or containment pads to reduce leaching.
- Place CDOT property signs at unfenced stockpiles.

Additionally, CDOT follows the Colorado Air Quality Commission's Regulation 16, which governs street sanding emissions. Regulation 16 describes the specification for sanding material to be applied to roadways in winter. CDOT follows the Regional Air Quality Control Council's "Guidelines to Reduce Air Pollution from Street Sanding" for the metropolitan Denver area. These guidelines include prescriptions for sand application rates, maximum salt concentrations, calibration of sand spreaders, and sweeping of sanded streets.

CDOT performs sweeping of sanded streets as soon as weather and road conditions allow (see Table 1-4 below). Sand and gravel from highway and roadway surfaces are collected and disposed of in landfills or reused in the construction process. In accordance with the permit, streets are swept a minimum of twice annually, including once in the fall and once in the spring.

TABLE 1-4
Street Maintenance and Material Usage (Part 1.B.1.c)

Sweeping Miles	Region 1	Region 2	Region 6	Total Miles Swept
Sweeping Miles	9,779	10,058	29,630	49,467
Material Usage	**Region 1**	**Region 2**	**Region 6**	**Total Material Used**
Abrasive Material (ton)	1,970	0	0	1,970
Salt/Sand Mixture (ton)	53,458	57,317	23,584	134,359
Liquid Deicer (gallon)	1,306,502	1,361,580	1,287,758	3,955,840
Solid Deicer (ton)	1,200	0	13,221	14,421
Sand/Slicer Mixture	47,189	0	0	47,189
Caliber® M1000 Deicer (gallon)	843,289	0	818,635	1,661,924
Liquid Deicer Special (gallon)	1,328	3	0	1,331

Rockslide Maintenance

CDOT removes rock and other material accumulated along cut-slope sections, shoulders, and other bench areas along the roadway on an as-needed basis. These areas are kept clean and the slope maintained to minimize the possibility of future rockslides onto the roadway.

Roadside Vegetation

CDOT performs the following maintenance activities on roadside vegetation within the right-of-way:

- Mowing
- Brush control
- Noxious weed control
- Bare ground treatment
- Tree pruning
- Planting
- Thinning
- Seeding
- Other activities

Before CDOT staff are allowed to begin ditch blading, grubbing, cutting trees and shrubs, or spraying herbicides for weed control, the necessary clearances are obtained from regulatory agencies. The Regional Planning and Environmental Manager is contacted if a specific environmental clearance is required.

Bridges

Bridges are maintained, cleaned, and inspected for proper drainage. Appropriate safety measures are required for any work or maintenance that involves painting, cleaning, or removal of materials.

CDOT reviewed the Federal Highway Administration's (FHWA) publication, *Evaluation and Management of Highway Runoff Water Quality* (FHWA-PD-96-032, June 1996), for bridge maintenance practices to be incorporated into CDOT's program to protect water quality. Although CDOT's *Manual of Maintenance Procedures* does not address specific bridge maintenance measures to protect water quality, CDOT does implement a procedure that considers the risk to water quality and evaluates the opportunities to reduce those risks. A memorandum regarding the evaluation of the FHWA publication was submitted to CDPHE on July 15, 2003. Bridge maintenance practices to protect water quality will be incorporated into CDOT's *Manual of Maintenance Procedures* during the next update in 2006.

Roadside Facilities

Drainage facilities owned by CDOT within the right-of-way include cattle passes, collection ditches, shoulder drains, side ditches, underdrains, outlet ditches, contour ditches, and culverts. These facilities are maintained by year-round work crews to ensure their ability to handle spring runoff and summer rains.

Maintenance activities include removing trash, debris, and sediment. All drainage facilities are inspected once per year. Minor defects are repaired as necessary and major defects are reported for future repair.

Drainage facilities that have sump pumping systems are inspected to ensure the pumping system works properly and the sumps are clean. The sump pumps are tested and serviced frequently to maintain good operating condition.

1.4 Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)

CDOT's Herbicide, Pesticide, and Fertilizer Program is summarized in the following paragraphs. The current program effectively controls discharges into the stormwater system. Key components of the program include the following:

- Herbicide use along roadways is minimized.
- Herbicide application is performed during dry-weather periods to the extent possible using methods to limit overspray.
- CDOT educates staff on the proper use, application, and disposal of herbicides, pesticides, and fertilizers.
- Applicators are certified as required by the Colorado Department of Agriculture.

Roadside vegetation is managed by mowing, pruning, thinning, or seeding to minimize or prevent unwanted plant growth. Cultural techniques encourage growth of desirable plants that eventually crowd out undesirable species. Biological control methods are also employed, which is a technique using living organisms to destroy the unwanted host plant.

Herbicides are applied according to the manufacturers' instructions. CDOT staff are instructed not to apply herbicides near irrigation ditches, streams, stock watering ponds, or domestic water supplies. CDOT uses a selective approach, targeting specific plants for application. Fertilizers are then applied to promote growth of the desirable plants. Records

are maintained to indicate the volume and location of herbicide, fertilizer, and pesticide applications. Material safety data sheets (MSDS) are maintained at the maintenance facility where the CDOT staff are located.

CDOT applicators are Certified State Applicators in accordance with Colorado Department of Agriculture requirements, which mandate licensing for restricted-use pesticide application. Over-the-counter products are used in accordance with the product's instructions, but all other chemical applications are contracted out or performed by county weed control districts.

CDOT applicators are instructed to minimize weed spraying and to spray only at spot locations of weed infestations. Aquatic sites are spot-sprayed with herbicides approved for such an application. Some maintenance sections do not spray herbicides in wetland areas, but those that do use specific chemicals and only after notification and approval from the Regional Environmental Manager.

CDOT provides yearly training for all maintenance employees statewide at the Camp George West facility. This training is not specific to herbicide, pesticide, or fertilizer use, but does include discussion on the proper application of herbicides and pesticides. In addition, CDOT also provides other training on the application of herbicides and pesticides on an as-needed basis for certification and licensing purposes. Region 1 has three certified applicators who participated in two training sessions in FY 2003, while four certified applicators from Region 6 participated in four training sessions during FY 2003. Region 2 does not have any certified applicators and contracts out all application activities to the counties and private contractors.

All CDOT applicators are state-certified as required by the Colorado Department of Agriculture and licensed to apply restricted-use pesticides. In order to maintain certification and licensing, CDOT applicators must attend ongoing training. CDOT's herbicide and pesticide training is an existing, ongoing practice that is utilized on an as-needed basis.

1.5 Illicit Discharge Program (Part I.B.1.e)

CDOT's Illicit Discharges Program may be divided into the following elements, which are discussed in the paragraphs below:

- Prevention of Illicit Discharges and Improper Disposal of materials
- Ongoing Field Screening
- Investigation of Suspected Illicit Discharges
- Procedures to Prevent, Contain, and Respond to Spills
- Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal
- Educational Activities to Promote Proper Management and Disposal of Toxic Materials

Prevention of Illicit Discharges and Improper Disposal (Part I.B.1.e.1)

CDOT has developed an ongoing program to detect and remove illicit discharges and improperly disposed materials to its storm sewer system. As part of this program, CDOT has modified its procedure for issuing utility permits to confirm that no non-stormwater discharges are connected into the CDOT storm sewer system. This program was submitted to CDPHE on January 15, 2003, and CDPHE approved the program with comments on May 22, 2003. The implementation schedule for this program is shown in Table 1-5 and is based on the approval date of May 22, 2003.

TABLE 1-5
CDOT Illicit Discharge Program Implementation Schedule (Part I.B.1.e)

Program Section Program Component	Implementation Date
I. Prevention of Illicit Discharges and Improper Disposal	
□ Finalize changes to the Utility and Access permit applications	May 22, 2004
□ Notify utility permit applicants of prohibition of non-stormwater discharges	November 22, 2003
□ Implement control measures to minimize impacts from street wash water associated with construction activities	November 22, 2003
II. Ongoing Field Screening	
□ Develop database for tracking field screening data	November 22, 2004
□ Train personnel conducting field screening	November 22, 2003
□ Commence field screening	May 22, 2004
III. Investigation of Suspected Illicit Discharges	
□ Trained personnel to use and respond to hotline calls reporting suspected illicit discharges	November 22, 2003
IV. Procedures to Prevent, Contain, and Respond to Spills	Current and ongoing
V. Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal	
□ Continue to distribute educational material such as the hotline poster to promote proper reporting of illicit discharges	Current and ongoing
VI. Educational Activities to Promote Proper Management and Disposal of Toxic Materials	
□ Consider the economic feasibility of holding CDOT hazardous waste roundup event; potential program for an ‘in-house” hazardous materials roundup program	November 22, 2003
□ Implement in-house hazardous waste roundup	As sufficient funding is identified

Ongoing Field Screening (Part I.B.1.e.2)

CDOT has developed an ongoing system of field screening of the MS4 outfalls to detect illicit discharges, illegal dumping, and illicit connections. Included in the program are the criteria to be used to evaluate outfalls for potential screening and screening frequency, and the mechanisms for identifying additional storm sewer outfalls. The ongoing field screening program was submitted to CDPHE on January 15, 2003, as part of the Illicit Discharge

Program. Implementation of this program is shown in Table 1-5 and is based on the approval date of May 22, 2003.

Inventory of Outfall System

No additional outfalls have been included in the inventory during the 2002-2003 reporting year.

Ongoing Outfall Screening

The ongoing outfall screening program was submitted to CDPHE as part of the Illicit Discharge Program on January 15, 2003. The ongoing field screening of the priority outfalls during dry-weather conditions will begin within 12 months of the program approval date of May 22, 2003, as shown in Table 1-5.

During FY 2003, 45 priority outfalls were screened as part of a pilot test of the ongoing outfall screening program. Of the outfalls screened, three had dry-weather flows. In all cases, field analyses of the discharge were performed. The results of the analyses are included in Section 4.0, Summary of Monitoring Data. Appendix C, Form 4b, lists all the outfalls screened and whether dry-weather flows were present.

Priority Dry-Weather Screening Outfalls

CDOT has identified the priority areas to receive ongoing screening based on their high potential for illicit discharges due to industrial or dense commercial location, or whether the receiving waters are considered to be a sensitive water. In the fall of 2001, CDOT verified the locations of the outfalls that discharge in these priority areas. The finalized list of priority outfalls was submitted in the 2002 Annual Report.

Dry-Weather Protocols

CDOT documented the protocols and chemical parameters that will be used for dry-weather screening in the CDOT *Dry-Weather Screening Program Manual*. This manual was submitted to CDPHE along with the Illicit Discharge Program on January 15, 2003.

Dry-Weather Sampling

CDOT performs field analyses and/or collects samples whenever flow is observed during a dry-weather outfall screening event. The analytical results of the screening events are summarized in Section 4.0, Summary of Monitoring Data.

Investigation of Suspected Illicit Discharges (Part I.B.1.e.3)

A program to investigate suspected illicit discharges was developed by CDOT and submitted to CDPHE on January 15, 2003. The program was developed within CDOT's existing authorities and specifies standard investigation procedures to identify, report, and follow up on the source of the illicit discharge or illegal connection to CDOT's storm sewer system. Unresolved illicit discharges will be forwarded to the Water Quality Control Division for further action. Training for personnel to use and respond to reports of suspected illicit discharges is scheduled to begin within 6 months of the program approval date of May 22, 2003.

Procedures to Prevent, Contain, and Respond to Spills (Part I.B.1.e.4)

CDOT is implementing its ongoing program to prevent, contain, and respond to spills attributable to CDOT. The State Patrol is typically the first agency to respond to spills caused by others on the highway. These spills are only handled by CDOT if no responsible party has been identified. Procedures to prevent, contain, and respond to spills are provided in CDOT's *Guide to Hazardous Spill Response on State Highways*.

During the period of July 1, 2002, through June 30, 2003, six spills (Form 4c) were identified on CDOT property based on the information provided by CDPHE. None of the spills was attributable to CDOT. Incidents provided by CDPHE related to police actions involving methamphetamine labs are not included as spills.

Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal (Part I.B.1.e.5)

CDOT headquarters performed MS4 / Phase II workshops in all CDOT regions. These workshops included information on the definition of an illicit discharge, the requirements of the Phase II regulations, and a description of CDOT's current Illicit Discharge Program. The purpose and general content of these workshops are described in Section 5.0 of this report, and a copy of the presentation material is provided in Appendix G. In addition, the Phase II workshop was presented at the Winter Conference, which was open to the public and all CDOT employees.

The Illicit Discharge Program bulletin developed in FY 2002 remains posted on CDOT's web site along with the Illicit Discharge Hotline number.

Educational Activities to Promote Proper Management and Disposal of Toxic Materials (Part I.B.1.e.6)

The Illicit Discharge Program bulletin cited above included information on the types of materials that should not be discharged into an MS4. This information is posted on CDOT's web site, and the bulletin is provided upon request to CDOT offices.

1.6 Industrial Facilities Program (Part I.B.1.f)

CDOT has developed a program to track industries discharging stormwater into the CDOT storm sewer system. This program was submitted to the CDPHE on January 15, 2003, and approved on May 22, 2003. Implementation of this program will begin 6 months from the date of program approval. As part of this program, CDOT has developed procedures to inventory all new facilities. Procedures have also been developed to record reports of industrial facilities witnessed to be connected to CDOT's system and to forward those reports to CDPHE. In addition, CDOT has established priorities and procedures for inspections and implementation of control measures.

To facilitate the implementation of the program, CDOT developed an Environmental Clearances Information Summary (ECIS) in June, 2003 to help prevent illicit discharges into CDOT's MS4. The ECIS is intended to be used by the CDOT Utility and Access Permit Programs to advise Utility, Special Use, or Access Permit applicants about the potential

need to obtain a Colorado Discharge Permit System (CDPS) permit. It also provides information about the general prohibition against those types of discharges that are not allowed. A copy of the CDOT ECIS is included in Appendix D.

Along with the ECIS update, CDOT distributed an internal memorandum that provided background information regarding changes to current procedures impacted by the recently developed CDOT Industrial Facility Program. CDOT will periodically revisit the processes that have been established under the Industrial Facility Program as they receive feedback from CDOT regional staff and external entities.

Changes to the Highway Utility Accommodation Code (Code) have been made as outlined in the CDOT Industrial Facility Program. The Code has not yet been adopted as a formal state rule. If the Code does not go to rulemaking, then it assumes the form of an operational manual. The conditions in the operational manual will be enforced as contractual condition of a utility permit.

CDOT has updated the form used for facilities to connect to CDOT's storm sewer system.

This program was submitted to the CDPHE on January 15, 2003, and approved on May 22, 2003. Implementation of this program will begin 6 months from the date of program approval.

1.7 Construction Sites Program (Part I.B.1.g)

CDOT is currently implementing its ongoing program to reduce the discharge of pollutants from its construction sites. Program elements include the following items:

- Site planning procedures
- Structural and non-structural BMPs
- Site inspection and enforcement procedures
- Training for construction site operators

CDOT's Standard Specification for Road and Bridge Construction includes two specification sections that address water quality and erosion control. Both sections are required to be included in the contract documents and stormwater management plan checklist for the following three types of CDOT projects:

- Type 1 – Overlays, signings, stripping, signalizations, etc. (no earth disturbances)
- Type 2 – Earth disturbances, but no Colorado Discharge Permit System (CDPS) permit required (area less than 1 acre)
- Type 3 – Earth disturbances and CDPS permit required (area greater than 1 acre)

Section 107.25, Water Quality, requires the contractor to take measures to protect water quality and use practices that minimize water pollution during construction. All practices listed in the specification must be taken to minimize pollution and all procedures listed in the specification must be used to complete a Stormwater Management Plan (SWMP).

Section 208, Erosion Control, requires the contractor to comply with CDOT's erosion control measures. The specification addresses constructing, installing, maintaining, and removing

erosion control measures during the course of the project. The contractor is required to coordinate any temporary control measures with permanent features to ensure continuous erosion control through the construction period.

Section 208, Erosion Control, requires the contractor to assign an employee to serve as the project's Erosion Control Supervisor. The Erosion Control Supervisor is responsible for ensuring project compliance by obtaining water quality permits, supervising installation, construction, and maintenance of temporary and permanent BMPs, inspecting the site with the engineer, attending project scheduling meetings, implementing action to remedy problems, and making site and BMP information available.

Site Planning Procedures

CDOT's Construction Program requires that a permit application be submitted for construction projects and an SWMP be developed and implemented. CDOT's *Erosion Control and Stormwater Quality Guide* sets forth procedures to be followed and includes standard specifications for water quality control (Section 107.25) and erosion control (Section 208).

A SWMP must be prepared for all sites that require a CDPS stormwater permit. Sites that do not require a CDPS permit, but which will have earth disturbances that may be subject to erosion, are also required to have a SWMP. Preparation of a SWMP ensures that erosion and sediment control and stormwater quality are addressed during and after construction. The SWMP includes a description of the site and the BMPs that will be used during and after construction. The SWMP must be prepared during the project's design phase and included on the erosion and sediment control measures and stormwater quality control measures plan sheets, which are a part of the construction drawings.

BMPs required during construction must include erosion control measures and material handling and spill prevention measures. All construction projects include specifications for water quality control (Section 107.25) and erosion control (Section 208). These sections also address measures for material handling and spill prevention or management.

CDOT has developed the following guidelines for the designer to prepare a SWMP:

- Study and inspect future construction plans to determine areas with potential erosion hazards.
- Determine limits of clearing and grading.
- Divide the site into drainage areas.
- Direct clean runoff around the construction area.
- Use erosion and sediment controls whenever possible to reduce site erosion and prevent offsite impacts.
- Use stormwater quality measures to reduce pollutants from highway runoff.

The SWMP includes the following measures the contractor must take during construction activities:

- Install perimeter erosion control measures before grading.
- Sequence and stage construction so no area remains exposed for unnecessarily long periods.
- Stabilize disturbed areas before other areas are disturbed.
- Implement stabilization BMPs immediately after grading.
- Develop and perform a regular maintenance schedule for erosion and sediment control measures.
- Use spill prevention and containment measures at storage sites.
- Develop and perform a schedule for regular collection and disposal of waste material.
- Designate a site for material disposal.
- Designate one person to be responsible for implementing the SWMP.

Components of the SWMP should be inspected during the project. Any items of concern should be brought to the contractor's attention. The Erosion Control Supervisor records observations and data using CDOT's Form Number 1176a, which is maintained in the project files at the project site.

Structural and Non-structural BMPs

Best management practices are measures used to prevent or reduce pollution of waterways. BMPs are required in the SWMPs prepared for construction projects. CDOT's *Erosion Control and Stormwater Quality Guide* provides details on BMPs that may be used. These BMPs are divided into three categories as shown in Table 1-6. CDOT periodically updates the guide to reflect new information concerning BMP effectiveness. The guide was last updated in 2002.

TABLE 1-6
Summary of BMPs (Part I.B.1.g)

Category	BMPs
Soil Stabilization Practices	Seeding, mulching, sodding, erosion control blankets, surface roughing
Structural Practices	Erosion bale, silt fence, berm/diversion, slope drain, storm drain inlet protection, check drain, outlet protection, channel stabilization or lining, sediment trap, sediment basin, dewatering structure, temporary stream crossing, stabilized construction entrance, level spreader, brush barrier, sandbag barrier
Other Practices	Spill prevention, waste disposal, protection of trees, curb roll/shoulder gutter

Site Inspection and Enforcement Procedures

Construction projects that necessitate a CDPS permit and SWMP require completion of an Erosion and Sediment Control Field Inspection Report (Form 1176a) every 14 days and after

any precipitation or snowmelt that generates runoff. Information required on the form includes the following:

- Project number and code
- Name of contractor whose work is being inspected
- Name of CDOT inspector (either project engineer or authorized representative)
- Reason for inspection (routine, complaint, or other)
- Indication of whether the BMP is used for each BMP listed
- Indication if a BMP requires maintenance or sediment removal
- Course of action required
- Signature and date of contractor and CDOT inspector

CDOT encourages the contractor and CDOT inspector to perform the inspections jointly. If this is not possible, the CDOT inspector may complete the inspection and the form independently. Originals of the completed forms are maintained at the project site.

CDOT formed an Erosion Control Advisory Team (ECAT) in 1994 to provide erosion control and water quality support to construction personnel, improve consistency in CDOT's erosion control program on a statewide basis, identify deficiencies in CDOT's erosion control program, and develop strategies to correct the deficiencies. The team reviews a sampling of projects from the state's six regions and publishes the results of the review in the annual report.

CDOT has been performing Regional ECAT (RECAT) inspections since July 1, 2001, using consultant assistance. Since that time, some regions have started performing these inspections without assistance. CDOT formed RECAT teams for Regions 1, 2, and 6 as of July 1, 2002, but CDOT headquarters is still providing RECAT assistance to Regions 3, 4, and 5. CDOT developed a *RECAT Handbook* for internal use, which provides information, procedures, and tools (forms) for performing RECAT inspections. The handbook is currently being printed for distribution.

CDOT met the permit requirement to perform 60 RECAT inspections per fiscal year. As shown in Table 1-7 and listed in Appendix E, a total of 67 RECAT inspections were completed in FY 2003.

TABLE 1-7
Summary of RECAT Inspections Performed in FY 2003 (Part I.B.1.g)

Region	Number of Inspections
Region 1	9
Region 2	9
Region 3	3
Region 4	9
Region 5	6
Region 6	21
T-REX	10
Total Inspections	**67**

Training for Construction Site Operators

CDOT has co-sponsored an erosion control course entitled "Stormwater Management During Construction," which is offered at Red Rocks Community College. Twenty-seven CDOT employees attended this course during FY 2003, along with representatives from various contractors, counties, cities, design firms, etc.

CDOT requires that an employee for the contractor serve as the site Erosion Control Supervisor (ECS). This person must have satisfactorily completed a CDOT-authorized training program, such as the Stormwater Management During Construction course. Upon completion of the program, the individual will receive an ECS certification card. Overall, 297 people received CDOT's ECS training certification during FY 2003.

Due to increased demand for the ECS certification, additional Stormwater Management During Construction courses are being offered through Red Rocks Community College and Altitude Training Associates, as well as a refresher course for this training. In FY 2003, two refresher training courses were offered through Altitude Training Associates. One was held in the City of Aurora on March 13, 2003, and another was held in the City of Durango on May 30, 2003. Overall, 22 people attended the refresher training, of which 12 were CDOT employees.

Other training courses associated with construction activities have occurred throughout the fiscal year. RECAT training and information sessions were included at the Winter Conference and during the Phase II Workshops. A complete list of the training courses is provided in Appendix E.

In addition to the Stormwater Management During Construction course and other training courses, CDOT has published two one-page BMP bulletins highlighting successful BMP applications used at CDOT construction sites. These bulletins have been distributed internally to RECAT members and CDOT employees involved with construction.

CDOT also produced a bulletin/newsletter highlighting the requirements of 404 permits and dewatering permits. This bulletin was distributed to approximately 300 CDOT employees, including the regional environmental groups, and is posted on the CDOT web site.

Table 1-8 summarizes the training activities related to construction activities performed during FY 2003.

TABLE 1-8
Summary of Construction Program Training Activities (Part I.B.1.g)

Activity	Number/Description
BMP of the Month	100 distributed
Construction Dewatering Newsletter	300 distributed
Erosion Control and Stormwater Quality Guide	300 distributed
Erosion Control and Stormwater Quality Pocketbook	800 distributed

TABLE 1-8
Summary of Construction Program Training Activities (Part I.B.1.g)

Activity	Number/Description
Staff Training	
□ "Stormwater Management During Construction Course, Red Rocks Community College	27
□ Winter Conference, January 2003 (includes various topics related to stormwater quality and construction)	250 attendees

1.8 Facility Runoff Control Program (Part I.B.1.h)

CDOT is currently developing Facility Runoff Control Plans (FRCP) for its facilities that fall under the requirements of the permit. FRCPs are presently being developed for the following facilities that do not have independent CDPS stormwater permits:

- Vehicle maintenance facilities
- Asphalt and concrete batch plants
- Solid-waste transfer stations
- Exposed stockpiles of materials
- Sites used for snow dumps and/or temporary storage of sweeper tailings or other waste piles

Lists of the facilities, including "major" and "minor" facility designations, were provided to CDPHE in January 2002. The final list of facilities requiring FRCPs is shown in Table 1-9. FRCPs are being developed for each major facility, and those plans will be maintained at each facility and the regional office. Minor facilities are being grouped by category, and FRCPs are under development for each group type. The FRCPs for minor facilities will be maintained at the regional office. Following completion of the runoff control plans, each facility will be inspected at least once annually. Table 1-10 lists those facilities with plans and their conformity to their respective plan.

TABLE 1-9
List of Major and Minor Facilities (Part I.B.1.h)

Facility Name	CDOT Region	Address	Designation
Region 1 – Aurora	1	18500 East Colfax, Aurora	Major
Colorado Springs	2	2025 Commercial Boulevard, Colorado Springs	Major[1]
Cherry Creek	6	3320 South Parker Road, Aurora	Major
Region 6 – Aurora	6	18800 East Colfax, Aurora	Major
Denver-Atlantic	6	5640 East Atlantic Place, Denver	Major
Denver-Havana	6	4375 Havana Street, Denver	Major

TABLE 1-9
List of Major and Minor Facilities (Part I.B.1.h)

Facility Name	CDOT Region	Address	Designation
Denver-Park	6	3601 Park Avenue West, Denver	Minor
Denver-West 11th	6	2300 West 11th Avenue, Denver	Minor

[1] The Colorado Springs facility is in actuality a "minor" facility. However, it is currently designated as a "major" facility since it constitutes the only facility in Region 2. This designation is subject to change when Region 2 acquires other facilities located within either the Phase I or Phase II permit areas.

CDOT has developed and implemented FRCPs for 50 percent of the facilities that fall under the requirements of CDOT's permit, in accordance with the compliance schedule. As required by the permit, CDOT will implement FRCPs for four more facilities (100 percent of the Phase I facilities) by January 15, 2004. Table 1-10 lists the facilities and the status of their plans, conformity to completed plans, and the anticipated completion date for plans not yet completed.

TABLE 1-10
Annual Report on Overall Conformity with Runoff Control Plans (Part I.B.1.h)

Facility Name	Status of Plan	Date of Inspection	Conformity to Plan?[1]	Anticipated Completion Date
Cherry Creek	Complete	August 13, 2003	Yes	January 15, 2002
Region 1 – Aurora	Complete	August 20, 2003	Partial	January 15, 2003
Colorado Springs	Draft Complete	NA	NA	January 15, 2004
Region 6 – Aurora	Complete	August 18, 2003	Yes	January 15, 2003
Denver-Atlantic	Complete	August 21, 2003	Yes	January 15, 2003
Denver-Havana	Draft Complete	NA	NA	January 15, 2004
Denver-Park	In Progress	NA	NA	January 15, 2004
Denver-West 11th	In Progress	NA	NA	January 15, 2004

[1] Conformity to plan could be "yes," "partial," or "no." If "partial" or "no," then an explanation should be added under "comments."

NA – not applicable because plan has not been implemented.

The Region 1 – Aurora Facility began implementation of its FRCP on January 15, 2003. This facility had significantly greater challenges than the other sites and was allowed 12 months to implement structural control measures. The annual inspection of this facility was performed before the 12-month implementation period elapsed, and the facility had not yet implemented all the control measures. The facility has taken proactive measures to insert sediment-trapping devices within the catch basin inlets located on the facility. These products are being demonstrated to determine their usefulness at other facilities, and appear to be effective in preventing sediment from entering the storm sewer system. This facility has undergone a recent change of management. The Water Quality Program Manager has met with the new facility management, and approaches are being proposed to bring this facility in full conformity with its FRCP.

SECTION 2.0

Proposed Changes to the Stormwater Management Program (Part I.F.2)

Part I.F.2 states, "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;"

CDOT's Stormwater Management Program consists of eight different programs as follows:

- 1.1 Maintenance of Structural Controls (Part I.B.1.a)
- 1.2 New Development and Redevelopment Planning Program (Part I.B.1.b)
- 1.3 Public Street Maintenance Program (Part I.B.1.c)
- 1.4 Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)
- 1.5 Illicit Discharge Program (Part I.B.1.e)
- 1.6 Industrial Facilities Program (Part I.B.1.f)
- 1.7 Construction Sites Program (Part I.B.1.g)
- 1.8 Facility Runoff Control Program (Part I.B.1.h)

2.1 Changes to the Stormwater Management Program

No changes in the Stormwater Management Program that have been established as permit conditions were made during FY 2003.

2.2 Update on Areas Added to the MS4

No areas have been added to the MS4 due to annexation or other legal means, and none is expected in the future.

SECTION 3.0

Revisions to Assessment of Controls and Fiscal Analysis (Part I.F.3)

Part I.F.3 states, "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);"

Part 6.5.3(3)(b)(v) states, "Assessment of Controls Estimated. Reductions in loadings of pollutants from discharges of municipal storm sewer constituents from municipal storm sewer systems expected as the result of the municipal stormwater quality management program. The assessment shall also identify known impacts of stormwater controls on groundwater."

Part 6.5.3(3)(b)(vi) states, "Fiscal Analysis. For each fiscal year to be covered by the permit, fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under 6.5.3(3)(b)(iii) and (iv). Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds."

No revision to the "Assessment of Controls" or the "Fiscal Analysis" are needed at this time due to the lack of sufficient monitoring data. The budget for compliance with the permit is included in Section 6.0 of this report.

SECTION 4.0

Summary of Monitoring Data (Part I.F.4)

Part I.F.4 states, "A summary of the data, including actual monitoring data, that is accumulated throughout the reporting year;"

Several monitoring and reporting requirements are included with the permit. Dry-weather screening and results from wet-weather sampling are provided in this section. Additional data may be found in the completed forms attached to this report.

4.1 Dry-Weather Screening

As part of the Stormwater Management Program, CDOT has developed a program to detect illicit connections and improper discharges to the MS4 as part of the Illicit Discharge Program. The Illicit Discharge Program was submitted to CDPHE on January 15, 2003, and approved May 22, 2003. Part I.B.1.e of the permit discusses the requirements of the Illicit Discharges Program, which include ongoing screening for illicit discharges, illegal dumping, and illicit connections. This program will be fully implemented within 12 months of the program approval date of May 22, 2003.

During FY 2003, CDOT performed a pilot test of its proposed ongoing outfall screening program. Field analysis results and observations of dry-weather flows are summarized in Table 4-1. Samples of the discharge were taken for one of the dry-weather flow events and sent for laboratory analyses to verify field analysis results. The results of the laboratory analyses are summarized in Table 4-2.

TABLE 4-1
Outfall Dry-Weather Screening Field Analysis Data

Visit Date	Outfall ID	Flow Rate (ft^3/sec)	Water Temperature (^oF)	Total Chlorine (mg/L)	Total Copper (mg/L)	pH	Total Phenol (mg/L)	Conductivity (µS/cm)	Odor	Color	Clarity	Floatables
August 1, 2002	South Platte River #37[1]	NM	NM	NM	NM	NM	NM	NM	None	Reddish brown	Clear	Slight oily sheen
October 1, 2002	Cherry Creek 15 in CMP-1[2]	NM	NM	NM	NM	NM	NM	NM	None	None	Clear	N/A
October 12, 2002	South Platte River #7	15	44	0.1		7.89		867	None	None	Clear	None

NM = Not Measured

[1] Outfall flow consisted of an extremely slow drip that was insufficient to sample. Visual observations were made from the wet area in front of the outfall. A follow-up visit to this outfall was conducted on October 14, 2002, and no dry-weather flow or indications of illicit discharge were present.

[2] Field analyses not conducted because visual observations indicated no illicit discharge. The flow was thought to be groundwater seepage.

TABLE 4-2
Outfall Dry-Weather Screening Laboratory Analysis Data

Sample ID	Date Collected	Outfall	Copper (µg/L)	Total Phenolics (mg/L)	Surfactants (mg/L)	pH	Specific Conductance (umhos/cm)	Turbidity (NTU)
SPR 7	October 21, 2002	South Platte River #7 [1]	ND	ND	0.25	8.3	940	ND

[1] This laboratory sample was taken to check and confirm the field analysis results.

Flow from the South Platte River #37 outfall consisted of an extremely slow drip that was insufficient for sampling. However, visual observations were made of the small pool beneath the outfall. This outfall was revisited on October 14, 2002, at which time no dry-weather discharge was observed. Visual observations and field analyses did not indicate a suspected illicit discharge for the other two outfalls with dry-weather flows.

4.2 Wet-Weather Sampling

As part of CDOT's Wet-Weather Monitoring Program, CDOT plans to conduct site-specific evaluations of temporary and permanent BMPs, and develop and conduct a deicing study, which includes performing a literature review, establishing a deicing partnership, developing a monitoring plan, and conducting field sampling. CDOT is currently working to implement the Wet-Weather Monitoring Program, which is discussed in greater detail in Section 8.0.

During the FY 2003 reporting period, CDOT did not perform any monitoring in conjunction with the Wet-Weather Monitoring Program. Monitoring associated with Erosion Control BMPs began in July 2003. It is anticipated that wet-weather monitoring of the storm filter will begin in the second half of FY 2004, and CDOT will actively share monitoring data from all components of its program.

SECTION 5.0

Summary of Educational Activities (Part I.F.5)

Part I.F.5 states, "Summary of educational activities;"

CDOT's educational activities are listed under the respective Stormwater Management Programs. Please see Section 2.0 for additional information.

During FY 2003, CDOT carried out several actions to increase awareness and understanding of its MS4 stormwater quality programs. These educational and outreach actions are outlined below.

5.1 Bulletins, Newsletters, and Flyers

CDOT wrote and distributed bulletins on topics relating to the MS4 program and water quality. Copies of these bulletins are included in Appendix G.

Relating to Construction

Bulletin on 404 and Dewatering Permits *Fall/Winter 2002*

This bulletin instructed readers on Sections 404 and 402 of the Clean Water Act as they relate to construction activities. Additionally, the bulletin explained the process and information required to obtain a 404 permit and dewatering permit.

This four-page bulletin was distributed to all CDOT employees in the winter of 2002, and a copy has been posted to the CDOT Environmental Programs web site for general circulation.

BMP of-the-Month Bulletin – Outlet Structure *January 2003*

This bulletin featured the excellent design of the outlet structures used in the sediment basins on the Highway 285 project. This project included seven separate sediment basins that have been very effective at catching the stormwater runoff during construction and removing sediment before the water is discharged through the outlet structure. This bulletin was distributed to CDOT employees in January 2003.

BMP of-the-Month Bulletin – Sediment Trap *February 2003*

This bulletin presented information on the construction of a drainage and sand-catch structure to receive stormwater runoff from the Wolf Creek ski area overflow parking lot along U.S. Highway 160, near Wolf Creek Pass and Pagosa Springs. The BMP effort was intended to control potential pollutants from running off the project site into Lake Creek, which flows into Wolf Creek. The bulletin also educated readers regarding structural and non-structural BMPs. This bulletin was distributed to CDOT employees in February 2003.

BMP of-the-Month Bulletin – Grading Technique *June 2003*

This bulletin highlighted the excellent performance of the Snowmass Canyon project team for the overall application of stormwater management and erosion control measures. Specifically noted was the effort to grade disturbed areas adjacent to the Roaring Fork River

so the runoff would drain back towards the project and away from the roadway and river. This bulletin was distributed to CDOT employees in June 2003.

Relating to Maintenance; Pollution Prevention and Good Housekeeping

Bulletin on Facility Runoff Control Plan/BMP *May 2003*

This bulletin highlighted actions to be taken during CDOT maintenance operations to help protect stormwater quality, and focused on innovative BMPs to deal appropriately with hazardous materials and waste. The bulletin referred readers to the CDOT *Erosion Control and Stormwater Quality Guide* for additional information. This bulletin is currently being used as a training tool for CDOT Maintenance employees.

5.2 MS4 Educational and Training Workshops

Phase II Stormwater Quality Program Requirements and Implementation

CDOT conducted educational and training workshops in each region across the state to provide information on the MS4 requirements and to seek input from CDOT staff regarding MS4 program alternatives and implementation of stormwater quality strategies.

Most workshops included a PowerPoint presentation covering CDOT's existing Phase I programs, the Phase II regulatory requirements, and proposed strategies and programs being considered to meet Phase II requirements. Samples of the workshop agenda and PowerPoint presentation(s) materials are provided in Appendix G. Specifically, the presentation sections included:

- Overview of Phase I and II Permits
- Public Education
- Public Involvement
- Illicit Discharge and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Good Housekeeping for Municipal Operations
- Phase II Permit Summary

Workshop participants included key CDOT staff from environmental, maintenance, construction, and other disciplines. An average of 15 CDOT staff attended each regional workshop, which were held as follows:

Region 1	Aurora	May 2003
Region 2	Colorado Springs	February 19, 2003
Region 3	Grand Junction	January 15, 2003
Region 4	Greeley	April 21, 2003
Region 5	Durango	January 14, 2003
Region 6	Denver	January 24, 2003

Input from each workshop was taken into consideration as CDOT developed its Phase II Permit Application and planned the next phase of formulating and implementing the stormwater quality programs.

Winter Conference

CDOT planned and organized an exciting educational 3-day conference focusing on "Environmental Programs and Stormwater Quality." A listing and abstract of the conference sessions are attached in Appendix G. Several sessions specifically addressed CDOT's MS4 Program:

- CDOT's Leading Role in Stormwater Management and Erosion Control
- CDOT Project Case Studies of Erosion and Sediment Control
- T-REX – Environmental Challenges and Opportunities
- CDOT's MS4 Program: Phase I and Phase II regulatory requirements, proposed strategies and programs
- BMPs – "What Works and What Doesn't"
- RECAT (Regional Erosion Control Advisory Team) "Inspection and Assistance Tips"
- Mock RECAT Field Inspection
- RECAT (Regional Erosion Control Advisory Team) Hot Topics
- RECAT Computer Tool Training
- What is an MS4? – CDOT's Role in the State Program
- CDOT's New Development and Redevelopment Program
- Facility Runoff Control Plans

The Winter Conference included presenters from CDOT, CDPHE, private firms, municipal government, and the U.S. Fish & Wildlife Service (USFWS). In addition, CDOT invited private vendors to set up a display area at the conference to showcase products and services used to enhance water quality and the environment.

Approximately 125 people attended the conference, which was held January 28-30, 2003, at CDOT headquarters in Denver. A similar conference is planned for March 2-4, 2004.

CDOT Stormwater Management for Maintenance Personnel

In conjunction with Altitude Training Associates, CDOT developed an 8-hour stormwater management training course for maintenance personnel. This course was designed to comply with the Phase II regulatory requirements under the Pollution Prevention and Good Housekeeping control measure to provide employee training on pollution prevention techniques and the impacts of improper disposal and illegal discharges. The flagship class was presented April 29, 2003, in Durango and attended by 25 CDOT maintenance employees from Maintenance Sections 3 and 7. CDOT anticipates offering this course to other Maintenance Sections during FY 2004.

5.3 Water Quality Program Web Site

CDOT's web site provides pages dedicated to CDOT's Water Quality Programs. During 2003, the Water Quality Programs site was expanded and revised to reflect updates to CDOT's MS4 Program and to disseminate information. Specific editions include an MS4 discharge topics page which includes the FY 02 Annual Report, Phase II workshop presentation materials, Phase II area maps (added to web site in FY 2004), and CDOT's *Erosion Control and Stormwater Quality Guide*. Relevant data on stormwater quality that had been posted earlier in 2002 continued to be carried on the site. Site information includes:

- Tools
- Technical Bulletins (including the addition of the 404/dewatering permit bulletin)
- FAQs (Frequently Asked Questions)
- Forms/Permitting
- Hot Topics
- Links to Phase II Regulations, Governmental, and Non-Profit Sites, Erosion Control/Revegetation Sites, Related Sites for Planners and Engineers, and Publications
- MS4 Discharge Topics (including the updates noted above)
- Training

The site address is www.dot.state.co.us/environmental/enwaterqual

SECTION 6.0

Annual Expenditures and Budgets (Part I.F.6)

Part I.F.6 states, "Annual expenditures for the past reporting year, and budget for the next reporting year;"

Table 6-1 lists the cost of complying with the CDPS stormwater permit in FY 2003, and provides budgeted cost for compliance with the CDPS stormwater permit for FY 2004. The costs and budgets provided are only estimates of CDOT's activities during FY 2003 and planned activities for FY 2004. A significant portion of the FY 2003 costs for the Illicit Discharge, Industrial Facilities, and New Development programs account for program development. For the most part, CDOT employee salaries are not captured for the development of these programs. Implementation budgets for programs developed during FY 2003 are not clearly known for FY 2004. These programs will receive unbudgeted support from the units from which the programs are to be implemented.

TABLE 6-1
Actual and Planned Expenditures

Program	FY 2003 Actual Expenditures	FY 2004 Planned Expenditures	Comments
Task Management and Program Development	**$ 329,000**	**$ 279,000**	• Includes primary consultant fees • Includes 75% of CDOT's Water Quality Program Manager's salary • Unencumbered budget comprised of available funds through the Water Quality program that have not been earmarked for a particular program • Permit fees
Compliance with Phase I Permit	$ 152,000	$ 167,000	
Preparation of Phase II Permit	$160,000	NA	
Unencumbered Budget		$ 97,000	
Annual Report	$ 17,000	$ 15,000	
Construction Sites Program	**$ 132,000**	**$ 131,000**	• Includes primary consultant fees for RECAT inspections and *RECAT Handbook* • Includes estimated CDOT employee salaries for RECAT inspections • Includes tuition cost for CDOT employees to attend training course • Includes printing costs for the *Erosion Control and Stormwater Quality Guide and Pocket Guide* for distribution at training courses • Unbudgeted support is planned for implementation of program in FY 2004; costs for implementing program are unknown at date of printing
RECAT and Non-RECAT	$ 89,000	$ 92,000	
RECAT Handbook	$ 32,000	NA	
Stormwater Training for Construction Sites	$ 10,000	NA	
Other Training	$ 1,000	NA	
Construction Permit	NA	$39,000	
Facility Runoff Control Program	**$ 52,000**	**$ 150,000**	• Includes primary consultant fees for development of Facility Runoff Control Plans
Herbicide, Pesticide, and Fertilizer Program	**$ 3,000**	**$ 3,000**	• Only includes cost of sending CDOT employees to training classes • Region 2 contracts out all herbicide and pesticide application requiring licensing; therefore, training costs are not applicable
Training (Region 1)	$ 600	$ 600	
Training (Region 2)	NA	NA	
Training (Region 6)	$ 2,000	$ 2,000	

TABLE 6-1
Actual and Planned Expenditures

Program	FY 2003 Actual Expenditures	FY 2004 Planned Expenditures	Comments
Illicit Discharges Program	**$ 79,000**	**$ 71,000**	• Includes primary consultant fees for development of program • Unbudgeted support is planned for implementation of program in FY 2004; costs for implementing program are unknown at date of printing
Industrial Facilities Program	**$ 15,000**	**$ 6,000**	• Includes primary consultant fees for development of program • Does not include CDOT employees' salaries for time spent on developing program • Unbudgeted support is planned for implementation of program in FY 2004; costs for implementing program are unknown at date of printing
Maintenance of Structural Controls Program	**$ 24,000**	**$ 24,000**	• No structural controls were identified within the Phase I areas of Region 1 • Cost and budget previously reported for Region 1 mistakenly included maintenance activities outside of the Phase I area • Region 6 FY 2003 cost and FY 2004 budget are based on FY 2002 cost
Region 1	NA	NA	
Region 2	Not available at printing	Not available at printing	
Region 6	$ 24,000	$24,000	
New Development and Redevelopment Planning Program	**$ 137,000**	**$ 62,000**	• Includes primary consultant fees for development of program • Does not include CDOT employees' salaries for time spent on developing program • Unbudgeted support is planned for implementation of program in FY 2004; costs for implementing program are unknown at date of printing
Public Street Maintenance Program	**$ 1,480,000**	**Not available at printing**	• Assumes 15 % of total street sweeping and material usage costs are attributable to CDPS/Stormwater Quality activities
Street Sweeping	$ 292,000	Not available at printing	
Material Usage	$1,188,000	Not available at printing	

TABLE 6-1
Actual and Planned Expenditures

Program	FY 2003 Actual Expenditures	FY 2004 Planned Expenditures	Comments
Wet-Weather Monitoring	**$ 74,000**	**$ 130,000**	• Includes primary consultant fees • Does not include CDOT employees' salaries for time spent on program
General Education and Information Management	**$ 186,000**	**$ 166,000**	• Includes primary consultant fees • Does not include full cost of Winter Conference • Does not fully capture CDOT employees' salaries for time spent providing training • Does not include CDOT IT costs for website development • Includes printing costs for educational materials
General Education	$ 78,000	$ 78,000	
Information Management	$ 108,000	$ 88,000	
Total Program Costs	**$2,511,000**	**$1,022,000**	

Notes:

NA - Cost/budget is not applicable or unknown.

All dollar amounts are rounded to the nearest $1,000.

SECTION 7.0

Summary of Enforcement Actions and Inspections (Part I.F.7)

Part I.F.7 states, "A summary of the number and nature of enforcement actions and inspections;"

7.1 Enforcement Actions

No enforcement actions were taken during FY 2003.

7.2 Inspections

Section 1.0, Status of the Components of the Stormwater Management Program, lists the number of inspections performed under each program. During FY 2003, CDOT conducted a total of 60 RECAT inspections under the Construction Sites Program. The RECAT inspections performed are summarized in Section 1.0, Table 1-7, and a detailed list is provided in Appendix E. Because the Illicit Discharge, Industrial Facilities and New Development programs were still evolving and not yet implemented, there were no scheduled inspections performed for these programs during FY 2003.

SECTION 8.0

Report on Wet-Weather Monitoring Program (Part I.F.8)

Part I.F.8 states, "The wet-weather reporting requirements as listed in Part I.D."

Part I.D.5 requires the Annual Report to include 1) a summary of any cooperative efforts; 2) tabulated data generated from the monitoring program and interpretation of the data; 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.

As part of the Stormwater Management Program, CDOT developed and implemented a wet-weather monitoring program for the MS4 designed to evaluate wet-weather discharges from highways and their effects on state waters.

The plan was submitted to the state for review and approval, and must include the following minimum requirements:

- Wet-weather conditions, particularly urban stormwater effects on state waters
- A clear statement of program goals
- Components that address the monitoring program goals
- Commitment of resources to the level appropriate for the proposed monitoring plan

CDOT is currently implementing the wet-weather monitoring program, and the schedule is provided in Table 8-1. This schedule was revised and documented in a letter to CDPHE dated February 27, 2003.

TABLE 8-1
Wet-Weather Monitoring Implementation Schedule, Revised February 27, 2003

Schedule Item	Status	Completion Date
StormFilter™		
Intergovernmental Agreements	In progress	Fall 2003
Design Drawings	Completed	January 2003
Installation	Not yet started	Late fall 2003-early spring 2004
Site-Specific Monitoring Plan	In progress	Fall 2003
Automatic Sampling Equipment Installation	Purchased and received	Spring 2004
Monitoring	Not yet started	Spring-fall 2004; spring-fall 2005
Annual Progress Report	Not yet started	December 2004
Final Report	Not yet started	December 2005
Silt-Saver® or Equivalent		
Site Selection	Completed	June 2003
Develop Site-Specific Monitoring Plan	Completed	August 22, 2003
Equipment Installation	Grab sampling only	Commenced July 2003

TABLE 8-1
Wet-Weather Monitoring Implementation Schedule, Revised February 27, 2003

Schedule Item	Status	Completion Date
Monitoring	In progress	Commenced July 2003
Final Report		December 2003
Swale or Other Permanent BMP		
Site Selection	Not yet started	February-April 2004
Develop Site-Specific Monitoring Plan		May-June 2004
Equipment Installation		July 2004
Monitoring		July 2004-September 2005
Report		November 2004
Final Report		November 2005
Turbidity Curtain or Equivalent		
Site Selection	Not yet started	February-April 2004
Develop Site-Specific Monitoring Plan		March 2004
Equipment Installation		April 2004
Monitoring		April-September 2004
Final Report		November 2004

Since the Wet-Weather Monitoring Program is in its formative stages, no significant changes to the program have taken place at this time. However, the availability of state funds and contract scheduling will continually impact the schedule of the program and affect completion dates by as much as several months. The previous revisions to the deicing and BMPs monitoring program were submitted in a letter to CDPHE on February 27, 2003.

8.1 StormFilter™

CDOT is cooperatively working with the City of Lakewood and Stormwater Management, Inc. to install the StormFilter™ BMP in Lakewood at the City's maintenance facility, which is used to store and service equipment. This partnership has been established to provide financial and/or in-kind service contributions for the unit and design of the BMP site, installation of the BMP, development of the intergovernmental agreements (IGAs), development of the Statement of Work, formulation of a site-specific monitoring plan, and performance of field sampling.

Work on the StormFilter™ project will continue during FY 2003. Partnership design review meetings were held in the fall of 2002 to complete the design plans. The plans were finalized for the StormFilter™ vault installation in Lakewood in January 2003, and the design drawings were modified for the CDOT bid process in February 2003. Coordination to develop and finalize the IGAs also continued during FY 2003. Draft IGAs were developed in April 2003 for each partnership agreement. Since that time, the IGAs have gone through two stages of revisions, and they will likely be completed in the fall of 2003. The IGAs will be reviewed by the Attorney General's office before the plans go through the CDOT bid process. It is anticipated that the StormFilter™ vault will not be installed until January 2004 or later.

Monitoring data are not available at this time for the StormFilter™. The Wet-Weather Monitoring Program is in an early development stage, and it is currently anticipated that monitoring of the StormFilter™ BMP will begin in the spring of 2004.

8.2 Silt-Saver® or Equivalent

CDOT has committed to monitoring one erosion control BMP in FY 2004 as part of the Wet-Weather Monitoring Plan. During late spring of 2003, CDOT began the process of identifying suitable construction sites for monitoring the Silt-Saver®. Three site visits were performed in the Denver metropolitan area, and in June 2003, a suitable construction project site was identified at the T-REX Transportation Expansion Project.

Cooperatives efforts were begun in FY 2003 with CDOT's contractor on the I-25 T-REX project to identify suitable monitoring sites to evaluate a temporary BMP on an active CDOT construction project. Specifically, CDOT is currently monitoring six Silt-Saver® and six Dandy Pop™ installations near the vicinity of the I-25 and I-225 interchange. A draft plan has been developed to gather visual observation data as well as stormwater grab samples. CDOT will continue to work with Southeast Corridor Constructors during FY 2004 to monitor the performance of a temporary BMP near the interchange of I-25 and I-225.

Monitoring data will be available for the evaluation of the two temporary BMPs at T-REX in FY 2004, and a report summarizing the results of the BMP study at T-REX will be submitted to CDPHE in December 2003.

8.3 Swale/Permanent BMP and Turbidity Curtain or Equivalent

Efforts to identify another suitable permanent BMP monitoring site and temporary BMP are expected to begin in spring of 2004. Future cooperative efforts on these BMP evaluation efforts are anticipated.

8.4 Deicing Efforts

Work to refine and implement the Wet-Weather Monitoring Plan continued between July 2002 and January 2003. The proposed deicing program was evaluated to incorporate existing CDOT monitoring activities related to deicing and water quality being conducted by CDOT. The evaluation consisted of preparing a list of ongoing CDOT studies related to deicing impacts, erosion and sediment impacts, and any water quality-related studies that may be appropriate. The initial request for information from CDOT regional offices resulted in a significantly larger number of completed or ongoing deicing studies than was originally anticipated. CDOT brought this issue to the attention of CDPHE in a letter dated February 27, 2003, in which it proposed a plan to develop a summary list of all current CDOT studies. In that same letter, CDOT also stated that it will decide whether the Department will participate in existing projects or develop new projects based on CDOT's specific goals of complying with the MS4 Permit requirements, providing direct benefits to CDOT, and providing a direct environmental benefit. The summary list was submitted to CDPHE for approval on June 30, 2003. Table 8-2 provides a condensed version of the summary list submitted previously to CDPHE.

TABLE 8-2
Current CDOT Environmental- or Water Quality-Related Studies

Name of Water Quality Study	Purpose of Monitoring	Monitoring Periods	CDOT Costs
CDOT Region 1: Monitoring and Assessment of BMPs on US 285 Widening	Monitoring construction-related BMPs to assess construction impacts to Turkey Creek. Monitoring efforts are in response to concerns from the Upper Bear Creek Watershed Association.	1999 – ongoing (Paramalee Gulch to Conifer at Foxton Road).	$65,000 per year.
CDOT Region 1: US 40 Berthoud Pass East Highway Reconstruction	Assess effectiveness of Permanent BMP and to develop effective maintenance plan.	September 2000 – ongoing (during construction and post-construction).	$50,000 per year.
CDOT Region 1: I-70 Water Quality Baseline Monitoring Program, PEIS Baseline Study	Develop baseline information to assess the effects of snowmelt and rainfall runoff from with I-70 on the receiving stream water quality along the I-70 west corridor.	September 2000 – ongoing.	$50,000 per year.
CDOT HQ: Magnesium Chloride Study	Environmental investigations focused on the effects of magnesium chloride deicers on water quality and aquatic life.	Monitoring conducted, 1997-1999. Completed, 1999.	Total cost: $165,000.
CDOT HQ: Evaluation and Comparison of Three Chemical Deicers	Study the environmental effects of Caliber® M1000 and Caliber® M2000; study included direct comparisons to magnesium chloride.	Final Report, August 2001.	Total cost: $100,000.
CDOT HQ: Corrosion Effects of Deicers	To assess the corrosion effects of magnesium chloride and sodium chloride on automobile components.	Final Report, May 2002.	Total cost: $100,000.
CDOT Region 1: The Use of Deicers and the Potential Effects on Roadside Vegetation	Assess impacts on roadside vegetation and associated ecosystems. Three-phase study.	Phase I will be completed in August 2004 and Phase II will begin in September 2004.	$150,000 for all three phases.
CDOT Region 1: Sand Analysis	CDOT efforts to reduce the amount of traction sand that reaches local streams.	1996, 2002-2003, and 2003-2007. Monitoring between March and May.	Total cost: $20,000.
CDOT State-Wide: Deicing Maintenance Program	CDOT is developing a system-wide approach for testing, analyzing, and applying deicers in accordance with established specifications.	FY 2003 – ongoing program.	
CDOT Region 1 Tracking System	Tracking system is being developed to improve data collection and dissemination of maintenance data, water quality monitoring data, etc.	FY 2003 – ongoing program.	
CDOT Partnering Efforts	319 Grants: CDOT participates in NPS programs and projects related to experimental BMPs for high-elevation areas and highway drainage. Stakeholder in various watershed groups and participates in various activities, such as public outreach and education. Water quality stream monitoring of Straight Creek and Black Gore Creek.		2003 costs: □ 319 Grants – $200,000 □ Stakeholder participation – $100,000. □ Water quality stream monitoring participation – $100,000.

APPENDIX A

Maintenance of Structural Controls

APPENDIX B

Herbicide, Pesticide, and Fertilizer Program

APPENDIX C

Illicit Discharge Program

APPENDIX D

Industrial Facilities Program

APPENDIX E

Construction Sites Program

APPENDIX F

Facility Runoff Control Program

APPENDIX G

Educational Activities