

Storm Water Management Program

Provo City



July 1, 2016 (Revised Annually)

Table of Contents

Introduction	1
Executive Summary	1
Brief Overview of Provo City	1
Existing Facilities	2
Water Quality Concerns	2
Program Goals	3
Program Overview	4
Public Education and Outreach on Storm Water Impacts	4
Public Involvement / Participation	5
Illicit Discharge Detection and Elimination	5
Construction Site Storm Water Runoff Control	7
Post Construction Storm Water Management in New Development and Redevelopment	8
Pollution Prevention / Good Housekeeping for Municipal Operations	9
Storm Water Management Program Implementation.	11
Public Education and Outreach on Storm Water Impacts.....	11
Objective	11
Best Management Practices	12
Strategies	13
Public Involvement / Participation	14
Objective	14
Best Management Practices	14
Strategies	14
Illicit Discharge Detection and Elimination	15
Objective	15
Best Management Practices	15
Strategies	15
Construction Site Storm Water Runoff Control	16
Objective	16
Best Management Practices	16
Strategies	16
Post-Construction Storm Water Management.....	18
Objective	18
Best Management Practices	18
Strategies	18
Pollution Prevention / Good Housekeeping for Municipal Operations.....	20

Objective	20
Best Management Practices	20
Strategies	20

<i>Appendix</i>	22
------------------------------	-----------



Introduction

Executive Summary

This document comprises Provo City's Storm Water Management Program (SWMP). This program was developed as a result of Phase II of the National Pollutant Discharge Elimination System (NPDES) Program ordered by the United States Environmental Protection Agency (EPA) and will be submitted to the Utah Division of Water Quality (DWQ) as part of the Utah Pollutant Discharge Elimination System (UPDES) Annual Report. The Provo City Storm Water Management Program provides an overview of the Phase II requirements and outlines the City's efforts to plan, develop, implement, and enforce a SWMP that will satisfy Phase II requirements. The basic goals of the SWMP are to reduce the discharge of storm water pollutants to the maximum extent practicable, to protect downstream waters from adverse quality and quantity impacts, and to promote behavioral changes by the public to reduce water quality impacts associated with pollutants in storm water runoff and illicit discharges.

Brief Overview of Provo City

Provo City incorporates approximately 43 square miles and is bordered by Orem City to the north, Springville City to the south, the Wasatch Mountains to the east, and Utah Lake to the west.

Provo's population, according to the 2000 census, is 105,439. It is anticipated that the current population is approximately 114,000. Included in this population are students that attend Brigham Young University and Utah Valley University.

The City is diverse in residential, commercial, industrial, and agricultural development. Brigham Young University has a large campus located in east-central Provo. Provo City is also the host city for Utah County and Utah State governmental facilities.

Most of Provo City lies below 5,000 ft in elevation with the average annual rain fall being 15.51 inches.

There are areas of sensitive lands defined throughout the City in which there are special provisions for proposed development. The sensitive lands are generally defined as areas with geological hazards and areas with a high water table, see Appendix A-1.

Existing Facilities

Provo City operates a Municipal Separate Storm Sewer System (MS4). This system consists mostly of gravity-flow conveyance facilities constructed within the rights-of-way of public streets that discharge directly into the Provo River or Utah Lake. Parts of the storm drainage system are old, undersized, and function at limited capacity. Other parts of the system are newly installed and sized to accommodate future upstream growth. The total mileage of in-place storm drain conveyance pipes 18" or larger is approximately 74. The western portions of the City are relatively flat and do not greatly favor gravity-flow systems. The City maintains 11 storm water lift stations. The steep mountain slopes to the east of the City create a potential for debris flows during a storm event. Several large basins have been constructed to capture these potential flows. Public and private retention and detention systems are installed throughout the City to minimize peak flows to the conveyance system by controlling discharges and infiltrating storm runoff into the ground.

Much of the storm water in Provo City flows directly into the existing storm drainage network. However, there are many storm drainage systems that are integrated with irrigation systems. During a storm, certain irrigation ditches may contain both irrigation water and storm runoff, causing the banks of the ditch to be more prone to flooding. For the past decade, integrated systems have been discouraged and several existing integrated systems have been separated and/or eliminated.

For about the past two decades, Provo City has required residential developers to install adequate storm drainage systems throughout their subdivisions. These include curb and gutter, curb face inlets, storm drain piping, and retention / detention facilities. All developments are currently required to size conveyance systems to accommodate a 25-year storm event.

Water Quality Concerns

Storm water runoff from lands modified by urban development can harm water resources and, in turn, cause or contribute to a violation of water quality standards. Unregulated urban development may cause adverse effects by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentration and loadings.

Urbanization alters the natural infiltration capability of the land and causes an increase in storm water runoff that may introduce various pollutants in the receiving water bodies. Urban development decreases the amount of pervious areas (farmland, orchards, forests, meadows, etc.) and replaces these areas with impervious surfaces (rooftops, driveways, sidewalks, roads, parking lots, etc.) that do not have the ability to absorb storm water. Storm water and snowmelt wash over these areas, pick up pollutants and deposit them into the receiving waters.

Urbanization also concentrates runoff and causes a gain in flow volume and velocity, causing an increase in erosion and sedimentation for downstream systems.



Program Goals

Provo city's Storm Water Management Program recognizes the critical need to reduce the potential for flood and water quality damage within the City. It also recognizes the need to address the historic trend of increasing flood risk and flood damage as the City continues to develop, and to avoid further environmental degradation associated with development.

The Storm Water Management Program defines seven goals to address these needs:

- Reduce the existing potential for storm water damage to public health, safety, life, property, and the environment.
- Control future increase in storm water damage within the City of Provo and in adjacent jurisdictions affected by City of Provo drainage.
- Protect and enhance the quality, quantity, and availability of surface and groundwater resources.
- Preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas
- Control sediment and erosion in and from drainage ways, developments, and construction sites.
- Establish comprehensive basin plans within each watershed that quantify, plan for, and manage storm water flows within and among the jurisdictions in those watersheds.
- Promote equitable, acceptable, and legal measures for storm water management.

Policies developed to implement the Plan must respond to the specific characteristics that have historically contributed to storm water quantity and quality issues in the City of Provo. The following outlines the key physical and institutional characteristics affecting the City's storm water management and presents the policies developed to address these characteristics. These Policies will serve as the mechanisms for attaining the Program Goals.



Program Overview

In 1990 the Environmental Protection Agency (EPA) passed federal storm water regulations that mandated municipalities to change their traditional storm water runoff management techniques. Historically, storm water management techniques have been comprised of facilities that would control the quantity of runoff to prevent flooding. The new regulation (Phase I) require certain municipalities, having populations greater than 100,000, to also address the impacts that storm water runoff would have on the water quality of the receiving waters.

In 1999 the EPA passed regulations to expand the 1990, Phase I, regulations to include municipalities having populations greater than 10,000. Phase II of the program requires regulated municipalities to include outreach programs that involve the public in planning and implementing storm water management systems. Phase II also provides regulations on construction sites that disturb areas of one acre and larger. Provo City became a Phase II regulated City and is required to comply with all current Phase II regulations.

The remainder of this section summarizes the Phase II Requirements:

Public Education and Outreach on Storm Water Impacts

Operators of small Municipal Separate Storm Sewer Systems (MS4s) must implement a public education and outreach program to promote behavior change by the public to reduce water quality impacts associated with pollutants in storm water runoff and illicit discharges. Outreach and educational efforts shall include a multimedia approach and shall be targeted and presented to specific audiences for increased effectiveness. The education program must include documented education and outreach efforts for the following four audiences:

1. Residents,
2. Businesses, institutions, and commercial facilities,
3. Developers, contractors, and engineers,
4. Municipal facilities.

The public education portion of the program must also provide and document information and training given to municipal engineers, development and plan review staff, land use planners, and other applicable parties, to learn about Low Impact Development (LID) practices, green infrastructure practices, and to communicate the specific requirements for post-construction control and the associated Best Management Practices (BMP's) chosen to be implemented within the SWMP.

The public education program should inform individuals and households about the problems and the steps they can take to reduce or prevent storm water pollution by:

- Distributing brochures or fact sheets
- Providing public service announcements
- Implementing education programs targeted at school-age children



- Community-based projects such as storm drain stenciling and watershed clean-up

The public education program should inform individuals and households about steps they can take to reduce storm water pollution by:

- Ensuring the use and disposal of landscape and garden chemicals, fertilizers and pesticides
- Protecting and restoring riparian vegetation
- Properly disposing of used motor oil and household wastes
- Getting involved in local stream restoration activities

Materials and outreach programs should also be directed to commercial, industrial, and institutional entities likely to have significant storm water impacts.

Public Involvement / Participation

Public involvement is an integral part of the storm water management program. Early and frequent public involvement can shorten implementation schedules and broaden public support for the program. Public participation is likely to ensure a more successful Storm Water Management Program by providing valuable expertise and can act as a conduit to promote other programs. Opportunities for the public to participate are as follows:

- Participating in the development of Best Management Practices (BMP's) and measurable goals in relation to storm water management
- Involvement in the storm drainage design, implementation, and maintenance processes
- Working as a citizen volunteer to educate other individuals about the program
- Participation in volunteer storm water quality monitoring efforts

Illicit Discharge Detection and Elimination

Illicit discharge is defined as any discharge to a municipal separate storm sewer that is not composed entirely of storm water such as, sanitary wastes, industrial process waste, and interior floor drains. Illicit discharges enter the system through either direct connections (direct piping to the storm sewer) or indirect connections (infiltration, spills collected by inlets, etc.).

Operators of regulated small MS4's are required to:

- Maintain a storm drainage system map showing the location of all outfalls, and names and location of all waters of the State that receive discharges from those outfalls
- Create, in writing, an Illicit Discharge Detection and Elimination (IDDE) Program to effectively prohibit, through ordinance, illicit discharges into the separate storm sewer system and implement a variety of appropriate enforcement procedures and actions in order to apply escalating enforcement options, as needed. The IDDE Program must have adequate legal authority to detect, investigate, eliminate and enforce against non-storm



water discharges. All elements of the IDDE Program (public information, inspections, investigations, enforcement, etc.) must be thoroughly documented. The IDDE Program must include the following:

- A. Develop written, systematic procedures for locating and listing priority areas likely to have illicit discharges.
- B. Develop structured field assessment activities, including written procedures and inspection forms, to perform routine dry weather screening of outfalls.
- C. Develop and implement Standard Operation Procedures (SOP's) for tracing an illicit discharge to the source, including visual inspections, opening manholes, using mobile cameras, using chemical indicators, collecting and analyzing water samples, etc.
- D. Develop and implement SOP's for characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharge found or reported by the public.
- E. Create and utilize a detailed inspection report used when illicit discharges are identified and confirmed.
- F. Develop and implement SOP's for ceasing the illicit discharge, performing follow-up inspections, and performing escalating enforcement activities if the discharge is not eliminated.
- G. Distribute information to public employees, businesses, and the general public of the hazards associated with illicit discharges and the improper disposal of waste.
- H. Promote (or provide services) for the collection of hazardous household waste.
- I. Publicly list and publicize a hotline for public reporting of spills or other illicit discharges and maintain a written record of all calls received and actions taken.
- J. Develop a written spill/dumping response procedure, including a flow chart for internal use.
- K. Develop and implement procedures for program evaluation and assessment.
- L. Provide annual training to field and office personnel on how to identify, investigate, and report illicit discharges.

The illicit discharge and elimination program need only address the following categories of non-storm water discharges if the operator of the small MS4 identifies them as significant contributors of pollutants:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Footing / foundation drains
- Irrigation water
- Springs
- Water from crawl space pumps
- Lawn watering



- Residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash water (excluding fire fighting activities)

Construction Site Storm Water Runoff Control

Over a short period of time, storm water runoff from construction site activity can contribute more pollutants, including sediment, to a receiving stream that had been deposited over several decades. Storm water runoff from construction sites can include pollutants other than sediment, such as phosphorus and nitrogen, pesticides, petroleum products, construction chemicals, and solid wastes that may become mobilized when land surfaces are disturbed.

MS4 operators are required to develop, implement and enforce a pollutant control program to reduce pollutants in storm water runoff from construction activities that result in land disturbance of one or more acres. This must include an ordinance or another regulatory mechanism to require erosion and sediment controls to the extent practicable and allowable under State and local law. The program must include:

- An ordinance or other regulatory mechanism to require erosion and sediment controls for public or private projects that disturb one acre or greater. The ordinance must include sanctions to ensure compliance such as: non-monetary penalties, fines, bonding requirements, and / or permit denials for non-compliance. The ordinance must also include construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) as well as provisions for access by qualified City personnel to inspect and enforce the elements of the SWPPP.
- Develop a written enforcement strategy of the ordinance which includes:
 - SOP's for SWPPP review (for all projects disturbing one acre or greater or those that disturb less than one acre that are part of a common plan of development) to ensure compliance with State and Local regulations. The SWPPP review shall also include the following:
 - Review of pre-construction BMP's, BMP's used during the construction phase, and BMP's to be incorporated as post-construction permanent measures.
 - Creating and follow a checklist that considers potential water quality impacts.
 - Review procedures that evaluate and encourage Low Impact Development (LID) or green infrastructure design that may be incorporated into the overall project site design.
 - Prioritize proposed construction sites of their potential to create adverse water quality impacts, particularly to the waters listed by the State as impaired.
 - Create a Construction Site Storm Water Runoff Inspection Program that includes the following:

- SOP's for construction site inspections and enforcement actions for non-compliance. The procedures must clearly define who is responsible for site inspections and who has the authority to impose sanctions to ensure compliance to the program.
- Usage of the most current Construction Site Inspection Form (Checklist) found on the State of Utah – Division of Water Quality website.
- Site Inspections performed at pre-construction, current construction, and post-construction phases of the project.
- SOP's that include procedures for being notified by construction operators of their completion of active construction activities so that final stabilization of the project site can be verified and removal of temporary control measures can be conducted.
- Detailed documentation, tracking, and record-keeping of all inspection activities, corrective actions, and enforcement actions.
- SOP's that include specific processes and sanctions to minimize occurrences of, and obtain compliance from violators, which shall include appropriate, escalating enforcement actions and procedures.
- Requirements to control other waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may adversely impact water quality
- Procedures for receipt and consideration of information submitted by the public
- Adequate training of all staff whose primary job duties are related to the implementation of the Construction Site Storm Water Program

Post-Construction Storm Water Management in New Development and Redevelopment

Increased human activity associated with development often results in increased pollutant loading from storm water discharges. If potential adverse water quality impacts are considered from the beginning stages of a project, new development and redevelopment provides more opportunities for a decrease in storm water runoff and an increase in water quality protection. The objective of this measure is for the hydrology associated with new development to resemble the pre-development hydrology or to improve the hydrology of a redeveloped site and reduce the discharge of storm water.

Operators of small MS4's will be required to develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that result in land disturbance of greater than or equal to one acre that discharge into the MS4, including projects less than one acre that are part of a larger common plan of development. Specifically:

- Develop and adopt an ordinance that requires long-term post-construction storm water controls at new development and redevelopment sites. The ordinance shall, at a minimum, be equivalent with the technical requirements set forth in the UPDES Storm



Water General Permit for Construction Activities, UTR300000, which can be found at <http://www.waterquality.utah.gov/UPDES/stormwatercon.htm>.

- Development an enforcement strategy and implement the enforcement provisions of the ordinance including:
 - Procedures that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from, chronic and recalcitrant violators which shall include appropriate, escalating enforcement procedures and actions.
 - Documentation on how the requirements of the ordinance will protect water quality and reduce the discharge of pollutants to the MS4. Documentation shall include:
 - How long-term storm water BMP's were selected;
 - The pollutant removal expected from the selected BMP's; and
 - The technical basis which supports the performance claims for the selected BMP's.
- Create a Development / Redevelopment Program that has requirements to minimize water quality impacts. The plan should include:
 - Non-structural BMP's to minimize development in areas that are susceptible to erosion, promote preservation of native soils and vegetation, preservation of areas that provide water quality benefits, and to protect the integrity of natural resources and sensitive areas.
 - A process that encourages Low Impact Development approach that encourages structural BMP's (where practicable) that infiltrate, evapotranspire or harvest and utilize storm water.
 - A plan to retrofit existing sites that are adversely impacting water quality.
 - Developing and defining specific hydrologic methods for calculating runoff volumes and flow rate to ensure consistent sizing of structural BMP's.
- Adopt and implement procedures for site plan review that incorporate consideration of water quality impacts that include the review of SWPPP's to ensure that long-term water quality measures are being implemented and providing developers and engineers with preferred design specifications for water quality BMP's.
- Adopt and implement SOP's for site inspections and enforcement of post-construction storm water quality measures including:
 - An ordinance that includes provisions for both construction phase and post-construction access to allow the City to inspect water quality BMP's or provide a means where private facility operators can certify the BMP's and have a qualified private party perform inspections.
 - Qualified City inspector to perform at least one inspection on each permanent structural BMP during installation.
 - Each permanent structural BMP to be inspected annually by qualified City personnel or by the property owner/operator as outlined by a maintenance agreement.
- Adequate training for all staff involved in post-construction storm water management, planning, review, inspections, and enforcement.



- Maintain a GIS inventory of all post-construction structural BMP's both public and private. The inventory must include description of BMP, maintenance requirements, and inspection information.

Pollution Prevention / Good Housekeeping for Municipal Operations

Operators of MS4's must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing storm water from municipal operations.

The program must include employee training that addresses prevention measures pertaining to municipal operations such as:

- Parks, golf courses and open space maintenance
- Fleet maintenance
- New construction and land disturbances
- Storm water systems maintenance

It is encouraged that operators of MS4's consider the following when developing a SWMP:

- Implement maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural storm water controls to reduce floatables and other pollutants discharged from the storm drainage system
- Implement controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, and salt/sand storage locations and snow disposal areas operated by the MS4
- Adopt procedures for the proper disposal of waste removed from the storm systems and areas listed above, including dredge spoil, accumulated sediments, floatables, and other debris
- Adopt procedures to ensure that new flood management projects are assessed for impact on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices



Storm Water Management Program Implementation

In effort to comply with the Phase II directive and to achieve storm water quality goals, the following chapter describes the activities that will comprise Provo City's Storm Water Management Program.

Public Education and Outreach on Storm Water Impacts

OBJECTIVE

The objective of Provo City's Public Education and Outreach Program is to educate the public about the impacts of storm water discharge and to inform the public about steps they can take to reduce storm water pollution. The anticipated methods for accomplishing the objectives of this program are to produce quality storm water education materials and to utilize these materials at City-sponsored public events, during classroom presentations, as brochures inside utility bills, and on the Internet.

TARGETED POLLUTANTS

Residential Community

The specific targeted residential pollutants are based on rationale that the majority of City residents can make a difference by small behavioral changes and that the majority of City residents participate in targeted activities that have the potential to create negative water quality impacts. These targeted pollutants, as well as the targeted activities, include:

Targeted Activities

1. Gardening and lawn care to increase awareness of detrimental uses of fertilizers, pesticides, and herbicides.
2. Yard work and landscape maintenance to promote proper disposal of yard waste, including leaves.
3. Auto repair and maintenance to promote proper disposal of automotive fluids such as oil, antifreeze, etc.
4. Promote proper disposal of pet waste.

Commercial, Business, and Institutional Community

The specific targeted commercial pollutants are based on rationale that often times a business owner is caught up in performing the specific elements of their business that activities that have the potential to degrade storm water quality are overlooked. If these activities are highlighted to the business community and the business community, in turn, makes small, but significant, changes, overall storm water quality will improve. Following are the specific targeted commercial pollutants:



Targeted Activities

1. Lawn care & landscape maintenance to reduce the amount of fertilizers, pesticides, herbicides, and yard waste that enters the storm drainage system.
2. Building, grounds, and equipment maintenance to promote proper management of waste, proper storage of materials, proper use of salt or other de-icing materials, and proper management of parking lot surfaces.

Development Community (developers, engineers, contractors, planners, etc.)

The specific targeted pollutants for the development community are based on rationale that there are a specific set of pollutants that are generated by development projects. A variety of measures can be taken to reduce the pollutants that are common to development projects.

Targeted Activities

1. Construction / development activities – Provide information to the development community to promote the proper design and implementation of Storm Water Pollution Prevention Plans.

Municipal Employees

Provo City has a vast array of employees that perform functions that may contribute to storm water quality degradation. Proper training can promote behavioral changes that can prevent the degradation of storm water caused by municipal operations.

Targeted Activities

1. Fleet / equipment management to promote proper storage, use, and disposal of fluids that have the potential to pollute downstream waters.
2. Proper management of wastes such as street sweeping waste and vacuum truck waste.
3. Proper storage and use of salts or other de-icing materials.
4. Proper maintenance of roadways and parking lots.
5. Management of parks and other City-owned and operated facilities to properly use fertilizers, pesticides, and herbicides and to promote the proper disposal of landscape waste.

BEST MANAGEMENT PRACTICES

Provo City participates in the Utah County Storm Water Coalition. The Coalition focuses on the Public Education and Outreach Control Measure by producing informative brochures & displays, administering the 4th Grade Storm Water Education Program, and providing various training forums targeting municipal employees, developers, contractors, and engineers. The Utah County Storm Water Coalition will continue to pursue opportunities that relate to the Public Education and Outreach Control Measure. Provo City will continue to participate in the Coalition.



Strategies

Produce & Provide Annual Newsletter

A newsletter that provides information regarding storm water quality and management will accompany the utility bill. Residents will have the opportunity to be informed as well as stimulated to participate in the public storm water forums. The annual newsletter will contain a reference to the City's Storm Water Quality website.

Create Informative Displays

Self-explanatory displays, showing the adverse effects of storm water pollution, can be a very effective way to stimulate public awareness of storm water quality. These displays will be used during community events.

Provide Information for the Disposal of Hazardous Materials

The objectives of this BMP are to make the public aware of the everyday materials that, if not properly disposed, have the potential to cause adverse effects on water quality and to define the means to properly dispose of these materials.

Storm Water Web Site

Continue to develop and maintain an interactive storm water web site. Storm water related materials (reports, development standards, educational materials, etc.) will be made available to the public. The website will give residents an opportunity to voice concerns, share resources, and develop strategies for water quality improvement.

Storm Water Classroom Presentations

The Utah County Storm Water Coalition will continue to employ an instructor to develop and perform an approved storm water presentation to each of the 4th grade classes in Provo to provide education on the effects of storm water pollution.

Storm Drain Stenciling

In effort to educate the public that all City storm drains eventually discharge to either the Provo River or Utah Lake, all storm drain inlets will be stenciled with a fish logo and / or a "DO NOT DUMP – DRAINS TO LAKE" message.

Municipal Storm Water Quality Committee

A committee comprised of individuals from the various departments throughout the City will be created. The committee will be informed of the various water quality concerns and asked to provide input on how to address each concerns and promote storm water pollution prevention. The items discussed by the committee will be disseminated to the respective departments. It is anticipated that the committee will meet on a monthly basis.



Public Involvement / Participation

OBJECTIVE

The success of a Storm Water Management Program is largely dependent upon the participation of the public. The objective of this minimum control measure is to provide ongoing opportunities for the public to become involved in storm water education, stenciling, cleanup, and monitoring. It is also imperative to offer the public the occasion to provide input on the content and implementation of storm water management programs.

BEST MANAGEMENT PRACTICES

Strategies

Neighborhood Involvement

Neighborhood storm water management efforts can be coordinated through the neighborhood chairperson. The chair of each neighborhood committee will be utilized in providing the residents an opportunity to actively participate in neighborhood-wide storm water cleanup, storm water quality monitoring, and / or storm drain stenciling.

Leaf Bag Distribution

A citywide effort to keep leaves from entering the storm gutters and drains will be implemented. Each September, the City will make large plastic bags available for residents to deposit the leaves that fall on their property. The City will pick up the filled bags and properly dispose of the leaves.

Public Survey

A public awareness survey was performed in April of 2004 to explore public awareness with regard to storm water issues. A follow-up survey will be performed in order to ascertain the effectiveness of the Public Outreach / Public Involvement Programs.

Hold Annual Public Storm Water Educational Forums

As part of the annual forums, attendees will have the opportunity to participate in the development of BMP's and Citywide storm water quality goals.



Illicit Discharge Detection and Elimination

OBJECTIVE

The goal of the Illicit Discharge Detection and Elimination element is to prevent non-storm water sources from entering the City storm drain system, especially those discharges that have the potential to cause adverse effects on the receiving bodies of water. Achieving this goal requires a coordinated effort between the general public and appropriate municipal staff.

BEST MANAGEMENT PRACTICES

Strategies

Storm Drainage System Mapping

Maintain the City's storm drainage system map to show the location of all outfalls, detention / retention basins, and main trunk lines. The map will need to be continually updated as new storm drainage infrastructure is installed with new development and capital improvement projects. The location of outfalls will be marked in the field by using signs that identify to these outfalls to the public. The map will include locations of reported illicit discharges, investigations, and enforcement actions.

Create and Adopt a Storm Water Ordinance

Create a Storm Water Ordinance, which provides the legal authority for regulating illegal discharges. Develop enforcement policies and procedures. Train appropriate municipal staff members regarding the implementation of the ordinance.

Identify Priority Areas

Develop and prioritize a list of outfalls based on the likelihood of illicit discharges or connections. Create a system that identifies, to the public, the areas of potential or suspected illicit discharge activities.

Illicit Discharge Detection and Elimination Program

Develop a comprehensive IDDE Program that includes training of municipal employees, creating and following SOP's for the detection, prioritization, tracing, enforcing, and eliminating illicit discharges. The IDDE Program will include public information regarding the hazards associated with improper disposal of waste and provide a means (hotline) of reporting suspected discharges.



Construction Site Storm Water Runoff Control

OBJECTIVE

The objective of the Construction Site Storm Water Runoff Control Program is to reduce the discharge of pollutants from construction site runoff to the maximum extent. This will be accomplished by requiring construction sites to reduce, if not eliminate, sediment in site runoff and by requiring contractors to practice good housekeeping measures to reduce other pollutant runoff such as litter, concrete wastes, and hazardous materials.

BEST MANAGEMENT PRACTICES

Strategies

Development Written Enforcement Strategy

Create written SOP's to ensure that development projects will adequately address erosion, sedimentation, and pollution control standards. The enforcement strategy will prioritize construction projects, require that all appropriate proposed projects pursue an approved SWPPP prior to commencement of construction activities, and encourage Low Impact Development. The enforcement strategy will also include provisions for document review, tracking, and filing.

Create and Adopt Storm Water Ordinance

The Storm Water Ordinance will require construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) that includes components to address storm water erosion control, pollution control, sediment control and control of construction waste specific to construction site runoff. The ordinance will include provisions for access to construction sites and escalating enforcement strategy for construction site storm water quality violations.

Create Storm Water Standards

Develop and adopt erosion control, sediment, and pollution control standard methods, drawings, and specifications. These standards will be updated, as necessary, based on the latest technology and practices.

Storm Water Inspection and Enforcement Program

Appropriate City staff will be adequately trained to ensure that the approved erosion, sedimentation, and pollution control measures are implemented as part of each phase of the construction process and that these measures are properly installed and maintained. Sanctions will be established to ensure compliance. Appropriate checklists and forms will be utilized to ensure detailed documentation, tracking, and record-keeping measures are conducted.

Developer, Engineer, and Contractor Outreach



Educate and provide guidance to the development community of the City's erosion, sedimentation, and pollution control standards, as they relate to new development. This outreach may come in the form of fact sheets, brochures, public notices, and workshops. Pertinent materials will be posted on the City's storm water website.



Post-Construction Storm Water Management in New Development and Redevelopment

OBJECTIVE

The goals of the Post-Construction Storm Water Management Program are to minimize the adverse effects to water quality and quantity caused by storm water runoff in urbanized development and redevelopment and to strive to implement measures that will allow post-construction hydrology to mimic pre-development hydrology. This can be accomplished by establishing a Storm Water Ordinance that addresses post-construction runoff concerns. Other implementation strategies will include the selection of structural and non-structural BMP's to be utilized in the design of development projects aimed to reduce pollutants in post-construction runoff.

BEST MANAGEMENT PRACTICES

Strategies

Adopt Storm Water Ordinance

Title 18 Storm Water Ordinance contains components regarding the implementation of post-construction runoff controls to insure that long-term post-construction water quality concerns are being addressed.

Create a Development / Redevelopment Program

The strategy of the Development / Redevelopment Program will be to minimize development in areas of the City that are susceptible to erosion, to promote the preservation of native soils and vegetation, and preserve areas that provide water quality benefits by encouraging LID practices, creating a plan to retrofit existing sites that are adversely impacting water quality, and develop specific hydrologic methods to ensure consistent sizing of structural BMP's.

Development Review Processes

The development review process will incorporate specific methods to ensure that post-construction runoff controls are integrated into the design of land development projects as defined by the Storm Water Ordinance.

Design Criteria and Standards

Develop and adopt specific design criteria and standards pertaining to structural and non-structural BMP's for post-construction erosion, sediment, and pollution control. These standards will be updated, as necessary, based on the latest technology and practices.

Inspection and Enforcement

Appropriate City staff members are continually trained to ensure that the approved post-construction BMP's are in-place and properly constructed. Standard operating procedures will be established to ensure accurate inspection and enforcement actions are followed.



Inspection records will be accurately kept and placed on file and integrated into the City's GIS System. An enforcement strategy will be implemented that allows (through ordinance) escalating enforcement provisions to ensure compliance. Documentation of the methodology behind the development of the enforcement strategy will be established and filed.

Operation and Maintenance Plan

Appropriate City Staff will be trained to operate and maintain the BMP's that fall under Provo City jurisdiction. City staff will perform inspections to ensure that privately held post-construction BMP's are adequately maintained. A maintenance schedule will be created to ensure that all BMP's are routinely inspected and maintained.

Post-Construction BMP Inventory

A GIS inventory of all post-construction BMP's will be established and maintained. All inspection & enforcement activities will be included as part of the inventory strategy.

Developer, Engineer, and Contractor Outreach

Educate and provide guidance to the development community of the City's requirements for post-construction BMP's, as they relate to the runoff of new development and redevelopment. This outreach may come in the form of fact sheets, brochures, public notices, and workshops.



Pollution Prevention / Good Housekeeping for Municipal Operations

OBJECTIVE

Provo City conducts numerous operational activities that have the potential to introduce pollutants into storm drainage systems. The goal of the Good Housekeeping Program is to educate City departments on good housekeeping methods that will reduce the contribution of storm water pollutants by municipal operations.

BEST MANAGEMENT PRACTICES

Strategies

Inventory of City-owned Facilities

Create a written inventory of all City-owned facilities and assess (prioritize) each facility's potential to cause adverse impacts to storm water quality. Include, in the inventory, specific BMP's required, standard operating procedures, and specific staff responsible to perform activities associated with implementation of this control measure.

Inspection of City-owned Facilities

Perform and document weekly visual inspections, quarterly comprehensive inspections, and quarterly visual observations of storm water runoff for all 'high priority' City-owned facilities.

Flood Management Structures

Develop and implement a process to assess the water quality & hydrologic impacts in the design of all new flood management structural controls. Assess all existing flood management controls to determine whether changes or additions should be made to improve water quality.

Employee Training

Provide training sessions for City employees that have job functions that are likely to impact storm water quality. Present an overview of the Provo City Storm Water Management Program and Phase II of the National Pollutant Discharge Elimination System to the employees that are directly related to the above operations. Develop a mechanism to give City employees the opportunity to provide feedback and suggestions on how to improve the Storm Water Management Program.

Storm Drainage System Maintenance Program

Create a storm drainage system maintenance schedule that aims to frequently remove accumulated sediment and floatables from storm drain inlets and other areas that experience regular accumulation.



Storage and Disposal of Waste Removed from Storm Drainage System

Identify proper procedures to handle the storage and disposal of waste removed from the City's storm drainage systems. Provide training to employees that will be handling storm drainage waste on proper methods of handling, storage, and disposal. Ensure that provisions are made to ensure that all classifications of waste are properly disposed of.

Appendix

A-1 Map of Provo City Sensitive Lands

