

The City of Redmond

Stormwater Management Program (SWMP)



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INTRODUCTION

This document is the City of Redmond's Stormwater Management Plan, in response to the Western Washington Phase II Municipal Stormwater Permit (NPDES Permit). The NPDES Permit was issued to the City of Redmond by the State of Washington Department of Ecology on January 17th, 2007 (effective February 16th, 2007). The NPDES Permit requires that the City of Redmond produce a Stormwater Management Plan (SWMP), and update it regularly, to reflect Redmond's actions and planned actions in meeting permit requirements.

The City's SWMP aims to reduce the discharge of pollutants into receiving waters within Redmond to the maximum extent practicable (MEP), to apply all known and reasonable technologies (AKART) to address stormwater pollutants, and protect receiving waters from degradation. These goals will be accomplished by the implementation of all aspects of this SWMP. The City intentionally exceeds some NPDES Permit requirements to better protect water resources and to keep those resources safe for human contact and able to sustain aquatic ecosystems/species.

This document is organized according to the five NPDES Permit SWMP elements. Excluding this introduction section, the five elements are the sections of this SWMP: Education and Outreach, Public Involvement and Participation, Illicit Discharge Detection and Elimination, Controlling Runoff from Development/Redevelopment and Construction Sites, and Municipal Operations and Maintenance. Within each section, requirements of the permit are individually detailed (i.e. S5.C.3.b). To review the permit language in comparison to what Redmond has designed in response, one can access the permit at the following Washington Department of Ecology website:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIIww/wwphiipermit.html>

This document will be updated as program components change, this will occur annually at a minimum. In August 2009, The Washington State Pollution Control Hearing Board ruled on a hearing involving permittees, interest groups, and the State of Washington Department of Ecology. The ruling changed some permit requirements which in turn has changed some aspects of Redmond's SWMP. Those changes are documented in this draft of Redmond's SWMP.

PUBLIC EDUCATION AND OUTREACH

The City of Redmond's Natural Resources Division of Public Works has provided and participated in a variety of education and outreach efforts focused on environmental stewardship, including stormwater management. For decades, Redmond's outreach efforts have targeted residents, students, businesses, policy makers, elected officials, and city staff. Outreach efforts include natural yard care training, water conservation, targeted pollution reduction outreach materials, Redmond Focus articles, Redmond's RCTV commercials, and environmental awareness booths at various public functions. Redmond currently has one full time employee dedicated to developing and implementing NPDES permit public education and outreach efforts.

The City formalized a targeted Public Education and Outreach Program by February 16, 2009, as required by the permit. The Program is designed to achieve measurable improvements in the general public's understanding of stormwater problems and what the general public can do to reduce or resolve those problems.

S5.C.1.a Targeted Stormwater Outreach

The City provides targeted stormwater-related outreach programs to the public on numerous subjects including: Natural Yard Care, charity car washing, and general stormwater awareness.

Since 2002, the City has offered free Natural Yard Care Programs to Redmond residents. These workshops provide home owners with information, tools, advice, and other resources that they can use to help reduce the amount pollution in stormwater runoff by incorporating integrated pest management, improving soils, and making better plant selections.

The City loans "Salmon Safe" car wash stormwater catch basin insert kits to charities and to businesses interested in holding or sponsoring car wash fundraising events within the City. For the last three years, the City has hired a consultant (Full Circle Environmental) to improve the effectiveness of this program. The consultant meets with the managers of businesses to make sure that the managers understand their responsibilities with regards to use of the kits and compliance with the City Stormwater Code (Redmond Municipal Code 13.06), and to make sure that the kits functioned properly. In 2010, the consultant also began meeting with, and distributing educational material to, the faculty advisors for sport teams and school clubs at Redmond Junior High and Redmond High School.

The City of Redmond coordinated with other permitted jurisdictions in Western Washington to create an outreach group called Stormwater Outreach for Regional Municipalities (STORM). This group works in conjunction with Washington State's Puget Sound Partnership and the Department of Ecology to run a regional stormwater awareness campaign, using the brand "Puget Sound Starts Here." The campaign has received multiple state and federal competitive grants. It consists of television ads, a website, earned media, and other outreach techniques. The campaign has also engage non-profit groups throughout Western Washington to increase the campaigns scope. Redmond will continue to use this campaign in Redmond to increase the public's general awareness of stormwater issues.

S5.C.1.b Measuring Outreach Effectiveness

The Charity Carwash Program consultant conducts drive-through (windshield) monitoring in Redmond six weekends a year. They monitor sites that have sponsored charity car washes in the past and search for new locations where this activity may be taking place. In 2010, this monitoring occurred in May, June, September, and October. If the consultant discovers a charity event that does not have a kit, they supply a kit and offer education as to why and how car wash events can harm local waterways. If the consultant finds an event that is using a kit, they inspect the kit's set up to ensure that it is installed correctly and diverting water to the proper location. The consultant provides two reports to the City each year. These reports provide the City with information on program effectiveness and make recommendations as to how the program might be improved.

In 2006, the cities of Redmond, Bellevue, Kirkland, and Shoreline completed a marketing survey titled *Residential Surface Water Quality Survey for City's of Bellevue, Redmond, and Shoreline*. This survey provides a baseline for measuring Redmond's residential homeowners understanding of stormwater pollution and surface water impairments.

By 2012, Redmond will participate in a regional survey or initiate a Redmond specific survey to re-access the general understanding of residential homeowners concerning stormwater issues. The survey will be designed to ensure that valid comparisons can be made with the 2005 survey. The STORM campaign will be fully implemented prior to the survey being administered.

S5.C.1.c Tracking Outreach Efforts

Redmond will continue to track outreach efforts applied in Redmond. Tracking will include the number items created to convey stormwater outreach messages and the number of these items distributed.

PUBLIC INVOLVEMENT AND PARTICIPATION

The City of Redmond is committed to ongoing opportunities for public involvement and participation in the development of this plan. This will be achieved through advisory councils, watershed committees, participation in developing rate-structures, stewardship programs, environmental activities or other similar activities.

S5.C.2.a and S5.C.2.b Involving the Public in the SWMP

The City of Redmond has requested public review of the City's Stormwater Management Plan (SWMP) through the City's internet landing page:

<http://www.redmond.gov>

When updates have been made, residents are invited to review and comment on the plan's content and the City's response to permit requirements. The City also provides a contact number for residents to call with questions throughout the year from the City's SWMP webpage:

<http://www.redmond.gov/Environment/StormwaterUtility/NPDES/>

In addition, Redmond has also held public discussions during council meetings, council study sessions, and Planning and Public Works Committee meetings to adopt local code and to discuss NPDES Phase II Permit requirements. Additional community interactions on receiving waters and environmental stewardship have occurred during neighborhood planning efforts. Although these were not specific to this plan, they have been excellent opportunities for staff to discuss surface water issues with the public.

ILLICIT DISCHARGE DETECTION AND ELIMINATION

The Illicit Discharge Detection and Elimination (IDDE) program is designed to prevent contamination of groundwater and surface water by monitoring, tracking, and removing non-stormwater discharges into the stormwater drainage system.

The City of Redmond initiated and funded an Illicit Discharge Detection and Elimination (IDDE) Program in January 2005, well before the program was required under the NPDES Permit. The City has implemented all actions required by the NPDES permit and developed and implemented procedures to characterize the nature of and respond to any known illicit discharges. Redmond's IDDE program is a citywide program that addresses non-stormwater discharges, including direct discharges to receiving waters, and discharges to non-city owned/operated stormwater conveyance.

S5.C.3.a Municipal Stormwater Drainage System Map

The City maintains an up-to date stormwater conveyance map in an enterprise geospatial database. Updating and managing geospatial data is done according to documented procedures and quality control standards. Global information system (GIS) data includes attributes that describe ownership, water quality facility design details, flow control facility design details, conveyance design information, and spatial data. GIS data is managed with ESRI software and database management system solutions. Both private and public stormwater system data is managed geospatially. The GIS stormwater data includes all nominal diameter pipes, not just 24 inch or larger. Land use and drainage area delineations for each outfall have been developed and are updated regularly.

S5.C.3.b Water Pollution Prevention Ordinance/Municipal Code 13.06

The City of Redmond updated Municipal Code 13.06 by the August 2009 permit deadline. The ordinance needed to:

- Define allowable discharges, conditional discharges, and prohibited discharges to the City's owned/operated stormwater conveyance system.
- Establish inspection authority and escalating enforcement authority to correct non stormwater discharges to the City's stormwater system.
- The prohibition of illicit connections to the stormwater conveyance system
- Provide definitions to make sure consistency existed between state and local terminology.

The City updated RMC 13.06 to include the required elements listed above and the following additional modifications to protect receiving water bodies:

- The scope of the code was increased to the continuous city limits. Non stormwater discharges to privately owned stormwater conveyance, or direct discharge to receiving waters are regulated by Redmond.
- The City can require structural and non-structural source control best management practices (BMPs) of existing land uses, if deemed necessary to reduce or eliminate non stormwater discharges, citywide.
- The City preserved its existing escalating enforcement strategy to address non stormwater discharges. The code also detailed that the City can collect city expenses incurred due to abatement of non stormwater materials in the stormwater drainage system.

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- The City retained the ability to regulate NPDES permitted discharge within the City of Redmond. This includes construction sites and industrial sites permitted by the State of Washington.
 - The City adopted the definitions and terms in the permit, and added additional prohibited and conditional discharges based on historical issues of non stormwater discharges.

S.5.C.3.c Ongoing IDDE Program

The City currently has an ongoing, fully funded, IDDE program. The City responds to and investigates, calls regarding environmental concerns such as illegal dumping, spills, illicit discharges, and illicit connections. The program has performed source tracing studies in the heaviest commercial and industrial portions of the City. The City will continue source tracing efforts as necessary in the future with the intent of shifting more focus to source control. Documentation of IDDE procedures are detailed in the City's *Illicit Discharge Detection and Elimination (IDDE) Program Manual: City Policies and Procedures (2011)*.

In 2011, Redmond prioritized Peters Creek as the priority waterbody for visual inspection as required in the permit. In 2012, the City selected Idylwood Creek as the priority waterbody for visual inspections.

S.5.C.3.d IDDE Public Outreach

The City operates a telephone hotline that allows citizens to report illicit discharges or illicit dumping within city limits: (425)556-2868. The hotline is covered 24 hours a day, seven days a week. During regular business hours, calls are received and followed up on by the Natural Resources Division of Public Works. Off hour calls are managed by Redmond's police dispatch and standby maintenance crew. The call line has been publicized by the City's website, magnets distributed at community events, Redmond's television channel (RCTV), and most outreach materials created by the City typically include the hotline number. All calls are tracked and followed up on.

Additionally, targeted outreach materials have been developed and deployed to the public for restaurant related non stormwater discharges, car washing, and general awareness of stormwater and prohibited discharges.

S.5.C.3.e Program Evaluation and Assessment

The City currently tracks how many of each type of IDDE incidence that occurs and how those incidences are resolved. The IDDE Program has been regularly evaluated since 2005. This typically occurred with new staff in the IDDE Administrator position (3 staff since 2005). Redmond has and will continue to keep information provided by recipients of IDDE outreach materials.

S.5.C.3.f Municipal Field Staff IDDE Training

The City of Redmond has developed a field staff training plan to train all field staff in the identification and proper response to illicit discharges to the stormwater drainage system. The training program applies to all field staff, including but not limited to the following: Fire and Police Department staff that operate in the field, Public Works and Planning inspectors, and operations maintenance staff in Parks and Public Works.

The program is mandated/administered by the City of Redmond Human Resources Department as an employment requirement (similar to safe driver training). The training is required for new staff as well as existing staff. The training will be

refreshed for existing staff on a regular basis. The operations and maintenance staff will be provided IDDE awareness training as a component of the operations and maintenance training discussed in section S.5.C.5 of this SWMP. The training will be similar to the IDDE training provided to all other groups, just administered in conjunction with the operations and maintenance training.

For all other field staff, the City of Redmond purchased *Municipal Stormwater Pollution Prevention-Storm Watch* from Excal Visual. Redmond has modified the video section pertaining to IDDE awareness and reporting. Modifications have been made to include the local spill hotline number and Redmond specific information. The video will be administered to the various groups through existing training schedules and made available online. Training participation will be tracked for each employee through the Human Resources Department.

Training of staff that are responsible for identification, investigation, termination, cleanup, and reporting illicit discharges, including spills and illicit connections occurred in August 2009. The training was provided by King County. As staff responsible for such activities change, additional training will occur.

CONTROLLING RUNOFF FROM NEW DEVELOPMENT, REDEVELOPMENT AND CONSTRUCTION SITES

How development and redevelopment occur plays a critical role in the ability of receiving waters to support beneficial uses. This section of the SWMP addresses: how impacts from development/redevelopment will be reduced, how impacts will be mitigated, and what is required of sites during construction. How Redmond is or plans to address specific NPDES permit requirements of development, redevelopment, and construction sites will be discussed.

S5.C.4.a Apply Stormwater Management Standards to Development, Redevelopment, and Construction Sites

Redmond Municipal Code (RMC) 15.24 codifies stormwater management in Redmond, and includes code for construction, and stormwater infrastructure design. RMC 15.24 was updated June 15, 2010 to include all minimum requirements and language required by this section of the permit and appendix 1. Redmond has been using the 2005 Stormwater Management Manual for Western Washington (SWMMWW) since 2007 and the 2001 version of the SWMMWW since 2004. Redmond has and continues to require minimum requirements of development/redevelopment below the one acre threshold in appendix 1 of the permit.

RMC 15.24 codifies by reference the Clearing, Grading and Stormwater Management Technical Notebook ("Technical Notebook"), which is the technical guidance and local modification of the 2005 Washington State Department of Ecology Stormwater Manual for Western Washington. The Technical Notebook was amended with an addendum dated August 18, 2010, to align the Technical Notebook with this section and Appendix 1 of the permit.

The Clearing, Grading and Stormwater Management Technical Notebook, Issue 5, January 1, 2007, allows for Low Impact Development (LID). Additional updating of zoning requirements has also occurred to provide incentives for developers to apply LID techniques in Redmond. See Redmond Community Development Guide (RCDG) section 20C.30.57.

S5.C.4.b Review and Inspect Development/Redevelopment Projects

The City has a permitting process with civil/site plan review and approval process, inspection, and enforcement to meet standards established by S5.C.4b. Civil/site plans shall be submitted for review prior to issuance of a permit for all private projects that meet any of the following thresholds:

- Move over 50 CY of soil; or
- Change the topography by more than four feet; or
- Perform work within a City of Redmond easement or right-of-way; or
- Work with a stormwater pipe 12-inches in diameter or greater; or
- Clear 7,000 SF of land; or
- Remove more than 10 trees; or
- Add 2,000 SF or more of impervious surface; or

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- Work within a Critical Area or buffer as defined in the Community Development Guide; or
 - Modify a private water quality or flow control stormwater facility.

These thresholds meet and in some cases exceed the required thresholds of the permit. All private projects triggering review provide plans in accordance with City's standards that clearly detail how the site meets all stormwater management requirements (including a post construction maintenance manual for projects that involve permanent quality and/or quantity control facilities). Plans are reviewed by licensed engineers or qualified engineering firms for compliance with Redmond's standards. Public projects do not typically trigger local permits; however, public projects are subject to and abide by Redmond's development/redevelopment stormwater management standards.

Redmond's construction site inspection program is a well known regional program that adheres to protocols that provide proper protection of stormwater drainage systems and local waterways from impacts that can occur during construction. This oversight occurs in three phases: prior to construction during a plan acceptance process and an on-site Best Management Practices (BMP) implementation inspection, during construction inspections, and during a post construction project acceptance inspection.

The City of Redmond has chosen to inspect all sites instead of using the Construction Site Sediment Damage Potential Worksheet (Appendix 7 of the permit) to determine if a plan acceptance inspection is needed. The City's stormwater engineers review projects that trigger Temporary Erosion and Sediment Control (TESC) Plans, wet weather plans, or stormwater pollution prevention plans (SWPPP). Once the City has accepted a plan to control erosion, runoff and other potential construction impacts, but prior to extensive clearing and construction, City staff inspects the TESC site to ensure that the proper control measure have been selected, properly placed, and installed correctly.

During construction, the City conducts frequent inspections at the worksite--typically more than once a week and after major rain events--to ensure proper implementation and maintenance of TESC Best Management Practices. Redmond inspectors have the authority to enforce Redmond Municipal Code (RMC) 13.06 and RMC 15.24, using corrective action notices and stop work orders, to insure the protection of receiving waters from construction impacts.

After construction, the City again inspects stormwater structures at a project site. If the maintenance thresholds have been triggered, the City requires that needed maintenance take place. If the maintenance thresholds have not been reached, or once maintenance has been completed, the City then accepts the project.

55.C.4.c Post Construction Operation and Maintenance

The City has provisions to verify adequate long-term operation and maintenance (O&M) of post-construction stormwater facilities and BMPs. RMC 13.06 requires inspection and maintenance of private stormwater facilities, and all stormwater structures (including pipes and catch basins), in accordance or excess of requirements established by the NPDES Permit. RMC 13.06 also establishes enforcement authority and procedures.

Redmond has adopted and enforces maintenance standards equivalent to or more protective than those established in the 2005 Stormwater Management Manual for Western Washington (Volume V, Chapter 4).

The Natural Resources Division of Public Works has initiated, funded, and staffed a private stormwater maintenance inspection program since 1996. The program historically focused on commercial, multi-family, condo, and industrial properties, citywide. Currently, all sites having private stormwater drainage are inspected on a biannual basis. In excess of permit requirements, the city inspects all stormwater structures, excluding clean outs, roof drains, and small area/landscape drains. All maintenance work required by the City must be performed by qualified City-approved contractors. As part of the inspection program, contractors are required to submit vector waste tracking forms/disposal receipts to the City to insure proper disposal of collected material.

Disposal records allow the City to track approximate tonnage of material removed from private stormwater drainage systems. Records over the past twelve years have shown a significant decrease in materials removed from the private drainage systems as a result of the inspection program. This reduction in tonnage is evidence that the program is working to reduce the amount of materials in private stormwater drainage systems. As such, the City will continue its more extensive inspection program, looking at facilities built to earlier standards (not required by the permit), and will include all parts of private drainage systems. Including all parts of the drainage system, such as catch basins, is thought to add better protection of the functionality of stormwater drainage flow control and runoff treatment facilities. This is also thought to lessen the maintenance expense for private stormwater drainage system owners.

As mentioned previously, all stormwater infrastructure, including runoff treatment and flow control facilities, are inspected post construction one year after acceptance, to release warranty bonds. Once this occurs, sites are added to the long term private system inspection program and typically get inspected within one year from the warranty bond release.

During heavy house construction, single-family home inspectors inspect the stormwater drainage system that can potentially be impacted by the home construction activity. This occurs every six months during heavy home construction. If facilities and stormwater conveyance require cleaning during home construction, responsible parties are required to perform maintenance/cleaning.

S5.C.4.d Records Management

The City keeps records of inspections and enforcement actions by staff, including inspection reports, correction notices, stop work orders, warning letters, notices of violations, and other enforcement records for new and existing developments. Records are currently tracked on a project/parcel basis and are available upon request.

S5.C.4.e Notice of Intent (NOI)

The City makes available to the public NOIs for coverage under the NPDES Construction Stormwater General Permit and the NPDES General Industrial Stormwater Permit. Copies are available at Redmond City Hall, in the Development Services Center.

S5.C.4.f Staff Training

All staff responsible for plan review of stormwater runoff controls are licensed professional engineers or qualified consultants. Follow-up training will be provided as needed to address changes in standards, procedures, techniques, and staffing. City staff responsible for inspection of stormwater infrastructure are adequately trained to do so. Lastly, all staff responsible for managing construction TESC measures are CESCL trained. The City will document and maintain records of the training provided and the staff trained.

POLLUTION PREVENTION AND OPERATION AND MAINTENANCE FOR MUNICIPAL OPERATIONS

The City of Redmond has taken many steps to insure operation and maintenance activities are done in a manner that protects or reduce potential impacts to stormwater drainage and receiving waters.

S5.C.5.a Maintenance Standards

The City adheres to and has adopted maintenance standards in Chapter 4 of Volume V of the 2005 Stormwater Management Manual for Western Washington. In some instances, as with the trigger to clean catch basins, the City exceeds maintenance requirements.

S5.C.5.b Annual Inspection of Flow Control and Runoff Treatment Facilities

The City currently inspects and maintains flow control and runoff treatment facilities owned and operated by the City. The City has developed a public stormwater system inspection program and completed the year 2010 inspection for all flow control and runoff treatment facilities by October of 2010. The program utilizes GIS data/database to document repair needs, when the facility was inspected, and when the facility was cleaned. This program will be updated as new facilities are constructed. Once inspected, needed cleaning and maintenance will occur within the time frame prescribed by the NPDES Permit.

The vegetative maintenance for City ponds and bioswales is accomplished on an annual basis using both permanent staff and seasonal employees. Employee hours are tracked using the Mainsaver software program. Control structures related to ponds and bioswales are inspected annually and are tracked via the program used for the underground vault and detention pipe inspection/maintenance program.

S5.C.5.c Major Storm Event Inspections

The City currently inspects structures after “major storm events” to determine system function. The City is not currently aware of public stormwater facilities being impacted by major storm events. The City will prepare a map detailing the locations in which flow and runoff treatment facilities are significantly impacted by 24-hour 10-year storm event. According to Figure 3.2.1.B of the 1998 King County Surface Design Manual, which is an isopluvial map, the 10-year 24-hour storm event is 2.8 inches of rainfall in 24 hours.

S5.C.5.d Catch Basin Inspections

The City has historically inspected and maintained catch basin and inlets owned by the City. Redmond has been documenting cleaning of catch basins and inlets using paper forms. Similar to runoff treatment and flow control facility inspections, in 2010 the City has developed a GIS based public catch basin and inlet inspection program. The program utilizes indicator structures to determine catch basin maintenance needs. Some catch basins are inspected individually, such as those on primary arterials and on maintained snow routes. Such catch basins will likely be inspected more frequently than once during a permit cycle, depending on snow management.

S5.C.5.e Inspection and Maintenance Tracking

Redmond has developed an innovative asset management system to track inspection and cleaning/maintenance of both catch basins/inlets and stormwater facilities (flow control and runoff treatment). The system uses geographical information system (GIS) software produced by ESRI. The program involves GIS/GPS enable field data capture equipment. Data will be updated on a daily basis and in a format/database making the data easy to illustrate with maps and easy to analyze for reporting. GIS data is also Redmond's most complete dataset of the public stormwater drainage system. Great effort has taken place to insure that GIS data is complete, mostly through field verification which is conducted on an on-going operation.

S5.C.5.f and g Reduction of Municipal Operations Stormwater Impacts

Redmond has developed and adopted procedures for all items listed in the permit requiring documentation of practices/procedures. Locally developed standard operating procedures (SOPs) are equivalent or more protective of receiving waters than those in Volume V of the 2005 Ecology Stormwater Management Manual for Western Washington. Books of procedures and associated policies have been developed and provided to maintenance staff and maintenance staff supervisors/management in Public works and Parks and Recreation; training was also provided.

S5.C.5.h O&M Employee Training

The City has trained all operations field staff on procedures necessary and required of their job function to protect stormwater drainage and receiving waters. The training also included Redmond specific information on water quality and IDDE awareness as discussed in the IDDE section of this plan. All maintenance staff have been trained and plans have been established as to how new maintenance employees, including limited duration employees, will be trained in the future.

S5.C.5.i Stormwater Pollution Prevention Plan (SWPPP) for Redmond's Maintenance and Operations Center

The City developed a SWPPP for its Maintenance and Operations Center. The plan was developed using a consulting firm (Brown and Caldwell) with experience developing SWPPPs for industrial sites. The City's SWPPP details a stormwater and BMP monitoring program, spill response protocol, structural (with implementation dates) and operational BMPs, site maps, contaminant inventory, and a schedule to annually review the SWPPP.

S5.C.5.j Record Keeping

The City maintains records of inspection, maintenance, and repair as detailed in each section of S5.C.5.