

Appendix E: Program Element Accomplishments

Construction Element Accomplishments

Education and Outreach

- Conducted various workshops for the development community on the Construction Program; proposed ordinances; developed the *Grading, Erosion and Sediment Control Manual* (Grading Manual); and recommended control measures and state requirements beginning in 1991. The City of Sacramento (City) conducted four workshops in October 1999 and participated in various workshops sponsored by International Conference of Building Officials (ICBO) during 1999/00. The City's workshops covered City and state erosion, sediment and pollution control requirements. Two workshops were targeted for municipal inspectors, and two were held for the development community. The ICBO workshops covered new State General Construction Permit requirements and effective and non-effective best management practices (BMPs).
- Conducted regular training/coordination meetings and tailgate sessions with City plan checking and inspection staff. Specific tailgate sessions were held with developers, project engineers, inspectors, consultants, and contractors for development projects in the North Natomas area in the fall of 1998.
- Conducted annual training from 2003/04 through 2007/08 for agency staff whose jobs are engaged in construction activities. Staff targeted included various departments such as the Department of General Services (Facility Design & Inspection), Parks and Recreation (landscape architects & inspection), Planning (Long Range, Current, Environmental) Transportation (project managers and inspection), Utilities (development review staff, project managers, inspection) and Development Services (Matrix staff).
- Developed various outreach materials, including a Construction Fact Sheet and brochures for six different construction related activities (Concrete Applications, Earth Moving Activities, Heavy Equipment Operation, Landscaping and Pool Maintenance, Painting and Solvents, and Roadwork and Paving), beginning in 1994. The Concrete and Paint brochures were updated during the Second Permit term and were translated into Spanish in 2005.
- Partnered with the County to create a new pamphlet entitled "Construction on Small Building Sites" in April 2004.
- Participated in the Permittee Inspection Coordination Committee (PICC) formed by the County of Sacramento from May 2000 through 2004 to discuss standards enforcement procedures, and new product and technology. The group was composed of program and inspection staff from the Sacramento Area Stormwater Permittees (Permittees), County Regional Sanitation District, City of Stockton, and California Regional Water Quality Control Board, Central Valley Region (Regional Board). The work group goal was to share information and provide a consistent message to the development community. The work group was disbanded in June 2004.

- Partnered with the County of Sacramento (County) and Regional Board to develop a Stormwater Pollution Prevention plan (SWPPP) Preparation Course. Participated in or co-sponsored 15 various training courses with the County, Permittees or Building Industry Association (BIA), and the Regional Board from October 2000 through June 2002. Co-sponsored workshops with the Permittees entitled, "Preparing and Implementing SWPPPs for Construction Activities" on August 12, 2002, and March 31 and June 24, 2004 and "Simple Tools for NPDES Compliance" on September 18 and October 3, 2002
- Partnered with the Permittees to sponsored Pre-wet Season meetings for the development community on September 1 and 11, 2003, September 8 and 14, 2004, and September 19 and 20, 2005.
- Partnered with the Permittees to conduct an informational meeting with consultants conducting training on Sacramento stormwater requirements on December 11, 2002, and erosion and sediment control vendor training on September 25, 2003.

Ordinance and Standards

- Developed Grading and Erosion Control Questionnaire in September 1991 to identify small infill projects that may potentially cause drainage and/or sedimentation problems prior to approval of the project.
- Adopted Grading and Erosion and Sediment Control Ordinance in December 1993. Amended Ordinance in February 2001 to ensure that projects in North Natomas complied with federal and state endangered species requirements during the period in which the Natomas Habitat Conservation Plan was invalid. Amended Ordinance and adopted an Erosion and Sediment Control Fee Resolution on October 21, 2003, to enable the City to fund the erosion and sediment control inspection program for private construction projects .
- Completed Grading Manual in January 1994.
- Updated standard drawings in the Grading Manual to be consistent with the proposed joint City/County construction specifications and participated in the development of the joint specifications in 1996/97. Developed standard notes for Erosion and Sediment Control Plans in 1997/98. Revised the standard drawings in 2005/06. These standard notes and technical drawings are available on the City's website.
- Partnered with the County to draft an example standard erosion and sediment control plan in 2005/06.
- Adopted the City of Sacramento Stormwater Management and Discharge Control Ordinance (Stormwater Ordinance) in February 1998.

Inspection and Enforcement

- Revised review procedures for development plans and California Environmental Quality Act (CEQA) documents to include erosion and sediment control practices beginning in 1991. Since 1991, standard conditions have been developed, and projects are conditioned during the entitlement process to comply with City and state grading, erosion and sediment control requirements. The City also reviews Environmental Impact Reports and Mitigation Monitoring Plans to ensure that erosion, sediment and pollutant control is addressed.

- Began issuing grading permits, which included Erosion and Sediment Control Plans, during the improvement plan and building permit process in 1994/95.
- Acquired the part-time services of three Water Waste Inspectors in December 1995 to enforce stormwater requirements at construction sites. These inspectors began inspecting residential subdivisions during 1995/96 and commercial projects in 1996/97. In 1998, the part-time inspectors were replaced with a full-time inspector dedicated to ensuring private development construction sites comply with City erosion, sediment and pollution control requirements. In 2002, an additional full-time inspector was added to increase coverage at private construction sites.
- Developed standard language for City and state grading, erosion and sediment control requirements for inclusion in construction specifications for City projects in 1993/94. Incorporated standard construction specification language into Department of Utilities contracts in 1996/97. Revised Department of Utilities language in 2002.
- Sent winterization letters to construction projects requesting certification that sites were prepared for the rainy season in October 1998, 1999, 2000 and 2002; and distributed the Regional Board Rainy Season letter in October 2003, 2004, 2005 and 2006.
- Developed a database to track inspections and generate inspection reports in 2002/03.
- Sent a citywide notice in March 2001 to developers and builders of active construction sites notifying them that failure to implement effective erosion, sediment and pollutant control measures year around would result in the issuance of stop work orders.
- Developed in December 2001, in conjunction with the County and Regional Board, a local guidance document that assists agency staff and the development community in complying with the April 2000 General Construction Permit Modifications regarding sediment impaired water bodies and non-visible pollutants in SWPPPs.
- Developed a new Street/Sidewalk Washing program and implemented it in December 2001. This program addresses the sedimentation found in newly constructed drainage systems resulting from street washing at construction sites. The program restricts regular construction site street washing to Friday afternoons and Saturdays after a City inspector certifies the site has been dry cleaned and is free of sediment and other materials.
- Participated in developing and assisted in the funding of the California Stormwater Quality Association (CASQA) BMP Handbooks (formerly the California Stormwater Quality Task Force). The BMP Handbook revisions were completed in 2003.
- Verify that the State General Construction Permit Storm Water Pollution Prevention Plan contains 1) a vicinity map, 2) a site map, 3) a list of potential sources of stormwater pollution, 4) type and location of erosion and sediment control BMPs to be used, 5) contact information for the person responsible for implementing the SWPPP, and 6) certification statement prior to issuing a permit. This procedure was implemented in 2003.
- Prioritized construction sites as a high or moderate threat to water quality in 2003/04. High priority sites are inspected a minimum of twice per month from October 1 – April 30 and monthly thereafter. Moderate sites are inspected a minimum of monthly year round.

Effectiveness Evaluation

- Completed the Construction Site Inlet Protection Special Study in 1995/96, which evaluated the effectiveness of four inlet protection BMPs.
- Completed work plan for evaluation of the Construction Element including the development of the plan review and field audit forms in 1996/97. Began plan review and field audit by stormwater staff in 1997/98. Conducted an audit of the Construction Element in 1999/00. This audit was performed by a consultant and included evaluation of the City's standards, Grading Manual, and plan check and inspection processes and quality. The results of this audit will be used to identify and prioritize areas needing improvement in the Construction Program.

Illegal Discharge Element Accomplishments

Inspection and Enforcement

- Adopted Stormwater Ordinance in February 1998 that was updated in 2004.
- Conducted an Illicit Connection Field Screening Program between 1995 and 1998. Demonstrated that illicit connections were not a significant problem. Only one discharge was found to need removal and was subsequently connected to the sanitary sewer.
- Developed procedures to respond to reports of illicit discharges and to contain, clean and abate the discharges.
- Developed enforcement response procedures
- Began using Water Quality Inspectors in 2007 to provide enforcement for parties responsible for illicit discharges.
- Developed a database for tracking of illicit discharge complaints and enforcement actions.

Education and Outreach

- As a deterrent to illegal dumping, approximately 95% of all drain inlets have been labeled with the message "No Dumping Flows to River".
- Produced various public outreach materials for use by Field Services and Program staff to distribute in areas that have experienced extreme or repeated dumping incidents or other water quality problems.
- Provided ongoing training for drainage maintenance and other municipal staff to identify and help investigate illicit connections or evidence of illegal dumping.

Waste Disposal Alternatives

- Initiated an ongoing program for curbside collection of used motor oil by the Solid Waste Division in 1995.
- Continued to conduct quarterly household hazardous waste collection events through the Solid Waste Division. In 1999, a new solid waste transfer station provided facilities that accept daily deposits of small amounts of household-generated hazardous wastes.

Spill Response and Source Investigation

- Provided ongoing spill response notification procedures and training for the Department of Utilities 24-hour City Operator.
- Began ongoing 24-hour availability of City Field Services and Fire Department Hazardous Materials staff in 1992 for response to prohibited non-stormwater discharges in the City for documentation, investigation, reporting, and clean up.
- Implemented an ongoing phone line in 1992, for public reporting of incidents of prohibited non-stormwater discharges.
- Developed a Stormwater Program website in 1998, which provides pollution prevention information and on-line reporting of illegal discharges.

Industrial Element Accomplishments

Significant Industries Control Program

- Developed a customized industrial database in 1997, which contains all business licenses filed in the City, facilities under the State Industrial General Permit for Stormwater Discharges Associated with Industrial Activities (State Industrial General Permit), and those industries identified in the 1991 industrial identification work.
- Included language in the City development review process requiring the owner(s) of a planned industrial development to submit a determination of the need for coverage under the State Industrial General Permit to the Department of Utilities for approval.
- Developed a rating system in 1996 to prioritize industries with regard to specific activities and the probability or significance of pollutants and non-stormwater discharges.
- Developed and implemented the Clean Water Business Partner (CWBP) Program, a nonstructural control program, for the mobile carpet cleaning industry in 1997. Added landscape contractors in 2000.

Inspection and Enforcement

- Adopted the Stormwater Ordinance in 1998. Revised the Ordinance in 2004 to include authority for the County of Sacramento's Environmental Management Department (EMD) to conduct inspection at targeted industries on behalf of the City.
- Participated in the Sacramento Area Pollution Prevention Committee, formed in 1996, and the Environmental Task Force, formed in 1999, which provide opportunities for Industrial Element staff to network with other pollution prevention agencies.
- Initiated coordinated inspections for food service facilities, metal recyclers, and businesses with sewer pretreatment permits in 1999.
- Develop EMD's inspection program to establish routine stormwater inspections of targeted industries, to be conducted in conjunction with other regulatory inspections.
- Completed the first cycle of stormwater compliance inspections by EMD, on June 30, 2007, at auto repair and body shops, auto dealers, gas stations, restaurants, nurseries, kennels, equipment rental businesses, and facilities covered under the Industrial General Permit.

- Conducted inspections and enforcement at industries on a complaint basis. Issued verbal warnings, Notices of Violations, and Administrative Penalties.

Outreach and Education

- Conducted a compliance assistance workshop in 1996 on the State Industrial General Permit.
- Provided annual education and training for Field Services staff to help them identify and report stormwater pollution problems observed in the field to Industrial Element staff.
- Produced educational outreach materials in 1995 for commercial and do-it-yourself painters, food service facilities, pool maintenance companies, concrete application, heavy equipment operation, landscaping, road work and paving, and dry cleaning businesses.
- Sent outreach materials to targeted industries twice during the 2003-2007 Permit term.

Municipal Operations Element Accomplishments

Municipal Activities

- Conducted monthly street sweeping of 2,400 curb miles.
- Cleaned sumps and removed sediment from drainage channels.
- Operated and maintained settling/treatment facilities at regional detention basins.

Municipal Facilities

- Coordinated with and provided guidance to project managers and inspection staff for construction of municipal facilities.
- Identified and minimized non-stormwater discharges from equipment and vehicle washing.
- Conducted site inspections of municipal facilities to ensure that control measures were being implemented.
- Developed Stormwater Pollution Prevention Plans (SWPPPs) and BMPs for the 24th Street, North Area, and Meadowview corporation yards.

Municipal Construction Projects

- Provided technical assistance for City construction projects.
- Incorporated regional water quality control measures in North Natomas and Jacinto Creek detention basins.
- Provided water quality features in the Wood Lake drainage system maintenance and improvement project.
- Revised erosion and sediment control specifications.
- Conducted regular City construction site inspections.

Spill Response

- Developed and implemented the Sewer Overflow Emergency Response Plan.

Outreach and Training

- Attended various tailgate meetings and conducted specific training sessions to provide Program information and to increase awareness of water quality issues associated with municipal activities.
- Conducted site visits to municipal facilities.
- Participated in the review of design plans for proposed municipal facilities.
- Conducted Integrated Pest Management workshops for City pest control operators and managers.
- Conducted inspector training.

New Development Element Accomplishments

Technical Assistance

- Completed renderings of on-site control measures (Vegetated Swale, Infiltration Trench and Interceptor) in 1995/96. These renderings were completed to demonstrate how stormwater control measures could be incorporated into actual development projects. They were used in training City staff and the development community.
- Conducted outreach to the development community on post construction stormwater quality requirements in 1996/97 and again in 1998/99. The presentations included information on City policy, standard conditions, recommended source control and treatment control measures, and reference materials. The 1996/97 audiences included the Consulting Engineers and Land Surveyors of California (CELSOC) and American Society of Landscape Architects (ASLA). The 1998/99 audiences included CELSOC; ASLA; American Society of Civil Engineers (ASCE); Building Industry Association (BIA); and private architectural, planning and engineering consulting firms.
- Co-sponsored a Low Impact Development (LID) Workshop – Better Site Design on May 19, 2004 with the Permittees.
- Conducted outreach to the development community on the revised development standards and new regional Stormwater Design Manual in 2006/07. Outreach included creation and distribution of Project Update Fact Sheets, articles and notices through the professional organizations such as BIA, CELSOC, AIA, APA and ASLA, and presentations. A presentation was given to BIA in February 2007 and two public workshops were held in March 2007. Staff also presented the information to the City's Development Oversight Committee in April 2006 and June 2007.
- Prepared and distributed newsletter in 1998/99 to explain the need to incorporate stormwater quality control measures in the development planning process.
- Conducted training/coordination meetings with City planners, plan checking staff and inspectors from the Planning, Public Works, Building, and Utilities departments beginning in 1996. Meetings introduced the new on-site guidance manual and post-construction requirements to the Planning Department Environmental and Development Services staff in May 2000 and Public Works Department Architectural, Design and Inspection Sections in June 2000.

- Conducted annual training from December 2004 through 2007/08 for agency staff whose jobs are engaged in development planning. Staff targeted included various departments such as the Department of General Services (Facility Design), Parks and Recreation (landscape architects), Planning (Long Range, Current, Environmental) Transportation (project managers), Utilities (development review staff) and Development Services (Matrix staff).
- Conducted a presentation of the City's Development Standards and a field tour of the North Natomas Basins for the "California Nonpoint Source Conference, Demonstrating Nonpoint Source Solutions" on October 25, 2001.
- Participated in the Water Board's "Conducting Audits of Municipal Storm Water Programs" workshop by presenting information on the City's new development stormwater quality requirements and review process in March 2004.

Design Standards

- Completed *Volume 2 (Hydrology) of the City/County Drainage Manuals* in December 1996, which provides the accepted methods for estimating runoff peak flows and volumes for design of drainage facilities and determining the optimum volume of storage for water quality detention basins.
- In 1996/97, conducted the Volume 5 Work Group, comprised of four private engineering firms that reviewed and critiqued the design criteria and control measures in the Draft *Volume 5 (Standards for Design of New Development On-site Stormwater Quality Control Measures) of the City/County Drainage Manuals, January 1995*.
- Adopted the Stormwater Ordinance in February 1998.
- Completed *Volume 4 (Manual of Standards for Design of Joint Use Stormwater Detention Facilities) of the City/County Drainage Manuals* in 1997/98. The manual provides standards for design, operation and maintenance of joint-use park/detention facilities.
- Completed *North Natomas Drainage Design and Procedures Manual* in 1997/98. The manual includes criteria for the control of urban runoff pollutants from new developments on a regional basis. This manual requires stormwater quality control facilities for low-intensity storms and initial flows from larger storms (i.e., first flush) as well as natural processes for non-storm flows, irrigation runoff and dry weather conditions. The regional stormwater criteria from this manual were incorporated into the Stormwater Quality Design Manual for Sacramento and South Placer Regions.
- Participated in workgroup to incorporate stormwater requirements and control measures into existing ordinances and guidance manuals for parking lot tree shade and multifamily housing in 1998/99.
- Completed the Guidance Manual for On-site Stormwater Quality Control Measures in January 2000. This manual had previously been known and utilized as Volume 5 (Standards for Design of New Development On-site Stormwater Quality Control Measures) of the City/County Drainage Manuals during its draft stages.

- Prepared the Development Standards Plan that was submitted to the Regional Board on December 1, 2003, and approved by the Regional Board in May 2005. The DSP included an overview of the development review process, existing development standards including a comparison to the stormwater Permit requirements, proposed amendments to the development standards, and an evaluation of the numeric sizing criteria for treatment controls. The DSP also included a review of existing planning procedures and codes and policies to determine if water quality protection principles listed in the Stormwater Permit were included. The development standards were amended in May 2006.
- Completed the regional Stormwater Quality Design Manual for Sacramento and South Placer Regions in May 2007. The manual includes the stormwater quality requirements for new developments and significant redevelopments, numeric sizing criteria and design and maintenance criteria for source controls, runoff reduction measures and treatment controls.

Development Standard Implementation (Regional and On-site Stormwater Controls)

- Began review of CEQA documents to ensure new developments address water quality mitigation measures for stormwater runoff in 1991/92. Revised the Initial Study Checklist to consider potential stormwater quality impacts in June 2003.
- Began conditioning projects during the entitlement process to comply with postconstruction stormwater requirements in 1993.
- Developed planning principles requiring the North Natomas Drainage Master Plan to formulate flood control and water quality alternatives for development of 7,000+ acres in 1992. Using the water quality design criteria developed in 1997/98, drainage master plans were developed and basins were designed. The regional facilities in North Natomas include Basin Nos. 1, 2, 3, 4, 5, 6a, 6b, 7a, 7b, 8a, and 8c. The types of water quality features utilized in the basins are combination wet/dry water quality basins, dry extended detention basins, low flow channels, and micropools. Maintenance plans have been prepared for several of these basins.
- Began incorporating regional water quality detention basins into the 500+ acre Jacinto Creek Planning Area in 1993/94. Regional water quality ponds have been incorporated into Laguna Vega North and South, Laguna Vista, and Sheldon Farms.
- Completed and began utilizing a “Stormwater Treatment Device Access and Maintenance Agreement” in 1995/96 to ensure that property owners commit to long-term maintenance for on-site structural control measures. As of May 2006, maintenance agreements are required for all treatment control measures.
- Incorporated various on-site stormwater treatment control measures into the drainage systems for private development projects since 1995. These control measures include vegetated swales, Fossil Filter catch basin insert, CDS Filters, Jensen/Tiechert Interceptors, Jensen Storm Vault, Stormceptor, and Vortech. These devices have been installed at various development projects, including retail centers, office parks, equipment rental facilities, and manufacturing facilities.

- Sent letters annually requesting inspection and maintenance records for proprietary devices installed on private property from June 2001 through 2007 to ensure that devices are being maintained.

Effectiveness Evaluation

- Conducted an Oil/Water Separator Study at the Northside Subdivision. The study was planned in 1993, and monitoring began in 1994/95 rainy season.
- Conducted stormwater settling tests during the 1993/94 and 1994/95 wet season to determine the settling rates of solids, metals and other parameters associated with Sacramento urban runoff.
- Completed the *NDMP Stormwater Control Measure Study Work Plan* in 1995/96, which included a literature review of effectiveness data on all control measures included in the draft January 1995 *Volume 5 of the City/County Drainage Manual*, and suggested BMP studies to be conducted in the Sacramento area.
- Conducted NDMP Inlet/In-line Control Measure Study from 1996-1999. Four storms were monitored for a Tiechert Stormwater Interceptor and a Fossil Filter catch basin insert in 1997/98, and five storm events were monitored for the Stormwater Interceptor in 1998/99. The results were summarized in the *Inlet/In-line Control Measure Study Report 1998-99*, dated October 1999.
- Conducted a Detention Basin Study (Brown Road Detention Basin) to evaluate the performance of dry extended stormwater detention basins in removing urban runoff pollutants. The study collected samples from 18 storm events from 1997 through 2001. The study concluded that the basin is substantially effective in reducing concentrations of many important stormwater pollutants in the solid/particulate form, but is less effective at reducing dissolved constituents and bacteria. Total suspended solids and total copper, lead and zinc showed statistically significant reduction between the inlet and outlet of the basin. The full report is included in the *2001/2002 Annual Monitoring Report* (December 1, 2002).
- Conducted NDMP Control Measure Literature Review Update in 1997/98. The update included gathering information on vegetated control measure studies, new information from the 1996 Literature Review's "Ongoing Studies List," and recommended vegetation for vegetated swales and filter strips.
- Conducted a Landscape Control Measure Study (Vegetated Swale), which was initiated in 1997. Two storm events were monitored at the Sacramento Municipal Utility District (SMUD) parking lot facility in 1998/99, and a summary report was completed entitled *NDMP Vegetated Landscape Control Measure Study Report 1998/99* (dated October 1999). Effluent sampling was difficult at the SMUD facility because the vegetated swale system effectively reduced run-off through infiltration. A new site was selected at an office building on Expo Parkway. Eleven storm events were monitored from late 1999 through May 2002. The final report is included in the *2001/2002 Annual Monitoring Report* (December 1, 2002).

- Completed the *Investigation of Structural Control Measures for New Development* Final Report in November 1999. This study obtained and evaluated the performance data of 14 new development proprietary control devices and four public domain measures. The objective of this study was to identify both control measures considered acceptable for installation in the Sacramento area and information needs. An update of the initial study, including the original 14 manufacturers and 17 new manufacturers, was initiated in 2001. A draft report was prepared, including a peer review of the report by an independent consultant. Updated procedures and approved several devices in 2003 and 2005.
- Allowed the installation of several proprietary devices in 1999/00 that needed additional performance data and required the developer to conduct monitoring studies.
- Began dry weather sampling of North Natomas Basin Nos. 4, 5, 6, and 7a in September 1999. Dry weather grab samples were collected in September 1999; July, August, September and October 2000; April, June and August 2001; and March and June 2002. Wet weather grab samples were collected at Basin 7a on January 10 and 25, February 17, March 4, and April 6, 2001; and March 6, 9 and 22, 2002.
- Completed the Wet Water Quality Detention Basin Effectiveness Study Work Plan in September 2003.
- Completed the Erosion Potential Study in December 2004.

Public Education and Outreach Element Accomplishments

Outreach to General Public and Target Sectors

- Initiated Volunteer Storm Drain Stenciling program in 1993. Approximately 1,000 storm drain inlets are stenciled each year with a “No Dumping – Flows to River” message in semi-permanent (12-18 months) water-based spray paint.
- Conducted biannual public opinions since 1994 to determine the effectiveness of outreach activities.
- Attended public events since 1993. Provided an educational booth at local community events for distribution of materials and an interactive demonstration on stormwater pollution prevention.
- Developed and implemented Community Action Grant Program, which has been ongoing since 1996. Four to six grants each year have been awarded to local schools, agencies, associations, or clubs for promoting the protection of local waterways through stormwater pollution prevention.
- Conducted Pesticide Use Public Opinion Survey in 1997, providing baseline for pesticide toxicity control outreach evaluation.
- Provided permanent stormwater pollution prevention exhibits for the Sacramento and Folsom Zoos in 1997.
- Initiated partnership with the Sacramento Zoo in 1999, which included water quality curriculum in the Zoo’s classroom outreach and Zoomobile programs.
- Installed permanent stormwater playground at the Sacramento Zoo in 1999 and added to the playground in 2003.
- Developed Stormwater website in 1998.
- Conducted multimedia outreach campaign using recognizable mascot “Sammy Salmon” to deliver water pollution prevention key messages since 1998.

- Provided multiethnic outreach through electronic and print media since 1998.
- Developed and implemented the CWBP Program for two industries, carpet cleaners and landscapers, since 1998. Added mobile pressure washers to CWBP in 2003.
- Created and placed electronic stormwater model on display in various public buildings throughout the year since 1997.
- Developed Water Wise Pest Control program in 2000 to decrease pesticide toxicity in local waterways. The program is a partnership with the University of California (UC) IPM program and UC Extension Master Gardener Program and is funded through a grant from CALFED.
- Awarded an U.S. Environmental Protection Agency (EPA) grant in 2001.
- Partnered with the California Integrated Waste Management Board and other City departments on a public outreach program to reduce stormwater and greenwaste pollution and increase water conservation in North Natomas.

Outreach to Schools

- Assisted in development and implementation of stormwater curriculum (Splash Program) based on math and science for middle school and high school children to foster environmental awareness since 1999.
- Developed and implemented Stormwater Classroom Presentations to elementary school students since 1999. Presentations introduced the water cycle, aquatic food chain, and concept of environmental stewardship. Expanded program from 600 students in 1999 to over 6,000 students by 2003.
- Worked with the Sacramento Theatre Company to produce regional water conservation/ water quality musical production performed at public festivals and 75 schools during the spring of 2003.

Outreach to Public Officials and Municipal Operations

- Provided annual status reports for stormwater outreach activities to the City Council since 1996.
- Received City Council recognition in the form of proclamations presented to businesses and agencies that have done an outstanding job promoting water quality protection since 1998.
- Actively participated annually in National Pollution Prevention Week.

Outreach Involving Statewide Regional Activities

- Actively participated in the California Stormwater Quality Association Public Information and Public Participation committee.
- Was instrumental in developing the Central Valley Stormwater Public Outreach Group in 1999-2000, a professional network focused on stormwater issues unique to this area.
- Provided City staff who served as co-chair for the Public Outreach Committee of the California Regional Environmental Education Community Network, Capital Region from 1999-2000.
- Represented the California Stormwater Quality Association Public Information and Public Participation Committee at the EPA Consumer Labeling Initiative Committee's "Read the Label First" campaign conference call meetings in 2000.

- Shared information on the development and implementation of City of Sacramento Stormwater outreach programs at meetings of the California Stormwater Quality Association, California Water Environment Association, California Interagency Education Network, Sacramento Valley Broadcasters Association, and the 1999 California YMCA Youth in Legislature Symposium, and to numerous Phase II communities in northern California.

Watershed Stewardship Element Accomplishments

- Developed the 1988 Laguna and Jacinto Creek stream restoration project, which included incorporation of wetlands in channel features and vernal pools in overbanks.
- Developed the 1999 Jacinto Creek Planning Area Project, which included channel enhancements, re-establishment of vegetation, and wet detention basin water quality features.
- Developed the 1999 Royal Oaks Drain project, which provided water quality features and enhanced existing wetland.
- Completed design of Hagginwood Creek detention basin project in 2000, which includes stream restoration and incorporation of water quality features.
- Provided funding opportunities for citizen monitoring, training and school adopt-a-creek activities from 1997 to present through the City of Sacramento Stormwater Management Program's Community Action Grant Program. Several creek clean-up, restoration and educational efforts have been sponsored to date.
- Continued development and implementation of the Splash Program for water pollution prevention, geared for grades 5-12.
- Participated in community events from 1993 to present, including sponsorship of the Sacramento Urban Creeks Council's Creek Week
- Participated in the Sacramento River Watershed Program.
- Participated through the Department of Utilities in City of Sacramento planning activities, The department works with various City departments to encourage inclusion of water quality features when feasible. Projects considered include creek restoration and development of water features for flood control.
- Began Arcade Creek Watershed Management Program with numerous other City, County, state, and regional entities. Organized watershed management stakeholders group in 2001. Completed Arcade Creek feasibility study and Arcade Creek Watershed Management Plan in 2003.

Special Studies

Introduction

The Permittees have conducted various research studies over the years to evaluate BMP effectiveness as well as to provide information for management decisions. These studies have been in the form of literature reviews, monitoring studies funded by the Permittees and research studies funded through grants. Examples of the types of information gathered through special studies include the following:

- Assessment of BMP effectiveness
- Maintenance frequency for BMP's or other municipal facilities
- Verification of pollutant contributions from uncontrolled sources
- Target pollutant source identification

- Follow-up to questions identified during monitoring efforts

The information gathered from these studies continues to be used in many of the program elements to guide decisions and influence policies.

History and Accomplishments

Over the years studies have been conducted on a variety of topics including detention basin effectiveness, vegetated swale effectiveness, air deposition of pollutants and the structural BMP effectiveness study.

Special Studies for 2008-2012

During the 2008-2012 Permit term, the Permittees will continue working on several on-going special studies as well as begin working on new studies to answer some recently identified questions. The on-going studies are summarized in Table E-1 on the next page.

This is a preliminary list of studies identified at this time. The Permittees will add additional studies as identified during the Permit term. Additional discussion about special studies can be found in the associated program elements in Chapter 4.

Effectiveness Evaluation

Special Studies have been used historically to contribute to the overall effectiveness of the Program by answering identified questions and assisting management in the decision making process. These studies help the Program to achieve varying levels of effectiveness depending on the study outcome and the use of the data.

For example, the dry extended detention basin study results showed that these basins are effective at removing many of the pollutants bound to particulate matter in urban runoff. The Permittees were able to utilize this information to allow the continued use of this BMP for treating urban runoff, achieving a Level 3 effectiveness, where behavior is changed or impacted by the activity. Refer to Chapter 2 for a full description of the effectiveness levels referred to in this section.

Table E-1 includes a summary of the effectiveness outcomes and/or goals for the various special studies that the Permittees will continue to work on in the upcoming Permit term.

Table E-1: Special Studies

Special Study	Description	Status	Program Element	Effectiveness Outcome/Goal
Wet Detention Basin Study	a. Monitoring study to determine the effectiveness of a wet water quality detention basin in removing common urban runoff pollutants in the City of Sacramento.	Monitoring began in 2006/07 wet season. Anticipated to be completed during the fourth permit term.	New Development and Monitoring	Level 3 – Changed behavior
Structural BMP Effectiveness Study	b. Study to determine the effectiveness of proprietary stormwater control measures by requiring manufacturers to submit monitoring data demonstrating their products pollutant removal effectiveness. Results used to determine which products will be allowed in Sacramento area.	On-going research studies	New Development	Level 2 and 3 – Increased awareness and changed behavior
DO, pH, and Temperature in Urban Tributaries	Evaluate issues identified in the RWQEs related to exceedances of DO, pH, and temperature WQOs in urban tributaries.	Initiate work plan in FY 07/08	Monitoring	Level 2 – Increased awareness
Municipal facilities maintenance activity effectiveness	Develop workplan to evaluate the effectiveness of municipal operations element activities, i.e. street sweeping, drainage maintenance, etc.	Initiate work plan in FY 07/08	Municipal Operations	Level 1
Industrial inspection evaluation	Evaluate the effectiveness of industrial inspections at reducing or preventing discharges of target pollutants	Initiate work plan in FY 07/08	Commercial/Industrial	Level 1