

**NEVADA DEPARTMENT OF
TRANSPORTATION**



**STORMWATER
MANAGEMENT PROGRAM**

Annual Report for FY06 – July 1, 2005 – June 30, 2006

Nevada Department of Transportation
1263 S. Stewart Street
Carson City, Nevada 89712

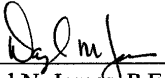
Nevada Department of Transportation
1263 S. Stewart Street
Carson City, Nevada 89712

Certification

STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT

October 1, 2006

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [40CFR§122.22(d)]



Daryl N. James, P.E.
Chief Environmental Services Division

Date: 10/25/06

INTRODUCTION

In response to the Nevada Department of Transportation's (NDOT's) request for a single National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for storm water discharges from all NDOT properties, facilities, and activities, the Nevada Division of Environmental Protection (NDEP) issued NDOT a statewide NPDES MS4 Permit (NV0023329) (permit) February 23, 2004. NDOT has developed a Storm Water Management Program (SWMP) to comply with the Permit requirements and address storm water pollution related to highway planning, design, construction, and maintenance activities throughout the State.

The objective of the Annual Report is to report on the MS4 Permit and SWMP-required activities that occurred during the reporting period July 1, 2005 to June 30, 2006 (FY06). This reporting period is officially the first full year NDOT has implemented the SWMP since the issuance of the MS4 permit and subsequent withdrawal from the Truckee Meadows and the Las Vegas Valley Stormwater Permit Coordinating Committees.

The following sections conform to the SWMP document organization and address the reporting requirements specified in section 5.3 of the MS4 Permit.

SECTION 1 - PROGRAM MANAGEMENT

There were no management responsibility changes during the reporting period.

Section 1.4 Municipal Stormwater Permittees Coordination

NDOT coordinates storm water management activities with both regulated and non-regulated MS4s, flood control managers, and other entities as an ongoing process for projects that affect local agencies and is implemented through informal discussions, meetings, agreements, procedures, etc. Headquarter's Water Quality Specialist (WQS) attends the Truckee Meadows and Las Vegas Valley Stormwater Permit Coordinating Committee Meetings. During this reporting period, the WQS attended a total of 3 Las Vegas Valley and 1 Truckee Meadows Stormwater Permit Coordinating Committee Meetings. The WQS is on the distribution list for both committees and receives all minutes and agendas and any pertinent correspondence.

Section 1.6 Source Identification

The Appendix A maps referenced in this section have been updated and are enclosed with this report. Refer to section 2.0 for complete details.

Table 1 identifies MS4 primary points of contact for the Department as of May 2006.

Table 1. MS4 Contacts

Committee Affiliation	Contact Name	Agency
Las Vegas Valley	Al Jankowiak	City of Henderson
Las Vegas Valley	Jennifer Doody	City of North Las Vegas
Las Vegas Valley	Gil Suckow	Clark County
Las Vegas Valley	Greg McDermott	City of Las Vegas
Las Vegas Valley	Kevin Eubanks (Committee Chair)	Clark County Regional Flood Control District
NONE	Scott Wilkinson	City of Elko
NONE	Robert Fellows	City of Carson
NONE	Dennis Longhofer	Indian Hills General Improvement District
NONE	Kathy Pool	Douglas County
Truckee Meadows	Terri Svetich (Committee Chair)	City of Reno
Truckee Meadows	Sean Gooch	City of Sparks
Truckee Meadows	Kimble Corbridge	Washoe County

SECTION 2 – DISCHARGES TO WATER QUALITY IMPAIRED WATERS

NDOT updated the series of maps that identify highways and facilities relative to 303(d) listed impaired waterbodies. The EPA approved the final 2004 list November 2005. The maps display the waterbodies listed in Appendix A of the EPA Approved Final Nevada’s 2004 303(d) Impaired Waters List report. The established TMDLs listed in Section 2 of the SWMP have not been amended by the 2004 report. The maps are enclosed with this report. Replace the existing maps located in Appendix A of the SWMP with the 2004 update. NDOT did not update the spreadsheets listing the facilities located in Appendix A of the SWMP. They will no longer be required as the new maps adequately display NDOT facilities in relationship to the 303(d) waterbodies.

SECTION 3 – BEST MANAGEMENT PRACTICES IDENTIFICATION AND IMPLEMENTATION PROGRAM

Nothing to report

SECTION 4 – PROJECT DESIGN STORMWATER MANAGEMENT PROGRAM

NDOT amended the Stormwater Quality Manual, Planning and Design Guide January 2006. The Water Quality Erosion and Sediment Control Implementation Team managed the revision. The revised sheets were sent to NDEP. The Project Categorization Scoresheet revision was the most substantive amendment. Roadway Design staff utilizes this sheet for rating a

project's impact relative to water quality. The result determines how to proceed with temporary erosion control planning as well as determining if permanent BMPs are necessary.

Section 4.3 Permanent BMPs

During 2004 and 2005, an erosion control water quality project was constructed along a 3-mile section of SR 28 through Incline Village. This project addressed erosion and water quality issues within the NDOT right of way focusing on source and treatment control. The project included riprap slope protection, reseeded slopes, sand oil interceptors, sediment trapping drop inlets, lined channels, energy dissipation at culvert outlets, curb and gutter as well as an enhanced Third Creek fish passage under SR 28. Construction cost for the environmental improvements is estimated at \$3.9 million.

In fall 2005, the Lake Tahoe Phase III Environmental Improvement Program Master Plan kicked off. This two-year effort focuses on master planning the remaining environmental improvements along the remaining 15 miles of NDOT's maintained roadways in the Tahoe Basin that have not been retrofitted with erosion control and water quality BMP's. Once completed, the Master Plan will include a preliminary design for those roadway sections, preliminary construction estimates and construction schedules.

In 2006, 3 erosion control projects were constructed along Highway 50. The first project, located approximately 0.5 miles north of Cave Rock retrofitted approximately 2 miles of roadway with erosion control and water quality BMP's. The project included riprap slope protection, roadway shoulder stabilization, reseeded slopes, infiltration basins, a sand oil interceptor, sediment trapping drainage inlets, energy dissipation at culvert outlets, lined channels and curb and gutter. Construction cost for the environmental improvements is estimated at \$2.8 million.

The second project along Highway 50 was constructed approximately 1 mile south of Cave Rock, involving a 1.5-mile stretch of the roadway. The project included riprap slope protection, a sand oil interceptor, reseeded slopes, sediment trapping drainage inlets, energy dissipation at culvert outlets, lined channels and curb and gutter. Construction cost for the environmental improvements is estimated at \$0.6 million.

The third project along Highway 50 was constructed approximately 2 miles north of the California/Nevada Stateline, involving a 1.5-mile stretch of the roadway. The project included the installation of riprap slope protection, a sediment basin, reseeded barren slopes, sediment trapping drainage inlets, energy dissipation at culvert outlets, lined channels and curb and gutter. Construction cost for the environmental improvements is estimated at \$1.3 million.

SECTION 5 – CONSTRUCTION SITE BMP PROGRAM

NDOT amended the Stormwater Quality Manual, Construction Site Best Management Practices January 2006. The Water Quality Erosion and Sediment Control Implementation Team managed the revision. The revised sheets were sent to NDEP. The most substantive

amendments occurred to the soil stabilizer, river diversion, silt fence, storm drain inlet protection, and the concrete waste management fact sheets.

Section 5.2 NDOT Construction Project Process

The following was reported in the FY05 report however the revised sheet was not sent to NDEP. Enclosed with this report is the revised page 31 that reflects the following:

March of 2005, the Water Quality Sediment and Erosion Control Implementation Team amended the project categorization payment procedure. The lump sum bid item for a project categorized as “No-impact” has been changed from \$5,000.00 to \$500.00 and there is no longer a Temporary Pollution Control Force Account in the amount of \$10,000.00 for “High-impact” projects. This pay item was encompassed by the existing “Incidental Construction” (736 item) for either temporary BMP replacement for major events (process not yet defined) or for the installation of BMPs determined by the Resident Engineer to be outside the contract scope. Force Account is omitted now that our projects are tied to the Construction Site BMP Manual requiring minimum controls for lump sum payment thereby requiring the contractor to be more accountable for their bid.

Section 5.4 Construction Site Inspection Program

Approximately 80% of NDOT’s construction projects were inspected for Storm Water Pollution Prevention Plan compliance where General Permit coverage is required. Headquarters retains a copy of the one-page inspection form that was actually revised during the reporting period. A copy of the inspection form is enclosed with this report.

SECTION 6 – MAINTENANCE PROGRAM

Section 6.3 Maintenance BMPs

In section 13.0, Program Schedule, NDOT committed to establish a frequency schedule for cleaning stormwater facilities and street sweeping by District. Due to the inherent complexity of this task, NDOT continues adherence to the statewide policy outlined in the Maintenance Manual summarized in Section 6.3.1 of the SWMP. However, NDOT has established a unified tracking and reporting procedure for cleaning stormwater facilities and street sweeping per section 13.0. The following tables summarize accomplishments during the reporting period within the four regulated MS4 areas in Nevada as well as the Lake Tahoe Basin. Due to lack of guidance regarding the tracking and reporting procedure, NDOT assumes that the information contained in the tables satisfies the municipal operations component of our program.

To address the issue of stormwater decant disposal in the Lake Tahoe Basin, a report was prepared in 2006 to evaluate decant water disposal alternatives. The report evaluated the feasibility of decant disposal location in the Basin, current and proposed decant water disposal practices and presented benefit cost information for several disposal alternatives. From this report, two locations for decant disposal were identified and are slated for construction in 2007.

Table 2. Stormwater Drainage Structure Maintenance Activity

Task	Accomplishment	Man hours	Accomplishment	Man hours
<i>Urbanized Area:</i>	<i>Truckee Meadows MS4*</i>		<i>Carson City MS4*</i>	
Clean Culvert Openings	890 each	1,264	65 each	133
Clean Culverts	3,868 linear feet	908	7,326 linear feet	1,368
Clean Cuts & Ditches	4,181 yd ³	1,396	3,645 yd ³	373
Clean Drop Inlets	2,643 each	1,382	1,090 each	492
Clean Retention/detention Basins	Nothing reported	–	Nothing reported	–
Clean Slotted Drains	42 linear feet	2	Nothing reported	–
Urban and Rural Sweeping	9,992 yd ³	4,765	1,075 yd ³	1,195
Sweep/Clean Debris from Structures	Nothing reported	–	Nothing reported	–
<i>Urbanized Area:</i>	<i>Las Vegas Valley MS4*</i>		<i>Elko MS4*</i>	
Clean Culvert Openings	11 each	221	101 each	367
Clean Culverts	7,275 linear feet 7,115 lnft - contract	2,278 -	1,955 linear feet	209.5
Clean Cuts & Ditches	4,037 yd ³	1,245	224 yd ³	76
Clean Drop Inlets	6,140 each 961 ea. - contract	2,957 -	35 each	32
Clean Retention/detention Basins	Nothing reported	–	Nothing reported	–
Clean Slotted Drains	250 linear feet 2,710 lnft – contract	80 -	Nothing reported	–
Urban and Rural Sweeping	16,592 yd ³	12,126	2,032 yd ³	1,248
Sweep/Clean Debris from Structures	Not available	30	Not available	76
Remove Storm Debris	185 yd ³	84	116 yd ³	46
<p>* Data represents all roads within the Urbanized Area defined by the 2000 US Census Bureau and EPA including the following routes and mile postings. Reference 303(d) maps included with this report: Truckee Meadows; US395 from Carson City north to 37, I-80 from 9.2 (will extend west to Stateline next year) to 24.0, SR445 to 0.77 (will extend north next year), SR431 0-25, SR341 15-22, all of SR425, SR429, and SR877; Carson City; US50W 0-7.6, US50E 12-17, US395 to Douglas County 7.6, SR206 0-15.43, SR207 0-11.3; Elko; I-80 7.5-56, SR225 27.23-35.5, all of SR227 and SR228; Las Vegas includes all routes contained within the rectangle on the District I 303(d) map plus I-15 25 north to 57.69, US95 92.36 (Mt. Charleston exit) south to Rail Road Pass (56), SR160 0-10, SR159 10.42-31.62, all of SR146, SR147 and SR604.</p>				

Table 3. Lake Tahoe Basin Stormwater Drainage Structure Maintenance Activity

Task	Accomplishment	Man hours
<i>Data is compiled from the following highways: US50; SR28; SR207, SR431; and SR760 (Elks Point Rd)</i>		
Clean Culvert Openings	69 each	72
Clean Culverts	14,019 linear feet	1,602
Clean Cuts & Ditches	5 yd ³	16
Clean Drop Inlets	785 each	1,030
Clean Retention/detention Basins	1 yd ³	16
Clean Slotted Drains	4,629 linear feet	815
Urban and Rural Sweeping	898 yd ³	1,002
Sweep/Clean Debris from Structures	Not available	-
Remove Storm Debris	30 yd ³	15
Clean Sand/oil Interceptors	25 yd ³	97

NDOT purchased three new PM-10 compliant sweepers during this reporting period for District II. Two of them are Tennant Centurions and the other is manufactured by Schwarz.

Section 6.3.2 Erosion Control BMPs and Section 6.3.3 Snow Removal and Ice Control

The Snow and Ice Program requires the use of abrasives and/or deicing agents across the state where low winter temperatures occur. NDOT continues to work hard determining the threshold to maximize the motoring public's safety while considering the potential adverse effects to the environment. One tool to accomplish this is the use of the Road Weather Information Systems (RWIS). RWIS is a series of meteorological stations strategically located alongside the highway that gives NDOT opportunities to utilize alternative de-icing/anti-icing chemicals/application rates, and make optimal use of equipment and staff. RWIS is an integral part of NDOT's annual maintenance operations in the Lake Tahoe Basin. Over \$6.8 million dollars has been spent for roadway maintenance since 1998 in the Basin.

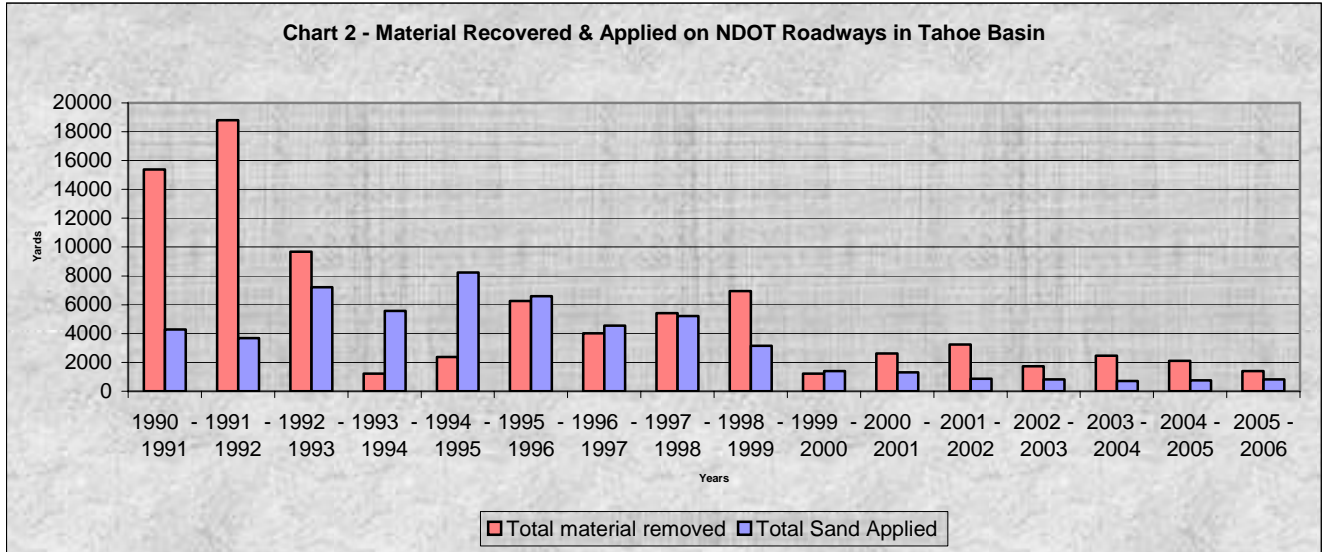
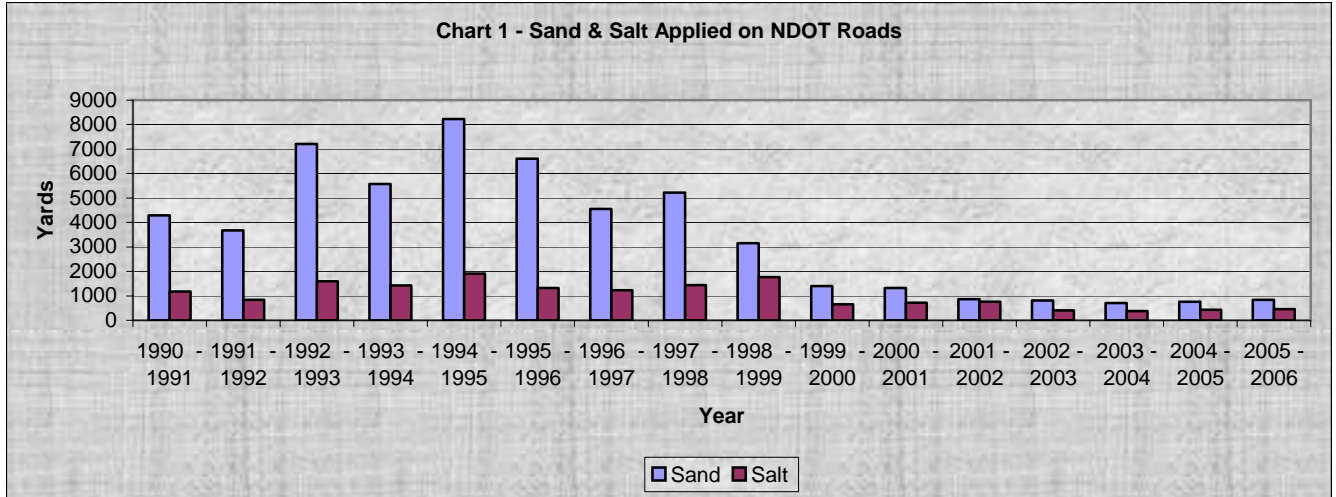
During the past seven years, NDOT has reduced the total amount of sand and salt applied by an average of 82% and 61% respectively (refer to table 4 and Chart 1) as compared to the average of the previous nine years in the Lake Tahoe Basin. This quantitative analysis does not correlate variables such as worker efficiency and climatic functions. Evaluating the total amount of material recovered from sweeping operations, cleaning of ditches, sediment basins, drop inlets, culverts, and sand oil interceptors versus the amount of sand applied, NDOT speculates that source control measures, constructed under the Environmental Improvement Program (EIP) since 1998-1999, has reduced erosion of cut slopes by 73% (refer to Table 4 and Chart 2). This

reduction is calculated by comparing the 2000-2006 period to 1990-1999. From an economic standpoint, less material applied to NDOT roads equates to less capital expenditure and subsequently, reduced maintenance hours to recover. Only Lake Tahoe data is being reported here due to the relative environmental sensitivity of the region.

Table 4. Lake Tahoe Basin Ice Control Materials Applied/Removed

Fiscal Year	Salt and Sand Applied (yd)	Straight Salt Applied (yd)	Salt Brine Applied (Gallons/Yards**)	Total Material Applied* (yd)	Total Material Removed* (yd)
<i>Data is compiled from the following highways: US50; SR28; SR207, SR431; and SR760 (Elks Point Rd)</i>					
1990-1991	5151	317	Not Available	5077	15394
1991-1992	4417	106	Not Available	6092	18808
1992-1993	8645	157.5	Not Available	8339	9687
1993-1994	6690	305.5	Not Available	5614	1219
1994-1995	9877	267	Not Available	8296	2368
1995-1996	7922	3	Not Available	9047	6259
1996-1997	5469	312	Not Available	6214	4016
1997-1998	6274	395	Not Available	5809	5427
1998-1999	3778	1124	50,550; 58.13	3435	6941
1999-2000	1678	363	43,879; 50.46	1616	1260
2000-2001	1543	451	51,799; 59.57	1873	2620
2001-2002	1033	459	110,026; 126.53	1248	3244
2002-2003	975	208	28,263; 32.50	1326	1728
2003-2004	842	213	16,742; 19.25	1268	2469
2004-2005	911	281	26,145; 30.07	1332	2098
2005-2006	1000	294	29,144; 33.52	1560	1397
*Excludes salt; **Conversion from pounds to salt in yds					

In section 13.0, Program Schedule, NDOT has committed to develop a sampling program for abrasives and de-icing materials as required by the MS4 Permit. As an update to the schedule in section 13.0, NDOT will initiate testing of the aggregate material during the second half of FY07 and salt during the first half of FY08.



Section 6.3.4 Vegetated Treatment Control

Environmental Services Division continues the Tall White Top control (*Lepidium latifolium*) program in three of the U.S. 395 water quality basins constructed in the mid to late 1990s as on-site 401-Water Quality Certification mitigation. Other broadleaf noxious weeds like musk thistle (*Carduus nutans*) and various knapweeds are also controlled. A water label (Weedar-64) 2,4,d herbicide is utilized. Also, aggressive noxious weed control is being implemented at the Washoe Valley Wetland Mitigation Site as well as the newly constructed Carson City Bypass constructed stormwater treatment wetlands located between U.S.50E and 5th Street. Measurable progress is being made. During FY07, NDOT will establish a tracking and reporting procedure for vegetation control including herbicide use.

SECTION 7 – ILLICIT DISCHARGE AND DETECTION PROGRAM

One official issue was addressed during the reporting period. Lakeside Specialized Transportation's owner Jim Fernhoff met with NDOT and City of Reno to resolve the issue. A letter was sent to NDEP dated November 10, 2005 providing the background to the problem and subsequent resolution. A copy of the letter is enclosed with this report.

On June 27, during the routine sand oil interceptor monitoring program (see section 9), non-storm water was observed flowing into a 450 gallon Stormceptor located along State Route 28 in Incline Village just north of the former Ponderosa Ranch (SR28WAMP5.70). NDOT will investigate sometime during FY07.

SECTION 8 – PUBLIC OUTREACH AND EDUCATION

Section 8.2 Employee Training

Forty-two construction site field inspectors and Resident and Assistant Resident Engineers were trained across the state during this reporting period. Training consisted of "tailgate" style informal presentation and distribution of the inspection forms and field BMP manual followed by an onsite SWPPP compliance review of the project of interest as applicable. In addition, personal communication involving training content occurred with 10 crews among the Districts where a site visit wasn't possible. This informal training is temporary until NDOT develops a more formal comprehensive program for construction site inspectors statewide.

Section 8.2 Public Education Programs

NDOT has committed \$30,000 to the Water Wise program. The program was actually initiated in FY05, however did not officially commence until this reporting period (June 26, 2005). The Water Wise project is a public/private partnership geared to educate the broad public about non-point source (NPS) pollution in western Nevada through collaboration with a local broadcast meteorologist and creation of an interactive website. It provides a distribution and communications mechanism to get environmental science information to the public effectively and efficiently. The project enhances citizen awareness about local individual efforts needed to reduce NPS pollution, and broad-scale societal, community, institutional, and political actions needed to achieve long term improvements in water quality protection. The broadcast meteorologist and interactive website provide water quality data in a format that the general public can easily understand and identify with. The project has an evaluation component where pre-, mid-, and post-surveys will be conducted to assess impact to the public's awareness, learning, and behavior. Program effectiveness can also be measured by the Truckee Meadows Stormwater Committee's water quality monitoring with the goal being reduced concentrations of key constituents identified.

This is the first program of its kind in Nevada with approximately 50 cities nationally that participate. Water Wise is funded by NDEP, the Regional Water Planning Commission, Truckee Meadows Stormwater Permit Coordinating Committee (Washoe County, Reno, and Sparks),

Carson City, the University of Nevada (UNR) Cooperative Extension as a salary match, and NDOT. Sue Donaldson, UNR Cooperative Extension, is the planning group's coordinator for the program. Storm Center Communications, Inc. was retained by the group to identify and recruit the local broadcast meteorologist, train the meteorologist, create the website and produce stories. Storm Center will coordinate the meteorologist with the local sponsoring partners and stakeholders (Planning Group) that will effectively produce the content for the weekly Envirocast™ ON-LINE, and monthly on-air environmental news stories focused on the Truckee and Carson River watersheds. The Planning Group assists in identifying story lines, prioritizing subject matter, advertising the program, etc.

Listed below are the interactive websites discussed above. Stories are archived on the Water Wise home page:

<http://www.krnv.com/> (click on the Water Wise button)
<http://krnv.iewatershed.com/>

The WQS volunteered as a team leader for a community watershed public outreach program called Snapshot Day held on May 20, 2006. Snapshot Day is a one-day, volunteer-based event designed to collect watershed information during one moment in time. Volunteer leaders are trained, and these leaders accompany teams of volunteers to various pre-determined sites to collect information relative to the health of our watersheds. The purpose of this effort is two-fold:

- to promote environmental education and stewardship, and
- to collect valuable water quality information

Section 8.3 Construction Contractor Outreach

NDOT advertises the NDEP hosted General Permit compliance training sessions across the State in the contractor's bulletin which is published bi-monthly.

SECTION 9 – MONITORING PROGRAM

Section 9.1 Overview

This section will serve as our “monitoring plan” per section 5.1.1 of the MS4 Permit. In FY07, NDOT anticipates partnering with the Elko MS4 to conduct stormwater characterization monitoring within the designated UA boundary. City of Elko will manage the monitoring program and NDOT will fund 50% of the analytical cost. The Humboldt River is the receiving water body and is listed on the 2004 303(d) Impaired Water Bodies List.

NDOT will initiate the Carson City Bypass stormwater treatment wetland BMP effectiveness study in conjunction with stormwater characterization. Approximately 2/3 of Carson City's stormwater flows through this anthropogenic wetland complex constructed as part of the Carson City Bypass project. The Carson River flows approximately 1.5 miles from the terminus of the treatment wetlands. Flow based composite sampling will comprise the

monitoring component. NDOT will sample four wet weather (winter/spring) and two summer runoff events annually.

NDOT will continue the stormwater monitoring on Steamboat Ditch, Galena Creek, Browns Creek, Browns Diversion, Corey Canyon Creek, and Winters Creek as part of the I-580 freeway extension water quality impact study that commenced November 2003. Refer to Section 9.2 for complete details.

Section 9.2 Monitoring Program

As of fall 2005, monitoring of roadway runoff began in the Tahoe basin as part of the Tahoe Phase III Master Plan project. The monitoring consists of collecting data from 7 locations along NDOT's highways with the purpose of assessing both the performance of BMPs in terms of sediment and other pollutant removal, and the characterization of roadway runoff from non-BMP retrofitted roadway locations. The year round monitoring effort will continue through September 2007 with initial data becoming available in late fall 2006.

NDOT is constructing the Interstate-580 (I-580) Extension Project, which will extend from the Mt. Rose Highway (State Route 431) to Winter's Ranch in Washoe Valley, Nevada. Construction of the first phase (Package A) of the I-580 Extension commenced November 2003, and since the start of construction NDOT has conducted quarterly water quality monitoring (base flows) and stormwater runoff sampling.

The surface waters in the project area (Steamboat Ditch, Galena Creek, Browns Creek, Browns Diversion, Corey Canyon Creek, and Winters Creek) are being monitored for impacts resulting from construction of the interstate. These watersheds are contained within the southwestern area of the Truckee River Hydrographic Region. Galena Creek is listed on the 2004 303(d) Impaired Water Bodies List for dissolved zinc. The primary objective of the water quality monitoring study is to comply with Sections 401, 402, and 404 of the Clean Water Act and adherence to NDOT's water quality goals and objectives that are based upon non-degradation of existing water quality. Pre-construction surface water sampling established a water quality baseline. The established baseline aids in the determination for potential impacts to surface water during and after construction (Draft Baseline Report; JBR, 2004).

Galena Creek, Browns Creek, Browns Diversion, and Corey Canyon Creeks are the only waterbodies affected by Package A. There are ten BMP effectiveness monitoring sites strategically located along the alignment. Storm events are determined by use of a tipping bucket rain gauge set up in a weather station in the project area. A storm event is triggered when precipitation greater than 0.20 inches in a 4-hour time span falls on the project area. The monitoring team is notified by the remote weather station via telephone when this threshold is met, and mobilized onsite.

In addition to non-degradation of existing water quality, SWPPP compliance is a high priority. This study is a great tool to analyze the quantifiable impacts to the receiving water bodies from construction. Results are conveyed to the Resident Engineer from the Environmental Services and Hydraulics Divisions that in turn are relayed to the contractor for

SWPPP amendment. The biggest change since the beginning of the project was to focus on source controls and strategically installing sediment basins to alleviate and/or slow the flows to the water bodies. Dramatic improvements have been measured.

During FY06, two reports were written: the *Biannual Water Quality and BMP Effectiveness Report for July through December 2005* and the *Biannual Water Quality and BMP Effectiveness Report January through June 2006* (JBR, 2005; JBR, 2006). These reports show temporary impacts to the receiving water bodies during storm events. The most common elevated concentrations of constituents analyzed and/or measured are total suspended solids, total dissolved solids, total aluminum, total iron, and turbidity. Generally, the quarterly base flow sampling does not show an impact from construction. However, due to the exuberant precipitation received during FY06, the antecedent moisture conditions caused material to slough into the creeks during non-event periods. This issue was eventually resolved with Best Management Practices per SWPPP implementation.

Winters Creek and Steamboat Ditch will be affected in the subsequent phase as well as the addition of more BMP effectiveness sites projected to occur sometime during FY07.

During the week of June 26, 2006, the Environmental Services Division conducted the annual Lake Tahoe Basin sand oil interceptor (SOI) monitoring. Of the 22 SOIs this characterization study encompasses, 21 units were sampled. The pre-treatment vaults located at Spooner and Incline Maintenance Facilities are not included in this sampling program as the waste stream differs (non-stormwater versus stormwater).

This year the strategy changed as NDOT sampled and recommended that all the units get cleaned. The high bacteria levels observed in every sample last year prompted this change. The units were cleaned before the onset of the wet season (October – May).

No deleterious odors or substances were observed at the time of sampling. The analytical data did not show any significant differences in concentrations from last year. The SOIs contain high levels of bacteria in the water fraction, specifically total coliform and *E. coli*. Once again the total petroleum hydrocarbon-extractable (TPH-E) concentrations (EPA Method SW8015B) generally exceed the 100ppm threshold for both the diesel and oil ranges. The NDEP allows NDOT to contain the sediment in a lined facility at a maintenance yard located in an abandoned borrow pit located outside the Tahoe Basin (Oasis pit). Laboratory interpretation of these high levels of TPH-E concludes that the source is asphalt detritus as opposed to freed product (crankcase oil). This can be supported by the fact that not once has an SOI contained free product in the settling chamber upon time of sampling. The lab runs a silica gel wash clean-up of the samples before analyzing. This procedure removes most of the plant material (carbon) sources to get a representative sample. This data will be synthesized into a comprehensive file for ease of tracking to identify trends for proper management.

APPENDIX D – CLEAR CREEK STORM WATER MANAGEMENT PROGRAM

SECTION 1.0 – INTRODUCTION

Nothing reported

SECTION 3.0 – BEST MANAGEMENT PRACTICES

Section 3.2 Permanent BMPs

In spring of 2005, 41 willow and rock sediment-trapping structures were constructed in a series of tributary channels to Clear Creek, which convey flow from US Highway 50. The structures were designed to both prevent sediment from migrating to Clear Creek through the sediment trapping qualities of the structures, and to slow flow velocities (erosive forces) by means of reducing the tributary slopes. The work was funded by NDOT and completed by the Carson Valley Conservation District using hand labor. In late spring 2006, these structures were inspected to determine how they fared through the year. Based on the field assessment, nearly all the structures were retrofitted during the summer of 2006, in order to enhance their performance.

Section 3.3 Construction Site BMPs

There is only one NDOT administered construction project that commenced during this reporting period. The US50 underpass is a developer-funded project. The contractor developed and implements the SWPPP and NDOT inspects per the General Permit protocol. The Construction Site BMP Manual is incorporated into this contract. Section 3.0, Appendix D of the SWMP highlights BMPs excerpted from the manual.

SECTION 4.0 – MAINTENANCE

Maintenance inspected most of the US50 drainage structures resulting in a few cleaned. This data is encompassed in Table 2.0 under the Carson City MS4 section.

SECTION 5.0 – ILLICIT DISCHARGE AND DETECTION PROGRAM

Nothing reported

SECTION 6.0 – PUBLIC OUTREACH AND EDUCATION

Nothing reported

SECTION 7.0 – CLEAR CREEK MONITORING AND PROJECT PLANNING

Monitoring in the Clear Creek watershed was initiated in 2003 via a 2-year joint funding agreement between NDOT and the USGS. The initial objective was to determine current water

quality characteristics of Clear Creek, establish an Internet database and evaluate the effectiveness of future erosion control efforts proposed within the watershed. In late 2005, the joint funding agreement was renewed for an additional 2 years with a focus of describing the relation between erosion and its contribution to suspended-sediment loading in the discharge to Clear Creek. This relationship will be used to estimate sediment yield and establish baseline data to evaluate future changes in water quality and sediment loading.

SECTION 8.0 – PROGRAM SCHEDULE

In 2005-06, an engineering feasibility design study was initiated in an effort to address concerns regarding the impact roadway runoff might have on Clear Creek water quality. The study evaluated the feasibility of collecting runoff originating on Highway 50, between Spooner Summit and the junction with US Highway 395, treating it and then discharging it back into Clear Creek. The study showed that by potentially installing a storm drain system down Highway 50 from Spooner Summit to the Carson Valley, all the roadway runoff originating from a 25-year storm could be collected and treated, and as a result, be eliminated from flow contributing to the current discharge points along US Highway 50. NDOT plans on advancing the design of this concept and ultimately constructing this project as funding becomes available.