LAKE TAHOE BASIN STORM WATER MANAGEMENT PLAN

COUNTY OF EL DORADO

PREPARED BY:

COMMUNITY DEVELOPMENT AGENCY

TRANSPORTATION DIVISION

TAHOE ENGINEERING UNIT

PREPARED FOR:

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

UPDATED 2013

CERTIFICATION

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 a fine and imprisonment for knowing violations.

Executed on the _____ day of _____, 2013 at the County of El Dorado.

_____

Contact Name

(Signature)_____ (Title)_____

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LIST OF ACRONYMS

APN	Assessor's Parcel Number
BCP	Backyard Conservation Program
BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CDA	Community Development Agency
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CIWMB	California Integrated Waste Management Board
CTC	California Tahoe Conservancy
CUPA	Certified Unified Program Agencies
CWA	Clean Water Act
DSD	Development Services Division
TD	Transportation Division
DWQ	Department of Water Quality
EIP	Environmental Improvement Program
EMD	Environmental Management Division
GIS	Geographic Information System
GPS	Global Positioning System
HHW	Household Hazardous Waste
ID/IC	Illicit Discharges/Illegal Connections
IPM	Integrated Pest Management
LCCP	Lake Clarity Crediting Program
LMIS	Land Management Information System
LTBMU	Lake Tahoe Basin Management Unit
MEP	Maximum Extent Practicable
MOU	Memorandum of Understanding
MS4s	Municipal Separate Storm Sewer Systems
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PDP	Project Delivery Process
PLRP	Pollutant Load Reduction Plan
RAM	Rapid Assessment Methodology
RCD	Resource Conservation District

ROWD	Report of Waste Discharge
RWQCB	Regional Water Quality Control Board (Regional Water Board)
SEZ	Stream Environment Zone
SNPLMA	Southern Nevada Public Lands Management Act
STPUD	South Tahoe Public Utilities District
STR	South Tahoe Refuse
SWQIC	Storm Water Quality Improvement Committee
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TRCD	Tahoe Resource Conservation District
TRPA	Tahoe Regional Planning Agency
TSWMP	Tahoe Storm Water Management Plan
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency (or EPA)
USFS	United States Forest Service
WDID	Waste Discharge Identification
WDR	Waste Discharge Requirements

EXECUTIVE SUMMARY

The County of El Dorado Tahoe Storm Water Management Plan (TSWMP) has been developed for and will be implemented within the jurisdictional limits of the County of El Dorado that fall within the Lake Tahoe Hydrologic Unit. The TSWMP represents the five year strategy for reducing the discharge of pollutants into and from the municipal storm water collection, conveyance, and treatment facilities. The overall goals of the Storm Water Program are to a) reduce the degradation of waters of the State and waters of the United States by urban runoff and protect their beneficial uses; and b) develop and implement an effective TSWMP that is well understood and broadly supported by regional stakeholders.

The TSWMP has been developed in compliance with the municipal storm water Permit requirements (Order No. R6T-2011-0101A1) and proposes a wide range of Best Management Practices (BMPs), Control Measures and Performance Standards which will be implemented over the period covered by the permit (2011-2016). The TSWMP provides a comprehensive approach for addressing pollutants in storm water discharges and is organized into ten sections, each addressing key permit provisions.

- *Section 1 – Program Management Component*

  This section addresses the program overview, background, management strategy, fiscal analysis, and legal authority.
- *Section 2 – Construction Component*

  This section describes the program that has been developed to reduce pollutants from construction sites during all construction phases.
- *Section 3 – Commercial, Industrial, Municipal and Residential Component*

  This section describes the program that has been developed to track, inspect, and provide outreach to commercial, industrial, municipal and residential facilities.
- *Section 4 – Storm Water Facilities Inspection Component*

  This section describes the program that has been developed to address municipal operations, including road and facility inspection and traction abrasive and deicer application and recovery, so that they are performed in a manner that is protective of water quality and minimizes the potential for pollutants to enter the storm drain system.
- *Section 5 – Illicit Discharge Detection and Elimination Component*

  This section describes the program that has been developed to detect, respond to, investigate, and eliminate illicit discharges and illegal connections.
- *Section 6 – New Development and Redevelopment Component*

  This section describes the program that has been developed to prevent or reduce pollutants in runoff from development and redevelopment activities.
- *Section 7 – Public Education Component*

  This section describes the public education and outreach program that has been developed to promote change in behavior and increase the knowledge of target communities to reduce pollutants to the storm drain systems.
- *Section 8 – Municipal Personnel Training and Education Component*

  This section describes the public education and outreach program that has been developed for Municipal Personnel to promote behavior change and increase the knowledge regarding reducing pollutants flowing into the storm drain systems.
- *Section 9 – Fiscal Analysis*

  This section provides an overview of the fiscal status and analysis for implementing the County's TSWMP.
- *Section 10 – Program Implementation, Evaluation, and Reporting*

  This section describes the storm water program implementation schedule, supporting training program, assessment methods to evaluate the overall program, and reporting requirements.

Section 1

PROGRAM MANAGEMENT COMPONENT (PM)

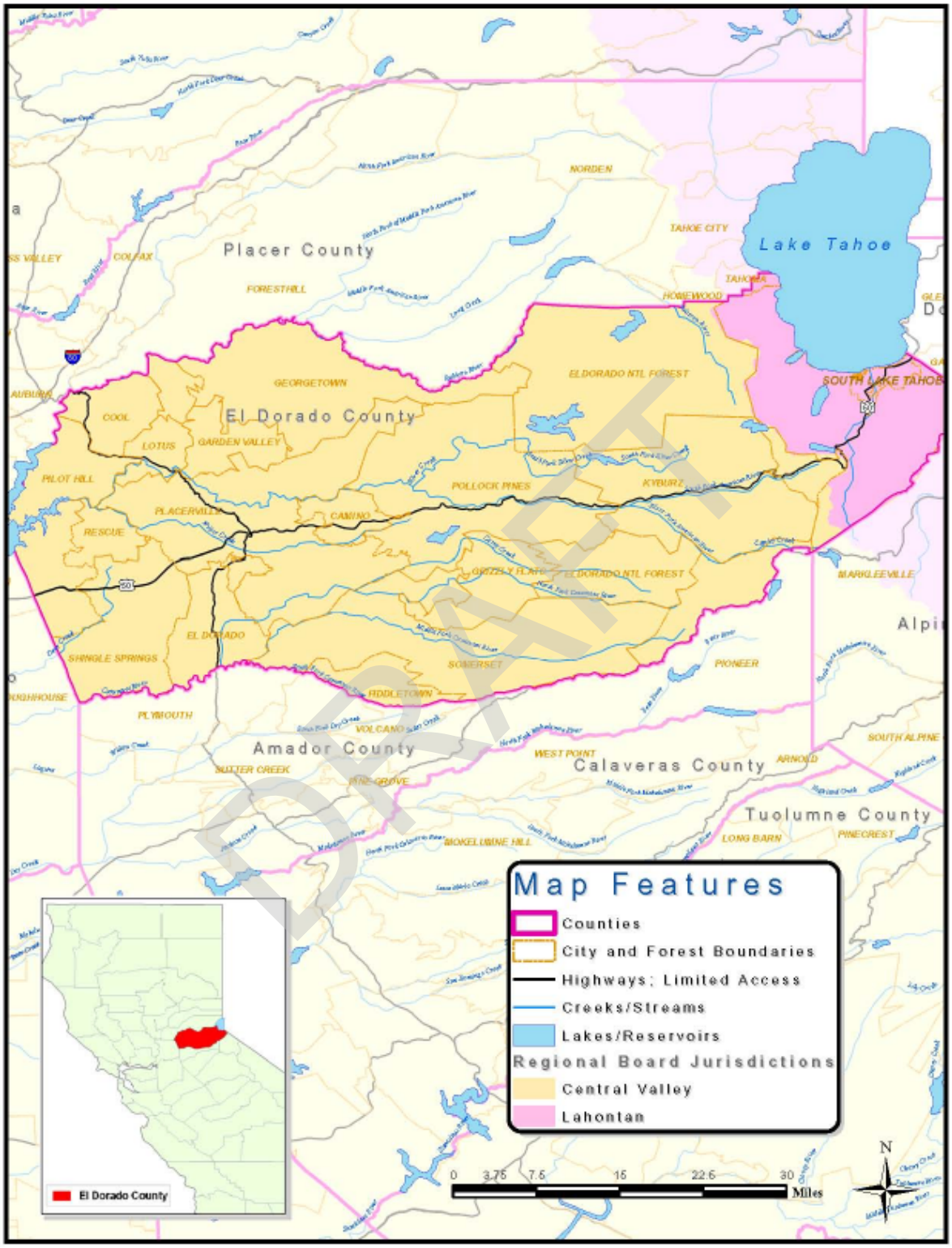
1.1 OVERVIEW

The County of El Dorado (County) is located in the foothills and mountains of the Sierra Nevada, extending 90 miles and encompassing approximately 1,805 square miles, over half of which is in public ownership in the form of national forests and various open space areas.[1] The Lake Tahoe Basin (Tahoe Basin) portion of the County is bordered by Placer County to the north, Alpine and Amador Counties to the south, and the State of Nevada to the east. The eastern portion of the County is characterized by rolling foothills, increasing in elevation from 200 feet above sea level to 10,881 feet above sea level at the highest mountain peak, Freel Peak in the Tahoe Basin. The weather in the County varies greatly by elevation – from warm, dry summers and mild winters in El Dorado Hills and Placerville to mild summers and snowy winters in South Lake Tahoe. The rainy season primarily occurs between November and April, when rain and snow can be expected, depending on elevation.

The City of Placerville, the County seat, is the only incorporated city in the western slope of the County. South Lake Tahoe is the only other incorporated city in the County and is located in the Tahoe Basin. Of the County's 181,058 residents,[2] 150,221 reside on the western slope, and the remaining 30,837 residents reside in the Tahoe Basin. A further breakdown of these figures shows that of the 30,837 residents that reside within the Tahoe Basin, 21,403 are residents of the incorporated city of South Lake Tahoe, and the remaining 9,434 reside in the unincorporated portion of the Tahoe Basin, which is the geographical area of focus for this document. An overview map of the area is provided in **Figure 1-1**.

[1] www.naco.org
[2] 2010 figures from the California Department of Finance

Figure 1-1. El Dorado County Area Map[3]



[3] Regional Board Jurisdiction boundaries were obtained from the Regional Water Boards. All other information was obtained from Environmental Systems Research Institute (ESRI).

The County is under the jurisdiction of two Regional Water Quality Control Boards (Regional Water Boards) and must comply with two separate municipal National Pollutant Discharge Elimination System (NPDES) permits as indicated below.

	Western El Dorado County	Eastern El Dorado County (Lake Tahoe Basin)
Regional Water Board Jurisdiction	Central Valley	Lahontan
Municipal Storm Water Permit	Small Municipal Separate Storm Sewer System General Permit (Phase II General Permit)	Storm Water/Urban Runoff Discharges from El Dorado County, Placer County, and the City of South Lake Tahoe (Order No. R6T-2011-0101A1)
Permit Adoption Date	February 5, 2013	December 6, 2011
County Area Covered by Permit	Western El Dorado County	Lake Tahoe Hydrologic Unit (Eastern El Dorado County)

This document outlines the County Tahoe Basin Storm Water Management Plan (TSWMP) that has been developed for and will be implemented within the jurisdictional limits of the County that fall within the Lake Tahoe Hydrologic Unit. The TSWMP, which includes program Control Measures, represents the five year strategy for reducing pollutant discharges from the municipal storm water collection, conveyance, and treatment facilities and for meeting other Permit conditions. The overall goals of the program are to a) reduce the degradation of waters of the State and waters of the United States (waters of the U.S.) by urban runoff and protect their beneficial uses and b) develop and implement an effective TSWMP that is well understood and broadly supported by regional stakeholders. The core objectives of the TSWMP are to:

1. Identify and control those pollutants in urban runoff that pose significant threats to the waters of the State and waters of the U.S. and their beneficial uses.
2. Comply with the federal regulations to eliminate or control the discharge of pollutants from the municipal storm water collection, conveyance, and treatment facilities.
3. Expand and integrate the County's existing programs into a comprehensive TSWMP that sets the standard for storm water management in the Tahoe Basin.
4. Develop a cost-effective program that focuses on pollution prevention of urban storm water.
5. Seek cost-effective alternative solutions.
6. Allow the County to become a more robust partner and coordinate implementation of Control Measures with other agencies.
7. Provide a platform to coordinate the County's current and future Environmental Improvement Program (EIP); Capital Improvement Program (CIP); Pollutant Load Reduction Plan (PLRP); Maintenance Plan; and Maintenance, Permit, and Public Outreach projects.
8. Engage stakeholders in a discussion of the TSWMP that is informative and constructive and that lays the foundation for stakeholder support and cooperation in the implementation of the TSWMP.

To address these objectives, the TSWMP provides for a comprehensive and multidisciplinary effort by the County. However, the TSWMP also recognizes that, since the County may lack legal jurisdiction over certain storm water discharges into the municipal storm water collection, conveyance, and treatment facilities from State and Federal lands and facilities, utilities, special districts, and waste water management agencies, the County likely lacks the authority to eliminate or regulate such discharges and,

thus, should not be held responsible for such discharges. Similarly, certain activities that generate pollutants present in storm water runoff may be beyond the ability of the County to eliminate. Examples of these include operation of internal combustion engines, atmospheric deposition, brake pad wear, tire wear, and leaching of naturally occurring minerals from local geography.

1.2 BACKGROUND

The storm water pollution control effort, of which this TSWMP is a part, is the result of over forty years of legislative effort beginning with the 1972 Federal Water Pollution Control Act, subsequently known as the Clean Water Act (CWA). The CWA established the NPDES program. The 1987 Federal Clean Water Act amendments created Section 402(p) of the Act which, among other things, mandated permits for municipal storm water dischargers. Section 402(p) requires that the municipal NPDES permits include:

- A requirement to effectively prohibit non-storm water discharges into the municipal separate storm sewer systems (MS4s); and
- Controls to reduce the discharge of pollutants in storm water discharges to the maximum extent practicable (MEP), including management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator of the State determines appropriate for the control of such pollutants.

Subsequent regulations promulgated by the United States Environmental Protection Agency (U.S. EPA) on November 16, 1990 (40 CFR 122.26 (d)(2)(iv)) required municipal NPDES dischargers to develop and implement a management program to effectively address these requirements.

In October 2000, the Regional Water Board adopted the County's NPDES municipal storm water permit (Order No. 6-00-82). This permit did not require the development of a TSWMP and primarily focused on implementing and maintaining erosion control and storm water treatment facilities. In October 2005, Order No. 6-00-082 was replaced with municipal storm water permit, Order No. R6T-2005-0026 (CAG616001). That permit added the requirement for the County to develop a TSWMP. In December 2011, Order No. R6T-2005-0026 was replaced with Order No. R6T-2011-101. The County, along with its Co-permittees, Placer County and the City of South Lake Tahoe, filed an Appeal on the Permit. After a series of negotiations, Order No. R6T-2011-101 was replaced with Order No. R6T-2011-101A1 in October 2012.

The TSWMP has been amended in compliance with the Permit requirements (see **Table 1-1**) and incorporates Control Measures and associated Performance Standards.

The Permit primarily focuses on the implementation requirements of the TSWMP. However, the Permit also requires the Permittees' discharges to comply with the Lake Tahoe Total Maximum Daily Load (TMDL) requirements. The County's Pollutant Load Reduction Plan (PLRP) outlines how the County will meet the TMDL requirements. The PLRP is included in Appendix A. It should be noted that the incorporation of a TMDL into a municipal storm water permit is highly unusual and to date has not been required in any other municipal storm water NPDES Permit in the United States.

1.3 PERMITTED AREA

The County is identified as a medium municipality (population between 100,000 and 250,000) as defined within the Code of Federal Regulations (CFR) 40 CFR 122.26 (b)(7). As such, the County is required to obtain an NPDES municipal storm water permit for the area under its jurisdiction. The jurisdictional area of El Dorado County that falls within the Lake Tahoe Hydrologic Unit is considered the "permit area" for Order No. R6T-2011-101A1 (Permit).

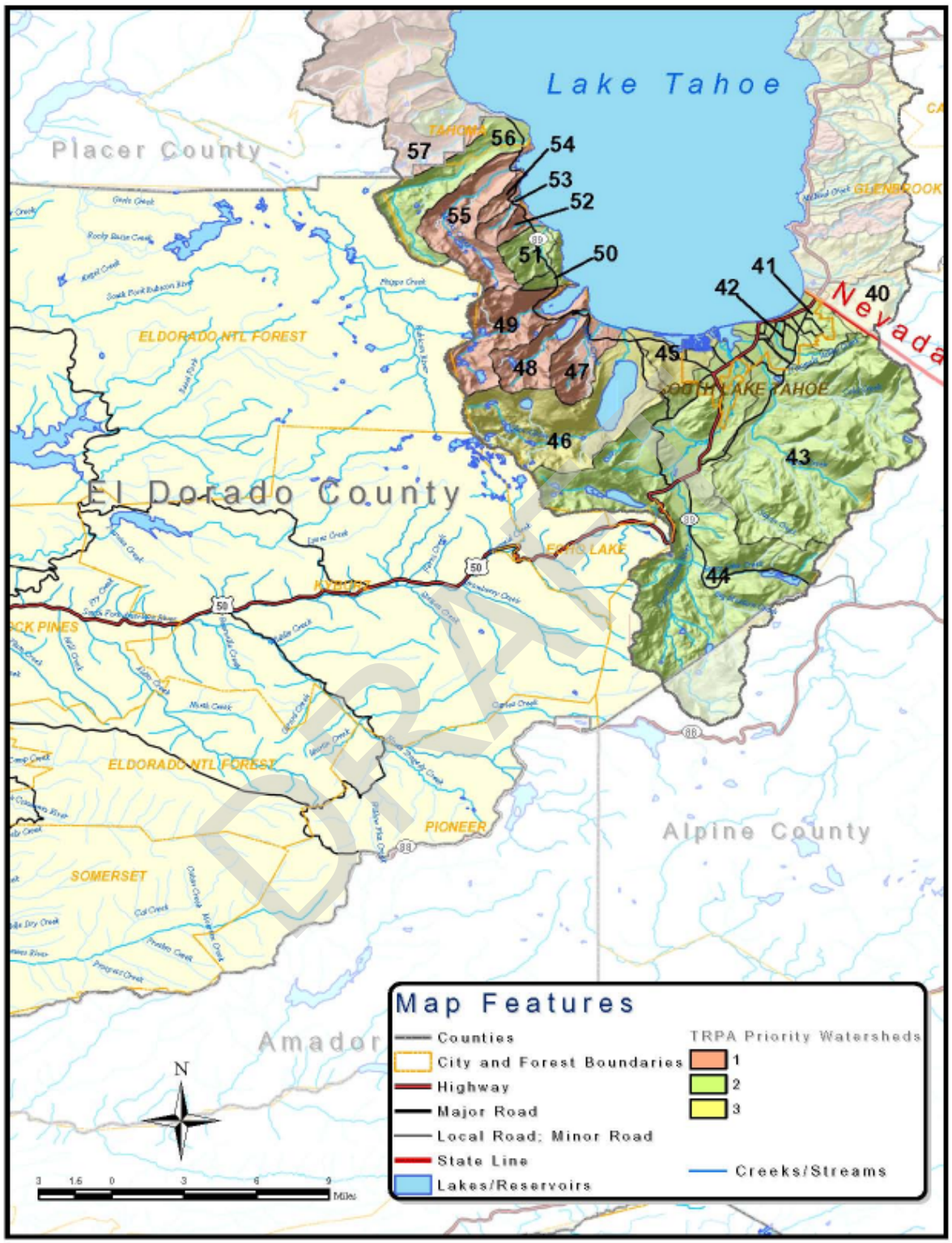
The Permit is watershed-based in that it only applies to storm water discharges to the surface and ground waters within watershed of the Lake Tahoe Hydrologic Unit. This Permit is different from traditional MS4 permits which are typically delineated by jurisdictional, not geographic boundaries. The watershed-based approach provides a framework for addressing all stressors in a hydrologically defined drainage basin instead of viewing individual pollutant sources in isolation.

The County encompasses portions of eighteen watersheds within the Lake Tahoe Basin including:

- Edgewood Creek (40)
- Bijou Park (41)
- Bijou Creek (42)
- Trout Creek (43)
- Upper Truckee (44)
- Camp Richardson (45)
- Taylor Creek (46)
- Tallac Creek (47)
- Cascade Creek (48)
- Eagle Creek (49)
- Bliss State Park (50)
- Rubicon Creek (51)
- Paradise Flat (52)
- Lonely Gulch Creek (53)
- Sierra Creek (54)
- Meeks (55)
- General Creek (56)
- McKinney Creek (57)

The two largest watersheds in the Lake Tahoe Basin, Upper Truckee River and Trout Creek, fall within the County's jurisdiction. This area is presented in **Figure 1-2**. The numbers following the watershed names above are identified in **Figure 1-2** so that each watershed is represented.

Figure 1-2. El Dorado County – Lake Tahoe Hydrologic Unit Area Map[4]



[4] Priority Watershed information was obtained from the TRPA. All other information was obtained from ESRI.

1.4 STORM WATER MANAGEMENT PLAN (TSWMP) ORGANIZATION

The TSWMP provides a comprehensive approach for addressing pollutants in storm water discharges and is organized into ten sections, each addressing key permit provisions. To assist in identifying which permit provisions are addressed in which TSWMP section, a cross reference table (**Table 1-1**) is provided below. Supporting guidance is provided in corresponding appendices.

Table 1-1. Permit Provisions and Corresponding TSWMP Section(s)

Permit Provision	Primary TSWMP Section(s)
I. Non-Storm Water Discharges	Section 1
II. Other Prohibitions	Section 1
III. Storm Water Program Implementation	
A. Legal Authority	Section 1
B. Storm Water Management Plans	
1. Construction Component	Section 2
2. Commercial, Industrial, Municipal and Residential Component	Section 3
3. Storm Water Facilities Inspection Component	Section 4
4. Illicit Discharge Detection and Elimination Component	Section 5
5. New Development and Redevelopment Component	Section 6
6. Public Education Component	Section 7
7. Municipal Personnel Training and Education Component	Section 8
8. Fiscal Analysis Component	Section 9
IV. Lake Tahoe Total Maximum Daily Load Implementation – Pollutant Load Reduction Requirements	
A. Baseline Pollutant Loads	Appendix A
B. Pollutant Load Reduction Requirements and Water Quality-Based Effluent Limits	Appendix A
C. Pollutant Load Reduction Plans	Appendix A
D. Land Use Changes and Management Practices	Section 6
E. Storm Water Facility Operations and Maintenance	Section 4
F. Pollutant Load Reduction Progress	Appendix A
G. Pollutant Load Reduction Monitoring Requirements	Appendix B
V. Receiving Water Limitations	Section 1
VI. Administrative Provisions	Section 1
ATTACHMENT C. MONITORING AND REPORTING PROGRAM	
I. Pollutant Load Reduction Monitoring Requirements	
A. Lake Clarity Crediting Program	Appendix A
B. Credit Definition and Credit Requirements	Appendix A
C. Crediting Program Handbook	Appendix A
D. Catchment Credit Schedules	Appendix A
E. Condition Assessments	Appendix A
F. Condition Assessment Method Alternatives	Appendix A

Permit Provision	Primary TSWMP Section(s)
G. Impacts Influencing Baseline Pollutant Loads	Section 6
II. Inspection Requirements	
A. Storm Water System Inspections	Section 4
B. Construction Site Inspections	Section 2
C. Commercial, Industrial and Municipal Site Inspections	Section 3
D. Traction Abrasive and Deicing Material	Section 4
III. Water Quality Monitoring Requirements	
A. Catchment Scale Runoff Water Quality Monitoring	Appendix B
B. Best Management Practice (BMP) Effectiveness Monitoring	Appendix B
C. Monitoring Plan	Appendix B
D. Storm Water Monitoring Data Management	Appendix B
E. Storm Water Monitoring Compliance Options	Appendix B
IV. Annual Reporting Requirements	
A. Pollutant Load Reduction Reporting	Appendix A
B. Storm Water Facilities Inspection Reporting	Section 4
C. Construction Site Inspection Report	Section 2
D. Commercial, Industrial and Municipal Site Inspection Report	Section 3
E. Traction Abrasive and Deicing Material Report	Section 4
F. Storm Water Monitoring Report	Appendix B
G. Illicit Discharge Report	Section 5
H. Education Component Report	Section 7
I. Impacts Influencing Baseline Pollutant Loads Report	Section 6
J. Provisions	Section 1

An overview of each section is provided in **Table 1-2** below:

Table 1-2. Overview of TSWMP Sections

TSWMP Section	Description
Section 1 Program Management Component	This section addresses the program overview, background, management strategy, and legal authority.
Section 2 Construction Component	This section describes the program that has been developed to reduce pollutants from construction sites during all construction phases.
Section 3 Commercial, Industrial, Municipal and Residential Component	This section describes the program that has been developed to track, inspect, and provide outreach to commercial, industrial, municipal and residential facilities.
Section 4 Storm Water Facilities Inspection Component	This section describes the program that has been developed to address municipal operations, including road and facility inspection and traction abrasive and deicer application and recovery, so that they are performed in a manner that is protective of water quality and minimizes the potential for pollutants to enter the storm drain system.
Section 5 Illicit Discharge Detection and Elimination Component	This section describes the program that has been developed to detect, respond to, investigate and eliminate illicit discharges and illegal connections.
Section 6 New Development and Redevelopment Component	This section describes the program that has been developed to prevent or reduce pollutants in runoff from development and redevelopment activities.
Section 7 Public Education Component	This section describes the public education and outreach program that has been developed to promote change in behavior and increase the knowledge of target communities to reduce pollutants to the storm drain systems.
Section 8 Municipal Personnel Training and Education Component	This section describes the public education and outreach program that has been developed for Municipal Personnel to promote behavior change and increase the knowledge regarding reducing pollutants flowing into the storm drain systems.
Section 9 Fiscal Analysis Component	This section provides an overview of the fiscal status and analysis for implementing the County's TSWMP.
Section 10 Program Implementation, Evaluation and Reporting Component	This section describes the storm water program implementation schedule, supporting training program and assessment methods to evaluate the overall program and reporting requirements.

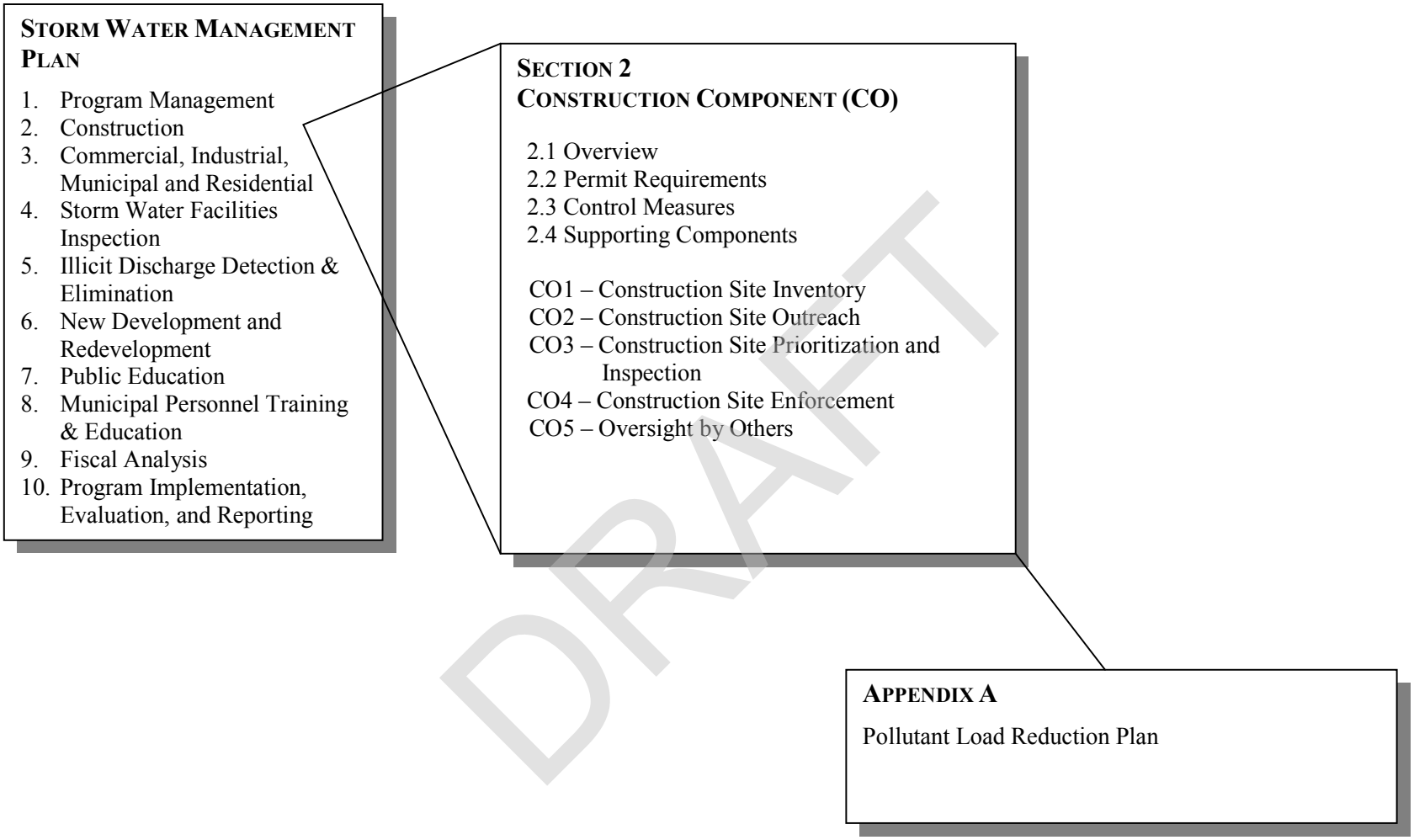
1.5 CONTROL MEASURES AND PERFORMANCE STANDARDS

Control Measures, Performance Standards, and Assessment Tasks have been identified in order to assist the County in implementation of the TSWMP. In addition, implementation schedule tables have been included within each Control Measure to clearly identify what the Performance Standards are and when they are to be completed. Implementation tables are included to assist each County Division in quickly and efficiently referencing deliverable dates and associated requirements.

- Control Measure – Control Measures are programmatic actions required to meet Permit requirements. The Control Measures, outlined within each section, were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements.
- Performance Standards – The Performance Standards included in each Control Measure establish the level of effort required (i.e., the specific tasks or activities that must be completed) to comply with the Permit provision(s) related to the Control Measure.
- Assessment Tasks – The Assessment Tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments. These items include information or data that allows the County to document and assess the effectiveness of the storm water management program.
- Implementation Schedule – Implementation schedule tables are included in Appendix E to clearly identify what the Performance Standards are, when they need to be completed during the five year term of the Permit, and who has primary and secondary responsibility. The implementation schedule table essentially builds accountability into the program and provides a quick reference for County Division staff.

An overview of the TSWMP organization is presented in **Figure 1-3**.

Figure 1-3. Storm Water Management Plan Organization



1.6 PROGRAM COORDINATION

1.6.1 Partner Agencies

The implementation of the TSWMP requires a coordinated management effort by the County and other agencies including:

- City of South Lake Tahoe
- Placer County
- Tahoe Regional Planning Agency
- California Department of Transportation
- South Tahoe Public Utility District
- United States Forest Service – Lake Tahoe Basin Management Unit
- Tahoe Resource Conservation District
- California Tahoe Conservancy
- Lahontan Regional Water Board

The County will continue to coordinate with the agencies listed above as needed in order to facilitate the communication and coordination that is necessary to implement the TSWMP. A brief description of each agency and its relationship to the County's storm water program is provided in **Table 1-3** and the text below.

Table 1-3. Agency Coordination for the Storm Water Management Program

Agency Coordination	Storm Water Management Areas of Coordination									
	Program Management	Construction	Industrial and Commercial	Storm Water Facilities	Illicit Discharge	Development	Public Education	Municipal Training	Fiscal Analysis	Reporting
City of South Lake Tahoe	X	X	X	X	X	X	X	X	X	X
Placer County	X	X	X	X	X	X	X	X	X	X
TRPA	X	X	X	X	X	X	X	X		X
Caltrans				X	X		X			X
South Tahoe Public Utility District				X	X		X			
USFS – LTBMU				X	X		X			
Tahoe RCD		X	X	X	X	X	X	X		
California Tahoe Conservancy				X			X			
Lahontan Regional Water Board	X	X	X	X	X	X	X	X		

Co-Permittees (County of El Dorado, City of South Lake Tahoe and Placer County)

While named as co-permittees within Order No. R6T-2011-101A1, the City of South Lake Tahoe, Placer County, and the County have independent programs and submit documents and reports separately to the Lahontan Regional Water Board. However, the programs are fairly similar due to the shared permit, emphasis on regional planning, and the co-permittees collaboration with each other as needed to address common issues. Each agency is responsible for implementing the storm water program within their respective jurisdictions and each has jurisdiction over and/or maintenance responsibilities for their own municipal storm water collection, conveyance, and treatment facilities.

Regional Partners

Tahoe Regional Planning Agency

The Lake Tahoe Basin has a bi-state regional environmental planning agency, the Tahoe Regional Planning Agency (TRPA), was approved by States of California and Nevada and ratified by Congress in 1969. The TRPA's Compact, as revised in 1980, gave the TRPA authority to adopt environmental quality standards, called thresholds, and to enforce ordinances designed to achieve the thresholds. The TRPA Governing Board adopted the thresholds in 1982.[5] The TRPA has developed a Code of Ordinances that regulates land use, density, rate of growth, land coverage, excavation, and scenic impacts in the Tahoe Basin. These ordinances are designed to bring the Lake Tahoe region into attainment with the environmental threshold standards established for water quality, air quality, soil conservation, wildlife habitat, vegetation, noise, fisheries, recreation, and scenic resources.

The TRPA works closely with the Lahontan Regional Water Board and other federal, state and local governments to achieve the environmental goals of the Lake Tahoe Region. In 1992, the TRPA and the County entered into a Memorandum of Understanding (MOU) to establish a regulatory framework for new construction of and modifications to residential structures. The MOU also allows the County to perform certain activities such as routine maintenance operations without obtaining a formal permit and to permit small scale residential projects. The TRPA and the County have also established a partnership that allows the County Building Department located in the Tahoe Basin to conduct the TRPA review process as a part of issuing a building permit for a project. In addition, the MOU requires the County to abide by the TRPA Regional Plan and enforce the associated TRPA Code of Ordinances within their respective jurisdiction. The County will review the existing MOU and work with the TRPA if any changes are necessary in order to comply with the NPDES Permit.

The County works with the TRPA through the EIP Project Delivery Process and obtains TRPA permits and approvals prior to construction. The County also obtains mitigation funds collected by the TRPA for water quality, air quality, and stream environment zones. These mitigation funds are distributed to local jurisdictions for construction of local EIP projects.

California Department of Transportation

Another important regional partner is the California Department of Transportation (Caltrans) due to the state highway system within the County. Caltrans is regulated by the California State Water Resources Control Board (State Water Board) and must comply with the requirements as set forth in the Statewide NPDES Storm Water Permit (Order No. 99-06-DWQ) adopted by the State Water Board (SWRCB) on July 15, 1999.[6] Similar to the County, Caltrans has developed and is implementing a SWMP. This Statewide SWMP addresses storm water pollution control related to highway planning, design, construction and maintenance activities throughout the State of California, including the Tahoe Basin. Within the Tahoe Portion of the County, California State Route 89 and US Hwy 50 provide regional access from the major population centers of Northern California. While Caltrans maintains these state highways, their geographical location within the County requires coordination to ensure safe and efficient use of the federal, state, and local roadway network.

There are also existing relationships between the County and Caltrans transportation planning and engineering divisions. When opportunities present themselves to coordinate on specific projects, the County and Caltrans have entered into Cooperative Agreements that relate to project planning, funding,

[5] www.TRPA.org
[6] http://www.dot.ca.gov/hq/env/stormwater/

implementation, and post-project maintenance. In addition to project implementation, the County is also the recipient of various grants that are administered by Caltrans that range from transit planning and water quality projects to bicycle trail projects.

South Tahoe Public Utility District

The South Tahoe Public Utility District (STPUD) is a public agency formed in 1950. STPUD provides wastewater collection, treatment, and drinking water to the City of South Lake Tahoe and segments of the unincorporated portion of the County within the Tahoe Basin and consists of over 14,000 residential water connections, 660 commercial and government sites, and 13 active wells. STPUD's infrastructure also includes over 400 miles of sewer lines within its service area, much of which resides within the County right-of-way. Due to the fact that many sewer lines are located under County roads, the County and STPUD have developed a cooperative relationship to ensure access for maintenance purposes and to reduce conflicts during the implementation and maintenance of EIP projects. In some cases, conflicts with proposed storm water improvements arise requiring the relocation of the STPUD facilities.

In addition to providing water and sewer services, STPUD has made valiant efforts to protect the region's water resources. As part of this effort, STPUD has developed a tertiary reclamation wastewater treatment system to treat all water at its treatment facility. Upon treating the water, the water is pumped via export lines to reservoirs outside of the Tahoe Basin which is later used for irrigation purposes. Construction of this facility assisted in achieving the mandates under the Porter-Cologne Act, which required all wastewater to be treated and exported from the Tahoe Basin.

United States Forest Service – Lake Tahoe Basin Management Unit (USFS-LTBMU)

In 1973 the United States Forest Service (USFS) established the Lake Tahoe Basin Management Unit (LTBMU). The LTBMU is consistent with the jurisdictional boundaries of the TRPA and manages approximately 80% of the land mass in the Lake Tahoe Basin. The LTBMU reflects a unique National Forest that lies within the Sierra Nevada geologic basin, along the border of California and Nevada. It encompasses over 150,000 acres of National Forest lands, and ranges in altitude above sea level from 6,225 feet at lake level to 10,881 feet at Freel Peak, overlooking the City of South Lake Tahoe. This land mass consists of typical National Forest tracts as well as thousands of urban parcels that are under the ownership of the United States government and are deemed unbuildable. Many of these parcels are located in the subdivision areas of unincorporated El Dorado County.

The purpose of the LTBMU is to protect Lake Tahoe and its water quality by managing a diverse range of resources, particularly the complex watershed systems that form the basin surrounding the lake. Conservation, restoration and protection programs also include forest health and hazardous fuels management, habitat, and wilderness management to name a few. The LTBMU has become known for pioneering programs and techniques in watershed management, environmental education and resource interpretation programs, fisheries and stream restoration.[7]

In addition to the typical mandates associated with the USFS, the LTBMU is also a major funding partner due to the passage of the Southern Nevada Public Lands Management Act (SNPLMA) which was signed into law in 1998 and allows for the sale of public lands in and around the Las Vegas area within Clark County located in Southern Nevada. In November 2003, the Act was amended to direct $300 million, over a period of eight years, to Lake Tahoe for implementation of the EIP. Projects that are funded by SNPLMA are submitted each year to the Secretary of Interior for approval and must meet the following minimum criteria:

[7] http://www.fs.fed.us/r5/ltbmu/

- Be the responsibility of the federal government in the Environmental Improvement Program
- Have a willing and ready federal sponsor

With the passage of SNPLMA, the County has been eligible and has received funds for the construction of various EIP projects within the County portion of the Tahoe Basin.

In addition to being a funding partner to the County, the USFS grants Special Use Permits to the County to allow water quality improvement facilities to be constructed on portions of their property. The County also works with the USFS through the National Environmental Protection Act process prior to project construction.

Tahoe Resource Conservation District

The Tahoe Resource Conservation District (TRCD) was formed by the California Legislature in 1974 to address local resource conservation needs with particular emphasis being placed on conservation of soil and water resources. TRCD works for the general public interest and benefit by providing technical assistance and guidance on soil and water conservation, control of runoff, prevention and control of soil erosion, protection of water quality and reclamation, and the development of storage and distribution of water and treatment. The TRCD works closely with the Natural Resource Conservation Service and all the local California governments. Like all of the implementing and regulatory agencies, TRCD is working to reverse the current trend in declining clarity in Lake Tahoe through implementation of its various programs.[8]

In regard to El Dorado County, the County enlists technical assistance and public outreach support from TRCD during the planning, design, and construction phases when implementing EIP projects. The County has also been the recipient of erosion control funds provided by the Bureau of Reclamation, which are passed through to the County via the TRCD. The TRCD will play a major role in assisting the County in meeting the Permit provisions.

California Tahoe Conservancy

The California Tahoe Conservancy (CTC) is an independent State agency within the Resources Agency of the State of California. It was established by State law in 1984 (Chapter 1239, Statutes of 1984). Its jurisdiction extends to the California side of the Tahoe Basin. The CTC is not a regulatory agency; it was established to develop and implement programs through acquisitions and site improvements to improve water quality in Lake Tahoe, preserve the scenic beauty and recreational opportunities of the region, provide public access, preserve wildlife habitat areas, and manage and restore lands to protect the natural environment.[9]

The County and CTC have long been partners in completing projects outlined in the CTC's 1987 report titled "A Report on Soil Erosion Control Needs and Projects in the Lake Tahoe Basin," which outlines priority projects aimed at preserving and restoring the waters within the Tahoe Basin. According to information provided by the CTC; the CTC has awarded grants totaling more than $35 million for 71 projects. These will result in the revegetation of about 120 acres of disturbed land and the construction of 82 miles of roadside drainage facilities, 13 miles of rock-lined and vegetated channel protection, and 2.6 miles of retaining walls. Some 360 sediment traps and treatment basins will also be constructed. More than 50 acres of wetland and meadow are being restored as well."

In addition to the Soil Erosion Control Grant Program, the County has also been the recipient of funds from other CTC programs which include the Public Access and Recreation, Wildlife, and the Stream Environment Zone programs. Utilizing funds from all of the abovementioned programs, the County has

[8] http://tahoercd.org/
[9] http://www.tahoecons.ca.gov/

evolved from focusing strictly on erosion control projects to taking an approach that focuses on the ecological restoration of the overall watershed.

In addition to being a funding partner to the County, the CTC grants permission to the County to allow water quality improvement facilities to be constructed on portions of their property. The CTC is also a technical partner to the County, participating in project design, discussion, and review.

Lahontan Regional Water Board

It is the responsibility of the Regional Water Boards to preserve and enhance the quality of the State's waters through the development of water quality control plans (Basin Plans) and the issuance of waste discharge requirements (WDRs) and NPDES permits.[10]

The Lahontan Regional Water Board jurisdiction extends from the Oregon border to the northern Mohave Desert and includes all of California east of the Sierra Nevada crest. The name of the region is derived from the prehistoric Lake Lahontan, which once covered much of the State of Nevada. The region is 570 miles long, has a total area of 33,131 square miles and includes the highest (Mount Whitney) and the lowest (Death Valley) points in the contiguous United States. The region includes over 700 lakes, 3,170 miles of stream and 1,581 square miles of ground water basins. Water quality problems in the region are largely related to nonpoint sources including erosion from construction, timber harvesting, and livestock grazing; storm water; acid drainage from inactive mines; and individual wastewater disposal systems.[11]

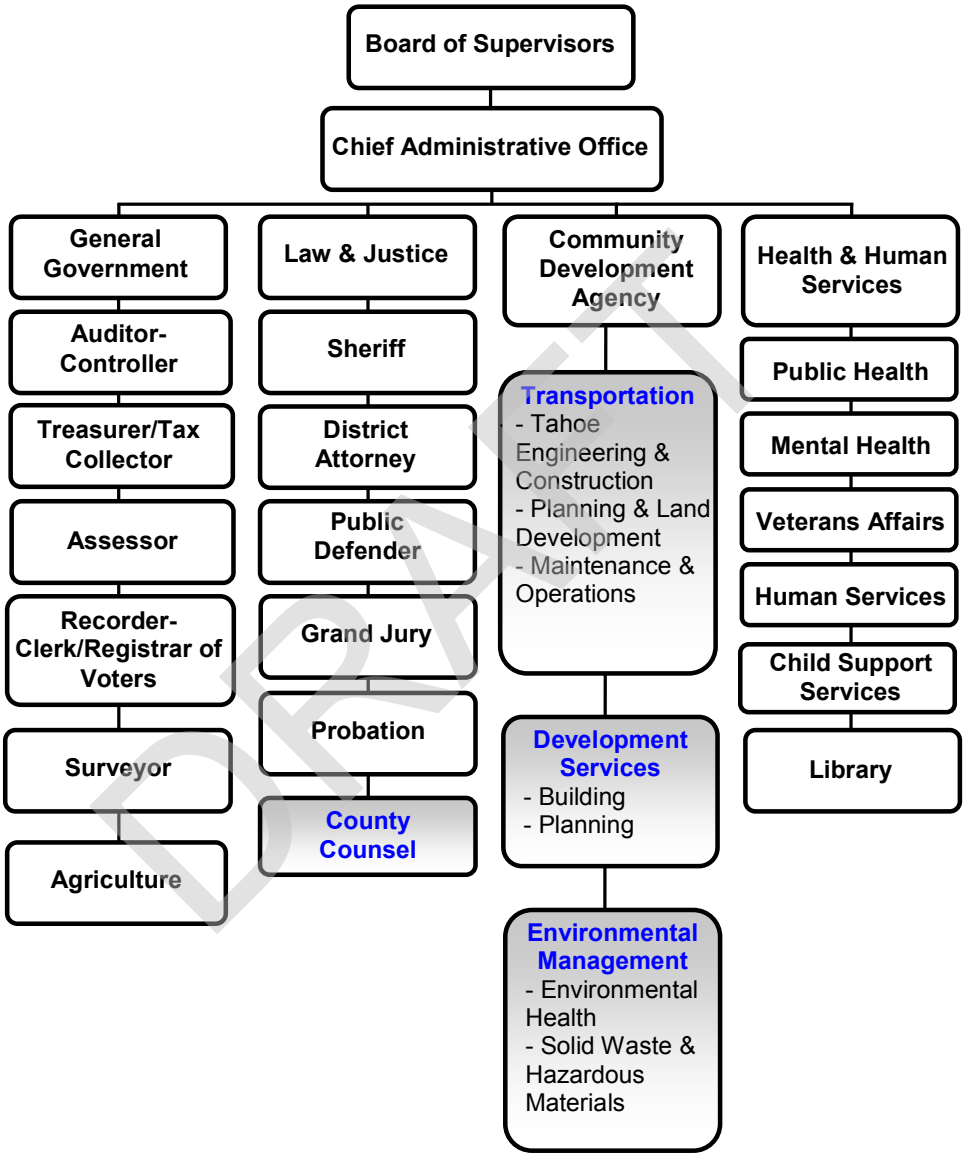
The Lahontan Regional Water Board regulates storm water discharges in the Tahoe Basin. The Lahontan Regional Water Board adopted area wide storm water WDRs for local governments (Placer, El Dorado County and the City of South Lake Tahoe) in 1984. Following the development of the US Environmental Protection Agency (USEPA) storm water regulations, the Lahontan Regional Water Board adopted municipal storm water permits for these entities in 1992 and has subsequently renewed the permit approximately every five years including 2000, 2005 and, most recently, 2011. The Lahontan Regional Water Board works closely with the County during the development and subsequent implementation of the Storm Water Management Plan. The Lahontan Regional Water Board also coordinates with the County on a number of other activities including the development and implementation of restoration, erosion, and storm water treatment control projects within the Tahoe Basin.

[10] http://www.waterboards.ca.gov/npdes/index.html#role
[11] Water Quality Control Plan for the Lahontan Region, August 1995

1.6.2 Intra-Departmental Coordination

The County's Community Development Agency -Transportation Division (TD) – Tahoe Engineering Unit currently has primary responsibility for the development and implementation of the TSWMP. However, the implementation of the TSWMP requires the assistance of and close coordination with several other County Divisions as identified in **Figure 1-4**.

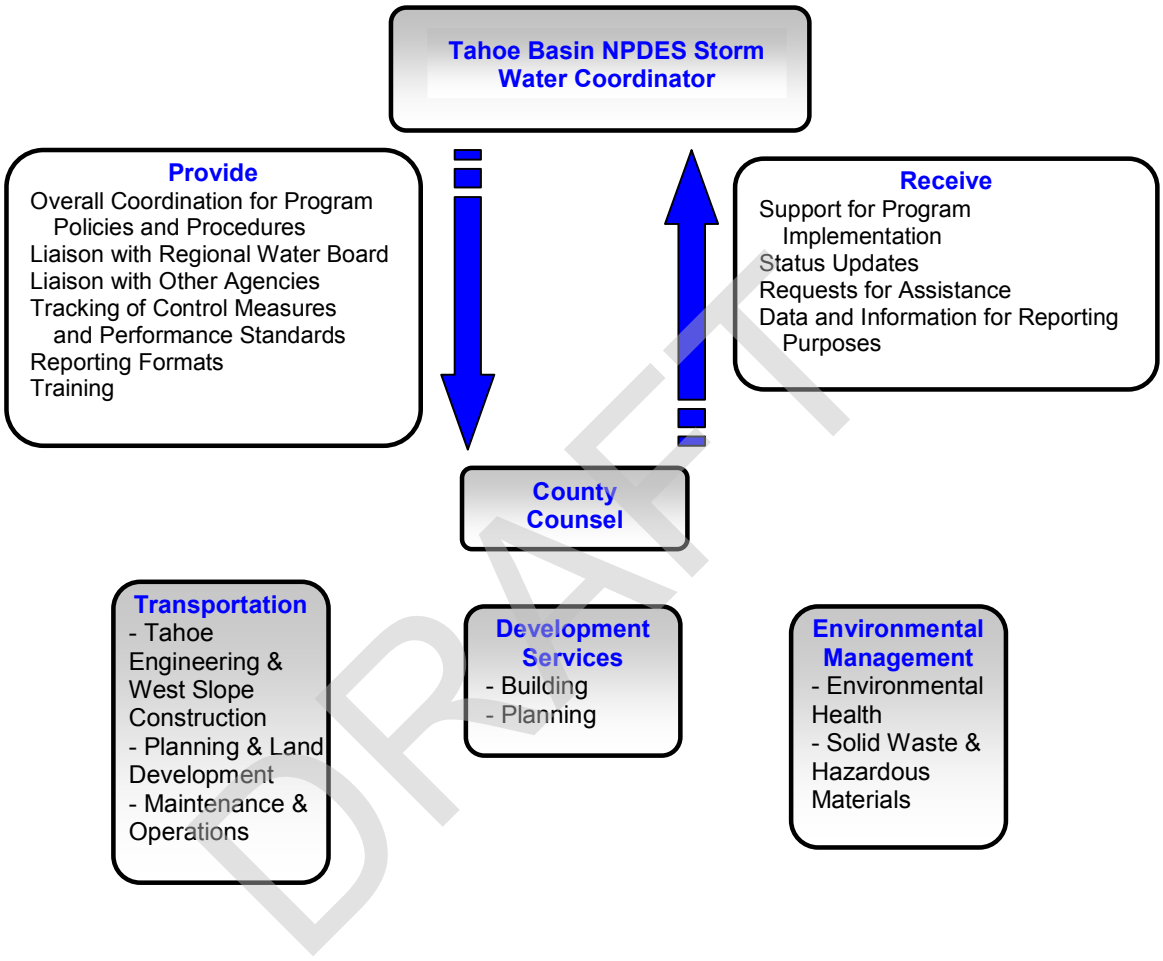
Figure 1-4. El Dorado County Organization Chart



The shaded boxes represent the primary Divisions involved in the development and implementation of the TSWMP. Contact information will be provided and updated in the annual reports.

The County's NPDES Storm Water Coordinator resides in the Transportation Division.[12] The NPDES Storm Water Coordinator has primary responsibility for tracking the development and implementation of the Control Measures and deliverables and provides overall support and coordination for the responsible County Divisions. The relationship between the Coordinator and County Divisions is illustrated in **Figure 1-5** below.

Figure 1-5. County of El Dorado Tahoe Basin Storm Water Coordinator



[12] The County's Tahoe Basin Storm Water Coordinator is currently assigned to the Transportation Division – Tahoe Engineering Unit. The assignment and associated responsibilities may be reassigned as this program matures and as titles and responsibilities change internally. Any changes to the management structure will be summarized within the annual reports.

A brief description of Division responsibilities are provided in **Table 1-4**.

Table 1-4. Primary Responsibilities of the County Divisions

Key County Department/Division for Development/Implementation of the TSWMP	Primary Departmental Responsibilities
Transportation Division (TD) • Tahoe Engineering Unit • Maintenance and Operations Division • Transportation Planning and Land Development Division	TD is responsible for implementing, monitoring, and/or overseeing all improvements and maintenance activities undertaken on County roads. TD is also responsible for planning, developing, and administering the County's transportation, transit, and non-motorized transportation modes as well as administering the County storm water ordinance.
Development Services Division (DSD) • Planning Division • Building Division	The *Planning Division* is responsible for coordinating the review and approval processes for all proposed land development/redevelopment. The *Building Division* is responsible for administering the Grading, Erosion and Sediment Control Ordinance regulating grading on private property as well as the building permit program, including management of grading associated with the construction of individual, single family homes.
Environmental Management Division (EMD) • Environmental Health Division • Solid Waste and Hazardous Materials Division	The Environmental Management Division is responsible for conducting restaurant inspections, managing the County's solid waste, hazardous waste, used tire, and used oil programs, overseeing the County's marina bilge waste management program, managing the County's vector control program, and managing the County's separately permitted waste treatment plants.
Agriculture Department	The Department of Agriculture is responsible for implementing the County's pesticide and herbicide management program as well as the noxious weeds abatement program.
County Counsel	County Counsel serves as the County's attorney and provides legal advice and representation to the El Dorado County Board of Supervisors, County Divisions, and other public officers and agencies in civil matters.

The County Divisions listed above meet on an on-going basis (at least once per quarter) in order to facilitate the communication and coordination that is necessary to implement the TSWMP.

Each of the key Divisions has a responsibility for the day-to-day implementation of the TSWMP. A general overview of the program elements and responsible County Division is presented in **Table 1-5**. For specific information regarding each Control Measure and Performance Standard, the appropriate TSWMP section should be consulted.

Table 1-5. County Divisions Responsible for Implementing the Storm Water Program

	Program Management	Construction	Industrial/ Commercial Facilities	Storm Water Facilities	Illicit Discharge Detection & Elimination	Develop-ment	Public Education	Municipal Training	Fiscal Analysis	Reporting
NPDES Storm Water Coordinator	P	S	S	P	S	S	P	P	P	P
Transportation Division – Tahoe Engineering Unit	P	S	S	P	P	S	P	P	P	P
Development Services Division – Building Div.	S	P			S	P	S		S	S
Environmental Management Division	S		P		P		S		S	S
Maintenance & Operations Division	S			S	S		S	S	S	S
Department of Agriculture							S			
County Counsel	S				S					S

P – Primary responsibility
S – Provides support to primary Division

The County has been meeting quarterly with all responsible divisions as a Storm Water Advisory Committee (SWAC) to keep the program on track and identify responsibilities. The SWAC consists of staff from Engineering, Maintenance, Development Services and Environmental Management. The SWAC will continue to convene quarterly throughout the Permit term and for the life of the SMWP.

1.7 LEGAL AUTHORITY

The Permit requires that the County implement a Storm Water Management Program to reduce the pollutants in storm water discharges. Central to this Program is the verification that the County has adequate legal authority to regulate the discharge of pollutants to and from the storm water collection, conveyance, and treatment facilities. The legal authority shall establish, maintain, and enforce the necessary legal authority to prohibit, including, but not limited to:

- Illicit connections and illicit discharges to its collection, conveyance, and treatment facilities,
- The discharge of non-storm water to the Permittees' storm water collection, conveyance, and treatment facilities.
- Control through interagency agreement, the contribution of pollutants from one municipal jurisdiction to another,
- Require persons within their jurisdiction to comply with conditions in the Permittees' ordinances, permits, or orders (i.e. hold dischargers to its collection, conveyance, and treatment facilities accountable for their contributions of pollutants and flows),
- Remove illicit connections to public storm water collection, conveyance, and treatment facilities,
- Control the discharge of spills, dumping, or material disposal other than storm water to public storm water collection, conveyance, and treatment facilities,
- Utilize enforcement measures (e.g., stop work orders, notice of violations, fines, referral to City, County, and/ or District Attorneys, etc.) by ordinances, permits, contracts, orders, administrative authority, and civil and criminal prosecution,
- Control the quality of storm water runoff from industrial and construction sites,
- Carry out all inspections, surveillance and monitoring procedures necessary to determine compliance and non-compliance with permit conditions including the prohibition on illicit discharges, and
- Require the use of control measures to prevent or reduce the discharge of pollutants to the maximum extent practicable.

The County is a legal entity that must administer, implement, and enforce the Storm Water Management Program within its jurisdiction. The County has broad legal authority as a result of storm water, wastewater, grading, solid and hazardous materials regulations, and various public nuisance ordinances to address storm water quality issues. The County has several existing ordinances that provide the foundation for the required legal authority. These ordinances are briefly described below in **Table 1-8**.

Table 1-8. Existing Storm Water Discharges-Related Legal Authority

Ordinance	Section	Area of Focus
Storm Water Quality	Section 8.79	Storm water and non-storm water discharges and connections
Solid Waste Management	Section 8.42 and 8.42.700	Littering, accumulation of solid waste or illegal dumping on public or private property
Hazardous Materials Management	Section 8.38 and 8.38.020	Hazardous materials management including the handling, storage, use, transport, processing or disposal of any hazardous material or hazardous waste
Private Sewage Disposal	Section 15.32 and 15.32.060	Sewage or sewage effluent disposal
Well Standards	Section 8.39	Ground water pollution/ contamination
Park Rules and Regulations	Section 9.46.400	Pollution/ contamination of any park reservoir, lake, stream, waterway or other body of water
Grading, Erosion, and Sediment Control	Section 15.14	Grading on private property to, among other things, avoid pollution of watercourses with nutrients, sediments or other earthen materials generated on or caused by surface runoff on or across the permit area; and to ensure that the intended use of a graded site is consistent with the El Dorado County general plan.

County of El Dorado - County Counsel has provided a certified statement of legal authority (Appendix F). The certified statement recognizes that the County adopted a Tahoe Basin Storm Water Quality Ordinance on February 12, 2013 (Appendix C). Through this Ordinance and other urban runoff related Ordinances applicable in the Lake Tahoe Basin; the County possesses the adequate legal authority to comply with all Permit conditions.

RESPONSIBILITY

The Storm Water Coordinator in the Transportation Division – Tahoe Engineering Unit has primary responsibility for all of the Performance Standards for this Control Measure. The Transportation Division, Development Services Division, Environmental Management Division, County Counsel, and Tahoe Regional Planning Agency will provide support for this Control Measure.

Section 2
CONSTRUCTION COMPONENT (CO)

2.1 OVERVIEW

The purpose of the Construction Component is to coordinate County programs and resources to effectively reduce pollutants in runoff from construction sites during all construction phases. This is accomplished through the following:

- Providing adequate legal authority to control pollutants from construction sites with land disturbance of three cubic yards or more;
- Reviewing construction plans and issuing grading permits consistent with County, TRPA, and Lahontan Regional Water Board (Lahontan) requirements;
- Requiring Best Management Practices (BMPs) to control sediment and pollutants from construction sites;
- Maintaining a tracking system (inventory) of active construction sites;
- Prioritizing construction activities and associated inspections based on the threat to water quality;
- Inspecting construction sites to ensure proper implementation of BMPs and compliance with County requirements and all applicable Permit conditions;
- Bringing forth enforcement actions for sites in violation of County requirements and advising Lahontan of apparent violations of the Construction General Permit; and
- Providing regular internal (County staff) and external (contractors, developers, etc.) training on applicable components of the Storm Water Program and the Construction General Permit.

2.2 PERMIT REQUIREMENTS

2.2.1 Construction General Permit Requirements

Lahontan adopted Waste Discharge Requirements (WDR) and a NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity Involving Land Disturbance in the Lake Tahoe Hydrologic Unit, Order No. R6T-2011-0019 on April 14, 2011 (Lahontan Construction General Permit). The Lahontan Construction General Permit requires all dischargers, where construction activity disturbs one acre or more (or is part of a larger common plan of development that will disturb one acre or more) to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies BMPs that will reduce pollutants in storm water discharges from construction sites and prevent erosion as well as identify Stream Environment Zone (SEZ) disturbances and document specific sampling locations that will be utilized during storm events
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the United States (Waters of the U.S.)
- Perform inspections of all BMPs

To obtain authorization, the landowner and/or project proponent (discharger) must submit a Notice of Intent (NOI) and the proper fee to Lahontan prior to starting construction activities.

2.2.2 Municipal NPDES Permit Requirements

The Municipal NPDES Permit for Storm Water/Urban Runoff Discharges (Order No. R6T-2011-0101A1) was adopted by Lahontan on October 10, 2012. Provision III.B.1 requires that the Permittees develop and implement a Construction Component within its Storm Water Management Plan (TSWMP) to reduce pollutants in runoff from construction sites. The Permit focuses on the development, implementation, and reporting of the following Control Measures:

- Construction Site Inventory
- Construction Site Outreach
- Construction Site Prioritization and Inspection
- Construction Site Enforcement
- Oversight by Others

2.3 CONSTRUCTION SITE ENFORCEMENT OVERSIGHT BY OTHERS CONTROL MEASURES

The Control Measures outlined in **Table 2-1** were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements.

Table 2-1. Control Measures for the Construction Component

ID	Control Measure	Permit Provision(s) Addressed
CO1	Construction Site Inventory	III.B.1.A
CO2	Construction Site Outreach	III.B.1.B
CO3	Construction Site Prioritization and Inspection	III.B.1.C
CO4	Construction Site Enforcement	III.B.1.D
CO5	Oversight by Others	III.B.1.E

2.4 SUPPORTING COMPONENTS

The Public Education Component (Section 7) will utilize appropriate media outlets to increase public and County staff knowledge regarding the impacts of urban runoff, problem identification, potential BMP solutions, and reduction of pollutants released into the environment. This will be accomplished through annual workshops and distribution of educational materials at appropriate locations. Changes made in County policies and planning strategies promoted in the Program Management Component (Section 1) will help ensure that storm water quality and watershed principles are integrated into the development process and building plans.

CO1 – CONSTRUCTION SITE INVENTORY

DESCRIPTION

The tracking of construction sites from the planning stage to project completion is important for assessing the overall magnitude of the construction activities within the Tahoe Basin. To effectively inventory and monitor construction sites and activities, it is essential that the County develop a tracking system and associated attributes that are updated on a permit by permit basis. Maintaining an inventory and database to track all stages of the construction process is the foundation of construction-related source identification and helps ensure that pollution prevention and source control are emphasized during all phases of the construction process. This will also allow the County to allocate the limited existing human resources in a cost effective and efficient manner that will assist in reducing a project's threat to water quality.

EXISTING BMPS AND RELATED ACTIVITIES

The County Information Technology Office maintains the County-wide database, referred to as the Land Management Information System (LMIS). The LMIS is an interactive main frame system that tracks a variety of information from all County Divisions. The Development Services Division (DSD) uses the LMIS as a tracking system (database) for tracking permits, inspections, and enforcement activities, as well as storing all other relevant site information. The DSD tracks this information for expansion/additions, garages, pools/spas, rebuilds, driveways, grading, and new single family dwellings. The LMIS, in part, contains the following categories:

- Assessors Information
    - Assessors Parcel Number (APN)
    - Site Owner Contact Information
    - Land Use Type
- Permit Information
    - Permit Number and Type
    - Type of Project and Permit
    - Permit Status
    - Applicant Contact Information
    - Permit History
- Inspection and Enforcement Information
    - Inspectors Name
    - Inspection Dates and Times
    - Findings of Inspections and Field Approvals
    - Follow Up and Enforcement Actions Taken
- Other Information
    - Dates for all Transactions
    - Agency/Department Routings
    - Comments

DSD uses TRPA maps during the plan review process to determine the watershed data, land capability, and other related site conditions for the construction site. The County submits annual Construction Site Inventory Reports to Lahontan for active construction projects in the Lake Tahoe Basin portion of the County that are projected to include the excavation of more than three cubic yards.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Enhance current tracking system for construction projects.
    - Determine additional information to be tracked in the LMIS by the County. Additional fields may include:
        - Watershed Data (Name, Priority)
        - Nearby Surface Waters
        - Land Capability
        - SWPPP Information and Inspections (Waste Discharge Identification Number)
        - Site Slope
        - Overall Site Priority
        - Field and Weather Conditions
        - Observed Facility Conditions
        - A Summary of Enforcement Actions
    - Develop the database to link to a Geographic Information System (GIS) to produce spatial analysis and acquire spatial information.
- Maintain tracking system (database) of active construction sites based on pre-grade inspections and security returns.
- Update inventory of construction sites within El Dorado County in the Tahoe Basin subject to local grading and construction permits that involve more than three cubic yards of soil disturbance.
- Submit Construction Site Inventory Report by March 15, 2014 and annually thereafter.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Conduct an annual audit to verify the accuracy and use of the tracking system.
- Track the number of construction sites within the inventory and the increase/decrease from year to year.

RESPONSIBILITY

The DSD has primary responsibility for the Performance Standards within Control Measure CO1. The Storm Water Coordinator within the Transportation Division – Tahoe Engineering Unit (TD-TEU) will provide support for this Control Measure.

CO2 – CONSTRUCTION SITE OUTREACH

DESCRIPTION

The Construction Site Outreach Control Measure focuses on education and training to increase awareness and prompt behavioral changes within various construction trades. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. This will be accomplished through workshops, trainings, and distribution of educational materials as well as expanded outreach programs. To increase awareness, regular training for County staff and other responsible parties (i.e., contractors, property owners, developers, and project applicants) related to applicable components of the Storm Water Management Program, County and TRPA Codes, and the Construction General Permit will be conducted on an annual basis and will include coordination with other Basin partners.

The overall goals and objectives of the training program for the TSWMP are to:

- Promote the effective implementation of the storm water management program
- Create a cohesive storm water education program that will prompt the behavioral changes needed to improve water quality
- Increase the general understanding of water pollution problems and pollution prevention techniques
- Increase the specific knowledge of the TSWMP and its requirements

Specific training efforts for the Construction Component are summarized in **Table 2-2** below.

Table 2-2. Construction Component Training

Audience	Format	Subject Material	Schedule or Frequency
• Storm water construction inspectors • Building inspectors • Grading permit inspectors	• Classroom • Field demos • Tailgate sessions	• Overview of storm water management • Storm water impacts of land development • Storm water ordinance and enforcement policy • Construction storm water inspection training • BMPs for construction activities • Tracking database	• Annually
• Grading plan and SWPPP reviewers	• Classroom • Field demos	• Overview of storm water management • BMPs for construction activities • SWPPP requirements • Tracking database	• Once every two years (with half of the staff being trained each year)

EXISTING BMPS AND RELATED ACTIVITIES

Internal: County Staff

The County is implementing the TSWMP by establishing and completing program specific Control Measures and Performance Standards. To ensure that the various division personnel understand their roles and responsibilities under the TSWMP, the County will develop and provide a series of classroom and field training modules. By having responsible division staff attend the training modules, the County will be able to effectively implement the TSWMP.

The County currently provides training to DSD and TD staff and inspectors on the impacts of urban runoff; potential BMP solutions; elimination of pollutants released into the environment in order to protect water quality; and permit and inspection requirements. The training for County staff consists of internal sessions as well as sessions provided by the TRPA, the Tahoe Resource Conservation District (TRCD), Lahontan, and other Basin partners.

External: Responsible Parties (Contractors, Property Owners, Developers, and Project Applicants)

The County provides education to contractors, property owners, developers, and project applicants on the impacts of urban runoff; potential BMP solutions; elimination of pollutants released into the environment; and permit and inspection requirements. The County conducts education and training for construction activities through the County's website, distribution of educational materials, and one-on-one discussions during site inspections by County staff. The County plays a secondary role by assisting Basin partners (such as TRPA and TRCD) in conducting educational workshops and events.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Enhance construction education and training programs to increase the level of awareness regarding:
    - Municipal NPDES Permit; Construction General Permit; and other federal, state, regional, and local water quality regulations applicable to construction/grading activities
    - The connection between construction activities and water quality impacts
    - How erosion can be prevented
    - How impacts to receiving water bodies resulting from construction activities can be minimized through the proper installation of BMPs
- Increase awareness regarding construction activities by producing/distributing educational materials, improving the information on the County's website, and conducting additional workshops/events.
- Utilize resources such as the Sediment Source Control Handbook, BMP handbooks, and other BMP references when training and educating
- Continue to improve and implement construction education and training programs

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Conduct audits to verify the results of the construction education and training programs.
- Document workshops, trainings, educational material distribution, and events.

To document the implementation of the training program it is necessary for the County to keep appropriate attendance records of the various training sessions. A summary of each training session, including staff name, department, type of training, and date of training, will be included in the Annual Report. The standardized tracking sheet, such as the one presented below, may be used to track all the trainings that are attended.

Training Log for the Storm Water Program

Name of Workshop/Training: Sponsoring Organization/Department: Instructor: General Description of the Subject Matter: Location: Date:				
Name of Attendee(s)	**Title**	**Department**	**Phone**	**E-mail**

Maintaining records of training provided to staff allows the County to:

- Determine which staff requires which training
- Determine when training sessions must be conducted
- Document evidence of training for enforcement and compliance purposes including copies of follow-up surveys and quizzes

RESPONSIBILITY

DSD has primary responsibility for the Performance Standards within Control Measure CO2. The Storm Water Coordinator, the Environmental Management Division (EMD), and the TRPA will provide support for this Control Measure.

CO3 – CONSTRUCTION SITE PRIORITIZATION AND INSPECTION

PRIORITIZATION

DESCRIPTION

Consistent with Board Order No. R6T-2011-0101A1, construction sites which disturb more than three cubic yards of soil need to be prioritized based on a set of criteria intended to identify their threat to water quality. The Construction Site Prioritization and Inspection Control Measure allows the County to focus its inspection resources in areas that pose the greatest threat to water quality. This prioritization will help ensure that sites with the highest threat to water quality will be inspected more frequently and assist the County in educating those responsible for projects deemed to be of high priority.

EXISTING BMPS AND RELATED ACTIVITIES

The DSD currently conducts inspections as they receive inspection requests and complaints from agencies and the public. While the County does not have a formal prioritization process for construction sites, an informal process does exist to utilize certain site criteria to prioritize each site as high, medium, or low.

The County has proposed a prioritization process noted below that will be fully developed in 2013/2014. The following criteria is part of the proposed prioritization process to determine the threat to water quality and inspection frequency based on high, medium, or low priority.

Upon initial site visits, the preliminary prioritization map would be utilized by the County to assess the existing priority assigned to each project. The site may be reprioritized after initial inspection at the discretion of the inspector. In addition, some projects may be determined to be of such a small scale and of minimal threat that additional inspections may not be warranted throughout the life of the project.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Develop and approve the use of a prioritization process for construction site activities based on threat to water quality. Threat will be prioritized within the inventory as a high, medium, or low threat to water quality with corresponding inspection frequencies.
    - In evaluating threat to water quality, the County will consider the following:
        - Potential for Soil Erosion Based on Land Capability
        - Steepness of Slope within the Project Area
        - Scope and Size of Project
        - Proximity to EIP Projects and SEZ
        - Stage of Construction
        - Proximity to Receiving Waters (<50 feet, 100 feet, and 200 feet to receiving waters)
        - Priority Watershed
        - Length of Construction
    - Enhance Construction Site Inventory (see CO1) to include prioritization ranking.
    - Inspect high priority sites once per week, and medium and low priority sites as needed.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Conduct audits to verify the accuracy, validity, and use of the prioritization method.
- Track the number of construction sites that are high, medium, or low priority and the increases/decreases from year to year.

RESPONSIBILITY

The DSD has primary responsibility for the Performance Standards within Control Measure CO3. The Storm Water Coordinator (currently assigned to the TD), and the TRPA will provide support for this Control Measure.

INSPECTIONS

DESCRIPTION

Proper inspection processes and frequencies are critical for the ultimate success of the Construction Program Component. An effective construction inspection program requires having adequate legal authority to enforce County requirements, tracking active construction sites to identify repeat violators, and conducting inspections to ensure BMPs are being implemented and maintained properly. Inspectors should also be aware of and be able to identify storm water quality issues and understand the proper course of corrective actions if any violations are identified.

A proactive and progressive enforcement policy, and accompanying legal authority to execute it, is an important tool for providing a fair and equitable approach to bringing contractors and developers into compliance with County and Regional requirements. The County has a Storm Water Ordinance, a Grading Ordinance and other Permit provisions that give it adequate legal authority to enforce water quality protection rules.

INPECTION FREQUENCY

Once the site information outlined above is analyzed for each construction site, a high, medium or low priority can be assigned to each site. Inspections shall occur at the following frequencies for the different priorities.

High Priority – Once per week

Medium Priority - As needed to protect water quality

Low Priority – As needed to protect water quality

EXISTING BMPS AND RELATED ACTIVITIES

County inspectors refer to improvement, building, and grading plans to ensure that appropriate storm water BMPs are installed and maintained properly. For a typical residential or small commercial project, the DSD is tasked with providing inspection services. The DSD website contains information on building and plan review guidelines, allows submittal of inspection requests, and provides links to other governmental agency and non-proprietary standards across a wide scope of construction related activities.

Construction sites must meet all of the conditions stated in the *El Dorado County Standard Conditions of Approval for Residential Projects.* Currently, the DSD attaches and enforces this document as part of the approved set of plans. Two on-site pre-grade inspections are required by the DSD before any work is allowed to start on the site.

The first pre-grade inspection verifies that:

- Jobsite address, Assessor's Parcel Number (APN), and owner's name is posted
- Approved plans are on the jobsite
- Surveyed property corners are staked and flagged
- Trees considered for removal are identified with ribbons wrapped around the trunk at breast height
- Proposed buildings and driveways are identified by stakes and string
- On-site sanitation facility is present

The second pre-grade inspection verifies that:

- Temporary erosion Control Measures are in place
- Vegetation protection and job site fencing are in place and meet TRPA requirements

BMPs are inspected every time a Building inspector visits the construction site throughout the construction process.

A building permit is not closed until a TRPA final inspection is approved by the County. The TRPA final inspection verifies that all required permanent BMPs are installed and functioning properly. To help ensure that BMPs are installed on all construction sites, the DSD enforces the provisions of Chapter 5 of the TRPA Code of Ordinances. A security deposit is collected equal to 110% of the cost of the approved permanent BMPs and is not released until the TRPA final inspection is approved and the permit has been closed. If the permit expires before the permit is closed, the County will file a Notice of Non-Compliance against the subject property.

County inspectors currently have the legal authority to issue Verbal Warnings, Standard Correction Notices, Notice of Inspections, and Stop Work Orders, if necessary, to ensure compliance with water quality requirements. If an inspector is unable to encourage compliance with Verbal Warnings, an incremental disciplinary process begins with a Notice of Inspection where the violations are documented and a time limit is specified for compliance (usually 24 hours). If the project is still out of compliance at the end of the time limit, a Stop Work Order is issued for all non-BMP related activity. Stop Work Orders are only issued as a last resort; after all other measures have been exhausted, to bring a site into compliance. The Stop Work Order is lifted only after compliance is achieved and a fine is paid equal to the TRPA filing fee for the project. For repeat offenders or contractors that have not filed appropriate applications, the referral policy includes notifying Lahontan.

The TD provides, upon notification, inspections for infrastructure improvements and improvements located within the County right-of-way. For projects in which the County is the project proponent, such as EIP projects, the TD inspects the project daily to ensure that all elements identified in the Temporary Erosion Control Plan and/or Storm Water Pollution Prevention Plan (SWPPP) are adhered to for compliance with permit conditions. This is accomplished by utilizing internal staff, a hired construction inspector, or both.

Performance Standards

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Continue to conduct construction site inspections for compliance with County, Lahontan, and TRPA ordinances (grading, storm water, etc.), permits (construction, grading, etc.), and the General Construction Permit Requirements. Inspections must include review of site erosion control and BMP implementation plans.

- Review SWPPPs, when applicable, and work with TRPA to require a SWPPP for any project TRPA issues a permit for in El Dorado County that is one acre or larger.
- During the construction season (May 1st through October 15th), the County will inspect, at a minimum, each high priority construction site weekly.
- Implement all follow-up actions necessary to comply with County, TRPA, and Lahontan requirements, based on site inspection findings.
- Enhance construction site inspection forms to include:
    - Checks for BMPs that include:
        - BMPs are implemented and functioning
        - Non-storm water runoff issues
        - Overall construction site deficiencies
        - Winterization compliance for active and inactive job sites
    - Enforcement (follow up) action taken
- Enhance enforcement program to assist in the implementation of sediment and erosion Control Measures. In general terms, the process should consist of the following progressions in enforcement of construction sites:
    - Verbal Warnings
    - Standard Correction Notices
    - Notice of Inspections – Details the specific violation and sets a specific deadline for compliance and advising of potential monetary fines
    - Stop Work Orders (second Notice of Violation) – All non-BMP related work must stop until compliance is achieved and a fine equal to the TRPA filing fee for the project is paid
    - Legal Action – A referral to the TRPA code enforcement unit for review and recommendation to the TRPA Governing Board
- Submit Construction Site Inspection Report by March 15 of each year throughout the life of the Permit. This report should include a detailed summary report of all active construction sites and their associated priority, all construction inspections performed, identified problems, and any planned or completed enforcement follow up activities.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Track compliance performance of construction sites with BMP implementation.
- Track the types and number of enforcement actions taken and increases/decreases from year to year.

RESPONSIBILITY

The DSD has primary responsibility for the Performance Standards within Control Measure CO3. The Storm Water Coordinator, County Counsel, and the TRPA will provide support for this Control Measure.

CO4 – CONSTRUCTION SITE ENFORCEMENT

DESCRIPTION

Effective planning of construction site activities prevents pollutants from entering the storm drain system and/or nearby surface waters. The County or TRPA currently require all projects which disturb more than three cubic yards of soil to obtain a grading permit and meet all standard conditions for approval. During the application process for a grading permit, the County or TRPA will review the application to ensure that erosion, sediment control, and storm water BMPs are adequately designed for in the site plan.

EXISTING BMPS AND RELATED ACTIVITIES

El Dorado County Grading Plan Review and Approval Process

The County, under authority of the Grading, Erosion, and Sediment Control Ordinance and the existing Memorandum of Understanding (MOU) with TRPA, is responsible for reviewing and permitting residential grading applications within the Lake Tahoe Basin consistent with the TRPA Code of Ordinances. The County currently has an established process in place to review all grading applications for erosion and sediment control BMPs prior to issuing any permit. The process includes the following items:

- Applications are specifically reviewed to ensure that all standard conditions as outlined in the *Standard Conditions of Approval for Residential Projects* have been met. This includes specific conditions for temporary and long term revegetation, slope stabilization, and drainage improvement BMPs. The Standard Conditions document is Attachment R of the existing MOU.
- The County also utilizes the *Project Review Conformance Checklist and Findings* document to ensure compliance with TRPA Environmental Thresholds including those related to air quality, water quality, soil conservation and stream environment zones, vegetation, wildlife, fisheries, noise, scenic resources, and recreation.

If the standard conditions are not met or the checklist identifies issues with the project, a permit is not issued and the application is deemed incomplete and returned to the applicant. In addition, the County has developed an annual El Dorado County Allocation Packet for all parties that have been issued residential building allocations under TRPA's building allocation program. The Allocation Packet is comprised of the following sections:

- Description of Application Packet
- Building Permit Information
- Permit Application Checklist
- Gas and Electrical Procedures
- Public Utility District Sewer and Water Guide
- Tahoe Regional Planning Agency Requirements
- Bear Resistant Garbage Enclosures
- Third Party Plan Checklist
- Local Lake Tahoe Agencies List
- School District Fees
- El Dorado County Building Department Fees

- Timber Harvest Procedures
- TD Procedures

Recently, the County has developed a robust SWPPP template for use by the County and Contractors who work on County issued projects. A SWPPP is required for all Capital Improvement and Environmental Improvement Program projects disturbing one acre or more of soil. The SWPPP is an important tool the County utilizes to ensure compliance with the Construction General Permit and systematically evaluate BMP effectiveness during the construction phase of a project. At a minimum, the County SWPPP contains the following elements:

- Introduction
- Existing Site Conditions
- Site Description
- Erosion and Sediment Control
- Post Construction Storm Water Management
- Waste Management and Disposal
- Spill Contingency Plan
- Maintenance, Inspection, and Repair
- Trainings
- Amendments

Tahoe Regional Planning Agency Plan Review and Approval Process

The TRPA under authority of the Code of Ordinances (Chapter 4.7) requires all projects which are not exempt from TRPA review as a Qualified Exempt Activity, as described in Chapter 2, be reviewed and approved by the agency. TRPA reviews projects in accordance with the TRPA's Rules of Procedure and pursuant to the applicable Code provisions. Provisions in Code Chapter 5 Compliance and Chapter 33 Grading and Construction outline specific requirements for erosion and sediment control which are also outlined in CO3.

The County has existing construction site enforcement procedures, which are outlined in the County's Code of Ordinances. These procedures include the following:

- Verbal Warnings
- Standard Correction Notices
- Notice of Inspections – Details the specific violation and sets a specific deadline for compliance and advising of potential monetary fines
- Stop Work Orders (second Notice of Violation) – All non-BMP related work must stop until compliance is achieved and a fine equal to the TRPA filing fee for the project is paid
- Legal Action – A referral to the TRPA code enforcement unit for review and recommendation to the TRPA Governing Board

The County also has a Storm Water Ordinance (Chapter 8.79 of the County's Code of Ordinances) that allows the County to enforce various water quality violations including illicit discharges and connections.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Continue to review grading applications to determine if a SWPPP is necessary and a Notice of Intent (NOI) has been submitted to comply with the Lahontan Construction General Permit.
- For all projects disturbing one acre or more, coordinate with TRPA to require SWPPPs to ensure conformance with requirements outlined in the General Construction Permit. The vast majority of projects that would require a SWPPP would be projects that are permitted directly by TRPA.
- Continue to review grading permit applications, prior to permit approval, to ensure they meet the Standard Conditions for Approval and conform to the Project Review and Conformance Checklists. The application should also address or include the following:
    - A general vicinity map identifying the project site, construction site perimeter, nearby roadways, and general topography
    - A site plan showing all proposed construction activities, drainage patterns (before and after), and anticipated storm water discharge points
    - An erosion and sediment control plan which describes the types and locations of the erosion and sediment control BMPs to be employed at the site
    - Emphasis on erosion prevention and sediment controls to supplement the erosion controls
    - Grubbing, clearing, and grading are proposed only in areas where construction will occur
    - Cut and fill locations and quantities
    - Ensure time of exposure is minimized
    - Temporary stabilization or revegetation of disturbed areas/slopes occurs rapidly following disturbance
    - All graded areas are winterized prior to October 15th of each year
- Maintain and update the annual El Dorado County Allocation Packet.
- Incorporate applicable sections of the Sediment Source Control Handbook, TRPA BMP Handbook, and the California Stormwater Quality Association's (CASQA's) Construction BMP Handbook into County BMP requirements for grading plans.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the number of grading plans reviewed by the County and how many required revisions.
- Track grading plans level of compliance with County requirements (i.e., full compliance, compliance with minor modifications, non-compliance – need to resubmit).

RESPONSIBILITY

The Storm Water Coordinator has primary responsibility for the last Performance Standard within Control Measure CO4 related to incorporating sections of the Sediment Source Control Handbook, TRPA BMP Handbook, and CASQA BMP Handbook into County requirements. The DSD has primary responsibility for the remaining Performance Standards within this Control Measure. The TRPA will provide support for this Control Measure.

CO5 – OVERSIGHT BY OTHERS

Tahoe Regional Planning Agency Plan Review and Approval Process

The TRPA under authority of the Code of Ordinances (Chapter 2) requires all projects which are not exempt from TRPA review as a Qualified Exempt Activity, as described in Chapter 2, be reviewed and approved by the agency. TRPA reviews projects in accordance with the TRPA's Rules of Procedure and pursuant to the applicable Code provisions. Provisions in Code Chapter 5 Compliance and Chapter 33 Grading and Construction outline specific requirements for erosion and sediment control which are also outlined in CO3.

Tahoe Regional Planning Agency Grading Standards

TRPA adopted the new Code of Ordinances in 2012. Several chapters in the Code provide guidance for grading and construction projects. Some of the requirements set forth in the Code of Ordinances include:

- Prohibition of grading, filling, and clearing of vegetation or disturbance of soil from October 15th to May 1st without a TRPA approved extension (Chapter 33.3.1.A)
- Grading is prohibited during any time period of precipitation, snow cover, or muddy and unstable conditions (Chapter 33.3.1.C)
- All construction sites are required to be winterized by October 15th (Chapter 33.3.1.D)
- Direct and indirect discharges of solid or liquid waste materials are prohibited (Chapter 33.3.2)
- Dust control is required for any grading activity (Chapter 33.3.3)
- Disposal of materials must be approved by TRPA and generally excess material must be exported outside the Basin (Chapter 33.3.4)
- Vegetation shall not be disturbed, injured, or removed except in accordance with the Code or conditions of project approval (Chapter 33.6)

For inspection purposes, Chapter 5 of the TRPA Code of Ordinances provides the authority for authorized TRPA representatives to conduct inspections of any project permitted by the agency at any reasonable time. Chapter 5 also provides the enforcement mechanisms available to TRPA which include:

- Correction Notice (Section 5.4.1)
- Cease and Desist Orders (Section 5.4.2)
- Permit Suspension and Revocation (Section 5.5)
- Penalties (Section 5.6)
- Forfeiture of Security (Section 5.9.4)
- Judicial Relief (Section 5.10)

REPORTING REQUIREMENTS

Section IV.C. of Attachment C of the Monitoring and Reporting Program (MRP) outlines the Construction Site Inspection Report annual reporting requirements. That Section reads as follows:

The annual report shall include a summary report of all construction inspections performed pursuant to Section II.B. of this MRP. The summary report shall include a list of all construction sites inspected, a

description of identified problems, and a discussion of any planned or completed enforcement follow up activities.

Section II.B. of the MRP states the following:

Permittees shall establish construction site inspection frequencies based on the water quality prioritization described in Permit Section III.B.1. At a minimum, Permittess shall conduct weekly inspections during the construction season of high priority construction projects and construction projects overseen by the Permittee (e.g. erosion control projects).

Permittees shall inspect each medium and low priority construction site at a frequency sufficient to ensure that sediment and other pollutants are properly controlled and that unauthorized, non-storm water discharges are prevented.

Permittees shall implement a construction site inspection documentation and tracking system to record inspection findings. At a minimum, the tracking system shall provide mechanisms to document the following:

- Inspector's name
- Date and time of inspection
- Field and weather conditions at the time of the inspection
- Inspection location
- Observed facility conditions
- A summary of follow up and enforcement actions taken, if violations are observed.

Section 3
COMMERCIAL, INDUSTRIAL, MUNICIPAL AND RESIDENTIAL COMPONENT (CIMR)

3.1 OVERVIEW

The purpose of this Component is to effectively prohibit unauthorized non-storm water discharges and reduce pollutants in storm water runoff from industrial and commercial businesses, and municipal and residential properties. Successful programs minimize threats to water quality from commercial, industrial, municipal and residential properties by conducting activities including tracking, inspecting, outreaching, and ensuring compliance at all potentially threatening sites. Because this Component essentially covers all private property within the Lake Tahoe portion of the County, significant oversight and resources are required.

3.2 PERMIT REQUIREMENTS

3.2.1 State Industrial Storm Water General Permit Requirements

The State Industrial Storm Water General Permit, CAS No. 000001, Order No. 97-03-DWQ was issued on April 17, 1997. In general, facilities designated by the Regional Board, facilities whose operators seek coverage, and facilities required by U.S. EPA storm water regulations are covered by the State's Industrial Storm Water General Permit. Primary requirements in the State's Industrial Storm Water General Permit include:

- Prohibition of unauthorized non-storm water discharges. Authorized non-storm water discharges are addressed in the Special Conditions section;
- Control of pollutant discharges using the best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT);
- Facility operators must prepare, retain on site, and implement a storm water pollution prevention plan (SWPPP). Development and implementation requirements for the SWPPPs are included in sections of the State's Industrial Storm Water General Permit. However, SWPPPs are developed emphasizing BMP implementation and elimination of unauthorized non-storm water discharges; and
- Implementation of a monitoring program to demonstrate compliance with the State's Industrial Storm Water General Permit. Allowances for alternative monitoring and group monitoring are provided in the State's Industrial Storm Water General Permit.

The State Water Resources Control Board is in the process of reissuing the State's Industrial Storm Water General Permit, and as a result the above requirements may change. Currently, there are no industrial sites located within the Lake Tahoe Basin portion of El Dorado County. Because of this, the County will not need to inspect or report on any industrial activity as part of the Permit requirements.

3.2.2 Municipal Permit Requirements

Section III.2 of the Permit requires the County develop and implement the Commercial, Industrial, Municipal and Residential Component and outline the Control Measures and Performance Standards that the program must address. The specific Permit provisions are as follows:

- Provision III.2.A - Commercial. Industrial and Municipal Site Inventory and Prioritization
- Provision III.2.B – Commercial, Industrial and Municipal Site Outreach
- Provision III.2.C - Commercial, Industrial and Municipal Site Inspections

- Provision III.2.D – Commercial, Industrial and Municipal Site Enforcement
- Provision III.2.E – Oversight by Others
- Provision III.2.F – Residential Property – Outreach and Education

3.3 CONTROL MEASURES

The Control Measures outlined in **Table 3-1** were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements.

Implementation of these Control Measures by the County will be an iterative process. After the initial commercial, industrial and municipal site inventory and prioritization (CIMR 1) is completed, it will require, at a minimum, regular updates to reflect ownership change or new businesses. Commercial and industrial site outreach regarding BMPs (CIMR 2) may occur in conjunction with initial site inspections for BMP implementation or facility operations (CIMR1). As part of the County's ongoing NPDES Program, progressive enforcement actions, including referrals to the Regional Board, will be implemented as appropriate (CIMR4). The County can take advantage of work conducted by partnering agencies, such as TRPA and Lahontan (CIMR5). Finally, outreach will be conducted to Residential property owners (CIMR6) to ensure they understand how they can improve water quality. Training modules will be developed and presented to ensure that all County inspectors can effectively implement this Component.

Table 3-1. Control Measures for the Commercial, Industrial, Municipal and Residential Component

ID	Control Measures	Permit Provision(s) Addressed
CIMR1	Commercial. Industrial and Municipal Site Inventory and Prioritization	III.2.A.
CIMR2	Commercial, Industrial and Municipal Site Outreach	III.2.B.
CIMR3	Commercial, Industrial and Municipal Site Inspections	III.2.C.
CIMR4	Commercial, Industrial and Municipal Site Enforcement	III.2.D.
CIMR5	Oversight by Others	III.2.E.
CIMR6	Residential Property – Outreach and Education	III.2.F.

3.4 SUPPORTING CONTROL MEASURES

The Program Management and Fiscal Analysis Components (Sections 1 & 9) provide the legal authority necessary to implement this Component, including site inspection and enforcement efforts.

The Illicit Discharge Detection and Elimination Component (Section 5) involves detecting and following-up on illicit discharges, which have the potential to emanate from industrial facilities, municipal facilities and/or commercial sites.

The Public Education Component (Section 7) disseminates storm water quality information to increase awareness of storm water quality concerns, thus reducing potential discharges from industrial and commercial businesses. The County will also develop and distribute BMP fact sheets targeting specific businesses.

CIMR1 – COMMERCIAL, INDUSTRIAL AND MUNICIPAL SITE INVENTORY AND PRIORITIZATION

DESCRIPTION

The Commercial, Industrial and Municipal Site Inventory and Prioritization Control Measure will ensure that the County develops and maintains an inventory of businesses that have the potential to impact storm water and/or receiving-water quality. Information for the inventory will primarily be gathered from new and existing business licenses, the Certified Unified Program Agency (CUPA) database and other related databases. The inventory will provide the basis for commercial site inspections and sources within the County, as well as outreach efforts for municipal, industrial and commercial sites, and will serve as a repository for all information regarding outreach efforts, inspections, and enforcement actions taken for each facility.

In addition, this Control Measure ensures that the industrial facilities, municipal sites and commercial businesses are appropriately prioritized as directed in the Permit. Since there are no industrial facilities that currently operate in the unincorporated area of the County, no inspections or prioritization will occur at this time. Commercial facilities will be prioritized based upon their threat to water quality. The EMD and TD-TEU staff will compile the list of commercial sites operating in the County and will prioritize them as high, medium or low based upon their potential to affect water quality. Municipal sites will be deemed as high priority and will be inspected annually by County TD staff.

EXISTING BMPS AND RELATED ACTIVITIES

The EMD is currently tracking industrial facilities and commercial businesses with CUPA responsibility using the Envision database system. This database system has been modified with specific coding to track storm water NPDES violations to help support effective implementation of the TSWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Update the existing Envision database inventory of regulated industrial facilities, municipal sites and commercial businesses.
    - Obtain list of industrial facilities and commercial businesses from Assessor's Office.
        - Cross-check the above list with information provided by EMD.
        - Augment the list of regulated businesses with an inventory of all business licenses in the Tahoe portion of the unincorporated County to ensure that a complete list is being used for the inventory and prioritization.
- Update the industrial, municipal and commercial list to include and be searchable by the following business types:
    - Industrial facilities covered by the State Industrial Storm Water General Permit: (The Tahoe Basin unincorporated portion of the County has none at this time.)
        - Manufacturing Facilities
        - Hazardous Waste Treatment, Storage, or Disposal Facilities
        - Solid Waste Transfer Stations
        - Recycling Facilities
        - Transportation Facilities

        - Sewage or Wastewater Treatment Facilities
    - Commercial businesses, including:
        - Automobile mechanical repair, maintenance, fueling, or cleaning
        - Equipment repair, maintenance, fueling, or cleaning
        - Automobile and other vehicle body repair or painting
        - Retail or wholesale fueling
        - Eating or drinking establishments
        - Mobile carpet, drape or furniture cleaning
        - Concrete mixing or cutting
        - Painting and coating
        - Golf courses, parks, ski resorts, snowmobile operations, and other recreational areas/facilities
        - Mobile pool and spa cleaning
        - Commercial pool and/or spa establishment
        - Snow removal activities
        - Boat marinas
        - Other commercial sites/sources that the County determines may contribute a significant pollutant load to its storm water collection, conveyance, and treatment facilities
    - Municipal Operations
        - Facilities/Maintenance yards
        - Waste and vactor disposal sites
        - Heavy equipment storage areas

  The following key fields are also recommended to be tracked in the tracking system:
    - Mailing address of company
    - Name and address of owner or operator
    - SIC code and SIC description, if applicable
    - Waste Discharge Identification (WDID) number, if applicable
    - Inspection-related information
    - Outreach-related information
    - Enforcement actions taken
    - Additional notes/comments
- Develop Geographical Information System (GIS) map to identify the location of the industrial, municipal and fixed commercial sites.
- Prioritize each industrial, municipal and fixed commercial site as high, medium or low. The prioritization will be based upon the sites potential to affect water quality.
- Review database regularly and update as needed to reflect ownership change or new businesses.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Compile the updated inventory for inclusion in the Annual Report and summarize any changes made to the inventory;
- Track the number of inspections and outreach efforts conducted;
- Provide a copy of the GIS map with the locations of industrial, municipal and commercial sites for inclusion in the Annual Report; and
- Perform a regular internal audit of the data to ensure its accuracy.

RESPONSIBILITY

The EMD has primary responsibility for the Performance Standards within this Control Measure. The TD-TEU has secondary responsibility for the Performance Standards within this Control Measure.

CIMR2 – COMMERCIAL, INDUSTRIAL AND MUNICIPAL SITE OUTREACH

DESCRIPTION

The Site Outreach Control Measure requires industrial, municipal and commercial site owners to be educated to help control storm water discharges and prohibit unauthorized non-storm water discharges to the storm drain system. Although the County and the TRPA may provide guidance on BMP selection, material storage, housekeeping activities, etc., the actual selection of site specific BMPs is the responsibility of the discharger.

EXISTING BMPS AND RELATED ACTIVITIES

The County has a Food Facility Information brochure currently available on its website. The EMD will use this as the basis for its outreach materials for eating and drinking establishments as well as those for other types of commercial food businesses located in the Tahoe Basin. EMD also has outreach brochures on Storm Water and Hazardous Materials. These brochures will be disseminated to appropriate businesses and will also be updated with new and available information as necessary.

The Development Services Division – Building Division (DSD-BD) operates under a memorandum of understanding (MOU) with the TRPA that the County will enforce the TRPA Code of Ordinances, including Land Use Provisions, Water Quality Control, and BMP Requirements for runoff from public and privately owned lands. As a result, DSD-BD staff performs site specific outreach on storm water issues during its inspections. DSD-BD has a Construction Industry Information brochure that it disseminates to active construction sites.

The TD - TEU manages the County's Lake Tahoe Storm Water Ordinance (Section 8.79 of the County's Code of Ordinances). TD-TEU staff has a responsibility to outreach to commercial, industrial and municipal sites about this local ordinance, and the associated enforcement mechanisms that are applicable to those business types for storm water violations.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

<u>Industrial</u>

- Review and revise the TRPA BMP Fact Sheet or develop a new BMP Fact Sheet for high-priority industrial facilities as needed. Distribute BMP fact sheet during outreach activities and via County website(s), County offices, and outreach events, as needed.
- Perform site inspections as needed.

<u>Commercial: Mobile Businesses</u>

- Refine outreach materials to include mobile businesses to ensure they are in compliance. To accomplish this, the County may take the following steps:
    - Identify mobile business types and activities to target with outreach efforts.
    - Refine guidance and outreach materials to specify the following:
        - BMPs that should be implemented to collect wastewater generated by these businesses
        - Disposal options available to business operators once the wastewater is collected
    - Determine if a sanitary sewer disposal program for permitted businesses is feasible.

        - Coordinate with the South Tahoe Public Utility District.
    - Distribute outreach and guidance materials as needed.

Commercial: Fixed Businesses

- Utilize TRPA's commercial business BMP brochure for the commercial business categories identified in CIMR1. The County may augment the information in TRPA's commercial brochure with the following:
    - Local ordinances and other applicable regulatory measures
    - Relationship of storm water program to the Lake Tahoe TMDL
    - Pollutants of concern
- Distribute appropriate materials during initial and follow-up commercial business inspections.
- Distribute appropriate materials during additional inspections and via County website(s), County offices, and outreach events.

Municipal

- TD-TEU staff will perform site inspections as needed. During an inspection, an inspector may also confirm that:
    - Each facility has appropriate permanent BMPs to control storm water and non-storm water discharges
    - Each operator has a current operating plans for facilities discharging storm water associated with industrial activity
    - A Storm Water Pollution Prevention Plan (SWPPP) is available on site
    - Appropriate training is conducted for staff working at the facility

ASSESSMENT TASKS

The assessment tasks identify those items that need to be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Provide a summary of outreach efforts.
- Provide copies of outreach materials.
- Document outreach activities.

RESPONSIBILITY

The EMD has primary responsibility for the Performance Standards within this component. The TD-TEU and the TRPA will provide support for this Control Measure.

CIMR3 – COMMERCIAL, INDUSTRIAL AND MUNICIPAL SITE INSPECTIONS DESCRIPTION

The Commercial, Industrial and Municipal Site Inspection Control Measure establishes procedures for inspecting high priority sites. The inspections ensure that the site operators have pertinent educational materials and that they comply with County, State, and Regional ordinances. Site inspections also ensure that unauthorized non-storm water discharges do not occur, and illicit connections do not exist. This Control Measure includes commercial sites that are fixed facilities, as well as mobile businesses, such as carpet cleaners, with each type of business necessitating a different approach for inspections and outreach. The types of businesses could include:

- Automobile mechanical repair, maintenance, fueling, or cleaning
- Equipment repair, maintenance, fueling, or cleaning
- Automobile and other vehicle body repair or painting
- Retail or wholesale fueling
- Eating or drinking establishments
- Mobile carpet, drape or furniture cleaning
- Concrete mixing or cutting
- Painting and coating
- Golf courses, parks, ski resorts, snowmobile operations, and other recreational areas/facilities
- Mobile pool and spa cleaning
- Commercial pool/spa facility
- Snow removal activities
- Boat marinas
- Other commercial sites/sources that the County determines may contribute a significant pollutant load to its storm water collection, conveyance, and treatment facilities

EXISTING BMPS AND RELATED ACTIVITIES

The EMD currently conducts two commercial business inspection programs:

- Certified Unified Program Agencies (CUPA) – The County is the lead agency for CUPA compliance. Businesses subject to CUPA include those with Underground Storage Tanks (i.e. fueling stations) which receive routine inspections annually, those with Aboveground Storage Tanks that store Petroleum, businesses that store hazardous materials above regulatory threshold quantities and hazardous waste generators; the latter three listed are inspected once every three years by EMD. Businesses that are not in compliance are subject to progressive enforcement, with can included administrative enforcement orders or referral to the County District Attorney's Office.
- Restaurants (Food Facilities) – The current restaurant inspections occur on an annual basis, with follow-up for significant violations occurring one day to one month later. In order to ensure that the EMD inspectors conduct thorough and consistent inspections, a Field Inspection System is used and a restaurant inspector training program is in place.

The County is currently working out the required procedures for staff from either EMD or TD-TEU to supplement the non-CUPA inspections to ensure that high priority commercial facilities are inspected once per year, per the Permit requirements. As stated above, there are no industrial sites within the County, therefore no inspections are required. Municipal sites will be inspected once per year by TD-TEU staff, per the Permit requirements.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Inspect restaurant/food facilities for storm water issues during regularly scheduled restaurant/food facility inspections, which will comprise the majority of the commercial site inspections.
- Review information tracked by the Field Inspection System and revise as needed to ensure it is consistent with the data needs and addresses BMP implementation and follow-up actions.
- Develop commercial inspection checklist for those not covered by CUPA or food facilities
- Inspect all commercial businesses at least once during the Permit term.
- Inspect sites deemed to be High Priority annually.
- For fixed commercial businesses found to be non-compliant during the first inspection, conduct a follow-up inspection to ensure business is in compliance. The follow-up inspection should occur within six months of the initial inspection.
- Conduct additional inspections as needed (e.g., if an illicit discharge is reported or a hotline call identifies an issue associated with a particular business).

ASSESSMENT TASKS

The assessment tasks identify those items that need to be tracked and reported as a part of the annual progress report and program effectiveness assessments.

- Provide a list of all commercial and municipal sites inspected, a description of identified problems, and a discussion of any planned or completed enforcement follow up activities

RESPONSIBILITY

EMD has primary responsibility for the Performance Standards within this Control Measure. TD-TEU staff will provide support for this Control Measure.

CIMR4 – COMMERCIAL, INDUSTRIAL AND MUNICIPAL SITE ENFORCEMENT

DESCRIPTION

The County has specific Ordinances relative to Storm Water management. This includes Chapter 8.79 of Title 8 – Storm Water Quality Ordinance. The County feels it has the legal authority to regulate storm water and non-storm water discharges through Code Enforcement Officials.

Current ordinances, in addition to the Storm Water Quality Ordinance, utilized by the County to manage urban runoff include the following: Hazardous Materials (Chapter 8.38); Well Standards (Chapter 8.39); Solid Waste (Chapter 8.42); Code Enforcement (Chapter 9.02); Water Resources (Section 9.46.400); Sewage Disposal (Chapter 13.12); Grading, Erosion, and Sediment Control (Chapter 15.14); Private Sewage Disposal Systems (Chapter 15.32); and Major and Minor Land Division (Sections 16.12.030 et seq. and 16.44.030 et seq.).

The Enforcement component establishes policies for handling industrial, commercial and municipal sites that are out of compliance with local codes and Ordinances. This Control Measure outlines the progressive levels of enforcement applied to facility operators not complying with County Ordinances.

This Control Measure recognizes the dual enforcement role that exists between the County and the Lahontan Regional Water Quality Board (Lahontan). For example, since some sites are regulated by both the County and Lahontan, the County will be responsible for enforcing the local codes and Ordinances that the sites violate and Lahontan is responsible for enforcing the provisions of applicable state Permits.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Implement an enforcement policy. This includes:
    - Verbal Warning, for example:
        - Violation of good housekeeping or management practices
        - Facility operator cooperative and willing to remediate
    - Notice of Noncompliance, for example:
        - First-time small spills
        - Failure to implement BMPs after receiving Verbal Warning
        - Minor infractions with minimal impact on storm drain system or the environment
        - Facility operator cooperative and willing to remediate
    - Administrative Compliance Order, for example:
        - Facility operator uncooperative
        - Second offense of similar nature
    - Citation, for example:
        - Failure to respond to Notice of Violation
        - Facility operator uncooperative
        - Major or continuous discharges
        - Potential for significant impact on storm drain system and environment

    - Legal Action / Cost recovery, appropriate for:
        - Failure to respond to enforcement actions
        - Evidence of willfully intending to cause, allow to continue, or conceal discharge in violation of County ordinances
- Track enforcement actions
- Review and modify, as necessary, the procedures for informing Lahontan of violations under their purview. The referral to Lahontan should include:
    - Name of facility
    - Operator of facility
    - Owner of facility
    - Record of violations that were noted
    - Records of communication between the County and facility owner and operator
- Follow up on inspection findings and take actions necessary for commercial, industrial and municipal sites to comply with permit and local Ordinance requirements
- Utilize Ordinance Code Section 8.79.180 as needed to issue violations and promote compliance

ASSESSMENT TASKS

The assessment tasks identify those items that need to be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Summarize businesses visited and/or inspected and any enforcement actions taken, including referrals to Lahontan, and provide this information in the Annual Report.
- Document any non-compliance with Ordinances and / or permit requirements

RESPONSIBILITY

The EMD has primary responsibility for the Performance Standards within this Control Measure. The TD-TEU has secondary responsibility for the Performance Standards within this Control Measure.

MICR 5 – OVERSIGHT FROM OTHERS

DESCRIPTION

Municipal - The municipal component is overseen by the Maintenance and Tahoe Engineering Unit within the TD. All records, inspections and reports regarding the municipal operations component will be completed by these respective Units.

Industrial / Commercial – This component will be mostly completed by EMD with assistance from the TD – Tahoe Engineering Unit. CUPA sites and non-CUPA that require inspections more than every three years will be coordinated with the various responsible divisions for successful implementation. All BMP implementation regarding commercial parcels will be done through existing TRPA codes with cooperation from the County.

Residential - This component will be overseen by the TRPA and the Tahoe Resource Conservation District (TRCD) while working with the DSD-BD for successful implementation. The County will utilize the existing Ordinances described above to require new and redeveloped parcels to retrofit with BMPs.

The County works with and supports the efforts of the TRCD and the Natural Resources Conservation Service (NRCS). TRCD and NRCS provide technical assistance on local resource issues to private landowners through its Backyard Conservation Program (BCP). Through the BCP, technical assistance is provided to landowners on storm water management, sediment and erosion control, irrigation and fertilizer management, identification and control of invasive species, wildlife habitat, and native plants. TRCD also provides education and outreach to increase awareness on defensible space, household hazardous waste disposal, recycling, drinking water source protection, and water conservation. The County will continue to utilize the TRCD's programs, staff, and relationships with landowners to assist in the delivery of education and outreach for residential areas and activities. The County plays a secondary role by assisting partner agencies (such as TRPA and TRCD) in conducting educational workshops and events. The County does not have legal authority to enforce conservation programs for residential sites. Further explanation of the County's legal authority is provided in Section 1.

The County also supports the efforts of the South Tahoe Public Utility District (STPUD), California Tahoe Conservancy (CTC), and South Tahoe Refuse (STR). The STPUD's Water Conservation Program provides education and outreach and regulates water use for all of their residential customers. The CTC works with residential landowners to coordinate the implementation of conservation practices on CTC urban lots. The STR's Recycling and Hazardous Waste Programs provides education and outreach for recycling and disposing of materials and hazardous wastes.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

Commercial – The TRPA completes most of the outreach and enforcement for commercial parcels, the County will rely on the TRPA for tracking and reporting of this information. This will include:

- An annual updated list of parcels in or out of compliance with regulations
- A description of the parcels retrofitted with BMPs
- A list of inspected parcels
- A list of parcels with enforcement actions taken including follow up actions

Residential –

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Work with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) to develop and implement an education and outreach program that targets the identified high priority properties and activities identified in the prioritization process.

  The education and outreach program may include the following elements:

  - Distribute conservation program materials at public workshops, community events, and County offices
  - Develop pollutant and/or activity specific outreach materials as needed
  - Pursue new funding opportunities to support Conservation Programs in El Dorado County
  - Support efforts of other agencies (i.e., TRCD) to write collaborative grants to support technical assistance to implement residential conservation practices in coordination with County EIP projects
  - Increase participation/presence at workshops, events, and meetings in the community
  - Invite partner agencies to present at El Dorado County workshops and events

- Meet with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) to discuss the development and implementation of incentives for residential landowners to implement their conservation practices.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the efforts conducted pursuant to the implementation strategy for the high priority areas.

RESPONSIBILITY

The TD - Tahoe Engineering Unit will oversee this Control Measure with assistance from DSD-BD. Much of the information required for compliance reporting will come from the TRPA and TRCD.

CIMR6 – RESIDENTIAL PROPERTY – OUTREACH AND EDUCATION

DESCRIPTION

The Residential Property - Outreach and Education Control Measure focuses on education and outreach to increase awareness and promote behavioral changes regarding the reduction of pollutants released into the environment in order to protect water quality and holistic management of the Tahoe Basin natural resources. The baseline implementation of the Residential Program is the countywide promotion of a designated set of pollution prevention practices for high threat water quality residential activities. However, based on the prioritization, high priority areas will receive targeted education and outreach.

EXISTING BMPS AND RELATED ACTIVITIES

The County provides education and outreach to residential landowners and responsible parties for residential construction sites. County staff disseminates information to the public through various divisions and holds contractor meetings.

As mentioned above, the County works with and supports the efforts of the TRCD and the NRCS. TRCD and NRCS provide technical assistance on local resource issues to private landowners through its BCP. Through the BCP, technical assistance is provided to landowners on storm water management, sediment and erosion control, irrigation and fertilizer management, identification and control of invasive species, wildlife habitat, and native plants. TRCD also provides education and outreach to increase awareness on defensible space, household hazardous waste disposal, recycling, drinking water source protection, and water conservation. The County will continue to utilize the TRCD's programs, staff, and relationships with landowners to assist in the delivery of education and outreach for residential areas and activities. The County plays a secondary role by assisting partner agencies (such as TRPA and TRCD) in conducting educational workshops and events.

The County also supports the efforts of the STPUD, CTC, and STR. The STPUD's Water Conservation Program provides education and outreach and regulates water use for all of their residential customers. The CTC works with residential landowners to coordinate the implementation of conservation practices on CTC urban lots. The STR's Recycling and Hazardous Waste Programs provides education and outreach for recycling and disposing of materials and hazardous wastes.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Work with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) to develop and implement an education and outreach program that targets the identified high priority residential areas and activities identified in the prioritization process.

  The education and outreach program may include the following elements:

  - Distribute conservation program materials at public workshops, community events, and County offices
  - Develop pollutant and/or activity specific outreach materials as needed
  - Pursue new funding opportunities to support Conservation Programs in El Dorado County
  - Support efforts of other agencies (i.e., TRCD) to write collaborative grants to support technical assistance to implement residential conservation practices in coordination with County EIP projects
  - Increase participation/presence at workshops, events, and meetings in the community

    - Invite partner agencies to present at El Dorado County workshops and events
- Meet with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) to discuss the development and implementation of incentives for residential landowners to implement their conservation practices.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the efforts conducted pursuant to the implementation strategy for the high priority areas.

RESPONSIBILITY

The TD - Tahoe Engineering Unit will oversee this Control Meaure with assistance from the DSD, TRPA and TRCD.

ANNUAL REPORTING REQUIREMENTS

The Annual Report shall include a summary of all commercial, industrial, and municipal site inspections performed pursuant to Section II.C of this Monitoring and Reporting Program. The summary shall include a list of all commercial, industrial, and municipal sites inspected, a description of identified problems, and a discussion of any planned or completed enforcement follow up activities.

Permittees shall establish commercial, industrial, and municipal site inspection frequencies based on the water quality prioritization described in Permit Section III.B.2. Each Permittee shall inspect each high priority commercial, industrial, and municipal site annually.

Permittees shall implement a commercial, industrial, and municipal site inspection documentation and tracking system to record inspection findings. At a minimum, the tracking system shall provide mechanisms to document the following:

- Inspector's name
- Date and time of inspection
- Field and weather conditions at the time of the inspection
- Inspection location
- Observed facility conditions
- A summary of follow up and enforcement actions taken, if violations are observed.

Section 4
STORM WATER FACILITIES INSPECTION COMPONENT (SWFI)

4.1 OVERVIEW

The County of El Dorado (County), as part of its normal operations, conducts a number of activities (e.g., storm drain cleaning, street sweeping) that mitigate the mobilization of pollutants during storm events. The purpose of the Storm Water Facilities Inspection Component is to ensure that these operations and maintenance (O&M) activities are performed in such a way as to maximize the treatment / storage capacity of BMPs, and minimize the pollutant potential for transport to the storm drain system and surface waters.

On March 15, 2013 the County submitted a PLRP to the Lahontan Regional Water Quality Control Board (Lahontan). The PLRP was adopted by the County of El Dorado Board of Supervisors on March 12, 2013. The PLRP outlines how the County intends to meet the first five year NPDES Permit requirements for reducing pollutant loading to Lake Tahoe (Attachment A). The Permit required the County to develop a PLRP by March 15, 2013 to outline its strategy to reduce its baseline fine sediment particle (FSP) pollutant load by 10%, its baseline total phosphorus (TP) pollutant load by 7% and its baseline total nitrogen (TN) pollutant load by 8% by September 30, 2016. Based upon the County's Baseline Pollutant Load Calculations, and the above-mentioned Permit requirements, the County is required to obtain 220 credits by September 30, 2016. A credit is defined as 200 pounds of fine sediment particles less than 16 μm in diameter.

The County's strategy to demonstrate compliance with this requirement is to register five (5) Urban Planning Catchments (UPCs) through the Lake Clarity Crediting Program (LCCP). The five (5) UPCs (Apalachee, Montgomery Estates Area 1, Christmas Valley, Angora 3 and Sawmill/Echo View) contain Water Quality and Erosion Control Projects that the County constructed between 2004 (baseline period) and 2012. By utilizing the Pollutant Load Reduction Model (PLRM), the County has calculated that it will obtain 251 credits when it registers the water quality and erosion control improvements constructed in the five (5) UPCs. The County does not propose to obtain credit from improved sweeping practices or advanced abrasives practices during the first 5-year Permit term. All of the credit will be obtained from infiltration improvements, road shoulder condition improvements and private property BMPs. To demonstrate the continual functioning of these improvements and to continue receiving credits for these improvements as part of the LCCP, the County will inspect and conduct assessments of its storm water facilities as required and outlined in the Permit.

4.2 PERMIT REQUIREMENTS

Attachment C of Order No. R6T-2011-101A1 contains the Pollutant Load Reduction Monitoring requirements for meeting the LCCP.

The inspection requirements outlined in Attachment C are summarized below:

- II.A – STORM WATER SYSTEM INSPECTIONS
    - Permittee shall develop and maintain an up-to-date and accurate map of its collection, conveyance and treatment facilities.
    - Permittee shall inspect storm water collection, conveyance and treatment systems annually.
    - Permittee shall implement inspection documentation and tracking systems to record inspection findings and prioritize maintenance needs.

  - Permittee shall evaluate and identify all potential pollutant sources for all storm water collection, conveyance and treatment inspections.
  - Permittee shall document and prioritize identified maintenance needs and perform needed maintenance to ensure storm water systems effectively collect, convey and treat urban runoff as designed.

- II.D – TRACTION ABRASIVE AND DEICING MATERIAL
  - The Goal is to measure the quality and quantity of traction abrasive and deicing material applied and recovered. To meet the objective the following must be implemented:
    - Develop specifications for the amounts of fine sediment particles, total nitrogen and total phosphorous allowable in material the permittee applies as traction material;
    - Develop a program to sample supplied traction abrasive material to determine whether the material meets the designed specifications;
    - Develop a system to track and record the total amounts of abrasive and deicing material applied to roads and parking areas per winter season; and
    - Develop a system to track and record the location and amount the maintenance crews, contractors or other authorized entities apply to roads within its jurisdiction.

4.3 CONTROL MEASURES

The Control Measures outlined in **Table 4-1** were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements. The Control Measures consider all major municipal facilities and activities that could potentially be sources of pollutants to the storm drain system.

Table 4-1. Control Measures for the Storm Water Facilities Inspection Component

ID	Control Measure	Permit Provision(s) Addressed
SWFI1	Storm water Collection, Conveyance and Treatment Facility Mapping	III.B.3.a.
SWFI2	Storm water Collection, Conveyance and Treatment Facility Inspections	III.B.3.b.
SWFI3	Storm water Pollutant Source Identification and Evaluation	III.B.3.c.
SWFI4	Storm water Maintenance Needs Assessment	III.B.3.d.

4.4 SUPPORTING CONTROL MEASURES

Many of the Control Measures of the Storm Water Facilities Inspection Component are supported through other Components and corresponding Control Measures. Coordination with the Illicit Discharges Detection and Elimination (IDDE) (Section 5) and Construction Components (Section 2) is imperative for proper implementation of this Component. For example, during the inspection of storm water facilities, municipal operations staff should identify and report illicit connections, illegal discharges, and signs of illegal dumping. Also, the Municipal Personnel Training and Education Component (Section 8) will be significantly interrelated to this Component.

SWFI1 – STORM WATER COLLECTION, CONVEYANCE, AND TREATMENT FACILITY MAPPING

DESCRIPTION

Mapping is an essential component of understanding where all critical infrastructure and BMPs are located in order to ensure their long term performance and function. The Permit requires that maintenance take place on all infrastructure and that all BMPs be inspected annually, at a minimum. In order to ensure that the County meets this objective, the County will keep a detailed mapping system that will be used to identify and prioritize all maintenance activities and associated infrastructure.

The overall goals and objectives of the mapping system include:

- Promote efficient and effective tracking, inspection and maintenance of BMPs;
- Facilitate timely BMP maintenance through streamlined inspections; and
- Develop a prioritization plan for BMPs and associated infrastructure based on inspection findings and annual trends.

EXISTING BMPS AND RELATED ACTIVITIES

The County currently has an up-to-date Lake Tahoe Basin Infrastructure Book (Book). This Book is compiled from existing project maps, subdivision maps and field inspections and is considered to be complete and comprehensive. The County expects that the existing County Infrastructure Book be expanded and built upon to include information necessary to track, log and update County infrastructure maintenance and BMPs. Existing GIS, CAD and Access databases will be updated and refined as necessary in order to meet the goals of this Component.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required to comply with the Permit provisions related to this Component.

- Continue to update the existing GIS based infrastructure and BMP map book; and
- Map and identify all new collection, conveyance and treatment facilities.

ASSESSMENT TASKS

Update the GIS map system to build upon existing County efforts on identifying, tracking, recording and mapping all County BMPs and related infrastructure.

Mapping of collection, conveyance and treatment facilities shall include:

- Mapping of location and identification of all newly constructed or identified infrastructure and related BMPs County wide;
- Identification and unique ID creation for all new BMPs and infrastructures; and
- Creation of a database to query information based on prioritization and maintenance needs assessment.

RESPONSIBILITY

The Transportation Division, Tahoe Engineering Unit (TD-TEU) has the primary responsibility associated with this Control Measure.

SWFI2 – STORM WATER COLLECTION, CONVEYANCE AND TREATMENT FACILITY INSPECTIONS

DESCRIPTION

The Storm Water Collection, Conveyance, and Treatment Facility Identification and Evaluation Control Measure provides for the long-term performance and integrity of the County's storm drain system and treatment facilities. The storm water collection, conveyance, and treatment facilities include:

- Storm drain inlets
- Sediment traps
- Pipes
- Culverts
- Curb and gutter
- Asphalt dikes
- Rock lined or vegetated swales
- Basins
- Vaults
- Swales
- Wetland treatment systems
- Other facilities as needed

The County will inspect its facilities at least once annually, maintain a database of inspection findings, and prioritize the storm drain inlets and other storm water system structures based on the TD-TEU's established protocols. The inspections will identify necessary maintenance, evidence of erosion, damage from snow removal or other equipment and accumulated sediment and debris (pine needles, trash, etc.), and vegetative cover, if applicable. The County will continue to document and record inspection findings in accordance with the Monitoring and Reporting Program (Permit Attachment C). A GIS-based database system will be used as an integral part of this Control Measure. Additionally, under this Control Measure the County will evaluate and identify potential pollutant sources.

EXISTING BMPS AND RELATED ACTIVITIES

The TD-TEU coordinates with the Tahoe Maintenance Division to perform inspections as part of the regular routine maintenance activities on all storm water facilities. Prior to issuance of the current Permit, the County included inspection of single sand traps, double sand traps, drop inlets, and double drop inlets under the BMP inspection program. This program involves inspection of these structures in the spring and/or fall of each year to gather specific information, including the percent filled and Global Positioning System (GPS) locations (where feasible), in order to prioritize the need for maintenance. GPS is used to identify specific types of BMPs that have been installed as part of the County's erosion control/water quality projects. Information is collected relative to County Road identification numbers, project number, and each BMP is given a corresponding GIS identification number. In cases where utilizing GPS is difficult (e.g. in areas with dense tree canopy) BMPs are identified on a hard copy map and the improvements are placed on a base map using GIS ESRI software and/or Auto CAD software. For recent construction projects the County will utilize record drawings that will provide accurate location information of recently constructed BMPs.

The information gathered during the inspections is recorded on the Data Entry Sheet specific to the type of BMP and is incorporated into GIS and a Microsoft Access database (e.g., BMP Inventory Database) to allow for identification of problem areas. This system is currently being modified to meet the requirements of the BMP Rapid Assessment Methodology (BMP RAM), which is a requirement of the LCCP and the Permit. The BMP RAM is very similar to the procedures that the County already utilizes

to inspect, track, maintain and report on its infrastructure. These problem areas, along with corresponding maps, are provided to the Maintenance Division to guide sediment and debris removal activities. Additionally, as part of this program the County has developed and maintained maintenance logs that document the date and location where maintenance was performed and the amount of material removed in the Maintenance Division Logs of Operation (including sanding, sweeper, and vactor logs). These logs are provided to the TD-TEU frequently and entered into an electronic Excel spreadsheet.

Damage and/or necessary repairs are noted during seasonal inspections through the use of the inspection forms for each type of BMP and entered into the BMP Inventory Database. The field inspector makes a note of any problems and notifies the appropriate County Staff. A work order request is then filled out and submitted to the Maintenance Division, which initiates the work. Once the work order is completed the form is signed and returned to the TD-TEU.

Along with the inspections described above, the County has used the inventory process to perform an outfall inventory to gain understanding of the impacts of area roadways, residential areas, commercial areas, and industrial areas on the overall watershed and its relation to surface water proximity. The County developed a Pollutant Load Reduction Strategy that helped identify all outfalls and associated loading. The County then built upon that effort during its PLRP development and implementation.

Finally, the County has been ensuring stenciling or markers have been applied at appropriate storm drain inlets. The stencils explain that the storm drain inlet leads to surface waters and therefore nothing should be dumped into them. During maintenance of storm drain inlets, the stenciling or markers are inspected to ensure legibility. Maintenance crews notify the TD-TEU of unacceptable stenciling/missing markers so that they can be corrected.

Performance Standards

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Continually maintain an inventory of storm water collection and conveyance structures and treatment facilities and related inspection information. The inventory should include wetland treatment systems, treatment basins, vaults, and swales, and any other storm water treatment facility, storm drain inlets, pipes, culverts, curb and gutter, asphalt dikes, rock lined or vegetated swales, and any other storm water collection and conveyance device.
    - Incorporate newly developed BMP RAM into inspection protocols.
    - Obtain most current list of facilities from TD-TEU.
    - Cross-check the above list with information that is necessary to include in the inventory and modify as needed.
    - Re-evaluate past inventories to determine future efforts.
- Continue to incorporate locations of inspected facilities and devices into GIS using GPS data/as-built surveys.
- Continue to implement source identification during the inspection process. Source identification may include the following:
    - Private property/residential run-off.
    - Commercial property runoff.
    - Eroding cut slopes.
    - Eroding road shoulders.
    - Traction abrasive application.

  - Dislodged sediment from snow removal activities.
  - Vehicle tracking sediment onto the roadway.
  - Parking related erosion.
  - Construction site tracking.

- Expand existing BMP inspection program to incorporate annual tracking/inspections of storm water treatment facilities as well as all collection and conveyance structures. Use the existing BMP specific Data Entry Sheet and GPS identification process, and modify as necessary, to ensure that all of the following information is collected during each inspection:
  - Inspector's name, date of inspection.
  - Location of facility or device / ID #.
  - Comment filed
    i. Assessment of needed maintenance activities and necessary repairs
    ii. Evidence of erosion
    iii. Evidence of damage from snow removal or other equipment
    iv. Accumulated sediment and debris
- Expand the maintenance program in coordination with prioritization efforts to include all storm water collection, conveyance, and treatment devices/facilities.
- Develop BMP fact and record sheets including a County BMP RAM for maintenance activities that include the following at a minimum:
  - Visually monitor inlet and outlet condition for items such as debris during each inspection and identify and prioritize problem areas of potential illicit discharge and sediment accumulation for follow up.
  - Measure infiltration of BMPs using a Constant Head Permeameter (CHP).
  - Make observations of vegetative cover.
  - Review current maintenance activities to ensure that appropriate storm water BMPs are being utilized to protect water quality.
  - Schedule the removal of trash, debris and/or sediment based on the visual monitoring.
  - Minimize the discharge of contaminants during maintenance and clean outs of storm water facilities.
  - Properly dispose of material removed.
  - Keep records of drainage structures and treatment facilities cleaned and maintained.
- Develop specific criteria that will be utilized to prioritize maintenance needs using the following data sources:
  - Inspection data entry sheets.
  - Source identification.
  - Sanding logs (completed under the Traction Abrasive and Deicing Application Areas Control Measure).
  - TD Snowplow Zone map.

    - BMP RAM data.

- Continue to implement protocol for notifying Maintenance Division personnel.
    - Provide list of identified problem areas and associated work orders. The Tahoe Basin Storm Water Coordinator or designee provides this information through inspections conducted by the TD-TEU staff.
    - Field crews complete work order requests and submit to the Tahoe Maintenance Division.
    - Remove sediment and debris.
    - Damage and/or necessary repairs.
    - Illegible inlet stenciling or missing marker in priority areas (to be re-stenciled within 180 days).
    - Evidence of illicit connections or discharges (to respond within two business days).
    - Once work is completed field crews return the work order to the TD-TEU.
- Continue to implement storm drain stenciling program.
    - Stencil existing priority storm drain inlets.
    - Ensure stencils are added during new development projects or as needed.
    - Inspect stencils and report needed re-stenciling to Tahoe Maintenance Division.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document implementation of the storm water collection, conveyance and treatment facility inspection program;
- Document implementation of the storm water collection, conveyance and treatment facility maintenance program;
- Develop and update infrastructure mapping as needed;
- Document the number of facilities/devices inspected and the number of problem areas identified for maintenance;
- Track number and types of BMPs implemented;
- Document total amount of material/debris removed from storm water conveyances; and
- Evaluate inventory database for trends

RESPONSIBILITY

The TD-TEU has primary responsibility for the Performance Standards within this Control Measure in coordination with the Maintenance Division.

SWFI3 – STORM WATER POLLUTANT SOURCE IDENTIFICATION AND EVALUATION

DESCRIPTION

The Storm Water Pollutant Source Identification and Evaluation Control Measure will identify a means for the reporting of any potential pollutant sources associated with private property/residential runoff, commercial site runoff, eroding cut slopes, eroding road shoulders, intercepted groundwater discharges, excessive traction abrasive applications and construction site tracking.

The County already has in place an education and outreach program for residential and commercial sites to increase awareness and promote behavioral changes regarding the reduction of pollutants released into the environment in order to protect water quality and conduct holistic management of Tahoe Basin natural resources. The County promotes a designated set of pollution prevention practices for high threat water quality activities countywide. Based on the prioritization, high priority areas receive targeted education and outreach. This Control Measure also addresses the enforcement of the County's storm water ordinance (Section 8.79 of the County's Code of Ordinances) and other regulatory mechanisms (excluding the BMP Retrofit Ordinance, which is administered by TRPA). The enforcement will be solely conducted as problems are identified either through field staff observations or as complaints are received. The enforcement of residential and commercial areas and activities will be focused on high priority areas.

Road Shoulder Inspections look for evidence of erosion and other related pollutant sources (e.g. eroding driveways, parking related erosion). The County will prioritize road shoulders based on the required level of maintenance determined from the data gathered during inspections. Road shoulder inspection will be conducted on all County maintained roads along with the storm water collection, conveyance, and treatment facility inspection program. Data entry forms, similar to the forms used for the storm water collection, conveyance, and treatment facility inspection program, will be created to document evidence of erosion on road shoulders.

Traction abrasive applications and areas are regulated to ensure that the discharge of potential pollutants generated during snow and ice control activities conducted by the County are minimized. An important aspect of this is tracking of application and removal rates for traction abrasive and deicing materials. Additionally, training employees regarding the importance of careful application and quick recovery of these materials is essential to this Component.

All other possible pollutant sources are tracked via field observations from County staff and are coupled with dry weather discharge monitoring inspections. Construction site tracking onto County roads is monitored by both the Construction Component (Section 2), Municipal Component (Section 3) and through the Hotline as outlined in the Illicit Discharge Detection and Elimination Component (Section 5).

EXISTING BMPS AND RELATED ACTIVITIES

The County provides education and outreach to residential landowners and responsible parties for residential construction sites. County staff disseminates information to the public through various outreach activities and holds regular contractor meetings to inform them of responsible construction site practices.

The County also currently works with the local agencies responsible for residential and commercial BMP implementation (TRPA & TRCD). The runoff associated with these properties will be identified and prioritized based on severity of the discharge, the connection of the site to a water body, and the size of the property. County ordinances will be used as needed for enforcement, however most areas will be referred to the TRPA and TRCD for follow up and corrective action.

The County has established a sediment and debris recovery program to mitigate the impacts associated with the application of traction materials. In order to evaluate the effectiveness of recovery efforts, the County uses daily sanding logs to record the application amount, location, and time of traction material application. The information from these logs is correlated with sweeper and vactor logs to quantify overall recovery.

The County has existing dry weather discharge monitoring protocols that outline inspection procedures for infrastructure, road shoulders and slopes and tracks and reports non-storm discharges. The County also has a storm water Hotline in conjunction with the City of South Lake Tahoe to assist with any storm water related activity and threats. Section 5 describes this in more detail.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Work with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) to continue to implement a comprehensive education and outreach program that targets identified high priority municipal, residential, commercial and industrial areas and activities identified in the prioritization process.

  The education and outreach program may include the following elements:

  - Distribute conservation program materials at public workshops, community events, and County offices.
  - Develop pollutant and/or activity specific outreach materials as needed.
  - Pursue new funding opportunities to support Conservation Programs.
  - Support efforts of other agencies (i.e., TRCD) to write collaborative grants to support technical assistance to implement residential conservation practices in coordination with County EIP projects.
  - Increase participation/presence at workshops, events, and meetings in the community.
  - Invite partner agencies to present at County workshops and events.
  - Inform agencies and the public to report discharges and threats to storm water runoff through the County Hotline.
- Meet with the appropriate Tahoe Basin agencies (i.e., TRCD, NRCS, STPUD, CTC, TRPA, STR) as needed to discuss the development and implementation of incentives for landowners to implement their conservation practices.
- Inspect all road shoulders, cut slopes and construction entrances as needed to ensure that the storm drain system is not compromised or a threat to water quality is not present. Document and record information as needed.
- Work with maintenance to continue to track the quantity and quality of abrasives used during winter operations including the amount applied on all County roads basin wide.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the efforts conducted pursuant to the implementation strategy for the high priority areas and Permit Attachment C Section IV.B.

RESPONSIBILITY

The TD-TEU has primary responsibility for this Performance Standard. DSD, EMD, TRCD, the Natural Resources Conservation Service, and the TRPA will provide support for this Control Measure.

SWFI4 – STORM WATER SYSTEMS MAINTENANCE NEEDS ASSESSMENT

DESCRIPTION

The Storm Water Systems Maintenance Needs Assessment Control Measure outlines procedures for the removal of sediment from storm water collection, conveyance and treatment facilities identified for maintenance.

EXISTING BMPS AND RELATED ACTIVITIES

The County has established an inspection program to identify storm water collection, conveyance, and treatment facilities in need of sediment removal. The high priority areas are reported to the Maintenance Division for sediment and debris removal. During inspections, sand traps and drain inlets are measured based on a percent full basis that is determined from dipping the BMPs with measuring devices and comparing the measures to the depth of the BMP according to the design elevations on the record drawings. Once a device is in need of maintenance, a work order is issued and submitted to the Maintenance Division for vactoring or cleaning. Vactor logs are completed by the Maintenance Division to track the amount of material removed and all material volumes are tracked using the County Maintenance database which includes all field verified system specifications.

Training is important to the successful implementation of this Control Measure; specifics regarding the training program are provided in Section 8.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Implement the sediment collection program based on the prioritization developed under the Storm Water Facilities Inspection Component.
- Develop and implement BMPs for sediment collection activities, including maintenance of equipment.
- Continue to implement protocols for the proper disposal of collected material:
    - Immediately after sediment collection is complete material is taken to a County containment area, where it is then loaded into a County dump truck and taken to South Tahoe Refuse
    - Material is processed by South Tahoe Refuse and shipped outside of the Lake Tahoe Basin
- Refine and improve protocols for the identification and needs associated with sediment collection (e.g. increased removal frequency, additional vactoring staff and equipment). The BMP RAM procedures will be incorporated into this refinement. Assessment will include evaluation of existing numbers and types of equipment, personnel trained to conduct removal activities, and anticipated future needs.
- Continue to keep accurate logs including the inspector, operator, date time, location, quantity/yards, weather, needs assessment, prioritization etc.
- Incorporate Road RAM protocols into County inspections.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Maintain records of materials removed under the sediment collection program.
    - Areas inspected.
    - Description of pollutant sources.
    - Problem areas.
    - Planned or completed maintenance.
    - Enforcement and follow up as needed.
- Track/report maintenance needs during cleaning.

RESPONSIBILITY

The TD-TEU and Maintenance Division have primary responsibility for the Performance Standards within this Control Measure.

Section 5
ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT (ID)

5.1 OVERVIEW

An illicit discharge is defined as any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term "illicit discharge" includes all non-storm water discharges except discharges pursuant to a NPDES Permit, discharges that are identified in the Non-Storm Water Discharge Prohibitions of the Permit (Section I.B.), and discharges authorized by the Regional Water Board. Illicit discharges include the disposal of non-storm water materials such as paint, spa water, or waste oil into the storm drain or the discharge of waste streams containing pollutants into the storm drain.

Illegal connections are a subset of illicit discharges. Illegal connections are defined as undocumented and/or unpermitted physical connections from a facility to a storm drain system or receiving water (e.g., a sanitary sewer connection to the storm drain).

Because illicit discharges and connections can be a significant source of pollutants to the storm drain system and receiving waters, the purpose of this Component is to ensure implementation of a comprehensive program for detecting, responding to, investigating and eliminating these types of discharges and connections in an efficient and effective manner.

5.2 PERMIT REQUIREMENTS

Section III.B.4 of the Permit requires the County to develop and implement the Illicit Discharge Detection and Elimination Component and outline the measures that the program must address. The specific provisions are as follows:

- Provision III.B.4.a. requires visual inspection of all storm water collection, conveyance and treatment systems at least once annually for evidence of illicit discharges, illicit connections, or other sources of non-storm water discharges, including dry weather discharges;
- Provision III.B.4.b. requires the establishment of a program to investigate and inspect any portion of the storm drain system that indicates a reasonable potential for illicit discharges, illegal connections, or other sources of non-storm water;
- Provision III.B.4.c. requires the implementation and enforcement of ordinances, orders, or other legal authority to prevent and eliminate illicit discharges and connections to the storm drain system; and
- Provision III.B.4.d. requires the promotion and facilitation of public reporting of illicit discharges and connections, including a public hotline.

5.3 CONTROL MEASURES

The Control Measures outlined in **Table 5-1** were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements. The Control Measures comprising this Component provide mechanisms for the prevention, detection, and referral of illicit discharges and illegal connections, followed by appropriate investigation, cleanup, and enforcement activities.

Table 5-1. Control Measures for the Illicit Discharge Component.

ID	Control Measures	Permit Provision Addressed
ID1	Inspection of storm water, collection, conveyance and treatment systems	III.B.4.a.
ID2	Establishment of a program to investigate any portion of the storm drain system that indicates a reasonable potential for illicit discharges, illegal connections, or other sources of non-storm water	III.B.4.b.
ID3	Implementation and enforcement of ordinances, orders, or other legal authority	III.B.4.c.
ID4	Public Reporting / public hotline	III.B.4.d.

5.4 SUPPORTING CONTROL MEASURES

The County's efforts to organize various outreach and educational activities to promote and provide opportunities for proper disposal of wastes (e.g., auto waste, household hazardous waste, e-waste, pet waste) to help reduce illicit discharges will help to support this Component (see Section 7 for additional information).

In addition to addressing illicit discharges from private land owners and businesses, efforts will be made to mitigate possible occurrences of illicit discharges associated with the County's municipal operations. To achieve this goal, several municipal operations (Section 3) will be improved to minimize the likelihood of illicit discharges. County facilities such as the maintenance yards, fueling locations, and washing stations will be managed to maximize source control and minimize illicit discharges. County Transportation Division (TD) Maintenance field crews will be trained to inspect the municipal storm water collection, conveyance, and treatment facilities. In addition, source identification protocols have been established. To assist in the effort to minimize illicit discharges, storm drain stencils will be placed by field crews on and/or around storm drains, catch basins, drop inlets, and other appropriate infrastructure that provide a message not to pollute or discharge to the storm drain system. The stencils will also be made available to volunteers.

ID1 – STORM WATER, COLLECTION, CONVEYANCE AND TREATMENT SYSTEM INSPECTION

DESCRIPTION

Detection of illicit discharges and connections through public reporting, dry weather monitoring, and field crew inspections is the first step in the Illicit Discharges and Illegal Connections Program. A comprehensive detection effort provides the foundation for the short and long term elimination of illicit discharges and illegal connections. While this Control Measure discusses the County's efforts as they primarily relate to the detection and elimination of illicit discharges and illegal connections, ID2 discusses additional efforts undertaken to address illegal connections, ID3 discusses enforcement procedures and ID4 identifies procedures for coordinated responses from the public.

EXISTING BMPS AND RELATED ACTIVITIES

The County has a number of activities that facilitate the detection of illicit discharges and illegal connections. These include public reporting and field crew inspections/notifications, which are described in additional detail below.

Public Reporting of Illicit Discharges and Illegal Connections

The County currently responds to and resolves each incident reported during business hours via the EMD's South Lake Tahoe office [(530) 573-3450]. After business hours, illicit discharge incident reports are routed through the dispatcher at the Sheriff's office for immediate action or for notification of other appropriate entities for future action. Each complaint or spill is investigated as soon as possible and is tracked to ensure that information is adequately documented and the proper authorities are notified. Information regarding each complaint or spill is documented using EMD's Hazardous Material Incident Report Form. For emergency situations, the County has established an Emergency Notification Procedure under the Solid Waste and Hazardous Materials Division which describes in detail the procedures for identifying and reporting spills that may pose an immediate threat to the health and safety of employees, the public, or the environment. These procedures are posted on the EMD's website at the following address:

https://www.edcgov.us/Government/EMD/HazardousMaterials/Emergency_Notification_Procedure.aspx

TD staff also operates a storm water hotline [(530) 544-1910] in coordination with the City of South Lake Tahoe. Complaints received through the hotline are followed up on the next business day by TD staff.

Field Crew Inspections

The County currently uses staff from the TD to visually inspect all storm water collection, conveyance and treatment systems for evidence of illicit discharges, illicit connections and other sources of non-storm water discharges. Inspections are typically coordinated with infrastructure inspections and routine maintenance work. Dry weather discharges are the focus of the inspections. When illicit connections and discharges are found, they are documented and corrected through coordination with EMD and/or with TD staff.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

Public Reporting of Illicit Discharges and Illegal Connections

- TD staff will review current procedures for internal communication between County Divisions and modify as necessary. Adequate communication should be established through a series of procedures for particular types of incidents to ensure adequate notifications, response, tracking, and corrective follow-up actions; and

- TD staff will create a flowchart summarizing the internal communication procedures established above.

Dry Weather Monitoring

- Dry weather monitoring is a valuable tool for the identification of dry weather flows and potential illicit discharges and illegal connections. The County has a dry weather visual monitoring program to assist in proactively identifying illicit discharges and illegal connections. The program considers the following:
    - Monitoring of outfalls during dry weather (e.g., May 1 - September 30)
    - Coordinating the program with the efforts already being conducted under the outfall inventory as a part of the pollutant reduction plan
    - Reviewing/analyzing other information/data such as land uses, water pollution complaints, etc. to assist in identifying problem areas
    - Prioritization of areas for further investigation
    - Development of follow-up investigation plan for identified problem areas

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the following:
    - Number of calls received and reason for each call (e.g., clogged catch basins, illegal dumping or illicit discharge, faded or missing catch basin stencils, general storm water information)
    - Number of legitimate problems reported via hotline
    - Types of materials and waste involved
- Report tracking information and confirm termination of any observed illegal discharges and connections.
- Document the results and follow-up actions for the dry weather visual monitoring program.

RESPONSIBILITY

The TD – TEU has primary responsibility for the Performance Standards within Control Measure ID1. The EMD will provide support for this Control Measure.

ID2 – INVESTIGATION/INSPECTION AND FOLLOW-UP

DESCRIPTION

Investigating and inspecting potential illicit discharges and illegal connections to the storm drain system, as well as conducting appropriate follow-up actions, are essential to meeting the Permit requirement to actively prevent, seek, and eliminate illicit discharges and illegal connections.

EXISTING BMPS AND RELATED ACTIVITIES

The County currently has a comprehensive approach for responding to reported illicit discharges or illegal connections. This approach includes the following:

- Investigation/Inspection including coordinating cleanup and disposal
- Source Tracking
- Recordkeeping
- Enforcement Action

The County investigates reports of potential illicit discharges and illegal connections to the storm drain system through the County's TD, EMD, and DSD – Building Division DSD-BD). Once an illicit discharge or illegal connection is discovered, the County responds accordingly. The DSD-BD is responsible for the initial response to illegal connections on actively permitted construction sites. The EMD is responsible for responding to illicit discharges and illegal connections on properties that are routinely inspected that are deemed to pose a threat to public health. In responding, the County investigates and, if necessary, coordinates source tracking, cleanup, and disposal efforts. Enforcement action is taken if a responsible party is identified and if warranted (see ID3).

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

Investigation/Inspection and Source Tracking

- The County will review existing response protocols and will develop enhanced response protocols for illicit discharges and illegal connections. Internal notification, follow-up, inspection, coordination, clean-up and disposal procedures will be refined to ensure that reported illicit discharges and spills are properly cleaned up and identified illegal connections are corrected.
- Implement response protocols.
- Also as a part of the response protocols, the County will review the content of the investigative training currently provided within the EMD and develop comprehensive investigative guidance to ensure that accurate information is obtained and evidentiary requirements are met. Such documentation may include the following:
    - Collection of samples and submittal under Chain-of-Custody form to a state certified laboratory
    - Photographs to record visual observations and to document evidence for future enforcement action
    - Informal interviews

Recordkeeping

- The County will refine its record keeping procedures for the Illicit Discharge Detection and Elimination Component. As part of the record keeping process, the County will maintain an Illicit Discharge tracking system using a combination of the existing Envision database system, the Office of Emergency Services (OES) database and the TD public hotline. The data that will be collected by inspectors using a complaint form, will most likely include the following:

  - Date (Signed by Investigator/Inspector)
  - Type of incident
  - Product (if identified)
  - Quantity
  - Location
  - Responsible party
  - Address of responsible party
  - Origin of the complaint/incident (e.g., hotline call, public employee call, field staff, dry weather monitoring)
  - Time other agencies notified (if applicable)
  - Date cleanup completed (if applicable)
  - List of any chemicals used in cleanup (if applicable)
  - Type of enforcement action taken (if applicable)
  - Resources utilized

  Information gathered through the above described processes will be used to identify target areas for enhanced public education and outreach efforts. The data will also serve as a way to track and/or identify hot spots and repeat offenders.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Provide copy of investigative guidance materials;
- Track total number of complaints/incidents identified by field staff for comparison with total number identified by other parties; and
- Use the illicit discharge map to annually evaluate patterns and trends of illicit discharges, identify priority areas, and track (and quantify) repeat offenders for elimination of illicit discharges.

RESPONSIBILITY

The EMD has primary responsibility for the Performance Standards within Control Measure ID2. The TD will provide support for this Control Measure.

ID3 – ORDINANCE ENFORCEMENT

DESCRIPTION

An integral part of the Illicit Discharges Component is the implementation and enforcement of County ordinances, orders, or other legal authority to prevent and eliminate illicit discharges and connections to its storm drain system. This Control Measure addresses specific legal authority issues related to illicit discharges and should be implemented in coordination with the County's effort to maintain adequate legal authority for the storm water program.

EXISTING BMPS AND RELATED ACTIVITIES

Typically, the County focuses on public education for private property owners with options for progressive corrective actions for repeat offenders. The progressively severe corrective actions involve verbal warnings followed by written warnings and legal action, if necessary. Illicit discharges by businesses are typically addressed in a more formal manner through the issuance of notices of violations, citations, or notices and orders (e.g., Cease and Desist) depending upon the compliance history of the facility and/or business owner.

The County will utilize its newly adopted Storm Water Ordinance (Chapter 8.79 of the County's Code of Ordinances) to conduct enforcement on illicit discharges and illegal connections. Section 8.79.170 of the Storm Water Ordinance (see Appendix C) outlines the County's enforcement procedures for violations of the subject Ordinance. When appropriate, violators will be subject to the County's enforcement procedures to prevent future illicit discharges and connections.

The County will also utilize many other Ordinances to manage its storm water program. These include: Hazardous Materials (Chapter 8.38); Well Standards (Chapter 8.39); Solid Waste (Chapter 8.42); Code Enforcement (Chapter 9.02); Water Resources (Section 9.46.400); Sewage Disposal (Chapter 13.12); Grading, Erosion, and Sediment Control (Chapter 15.14); Private Sewage Disposal Systems (Chapter 15.32); and Major and Minor Land Division (Sections 16.12.030 et seq. and 16.44.030 et seq.). The various County Divisions (TD, EMD and DSD) all have respective roles that are defined in order to carry out actions to enforce the above-referenced County Ordinances.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Utilize the progressive enforcement policies outlined in Section 8.79.170 of the County's Storm Water Ordinance.
    - Identify procedures for coordinated responses for discharges from publicly owned lands (State and/or Federally owned properties) and how the County will interface with the Regional Board.
- Implement the progressive enforcement policy.
- The EMD will utilize its existing authorities under Federal, State and Local law to conduct enforcement activities under its purview.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Report the numbers and types of enforcement actions taken.
- Report on repeat offenders by providing information regarding the number of repeat violations and the incremental enforcement actions taken against them.

RESPONSIBILITY

The EMD, TD and DSD share primary responsibility for the Performance Standards within Control Measure ID3 based upon their respective enforcement responsibilities. County Counsel will provide support for this Control Measure.

ID4 – PUBLIC REPORTING DESCRIPTION

Detecting illicit discharges through a public hotline, public inspections and citizen complaints is a critical step in the Illicit Discharges and Illegal Connections Program. A comprehensive detection effort provides the foundation for the short and long term elimination of illicit discharges and illegal connections.

EXISTING BMPS AND RELATED ACTIVITIES

The County has a number of activities that facilitate the detection of illicit discharges and illegal connections. These include public reporting and citizen complaints.

Public Reporting of Illicit Discharges and Illegal Connections

The County currently responds to and resolves each incident reported during business hours via the EMD's South Lake Tahoe office [(530) 573-3450]. After business hours, illicit discharge incident reports are routed through the dispatcher at the Sheriff's office for immediate action or for notification of other appropriate entities for future action. Each complaint or spill is investigated as soon as possible and tracked to ensure that information is adequately documented and the proper authorities are notified. Information regarding each complaint or spill is documented using the EMD's Hazardous Material Incident Report form or other related complaint form. For emergency situations, the County has established an Emergency Notification Procedure under the Solid Waste and Hazardous Materials Division which describes in detail the procedures for identifying and reporting spills that may pose an immediate threat to the health and safety of employees, the public, or the environment. These procedures are posted on the EMD's website.

The County has also established a bilingual 24-hour hotline for public reporting of illicit discharges. The hotline number is [(530) 544-1910]. The County will promote, publicize, and facilitate public reporting of illicit discharges via the hotline. The hotline is operated in cooperation with the City of South Lake Tahoe. The hotline is capable of receiving reports in both English and Spanish, and will be displayed prominently on applicable County Division websites.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

Public Reporting of Illicit Discharges and Illegal Connections

- Review current procedures for internal communication between County Divisions and modify as necessary. Adequate communication should be established through a series of procedures for particular types of incidents to ensure adequate notifications, response, tracking, and corrective follow-up actions.
    - Modify complaint forms and data tracking as necessary.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document the following:
    - Number of hotline calls received and reason for each call (e.g., clogged catch basins, illegal dumping or illicit discharge, faded or missing catch basin stencils, general storm water information)
    - Number of legitimate problems reported via hotline
    - Types of materials and waste involved

RESPONSIBILITY

The EMD and the TD both have primary responsibility for the Performance Standards within ID4 based upon the type of incident and the current County protocols for responsibility.

ANNUAL REPORTING REQUIREMENTS

To assess compliance with Permit Sections I.A and III.B.5 the annual report shall describe actions taken to prevent unauthorized non-storm water discharges and report any identified illicit discharges to its collection, conveyance, and treatment facilities. The report shall include a description of any education, outreach, or inspection activities conducted pursuant to Permit Sections III.B.1, III.B.2, III.B.3 and III.B.4 that support the program to prohibit unauthorized non-storm water discharges.

SECTION 6
NEW DEVELOPMENT AND REDEVELOPMENT COMPONENT (NDRC)

6.1 OVERVIEW

The purpose of the New Development and Redevelopment Component is to effectively reduce pollutants in storm water runoff by requiring developed properties to implement permanent storm water treatment facilities. The design target for these treatment facilities is to infiltrate at a minimum, runoff generated by the 20 year/1 hour storm, which equates to approximately 1 inch of water over all onsite impervious surfaces. This Component is also designed to protect surface waters by incorporating numeric effluent limits for those areas that cannot meet the 20 year/1 hour storm infiltration requirements.

The requirements outlined in this Component have been required for all development and redevelopment prior to the adoption of the Permit. The current regulations are enforced and implemented through Ordinances adopted by the TRPA via a MOU between the County and the TRPA.

6.2 PERMIT REQUIREMENTS

Provision III.B.5 of the Permit requires development and redevelopment properties to infiltrate the entire 20 year/1 hour storm or approximately 1" of rain generated from all impervious surfaces. If this condition cannot be met, then the Permit requires development and redevelopment properties to treat storm water to meet numeric effluent limits as described in III.B.1 of the Permit. Permit provision III.B.5.b. requires documentation of shared treatment facilities between private property and public discharges.

Permit Section I.G and Monitoring and Reporting Section IV.I require the County to analyze changes in land use, impervious cover and operations and maintenance practices to ensure that they do not increase a catchment's average annual baseline pollutant load. For the 2014 water year, the County will conduct this general assessment in hydraulically connected catchments not registered as part of the Crediting Program that may have occurred since the initial baseline analysis was conducted. That analysis will be included in the March 15, 2015 Annual Report.

6.3 CONTROL MEASURES

The Control Measures outlined in **Table 6-1** were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements.

Table 6-1. Control Measures for the Development and Redevelopment Component

ID	Control Measures	Permit Provision(s) Addressed
NDRC1	20 year/1 hour Storm Requirement	III.B.5.
NDRC2	Numeric Effluent Limit Requirement	III.B.5.a.
NDRC3	Shared Water Treatment Facility Coordination	III.B.5.b.

6.4 SUPPORTING CONTROL MEASURES

The Program Management Component (Section 1) highlights the management structure for intra and interagency coordination. The Commercial, Industrial, Municipal and Residential Component (Section 2 – Control Measure MICR 5) explains how oversight from others can assist with meeting the goals of this Component. The Education and Public Participation Program Component (Section 7) disseminates storm

water quality information to increase awareness of storm water quality concerns, thus reducing potential discharges to nearby surface waters, ground water, and ultimately Lake Tahoe.

NDRC1 – 20 YEAR/1 HOUR STORM REQUIREMENT

DESCRIPTION

This Component requires development and redevelopment properties to infiltrate the 20 year/1 hour storm, which equates to one inch of rainfall over all impervious surfaces. The Permit requirements in this Component are currently being required of all development or redevelopment residential and commercial parcels through TRPA Ordinances 60.4.3.B. and 60.4.6.A.1. Those Ordinances state:

- 60.4.3.B. - Application of required permanent BMPs within the parcel or entire project area boundaries, whichever is greater, shall be a condition of project approval.
- 60.4.6.A.1. - Infiltration facilities shall be designed to accommodate the volume from a 20-year/one hour storm. An average intensity of one inch per hour shall be used for this calculation. Infiltration facilities shall be designed utilizing the methodology set forth in the BMP Handbook.

EXISTING BMPS AND RELATED ACTIVITIES

Per TRPA Code of Ordinances Section 60.4.3.B., all new parcels seeking to develop or redevelop are required to install BMPs that treat and infiltrate the design storm mentioned above. As a condition of project approval, plan checkers and permit issuers both at TRPA and in the County's DSD verify that the appropriate BMPs are designed on the projects plan sheets. As a condition of the project being signed off and the Security returned, those BMPs are inspected by TRPA and DSD inspectors. County staff approves development and redevelopment projects under the MOU between the County and TRPA, which requires project proponents to implement projects under the rules and regulations of the TRPA.

In addition to requiring BMPs on properties that seek permits, TRPA maintains a BMP Retrofit Program that requires all developed properties to implement onsite BMPs per the requirements of TRPA Code Section 60.4.6.A.1. The TRPA has developed a BMP handbook to guide and direct this effort along with providing technical staff and assistance for design and implementation. The TRCD also assists the TRPA and the County with the implementation of this Component. The TRCD takes the lead on the residential properties and the TRPA is responsible for the commercial properties. Both follow similar processes for BMP implementation based on site selection, site conditions, site constraints and land use.

PERFORMANCE STANDARDS

DSD staff performs enforcement and compliance for permitted properties that fall under the guidance of the County under the MOU. The TRPA completes enforcement and compliance activities both for permitted properties under their jurisdiction and for BMP Retrofit properties. The County will query its own tracking data for projects under its jurisdiction and will rely on the TRPA for tracking and reporting on projects under their jurisdiction. This will include:

- A list of inspected parcels;
- An annual updated list of parcels in or out of compliance with BMP regulations;
- A description of the parcels retrofitted with BMPs; and
- A list of parcels with enforcement actions taken including follow up actions

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document and track the amount of annual permits, building allocations and BMP Retrofits
  - Receive annual updates from the TRPA on residential and commercial BMP implementation

RESPONSIBILITY

The DSD will oversee much of this Control Measure with assistance from the TD-TEU. Much of the information required for compliance reporting will come from the TRPA and TRCD.

NDRC2 – NUMERIC EFFLUENT LIMIT REQUIREMENT

DESCRIPTION

This Component requires that a project proponent must meet numeric effluent limits if they cannot infiltrate the 20 year/1 hour storm. The Permit requirements outlined in this Component are currently being required of all development or redevelopment residential and commercial through TRPA Ordinance 60.4.8 which requires discharge limits for surface runoff. DSD staff help implement Ordinance 60.4.8. during plan check, permit issuance, field inspection and Security return via an MOU with TRPA.

Ordinance 60.4.8. states:

- Where special circumstances occur, alternative BMPs may be approved to meet water quality standards. Special circumstances may include, but not be limited to, streets, highways, bike trails, existence of high ground water table, unusual up stream or downstream flow conditions, and presence of unusual concentrations of pollutants.

As mentioned, the County will utilize the above-mentioned TRPA Ordinance in order to implement this Component, however the County is also adopting the following numeric effluent limits (NEL) developed by Lahontan to ensure protection of surface and groundwater.

Table III.B.1 – Numeric effluent limits for runoff discharges

Constituent	Units	Land Treatment/ Infiltration Systems	Surface Waters
Total Nitrogen	mg/L as N	5.0	0.5
Total Phosphorus	mg/L as P	1.0	0.1
Turbidity	NTU	200	20
Oil and Grease	mg/L	40	2.0
Total Iron	mg/L	4.0	0.5

EXISTING BMPS AND RELATED ACTIVITIES

Currently, the County operates under a MOU with TRPA that directs the County to implement and enforce all components of the TRPA Regional Plan for the Lake Tahoe portion of the County which includes the TRPA Code of Ordinances. Within the TRPA Code of Ordinances various provisions are included related to Land Use Development, Water Quality Control, and BMP requirements for runoff from public and privately owned lands. The County also currently supports the TRPA's BMP Retrofit Program, outlined in Code of Ordinances Chapter 60.

While the County has limited commercial and industrial properties within its jurisdiction, the activities that take place on these parcels can pose a great threat to ground water and nearby surface waters. Therefore, it is imperative that the County participate in the enforcement and implementation of the TRPA Regional Plan and associated BMP Retrofit requirements.

Retrofitting commercial and industrial properties with effective BMPs allows the County to utilize a comprehensive watershed approach when designing projects which ultimately results in better water quality.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Coordinate with the TRPA to:

- Encourage owners/operators of facilities and businesses regarding their obligation to comply with the development and redevelopment standards and with retrofit requirements and good house keeping practices outlined in the TRPA Code of Ordinances.
- Develop and implement aspects and guidelines associated with the principles of Low Impact Development and Green Building as part of the building permit process.
- Develop incentives to promote the implementation of BMPs on commercial and industrial properties.
- Promote BMPs that meet NELs where properties cannot treat and infiltrate the 20 year/1 hour storm.
- Monitor BMPs as required to ensure that all NELs are in compliance with regulations and Table III.B.1 of the Permit.

DSD staff performs enforcement and compliance for permitted properties that fall under the guidance of the County under the MOU. The TRPA completes enforcement and compliance activities both for permitted properties under their jurisdiction and for BMP Retrofit properties. The County will query its own tracking data for projects under its jurisdiction and will rely on the TRPA for tracking and reporting on projects under their jurisdiction. This will include:

- A list of inspected parcels;
- An annual updated list of parcels in or out of compliance with regulations;
- A description of the parcels retrofitted with BMPs; and
- A list of parcels with enforcement actions taken including follow up actions

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Track the number of annual permits, building allocations and BMP Retrofits implemented as a part of the program.
- Monitor BMPs to ensure compliance with NELs and existing County stormwater ordinances.

RESPONSIBILITY

The DSD will oversee much of this Control Measure with assistance from the TD-TEU. Much of the information required for compliance reporting will come from the TRPA and TRCD.

NDRC3 – SHARED WATER TREATMENT FACILITY COORDINATION

DESCRIPTION

The County may opt to implement shared treatment facilities as part of its pollutant load reduction strategy. When considering whether or not to accept private property runoff into County treatment facilities, the County will ensure that the treatment facilities are adequate sized to accommodate the additional runoff. This is not a strategy the County intends to pursue in general; however opportunities may present themselves where this approach makes sense. Additionally, this requirement is outlined in the Permit and the County must ensure that these additional storm water flows do not increase average annual fine sediment or nutrient loads.

EXISTING BMPS AND RELATED ACTIVITIES

The County owns, operates and maintains all of its own treatment facilities for storm water flows generated off of the County-owned right of way (ROW). All designed systems are sized for the ROW and do not include private parcel runoff. All BMPs are inspected annually and are prioritized for maintenance as needed to comply with Permit requirements and treatment system functionality.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Develop a tracking system for shared water treatment facilities, operating expenses and annual maintenance requirements; and
- Ensure treatment facilities have the needed capacity for accepting private property storm water flows and meet average annual fine sediment and nutrient load requirements.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document and provide information on any shared treatment facilities including the volume, pollutant loading and pollutant load reduction associated with shared facilities; and
- Provide an analysis on shared facilities relative to the County ROW including monetary compensation for maintenance, upkeep and reporting of information.

RESPONSIBILITY

The TD-TEU will oversee this Control Measure with assistance from DSD.

Section 7
PUBLIC EDUCATION COMPONENT (PE)

7.1 OVERVIEW

The purpose of the Public Education Component is to inform the public about the impacts of urban storm water runoff (thereby increasing knowledge) and introduce steps that the public can take to reduce pollutants in storm water runoff (thereby encouraging behavior changes). This Component also assists the public and local officials in understanding the problems associated with urban storm water runoff so they can help build support for the storm water program and realize how they fit into the cumulative storm water management strategy for the Tahoe Basin. The County's efforts will continue to evolve throughout the term of the Permit as outreach opportunities arise.

This Component is also designed to maximize the use of limited resources and to develop partnerships among the stakeholders in the Tahoe Basin. Local stewardship efforts, trainings, and partnerships among governmental agencies, schools, and private interests are the key types of involvement envisioned in this Component.

7.2 PERMIT REQUIREMENTS

Section III.B.6 of the Permit outlines the need to develop and implement a Public Education Component. The specific Permit provision is as follows:

- Section III.B.6 of the Permit requires the development and implementation of an Education Component using any appropriate media to (1) increase the knowledge of specified target communities regarding impacts of urban runoff on receiving waters and BMP solutions; and (2) encourage the behavior of target communities to reduce pollutant releases to the storm water collection, conveyance and treatment system. The target audiences, at a minimum, should include the following:
    - Municipal Departments and Personnel;
    - Construction Site Owners and Developers;
    - Industrial Owners and Operators;
    - Commercial Owners and Operators; and
    - Residential Community, General Public, and School Children.

7.3 CONTROL MEASURES

The Control Measures outlined in **Table 7-1** discuss how the County intends to meet this Permit requirement. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements. The Control Measures identify mechanisms for providing outreach and public participation opportunities to each of the required target communities.

Table 7-1. Control Measures for the Public Education Component

ID	Control Measures	Permit Provision(s) Addressed
PE1	Public Participation	III.B.6.
PE2	Program Development and Implementation	III.B.6.
PE3	Business/Construction Outreach	III.B.6.

7.4 SUPPORTING CONTROL MEASURES

The Public Education Component is supported by several other Components.

The Illicit Discharge Detection and Elimination Component (Section 5) requires the County to establish a hotline that allows the public to report illicit discharges and illegal connections.

The Construction Component (Section 2) and the New Development and Redevelopment Component (Section 6) require review of construction plans, issuance of grading permits, implementation of BMPs to control sediment and pollutants from construction sites, and inspection of construction sites to ensure proper implementation of BMPs. This process allows for the distribution of construction-specific storm water quality information to increase awareness of storm water quality concerns.

The Commercial, Industrial, Municipal and Residential Component (Section 3) requires inspections for commercial and industrial businesses. These inspections provide an opportunity for the distribution of business-specific storm water quality information to increase awareness of storm water issues.

The Municipal Personnel Training and Education Component (Section 8) defines the training program for Municipal Departments and Personnel, who are essential to the successful implementation of all aspects of the Public Education Component.

PE1 – PUBLIC PARTICIPATION

DESCRIPTION

The participation of the public in the implementation of the TSWMP is critical to a successful effort to protect the Tahoe Basin's water resources and associated ecology. Therefore, active public participation is encouraged and supported by the County.

EXISTING BMPS AND RELATED ACTIVITIES

The County has provided for public participation in the storm water management program in a number of ways. The primary mechanisms for public participation include the following:

- Allowing direct public participation to contribute to the initial development of the first TSWMP. The County held two meetings (July 18, 2006 and November 15, 2006) to inform the public about the development and implementation of the TSWMP and seek their input. The community will have an opportunity to engage with the County at the Board of Supervisors meeting during the TSWMP update. Through these meetings, the County also gauged the public's understanding of storm water issues in the Tahoe Basin. Establishing rapport with the public is imperative to increasing their understanding of storm water management issues and securing their support for the implementation of the TSWMP; and
- Promotion of waste disposal and other programs that support the overall storm water management program, including the Household Hazardous Waste Program, the Used Oil & Filters Program, the Universal Wastes Program (including Electronic Waste), and the Clean Boating Kit Giveaways.

In addition, the County supports activities and events involving citizen volunteers and local citizen groups. These activities have included:

- Storm drain stenciling program (with the League to Save Lake Tahoe);
- Beach Cleanup Day (held in conjunction with the annual California Coastal Cleanup Day);
- Snapshot Day Stream Monitoring: Snapshot Day is an annual one-day event sponsored by the Tahoe-Truckee Clean Water Team and the Lake Tahoe Environmental Education Coalition during which community volunteers conduct water quality monitoring in the Lake Tahoe and Truckee River watersheds;
- Earth Day Festival; and
- School Science Program.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Continue to hold meetings, as necessary, to allow members of the public to be actively involved in the implementation of the TSWMP;
- Continue to facilitate public participation through County waste disposal and other programs, including the Household Hazardous Waste Program, the Used Oil & Filters Program, the Universal Wastes Program, and the Clean Boating Kit Giveaways;
- Partner with local citizen groups to actively coordinate opportunities for public participation. The County may explore partnerships with some of the following groups:
    - Lake Tahoe Environmental Education Coalition
    - League to Save Lake Tahoe

  - Tahoe Area Sierra Club
  - Tahoe Regional Planning Agency
  - Tahoe Rim Trail Association
  - Cooperative Extension
  - Tahoe Resource Conservation District
- Continue to participate in Beach Cleanup Day/California Coastal Cleanup Day;
- Continue to participate in the annual Snapshot Day Stream Monitoring;
- Explore the possibility of sponsoring regional Stream Cleanup Days or Adopt-a-Stream programs; and
- In partnership with local citizen groups, revitalize and sponsor a storm drain stenciling program for the Tahoe Basin.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Document public participation efforts in the implementation of the TSWMP.
- Track quantity of used oil and filters as well as types and quantities of household hazardous wastes and universal wastes disposed of through County programs.
- Track the number of Clean Boating Kits distributed.
- Document any partnerships formed with local citizen groups.
- Document the County's role in local cleanup events.
- Track the volunteer organizations and/or community partners participating in storm drain stenciling and cleanup events.
- Track the number of volunteers participating in the storm drain stenciling and Beach Cleanup Day or other cleanup events.

RESPONSIBILITY

The Storm Water Coordinator (Transportation Division – Tahoe Engineering Unit (TD-TEU) has primary responsibility for the first Performance Standard within Control Measure PE1. The Environmental Management Division (EMD) has primary responsibility for the remainder of the Performance Standards within PE1. The Development Services Division (DSD) will provide support for the PE1 Control Measure.

PE2 – PROGRAM DEVELOPMENT AND IMPLEMENTATION

DESCRIPTION

This Control Measure requires that outreach be conducted with the residential community and general public to inform these audiences of the impacts of urban storm water runoff and introduce steps they can take to reduce pollutants in storm water runoff. Such outreach communicates to the County's residents and visitors the importance of storm water quality protection and pollution prevention as it relates to the protection and restoration of the Tahoe Basin watershed.

EXISTING BMPS AND RELATED ACTIVITIES

The County currently implements public outreach through a variety of means:

- **Educational materials** – The County provides information to the residential community and general public regarding storm water quality. Outreach materials are available for download at the County website (http://www.edcgov.us/Government/EMD/HazardousMaterials/Storm_Water_Pollution_Prevention.aspx). A summary of outreach materials currently available for the residential community and general public is provided in **Table 7-2.**

Table 7-2. Summary of Existing General Public and Residential Outreach Materials

Outreach Material Title	Type	Target Audience
El Dorado County Storm Water Management Program: Hazardous Waste Information	Brochure	Residential Community, General Public
Recycling List for Automotive Fluids, Filters, and Tires	PDF Document	Residential Community, General Public
El Dorado County Storm Water Management Program: Community Information	Brochure	Residential Community, General Public

In addition, the Development Services Division – Building Division provides the TRPA's residential BMP Retrofit brochures, which outline Basin-specific storm water pollution prevention strategies, to the residential community.

- **Partnering opportunities** – Partnering with other County agencies, local business partners, citizen groups, and education groups is an important component of the storm water outreach effort. The County has partnered with the TRPA to provide a consistent message regarding storm water regulations and BMP technology by distributing the TRPA's outreach brochures on BMP Retrofit to its residents. The County has also co-presented with the TRPA and Tahoe Resource Conservation District (TRCD) at local storm water BMP workshops.
- **Media relations –** The County has implemented public outreach through a variety of means including theater ads, billboards, and newspaper articles and advertisements.
    - Theater Ads have been used in the past to promote recycling of used oil and marina pollution prevention.
    - While billboards are not permitted in the Tahoe Basin, the County has maintained a billboard on the eastbound lane of Highway 50. The billboard promotes recycling of electronic waste; in the past, the billboard has been used to promote proper disposal of marina oil and to raise awareness of the potential for Rubicon four-wheel drive oil spills.

- Local newspapers carry advertisements for the permanent household hazardous waste (HHW) facility, located at the South Tahoe Refuse Transfer Station Materials Recovery Facility on Ruth Avenue in South Lake Tahoe, CA.

- **Household Hazardous Waste (HHW) Collection and Used Oil Recycling** – The County has implemented programs that facilitate proper disposal of used oil and other toxic materials, including the HHW Program, the Used Oil & Filters Program, and the Universal Wastes Program (including Electronic Waste).

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

Build upon existing public outreach strategy. The County will continue to build upon its outreach strategy to continue to engage with the public on storm water issues. In building upon the outreach strategy, the County will review existing Tahoe Basin outreach materials and strategies and will augment them as needed. In addition, the County will review outreach materials and strategies created for other storm water programs (e.g., California Stormwater Quality Association (CASQA) Resource Library, California Water Boards' Erase the Waste Campaign and California Storm Water Toolbox, EPA's Stormwater Outreach Materials and Reference Documents). The strategy will likely include some of the following activities:

- Educational materials – Develop educational materials as necessary to conduct effective public outreach. Review and update current materials as needed. Ensure inclusion of topics specific to each target community. Advertise and promote the public storm water hotline within the educational materials.
- Participation in public events – Continue to participate in and co-sponsor neighborhood events, using these opportunities to distribute educational materials to the general public.
- Partnering opportunities – Explore opportunities to partner with other County agencies, local business partners, citizen groups, and education groups.
- Pesticide outreach program – The County will review existing pesticide outreach programs and will promote integrated pest management (IPM) through public outreach materials and reach out to plant suppliers to discourage use of pesticides and promote use of native plants.
- Media relations – Conduct editorial and media relations. Advertise and promote the public storm water hotline through a variety of media.
- Household Hazardous Waste (HHW) Collection and Used Oil Recycling – Continue to implement County programs that educate the public regarding proper disposal of used oil and other toxic materials and enhance as necessary to complement the storm water program.
- Website – Establish a page on the County's website specifically for the Tahoe Basin for disseminating information and outreach material regarding the Tahoe Basin storm water program. Advertise and promote the public storm water hotline through the website.
- Surveys – Conduct baseline and follow-up public opinion surveys. These surveys will assist the County in determining the effectiveness of the public outreach strategy and gauging the degree of behavior change within the target audiences.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments. The Public Education Component qualitatively

and quantitatively documents and evaluates the level of effort expended in implementation of the program and the level of success in increasing awareness and changing behaviors.

- Qualitative documentation will be solicited through community response forms and evaluation forms given out at community presentations and other events.
- Quantitative documentation of the strategy implementation including tracking the number of brochures or other materials distributed, the number of storm water website hits, the number and types of media used to convey storm water quality messages, the number of community presentations, and attendance at each event.

RESPONSIBILITY

The EMD has primary responsibility for the Performance Standards within Control Measure PE2. The Storm Water Coordinator and DSD will provide support for this Control Measure.

PE3 – BUSINESS/CONSTRUCTION OUTREACH

DESCRIPTION

Many construction sites, as well as commercial and industrial businesses, are sources of storm water pollutants that need to be addressed by the County. This Control Measure will educate and inform local business owners/operators and construction site owners/developers about storm water quality and impacts on water resources. Efforts are targeted at all of the specific business types outlined in the Permit; however, during the County's outreach efforts, an emphasis will be placed on educating local restaurants, retail gas outlets, mobile carpet cleaning, and mobile spa cleaning operations.

EXISTING BMPS AND RELATED ACTIVITIES

The County is proactively outreaching to local business owners and operators, as well as construction site owners and developers, to provide education regarding storm water pollution issues. Business outreach occurs when the EMD conducts routine inspections and when it responds to complaints. The DSD outreaches to construction site owners and developers by participating in annual contractor workshops which focus on the proper installation and maintenance of temporary and permanent BMPs at residential, commercial, and industrial properties. Moreover, County Building Inspectors provide in-field outreach while conducting onsite compliance evaluations for various permit conditions, including conditions specific to storm water management. The County conducts initial and follow-up public workshops as part of the scoping phase as it relates to the TRPA's EIP project implementation.

Outreach materials targeting business owners and operators and construction site owners and developers are available for download at the County website (http://www.edcgov.us/Government/EMD/HazardousMaterials/Storm_Water_Pollution_Prevention.aspx). While these materials have been developed by the County's Western Slope Storm Water Management Program, they contain information specific to the Tahoe Basin portion of El Dorado County and are currently distributed within the Tahoe Basin. A summary of materials currently available for business owners and operators and construction site owners and developers is provided below in **Table 7-3.**

Table 7-3. Summary of Existing Commercial Business and Construction Outreach Materials

Outreach Material Title	Type	Target Audience
Vegetation Establishment Guidelines for the Sierra Nevada Foothills and Mountains	PDF Document	Construction Site Owners and Developers
El Dorado County Storm Water Management Program: Construction Industry Information	Brochure	Construction Site Owners and Developers
El Dorado County Storm Water Management Program: Food Facility Information	Brochure	Commercial Food Facilities, including Restaurants

Additionally, the DSD provides the TRPA's residential and commercial BMP Retrofit brochures, which outline Basin-specific storm water pollution prevention strategies, to construction site owners and developers and business owners and operators.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Control Measure.

- Update business-specific educational materials consistent with the public outreach strategy for Permit-specified commercial businesses. The materials should include the following topics, as applicable:
    - Requirements of local municipal permits and ordinances (i.e., storm water and grading ordinances and permits).
    - Impacts of urban runoff on Lake Tahoe water quality.
    - Importance of good housekeeping (i.e., sweeping impervious surfaces instead of hosing).
    - Pollution prevention and safe alternatives.
    - BMPs: Site specific, structural, and source control.
    - BMP maintenance.
    - Non-storm water disposal alternatives (i.e., all wash waters).
    - Equipment and vehicle maintenance and repair.
    - Public reporting mechanisms (i.e., hotline number).
- Review "Food Facility Information" brochure and revise as necessary to ensure the content is consistent with the public outreach strategy and the educational materials developed above.
- While all commercial businesses in the area will be targeted for outreach, the County will prioritize providing education and outreach to local business types that are of particular concern, including the following:
    - Retail or wholesale fueling.
    - Eating or drinking establishments.
    - Mobile carpet, drape or furniture cleaning.
    - Mobile pool and spa cleaning.
    - Automobile mechanical repair, maintenance, fueling, or cleaning.
    - Equipment repair, maintenance, fueling, or cleaning.
    - Automobile and other vehicle body repair or painting.
    - Concrete mixing or cutting.
    - Painting and coating.
    - Golf courses, parks and other recreational areas/facilities .
    - Snow removal activities.
    - Other commercial sites/sources that the County determines may contribute a significant pollutant load to its storm water collection, conveyance, and treatment facilities.
- Review current educational materials for Construction Site Owners and Developers to ensure they address the following topics:
    - Requirements of local municipal permits and ordinances (i.e., storm water and grading ordinances and permits).

- Impacts of urban runoff on Lake Tahoe water quality.
- Importance of good housekeeping (i.e., sweeping impervious surfaces instead of hosing).
- Pollution prevention and safe alternatives.
- BMPs: Site-specific, structural, and source control.
- BMP maintenance.
- Equipment and vehicle maintenance and repair.
- Importance of native vegetation/mulch for preventing soil erosion.
- Water quality impacts associated with land development (including residential construction and redevelopment).
- Public reporting mechanisms (i.e., hotline number)

- Distribute outreach materials to Construction Site Owners and Developers.

ASSESSMENT TASKS

The assessment tasks identify those items that should be tracked and reported as a part of the Annual Progress Report and program effectiveness assessments.

- Using the existing Envision database, track outreach materials distributed to each specific business (e.g., name of educational material, target audience, distribution mechanism, and number distributed).
- Using the existing Land Management Information System (LMIS) database, track outreach materials distributed to each construction site owner/developer (e.g., name of educational material, target audience, distribution mechanism, and number distributed).

RESPONSIBILITY

The EMD has primary responsibility for the first three Performance Standards within Control Measure PE3. The DSD has primary responsibility for the remainder of the Performance Standards within PE3. The Storm Water Coordinator and the Tahoe Regional Planning Agency will provide support for this Control Measure.

Section 8

MUNICIPAL PERSONNEL TRAINING AND EDUCATION COMPONENT (MPTE)

8.1 OVERVIEW

The County will conduct annual BMP training with Maintenance Division staff and contractors, related to performing effective and NPDES compliant municipal operations for water quality protection. The training will go into detail on BMPs, proper maintenance activities and NPDES compliance. The training will include a formal presentation to the entire Tahoe Maintenance Division by members of the Transportation Division – Tahoe Engineering Unit (TD-TEU) NPDES staff. The enhanced training will be presented in the form of a power point presentation which provides an overview of Board Order No. R6T-2011-0101A1 and the associated regulatory process as well as efforts that are required to protect valuable resources from pollutants during storms. The training course will also cover proper utilization of temporary BMPs, construction site protection, material protection, permanent BMP maintenance, proper disposal of materials, responsible abrasive applications, sweeping prioritization, vactor/sweeper forms, illicit discharge detection, and future permit requirements. The TD-TEU staff will also train the Maintenance Division in construction practices relative to erosion control projects and infrastructure. To ensure that all Maintenance supervisors are aware of the County's NPDES requirements, TD-TEU staff will provide a binder packet to all Maintenance supervisory staff that includes the following:

- Agenda
- Lahontan Board Order No R6T-2011-0101A1
- TRPA/County of El Dorado Memorandum of Understanding
- County of El Dorado Storm Water Management Plan
- Storm Water Ordinance
- Example Notice of Violation
- BMP Maintenance Plan
- Power Point Presentation
- Example Maintenance Work Order
- Example BMP Database Tracking Form

TD-TEU staff will discuss water quality protection and proper temporary and permanent BMP installation in the field with street Maintenance personnel. The training will cover items such as installation of filter fence, coir logs, sediment traps, pipe, etc. TD-TEU will train and work with Maintenance staff to carry appropriate forms in all County vehicles to note, track and report illicit discharges in all areas of the County that are noted during normal driving and business operations. These discharges will be forwarded to TD-TEU staff for proper correction and reporting. Also, as mentioned above, TD-TEU staff will work with Maintenance staff to begin performing more BMP inspection work.

A certification statement for BMP training of the Maintenance crews will be included in all Annual Reports. This training will continue to be conducted on an annual basis to all County Maintenance Division staff. Use of the practices presented in the training will help in both sediment and erosion control throughout the County. The training will also help prevent discharge violations during storm and snow melt events as well as make the NPDES program a unified effort and a County-wide priority.

The TD-TEU will also train inspection staff within the Environmental Management Division (EMD). The training will cover illicit discharge detection and elimination, including tracking and correcting dry weather discharges. The TD-TEU staff will work with the EMD to develop inspection criteria and needed fields for entry into the Envision and CUPA databases.

The TD-TEU will also train inspection staff from the Development Services Division (DSD). The training will cover construction site inspection including plan review, onsite temporary BMPs, good housekeeping, permanent BMPs and site stabilization. The TD-TEU staff will work with the DSD to develop and record the required tracking data in the LMIS database.

Finally, the TD-TEU will conduct internal trainings for field inspectors so that they are fully capable of following the Permit inspection requirements. Topics will include illicit discharge detection, dry weather monitoring, illicit connections, BMP inspections, outfall inspections, road shoulder inspections and roadway inspections.

8.2 PERMIT REQUIREMENTS

Permit section III.B.7. states, " Permittees shall ensure that all municipal personnel and contractors responsible for implementing Permit requirements, for operating municipal facilities covered under Section III.B.2. of this Permit, and for conducting inspections required under Section III.B.1-5. of this Permit are adequately trained and educated to perform such tasks."

8.3 CONTROL MEASURES

The Control Measures outlined in **Table 8-1** were designed to adequately address the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements.

Table 8-1. Control Measures for the Municipal Personnel Training and Education Component

ID	Control Measure	Permit Provision(s) Addressed
MPTE 1	Municipal Personnel Training	III.B.7.
MPTE 2	Inspector Training	III.B.7.

8.4 SUPPORTING COMPONENTS

The Public Education Component (Section 7) will utilize appropriate media outlets to increase public and County staff knowledge regarding the impacts of urban runoff, problem identification, potential BMP solutions, and reduction of pollutants released into the environment. This will be accomplished through annual workshops and distribution of educational materials at appropriate locations. Changes made in County policies and planning strategies promoted in the Program Management Component (Section 1) will help ensure that storm water quality and watershed principles are integrated into the municipal operations. The Storm Water Facilities Inspection Component (Section 4) will also help to support this Component by outlining inspection training protocols for infrastructure.

MPTE1 – MUNICIPAL PERSONNEL TRAINING

DESCRIPTION

Training is the foundation of this Component. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The overall goals and objectives of the municipal personnel training program for the TSWMP are to:

- Promote the effective implementation of the storm water management program;
- Protect water quality;
- Protect County infrastructure;
- Meet pollutant load reduction requirements;
- Create a cohesive storm water education program for maintenance personnel that will prompt behavioral changes to improve water quality;
- Increase the general understanding of water pollution problems and pollution prevention techniques;
- Increase the specific knowledge of the Permit and the TSWMP and their requirements; and
- Increase the efficiency of the Regulatory program through effective BMP management; prioritization and reporting.

Specific training efforts for the Municipal Operations Control Measure are summarized below.

Municipal Operations Control Measure

Audience	Format	Subject Material to be Covered	Schedule or Frequency
• Maintenance crews • Road crews • Street sweepers • Fleet maintenance crews • Waste pickup • Pesticide/fertilizer applicators • Any contract/lease staff involved in above activities	• Classroom • Field demos • Tailgate sessions	• Overview of storm water management • BMPs for municipal operations • BMPs for traction abrasives and deicing material application and recovery • Pollutant load reduction strategies	• Yearly

EXISTING BMPS AND RELATED ACTIVITIES

The County currently performs annual BMP and NPDES related training for maintenance personnel and their contractors. To ensure that the Maintenance Division personnel understand their roles and responsibilities under the TSWMP, the County will continue to provide a series of classroom and field training modules. By having responsible division staff attend the training modules, the County will be able to effectively implement the TSWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Component.

- Continue to refine the training module to include the following:
  - Storm water management overview.

  - BMPs for municipal operations including lawful disposal of vacuum truck and sweeping equipment waste; and spill response, containment, and recovery at a minimum.
  - BMPs for traction abrasives and deicing material application and recovery. Specifically to include information regarding how traction abrasives and deicing material create potential water quality problems, the importance of quick material recovery, and the importance of avoiding soil disturbance when snow plowing.
- Implement training as follows:
  - Conduct classroom sessions and/or field demonstrations.
  - Conduct tailgate sessions.

ASSESSMENT TASKS

To document the implementation of the training program it is necessary for the County to keep appropriate attendance records of the various training sessions. A summary of each training session, including staff name, division, type of training, and date of training, will be included in the Annual Report. The standardized tracking sheet, such as the one presented below, may be used to track all the trainings that are attended.

Training Log for the Storm Water Program

Name of Workshop/Training: Sponsoring Organization/Department: Instructor: General Description of the Subject Matter: Location: Date:				
Name of Attendee(s)	**Title**	**Department**	**Phone**	**E-mail**

Maintaining records of training provided to staff allows the County to:

- Determine which staff requires which training;
- Determine when training sessions must be conducted; and
- Document evidence of training for enforcement and compliance purposes including copies of follow-up surveys and quizzes.

RESPONSIBILITY

The TD-TEU has primary responsibility for the Performance Standards within this Control Measure.

MPTE 2 – INSPECTOR TRAINING

DESCRIPTION

Training is the foundation of this Component. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. The Storm Water Coordinator will ensure that County personnel in the EMD, DSD and TD-TEU are adequately trained so that those staff can conduct field inspections in a manner consistent with Permit requirements.

The overall goals and objectives of the inspector training program for the TSWMP are to:

- Promote the effective implementation of the storm water management program;
- Discover and correct illicit discharges, illegal connections and dry weather discharges;
- Manage clean and contained construction sites;
- Protect water quality;
- Protect County infrastructure;
- Create a cohesive storm water education program that will prompt the behavioral changes needed to improve water quality; and
- Increase the general understanding of water pollution problems and pollution prevention techniques.

Specific training efforts for the Inspector Training Control Measure are summarized below.

Contractor Training Control Measure

Audience	Format	Subject Material to be Covered	Schedule or Frequency
• EMD Staff • DSD Staff • TD-TEU Staff	• Classroom • Field demos	• Overview of storm water management • Temporary BMPs for construction sites • Permanent BMPs for construction sites • IDDE • BMP RAM • Road RAM	• Yearly

EXISTING BMPS AND RELATED ACTIVITIES

The County is implementing the TSWMP through the establishment and completion of the program specific Control Measures and Performance Standards. To ensure that the various division personnel understand their roles and responsibilities under the TSWMP, the County will continue to provide a series of classroom and field training modules. By having responsible division staff attend the training modules, the County will be able to effectively implement the TSWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required to comply with the Permit provision(s) related to this Component.

- Develop training module to include the following:
  - Storm water management overview.
  - Temporary BMPs for construction sites – design, installation and maintenance.
  - Permanent BMPs for construction sites – design, installation and maintenance.

- Housekeeping.
- IDDE.
- Dry weather discharges.
- BMP RAM.
- Road RAM.
- Other Permit requirements.

- Implement training as follows:
  - Conduct classroom sessions and/or field demonstrations.

ASSESSMENT TASKS

To document the implementation of the training program it is necessary for the County to keep appropriate attendance records of the various training sessions. A summary of each training session, including name, division, type of training, and date of training, will be included in the Annual Report. The standardized tracking sheet, such as the one presented below, may be used to track all the trainings that are attended.

Training Log for the Storm Water Program

Name of Workshop/Training: Sponsoring Organization/Department: Instructor: General Description of the Subject Matter: Location: Date:				
Name of Attendee(s)	**Title**	**Department**	**Phone**	**E-mail**

Maintaining records of training provided to staff allows the County to:

- Determine which staff requires which training;
- Determine when training sessions must be conducted; and
- Document evidence of training for enforcement and compliance purposes including copies of follow-up surveys and quizzes.

RESPONSIBILITY

The TD-TEU has primary responsibility for the Performance Standards within Control Measure. The DSD and EMD will provide support for this Control Measure.

Section 9

FISCAL ANALYSIS COMPONENT (FA)

9.1 OVERVIEW

In order to ensure that the necessary financial resources are available to continue to comply with the Permit, the County must analyze its current program, related expenditures and funding sources and identify if additional funding is needed to fully implement the TSWMP. This Component identifies the County's approach for conducting its fiscal analysis as well as the development of the overall, long-term program funding strategy.

9.2 PERMIT REQUIREMENTS

Permit Section III.B.8. requires the County to conduct a fiscal analysis of its urban runoff management program. The Permit requires the County to evaluate expenditures (such as capital, operation and maintenance, education, and administrative expenditures) expected for Permit implementation and include an analysis of the sources of funding and the legal restrictions on those funds.

9.3 CURRENT FISCAL RESOURCES AND EXPENDITURES

State and federal funding partners have provided the bulk of the funding to implement water quality improvement projects in the Lake Tahoe Basin. These resources have helped the County implement critical elements of the EIP and the TMDL. In addition, local private development projects have generated mitigation funds, assessed by the TRPA, which the County uses for environmental mitigation projects.

Historically, the County's contribution to its storm water management program has been centered on maintaining the storm water collection, conveyance, and treatment facilities along with conducting project effectiveness monitoring studies, educational and outreach programs, program management, property inspections, illicit discharge investigations, etc. The primary funding sources for the County's NPDES Program include Public Utility Franchise Fees, part of the County General fund (~ 50%), and the Road Fund for road-related functions (~ 50%). The Development Services Division (DSD) and the Environmental Management Division (EMD) expend their own general fund resources to implement their respective portions of the NPDES Permit, even though these resources are limited and are not dedicated specifically for NPDES compliance. Some NPDES costs can be shared with inspection fees that are collected from private properties.

It should be noted that as a result of tightening budgetary constraints combined with increased regulatory requirements, the vast majority of California's public agencies tasked with storm water management responsibilities (e.g., counties, cities, flood control districts, etc.) are faced with significant revenue challenges.

9.4 FISCAL STRATEGY

Since regulatory requirements will continue to require more responsibility of the County, the County must continue to conduct fiscal analyses and closely monitor its budget to ensure that the necessary funds are available to conduct the required work. Any fiscal strategy must include a review of funding needs, propose methods to address funding shortfalls, and provide a detailed timeline with measurable milestones to secure needed funding, if necessary. In October of 2009, Nichols Consulting Engineers, Inc. (NCE) completed the *Final Funding Needs and Options Memorandum* for the County which outlined the County's projected funding needs to implement its storm water management program. That memorandum

also outlined the County's existing funding sources for storm water management. Then, in June of 2010, NCE completed a *Final Stormwater Finance Strategy Report* (Strategy Report) for the County which outlined strategies for securing the estimated difference in funding between what the County had and what it needed to fully implement its program. The activities that were conducted as a part of those efforts included:

- Confirmation/identification of existing program activities, costs and available resources. This included an audit of all current funding sources including general fund, road fund, etc. as well as federal and state grants. This audit evaluated the future reliability of those sources;
- Analysis of the total program costs for the five year permit term by County Division. The TSWMP was analyzed for anticipated funding needs necessary to support each of the program activities; and
- Identification of potential funding sources and development of a strategy to secure funding. This strategy formed a funding plan that identified possible revenue sources, along with pros and cons of utilizing each source, including any legal restrictions on the use of various funds.

The approach that was recommended from the Strategy Report was for the County to continue to fund the program at the existing levels with the general fund and the road fund and to pursue a Property Related Fee (Fee) of $105 per year per parcel. This Fee would have to go to the public for a majority vote. Next steps for this process include:

- Evaluation of the community support and political feasibility of the recommended Fee using tools such as a community-wide public opinion survey and analysis as well as success rates of similar communities within California. A community-wide survey would assist the County in understanding the potential revenue available from a dedicated fee or special tax and the likelihood of successfully passing the Fee.

As a result of the economic downturn, the County chose not to pursue the Fee. Even though the County recognized the need for additional funding to continue to help improve Lake Tahoe's water quality, the County felt that the timing was not right to ask property owners to contribute funding to the its storm water management program. As a result, the County has continued to manage its program and meet Permit deliverables with limited financial resources. In the future, the County will evaluate whether it wants to pursue the Fee to generate the additional resources necessary to implement its storm water program to protect water quality.

9.5 Fiscal Analysis

Each year the County will conduct a thorough fiscal analysis of the expected funds that are necessary to fully implement the Permit requirements and the actions listed in the TSWMP. The analysis will include a description of the source(s) of funding that are proposed to meet the necessary expenditures including legal restrictions on the use of such funds. The analysis will consider both available financial resources and projected financial needs for the following:

- TSWMP Implementation;
- Pollutant Load Reduction Plan Implementation;
- Lake Clarity Crediting Program Participation;
- Capital Improvement Program Delivery;
- Operations & Maintenance Activities;
- Education & Outreach Activities;
- Construction Site Management

- Commercial, Industrial, Municipal and Residential Inspections;
- Illicit Discharge Detection and Elimination Activities;
- Water Quality Monitoring;
- Legal Authority / Storm Water Ordinance Implementation;
- Internal Training and Communication;
- Administrative Expenditures; and
- Program Evaluation, Coordination and Reporting.

The County anticipates operating primarily on its general fund and road fund to implement its NPDES Permit requirements in the near future and will continue to evaluate whether to pursue the recommended funding option described above if Permit deliverables are not being met. The County will evaluate whether or not additional specific NPDES general fund dollars can be shifted to the EMD and DSD to support their roles in implementing the TSWMP.

9.6 REPORTING

As a part of the Annual Report, the County will report on current and projected NPDES expenditures. The expenditures for implementing the TSWMP, including capital improvements, operation and maintenance activities, education, and administration of the program, will be included. Although the information will be conveyed in a table such as **Table 9-1**, the final table used within the report may include additional detail within each of the major categories.

In addition, the report will include a description of the source(s) of funds that are proposed to meet the necessary expenditures which are projected to be incurred.

Table 9-1. Example Fiscal Reporting Table

Component	Expenditures During Current Fiscal Year	Estimated Budget for Next Fiscal Year	Legal Restrictions of Funds
Program Management			
Construction			
Commercial, Industrial, Municipal and Residential			
Storm Water Facilities			
Illicit Discharge/Illegal Connections			
Development/Redevelopment			
Public Education			
Municipal Personnel Training			
Fiscal Analysis			
Program Implementation, Evaluation and Reporting			
Pollutant Load Reduction Plan			
Storm Water Monitoring			
TOTAL			

Section 10

PROGRAM IMPLEMENTATION, EVALUATION, AND REPORTING COMPONENT (PIER)

10.1 OVERVIEW

The implementation of the TSWMP requires significant inter-Division participation. To ensure that the various Division personnel understand their roles and responsibilities under the TSWMP and that the TSWMP is effectively implemented, the County's Storm Water Coordinator will develop and provide a series of coordination meetings and training modules. The specific Permit-required training efforts planned for each Component are discussed in their respective sections of the TSWMP.

Paramount to the success of the storm water program is the need for the County to evaluate the effectiveness of its program by compiling and reviewing program data and procedures. The County will develop a long term strategy to assess the effectiveness of its program and will include both direct and indirect assessment methods. These assessment methods and long-term strategies will allow the County to identify trends, necessary improvements or data gaps, and to modify the TSWMP accordingly in order to make sure that it remains effective in addressing and preventing storm water pollution. The results of these assessments and proposed modifications to the TSWMP will be provided to the Lahontan Regional Board on an annual basis.

10.2 PERMIT REQUIREMENTS

Permit requirements specifically related to program reporting include the following:

- Annual Reporting Requirements are outlined in the Permit in the Monitoring and Reporting Program section MRP IV; and
- There is no specific Permit requirement for conducting a program evaluation; however the County will perform this analysis for the benefit of its storm water program.

10.3 PROGRAM IMPLEMENTATION

The TSWMP has been structured to identify the specific activities and corresponding schedules that must be implemented as well as the responsible Division(s). This is organized by a series of Control Measures and corresponding Performance Standards.

Successful implementation of the TSWMP also requires an extensive training effort by the County to ensure that its employees understand the storm water program and conduct their activities in a manner so as to minimize pollutants from storm water discharges. The County's proposed training efforts are summarized in the following subsection and are covered in detail in the corresponding Components in the TSWMP.

10.3.1 Training Program

As noted throughout the TSWMP, many County employees will be associated with the implementation of the TSWMP. To implement each of the Components, the County will develop audience/subject-specific training programs. Target audiences will be educated on the following topics as applicable:

- Requirements of local municipal permits and ordinances;

- Impacts of urban runoff on Lake Tahoe water quality;
- Importance of good housekeeping;
- Pollution prevention and safe alternatives;
- Household hazardous waste collection;
- Site specific, structural, and source control Best Management Practices (BMPs);
- BMP maintenance; and
- Non-storm water disposal alternatives.

A summary of the proposed training topics, which include the topics above as appropriate, and formats specific to the municipal, construction, and industrial/commercial communities are shown in **Table 10-1**.

Table 10-1. Summary of Proposed Training Activities

TSWMP Component	Format(s)	Topics						
		Basic urban runoff training	Illicit Discharge Detection and Elimination	Lawful disposal of vacuum truck and sweeping equipment waste	Water quality impacts associated with land development	Storm water quality improvement committee project planning and design processes	How to conduct a storm water inspection	Spill response, containment, and recovery
Illicit Discharges	• Classroom • Tailgate sessions	X	X	X	X		X	X
Construction	• Classroom • Field demos • Tailgate sessions	X			X	X	X	X
Development	• Classroom • Field demos	X			X	X		
Industrial/Commercial	• Classroom • Field demos	X		X	X		X	X
Municipal Operations	• Classroom • Field demos • Tailgate sessions	X	X	X		X	X	X

10.4 PROGRAM EVALUATION

The complete and successful implementation of the Tahoe Storm Water Management Plan will protect water quality. However, the ability to actually measure statistically significant improvement in water quality is difficult and long term. As a result, in the short term there is a need for using other assessment tools to evaluate the effectiveness of a storm water management plan. A long term assessment strategy is needed to set in place near term and long term assessment methods.

The long term assessment strategy will address the storm water program in terms of achieving both programmatic goals (i.e., raising awareness, changing behavior) and environmental goals (i.e., reducing pollutant discharges, improving environmental conditions). Different tools will be used to assess these different goals or outcomes. However, the strategy will initially focus primarily on program data and less on water quality data.

Generally, program evaluations will be conducted by comparing how well the County did at implementing Components, which are likely to lead to storm water quality improvement. If correlations can be established between implementation (e.g., conducting a survey, assessing BMP implementation, etc.) and water quality, it may allow predictions of water quality resulting from implementation of certain types of programs. Over time, correlating water quality improvement to programmatic results may help to identify the most expedient and cost-effective approaches to planning and assessing the program.

In developing the long term strategy the County will consider efforts by the California Storm Water Quality Association to identify methods for assessing the effectiveness of a storm water program (CASQA, *An Introduction to Stormwater Program Effectiveness Assessment*, 2005). The County will incorporate these guidelines as applicable in the development of the effectiveness strategy.

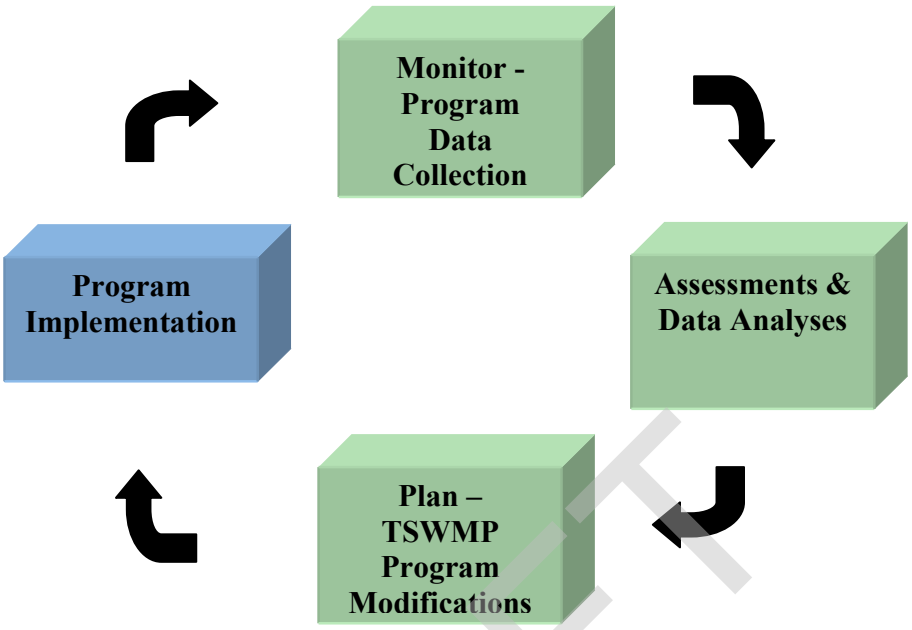
10.4.1 Performance Standards

Each Component described in this TSWMP has a list of associated Control Measures that address activities required by the Permit. The County will follow these Control Measures and implement the associated Performance Standards (i.e. the specific efforts outlined to meet the Control Measures). Where Performance Standards have been set, the County's program is considered to be effective if the Performance Standard is equaled or exceeded. The Performance Standards will be reviewed annually to determine whether the County has met its implementation obligations.

10.4.2 Assessment Tasks

As noted previously, assessment tasks have been identified for each Control Measure. The assessment tasks identify the data that needs to be collected in order to document the County's activities and to aid in assessing the effectiveness of the Control Measures. This data will be compiled and reviewed each year to assess trends, improvements, and data gaps. The annual review will also provide the County with an opportunity to identify modifications to the TSWMP to better address potential storm water quality issues (**Figure 10-1**).

Figure 10-1. Program Evaluation Process



10.5 REPORTING

The County has developed standardized formats for all reports that are required pursuant to the storm water Permit. This will include annual reports, fiscal analysis reports and program effectiveness reports. Pursuant to federal regulations, all reports and information will be signed and certified.

10.5.1 Annual Report

The purpose of the Annual Report is to document the status of the TSWMP implementation, present results from activities implemented, provide a compilation of deliverables and milestones reached during the previous fiscal year and report on the overall status and effectiveness of the TSWMP. Updates, improvements, or revisions to the TSWMP may also be proposed in the Annual Report. The Permit requires that an annual report be submitted to the Lahontan Regional Water Board by March 15 of every year, beginning in 2014. These specific reports are as follows:

- Pollutant Load Reduction Report;
- Storm Water Facilities Inspection Report;
- Construction Site Inspection Report;
- Commercial, Industrial and Municipal Site Inspection Report;
- Traction Abrasive and Deicing Material Report;
- Storm Water Monitoring Report (Appendix B);
- Illicit Discharge Report;
- Education Component Report; and
- Impacts Influencing Baseline Pollutant Loads Report (2015 Report only).

The TSWMP Review and Annual Report, which is due starting March 15, 2014 will focus on the items listed above, but will also include the following:

- An Executive Summary discussing the effectiveness of TSWMP in reducing storm water pollution to the maximum extent practicable;
- Summary of activities conducted by the County (including an up-to-date organizational chart);
- Lake Tahoe Crediting Program Update; and
- Recommendations to improve the BMPs, Performance Standards, and the TSWMP.

10.5.2 TSWMP Modification

Based on the program evaluation and experience in the implementation of the various Control Measures, the TSWMP may need to be modified, revised, or amended periodically in order to respond to changing conditions or to incorporate more effective approaches. In addition, the County may also need to revise the TSWMP in order to comply with regional/watershed-specific requirements or waste load allocations developed and approved pursuant to the TMDL. Proposed revisions will be provided to the Lahontan Regional Board as a part of the Annual Report submittal.

10.5.3 Report of Waste Discharge and Preliminary Pollutant Load Reduction Plan

The Permit expires on December 5, 2016. Therefore, the County is required to submit a Report of Waste Discharge (ROWD) and a preliminary PLRP to the Lahontan Regional Water Board 180 days prior to its expiration (June 9, 2016). The ROWD serves as the application for the re-issuance of the Permit. The updated PLRP will outline the strategy for the County to meet the next Permit term's (2016-2021) pollutant load reduction requirements pursuant to the TMDL.

10.5.4 Control Measures and Performance Standards

The Control Measures and Performance Standards for the storm water program reporting are summarized below.

- Develop a long-term effectiveness assessment strategy;
- Develop a standardized annual reporting format and template;
- Submit annual report including the elements described above; and
- Implement the strategies outlined in the Pollutant Load Reduction Plan (Appendix A).

10.5.5 Implementation Schedule

The implementation schedule for reporting Control Measures and Performance Standards is outlined in each Component.

RESPONSIBILITY

The Storm Water Coordinator has primary responsibility for this Control Measure. The Development Services Division, Environmental Management Division and County Counsel will provide support for this Component.

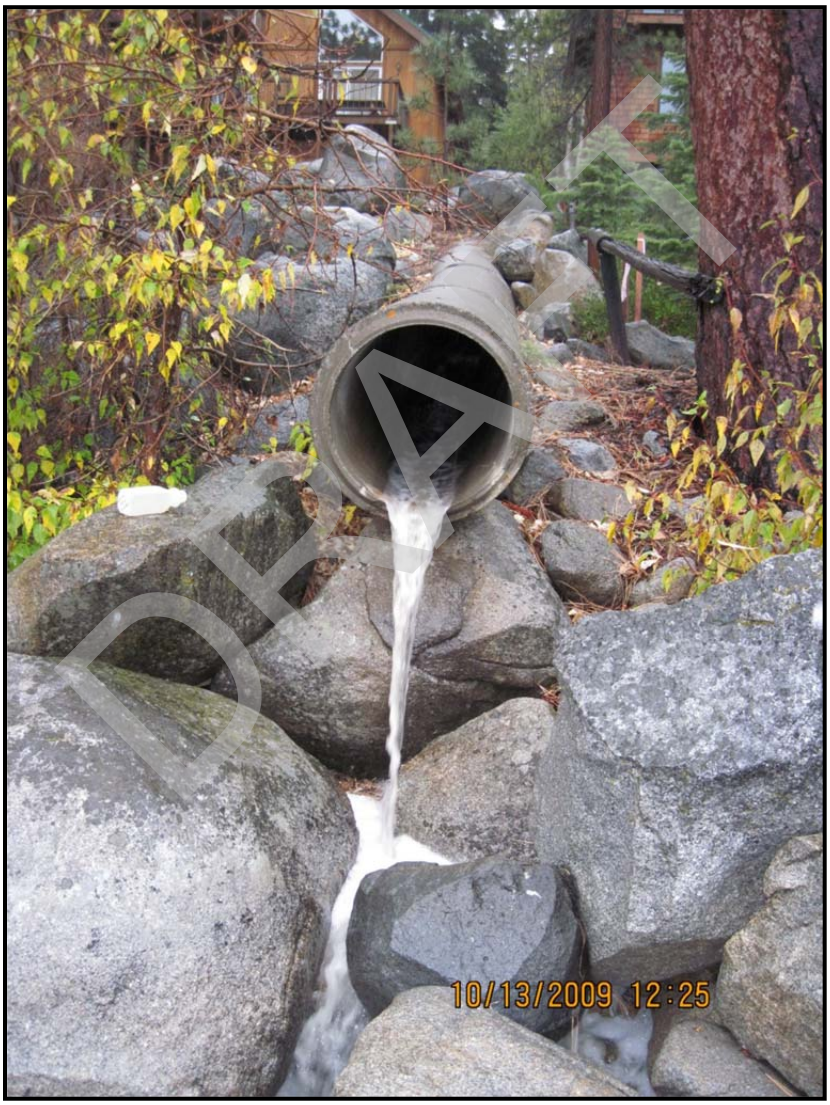
APPENDICES

APPENDIX A

County of El Dorado

Pollutant Load Reduction Plan

Lake Tahoe Basin



March 2013

COUNTY OF EL DORADO DEPARTMENT OF TRANSPORTATION

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The Pollutant Load Reduction Plan provided herein has been prepared by or under the direction of the following registered person. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

6 March, 2013

CIVIL ENGINEER, RCE #C70168
Daniel Kikkert, P.E.
Acting Senior Civil Engineer

REGISTERED PROFESSIONAL ENGINEER
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Executive Summary

This Pollutant Load Reduction Plan (PLRP) outlines how the County of El Dorado (County) intends to meet the first five year National Pollutant Discharge Elimination System (NPDES) Permit (Permit) requirements for reducing pollutant loading to Lake Tahoe. The Permit requires the County to develop a PLRP by March 15, 2013 to outline its strategy to reduce its baseline fine sediment particle (FSP) pollutant load by 10%, its baseline total phosphorus (TP) pollutant load by 7% and its baseline total nitrogen (TN) pollutant load by 8% by September 30, 2016. Based upon the County's Baseline Pollutant Load Calculations[i], and the above-mentioned Permit requirements, the County is required to obtain 220 credits by September 30, 2016. A credit is defined as 200 pounds of fine sediment particles less than 16 µm in diameter.

The County's strategy to demonstrate compliance with this requirement is to register five (5) Urban Planning Catchments (UPCs) through the Lake Clarity Crediting Program (LCCP). The five (5) UPCs (Apalachee, Montgomery Estates Area 1, Christmas Valley, Angora 3 and Sawmill/Echo View) contain Water Quality and Erosion Control Projects that the County constructed between 2004 (baseline period) and 2012. By utilizing the Pollutant Load Reduction Model (PLRM), the County has calculated that it will obtain 251 credits when it registers the water quality and erosion control improvements constructed in the five (5) UPCs. See Table 6 below for more specific detail on this. The County does not propose to obtain credit from improved sweeping practices or advanced abrasives practices during this Permit term. All of the credit will be obtained from infiltration improvements, road shoulder condition improvements and private property best management practices (BMPs).

1.0 Background

1.1 Lake Tahoe Total Maximum Daily Load (TMDL)

Lake Tahoe is a national treasure and was designated by the Environmental Protection Agency (EPA) as an Outstanding National Resource Water (ONRW). In order to establish long term water clarity trends and to monitor Lake Tahoe's health, Lake Tahoe clarity measurements have been taken consistently since 1968. The long-term trend had shown a historically declining condition, but the trend has exhibited moderate improvement, particularly over the last decade (2002 – 2011)[ii]. In order to continue to improve this trend, a TMDL was developed for Lake Tahoe. The TMDL process identifies the maximum load of a particular pollutant that a water body is able to assimilate while fully supporting its designated uses. The Lake Tahoe TMDL has an endpoint target of the mean annual water clarity of 97.4 feet, which was the measured clarity during the period from 1967 to 1971.

In 2011, the Lahontan Regional Water Quality Control Board (Lahontan) completed a TMDL analysis for Lake Tahoe and determined that an increased emphasis should be placed on controlling very fine sediment particles, which are less than 16 micrometers in diameter, from the urban areas surrounding Lake Tahoe[iii]. As a result, Lahontan adopted Basin Plan Amendments (BPA) to modify their water quality protection mandates to focus local Basin jurisdictions' efforts toward controlling fine sediment loading. Along with the BPA, an updated NPDES Permit was adopted, requiring the

local jurisdictions to participate in the LCCP. The LCCP is an entirely new administrative process to plan for, track, monitor and report on pollutants of concern.

1.2 Baseline Pollutant Load Calculation

A major TMDL milestone, which was required by a 13267 Order (Order) issued by Lahontan in March 2011, was for the local jurisdictions to calculate their respective baseline pollutant loading estimates for fine sediment, total nitrogen and total phosphorus. The period of time from October 1, 2003 to May 1, 2004 is defined by the Order as the baseline condition and is the point of reference for estimating baseline pollutant loading. The County's Baseline Pollutant Load Estimate Report outlined the results of the County's findings in response to that Order. The County's baseline pollutant loading estimates are presented below in Table 1.

Table 1 – County of El Dorado Baseline Pollutant Loading Estimates

Total Area (acres)[1]	Surface Runoff (acre-feet / year)	Pollutant Loading				
		TSS	FSP	TP	TN	Units
19,738	1,302 - 1,410 -	767,000	439,000	2,300	9,000	lb / year
		±49,000[3]	±28,000[3]	±300[3]	±600[3]	lb / year
		348	199	1.0	4.1	metric tons/ year
		-	2.2E+19	-	-	# particles / year[2]

1. Both Urban and Non-Urban landuses (as defined for the TMDL) were included in the total area.
2. 1 kg FSP = 1.1×10^{14} particles FSP[iv]
3. Represents the range in values originally submitted in County's Jurisdiction Specific Baseline Pollutant Load Estimate Report

1.3 Municipal NPDES Permit

In December 2011, Lahontan adopted an updated Municipal NPDES Permit for the three California Local Jurisdictions around Lake Tahoe (County of El Dorado, County of Placer and City of South Lake Tahoe). The Local Jurisdictions subsequently appealed the Permit and after many negotiations, an amended Permit was adopted by Lahontan in October 2012. The Permit requires, among other things, the County to develop a Pollutant Load Reduction Plan (PLRP) by March 15, 2013 to outline its strategy to reduce its baseline FSP pollutant load by 10%, its baseline TP pollutant load by 7% and its baseline TN pollutant load by 8% by September 30, 2016. This Report satisfies that PLRP requirement.

In addition to the PLRP, the NPDES Permit identifies two other milestones for pollutant load reduction planning efforts, which include:

- Pollutant Load Reduction Progress Report – October 1, 2013
- Report of Waste Discharge and Updated Pollutant Load Reduction Plan – June 9, 2016

2.0 Methodologies

2.1 Methods of Analysis

The County utilized the Pollutant Load Reduction Model (PLRM) to calculate pollutant load reduction estimates from its baseline pollutant load estimates for fine sediment, total nitrogen and total phosphorus from the County's jurisdiction in the Tahoe Basin. County staff modeled all of the Urban Planning Catchments (UPCs) where water quality and erosion control improvements were constructed between 2004 (baseline period) and 2012.

For the Baseline Load Estimate, the County aggregated its 338 defined subwatershed areas into 95 planning level catchments and modeled each of those 95 catchments. In doing so no extrapolation work was required in order to model the County's entire jurisdiction. For the PLRP, the County aggregated 19 defined catchments into five (5) UPCs. Existing physical condition data were gathered and analyzed to inform the PLRM to predict the most accurate pollutant loading estimates possible. These data included area, land use, precipitation, soils, slope, road risk, road shoulder condition, directly connected impervious area, indirectly connected impervious area, treatment BMPs, sweeping practices, road abrasive practices and private property BMPs.

Despite the County's best efforts, there was inherent uncertainty in the County's baseline pollutant loading estimates and there continues to be uncertainty in the County's pollutant load reduction estimates due to several factors. One primary concern deals with catchment connectivity. Connectivity was not included in the County's baseline pollutant loading estimate because an established methodology was not yet developed. In order to remain consistent, connectivity is not included in this PLRP load reduction estimate effort either. Connectivity is discussed in more detail below in Section 2.5. Other weaknesses inherent to the pollutant loading estimates come from technical difficulties encountered in the PLRM. Some of these flaws are inherent in hydrology based models in general and some are more particular to the PLRM. These technical difficulties are discussed in more detail below in Section 2.6.

The basic equation used by PLRM for calculating pollutant loads is as follows:

(i) $Pollutant\ Load = Area * Precipitation * Connectivity * Pollutant\ Concentration$

The parameters are defined as follows:

	PLRM
Area	$f(Watershed, Landuse, Ownership, Soil\ Type)$
Precipitation	$f(x, y, z, t)$
Connectivity	$f(DCIA, ICIA)$
Pollutant Concentration	$f(Landuse, Condition, Maintenance\ Practices)$

2.2 Model Parameters

The discussion of model parameters is limited to the work completed using the PLRM. See Appendix A for the corresponding UPC figures and Appendix C for the parameters used for each UPC.

Watershed

As part of the County's Pollutant Load Reduction Strategy (PLRS) effort, completed in 2009, the County determined the boundaries for all catchments within the Basin which contained County Rights of Way[v]. At that time the catchments totaled 338, with a total area of approximately 19,750 acres. The catchments were determined using a combination of United States Geologic Survey (USGS) defined watershed boundaries, County Existing Conditions and Analysis Memorandum (ECAM) and field observations.

For consistency, the County used these defined boundaries as the basis for the PLRM modeled boundaries. No attempt was made to separate urban areas from non-urban areas as the County was defining overall watershed boundaries. The determination of urban versus non-urban was based on assigned land use as defined for the TMDL[vi] and is as follows:

> Urban: Single-Family Residential (SFR), Multi-Family Residential (MFR), Commercial Institutional / Communications / Utilities (CICU), and Transportation (Primary, Secondary, and Unpaved Roads).
>
> Non-Urban: Vegetated (includes Unimpacted, Turf, Recreational, Ski Areas, Burned, and Harvested)

The County used the approach outlined in the Lake Tahoe Clarity Crediting Handbook[vii] to take "modeling drainage catchments" and group them into "urban catchments" with the definition of each as follows:

> **Urban Catchment**: *A contiguous area containing urban land uses with runoff draining to a surface waterbody.*
>
> **Modeling Drainage Catchment**: *A unique area fully contained within only one Urban Catchment.*

Based on the definitions above, the County has classified all of the original 338 watersheds as "Modeling Drainage Catchments". These, in turn were grouped into 95 "Urban Catchments" for the Baseline Load calculation in order to facilitate easier modeling and reporting of the results. As stated above, for the PLRP, 19 urban catchments, comprising five (5) UPCs were modeled. Because all watershed areas were accounted for and modeled, no extrapolation work was necessary.

Precipitation

The County is using the precipitation data that was developed for the TMDL and is being used in the PLRM. The data are from the eight SnoTel sites within the Basin and were compiled using the PRISM model[viii]. This data is gridded at an approximately 800 meter grid (158 Acres). Not all UPCs fell entirely within one grid cell, so to determine the correct cell the County used those cells that best represented the majority of the

catchment area. It is anticipated that this could provide variability in the modeled pollutant loads.

Slope

The slopes for each of the watersheds were estimated using the USGS Digital Elevation Model for the Basin. The data are available from the Lake Tahoe Data Clearing House Website[ix].

Land Use

All land uses were determined from the GIS Layer defined by Tetratech for the TMDL. Though the layer is a snapshot in time, it was created as a composite dataset based on datasets which had undergone a quality assurance check[x].

The land uses do not account for jurisdictional ownership, which includes all pervious land uses within the Rights of Way. The County used an in-house dataset of County and California Department of Transportation (Caltrans) Rights of Way in order to determine the jurisdictional ownership. In the areas where the County Right of Way is not defined (i.e. sections of Sawmill Road, etc.), the boundary limits were estimated using overall responsibility of maintenance.

Ownership

This parameter was utilized to determine jurisdictional ownership with respect to the Rights of Way. Within certain areas of the County, there exists the opportunity for comingling of flows with Placer County (Placer), Caltrans and the City of South Lake Tahoe (City).

In the case of the City, no flows were modeled to discharge into the County. Caltrans areas, and subsequent loads, were removed from each catchment to focus the modeling effort solely on the County pollutant load.

Soil Type

All soil data were taken from the 2006 Tahoe Basin Soil Survey completed by the Natural Resources Conservation Service (NRCS)[xi]. An intersection analysis was completed in GIS to extract the soils data within each of the defined watersheds. This was then used as input into the PLRM Soil Editor.

Note that the soil data input into the PLRM is independent of the Vegetated and Pervious land uses.

Land Use Conditions

Road Risk

Road Risk is used as the overall metric of the pollution potential for road segments. The County used the GIS layer of Road Risk as defined by Northwest Hydrologic Consultants, Inc. (NHC) as a starting point for determination of overall Road Risk. Using the guidelines established in the PLRM User's Manual[xii], the County made adjustments to this layer to reflect school bus routes, Primary / Secondary Road intersections, and upgrading of certain high volume roads. The refined County Road Risk layer is available upon request.

The County does not have data to suggest that changes to overall slope, traffic density, and adjacent land use have occurred since 2004 (baseline condition); however these changes are not considered to have a significant impact to pollutant load estimation. Exclusive of the changes outlined above, no additional changes were made to this layer.

Road Shoulder - Condition

A subset of the Road Risk which is input into the PLRM is the road shoulder condition. The County used the GIS layer of road shoulder condition as defined by NHC as the starting point. The layer reflects the 2010 condition, as defined by NHC, and required adjustment for assessing road shoulder conditions that occurred after 2010. Changes were made to this layer based on project plan sheets and County in-house knowledge. These changes included adjustments to the overall road shoulder condition (Erodible, Stable, Protected, and Stable & Protected).

Due to differences between the spatial format of the Road Shoulder Condition layer and the Road Risk layer, the County was unable to extract the Road Shoulder Condition as a function of Road Risk. Due to this constraint, the County applied the overall shoulder condition for the UPC to each of the estimated road risk categories.

Road Shoulder – Connectivity

The County used the NHC defined road shoulder shape file as a starting point, which had classified each shoulder within the Tahoe Basin as Directly Connected Impervious Area (DCIA) or Indirectly Connected Impervious Area (ICIA). These parameters are defined as[xiii]:

> DCIA: Impervious surfaces draining to a conveyance system.
>
> ICIA: Impervious surfaces draining to pervious surfaces that promote infiltration, distribution and energy dissipation, or storage prior to overflow draining to a conveyance system.

Changes were made to this layer based on project plan sheets and County in-house knowledge. The County calculated the % DCIA / % ICIA to the nearest whole percent due to the availability of the data. The PLRM User's Manual recommends taking this value to the nearest 20% (i.e. 20%, 40%, 60% …) as "… estimation closer than about 10% may provide diminished returns in modeling results …"[xiv].

Private Property Best Management Practices

The County used the recommended BMP implementation percentages, by land use, outlined below in Table 2 for the PLRM Baseline Load inputs. For the post 2004 condition, the County used the BMP implementation percentages, by land use, that were provided by TRPA as of November 13, 2012.

Table 2 - PLRM Inputs for Baseline Load and Post 2004 Load Estimate

Description of PLRM Input	Land Use	PLRM Baseline Inputs	PLRM Post 2004 Inputs
Road Abrasive Application Strategy	Secondary Roads – All Road Risk Categories	Minimal Controls	Minimal Controls
	Primary Roads – All Road Risk Categories	Moderate Controls	Moderate Controls
Sweeper Type	Secondary Roads – All Road Risk Categories	Mechanical Broom	Mechanical Broom
	Primary Roads – All Road Risk Categories	Mechanical Broom	Mechanical Broom
Sweeping Strategy	Secondary Roads – All Road Risk Categories	2 times per year	2 times per year
	Primary Roads – All Road Risk Categories	4 times per year	4 times per year
Private Property BMP Implementation*	Single-Family Residential	7%	21%
	Multi-Family Residential	19%	52%
	CICU	5%	18%
	Vegetated Turf (general)	0%	0%
	Vegetated Turf (golf course)	100%	100%
	All Land Uses – Source Control Certificate	0%	1%**

* Post 2004 Inputs are from 2011 TRPA Stormwater Management Program White Paper for California parcels.
** Source Control Certificate data is from TRPA for El Dorado County only.

2.3 Model Parameterization

Software

The County utilized the combination of Arc View, AutoCAD and Microsoft Access to determine the break out of soils, land use, road risk, shoulder condition, road connectivity, treatment BMPs and private property BMPs parameters as a function of each watershed. The above-mentioned software enabled easier aggregation of the watersheds into UPCs and also facilitated calculating the percent breakout of each parameter mentioned above within each catchment. Since the data for each of the parameters was available, the County determined there was no need to extrapolate the pollutant loading estimates.

Treatment

The County used its BMP database and project plan sheets to account for existing treatment capacity within each catchment. Using this information, the County was able to calculate the total sump volume for all infiltrating hard structures (drainage inlets, sediment traps, etc.). The County also calculated the total treatment volumes from all treatment facilities (Basins, Vaults, Infiltrating Channels, etc.), including estimating the surface area for infiltration. This data was summed for each UPC and was modeled in PLRM.

In the model, the County had to account for infiltration from all of its treatment BMPs. However, infiltration has proven to be a difficult parameter to estimate on an average annual basis. The County has utilized the Constant Head Permeameter (CHP) developed by NRCS[xv] to measure infiltration rates. The measured values have ranged from <0.05 in/hr to >12 in/hr and represent the infiltration rate and soil condition for that time and date of the test. The measurements that are <0.05 in/hr and >1 in/hr exceed the suggested values given for the PLRM[xvi]. In order to be consistent with how the other jurisdictions approached infiltration rates, the County utilized the default infiltration rate value in the PLRM and assumed an average annual infiltration rate of 0.4 inches/hour for all basins and infiltrating structures. The County discussed this value with Brent Wolfe of NHC on December 12, 2012, who developed the PLRM, and Brent Wolfe stated that using a 0.4 inch/hour infiltration rate was completely acceptable and was in-fact more conservative, in most cases, than values the other California Local Jurisdictions were using.

This issue of measured infiltration rates as a surrogate for average annual infiltration rates continues to be an issue and requires further study. The NPDES Permit requires the use of the BMP Rapid Assessment Methodology (RAM) tool to assess the condition of infiltrating treatment facilities. The CHP is identified as the preferred method for this assessment[xvii]. There is debate on the proper use of this tool for measuring infiltration rates, as the CHP was designed to measure the transmission rate below the free surface and not what the infiltration rate is at the free surface.

There is also a discrepancy between treatment opportunities within the jurisdictional Rights of Way versus the residential and commercial areas. When an SFR, MFR, or CICU is given a certificate for installing BMPs, it is assumed that those BMPs will treat one inch of storm water from the respective impervious surface. The treatment capacity is based on BMP volume and the infiltration rate is based on either CHP measurements or NRCS Soil Types[xviii], where the rates can be >5.67 inches/hour[xix].

2.4 Assumptions

In order to model its pollutant load reductions from its baseline pollutant load estimates, the County had to make numerous assumptions. These include the following:

- All catchments were modeled as if all the storm water within each catchment drains directly to treatment device (drainage inlets, sediment traps, basins). The treatment devices were not modeled, in most cases, as distributed systems, even though that is how they are spatially distributed, due to the inefficiencies of the PLRM. This may affect the modeled treatment efficiency results.
- Infiltration rates for treatment basins, drainage inlets and sediment traps were assumed to be constant throughout the year, which is likely not the case.
- All catchments were modeled as if they were 100% connected, which is known to be inaccurate. See Section 2.5 below for further discussion of this issue.
- All pollutant loads and load reductions were assumed to be static, with no variability by season or by buildup and washoff, which is an inherent limitation in the PLRM.

2.5 Catchment Connectivity

Catchment connectivity is an unknown that the County and the other local jurisdictions need to gain a better understanding of in order to have greater confidence in the

pollutant loading estimates. The PLRM incorporates a DCIA function within the model, which is essentially a professional best-guess based on landscape geography and flow routing interpretations within the catchment. The PLRM has no function to evaluate catchment connectivity to a receiving water body post outfall. The County estimated its baseline pollutant load without a thorough analysis of catchment connectivity and the County submits this PLRP without a full analysis of catchment connectivity to a receiving water body post outfall.

Because an accepted methodology does not exist to model catchment connectivity, and to remain consistent with the County's Baseline Pollutant Load Estimate, the County did not include connectivity in its load reduction estimates in this PLRP. Over the Permit term, the County plans to conduct research and further field analysis to establish a methodology to model average annual catchment connectivity. Once a protocol is developed, the County may submit a request to Lahontan to re-open the NPDES Permit to adjust its baseline pollutant loading numbers and its pollutant load reduction estimates to more accurately reflect real world conditions as determined through the most up to date and current methods for predicting this complex process.

2.6 Technical Difficulties

Numerous technical difficulties were encountered throughout the process of modeling pollutant load reduction estimates. Some of the technical difficulties include, but are not limited to the following:

- PLRM errors were encountered regarding catchment area (too large, too small, etc.). Thus a sensitivity analysis should be performed to determine the model limits where accurate results can be achieved from modeling catchments of varying sizes.

- In PLRM, the 'Areas Draining to Infiltration Facilities' function was not working properly and provided inaccurate model results based on an apparent algorithm error. Thus, this function could not be used in the model and the County was required to utilize other methods to model treatment. For instance, when the user inputs the percentage of the area draining to this feature, the program assumes that the DCIA is 100%. In the cases where DCIA is less than 100%, it is possible to show an increase in load with the addition of infiltration facilities.

- In PLRM, the 'Areas Draining to Pervious Dispersion Areas' function was not working properly and provided inaccurate model results based on an apparent algorithm error. Thus, this function could not be used in the model and the County was required to utilize other methods to model treatment. For instance, when the user inputs the percentage of the area draining to this feature, the program assumes that the DCIA is 100%. In the cases where DCIA is less than 100%, it is possible to show an increase in load with the addition of pervious dispersion areas.

- In PLRM, there is no mechanism to model soil types so that they are spatially accurate in the model. Thus, the County believes that a sensitivity analysis should be performed to determine the impacts that this lack of functionality creates.

- The data set was not available to model Road Shoulder Condition as a function of Road Risk. Thus, the County believes that this data layer should be created so that it can be used in future modeling efforts.

- There is no proven method to calculate or model average annual catchment connectivity; thus the County requires advisory feedback to further define connectivity. As a result, additional time will be required to further understand this concept in order to incorporate it into its pollutant load estimates to reflect more accurate, real-world pollutant load delivery.

- Data on infiltration rates for treatment systems is limited and there is a lack of consistency between the methods applied to public versus private infiltration facilities. By investigating this issue further, a consistent approach can be utilized to determine conditions on the ground which will further establish accurate loading results.

- Hydrologic routing flaws are evident in PLRM which has limited the County's ability to accurately model watershed loading and treatment.

- PLRM in its current form does not allow for calibration to measured data.

- PLRM was found to provide erroneous treatment results for infiltration basins with small surface area footprints. The errors encountered were inconsistent, however when the errors occurred the runoff loads, as modeled, were eliminated.

3.0 County Pollutant Load Reduction Plan

Section IV.C. of the NPDES Permit requires Permittees to develop at PLRP that includes the following elements: 1) Catchment Registration Schedule, 2) Proposed Pollutant Control Measures, 3) Pollutant Load Reduction Estimates, 4) Load Reduction Schedule and 5) Annual Adaptive Management. These required elements, which outline how and when the County will register its UPCs to demonstrate sufficient credit by the end of the Permit term, are described in detail below.

3.1 Catchment Registration Schedule

According to Municipal NPDES Permit Board Order R6T-2011-0101A1, Table IV.B.2, the County must achieve 220 Lake Clarity Credits for water year October 1, 2015 to September 30, 2016 (Water Year 2016), and for subsequent water years. In order to demonstrate compliance with this requirement, the County proposes to register five (5) Urban Planning Catchments (UPCs). Load reduction estimates from the PLRM show that from the erosion control and water quality improvement work completed in the five (5) UPCs, 251 Credits can be achieved. The five (5) UPCs were aggregated based on land use, geography and proximity to a single discharge point. Table 3 outlines the five UPCs that the County intends to register through the LCCP, the credits that can be obtained per UPC and the proposed registration date for each UPC.

Table 3 – County's UPCs to be registered in the Lake Clarity Crediting Program

	Project Area	Credits	Proposed Registration Date (WY)
UPC1	Angora 3	9	2016
UPC2	Christmas Valley (All Phases)	65	2016
UPC3	Apalachee (All Phases)	112	2015
UPC4	Montgomery Estates (Phase 1)	25	2015
UPC5	Echo View / Sawmill	41	2016
UPC 1-5	**Total Project Credits**	**251**	
	Credits Required	220	
	% Attatinment	114%	

3.2 Proposed Pollutant Control Measures

The PLRM gives the greatest credit for projects that focus on infiltration. Since all County projects primarily focus on infiltration, sufficient credits exist from the water quality and erosion control projects constructed between 2004 and 2012 to meet the first 5-year Permit pollutant load reduction requirements.

Existing Water Quality Improvement Projects

The County has been constructing projects that focus on infiltrating runoff from County roads and rights-of-way since 1982. The total volume reduction from the infiltration-based improvements has been quantified and modeled to understand the average annual pollutant load reduction that is achievable from these types of BMPs. The results of this intensive and detailed effort indicate that sufficient crediting for the first Permit term can be fulfilled using projects constructed since 2004 (the baseline condition) along with private property BMPs. The BMPs that the County modeled in the PLRM include:

- Infiltration Basins
- Wet Basins
- Bed Filters
- Infiltrating Sediment Traps
- Infiltrating Drainage Inlets
- Infiltrating Channels
- Private BMP Retrofits

Table 4 outlines the Erosion Control Projects that the County constructed between 2004 (baseline condition) and 2012 by UPC.

Table 4 –Erosion Control Projects Constructed Between 2004 & 2012 by UPC

Project Name	UPC	Year Constructed
Apalachee 1	3	2004
Apalachee 2	3	2005
Apalachee 2A	3	2006
Apalachee 3A	3	2007
Apalachee 3B	3	2008
Apalachee 3B.1	3	2009
Christmas Valley 1	2	2007
Christmas Valley 2A	2	2009
Christmas Valley 2B	2	2010
Christmas Valley 2C	2	2012
Angora 3	1	2008
Angora Fire*	1	2007
Rubicon 5*	6	2010
Silver Tip*	6	2006
Montgomery Estates 1A	4	2011
Montgomery Estates 1B	4	2012
Sawmill 2A	5	2012
Echo View	5	2012

* The County is currently not planning to obtain credits from these projects under the current Permit term.

Road Shoulder Changes

The County modified the Road Shoulder Condition in the areas that were treated with erosion control improvements after 2004 (baseline condition). These improvements include curb & gutter, rock-lined channels, slope protection, pervious pavement, etc. The changes made to the Road Shoulder Condition GIS layer were based off of project plan sheets and in-house knowledge. Based on the improvements, the road shoulder change was primarily from an 'erodible' condition to a 'stable & protected' condition.

Private Property Best Management Practices

The County obtained the latest BMP implementation data from the TRPA on November 13, 2012 and input that data into the PLRM model runs as a function of UPC. The percentage difference in BMP implementation from the baseline condition (2004) yielded pollutant load reductions that the County can claim credit for, since it occurred within the County's jurisdiction. See Table 2 above for the BMP implementation percentages for the baseline condition and the current condition.

Private property BMP implementation is a critical part of protecting water Quality and community watershed stewardship. The County of El Dorado will continue to participate in community outreach to inform the public of their requirements to protect water quality.

Abrasives Controls

Because the County has sufficient credit from its erosion control project construction and private property BMP implementation, the County does not intend to take credit from its advanced abrasives strategies under the current Permit. The County does however intend to take credit for advanced abrasive controls under the next Permit term. Based

upon initial research and preliminary findings, the County anticipates that the modification it has made to this practice has had a significant impact on the runoff quality coming from roads within its jurisdiction. To date, no standard method exists to take credit for advanced abrasives strategies on a jurisdiction-wide basis. The County will continue to lead the basin in understanding the benefits to this management practice and will continue working with various agencies and staff to continue to develop a means to quantify the benefits.

Sweeping

The County has one top of the line sweeper (Elgin Eagle) and has secured the grant funds to purchase another top of the line sweeper (Tymco 500X) in spring 2013. This will allow the County to continue to sweep roads after abrasive applications and at periodic and/or bi-weekly intervals to improve water quality. However, because the County can obtain sufficient credit from its erosion control project implementation and private property BMP implementation, it does not intend to take credit for sweeping under the current Permit term. The County will obtain credit from its sweeping practices under the next NPDES Permit.

Pollutant Load Reduction Measures

Table 5 outlines the pollutant load reduction measures that were modeled for each of the five UPCs in the PLRM. By modeling the pollutant load reduction measures for each UPC, the County has determined that 251 credits are achievable.

Table 5 – Pollutant Control Measures by UPC

Project Area	TMDL UPC	Proposed Pollutant Control Measures
Angora	1	Infiltration Basins, Volume Reduction, Shoulder Condition Change, Private BMP Retrofit
Christmas Valley	2	Infiltration Basins, Volume Reduction, Shoulder Condition Change, Private BMP Retrofit, Infiltrating Channels
Apalachee	3	Infiltration Basins, Wet Basins, Bed Filters, Volume Reduction, Shoulder Condition Change, Private BMP Retrofit
Montgomery Estates	4	Infiltration Basins Volume Reduction, Shoulder Condition Change, Private BMP Retrofit
Echo View / Sawmill	5	Infiltration Basins, Volume Reduction, Shoulder Condition Change, Private BMP Retrofit

3.3 Pollutant Load Reduction Estimates

The estimates for pollutant loading and pollutant load reduction for each UPC were completed using the methodologies described above in Section 2. The County's Baseline Pollutant Load Estimate is outlined above in Table 1 and the County's Expected Pollutant Load Estimate, after registering the five UPCs, is outlined below in Table 6. As was mentioned above, the County can obtain sufficient credit to meet the pollutant load reduction requirements of the Permit by registering UPCs where erosion control projects and private property BMPs were constructed between 2004 (baseline condition) and 2012. See Appendix B for the PLRM output tables and Appendix D for the County's PLRM results summary table.

Table 6 – Baseline Loading & Expected Condition Loading Estimates

		Pollutant Load (lbs/yr)									
Project Area	TMDL UPC	TSS	FSP	TP	SRP	TN	DIN	lbs FSP Reduced	Credits	Baseline Load	% of Baseline Reduced
Angora	1	19,506	10,333	57	9	260	31	1,887	9	12,220	15%
Christmas Valley	2	9,358	5,043	29	8	125	14	12,910	65	17,956	72%
Apalachee	3	49,219	28,752	128	19	564	69	22,399	112	44,469	50%
Montgomery Estates	4	12,881	7,212	35	5	156	19	4,938	25	18,832	26%
Echo View / Sawmill	5	17,373	11,896	33	4	112	14	8,127	41	20,023	41%
Total		**108,337**	**63,236**	**283**	**45**	**1,217**	**148**	**50,261**	**251**	**113,500**	

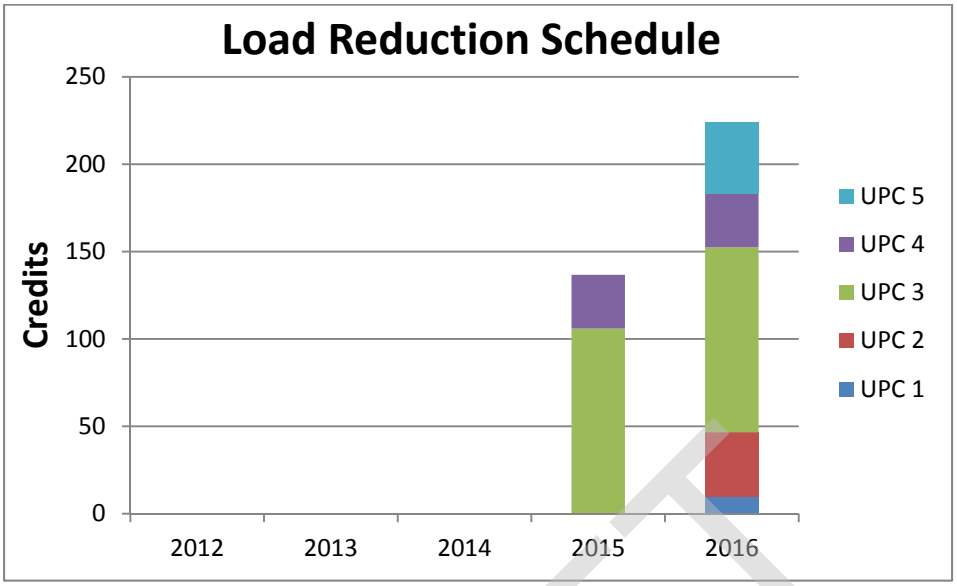
Summary	Pollutant Load (kg)							Credits
Achieved	49,141	28,683	128	20	552	67	22,798	251
Required			73		327		19,958	220
% Attainment			176%		169%		114%	114%

3.4 Load Reduction Schedule

The Permit specifically states that Permittees shall "Earn and maintain Lake Clarity Credits in accordance with Table IV.B.2 for water year October 1, 2015 to September 30, 2016, and for subsequent water years." The Monitoring and Reporting Program in Permit Attachment C specifically states that "Each Permittee will register additional catchments as needed to earn enough credits to meet the requirements contained in the Permit Table IV.B.2." In order to meet the required pollutant load reduction goals, the County evaluated several scenarios and the load reduction schedule associated with each. The result of this exercise was the formulation of a preferred load reduction registration schedule that County staff believes will both meet the intent of the Permit and will be the most cost effective.

Load Reduction Schedule – The County proposes to register two (2) catchments in water year 2015 and then register three (3) additional catchments in water year 2016. The County will register 137 credits in water year 2015 and then register the remaining 114 credits in water year 2016. See Chart 1 below for a graphical display of the County's load reduction schedule. This schedule meets the requirements of the Permit while allowing the County to enhance its resources over the next two years to perform the work required to register the catchments, conduct the condition assessments, manage the catchment credit schedules and participate in the LCCP tools development.

Chart 1 – County's Proposed UPC Load Reduction Schedule



Justification and Cost Savings Estimates

The LCCP Accounting and Tracking Tool (A&T Tool) has not yet been fully developed and thus UPCs cannot currently be registered and credits cannot be awarded. It is still uncertain when the A&T Tool will be available and therefore the County cannot fully commit to a catchment registration schedule in the immediate future. Without seeing the A&T Tool, the County also cannot fully determine the level of effort and cost associated with registering UPCs.

According to the Placer County Stormwater TMDL Strategy[xx] the average annual cost of the LCCP's inspection and reporting requirements is $76,000 per year or 500 staff hours at $150/hour. The assumptions made by the County of El Dorado are slightly different and are based on each UPC requiring 25 hours to develop/update, 40 hours to assess/inventory and 35 hours to maintain/report, annually. This equates to approximately $15,000 of work per UPC per year. Using these assumptions, the cost savings of delaying UPC registration for each year is approximately $75,000 or 500 staff hours, not counting for inflation. Because the Permit allows it, and because the A&T Tool is not yet developed, the County proposes to delay registering catchments until water year 2015, as opposed to starting in 2013, which will save the County approximately $150,000. See Chart 2 below for graphical representations of this.

Based on these estimates and accepting these assumptions, the County estimates that the cost to register the five (5) UPCs for Water Years 2015 and 2016 is approximately $95,000. See Chart 3 below for graphical representations of this.

Chart 2 – Cost Savings Estimate from Proposed Registration Schedule

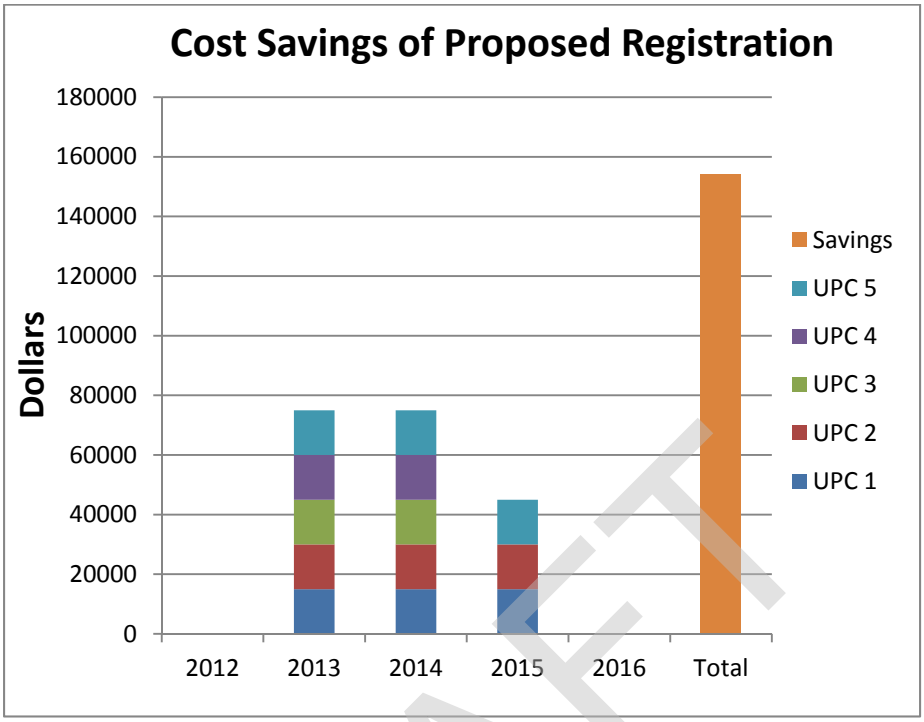
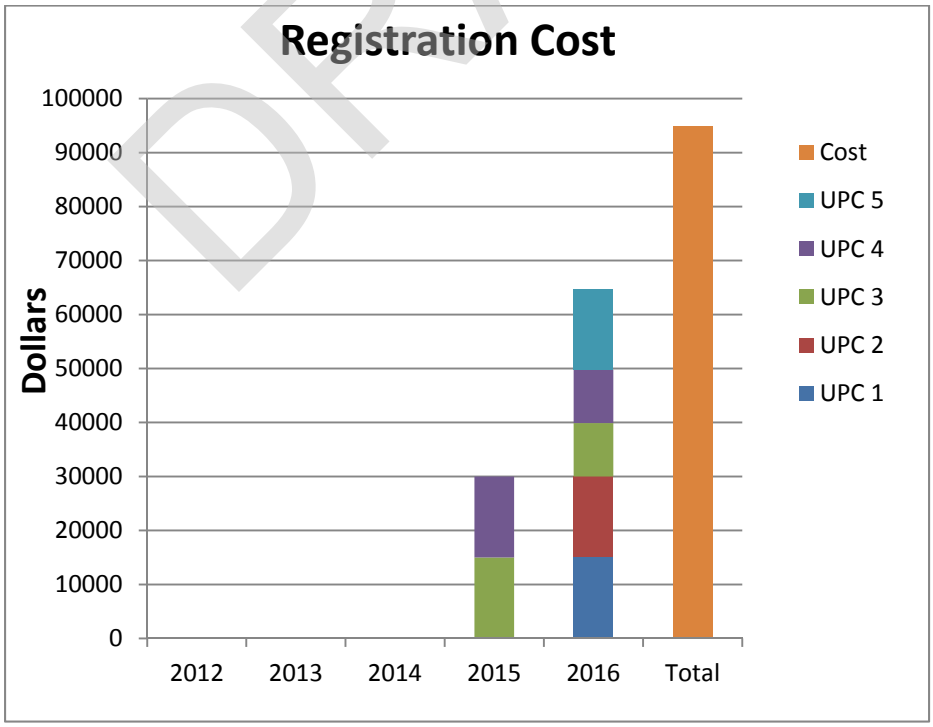


Chart 3 – Estimated UPC Registration Cost



3.5 Annual Adaptive Management

Throughout the NPDES Permit cycles, the County will continue to refine its understanding and operation of the required LCCP processes to improve efficiency and ultimately, water quality. The County's Storm Water Manager will work with the appropriate staff from both the Engineering Division and the Maintenance Division to annually assess storm water management activities and the associated load reduction progress. Since all of the County's credits are coming from improvements that are already constructed, the County's primary responsibility will be to inspect its BMPs to ensure that they are adequately maintained and are functioning as designed.

The Permit includes a Monitoring and Reporting Program that requires the Local Jurisdictions to conduct annual monitoring including catchment scale and BMP effectiveness monitoring. It is anticipated that this information will allow the County to adaptively manage the TMDL and Permit requirements and to better understand BMP effectiveness and the PLRM. As a result of improved monitoring data, the PLRM parameters can be better calibrated. From this, it is anticipated that the pollutant loading estimates may change; therefore it is paramount that flexibility be maintained in the Permit and the TMDL Program to allow for updates as information and data suggests.

The County will also continue to improve its understanding of water quality improvement practices including water quality project construction, BMP and roadway maintenance and private property BMP implementation. These measures will continue to be the County's key components to achieving Lake Tahoe's clarity goals and the County intends to take credit for these actions throughout the TMDL process.

4.0 Next NPDES Permit Term

The County will continue to focus its efforts on improving water quality and reducing pollutant loading to Lake Tahoe. As stated above, the County intends to focus on water quality improvement project implementation and enhanced roadway sweeping and abrasives practices in order to meet the requirements of future NPDES Permits. Table 7 below outlines the pollutant load reduction milestones that the County will be required to meet over the next 15 years (Lahontan's Clarity Challenge).

Table 7 – Pollutant Load Reduction Milestones

Pollutant	5-Year Milestone	10-Year Milestone	15-year Milestone (Clarity Challenge)	Transparency Standard (65-Year)
FSP	10%	21%	34%	71%
TP	7%	14%	21%	50%
TN	8%	14%	19%	46%

4.1 2012 – 2016 Project Construction

Between 2012 and 2016 the County plans to construct eleven (11) Erosion Control Projects. These projects are outlined below, along with their anticipated construction year.

- **Montgomery Estates Area 2 – 2013**
- **Montgomery Estates Area 3 – 2014**
- **Sawmill 2B Bike Path & Erosion Control Project – 2013**
- **Golden Bear – 2014**
- **Forest View – 2014**
- **Tahoe Hills – 2014**
- **CSA#5 – 2014/2015**
- **Meyers – 2016**
- **Boulder Mountain – 2013**
- **Lake Tahoe Blvd. Enhancement Project – 2014/2015**
- **Country Club - 2016**

The County will continue to perform PLRM modeling work to determine the potential available credits from constructing the above-mentioned Projects. The County will utilize the credits achieved from constructing these projects to help meet the requirements of the next NPDES Permit term.

4.2 Operations & Maintenance

Sweeping and Advanced Abrasives

Sweeping and abrasives management were evaluated as part of this PLRP. It was determined, based on both monitoring and modeling efforts, that both maintenance practices have a great benefit to water quality. The County modeled individual UPCs both with and without sweeping and has quantified the potential benefits that can be achieved from modifying this practice. As was previously discussed, because sufficient credit exists without adding in these additional practices, the County does not intend to take credit from them during this Permit term. The County is already implementing an improved sweeping and advanced abrasive program, which the County believes is having a significant benefit on water quality and lake clarity.

To date, the County has been successful working with the California jurisdictions on these practices and is an advisor in the development of responsible abrasive applications basin-wide. Currently, the County is working with Texas Southern University and Caltrans to understand the actual benefits resulting from modifying abrasives practices. This work will help to better inform PLRM in the future to determine pollutant load reduction expectations resulting from modifying these practices. The County is committed to continuing to improve its sweeping and abrasives strategies and to determining the associated water quality benefits to enable the County to take credit from these enhanced practices under future NPDES Permits.

The County is also developing a methodology to evaluate road conditions using visual assessments, preliminarily called the Simplified Compliance Road Rapid Assessment Methodology (SCRRAM). The County anticipates utilizing this methodology to conduct all road assessments in the future because it has been demonstrated to be low cost, reliable, safe and efficient. The County is also investigating utilizing new technologies to further improve its roadway condition assessment methodologies. One technology the County is investigating is placing Global Positioning Systems (GPS) on its sweepers and sander trucks to better track and account for their travel time and their subsequent effect on loads and load reductions. The model for this type of sweeping program is based off of the Maricopa County Public Works program in Arizona[xxi]. The other technology the

County is investigating is the TRAKER vehicle-based road dust emission measuring system[xxii].

Since the County does not intend to use sweeping and abrasives improvements as control measures for this Permit, a limited number of roadway condition assessments will be completed, however they will not be required for the UPCs proposed for registration.

BMP Maintenance
All County BMPs are inspected annually and are maintained to ensure functionality. To demonstrate that all of the credits should be awarded in the five (5) UPCs, the County will use a BMP Rapid Assessment Method (BMP RAM). This method, developed by the County, is equivalent to the endorsed 2nd Nature method, however it is already integrated into existing County tools and programs, and is thus more efficient for the County to utilize. All BMPs will be maintained as needed to meet compliance with the registered Catchment Credit Schedules and will be annually evaluated to ensure that credits are awarded.

5.0 Closing

County staff worked diligently on calculating the baseline pollutant load estimate and the anticipated pollutant load reductions in the post-baseline condition (2004 – 2012). The County is confident of its data collection and modeling efforts to date and believes that the work that the County has done, and continues to do, is having a beneficial effect on the water quality of Lake Tahoe. However, as mentioned above, this PLRP is submitted knowing that inherent uncertainties and technical difficulties exist. Because of this, the County will adaptively manage its NPDES Program and the strategies outlined in this PLRP and will maintain an open dialogue with Lahontan on its load reduction progress.

6.0 References

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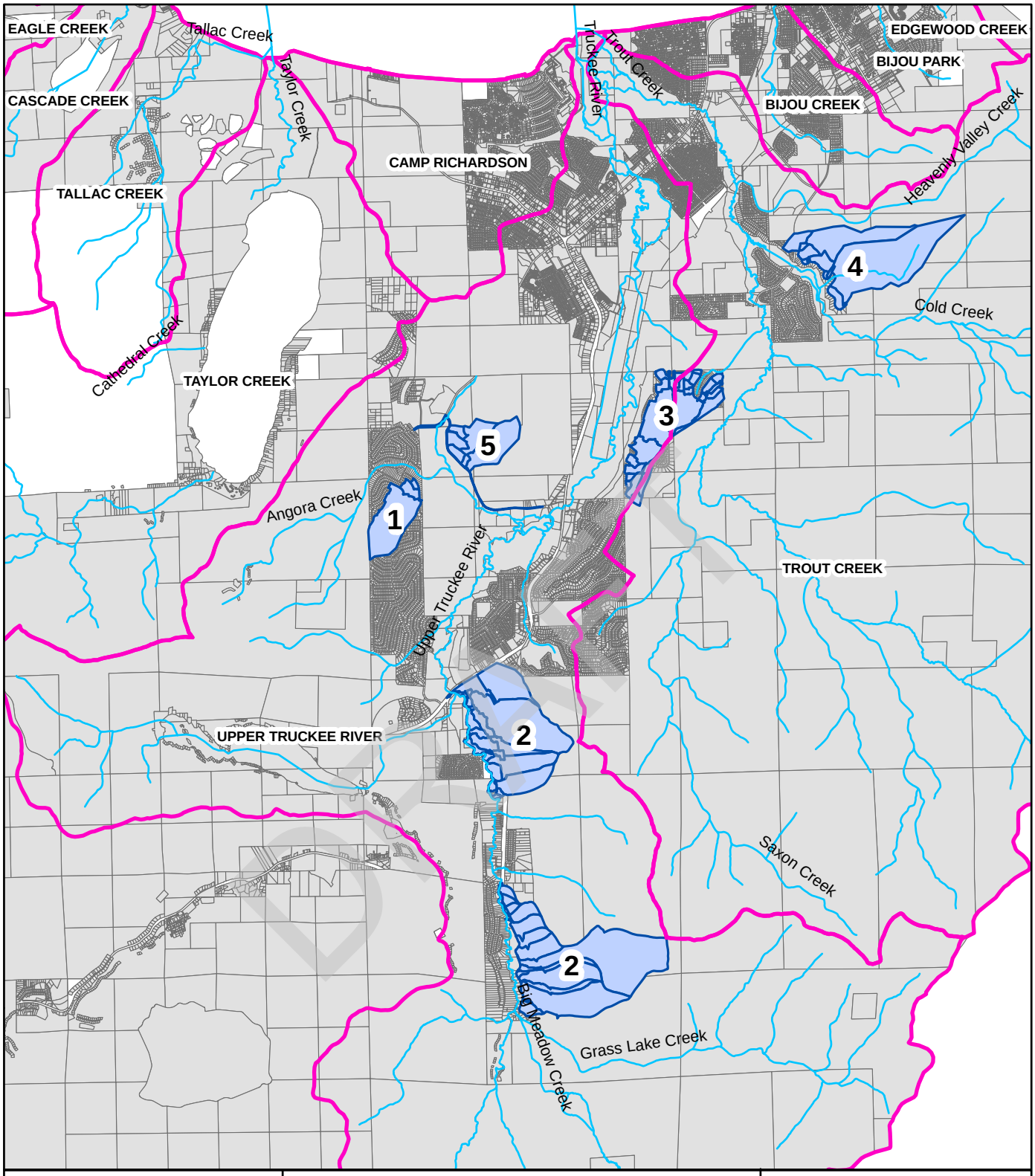
APPENDICES

APPENDIX A



Legend

Watersheds

Sub-Watersheds

Baseline

TMDL
UPC OVERVIEW

El Dorado County - DOT

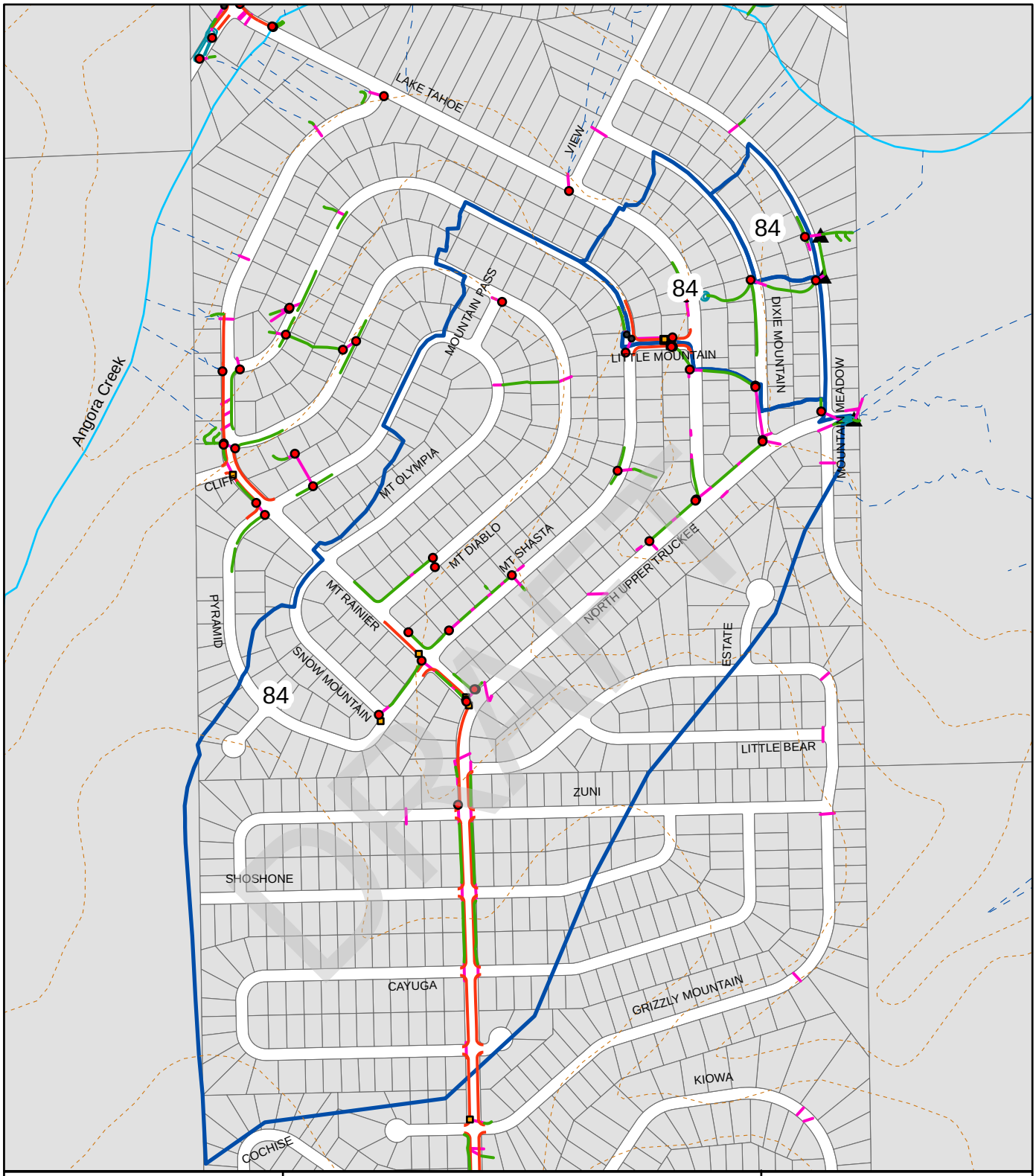
N

W E

S

1 inch = 7,500 feet

0 3,750 7,500 Feet



Legend

NID

TYPE

- DI
- SD
- ST
- VAULT
- NID_TDI
- EDC_CHANNELS
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

TMDL UPC 1

El Dorado County - DOT

N

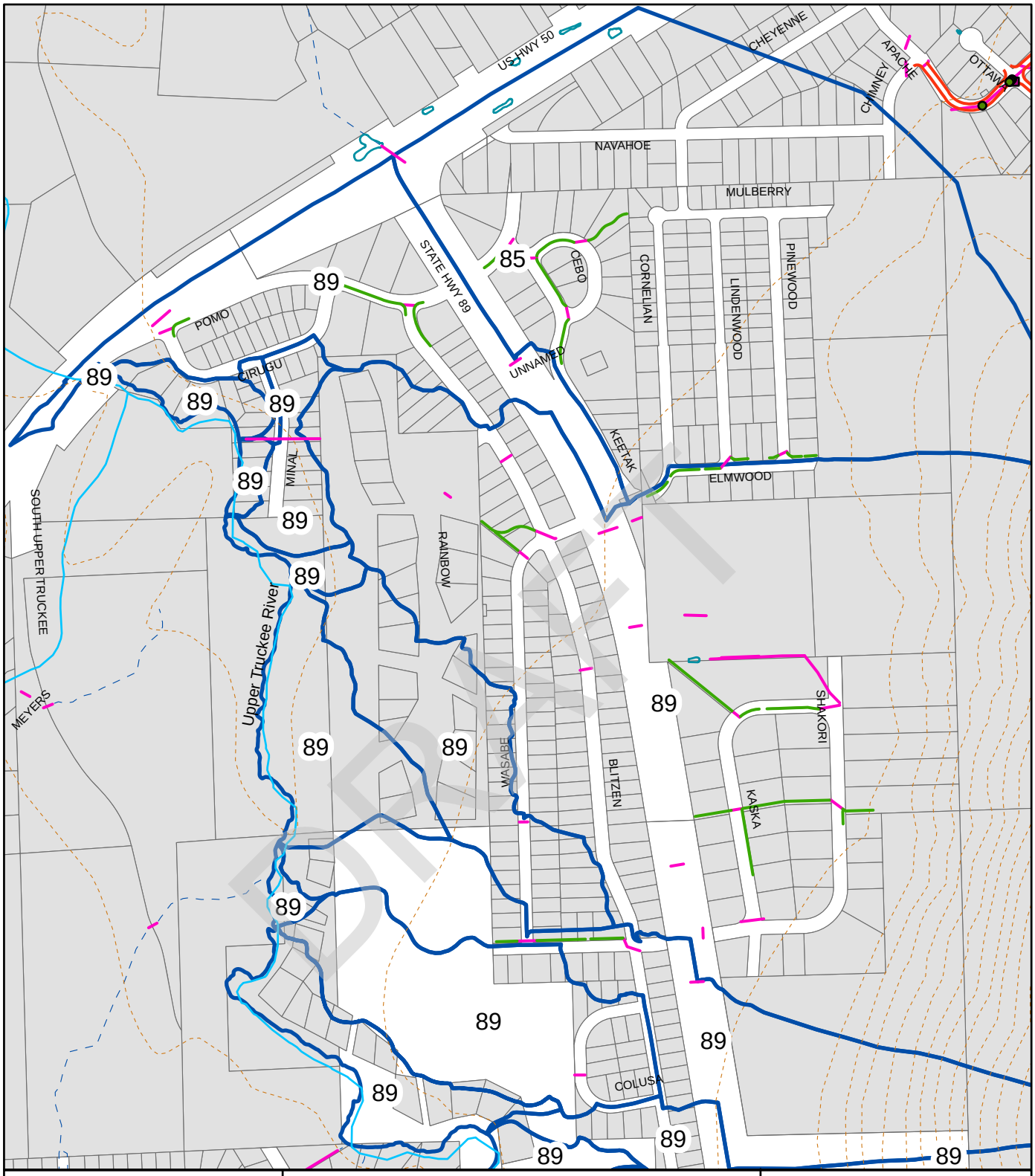
W E

S

1 inch = 600 feet

0 155 310 620

Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

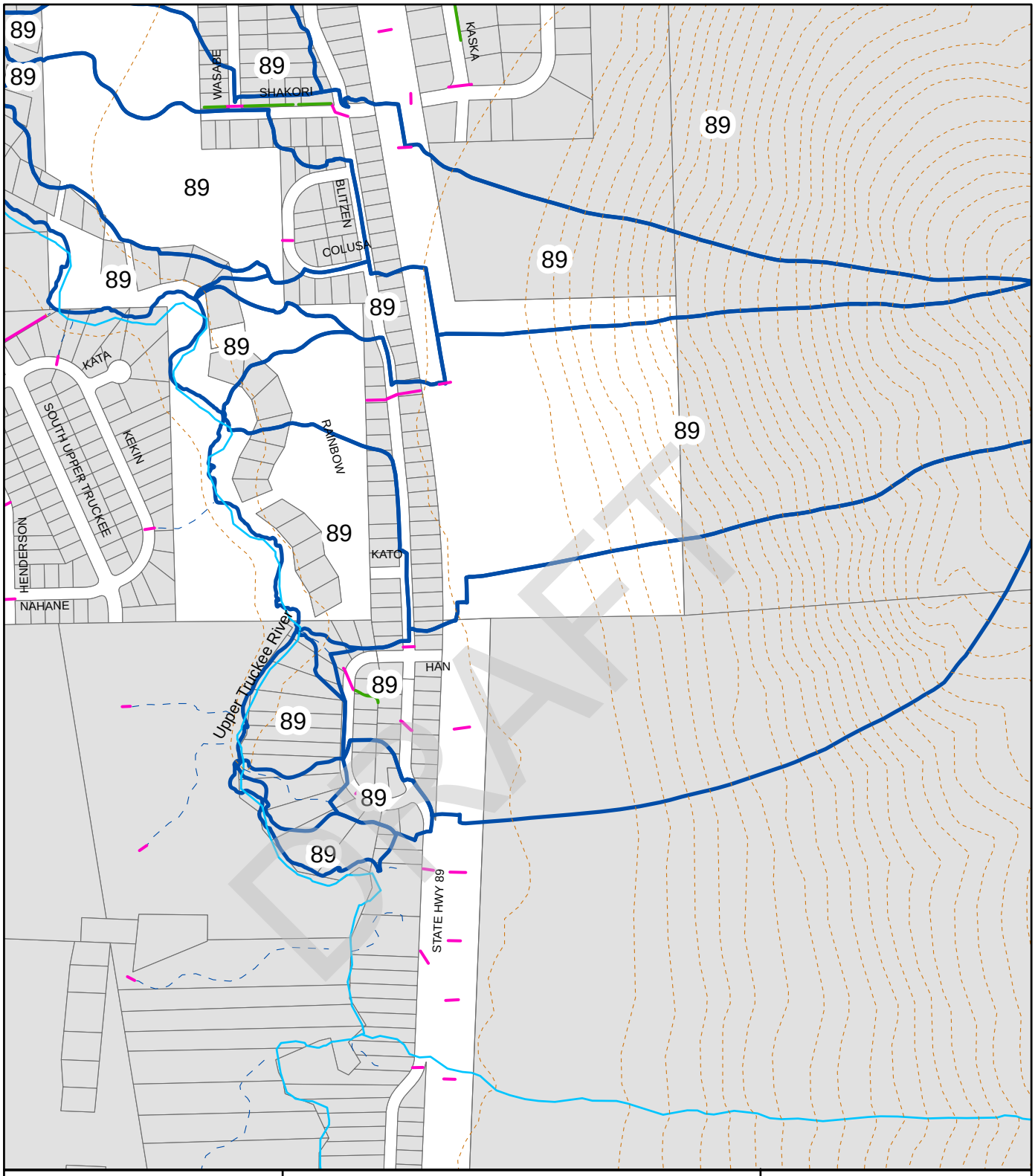
TMDL UPC 2
(1 of 4)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600 Feet



Legend

NID_DI
NID_SDMH
NID_ST
NID_TDI
CHANNEL
elev
EDC_AcDitch
EDC_Dike
EDC_Curb
EDC_Walls
PID
EDC_Basins
EDC_OUTFALL

Baseline

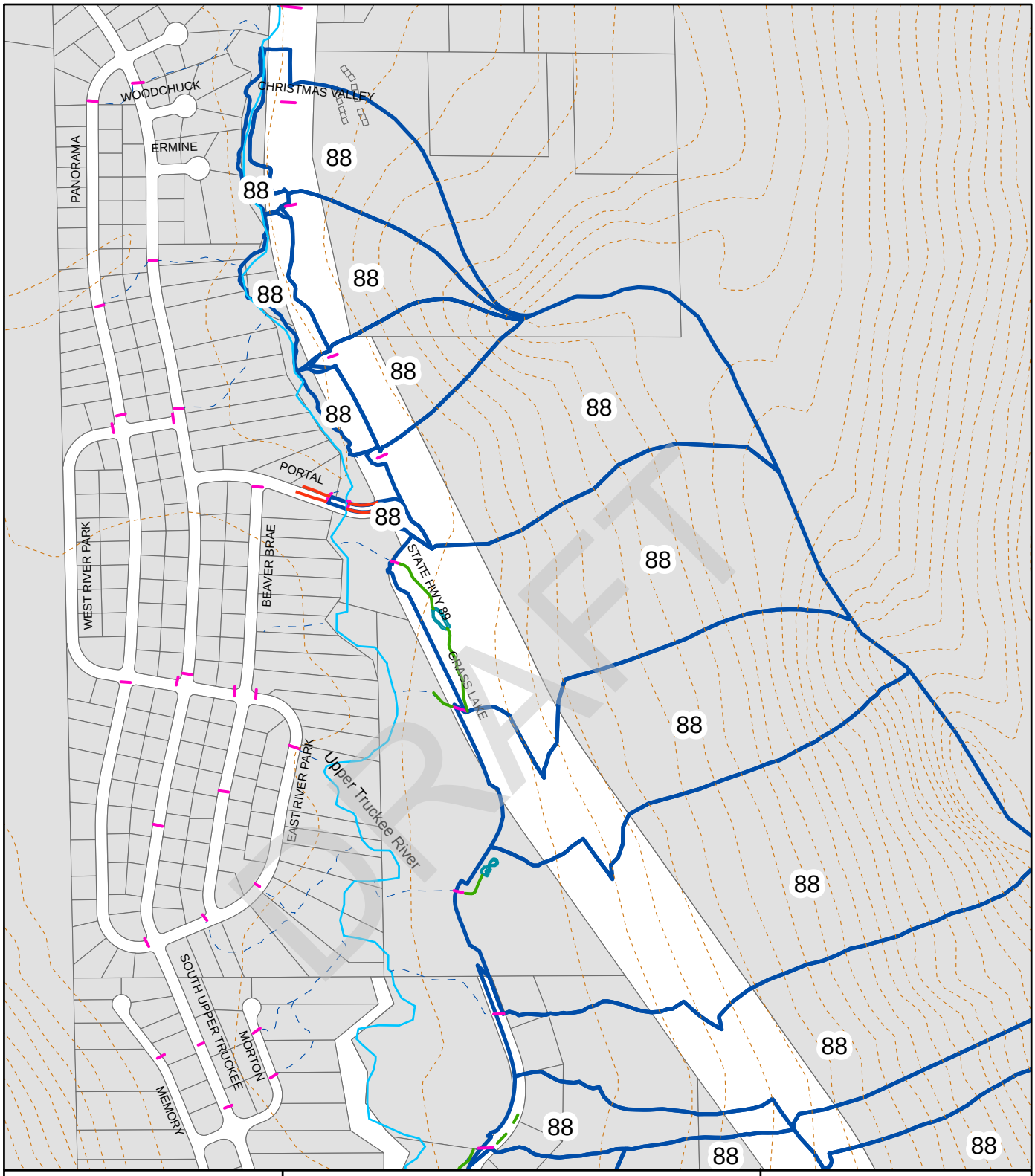
TMDL UPC 2
(2 of 4)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 160 320 640 Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

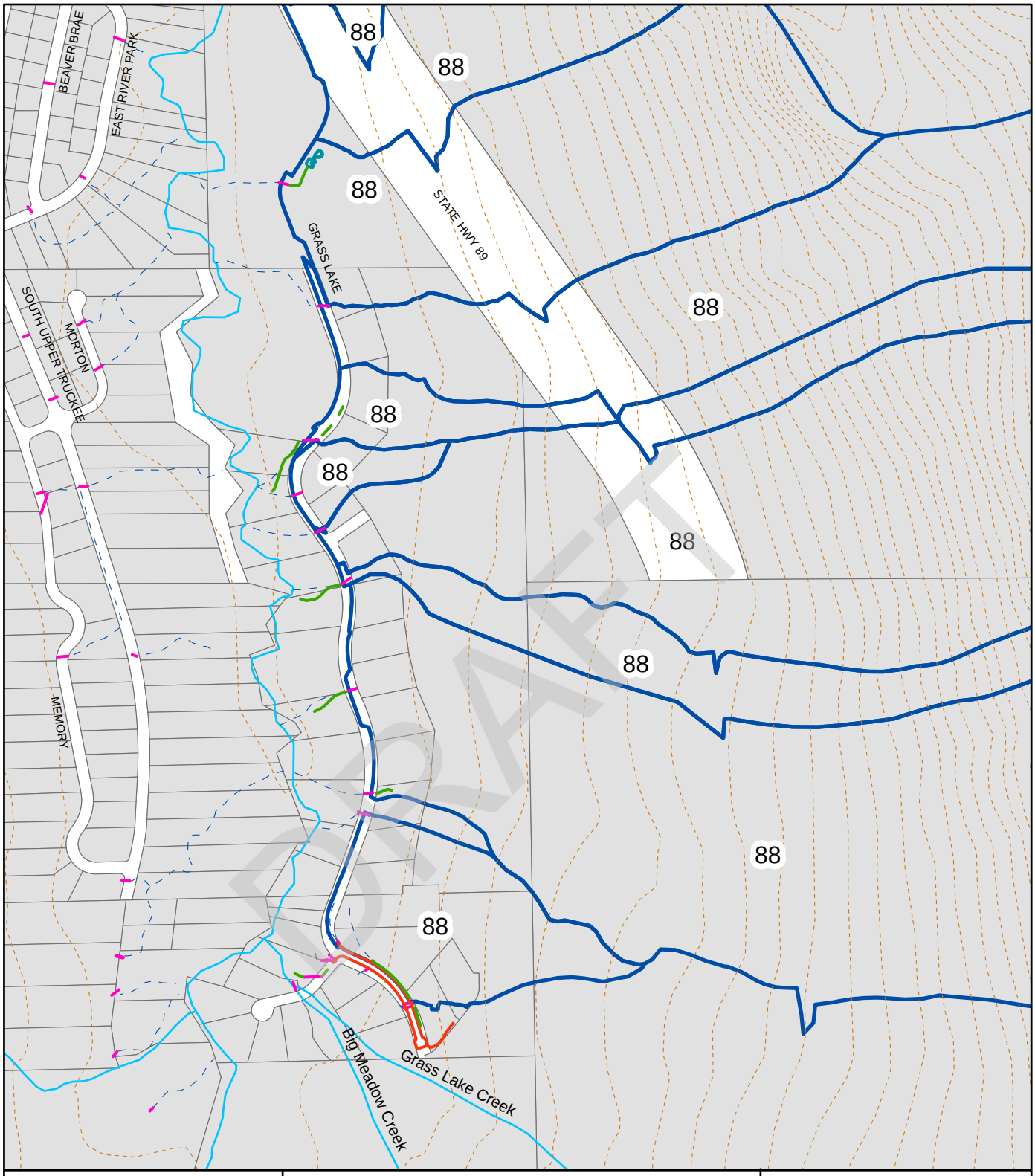
TMDL UPC 2
(3 of 4)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600 Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

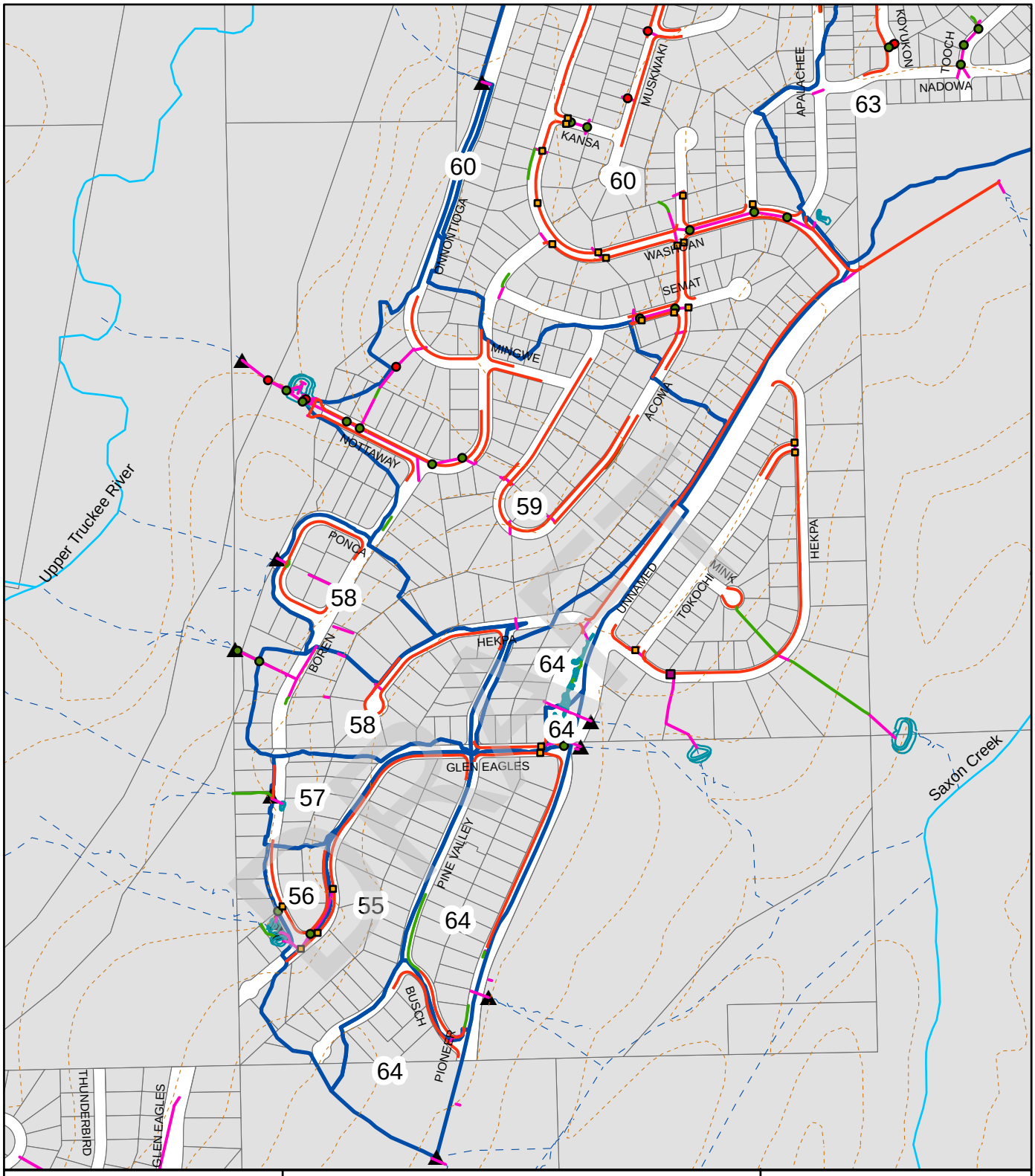
TMDL UPC 2
(4 of 4)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 155 310 620
Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

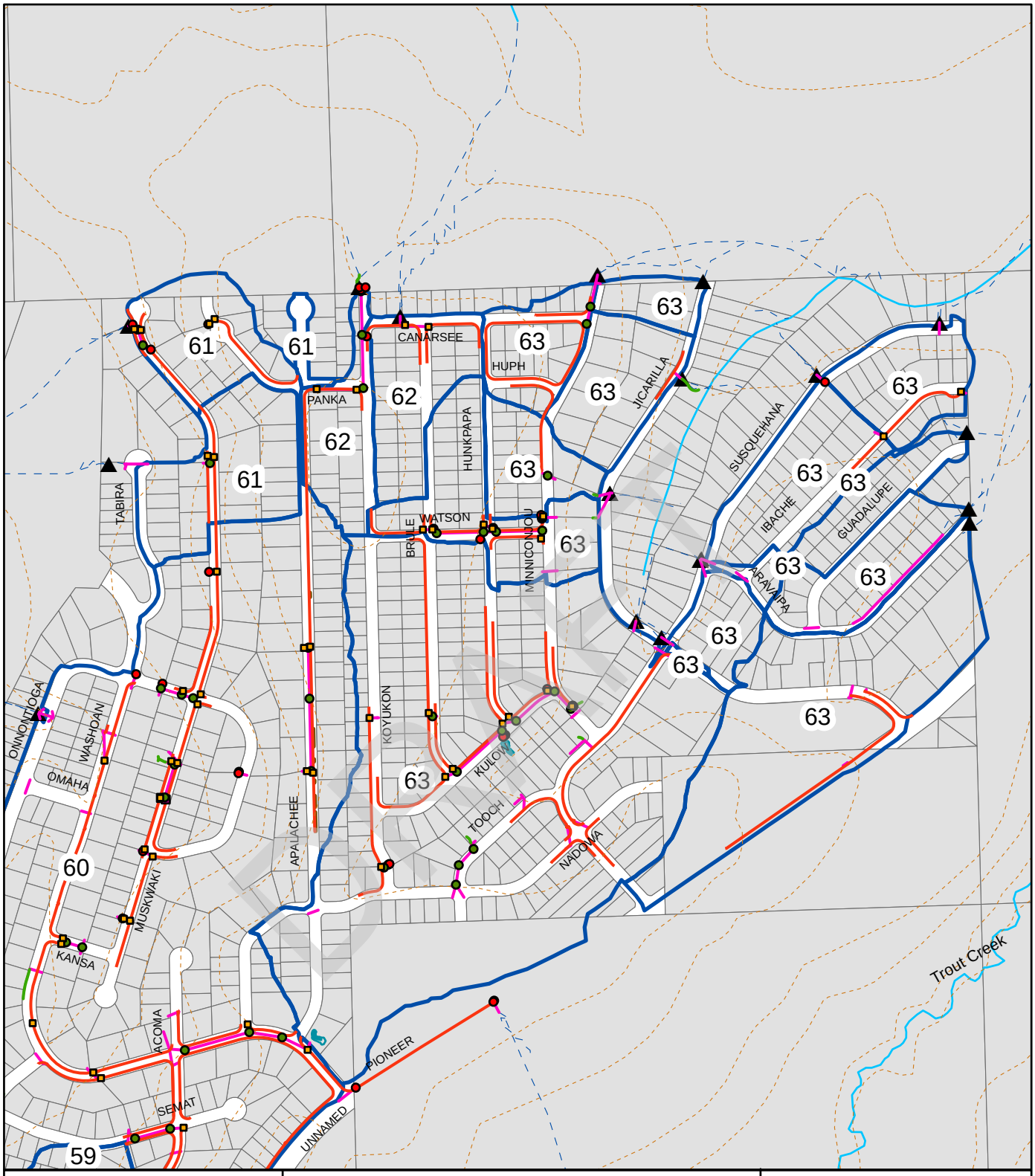
TMDL UPC 3
(1 of 2)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600
Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

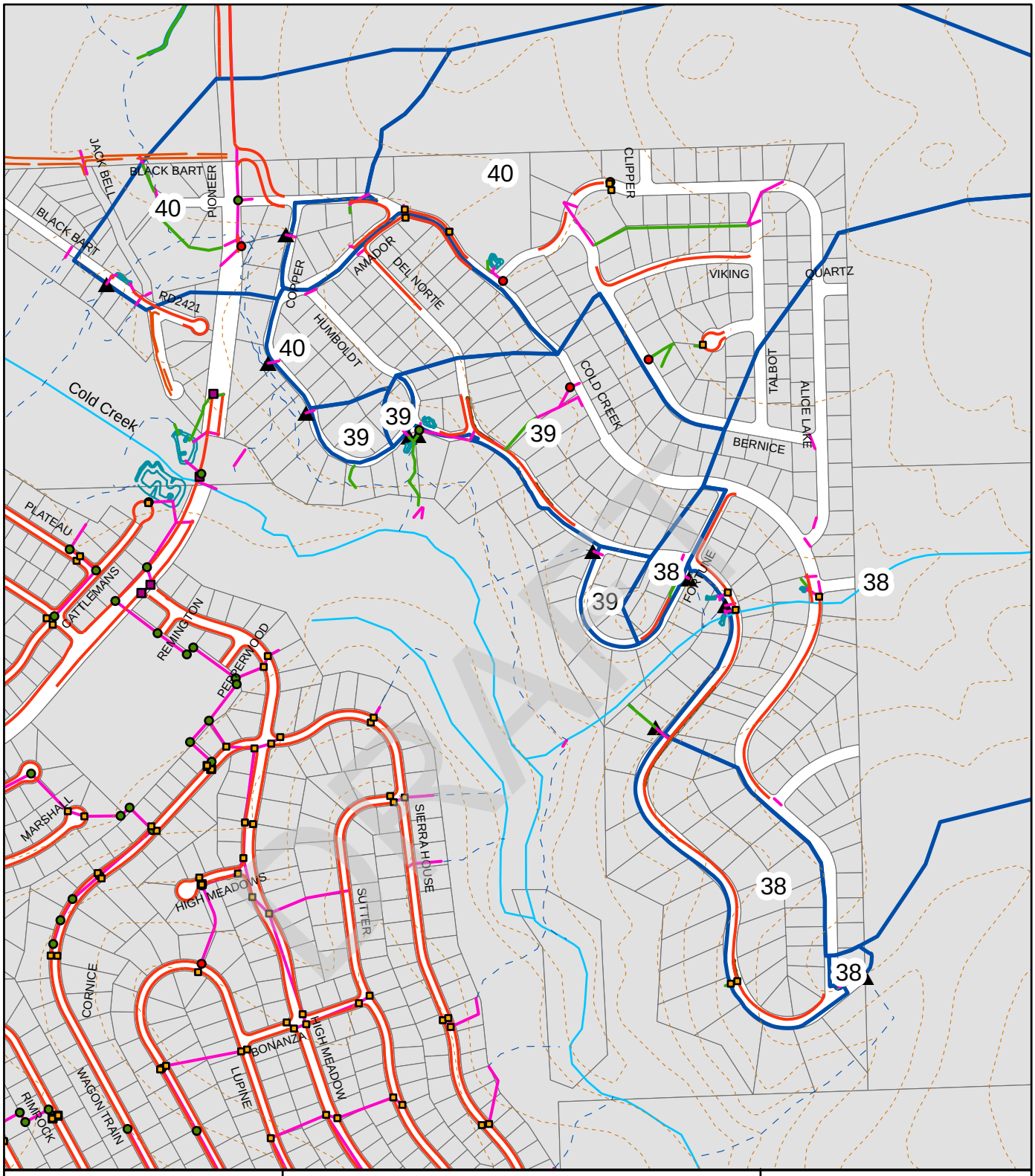
TMDL UPC 3
(2 of 2)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600 Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

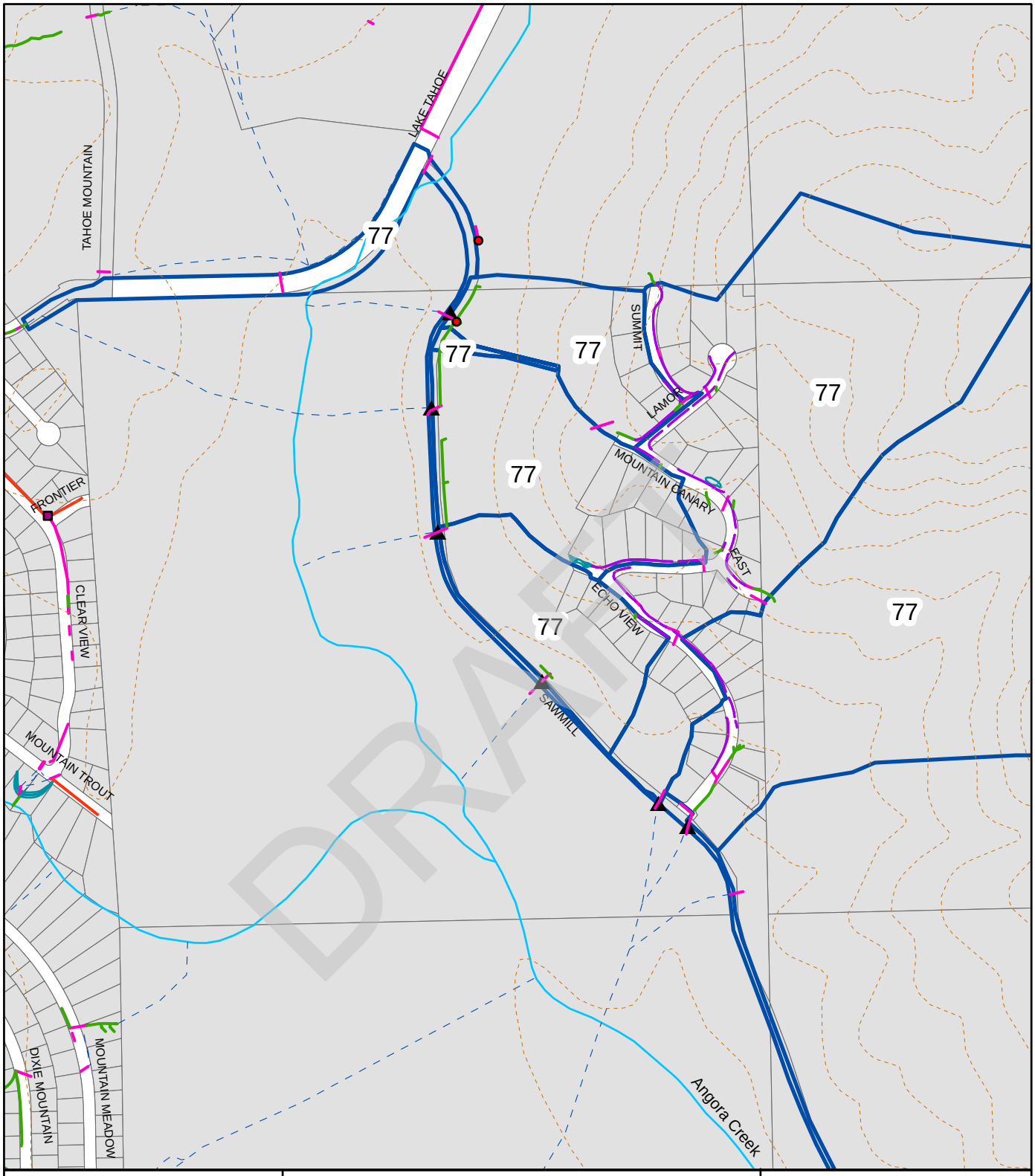
TMDL UPC 4

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 155 310 620 Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

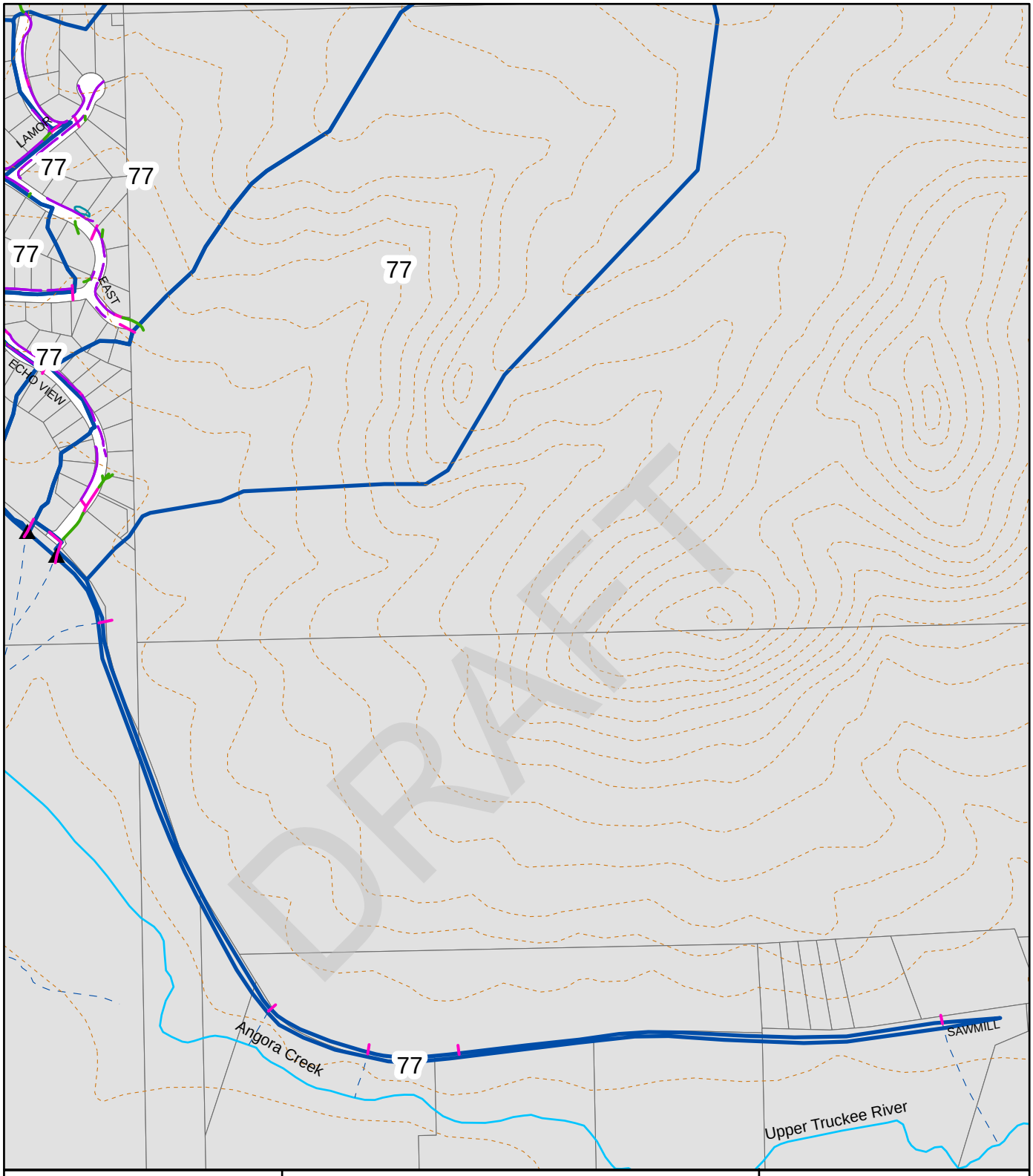
TMDL UPC 5
(1 of 2)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600
Feet



Legend

- NID_DI
- NID_SDMH
- NID_ST
- NID_TDI
- CHANNEL
- elev
- EDC_AcDitch
- EDC_Dike
- EDC_Curb
- EDC_Walls
- PID
- EDC_Basins
- EDC_OUTFALL

Baseline

TMDL UPC 5
(2 of 2)

El Dorado County - DOT

N
W E
S

1 inch = 600 feet

0 150 300 600
Feet

APPENDIX B

****
Global Information
****

Project Name:..... UPC38
Scenario Name:..... Scenario2E_individual
Number of years in simulation :.. 6
Met Grid # simulated:..... 885
Working Directory:..... C:\Program Files\PLRM\Projects\Project28\Scenario4\
Date First Created:..... 09/14/2011 07:45:05
Date Computed:..... 12/10/2012 2:56:41 PM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
WSID_33_38	3.97	2007.47	1130.24	6.01	0.98	26.64	3.16
WSID_32	6.56	3233.23	1749.54	9.43	1.45	44.16	5.33
WSID_39	1.13	672.27	354.27	1.73	0.22	8.34	1.07

****
Storm Water Treatment
****

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	6.56	3227.07	1746.19	9.42	1.45	44.07	5.32
Bypass Stream	3.51	1693.85	915.00	4.98	0.78	23.27	2.80
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	3.51	1693.85	915.00	4.98	0.78	23.27	2.80
Volume/Load Removed	3.04	1533.22	831.19	4.43	0.67	20.80	2.52
%Change(Removed/Influent)	46.43%	47.51%	47.60%	47.07%	46.34%	47.20%	47.38%
%Capture(1-Bypass/Influent)	46.43%						

InfiltrationBasin4	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	1.13	671.00	353.61	1.73	0.22	8.33	1.07
Bypass Stream	0.23	135.83	71.54	0.35	0.04	1.69	0.22
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	0.23	135.83	71.54	0.35	0.04	1.69	0.22
Volume/Load Removed	0.89	535.17	282.07	1.38	0.17	6.64	0.85
%Change(Removed/Influent)	79.41%	79.76%	79.77%	79.68%	79.51%	79.71%	79.74%
%Capture(1-Bypass/Influent)	79.41%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	774.96	28.79
Evaporation Loss	265.42	9.86
System Surface Discharge..	7.71	0.29
Percolation to Groundwater	501.87	18.64
Continuity Error.....	0.00%	
Percent Surface Runoff....	1.00%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	7.72	3831.84	2113.82	11.33	1.80	51.53	6.17
Scenario Total	7.72	3831.84	2113.82	11.33	1.80	51.53	6.17

****
Global Information
****

Project Name:..... UPC39
Scenario Name:..... Scenario2E_Individual
Number of years in simulation :.. 6
Met Grid # simulated:..... 841
Working Directory:..... C:\Program Files\PLRM\Projects\Project29\Scenario5\
Date First Created:..... 3/7/2012 1:26:22 PM
Date Computed:..... 12/10/2012 2:39:02 PM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
WSID_37	0.49	338.48	178.62	0.84	0.10	3.80	0.48
WSID_35	0.38	100.51	46.07	0.40	0.08	2.13	0.25
WSID_36_40	4.02	2578.31	1437.35	6.84	1.02	28.89	3.50

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	4.02	2573.50	1434.68	6.83	1.02	28.83	3.49
Bypass Stream	2.01	1232.99	684.98	3.34	0.51	14.04	1.69
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	2.01	1232.99	684.98	3.34	0.51	14.04	1.69
Volume/Load Removed	2.02	1340.51	749.70	3.49	0.51	14.79	1.81
%Change(Removed/Influent)	50.11%	52.09%	52.26%	51.16%	49.62%	51.30%	51.70%
%Capture(1-Bypass/Influent)	50.11%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	2.01	1232.56	684.77	3.33	0.51	14.03	1.69
Bypass Stream	1.67	1017.87	565.03	2.77	0.43	11.63	1.40
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	1.67	1017.87	565.03	2.77	0.43	11.63	1.40
Volume/Load Removed	0.33	214.70	119.74	0.57	0.08	2.40	0.29
%Change(Removed/Influent)	16.69%	17.42%	17.49%	17.05%	16.47%	17.11%	17.26%
%Capture(1-Bypass/Influent)	16.69%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	44.21	25.84
Evaporation Loss	14.84	8.67
System Surface Discharge..	2.52	1.48
Percolation to Groundwater	26.76	15.64
Continuity Error.....	0.18%	
Percent Surface Runoff....	5.72%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	2.54	1455.70	789.16	4.00	0.61	17.54	2.12
Scenario Total	2.54	1455.70	789.16	4.00	0.61	17.54	2.12

****
Global Information
****

Project Name:..... UPC40
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 842
Working Directory:..... C:\Program Files\PLRM\Projects\Project88\Scenario6\
Date First Created:..... 03/14/2011 14:41:36
Date Computed:..... 12/10/2012 2:19:27 PM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
WSID_34	3.44	1311.52	640.87	4.41	0.78	21.39	2.52
WSID_365	4.00	4028.18	2441.02	8.71	1.10	33.89	4.33
WSID_31	8.74	5577.40	3185.61	14.18	1.85	64.13	8.02

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	8.74	5567.43	3179.94	14.15	1.85	64.01	8.00
Bypass Stream	6.33	4008.07	2290.10	10.17	1.32	46.00	5.76
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	6.33	4008.07	2290.10	10.17	1.32	46.00	5.76
Volume/Load Removed	2.40	1559.36	889.84	3.99	0.53	18.01	2.25
%Change(Removed/Influent)	27.50%	28.01%	27.98%	28.18%	28.49%	28.13%	28.07%
%Capture(1-Bypass/Influent)	27.50%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	4.00	4020.54	2436.42	8.69	1.10	33.82	4.32
Bypass Stream	2.29	2281.66	1382.84	4.92	0.62	19.16	2.45
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	2.29	2281.66	1382.84	4.92	0.62	19.16	2.45
Volume/Load Removed	1.72	1738.88	1053.59	3.77	0.48	14.66	1.87
%Change(Removed/Influent)	42.85%	43.25%	43.24%	43.37%	43.87%	43.34%	43.28%
%Capture(1-Bypass/Influent)	42.85%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	294.28	24.57
Evaporation Loss	112.92	9.43
System Surface Discharge..	12.04	1.00
Percolation to Groundwater	169.31	14.13
Continuity Error.....	0.01%	
Percent Surface Runoff....	4.10%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	12.07	7593.27	4309.44	19.48	2.71	86.45	10.71
Scenario Total	12.07	7593.27	4309.44	19.48	2.71	86.45	10.71

****
Global Information
****

Project Name:..... UPC54
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 742
Working Directory:..... C:\Program Files\PLRM\Projects\Project90\Scenario2\
Date First Created:..... 12/11/2012 12:58:44 PM
Date Computed:..... 12/11/2012 1:15:46 PM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC54	4.52	9613.97	6685.78	16.85	1.47	51.00	6.60

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	4.52	9607.79	6681.49	16.84	1.47	50.97	6.60
Bypass Stream	4.51	9569.22	6654.60	16.77	1.46	50.76	6.57
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	4.51	9569.22	6654.60	16.77	1.46	50.76	6.57
Volume/Load Removed	0.01	38.57	26.90	0.07	0.01	0.20	0.03
%Change(Removed/Influent)	0.21%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%
%Capture(1-Bypass/Influent)	0.21%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	13.51	32.42
Evaporation Loss	3.40	8.16
System Surface Discharge..	4.47	10.72
Percolation to Groundwater	5.68	13.63
Continuity Error.....	-0.24%	
Percent Surface Runoff....	33.32%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	4.51	7864.68	5469.33	13.79	1.20	41.72	5.40
Scenario Total	4.51	7864.68	5469.33	13.79	1.20	41.72	5.40

****
Global Information
****

Project Name:..... UPC55
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 704
Working Directory:..... C:\Program Files\PLRM\Projects\Project42\Scenario3\
Date First Created:..... 11/09/2012 13:33:56
Date Computed:..... 11/09/2012 13:39:18

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC55	2.59	1545.72	861.41	4.42	0.75	17.80	2.07

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	2.59	1542.54	859.62	4.41	0.75	17.77	2.06
Bypass Stream	2.50	1468.66	818.16	4.21	0.72	16.95	1.97
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	2.50	1468.66	818.16	4.21	0.72	16.95	1.97
Volume/Load Removed	0.10	73.89	41.46	0.20	0.03	0.82	0.10
%Change(Removed/Influent)	3.70%	4.79%	4.82%	4.61%	4.38%	4.63%	4.70%
%Capture(1-Bypass/Influent)	3.70%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	35.02	34.15
Evaporation Loss	9.25	9.03
System Surface Discharge..	2.54	2.48
Percolation to Groundwater	23.25	22.68
Continuity Error.....	-0.07%	
Percent Surface Runoff....	7.18%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	2.50	1229.34	683.49	3.56	0.61	14.32	1.65
Scenario Total	2.50	1229.34	683.49	3.56	0.61	14.32	1.65

****
Global Information
****

Project Name:..... UPC56
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 704
Working Directory:..... C:\Program Files\PLRM\Projects\Project43\Scenario3\
Date First Created:..... 11/09/2012 14:09:33
Date Computed:..... 11/09/2012 14:17:44

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC56	1.39	632.15	336.71	1.74	0.20	9.58	1.25

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	1.39	631.12	336.16	1.73	0.20	9.56	1.25
Bypass Stream	1.35	600.61	319.92	1.65	0.19	9.10	1.19
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	1.35	600.61	319.92	1.65	0.19	9.10	1.19
Volume/Load Removed	0.04	30.51	16.24	0.08	0.01	0.46	0.06
%Change(Removed/Influent)	2.96%	4.83%	4.83%	4.86%	4.92%	4.85%	4.84%
%Capture(1-Bypass/Influent)	2.96%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	1.35	578.27	308.02	1.59	0.18	8.76	1.15
Bypass Stream	0.02	6.20	3.30	0.02	0.00	0.09	0.01
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	0.02	6.20	3.30	0.02	0.00	0.09	0.01
Volume/Load Removed	1.32	572.07	304.72	1.57	0.18	8.66	1.14
%Change(Removed/Influent)	98.36%	98.93%	98.93%	98.93%	98.92%	98.93%	98.93%
%Capture(1-Bypass/Influent)	98.36%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	5.98	34.15
Evaporation Loss	1.51	8.61
System Surface Discharge..	0.02	0.13
Percolation to Groundwater	4.44	25.40
Continuity Error.....	0.07%	
Percent Surface Runoff....	0.37%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	0.02	6.20	3.30	0.02	0.00	0.09	0.01
Scenario Total	0.02	6.20	3.30	0.02	0.00	0.09	0.01

****
Global Information
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Project Name:..... UPC57
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 704
Working Directory:..... C:\Program Files\PLRM\Projects\Project44\Scenario3\
Date First Created:..... 11/09/2012 14:20:36
Date Computed:..... 11/09/2012 14:27:19

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC57	1.59	1001.58	530.95	2.47	0.28	12.08	1.58

****
Storm Water Treatment
****

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	1.51	502.65	266.55	1.24	0.14	6.05	0.79
Bypass Stream	0.36	10.49	5.56	0.03	0.00	0.13	0.02
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	0.36	10.49	5.56	0.03	0.00	0.13	0.02
Volume/Load Removed	1.14	492.16	260.99	1.21	0.14	5.93	0.77
%Change(Removed/Influent)	75.85%	97.91%	97.91%	97.91%	97.91%	97.91%	97.91%
%Capture(1-Bypass/Influent)	75.85%						

InfiltrationBasin22	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	1.59	999.93	530.08	2.47	0.28	12.06	1.57
Bypass Stream	1.51	946.47	501.75	2.34	0.27	11.41	1.49
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	1.51	946.47	501.75	2.34	0.27	11.41	1.49
Volume/Load Removed	0.08	53.47	28.33	0.13	0.02	0.65	0.08
%Change(Removed/Influent)	4.90%	5.35%	5.34%	5.37%	5.42%	5.36%	5.35%
%Capture(1-Bypass/Influent)	4.90%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	9.96	34.15
Evaporation Loss	2.62	8.97
System Surface Discharge..	0.36	1.24
Percolation to Groundwater	6.96	23.86
Continuity Error.....	0.24%	
Percent Surface Runoff....	3.71%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	0.36	10.49	5.56	0.03	0.00	0.13	0.02
Scenario Total	0.36	10.49	5.56	0.03	0.00	0.13	0.02

****
Global Information
****

Project Name:..... UPC58
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 704
Working Directory:..... C:\Program Files\PLRM\Projects\Project45\Scenario3\
Date First Created:..... 11/09/2012 13:49:07
Date Computed:..... 01/09/2013 13:53:54

****
Catchments
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Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC58	5.20	1989.83	993.20	6.19	0.93	33.07	4.07

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	5.20	1987.16	991.87	6.18	0.93	33.02	4.06
Bypass Stream	4.81	1825.85	911.33	5.68	0.86	30.34	3.73
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	4.81	1825.85	911.33	5.68	0.86	30.34	3.73
Volume/Load Removed	0.39	161.32	80.54	0.50	0.08	2.68	0.33
%Change(Removed/Influent)	7.48%	8.12%	8.12%	8.11%	8.10%	8.12%	8.12%
%Capture(1-Bypass/Influent)	7.48%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	44.69	34.15
Evaporation Loss	11.82	9.04
System Surface Discharge..	4.83	3.69
Percolation to Groundwater	28.09	21.47
Continuity Error.....	-0.12%	
Percent Surface Runoff....	10.75%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	4.81	1823.14	909.96	5.67	0.85	30.30	3.73
Scenario Total	4.81	1823.14	909.96	5.67	0.85	30.30	3.73

****
Global Information
****
 Project Name:..... UPC59
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 742
Working Directory:..... C:\Program Files\PLRM\Projects\Project46\Scenario6\
Date First Created:..... 03/13/2012 10:37:04
Date Computed:..... 03/13/2012 15:35:14

****
Catchments
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Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC59Treat	11.61	6219.78	3481.02	17.85	2.91	77.75	9.21

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	11.61	6211.43	3476.32	17.82	2.91	77.65	9.19
Bypass Stream	10.99	5950.27	3343.85	16.94	2.72	73.95	8.79
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	10.99	5950.27	3343.85	16.94	2.72	73.95	8.79
Volume/Load Removed	0.61	261.16	132.47	0.89	0.19	3.71	0.40
%Change(Removed/Influent)	5.29%	4.20%	3.81%	4.98%	6.51%	4.77%	4.36%
%Capture(1-Bypass/Influent)	5.29%						

NottawayBasin	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	10.99	5806.88	3268.51	16.45	2.62	71.91	8.57
Bypass Stream	4.85	1848.98	1038.79	5.25	0.84	22.95	2.73
Treated Stream	6.39	2620.76	1570.27	8.60	1.51	38.93	5.31
Total Effluent	11.23	2168.63	1357.05	8.23	1.75	42.91	5.61
Volume/Load Removed	-0.24	3638.24	1911.47	8.22	0.87	29.00	2.96
%Change(Removed/Influent)	-2.19%	62.65%	58.48%	49.97%	33.26%	40.33%	34.54%
%Capture(1-Bypass/Influent)	55.90%						

NottawaySandFilter	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	11.23	2169.27	1357.52	8.23	1.75	42.92	5.61
Bypass Stream	5.51	1656.69	948.03	4.97	0.87	23.18	2.76
Treated Stream	5.73	198.27	198.19	2.10	0.62	19.19	2.85
Total Effluent	11.23	1854.97	1146.24	7.07	1.49	42.36	5.61
Volume/Load Removed	0.00	314.31	211.27	1.16	0.26	0.56	0.00
%Change(Removed/Influent)	-0.02%	14.49%	15.56%	14.11%	14.71%	1.29%	0.02%
%Capture(1-Bypass/Influent)	50.99%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	95.16	32.42
Evaporation Loss	25.96	8.84
System Surface Discharge..	11.23	3.83
Percolation to Groundwater	57.83	19.70
Continuity Error.....	0.16%	
Percent Surface Runoff....	11.82%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall2	11.23	1854.80	1146.26	7.07	1.49	42.36	5.61
Scenario Total	11.23	1854.80	1146.26	7.07	1.49	42.36	5.61

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Global Information
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Project Name:..... UPC60
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 742
Working Directory:..... C:\Program Files\PLRM\Projects\Project47\Scenario3\
Date First Created:..... 11/9/2012 11:31:18 AM
Date Computed:..... 11/9/2012 11:54:54 AM

****
Catchments
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Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC60	26.03	16166.48	9278.44	42.13	5.80	187.48	23.08

****
Storm Water Treatment
****

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	26.03	16136.86	9259.82	42.06	5.79	187.22	23.04
Bypass Stream	24.99	15398.18	8836.35	40.14	5.52	178.63	21.98
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	24.99	15398.18	8836.35	40.14	5.52	178.63	21.98
Volume/Load Removed	1.04	738.68	423.47	1.93	0.26	8.59	1.06
%Change(Removed/Influent)	3.98%	4.58%	4.57%	4.58%	4.58%	4.59%	4.59%
%Capture(1-Bypass/Influent)	3.98%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	218.36	32.42
Evaporation Loss	59.79	8.88
System Surface Discharge..	25.50	3.79
Percolation to Groundwater	133.38	19.80
Continuity Error.....	-0.14%	
Percent Surface Runoff....	11.45%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	24.99	15233.09	8741.53	39.71	5.47	176.73	21.75
Scenario Total	24.99	15233.09	8741.53	39.71	5.47	176.73	21.75

****
Global Information
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Project Name:..... UPC61
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 743
Working Directory:..... C:\Program Files\PLRM\Projects\Project48\Scenario3\
Date First Created:..... 11/09/2012 13:19:34
Date Computed:..... 01/09/2013 14:08:55

****
Catchments
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Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC61	4.46	2329.55	1269.48	6.57	0.96	30.77	3.76

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	4.46	2326.32	1267.71	6.56	0.96	30.73	3.75
Bypass Stream	4.62	2388.70	1301.62	6.74	0.98	31.56	3.85
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	4.62	2388.70	1301.62	6.74	0.98	31.56	3.85
Volume/Load Removed	-0.16	-62.37	-33.91	-0.18	-0.03	-0.83	-0.10
%Change(Removed/Influent)	-3.52%	-2.68%	-2.67%	-2.71%	-2.77%	-2.70%	-2.69%
%Capture(1-Bypass/Influent)	-3.52%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	36.65	31.41
Evaporation Loss	10.30	8.83
System Surface Discharge..	4.38	3.75
Percolation to Groundwater	21.98	18.84
Continuity Error.....	-0.04%	
Percent Surface Runoff....	12.53%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	4.62	1062.82	580.06	2.97	0.43	13.96	1.71
Scenario Total	4.62	1062.82	580.06	2.97	0.43	13.96	1.71

****
Global Information
****

Project Name:..... UPC62
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 743
Working Directory:..... C:\Program Files\PLRM\Projects\Project49\Scenario3\
Date First Created:..... 11/09/2012 12:40:22
Date Computed:..... 11/9/2012 1:06:23 PM

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Catchments
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Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC62	5.38	2101.14	1045.41	6.73	1.12	33.43	3.99

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	5.38	2098.37	1044.02	6.72	1.12	33.38	3.99
Bypass Stream	5.18	2000.96	995.38	6.42	1.07	31.85	3.80
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	5.18	2000.96	995.38	6.42	1.07	31.85	3.80
Volume/Load Removed	0.20	97.41	48.64	0.31	0.05	1.53	0.18
%Change(Removed/Influent)	3.78%	4.64%	4.66%	4.55%	4.41%	4.58%	4.62%
%Capture(1-Bypass/Influent)	3.78%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	26.97	31.41
Evaporation Loss	6.89	8.03
System Surface Discharge..	5.33	6.20
Percolation to Groundwater	14.81	17.25
Continuity Error.....	-0.23%	
Percent Surface Runoff....	19.24%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	5.18	1528.75	760.82	4.89	0.81	24.31	2.90
Scenario Total	5.18	1528.75	760.82	4.89	0.81	24.31	2.90

****
Global Information
****

Project Name:..... UPC63
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 743
Working Directory:..... C:\Program Files\PLRM\Projects\Project50\Scenario3\
Date First Created:..... 11/9/2012 9:36:54 AM
Date Computed:..... 11/9/2012 11:10:33 AM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC63	41.56	23723.99	13270.30	64.78	10.06	282.86	33.96

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	39.96	22607.16	12644.73	61.75	9.59	269.60	32.36
Bypass Stream	31.83	17850.44	9968.45	49.08	7.70	214.12	25.64
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	31.83	17850.44	9968.45	49.08	7.70	214.12	25.64
Volume/Load Removed	8.13	4756.71	2676.28	12.67	1.90	55.48	6.72
%Change(Removed/Influent)	20.34%	21.04%	21.17%	20.52%	19.78%	20.58%	20.77%
%Capture(1-Bypass/Influent)	20.34%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	41.56	23693.48	13253.71	64.70	10.05	282.49	33.91
Bypass Stream	39.96	22621.25	12652.29	61.79	9.60	269.79	32.38
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	39.96	22621.25	12652.29	61.79	9.60	269.79	32.38
Volume/Load Removed	1.59	1072.23	601.42	2.91	0.45	12.70	1.53
%Change(Removed/Influent)	3.84%	4.53%	4.54%	4.50%	4.48%	4.50%	4.50%
%Capture(1-Bypass/Influent)	3.84%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	323.61	31.41
Evaporation Loss	88.13	8.55
System Surface Discharge..	31.77	3.08
Percolation to Groundwater	204.33	19.83
Continuity Error.....	-0.19%	
Percent Surface Runoff....	9.83%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	31.83	17846.46	9966.59	49.06	7.69	214.06	25.63
Scenario Total	31.83	17846.46	9966.59	49.06	7.69	214.06	25.63

****
Global Information
****

Project Name:..... UPC64
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 741
Working Directory:..... C:\Program Files\PLRM\Projects\Project51\Scenario3\
Date First Created:..... 11/09/2012 12:17:35
Date Computed:..... 11/09/2012 12:27:29

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC64	7.33	7575.63	4840.75	16.33	1.88	61.51	7.68

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	6.98	6846.41	4377.07	14.73	1.69	55.46	6.93
Bypass Stream	1.30	758.13	483.90	1.64	0.19	6.19	0.77
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	1.30	758.13	483.90	1.64	0.19	6.19	0.77
Volume/Load Removed	5.68	6088.28	3893.17	13.09	1.50	49.27	6.15
%Change(Removed/Influent)	81.38%	88.93%	88.94%	88.86%	88.71%	88.84%	88.86%
%Capture(1-Bypass/Influent)	81.38%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	7.33	7563.64	4833.06	16.30	1.88	61.42	7.66
Bypass Stream	6.98	7133.14	4558.21	15.38	1.77	57.92	7.23
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	6.98	7133.14	4558.21	15.38	1.77	57.92	7.23
Volume/Load Removed	0.35	430.50	274.85	0.92	0.10	3.50	0.44
%Change(Removed/Influent)	4.83%	5.69%	5.69%	5.67%	5.58%	5.69%	5.72%
%Capture(1-Bypass/Influent)	4.83%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	53.47	29.84
Evaporation Loss	16.16	9.02
System Surface Discharge..	1.30	0.72
Percolation to Groundwater	36.07	20.13
Continuity Error.....	-0.11%	
Percent Surface Runoff....	2.44%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	1.30	759.26	484.66	1.64	0.19	6.20	0.77
Scenario Total	1.30	759.26	484.66	1.64	0.19	6.20	0.77

****
Global Information
****
 Project Name:..... UPC77
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 593
Working Directory:..... C:\Program Files\PLRM\Projects\Project61\Scenario3\
Date First Created:..... 12/10/2012 3:02:14 PM
Date Computed:..... 12/10/2012 17:10:47
 ****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC77	21.17	29263.84	20035.58	56.05	6.09	188.83	23.67

 ****
Storm Water Treatment
****

InfiltrationBasins	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	20.80	27856.84	19088.33	53.30	5.79	179.22	22.46
Bypass Stream	17.69	21652.82	14843.45	41.43	4.51	139.18	17.43
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	17.69	21652.82	14843.45	41.43	4.51	139.18	17.43
Volume/Load Removed	3.11	6204.02	4244.88	11.86	1.28	40.04	5.03
%Change(Removed/Influent)	14.97%	22.27%	22.24%	22.26%	22.09%	22.34%	22.39%
%Capture(1-Bypass/Influent)	14.97%						

Inf_Traps	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	21.17	29229.35	20012.38	55.98	6.08	188.60	23.64
Bypass Stream	20.80	28539.24	19540.49	54.66	5.94	184.13	23.08
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	20.80	28539.24	19540.49	54.66	5.94	184.13	23.08
Volume/Load Removed	0.36	690.11	471.88	1.32	0.14	4.47	0.56
%Change(Removed/Influent)	1.72%	2.36%	2.36%	2.36%	2.36%	2.37%	2.37%
%Capture(1-Bypass/Influent)	1.72%						

con_storage	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	17.69	21566.67	14787.56	41.25	4.48	138.50	17.35
Bypass Stream	14.77	17356.38	11883.98	33.28	3.63	112.07	14.04
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	14.77	17356.38	11883.98	33.28	3.63	112.07	14.04
Volume/Load Removed	2.92	4210.29	2903.58	7.97	0.85	26.43	3.31
%Change(Removed/Influent)	16.52%	19.52%	19.64%	19.32%	19.06%	19.08%	19.10%
%Capture(1-Bypass/Influent)	16.52%						

 ****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	550.75	37.96
Evaporation Loss	140.74	9.70
System Surface Discharge..	14.61	1.01
Percolation to Groundwater	395.68	27.27
Continuity Error.....	-0.05%	
Percent Surface Runoff....	2.68%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	14.77	17372.54	11895.59	33.31	3.63	112.16	14.05
Scenario Total	14.77	17372.54	11895.59	33.31	3.63	112.16	14.05

****
Global Information
****

Project Name:..... UPC84
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 555
Working Directory:..... C:\Program Files\PLRM\Projects\Project68\Scenario3\
Date First Created:..... 12/6/2012 9:19:37 AM
Date Computed:..... 12/6/2012 10:20:22 AM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC84	45.98	22845.38	12112.11	66.29	10.54	303.70	36.48

****
Storm Water Treatment
****

Traps	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	45.98	22821.25	12099.30	66.23	10.53	303.39	36.44
Bypass Stream	46.19	22859.07	12120.82	66.28	10.53	303.71	36.49
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	46.19	22859.07	12120.82	66.28	10.53	303.71	36.49
Volume/Load Removed	-0.21	-37.83	-21.52	-0.05	0.00	-0.32	-0.05
%Change(Removed/Influent)	-0.45%	-0.17%	-0.18%	-0.08%	0.03%	-0.11%	-0.14%
%Capture(1-Bypass/Influent)	-0.45%						

InfiltrationBasin	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	46.19	22480.65	11918.61	65.24	10.37	298.88	35.90
Bypass Stream	40.74	19515.58	10337.97	56.88	9.10	260.25	31.21
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	40.74	19515.58	10337.97	56.88	9.10	260.25	31.21
Volume/Load Removed	5.45	2965.07	1580.64	8.37	1.27	38.63	4.69
%Change(Removed/Influent)	11.80%	13.19%	13.26%	12.83%	12.25%	12.92%	13.07%
%Capture(1-Bypass/Influent)	11.80%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	498.66	39.33
Evaporation Loss	114.90	9.06
System Surface Discharge..	40.58	3.20
Percolation to Groundwater	344.03	27.14
Continuity Error.....	-0.17%	
Percent Surface Runoff....	8.19%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	40.74	19506.23	10332.80	56.86	9.10	260.15	31.19
Scenario Total	40.74	19506.23	10332.80	56.86	9.10	260.15	31.19

****
Global Information
****

Project Name:..... UPC85
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 626
Working Directory:..... C:\Program Files\PLRM\Projects\Project69\Scenario6\
Date First Created:..... 12/6/2012 3:04:06 PM
Date Computed:..... 1/10/2013 9:49:47 AM

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC85	18.31	7315.27	3834.74	25.43	7.89	107.84	11.97

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	18.31	7304.16	3829.40	25.39	7.89	107.66	11.95
Bypass Stream	18.11	7167.34	3754.44	24.87	7.69	105.67	11.75
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	18.11	7167.34	3754.44	24.87	7.69	105.67	11.75
Volume/Load Removed	0.20	136.81	74.95	0.52	0.20	1.98	0.20
%Change(Removed/Influent)	1.11%	1.87%	1.96%	2.05%	2.47%	1.84%	1.70%
%Capture(1-Bypass/Influent)	1.11%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	18.11	6934.01	3636.21	24.18	7.54	102.31	11.33
Bypass Stream	11.89	4309.72	2242.07	14.87	4.47	63.94	7.16
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	11.89	4309.72	2242.07	14.87	4.47	63.94	7.16
Volume/Load Removed	6.22	2624.29	1394.14	9.31	3.07	38.36	4.18
%Change(Removed/Influent)	34.34%	37.85%	38.34%	38.49%	40.70%	37.50%	36.85%
%Capture(1-Bypass/Influent)	34.34%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	269.58	41.18
Evaporation Loss	58.58	8.95
System Surface Discharge..	11.85	1.81
Percolation to Groundwater	199.44	30.47
Continuity Error.....	-0.11%	
Percent Surface Runoff....	4.42%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	11.89	4306.77	2241.15	14.87	4.48	63.89	7.15
Scenario Total	11.89	4306.77	2241.15	14.87	4.48	63.89	7.15

****
Global Information
****

Project Name:..... UPC88
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 657
Working Directory:..... C:\Program Files\PLRM\Projects\Project72\Scenario4\
Date First Created:..... 11/26/2012 10:50:02
Date Computed:..... 12/06/2012 16:35:27

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC88	8.31	2817.66	1421.59	8.94	2.08	49.87	6.22

****
Storm Water Treatment
****

Traps	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	8.31	2814.02	1419.87	8.92	2.08	49.79	6.21
Bypass Stream	7.79	2626.73	1324.69	8.26	1.92	46.22	5.75
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	7.79	2626.73	1324.69	8.26	1.92	46.22	5.75
Volume/Load Removed	0.52	187.29	95.17	0.66	0.15	3.57	0.46
%Change(Removed/Influent)	6.25%	6.66%	6.70%	7.43%	7.46%	7.17%	7.39%
%Capture(1-Bypass/Influent)	6.25%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	7.79	1789.80	905.04	5.59	1.31	31.24	3.88
Bypass Stream	2.07	38.36	19.23	0.12	0.03	0.69	0.09
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	2.07	38.36	19.23	0.12	0.03	0.69	0.09
Volume/Load Removed	5.72	1751.44	885.82	5.47	1.28	30.55	3.80
%Change(Removed/Influent)	73.40%	97.86%	97.88%	97.78%	97.77%	97.80%	97.81%
%Capture(1-Bypass/Influent)	73.40%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	2526.10	44.79
Evaporation Loss	568.54	10.08
System Surface Discharge..	2.06	0.04
Percolation to Groundwater	1955.18	34.67
Continuity Error.....	0.01%	
Percent Surface Runoff....	0.08%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	2.07	37.56	18.81	0.12	0.03	0.67	0.08
Scenario Total	2.07	37.56	18.81	0.12	0.03	0.67	0.08

****
Global Information
****

Project Name:..... UPC89
Scenario Name:..... Scenario2E
Number of years in simulation :.. 6
Met Grid # simulated:..... 625
Working Directory:..... C:\Program Files\PLRM\Projects\Project73\Scenario4\
Date First Created:..... 11/14/2012 15:06:32
Date Computed:..... 01/10/2013 09:04:47

****
Catchments
****

Catchment Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
UPC89	40.40	22640.82	12506.67	62.37	15.44	268.85	32.54

****
Storm Water Treatment
****

InfiltrationBasin1	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	40.40	22611.39	12491.20	62.28	15.42	268.46	32.50
Bypass Stream	43.93	24504.12	13529.13	67.29	16.49	290.66	35.24
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	43.93	24504.12	13529.13	67.29	16.49	290.66	35.24
Volume/Load Removed	-3.54	-1892.73	-1037.93	-5.01	-1.07	-22.19	-2.74
%Change(Removed/Influent)	-8.76%	-8.37%	-8.31%	-8.04%	-6.95%	-8.27%	-8.44%
%Capture(1-Bypass/Influent)	-8.76%						

InfiltrationBasin2	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Total Influent	43.93	17644.16	9778.30	49.22	12.78	210.06	25.24
Bypass Stream	25.73	4993.07	2771.82	14.17	3.84	59.87	7.12
Treated Stream	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Effluent	25.73	4993.07	2771.82	14.17	3.84	59.87	7.12
Volume/Load Removed	18.20	12651.09	7006.48	35.05	8.94	150.19	18.12
%Change(Removed/Influent)	41.42%	71.70%	71.65%	71.21%	69.94%	71.50%	71.78%
%Capture(1-Bypass/Influent)	41.42%						

****
Scenario Summary
****

Average Annual Hydrology	acre-feet/yr	inches/yr
Total Precipitation	1566.72	41.30
Evaporation Loss	368.65	9.72
System Surface Discharge..	25.72	0.68
Percolation to Groundwater	1172.82	30.92
Continuity Error.....	-0.03%	
Percent Surface Runoff....	1.64%	

Average Annual Surface Loading

Name	Volume(ac-ft/yr)	TSS(lbs/yr)	FSP(lbs/yr)	TP(lbs/yr)	SRP(lbs/yr)	TN(lbs/yr)	DIN(lbs/yr)
Outfall1	25.73	5014.10	2783.53	14.23	3.86	60.12	7.15
Scenario Total	25.73	5014.10	2783.53	14.23	3.86	60.12	7.15

APPENDIX C

Planning Catchment: PLRM Input

TMDL UPC	UPC	Area (AC)	Land USe Name	% of Catchment	Area (Acre)	Impervious %
1						
	84	151.8489				
			SFR	35.85%	54.4403	22.1%
			Roads_Unpaved	0.01%	0.0180	
			Roads_Secondary	1.45%	2.2007	100.0%
			EP4	8.53%	12.9552	
			EP3	31.49%	47.8097	
			EP2	3.58%	5.4325	
				80.91%	122.8564	
			EDC-S	19.09%	28.9925	72.1%
				19.09%	28.9925	
2						
	85	78.4582				
			SFR	34.35%	26.9536	23.4%
			Roads_Unpaved	0.06%	0.0492	
			Roads_Secondary	2.29%	1.7949	100.0%
			EP4	0.00%	0.0006	
			EP3	29.96%	23.5034	
			EP2	11.56%	9.0688	
			EP1	0.99%	0.7763	
			CICU	8.21%	6.4450	44.6%
				87.42%	68.5918	
			EDC-S	12.58%	9.8665	69.4%
				12.58%	9.8665	
	88	676.7160				
			SFR	0.95%	6.3972	11.8%
			Roads_Secondary	0.02%	0.1250	100.0%
			Roads_Primary	0.21%	1.4527	100.0%
			MFR	2.17%	14.7156	1.5%
			EP4	0.01%	0.0987	
			EP3	7.22%	48.8720	
			EP2	77.09%	521.6729	
			EP1	11.52%	77.9673	
			CICU	0.22%	1.4707	36.6%
				99.42%	672.7720	
			EDC-S	0.58%	3.9440	62.7%
				0.58%	3.9440	

TMDL UPC	UPC	Area (AC)	Land USe Name	% of Catchment	Area (Acre)	Impervious %
	89	455.1026				
			SFR	8.88%	40.4253	19.7%
			Roads_Unpaved	0.48%	2.1828	
			Roads_Secondary	1.45%	6.5794	100.0%
			MFR	0.41%	1.8737	28.1%
			EP3	25.69%	116.9302	
			EP2	44.65%	203.1905	
			EP1	10.15%	46.1960	
			CICU	3.50%	15.9487	36.5%
				95.22%	**433.3267**	
			EDC-S	4.78%	21.7759	66.1%
				4.78%	**21.7759**	
3						
	55	12.2361				
			SFR	59.94%	7.3348	14.8%
			Roads_Secondary	0.40%	0.0488	100.0%
			EP3	5.40%	0.6609	
			EP2	20.28%	2.4811	
				86.02%	**10.5256**	
			EDC-S	13.98%	1.7105	66.0%
				13.98%	**1.7105**	
	56	2.1049				
			SFR	25.62%	0.5392	10.8%
			Roads_Secondary	0.66%	0.0138	100.0%
			EP3	13.76%	0.2897	
			EP2	24.50%	0.5157	
				64.54%	**1.3585**	
			EDC-S	35.46%	0.7464	76.9%
				35.46%	**0.7464**	
	57	3.4561				
			SFR	23.69%	0.8188	12.1%
			Roads_Secondary	0.92%	0.0319	100.0%
			EP3	10.86%	0.3755	
			EP2	39.71%	1.3723	
				75.19%	**2.5985**	
			EDC-S	24.81%	0.8576	76.9%
				24.81%	**0.8576**	

TMDL UPC	UPC	Area (AC)	Land USe Name	% of Catchment	Area (Acre)	Impervious %
58	15.7342					
			SFR	28.83%	4.5366	20.8%
			Roads_Secondary	0.60%	0.0948	100.0%
			EP3	28.50%	4.4842	
			EP2	21.29%	3.3499	
				79.23%	12.4656	
			EDC-S	20.77%	3.2686	67.6%
				20.77%	3.2686	
59	35.1939					
			SFR	47.44%	16.6967	20.1%
			Roads Secondary	0.44%	0.1560	100.0%
			EP4	0.61%	0.2138	
			EP3	16.96%	5.9695	
			EP2	16.44%	5.7863	
				81.90%	28.8222	
			EDC-S	18.10%	6.3702	65.6%
			EDC-P	0.00%	0.0016	83.3%
				18.10%	6.3718	
60	80.7876					
			SFR	32.87%	26.5563	22.0%
			Roads_Secondary	1.07%	0.8640	100.0%
			EP4	2.36%	1.9097	
			EP3	31.96%	25.8224	
			EP2	10.18%	8.2266	
				78.45%	63.3790	
			EDC-S	20.98%	16.9496	66.7%
			EDC-P	0.57%	0.4590	97.7%
				21.55%	17.4086	
61	14.0996					
			SFR	32.80%	4.6246	24.4%
			Roads Secondary	0.34%	0.0474	100.0%
			EP3	38.49%	5.4271	
			EP2	6.42%	0.9051	
				78.05%	11.0042	
			EDC-S	21.95%	3.0954	64.8%
				21.95%	3.0954	
62	10.2902					
			SFR	55.79%	5.7412	27.3%
			Roads_Secondary	0.85%	0.0879	100.0%
			EP3	7.38%	0.7594	
			EP2	9.27%	0.9534	
				73.29%	7.5419	
			EDC-S	26.71%	2.7482	76.8%
				26.71%	2.7482	

TMDL UPC	UPC	Area (AC)	Land USe Name	% of Catchment	Area (Acre)	Impervious %
	63	123.7492				
			SFR	43.34%	53.6276	25.0%
			Roads_Secondary	1.22%	1.5109	100.0%
			MFR	0.11%	0.1376	36.0%
			EP4	1.53%	1.8979	
			EP3	20.87%	25.8254	
			EP2	12.72%	15.7419	
				79.79%	98.7414	
			EDC-S	19.12%	23.6558	73.4%
			EDC-P	1.09%	1.3520	71.6%
				20.21%	25.0078	
	64	21.4570				
			SFR	33.74%	7.2399	20.3%
			Roads_Secondary	0.25%	0.0539	100.0%
			Roads_Primary	0.11%	0.0225	100.0%
			EP3	9.14%	1.9621	
			EP2	30.61%	6.5674	
				73.85%	15.8457	
			EDC-S	9.98%	2.1411	63.9%
			EDC-P	16.17%	3.4702	69.9%
				26.15%	5.6113	
4						
	38	322.8225				
			SFR	7.19%	23.2180	17.8%
			Roads_Unpaved	0.09%	0.3012	
			Roads_Secondary	0.13%	0.4127	100.0%
			EP3	0.37%	1.1992	
			EP2	61.97%	200.0619	
			EP1	27.09%	87.4458	
				96.85%	312.6387	
			EDC-S	3.15%	10.1838	72.2%
				3.15%	10.1838	
	39	20.5995				
			SFR	63.74%	13.1295	19.3%
			Roads_Secondary	0.15%	0.0318	100.0%
			EP3	0.11%	0.0223	
			EP2	19.31%	3.9775	
				83.31%	17.1611	
			EDC-S	16.69%	3.4384	76.6%
				16.69%	3.4384	

TMDL UPC	UPC	Area (AC)	Land USe Name	% of Catchment	Area (Acre)	Impervious %
	40	143.7299				
			SFR	18.38%	26.4206	19.3%
			Roads_Unpaved	0.04%	0.0646	
			Roads_Secondary	0.35%	0.5026	100.0%
			Roads_Primary	0.07%	0.1046	100.0%
			EP4	0.17%	0.2409	
			EP3	3.72%	5.3448	
			EP2	56.77%	81.6026	
			EP1	11.47%	16.4841	
			CICU	0.71%	1.0222	24.5%
				91.69%	131.7869	
			EDC-S	7.12%	10.2328	80.1%
			EDC-P	1.19%	1.7101	75.7%
				8.31%	11.9429	
	54	5.0134				
			SFR	2.36%	0.1181	
			Roads_Secondary	0.03%	0.0014	100.0%
			EP4	5.68%	0.2848	
			EP3	40.36%	2.0232	
			EP2	0.02%	0.0010	
				48.44%	2.4286	
			EDC-S	1.21%	0.0609	62.6%
			EDC-P	50.34%	2.5239	84.4%
				51.56%	2.5848	
5						
	77	174.0788				
			Veg_Turf	0.07%	0.1139	
			SFR	6.82%	11.8683	25.4%
			Roads_Secondary	0.41%	0.7219	100.0%
			MFR	0.05%	0.0806	
			EP4	0.11%	0.1844	
			EP3	3.74%	6.5045	
			EP2	76.08%	132.4342	
			EP1	4.47%	7.7868	
				91.74%	159.6946	
			EDC-S	6.34%	11.0426	64.8%
			EDC-P	1.92%	3.3415	79.6%
				8.26%	14.3841	

EDC WS

TMDL UPC	UPC	Soil Type	%	Area of Soil Type	Area of WS
1					
	84	**7431**	**13%**	829524	6614537
	84	**7461**	**52%**	3420246	6614537
	84	**7462**	**15%**	976364	6614537
	84	**7482**	**5%**	332621	6614537
	84	**7483**	**1%**	82067	6614537
	84	**7484**	**15%**	973715	6614537
			100%	6614537	
2					
	85	**7413**	**1%**	24737	3645002
	85	**7414**	**1%**	28658	3645002
	85	**7422**	**1%**	42482	3645002
	85	**7451**	**10%**	371383	3645002
	85	**7462**	**9%**	340423	3645002
	85	**7481**	**58%**	2104218	3645002
	85	**7484**	**15%**	550921	3645002
	85	**7485**	**5%**	182179	3645002
			100%	3645002	
	88	**7041**	**0%**	2757	31387534
	88	**7412**	**6%**	1908586	31387534
	88	**7413**	**7%**	2156136	31387534
	88	**7414**	**4%**	1189521	31387534
	88	**7421**	**0%**	144222	31387534
	88	**7422**	**2%**	516650	31387534
	88	**7423**	**6%**	1951803	31387534
	88	**7424**	**1%**	309654	31387534
	88	**7426**	**7%**	2178942	31387534
	88	**7427**	**6%**	1930032	31387534
	88	**7431**	**2%**	497211	31387534
	88	**7471**	**1%**	226441	31387534
	88	**7483**	**4%**	1290835	31387534
	88	**7485**	**0%**	74816	31387534
	88	**7488**	**11%**	3543056	31387534
	88	**7489**	**14%**	4264525	31387534
	88	**7500**	**4%**	1222402	31387534
	88	**9001**	**2%**	510063	31387534
	88	**9441**	**3%**	1086633	31387534
	88	**9442**	**13%**	4148381	31387534
	88	**9443**	**7%**	2234870	31387534
			100%	31387534	

EDC WS TMDL UPC	UPC	Soil Type	%	Area of Soil Type	Area of WS
	89	**7041**	**1%**	132287	21277171
	89	**7042**	**0%**	96578	21277171
	89	**7412**	**1%**	286658	21277171
	89	**7413**	**6%**	1221770	21277171
	89	**7414**	**17%**	3620663	21277171
	89	**7422**	**2%**	353893	21277171
	89	**7423**	**3%**	680951	21277171
	89	**7424**	**5%**	1136724	21277171
	89	**7431**	**5%**	1152231	21277171
	89	**7451**	**16%**	3361031	21277171
	89	**7481**	**24%**	5020117	21277171
	89	**7482**	**7%**	1405222	21277171
	89	**7484**	**0%**	92130	21277171
	89	**7485**	**6%**	1273589	21277171
	89	**7486**	**5%**	1056579	21277171
	89	**7531**	**0%**	16462	21277171
	89	**7532**	**2%**	370286	21277171
			100%	21277171	
3					
	55	**7441**	**45%**	237560	533005
	55	**7442**	**55%**	295445	533005
			100%	533005	
	56	**7442**	**100%**	91691	91691
			100%	91691	
	57	**7441**	**10%**	14705	150546
	57	**7442**	**90%**	135842	150546
			100%	150546	
	58	**7441**	**18%**	123318	685381
	58	**7442**	**82%**	562063	685381
			100%	685381	
	59	**7441**	**10%**	158444	1533048
	59	**7442**	**76%**	1167270	1533048
	59	**7492**	**8%**	128313	1533048
	59	**7541**	**5%**	79021	1533048
			100%	1533048	
	60	**7441**	**15%**	516662	3519109
	60	**7442**	**40%**	1397150	3519109
	60	**7491**	**0%**	13853	3519109
	60	**7492**	**5%**	167964	3519109
	60	**7541**	**40%**	1423481	3519109
			100%	3519109	
	61	**7441**	**11%**	65014	614178
	61	**7442**	**75%**	462998	614178
	61	**7541**	**14%**	86167	614178
			100%	614178	

EDC WS TMDL UPC	UPC	Soil Type	%	Area of Soil Type	Area of WS
	62	**7441**	**89%**	398482	448239
	62	**7442**	**11%**	49758	448239
			100%	448239	
	63	**7441**	**15%**	785953	5390513
	63	**7442**	**19%**	1023024	5390513
	63	**7443**	**16%**	882268	5390513
	63	**7491**	**11%**	575483	5390513
	63	**7492**	**14%**	759228	5390513
	63	**7541**	**25%**	1364557	5390513
			100%	5390513	
	64	**7441**	**82%**	767698	934668
	64	**7442**	**18%**	166969	934668
			100%	934668	
4					
	38	**7411**	**1%**	70833	14062148
	38	**7413**	**7%**	946168	14062148
	38	**7421**	**24%**	3366069	14062148
	38	**7422**	**26%**	3599239	14062148
	38	**7423**	**3%**	486352	14062148
	38	**7491**	**2%**	284126	14062148
	38	**7492**	**9%**	1297497	14062148
	38	**7532**	**14%**	2036179	14062148
	38	**7533**	**8%**	1147577	14062148
	38	**9401**	**1%**	87773	14062148
	38	**9402**	**3%**	376702	14062148
	38	**9443**	**3%**	361118	14062148
	38	**9444**	**0%**	2517	14062148
			100%	14062148	
	39	**7421**	**72%**	646964	897315
	39	**7422**	**28%**	250352	897315
			100%	897315	
	40	**7041**	**0%**	4788	6260872
	40	**7411**	**18%**	1149489	6260872
	40	**7412**	**5%**	319470	6260872
	40	**7413**	**3%**	172892	6260872
	40	**7421**	**39%**	2443922	6260872
	40	**7422**	**8%**	522471	6260872
	40	**7423**	**6%**	356353	6260872
	40	**7461**	**5%**	329638	6260872
	40	**7462**	**7%**	456696	6260872
	40	**7532**	**1%**	41922	6260872
	40	**7533**	**7%**	463232	6260872
			100%	6260872	

EDC WS TMDL UPC	UPC	Soil Type	%	Area of Soil Type	Area of WS
	54	**7441**	**29%**	63822	218384
	54	**7443**	**4%**	8623	218384
	54	**7491**	**67%**	145939	218384
			100%	218384	
5					
	77	**7071**	**1%**	105121	7582871
	77	**7411**	**36%**	2713342	7582871
	77	**7412**	**27%**	2013885	7582871
	77	**7413**	**6%**	433004	7582871
	77	**7444**	**1%**	56647	7582871
	77	**7451**	**0%**	10263	7582871
	77	**7452**	**0%**	30616	7582871
	77	**7461**	**7%**	493300	7582871
	77	**7462**	**11%**	844694	7582871
	77	**7531**	**10%**	727896	7582871
	77	**7532**	**2%**	154103	7582871
			100%	7582871	

TMDL UPC	UPC		Road Risk	%	Sum of Road Risk Length	Sum of roads within
1						
	84					
		EDC-S	**Low**	**52%**	13208	25228
		EDC-S	**Moderate**	**23%**	5727	25228
		EDC-S	**High**	**25%**	6293	25228
				100%	25228	
2						
	85					
		CT-P	**Low**	**100%**	203	203
				100%	203	
		EDC-S	**Low**	**89%**	7220	8126
		EDC-S	**Moderate**	**6%**	500	8126
		EDC-S	**High**	**5%**	406	8126
				100%	8126	
	88					
		CT-P	**Low**	**40%**	2340	5819
		CT-P	**Moderate**	**41%**	2406	5819
		CT-P	**High**	**18%**	1073	5819
				100%	5819	
		EDC-S	**Low**	**92%**	2952	3199
		EDC-S	**Moderate**	**6%**	201	3199
		EDC-S	**High**	**1%**	47	3199
				100%	3199	
	89					
		CT-P		**2%**	199	9531
		CT-P	**Low**	**79%**	7529	9531
		CT-P	**Moderate**	**1%**	130	9531
		CT-P	**High**	**18%**	1673	9531
				100%	9531	
		EDC-S	**Low**	**73%**	13187	18097
		EDC-S		**1%**	228	18097
		EDC-S	**Moderate**	**3%**	452	18097
		EDC-S	**High**	**23%**	4230	18097
				100%	18097	

TMDL UPC	UPC		Road Risk	%	Sum of Road Risk Length	Sum of roads within
3						
	55					
		EDC-S	**Moderate**	**52%**	546	1046
		EDC-S	**High**	**48%**	500	1046
				100%	1046	
	56					
		EDC-S	**Moderate**	**100%**	598	598
				100%	598	
	57					
		EDC-S	**Moderate**	**100%**	705	705
				100%	705	
	58					
		EDC-S	**Low**	**36%**	868	2405
		EDC-S	**Moderate**	**64%**	1537	2405
				100%	2405	
	59					
		EDC-S	**Low**	**22%**	1240	5660
		EDC-S	**Moderate**	**25%**	1415	5660
		EDC-S	**High**	**53%**	3005	5660
				100%	5660	
	60					
		EDC-P	**High**	**100%**	809	809
				100%	809	
		EDC-S	**Low**	**9%**	1298	13970
		EDC-S	**Moderate**	**53%**	7355	13970
		EDC-S	**High**	**38%**	5317	13970
				100%	13970	
	61					
		EDC-S	**Low**	**4%**	94	2570
		EDC-S	**Moderate**	**73%**	1872	2570
		EDC-S	**High**	**24%**	604	2570
				100%	2570	

TMDL UPC	UPC		Road Risk	%	Sum of Road Risk Length	Sum of roads within
	62					
		EDC-S	**Low**	**84%**	2048	2438
		EDC-S	**High**	**16%**	390	2438
				100%	2438	
	63					
		EDC-P	**Moderate**	**81%**	299	370
		EDC-P	**High**	**19%**	71	370
				100%	370	
		EDC-S	**Low**	**36%**	7639	20983
		EDC-S	**Moderate**	**51%**	10735	20983
		EDC-S	**High**	**12%**	2609	20983
				100%	20983	
	64					
		EDC-P	**Low**	**21%**	499	2329
		EDC-P	**Moderate**	**25%**	574	2329
		EDC-P	**High**	**54%**	1256	2329
				100%	2329	
		EDC-S	**Low**	**43%**	947	2227
		EDC-S	**Moderate**	**53%**	1185	2227
		EDC-S	**High**	**4%**	95	2227
				100%	2227	

TMDL UPC	UPC		Road Risk	%	Sum of Road Risk Length	Sum of roads within
4						
	38					
		EDC-S	**Low**	**9%**	825	8880
		EDC-S	**Moderate**	**62%**	5496	8880
		EDC-S	**High**	**29%**	2559	8880
				100%	8880	
	39					
		EDC-S	**Low**	**17%**	635	3719
		EDC-S	**Moderate**	**52%**	1947	3719
		EDC-S	**High**	**31%**	1137	3719
				100%	3719	
	40					
		EDC-P	**Low**	**21%**	215	1018
		EDC-P	**Moderate**	**71%**	722	1018
		EDC-P	**High**	**8%**	81	1018
				100%	1018	
		EDC-S	**Low**	**27%**	2726	10200
		EDC-S	**Moderate**	**31%**	3157	10200
		EDC-S	**High**	**42%**	4317	10200
				100%	10200	
	54					
		EDC-P	**High**	**100%**	448	448
				100%	448	
5						
	77					
		EDC-P	**Moderate**	**2%**	39	1970
		EDC-P	**High**	**98%**	1931	1970
				100%	1970	
		EDC-S	**Low**	**2%**	167	8599
		EDC-S	**Moderate**	**74%**	6359	8599
		EDC-S	**High**	**24%**	2074	8599
				100%	8599	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
1						
	84	EDC-S				
			Erodible	51%	24040	46692
			Protected	5%	2488	46692
			Stable	10%	4714	46692
			Stable & Protected	33%	15450	46692
				100%	46692	
2						
	85	CT-P				
				39%	891	2312
			Erodible	61%	1422	2312
				100%	2312	
	85	EDC-S				
			Erodible	79%	12968	16404
			Protected	1%	162	16404
			Stable	4%	611	16404
			Stable & Protected	16%	2663	16404
				100%	16404	
	88	CT-P				
				90%	11559	12865
			Erodible	3%	444	12865
			Stable	6%	788	12865
			Stable & Protected	1%	74	12865
				100%	12865	
	88	EDC-S				
			Erodible	31%	1826	5980
			Stable	22%	1316	5980
			Stable & Protected	47%	2838	5980
				100%	5980	
	89	CT-P				
				87%	14452	16535
			Erodible	10%	1698	16535
			Protected	0%	76	16535
			Stable & Protected	2%	309	16535
				100%	16535	
	89	EDC-S				
			Erodible	66%	21164	32219
			Protected	6%	1941	32219
			Stable	6%	1999	32219
			Stable & Protected	22%	7115	32219
				100%	32219	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
3						
	55	EDC-S				
			Erodible	50%	1472	2963
			Stable & Protected	50%	1491	2963
				100%	2963	
	56	EDC-S				
			Stable & Protected	100%	1088	1088
				100%	1088	
	57	EDC-S				
			Erodible	53%	741	1389
			Stable & Protected	47%	648	1389
				100%	1389	
	58	EDC-S				
			Erodible	10%	459	4468
			Protected	16%	724	4468
			Stable	17%	741	4468
			Stable & Protected	57%	2543	4468
				100%	4468	
	59	EDC-S				
			Erodible	13%	1295	9706
			Protected	9%	882	9706
			Stable	15%	1458	9706
			Stable & Protected	63%	6071	9706
				100%	9706	
	60	EDC-P				
			Stable & Protected	100%	1182	1182
				100%	1182	
	60	EDC-S				
			Erodible	9%	2263	25173
			Protected	5%	1210	25173
			Stable	6%	1628	25173
			Stable & Protected	80%	20071	25173
				100%	25173	
	61	EDC-S				
			Erodible	16%	792	4894
			Stable	9%	427	4894
			Stable & Protected	75%	3675	4894
				100%	4894	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
	62	EDC-S				
			Erodible	52%	2345	4513
			Stable	5%	244	4513
			Stable & Protected	43%	1924	4513
				100%	4513	
	63	EDC-P				
			Erodible	32%	431	1341
			Stable & Protected	68%	910	1341
				100%	1341	
	63	EDC-S				
			Erodible	25%	9509	37430
			Protected	5%	1808	37430
			Stable	14%	5306	37430
			Stable & Protected	56%	20806	37430
				100%	37430	
	64	EDC-P				
			Stable	11%	548	4804
			Stable & Protected	89%	4256	4804
				100%	4804	
	64	EDC-S				
			Erodible	36%	1160	3221
			Stable	37%	1180	3221
			Stable & Protected	27%	881	3221
				100%	3221	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
4						
	38	EDC-S				
			Erodible	**13%**	1899	14359
			Stable	**17%**	2385	14359
			Stable & Protected	**70%**	10075	14359
				100%	14359	
	39	EDC-S				
			Erodible	**42%**	2588	6113
			Protected	**1%**	78	6113
			Stable	**25%**	1554	6113
			Stable & Protected	**31%**	1893	6113
				100%	6113	
	40	EDC-P				
			Stable & Protected	**100%**	1683	1683
				100%	1683	
	40	EDC-S				
			Erodible	**29%**	4885	17103
			Protected	**1%**	228	17103
			Stable	**21%**	3672	17103
			Stable & Protected	**49%**	8317	17103
				100%	17103	
	54	EDC-P				
			Erodible	**16%**	414	2645
			Stable & Protected	**84%**	2230	2645
				100%	2645	
	54	EDC-S				
			Erodible	**96%**	117	122
			Stable & Protected	**4%**	5	122
				100%	122	
5						
	77	EDC-P				
			Erodible	**100%**	2697	2697
				100%	2697	
	77	EDC-S				
			Erodible	**43%**	6689	15589
			Stable & Protected	**57%**	8900	15589
				100%	15589	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
1						
	84	EDC-S				
			DCIA	**56%**	26209	46692
			ICIA	**44%**	20483	46692
				100%	46692	
2						
	85	CT-P				
				39%	891	2312
			DCIA	**3%**	62	2312
			ICIA	**59%**	1359	2312
				100%	2312	
	85	EDC-S				
			DCIA	**12%**	2020	16404
			ICIA	**88%**	14384	16404
				100%	16404	
	88	CT-P				
				90%	11559	12865
			DCIA	**4%**	551	12865
			ICIA	**6%**	756	12865
				100%	12865	
	88	EDC-S				
			DCIA	**67%**	4015	5980
			ICIA	**33%**	1965	5980
				100%	5980	
	89	CT-P				
				87%	14452	16535
			DCIA	**6%**	1039	16535
			ICIA	**6%**	1043	16535
				100%	16535	
	89	EDC-S				
			DCIA	**28%**	9003	32219
			ICIA	**72%**	23215	32219
				100%	32219	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
3						
	55	EDC-S				
			DCIA	50%	1491	2963
			ICIA	50%	1472	2963
				100%	2963	
	56	EDC-S				
			DCIA	100%	1088	1088
				100%	1088	
	57	EDC-S				
			DCIA	100%	1389	1389
				100%	1389	
	58	EDC-S				
			DCIA	84%	3741	4468
			ICIA	16%	726	4468
				100%	4468	
	59	EDC-S				
			DCIA	69%	6670	9706
			ICIA	31%	3036	9706
				100%	9706	
	60	EDC-P				
			DCIA	100%	1182	1182
				100%	1182	
	60	EDC-S				
			DCIA	86%	21660	25173
			ICIA	14%	3513	25173
				100%	25173	
	61	EDC-S				
			DCIA	83%	4054	4894
			ICIA	17%	840	4894
				100%	4894	
	62	EDC-S				
			DCIA	90%	4074	4513
			ICIA	10%	439	4513
				100%	4513	
	63	EDC-P				
			DCIA	100%	1341	1341
				100%	1341	
	63	EDC-S				
			DCIA	67%	25221	37430
			ICIA	33%	12209	37430
				100%	37430	

TMDL UPC	UPC:	Jurisdiction Risk	Condition:	% of Total Length	Total Length of Condition	Total Length of Shoulder
	64	EDC-P				
			DCIA	100%	4804	4804
				100%	4804	
	64	EDC-S				
			DCIA	74%	2399	3221
			ICIA	26%	821	3221
				100%	3221	
4						
	38	EDC-S				
			DCIA	89%	12790	14359
			ICIA	11%	1569	14359
				100%	14359	
	39	EDC-S				
			DCIA	95%	5836	6113
			ICIA	5%	277	6113
				100%	6113	
	40	EDC-P				
			DCIA	100%	1683	1683
				100%	1683	
	40	EDC-S				
			DCIA	91%	15555	17103
			ICIA	9%	1548	17103
				100%	17103	
	54	EDC-P				
			DCIA	100%	2645	2645
				100%	2645	
	54	EDC-S				
			DCIA	100%	122	122
				100%	122	
5						
	77	EDC-P				
			DCIA	100%	2697	2697
				100%	2697	
	77	EDC-S				
			DCIA	53%	8246	15589
			ICIA	47%	7343	15589
				100%	15589	

UPC - ST and DI Volumes

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
1							
	84 Infiltrating						
	1382	1382		6.50	7.07	81.68	2008
	1385	1385		0.00	7.07	0.00	2008
	1387	1387		0.10	7.07	1.26	2008
	1388	1388		0.00	7.07	0.00	2008
	1389	1389		0.00	7.07	0.00	2008
	1395	1395		5.46	7.07	68.61	2008
	1396	1396		3.75	3.14	26.51	2008
	1397	1397		0.50	7.07	6.28	2008
	1400	1400		4.25	7.07	53.41	2008
	1418	1418		0.20	7.07	2.51	2008
	1419	1419		0.00	7.07	0.00	2008
	1421	1421		3.15	0.10	18.90	2008
	1422	1422		3.10	0.10	18.60	2008
	1423	1423		0.00	0.10	0.00	2008
	1424	1424		0.00	0.10	0.00	2008
	1425	1425		0.00	0.10	0.00	2008
	1426	1426		0.00	0.10	0.00	2008
	162	162		2.70	3.14	19.09	1993
					77.56	**296.85**	
	84 Solid						
	1383	1383		1.70	7.07	21.36	2008
	1384	1384		1.20	7.07	15.08	2008
	1386	1386		0.40	7.07	5.03	2008
	1390	1390		0.00	7.07	0.00	2008
	1402	1402		0.00	7.07	0.00	2008
	1403	1403		0.00	3.14	0.00	2008
	1404	1404		0.00	7.07	0.00	2008
	1405	1405		0.00	7.07	0.00	2008
	1408	1408		2.50	7.07	31.42	2008
	1409	1409		1.75	7.07	21.99	2008
	1410	1410		2.36	7.07	29.66	2008
	1411	1411		2.10	7.07	26.39	2008
	1412	1412		0.70	7.07	8.80	2008
	1413	1413		0.55	7.07	6.91	2008
	1414	1414		0.25	7.07	3.14	2008
	1415	1415		0.08	7.07	1.01	2008
	1416	1416		0.00	7.07	0.00	2008
	1417	1417		0.00	7.07	0.00	2008
	1616	1616		0.00	0.10	0.00	2008

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	1617	1617		0.00	0.10	0.00	2008
	2205	2205		1.40	0.79	4.40	
					124.29	**175.18**	
			UPC 84		**201.85**	**472.02**	

2

85 Infiltrating							
	1434	1434		0.15	7.07	1.88	2009
	1435	1435		5.00	7.07	62.83	2009
	1436	1436		5.22	3.14	36.90	2009
	1438	1438		4.77	7.07	59.94	2009
	1439	1439		0.87	7.07	10.93	2009
	1789	1789		3.00	7.07	37.70	2010
	1790	1790		3.00	7.07	37.70	2010
					45.55	**247.89**	
			UPC 85		**45.55**	**247.89**	
88 Infiltrating							
	1261	1261		3.09	0.10	18.54	2007
	1271	1271		3.25	7.07	40.84	2007
	1274	1274		5.42	7.07	68.11	2007
	1275	1275		5.40	3.14	38.17	2007
					17.38	**165.66**	
88 Solid							
	1260	1260		0.00	0.10	0.00	2007
	1272	1272		0.05	3.14	0.35	2007
					3.24	**0.35**	
			UPC 88		**20.62**	**166.01**	
89 Infiltrating							
	1437	1437		0.10	3.14	0.71	2009
	1440	1440		4.10	7.07	51.52	2009
	1441	1441		4.30	7.07	54.04	2009
	1442	1442		4.71	7.07	59.19	2009
	1443	1443		4.61	3.14	32.59	2009
	1791	1791		3.11	1.77	15.27	2010
	1792	1792		3.08	1.77	15.12	2010
	1793	1793		3.08	1.77	15.12	2010
	1794	1794		3.19	1.77	15.66	2010
	1795	1795		3.22	1.77	15.81	2010
	1796	1796		3.21	1.77	15.76	2010
	1797	1797		3.11	1.77	15.27	2010
	1798	1798		2.00	1.77	9.82	2010
	1799	1799		3.00	1.77	14.73	2010
	1800	1800		3.54	1.77	17.38	2010

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	1801	1801		3.16	1.77	15.51	2010
	1802	1802		3.21	1.77	15.76	2010
	1803	1803		3.00	1.77	14.73	2010
					50.46	**393.95**	
	89 Solid						
	1766	1766		0.00	0.10	0.00	
	1767	1767		0.00	0.10	0.00	
	1768	1768		0.00	0.10	0.00	
	1769	1769		0.00	0.10	0.00	
	1770	1770		0.00	0.10	0.00	
	1771	1771		0.05	0.10	0.58	
					0.59	**0.58**	
			UPC	**89**	**51.05**	**394.52**	
3							
	55 Infiltrating						
	595	595		0.00	0.10	0.00	2004
	596	596		2.27	0.10	13.62	2004
	597	597		2.27	0.10	13.62	2004
	682	682		5.43	7.07	68.24	2004
	736	736		5.50	7.07	69.12	2004
					14.43	**164.59**	
			UPC	**55**	**14.43**	**164.59**	
	56 Infiltrating						
	598	598		3.00	0.10	18.00	2004
	683	683		5.72	7.07	71.88	2004
	737	737		5.60	7.07	70.37	2004
					14.24	**160.25**	
			UPC	**56**	**14.24**	**160.25**	
	57 Infiltrating						
	335	335		0.55	3.14	3.89	2004
	599	599		3.00	0.10	18.00	2004
					3.24	**21.89**	
			UPC	**57**	**3.24**	**21.89**	
	58 Infiltrating						
	1258	1258		5.20	7.07	65.35	2004
	1259	1259		4.17	7.07	52.40	2004
	1444	1444		5.05	7.07	63.46	2004
	1445	1445		5.15	7.07	64.72	2004
	1446	1446		5.05	3.14	35.70	2004
	336	336		6.50	7.07	81.68	2004
	337	337		4.42	7.07	55.54	2004
	338	338		2.76	7.07	34.68	2004

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	339	339		6.49	7.07	81.56	2004
	340	340		6.72	7.07	84.45	2004
	611	611		2.80	0.10	0.00	2004
	612	612		1.40	0.10	8.40	2004
	613	613		3.00	0.10	18.00	2004
	685	685		5.31	7.07	66.73	2004
	739	739		12.85	3.14	90.83	2004
					77.26	**803.49**	
				UPC 58	**77.26**	**803.49**	
	59 Infiltrating						
	1562	1562		0.70	3.14	4.95	2004
	341	341		0.00	3.14	0.00	2004
	343	343		5.57	7.07	69.99	2004
	344	344		0.50	3.14	3.53	2004
	345	345		0.40	3.14	2.83	2004
	346	346		3.10	7.07	38.96	2004
	600	600		0.00	0.10	0.00	2004
	601	601		0.00	0.10	0.00	2004
	603	603		3.00	0.10	18.00	2004
	604	604		5.00	0.10	30.00	2004
	605	605		1.00	0.10	6.00	2004
	606	606		3.00	0.10	18.00	2004
	607	607		3.00	0.10	18.00	2004
	608	608		2.80	0.10	16.80	2004
	609	609		3.00	0.10	18.00	2004
	610	610		3.00	0.10	18.00	2004
	686	686		3.00	7.07	37.70	2004
	687	687		3.00	7.07	37.70	2004
	688	688		3.00	7.07	37.70	2004
	689	689		3.00	7.07	37.70	2004
	740	740		3.00	7.07	37.70	2004
	741	741		3.00	7.07	37.70	2004
	742	742		3.00	7.07	37.70	2004
	743	743		3.20	7.07	40.21	2004
					84.23	**567.17**	
	59 Solid						
	1572	1572			3.14		2004
					3.14		
				UPC 59	**87.38**	**567.17**	
	60 Infiltrating						
	1349	1349		3.40	0.10	20.40	2007
	318	318		3.65	7.07	45.87	2005

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
		319	319	4.24	7.07	53.28	2005
		320	320	5.30	7.07	66.60	2005
		321	321	0.00	3.14	0.00	2005
		322	322	2.72	7.07	34.18	2005
		324	324	3.82	3.14	27.00	2005
		326	326	2.70	7.07	33.93	2005
		328	328	2.87	7.07	36.07	2005
		347	347	2.25	7.07	28.27	2006
		348	348	4.10	7.07	51.52	2006
		349	349	0.60	3.14	4.24	2006
		350	350	0.60	3.14	4.24	2006
		351	351	2.30	3.14	16.26	2006
		576	576	2.10	0.10	12.60	2005
		577	577	2.90	0.10	17.40	2005
		578	578	3.16	0.10	18.96	2005
		579	579	2.92	0.10	17.52	2005
		580	580	2.77	0.10	16.62	2005
		581	581	2.73	0.10	16.38	2005
		582	582	2.80	0.10	16.80	2005
		583	583	0.00	0.10	0.00	2005
		584	584	3.13	0.10	18.78	2005
		585	585	0.10	0.10	0.60	2005
		586	586	0.00	0.10	0.00	2005
		587	587	2.90	0.10	17.40	2005
		588	588	2.65	0.10	15.90	2005
		589	589	0.00	0.10	0.00	2005
		590	590	2.85	0.10	17.10	2005
		591	591	2.72	0.10	16.32	2005
		592	592	3.00	0.10	18.00	2005
		593	593	3.12	0.10	18.72	2005
		614	614	2.73	0.10	17.47	2006
		615	615	2.80	0.10	14.56	2006
		616	616	2.75	0.10	9.63	2006
		617	617	2.84	0.10	19.88	2006
		618	618	2.70	0.10	18.90	2006
		619	619	3.00	0.10	10.50	2006
		620	620	2.80	0.10	29.68	2006
		621	621	2.80	0.10	19.60	2006
		622	622	2.65	0.10	18.55	2006
		623	623	2.80	0.10	19.60	2006
		624	624	2.65	0.10	18.55	2006
		625	625	2.95	0.10	20.65	2006

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	630		630	1.95	0.10	13.65	2006
	631		631	0.00	0.10	0.00	2006
	632		632	2.95	0.10	20.65	2006
	633		633	0.00	0.10	0.00	2006
	679		679	3.20	7.07	40.21	2005
	690		690	3.58	7.07	44.99	2006
	733		733	4.00	7.07	50.27	2005
	744		744	2.60	7.07	32.67	2006
					103.97	**1080.97**	
	60	Solid					
	1573		1573		0.10		2006
	1574		1574		0.10		2006
					0.20		
				UPC 60	**104.16**	**1080.97**	
	61	Infiltrating					
	352		352	4.30	3.14	30.39	2006
	354		354	0.40	3.14	2.83	2006
	626		626	3.10	0.10	21.70	2006
	627		627	3.21	0.10	22.47	2006
	628		628	0.00	0.10	0.00	2006
	629		629	2.90	0.10	20.30	2006
	634		634	2.60	0.10	18.20	2006
	635		635	0.03	0.10	0.21	2006
					6.87	**116.10**	
				UPC 61	**6.87**	**116.10**	
	62	Infiltrating					
	1328		1328	3.00	0.10	18.00	2007
	1329		1329	3.00	0.10	18.00	2007
	1330		1330	3.00	0.10	18.00	2007
	1331		1331	3.20	0.10	19.20	2007
	1332		1332	3.00	0.10	18.00	2007
	1366		1366	4.30	7.07	54.04	2007
	1367		1367	1.60	7.07	20.11	2007
					14.63	**165.34**	
				UPC 62	**14.63**	**165.34**	
	63	Infiltrating					
	1280		1280	4.63	3.14	32.73	2008
	1280		1280	4.63	3.14	32.73	2009
	1281		1281	5.79	3.14	40.93	2008
	1281		1281	5.79	3.14	40.93	2009
	1282		1282	4.41	3.14	31.17	2008
	1282		1282	4.41	3.14	31.17	2009

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
		1286	1286	2.99	7.07	37.57	2008
		1286	1286	2.99	7.07	37.57	2009
		1287	1287	6.71	3.14	47.43	2008
		1287	1287	6.71	3.14	47.43	2009
		1288	1288	5.21	7.07	65.47	2008
		1288	1288	5.21	7.07	65.47	2009
		1289	1289	4.02	7.07	50.52	2008
		1289	1289	4.02	7.07	50.52	2009
		1290	1290	4.42	3.14	31.24	2008
		1290	1290	4.42	3.14	31.24	2009
		1291	1291	4.18	3.14	29.55	2008
		1291	1291	4.18	3.14	29.55	2009
		1292	1292	4.53	3.14	32.02	2008
		1292	1292	4.53	3.14	32.02	2009
		1293	1293	4.26	3.14	30.11	2008
		1293	1293	4.26	3.14	30.11	2009
		1294	1294	3.01	0.10	18.06	2008
		1294	1294	3.01	0.10	18.06	2009
		1295	1295	3.18	0.10	19.08	2008
		1295	1295	3.18	0.10	19.08	2009
		1296	1296	3.40	0.10	20.40	2008
		1296	1296	3.40	0.10	20.40	2009
		1297	1297	3.24	0.10	19.44	2008
		1297	1297	3.24	0.10	19.44	2009
		1298	1298	3.06	0.10	18.36	2008
		1298	1298	3.06	0.10	18.36	2009
		1299	1299	2.45	0.10	14.70	2008
		1299	1299	2.45	0.10	14.70	2009
		1300	1300	4.62	0.10	27.72	2008
		1300	1300	4.62	0.10	27.72	2009
		1301	1301	3.30	0.10	19.80	2008
		1301	1301	3.30	0.10	19.80	2009
		1302	1302	3.20	0.10	19.20	2008
		1302	1302	3.20	0.10	19.20	2009
		1303	1303	2.15	1.77	10.55	2008
		1303	1303	2.15	1.77	10.55	2009
		1304	1304	2.16	1.77	10.60	2008
		1304	1304	2.16	1.77	10.60	2009
		1305	1305	2.72	1.77	13.35	2008
		1305	1305	2.72	1.77	13.35	2009
		1306	1306	1.29	1.77	6.33	2008
		1306	1306	1.29	1.77	6.33	2009

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
		1307	1307	1.16	0.20	2.05	2008
		1307	1307	1.16	0.20	2.05	2009
		1308	1308	1.06	0.79	3.33	2008
		1308	1308	1.06	0.79	3.33	2009
		1309	1309	1.12	0.20	1.98	2008
		1309	1309	1.12	0.20	1.98	2009
		1310	1310	1.09	0.20	1.93	2008
		1310	1310	1.09	0.20	1.93	2009
		1311	1311	1.07	0.20	1.89	2008
		1311	1311	1.07	0.20	1.89	2009
		1312	1312	2.25	1.77	11.04	2008
		1312	1312	2.25	1.77	11.04	2009
		1313	1313	2.18	1.77	10.70	2008
		1313	1313	2.18	1.77	10.70	2009
		1314	1314	1.41	1.77	6.92	2008
		1314	1314	1.41	1.77	6.92	2009
		1315	1315	1.48	1.77	7.26	2008
		1315	1315	1.48	1.77	7.26	2009
		1316	1316	1.41	1.77	6.92	2008
		1316	1316	1.41	1.77	6.92	2009
		1317	1317	0.68	0.20	1.20	2008
		1317	1317	0.68	0.20	1.20	2009
		1318	1318	0.67	0.20	1.18	2008
		1318	1318	0.67	0.20	1.18	2009
		1319	1319	0.74	0.20	1.31	2008
		1319	1319	0.74	0.20	1.31	2009
		1320	1320	0.59	0.20	1.04	2008
		1320	1320	0.59	0.20	1.04	2009
		1321	1321	0.56	0.20	0.99	2008
		1321	1321	0.56	0.20	0.99	2009
		1322	1322	0.66	0.20	1.17	2008
		1322	1322	0.66	0.20	1.17	2009
		1323	1323	1.35	1.77	6.63	2008
		1323	1323	1.35	1.77	6.63	2009
		1324	1324	1.49	1.77	7.31	2008
		1324	1324	1.49	1.77	7.31	2009
		1325	1325	1.05	0.20	1.86	2008
		1325	1325	1.05	0.20	1.86	2009
		1326	1326	1.00	0.10	6.00	2007
		1327	1327	2.60	0.10	15.60	2007
		1333	1333	4.22	0.10	25.32	2007
		1334	1334	3.53	0.10	21.18	2007

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	1335	1335	2.85	0.10	17.10	2007
	1336	1336	2.90	0.10	17.40	2007
	1337	1337	3.00	0.10	18.00	2007
	1338	1338	2.80	0.10	16.80	2007
	1339	1339	3.00	0.10	18.00	2007
	1340	1340	3.95	0.10	23.70	2007
	1341	1341	3.15	0.10	18.90	2007
	1342	1342	2.90	0.10	17.40	2007
	1343	1343	2.80	0.10	16.80	2007
	1344	1344	3.00	0.10	18.00	2007
	1345	1345	3.10	0.10	18.60	2007
	1346	1346	3.80	0.10	22.80	2007
	1347	1347	3.00	0.10	18.00	2007
	1348	1348		0.10		2007
	1350	1350	4.70	7.07	59.06	2007
	1353	1353	4.90	3.14	34.64	2007
	1354	1354	3.30	3.14	23.33	2007
	1355	1355	1.70	3.14	12.02	2007
	1357	1357	3.40	7.07	42.73	2007
	1358	1358	3.60	3.14	25.45	2007
	1359	1359	6.00	3.14	42.41	2007
	1360	1360	3.00	3.14	21.21	2007
	1361	1361	3.90	7.07	49.01	2007
	1362	1362	3.50	7.07	43.98	2007
	1368	1368	4.10	3.14	28.98	2007
	1369	1369	3.20	3.14	22.62	2007
	1370	1370	4.10	7.07	51.52	2007
	1371	1371	3.70	7.07	46.50	2007
	1372	1372	3.70	7.07	46.50	2007
	1373	1373	4.10	3.14	28.98	2007
	1374	1374	3.80	3.14	26.86	2007
	1375	1375	3.80	3.14	26.86	2007
	1432	1432	2.92	0.10	17.52	
	1433	1433	2.90	0.10	17.40	
	1586	1586		0.10		2008
	1586	1586		0.10		2009
	1587	1587		0.10		2008
	1587	1587		0.10		2009
				225.61	**2423.28**	
			UPC 63	**225.61**	**2423.28**	
64 Infiltrating						
	1482	1482	3.60	7.07	45.24	2005

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
	568	568		3.00	0.10	18.00	2005
	569	569		3.00	0.10	18.00	2005
	570	570		2.80	0.10	16.80	2005
	571	571		2.95	0.10	17.70	2005
	572	572		2.70	0.10	16.20	2005
	573	573		2.80	0.10	16.80	2005
	574	574		2.80	0.10	16.80	2005
	575	575		3.05	0.10	18.30	2005
	677	677		2.60	7.07	32.67	2005
	678	678		2.80	7.07	35.19	2005
	731	731		2.90	7.07	36.44	2005
	732	732		2.80	7.07	35.19	2005
					36.13	**323.33**	
	64 Solid						
	1480	1480		0.50	0.10	2.47	2005
	315	315		2.65	3.14	18.73	2005
					3.24	**21.21**	
			UPC	**64**	**39.37**	**344.53**	
4							
	38 Infiltrating						
	2195	2195		2.89	3.14	20.43	2011
	2196	2196		2.95	3.14	20.85	2011
	2199	2199		1.00	0.10	6.00	2011
	2200	2200		2.00	0.10	12.00	2011
	2201	2201		1.00	0.10	6.00	2011
	2202	2202		0.50	0.10	3.00	2011
	2204	2204		2.30	3.14	16.26	2011
					9.82	**84.54**	
	38 Solid						
	1233	1233			0.10		1988
	1234	1234			0.10		1988
	2203	2203		0.00	0.10	0.00	2011
					0.29	**0.00**	
			UPC	**38**	**10.11**	**84.54**	
	39 Infiltrating						
	2194	2194		4.11	3.14	29.05	2011
					3.14	**29.05**	
			UPC	**39**	**3.14**	**29.05**	
	40 Infiltrating						
	1	1		6.88	3.14	48.63	1995
	2252	2252			0.10		2011
	2253	2253			3.14		2011

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
		2254	2254		0.10		2011
		2255	2255		0.10		2011
		2256	2256		7.07		2011
		2257	2257		3.14		2011
		2258	2258		7.07		2011
		2259	2259		7.07		2011
		2260	2260		0.10		2011
		2261	2261		0.10		2011
		2262	2262		0.10		2011
		2262	2262		0.10		2011
		2262	2262		0.10		2011
		2263	2263		7.07		2011
		232	232	5.60	3.14	39.58	1995
		554	554	1.17	0.10	7.02	2001
		555	555	1.06	0.10	6.36	2001
		556	556	1.17	0.10	7.02	2001
					41.92	**108.62**	
	40	Solid					
		1606	1606	0.00	1.77	0.00	2001
					1.77	**0.00**	
				UPC 40	**43.69**	**108.62**	
	54	Infiltrating					
		1427	1427	5.28	3.14	37.32	
		1431	1431	5.15	3.14	36.40	
		316	316	4.50	3.14	31.81	2005
		317	317	4.07	7.07	51.15	2005
					16.49	**156.68**	
	54	Solid					
		1430	1430	1.65	3.14	11.66	
					3.14	**11.66**	
				UPC 54	**19.63**	**168.34**	
5							
	77	Infiltrating					
		2225	2225	4.00	3.14	28.27	2012
		2226	2226	4.00	3.14	28.27	2012
		2227	2227	5.00	3.14	35.34	2012
		2228	2228	5.00	7.07	62.83	2012
		2229	2229	5.00	7.07	62.83	2012
		2230	2230	3.01	3.14	21.28	2012
		2231	2231	3.60	3.14	25.45	2012
		2232	2232	5.00	7.07	62.83	2012
		2233	2233	5.00	7.07	62.83	2012

TMDL UPC	UPC	TYPE	NID	Sump Depth (ft)	Area (sf)	Volume (cf)	Year Constructed
		2234	2234	4.00	3.14	28.27	2012
		2235	2235	4.00	3.14	28.27	2012
		2236	2236	5.00	3.14	35.34	2012
		2237	2237	7.50	3.14	53.01	2012
		2238	2238	5.16	3.14	36.47	2012
		2239	2239	7.50	3.14	53.01	2012
		2240	2240	4.44	7.07	55.79	2012
		2241	2241	4.50	3.14	31.81	2012
		2242	2242	3.50	3.14	24.74	2012
		2243	2243	3.50	3.14	24.74	2012
		2244	2244	2.00	3.14	14.14	2012
		2245	2245	3.50	3.14	24.74	2012
		2246	2246	4.50	3.14	31.81	2012
		2248	2248	2.31	3.14	16.33	2012
		2249	2249	1.38	7.07	17.34	2012
					98.96	**865.78**	
	77	Solid					
		1838	1838				
		2250	2250	0.00	0.10	0.00	2012
		2251	2251	0.00	0.10	0.00	2012
					0.20	**0.00**	
				UPC 77	**99.16**	**865.78**	

BMP DATABASE: Treatment Parameters

TID	Project ID	Year Built	Area at Spillway (sf)	Area at Bottom (sf)	Average Storage Depth (ft)	Footprint (sf)	Calculated Volume at Outfall (cf)	Measured Percolation Rate (in/hr)	WQ Importance
TMDL UPC **1**									
UPC 84									
Lake Tahoe Blvd Basin									
47	**95160**	**2008**	1050	295	1.23	672	827		
North Upper Truckee Basin									
48	**95160**	**2008**	1355	266	1.00	810	810		
					TOTAL	**1482**	**1637**		
TMDL UPC **2**									
UPC 85									
Hwy 50 Basin # 1									
78	**95116**	**1992**	1362	1362	0.00	1362	0		
Hwy 50 Basin # 2									
79	**95116**	**1992**	1501	1501	0.00	1501	0		
Hwy 50 Basin # 16									
93	**95116**	**1992**	5664	5664	0.00	5664	0		
					TOTAL	**8527**	**0**		
UPC 88									
Hwy 89 Bioretention Area									
53	**95151**	**2007**	3613	1904	0.50	2758	1379		
Grass Lake Rd Bioretention Area									
54	**95151**	**2007**	2169	1057	1.00	1613	1613	14.55	
					TOTAL	**4371**	**2992**		
UPC 89									
Shakori Maint. Yard Basin									
121	**0**		761	761	0.00	761	0		
					TOTAL	**761**	**0**		

TID	Project ID	Year Built	Area at Spillway (sf)	Area at Bottom (sf)	Average Storage Depth (ft)	Footprint (sf)	Calculated Volume at Outfall (cf)	Measured Percolation Rate (in/hr)	WQ Importance
TMDL UPC	**3**								
UPC 56									
Glen Eagles Basin									
98	**95154**	**2005**	2984	377	2.00	1680	3361	0.12	Essential
Boren West Basin									
99	**95154**	**2005**	2324	299	2.00	1312	2623	0.25	Essential
					TOTAL	**2992**	**5984**		
UPC 57									
Boren East Basin									
9	**95154**	**2004**	665	204	2.50	434	1086	4.19	Key
					TOTAL	**434**	**1086**		
UPC 59									
Nottaway Basin									
6	**95154**	**2004**	5400	2529		3964			Essential
Nottaway Sand Filter									
10	**95154**	**2004**							Essential
Nottaway Vault									
128	**95154**	**2004**							Essential
					TOTAL	**3964**			
UPC 63									
Washoan Basin									
100	**95184**	**2007**	1535	332	1.00	934	934	1.05	
Kulow Basin									
120	**95184**	**2007**	1365	562	1.00	964	964	0.62	
					TOTAL	**1898**	**1898**		
UPC 64									
Frontage Rd Bioretention Area									
97	**95185**	**2005**	5128	1356	0.00	3242	0	1.05	
					TOTAL	**3242**	**0**		

TID	Project ID	Year Built	Area at Spillway (sf)	Area at Bottom (sf)	Average Storage Depth (ft)	Footprint (sf)	Calculated Volume at Outfall (cf)	Measured Percolation Rate (in/hr)	WQ Importance
TMDL UPC **4**									
UPC 38									
Fortune Basin									
131	**95155**	**2011**	948	351	1.00	650	650	3	Essential
Cold Creek West Basin									
132	**95155**	**2011**	411	145	1.50	278	417	3	Essential
Del Norte West Basin									
133	**95155**	**2011**	702	348	1.00	525	525	3	Essential
Del Norte East Basin									
134	**95155**	**2011**	580	262	1.00	421	421	3	Essential
					TOTAL	**1874**	**2013**		
UPC 39									
Copper Basin									
129	**95155**	**2011**	437	216	1.00	326	326	3	Essential
Humboldt Basin									
130	**95155**	**2011**	1104	490	1.50	797	1196	3	Essential
					TOTAL	**1123**	**1522**		
UPC 40									
Black Bart Ct Basin									
105	**95125**	**1995**	1156	218	1.00	687	687	0.16	
Alice Lake Basin									
135	**95193**	**2012**	1200	532	1.00	866	866	3	Essential
					TOTAL	**1553**	**1553**		
TMDL UPC **5**									
UPC 77									
Mtn Canary Basin									
136	**95169**	**2012**	769	75	1.00	422	422	1	
Echo View Bioretention Area									
137	**95169**	**2012**	1226	582	0.50	904	452	1	
					TOTAL	**1326**	**874**		

WQ (Water Quality) Importance (Lake Clarity Crediting Program Handbook, September 2009)

Essential: Responsible for greater than 25% load reduction (average annual)

Key: Responsible for 2% to 30% load reduction (average annual)

Supporting: Responsible for conveyance, source control, and/or pre-treatment (average annual)

BMP Certifcates

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
1						
	84					
		Multiple family dwelling (2-4 units)				
		1005	0	10082	10082	100%
		Open Space				
		6401	1	2422470	22083	1%
		6401		2422470	2400387	99%
		Single family dwelling (Existing)				
		1011	0	2317142	479824	21%
		1011	1	2317142	600282	26%
		1011		2317142	1237036	53%
		Vacant (private)				
		1		520519	486854	94%
		1	0	520519	20830	4%
		1	1	520519	12835	2%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
2						
	85					
		Industrial services				
		4111		94695	6946	7%
		4111	0	94695	87749	93%
		3305	0	20694	20694	100%
		Open Space				
		4111		18122	18122	100%
		6401		679471	679471	100%
		4203		9852	9852	100%
		Recreation centers				
		5020		29966	29966	100%
		Retail				
		3107	0	49992	49992	100%
		Rural Sports				
		5016	0	32269	32269	100%
		Single family dwelling (Existing)				
		1011		916164	611312	67%
		1011	0	916164	139807	15%
		1011	1	916164	165045	18%
		Vacant (private)				
		1		717456	701412	98%
		1	0	717456	10247	1%
		3501	1	35885	23636	66%
		3501	0	35885	12249	34%
		1	1	717456	5796	1%
		Vehicle storage and parking				
		3503	1	11094	11094	100%
	88					
		Open Space				
		6401		2049275	2049275	100%
		Public utility centers				
		4114	1	64028	64028	100%
		Single family dwelling (Existing)				
		1011	0	304527	72459	24%
		1011		304527	152370	50%
		1011	1	304527	79697	26%
		Vacant (private)				
		1		12948	12948	100%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
89						
		Industrial services				
	3504		0	76476	53068	69%
	3407			15757	15757	100%
	3301			106306	106306	100%
	3305			70571	70571	100%
	3504			76476	23408	31%
		Multiple family dwelling (2-4 units)				
	1005		0	57154	16095	28%
	1005			57154	41060	72%
		Multiple family dwelling (5-10 units)				
	1006			12183	12183	100%
		Open Space				
	4203			15330	15330	100%
	6401			12052066	12052066	100%
	4202			464172	464172	100%
	3501		0	103021	103021	100%
		Single family dwelling (Existing)				
	1011			1621366	1065733	66%
	1011		0	1621366	159815	10%
	1011		1	1621366	395818	24%
		Storage yards				
	3504			81549	63390	78%
	3504		0	81549	18158	22%
		Summer home				
	1013			407246	407246	100%
		Vacant (private)				
	3501		0	19006	19006	100%
	1		0	592811	20632	3%
	3305			17023	17023	100%
	3404		0	20998	20998	100%
	1			592811	572180	97%
		Vehicle storage and parking				
	3503		0	191107	49107	26%
	3503			191107	142000	74%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
3						
	55					
		Open Space				
		6401		82222	82222	100%
		Single family dwelling (Existing)				
		1011		328026	253277	77%
		1011	0	328026	23132	7%
		1011	1	328026	51617	16%
		Vacant (private)				
		1		38807	38807	100%
	56					
		Open Space				
		6401		10416	10416	100%
		Single family dwelling (Existing)				
		1011		37436	12090	32%
		1011	1	37436	25346	68%
		Vacant (private)				
		1		11111	11111	100%
	57					
		Open Space				
		6401		24640	24640	100%
		Single family dwelling (Existing)				
		1011	1	37248	11001	30%
		1011	0	37248	12372	33%
		1011		37248	13875	37%
		Vacant (private)				
		1		36539	36539	100%
		6401	1	10905	10905	100%
	58					
		Open Space				
		6401		229541	229541	100%
		Single family dwelling (Existing)				
		1011		276657	116524	42%
		1011	0	276657	82423	30%
		1011	1	276657	77711	28%
		Vacant (private)				
		1		82185	82185	100%
	59					
		Open Space				
		6401		320045	320045	100%
		Single family dwelling (Existing)				
		1011	0	814645	118601	15%
		1011		814645	506277	62%
		1011	1	814645	189767	23%
		Vacant (private)				
		1		120417	120417	100%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
60						
		Open Space				
	6401			1043002	1043002	100%
		Single family dwelling (Existing)				
	1011			1281957	682760	53%
	1011		0	1281957	225052	18%
	1011		1	1281957	374145	29%
		Vacant (private)				
	6401			15410	15410	100%
	1			404027	404027	100%
61						
		Open Space				
	6401			234935	234935	100%
		Single family dwelling (Existing)				
	1011			215458	160487	74%
	1011		1	215458	37083	17%
	1011		0	215458	17888	8%
		Vacant (private)				
	1			26569	26569	100%
62						
		Open Space				
	6401			5990	5990	100%
		Single family dwelling (Existing)				
	1011			254623	124827	49%
	1011		0	254623	65396	26%
	1011		1	254623	64401	25%
		Vacant (private)				
	1			49611	49611	100%
63						
		Multiple family dwelling (2-4 units)				
	1005			5999	5999	100%
		Open Space				
	6401		0	613406	7201	1%
	6401			613406	606204	99%
		Single family dwelling (Existing)				
	1011			2703105	1633000	60%
	1011		0	2703105	561368	21%
	1011		1	2703105	508736	19%
	1016			5992	5992	100%
		Vacant (private)				
	1		0	449082	5999	1%
	1		1	449082	6004	1%
	1			449082	437079	97%
64						
		Open Space				
	6401			15603	15603	100%
		Single family dwelling (Existing)				
	1011			330215	139712	42%
	1011		0	330215	61051	18%
	1011		1	330215	129452	39%
		Vacant (private)				
	1			214411	214411	100%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

TMDL UPC	UPC	LANDUSE	Cert Issued	Total Area (sf)	Cert Area (sf)	Percent
4						
	38					
		Open Space				
		6401		17111865	17111865	100%
		Single family dwelling (Existing)				
		1011		1127054	758960	67%
		1011	0	1127054	162573	14%
		1011	1	1127054	205522	18%
		Vacant (private)				
		1	1	115663	11174	10%
		1		115663	104489	90%
	39					
		Multiple family dwelling (2-4 units)				
		1005		10902	10902	100%
		Open Space				
		6401		115810	115810	100%
		Single family dwelling (Existing)				
		1011	0	583415	61285	11%
		1011	1	583415	174156	30%
		1011		583415	347974	60%
		6401		11993	11993	100%
		Vacant (private)				
		1		26659	26659	100%
	40					
		Open Space				
		6401		7708448	7708448	100%
		Single family dwelling (Existing)				
		4203		36003	36003	100%
		1011		1125586	694710	62%
		1011	1	1125586	203866	18%
		1011	0	1125586	227010	20%
		Vacant (private)				
		1		307797	307797	100%
		6401		11721	11721	100%
	54					
		Open Space				
		6401		8511	8511	100%
5						
	77					
		Open Space				
		6401	1	462069	2495	1%
		6401		462069	459575	99%
		Single family dwelling (Existing)				
		1011	1	509786	65969	13%
		1011	0	509786	126777	25%
		1011		509786	317040	62%
		Vacant (private)				
		1		1380109	1380109	100%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

Source Control Certifcates

TMDL UPC	UPC	LANDUSE	Total Area (sf)	Cert Area (sf)	Percent
1					
	84				
		Single family dwelling (Existing)			
		1011	2317142	40712	2%
2					
	88				
		Single family dwelling (Existing)			
		1011	304527	26406	9%
	89				
		Single family dwelling (Existing)			
		1011	1621366	9018	1%
3					
	59				
		Single family dwelling (Existing)			
		1011	814645	12219	1%
	60				
		Single family dwelling (Existing)			
		1011	1281957	6561	1%
	63				
		Single family dwelling (Existing)			
		1011	2703105	86935	3%
4					
	38				
		Single family dwelling (Existing)			
		1011	1127054	11897	1%

cert issued: 0, 1, or blank -- values from the TRPA database TRPA data received prior to Novemer 13, 2012

APPENDIX D

Baseline Load Summary									
TMDL UPC	**PLRM Project #**	**EDC UPC**	**Acres**	**TSS**	**FSP**	**TP**	**SRP**	**TN**	**DIN**
1	*68*	84	152	23,119	12,220	69	11	313	37
2	*69*	85	84	7,395	3,866	26	8	110	12
2	*72*	88	721	3,041	1,525	10	2	55	7
2	*73*	89	488	22,796	12,565	64	16	274	33
3	*42*	55	12	2,099	1,342	5	1	19	2
3	*43*	56	2	678	359	2	0	7	1
3	*44*	57	3	671	354	2	0	8	1
3	*45*	58	16	1,992	997	6	1	29	4
3	*46*	59	35	7,659	4,320	20	3	78	9
3	*47*	60	81	20,917	12,372	49	6	200	25
3	*48*	61	14	3,216	1,770	8	1	34	4
3	*49*	62	10	2,886	1,684	8	1	37	4
3	*50*	63	124	28,305	15,731	76	11	337	41
3	*51*	64	21	8,652	5,538	18	2	64	8
4	*28*	38	323	7,355	4,027	21	3	97	12
4	*29*	39	21	3,286	1,800	9	1	39	5
4	*88*	40	144	11,053	6,324	27	4	115	14
4	*90*	54	5	9,608	6,682	17	1	51	7
5	*61*	77	174	29,256	20,023	56	6	189	24
Total				**193,985**	**113,500**	**492**	**81**	**2,056**	**250**

Post 2004 Load Reduction Summary											
TMDL UPC	PLRM Project #	EDC UPC	Acres	TSS	FSP	TP	SRP	TN	DIN	lbs FSP reduced	Credits
1	68	84	152	19,506	10,333	56.86	9.1	260.2	31.19	1,887	9
2	69	85	84	4,307	2,241	14.87	4.5	63.9	7.15	1,625	8
2	72	88	721	38	19	0.12	0.0	0.7	0.08	1,503	8
2	73	89	488	5,014	2,784	14.23	3.9	60.1	7.15	9,781	49
3	42	55	12	1,229	683	3.56	0.6	14.3	1.65	659	3
3	43	56	2	6	3	0.02	0.0	0.1	0.01	356	2
3	44	57	3	10	6	0.03	0.0	0.1	0.02	349	2
3	45	58	16	1,823	910	5.67	0.9	30.3	3.73	87	0
3	46	59	35	1,855	1,146	7.07	1.5	42.4	5.61	3,174	16
3	47	60	81	15,233	8,742	39.71	5.5	176.7	21.75	3,631	18
3	48	61	14	1,063	580	2.97	0.4	14.0	1.71	1,190	6
3	49	62	10	1,529	761	4.89	0.8	24.3	2.90	923	5
3	50	63	124	17,846	9,967	49.06	7.7	214.1	25.63	5,765	29
3	51	64	21	759	485	1.64	0.2	6.2	0.77	5,054	25
4	28	38	323	3,832	2,114	11.33	1.8	51.5	6.17	1,913	10
4	29	39	21	1,456	789	4.00	0.6	17.5	2.12	1,011	5
4	88	40	144	7,593	4,309	19.48	2.7	86.5	10.71	2,015	10
4	90	54	5	7,865	5,469	13.79	1.2	41.7	5.40	1,212	6
5	61	77	174	17,373	11,896	33.31	3.6	112.2	14.05	8,127	41
Total				**108,337**	**63,236**	**283**	**45**	**1,217**	**148**	**50,261**	**251**

APPENDIX B

Implementers' Monitoring Program (IMP)

Component of the
Regional Storm Water Monitoring Program (RSWMP)

Implementers' Monitoring Plan

Submitted to the Lahontan Regional Water Quality Control Board
and the Nevada Division of Environmental Protection

April 30, 2013

Funds for this project are provided by the USDA Forest Service Lake Tahoe Basin Management Unit
through the Southern Nevada Public Lands Management Act

Submitted by the Tahoe Resource Conservation District
in cooperation with:

California

El Dorado County

Placer County

City of South Lake Tahoe

California Department of Transportation

Nevada

Douglas County

Washoe County

Nevada Tahoe Conservation District

Nevada Department of Transportation

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AV	Area-Velocity
BMP	Best Management Practice
Caltrans	California Department of Transportation
CEDEN	California Environmental Data Exchange Network
cf	cubic feet
cfs	cubic feet per second
CICU	Commercial, Industrial, Communications, Utilities
CMP	Corrugated Metal Pipe
CRC	Characteristic Runoff Concentration
District	Tahoe Resource Conservation District
DRI	Desert Research Institute
DTU	Data Transfer Unit
EIP	Environmental Improvement Program
EMC	Event Mean Concentration
FSP	Fine Sediment Particles
ICR	Indirect Cost Rate
IMP	Implementers' Monitoring Program
IV	Incline Village
MFS	Media Filtration System
NDOT	Nevada Department of Transportation
NPDES	National Pollutant Discharge Elimination System
NTCD	Nevada Tahoe Conservation District
PD	Pasadena
PLRM	Pollutant Load Reduction Model
PLRP	Pollutant Load Reduction Plan
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAM	Rapid Assessment Method
ROW	Right-of-Way
RSWMP	Regional Storm Water Monitoring Program
RTD	Rapid Transfer Device
RU	Rubicon
SAP	Sampling and Analysis Plan
SLRP	Stormwater Load Reduction Plan
SR	SR431
SWAMP	Surface Water Ambient Monitoring Program
TA	Tahoma
TN	Total Nitrogen
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TRPA	Tahoe Regional Planning Agency
UCD	University of California, Davis

µm	micro-meters
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
WQIP	Water Quality Improvement Project

PREFACE

This document is intended to function as the Lake Tahoe Basin's first collaborative monitoring plan for implementation efforts related to the urban stormwater source category of the Lake Tahoe Total Maximum Daily Load (TMDL). This monitoring program was developed jointly by the California and Nevada implementing jurisdictions in an attempt to collectively fulfill California National Pollutant Discharge Elimination System (NPDES) Permit requirements or Nevada Interlocal Agreement commitments. However, this monitoring plan also represents a historic first step toward implementing a comprehensive Regional Stormwater Monitoring Program (RSWMP) envisioned for the Tahoe Basin. All data will be collected in a manner consistent with RSWMP monitoring protocols so it can easily be analyzed to align with the goals and objectives presented in the multi-agency driven RSWMP Data Quality Objective Plan (Heyvaert et al 2011a), Quality Assurance Project Plan (Heyvaert et al 2011b), and Sample Analysis Plan (Heyvaert et al 2011c).

Although the scope of this monitoring plan does not include answering the following four RSWMP Key Study Questions, the generated data and information will support and feed into the forthcoming RSWMP effort. These four questions were developed to guide the evaluation criteria for determining the success of the Lake Tahoe TMDL's pollutant reduction strategies and are a priority for Basin Managers. Additionally, they were established in concert with the Tahoe Science Consortium (TSC) and were previously endorsed by the Tahoe Inter-agency Executive Committee (TIE). The four Key RSWMP Study Questions that data collected under this monitoring plan will feed into are as follows:

1) ***Are the stormwater Characteristic Runoff Concentrations (CRCs) developed for identified land use types in the Tahoe Basin suitable for use in deriving Pollutant Load Reduction Model (PLRM) estimates of pollutant loading?***

2) ***Are the stormwater Characteristic Effluent Concentrations (CECs) developed for different treatment and source control practices appropriate for PLRM estimates of load reductions?***

3) ***Are drainage area load reduction estimates from PLRM projections verified by field data collected from the projects under construction?***

4) ***Are pollutant loads from urban stormwater runoff in the Tahoe Basin decreasing in response to Environmental Improvement Program (EIP) and TMDL implementation, and what are the long-term trends related to TMDL load reduction targets?***

Furthermore, the data collected as part of this monitoring will not determine TMDL pollutant load reduction credits, rather, it serves to support the TMDL Management System and the modeling and assessment tools associated with crediting. Thus, data collected

under this monitoring plan will be evaluated by the Tahoe Resource Conservation District (Tahoe RCD) and presented to the Lahontan Regional Water Quality Control Board (Water Board) and the Nevada Division of Environmental Protection (NDEP) as part of meeting annual compliance reporting needs. This data will then be further analyzed under the purview of RSWMP such that recommendations can be provided to guide future stormwater program efforts. As this work progresses the following questions can also be explored:

5) ***On a site by site basis, what is the correlation between turbidity and fine sediment particle (FSP) concentrations?***

6) ***Once a site-specific rating curve has been developed between turbidity and FSP, is using a continuous turbidimeter in place of a traditional autosampler a suitable and cost effective alternative?***

7) ***How can monitoring data be used to support, enhance, and inform the jurisdictions' existing pollutant load estimates as modeled by the PLRM (or comparable models), and their condition assessment methods (Road RAM, BMP RAM or other comparable methods).***

Question 5 and 6 above will likely contribute to future RSWMP method development, model refinement, and cost effective implementation practices. This question is relevant because TMDL baseline conditions and associated load allocations were generated from data collected with traditional autosampler methodology. However due to the constant search for cost savings, continuous turbidity has been used in more recent studies (2NDNATURE and NHC 2010a), (2NDNATURE and NHC 2012). Since data collected by 2NDNATURE and NHC 2010b, and Heyvaert et. al., 2010 suggest there is a positive correlation between turbidity and fine sediment particles (FSP), one of Lake Tahoe's primary pollutants, work performed under this monitoring plan will employ, where feasible, the use of both autosampler and turbidimeter methodologies.

As part of fulfilling regulatory requirements, the jurisdictions will compile road operations and maintenance data, BMP maintenance records, as well as road and BMP condition assessments. This information will be summarized in annual reporting documents and will assist in answering Question 7. Knowing the condition of a road or BMP, the incidence of BMP maintenance, and/or the frequency of abrasive application and road sweeping prior to a monitored precipitation event lend valuable information to the interpretation of observed nutrient and sediment loads.

Lastly, RSWMP documents also identify the four "types" of monitoring needed to fill scientific data gaps; implementation, effectiveness, status and trend, and model support monitoring. The work performed under this monitoring plan will contribute to data collection that will help fulfill all of these monitoring needs. The California NPDES Permits and Nevada Interlocal Agreements qualify as implementation monitoring, whereas BMP

evaluations would fall under effectiveness monitoring. Long-term consistent data sets generated through permit and agreement compliance will also be useful in refining model predictions and identifying status and trends in the watershed.

This monitoring effort will utilize and build upon a significant body of work performed by the California and Nevada stormwater jurisdictions, Desert Research Institute, University of California, Davis Tahoe Environmental Research Center, 2NDNATURE, and Northwest Hydrologic Consultants (NHC). In addition, data collected for this work will assist in serving larger programmatic and regulatory needs and will benefit the Lake Tahoe TMDL's Adaptive Management System, the Status and Trend Monitoring and Evaluation Program at TRPA (environmental indicator tracking), and even California's Surface Water Ambient Monitoring Program which reports on surface water quality around the state. The larger RSWMP group, composed of basin scientists, agency partners, implementers, regulators and funders, some of which are listed above, will be a part of the discussion on how the RSWMP structure will function in the future.

As previously stated, this monitoring plan was developed for the implementation of the TMDL through California NDPES Permits and Nevada Interlocal Agreements; however, much of this data will be evaluated as part of the larger RSWMP effort, and will allow for a consistent monitoring design, data collection, analysis and reporting approach. The ability to tie this monitoring plan to the RSWMP vision will take continued collaboration and partnership building, and is an excellent opportunity to discuss and adaptively manage future program improvements and requirements for the next monitoring period beginning in 2016.

Beyond partnership building, permit compliance and a functional RSWMP, there is still a significant challenge ahead, one in which all partners will need to work together to find realistic funding sources for long term implementation of RSWMP, as well as basic permit and agreement compliance monitoring. Funds provided to the Tahoe Resource Conservation District, through the State Water Quality Control Board's Proposition 84 Stormwater Grants Program, will help move the Tahoe Basin in addressing this next major hurdle. Initial planning and work agreements are expected to begin in late 2013-early 2014; the primary purpose being to further develop a comprehensive stormwater monitoring program in the Lake Tahoe Basin.

INTRODUCTION

The Lake Tahoe Total Maximum Daily Load (TMDL) is a comprehensive, long-term plan to reverse the decline in deep-water transparency of Lake Tahoe and restore mid-lake clarity to the 1967-1971 level of 29.7 meters (97.4 feet). TMDL science suggests that up to two thirds of the decrease in clarity is attributable to fine sediment particles (FSP, <16 µm in diameter), and that the urbanized areas, roadways in particular, account for approximately 72% of FSP that eventually enter the lake (Lake Tahoe TMDL Technical Report, 2010).

Following the adoption of the TMDL in August 2011, the Lahontan Regional Water Quality Control Board approved a Municipal National Pollutant Discharge Elimination System (NPDES) permit (NPDES NO. CAG616001 Updated Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater/Urban Runoff Discharges from El Dorado County, Placer County and the City of South Lake Tahoe within the Lake Tahoe Hydrologic Unit, Order No. R6T 2011-101A) (herein after "Municipal permit") on December 6, 2011, and later amended on October 12, 2012 (attached herein as Appendix A).

The Municipal permit requires California jurisdictions in the Lake Tahoe Basin to take measures to decrease pollutant loading from stormwater runoff in urbanized areas. Local California jurisdictions must implement pollutant controls to decrease FSP and nutrient inputs, and must monitor and evaluate select urban catchment outfalls and Best Management Practices (BMPs) for flow volumes and sediment and nutrient loads. While monitoring data will not be used assess credits earned under the Lake Clarity Crediting Program for implementing effective pollutant controls, it will provide empirical data that will begin to (1) inform assumptions used to estimate runoff volumes and pollutant loads modeled with the Pollutant Load Reduction Model (PLRM) (2) assess nutrient and sediment loading at chosen catchments, (3) evaluate BMP effectiveness at chosen BMPs.

Similar permits or regulatory programs have been adopted for the California Department of Transportation (Caltrans) under NPDES NO. CAS000003, NPDES Statewide Stormwater Permit for Waste Discharge Requirements for State of California Department of Transportation, Order No. 2012-0011-DWQ effective July 1, 2013 (attached herein as Appendix B), The three urban jurisdictions located within Nevada, Washoe County, Douglas County and the Nevada Department of Transportation (NDOT) will each enter into Interlocal Agreements with the Nevada Division of Environmental Protection to implement the Lake Tahoe Total Maximum Daily Load. These agreements are expectd to become effective in August 2013.

This document will therefore outline a monitoring plan that is sufficient to achieve compliance with the requirements described in Attachment C, sections IIIA and IIIB of the California Municipal permit, as well as the stormwater monitoring commitments contained in the Nevada agreements. This monitoring plan will also assist Caltrans in meeting their

permit requirements to submit a Stormwater Monitoring Plan to meet Lake Tahoe TMDL Implementation Requirements by July 15, 2013.

BACKGROUND

Road systems and urban development have increased the total impervious area in the Tahoe basin, resulting in increased stormwater runoff volumes due to decreased natural infiltration. Stormwater runoff transports FSP, as well as nitrogen and phosphorus, resulting in more pollutant loading from the many highly impervious urban catchments located within each jurisdiction. Areas with greater hydrologic connectivity to Lake Tahoe are believed to have the highest potential to contribute FSP loads directly to the lake. To date, jurisdictions around the lake have spent tens of millions of dollars implementing projects as part of the many Water Quality Improvement Projects (WQIPs) which in this document are defined as those Environmental Improvement Programs (EIPs) whose primary purpose was to reduce impacts on Lake Tahoe from stormwater runoff. These projects often include numerous stormwater treatment strategies spread throughout the urban catchments, and may include stormwater infrastructure in the form of BMPs such as curb and gutter, sediment traps, a variety of treatment vaults and infiltration mechanisms, street sweepers, constructed wetlands, and source control measures like slope stabilization. Catchment scale runoff monitoring is needed to verify that cumulative implementation of pollutant control actions are resulting in measurable pollutant load reductions. BMP effectiveness monitoring is needed to verify that BMPs are reducing pollutant loads and to improve the installation and maintenance practices that will optimize water quality benefits over the long-term.

Furthermore, data collected under the Municipal permit are complementary to long-term regional stormwater monitoring efforts proposed under the Tahoe Basin's Regional Storm Water Monitoring Program (RSWMP). These data, in conjunction with the Tahoe Basin's long-term tributary monitoring program, will become valuable in helping to determine long-term status and trends related to upland runoff. Municipal permit compliance is a critical first step toward developing RSWMP, but it does not encompass the entire strategy or vision for RSWMP. The programmatic structure and implementation of RSWMP is being developed concurrently with permit monitoring using another funding source.

The Implementers' Monitoring Program (IMP) is a partnership between the Tahoe Resource Conservation District (the District), El Dorado County, Placer County, the City of South Lake Tahoe, Douglas County, Washoe County, the Nevada Tahoe Conservation District (NTCD), NDOT, and Caltrans. The District is the prime recipient of $750,000 from Round 12 of the Southern Nevada Public Lands Management Act (SNPLMA) issued through the USDA Forest Service, and will work on behalf of the local jurisdictions to implement coordinated monitoring requirements necessary for meeting Municipal permit needs. In addition to having in-house administrative and stormwater monitoring expertise, the District can also

contract across jurisdictional and state lines, making it an ideal agency to coordinate and collaborate with both California and Nevada agency representatives. Functioning with the District as a cohesive unit, the IMP partners will support the “one lake, one plan” ideal, as well as promote cost savings gained through economies of scale.

GOALS FOR MONITORING

The goals of water quality monitoring under this plan are to (1) comply with the monitoring requirements contained in the stormwater permits and agreements, (2) collect meaningful data this is useful for informing jurisdictions’ efforts to effectively and efficiently manage their stormwater programs, and (3) support TMDL implementation progress assessment and program improvement. Additionally, implementation of this monitoring plan will facilitate a better understanding of stormwater model performance under actual, site-specific conditions in the selected catchments. The PLRM, as developed, has incorporated the best possible assumptions valid basin-wide for multiple jurisdictions. Thus, the PLRM is consistent across all catchments and an important load crediting tool. However, actual conditions in particular catchments would be expected to vary from the basin-wide assumptions to some degree. Comparing model results to measured data is critical to verify model performance. The current Municipal permit requires continuous flow data and a minimal number of events sampled per year (one per season) at each site pursuant to section III.A.3 of Attachment C. Over time, a robust dataset for each monitoring site will be developed, providing a greater degree of confidence in meeting the secondary goal.

Lastly, the uniqueness of the different monitoring and evaluation sites will contribute to initial development and eventual implementation of a basin-wide catchment scale monitoring network under RSWMP. Each site has implemented or planned water quality improvement strategies believed to represent the best known methods for reducing pollutant loading to Lake Tahoe. As this permit monitoring continues, it will help inform what types of sites and BMPs should be included in a regional stormwater monitoring network.

Five catchments have been chosen to be monitored. These catchments are defined as the area that drains to an outfall monitoring site and can be modeled as a PLRM catchment. (In some instances, PLRM catchments are subsets of larger Urban Planning Catchments.) Monitoring will include flow measurements and water quality sampling at eleven monitoring stations: the outfalls of the five selected catchments, and the inflows to and outflows from the selected BMPs located within three of those catchments.

The monitoring plan includes:

- Measuring continuous flow at each of the eleven monitoring stations,
- Measuring continuous turbidity at selected monitoring stations,

- Taking samples across the hydrograph during four different storm event types at ten of the eleven monitoring stations,
- Analyzing samples for total nitrogen (TN), total phosphorus (TP), total suspended solids (TSS), turbidity, and fine sediment particles (FSP),
- Calculating seasonal and annual runoff volumes at each of the eleven monitoring stations and nutrient and sediment loads at ten of the eleven monitoring stations.

The District is responsible for installations and, as needed, will coordinate with the University of California, Davis (UCD) and Desert Research Institute (DRI) staff to instrument the eleven stations and install the devices necessary to monitor flow, continuous turbidity, and to collect samples. Site instrumentation is expected to begin the summer of 2013 so that monitoring can commence on October 1, 2013 (the start of water year 2014 (WY14)). The District is also responsible for coordinating and performing all tasks associated with sampling, with assistance from the NTCD and UCD. Sampling tasks include, but are not limited to, collecting data and samples from the monitoring stations, filtering samples for TSS, and ensuring delivery of the samples to appropriate analytical laboratories. The District will also coordinate site and equipment maintenance, database management, data analysis, and complete annual and final reporting.

MONITORING SITES

Five catchment outfall sites and four BMP effectiveness projects covering two different treatment approaches have been selected for monitoring (Figure 1) in five locations: SR431 (SR), Incline Village (IV), Tahoma (TA), Rubicon (RU), and Pasadena (PD). Some of these locations will be used as both outfall and BMP sites; their descriptions are to follow in this section. All sites were chosen because of their high direct hydrologic connectivity to Lake Tahoe. In addition, there is one catchment located within each CA jurisdiction as required by the CA permit. Catchment outfall sites were selected based on a diversity of land uses, a range of catchment sizes, and a reasonably equitable distribution of sites among the participating jurisdictions. BMP effectiveness projects were selected because of their potential efficacy in treating storm water runoff characteristic of the Lake Tahoe basin, the broad interest in and lack of conclusive data regarding the efficiency of the selected BMPs in reducing runoff volumes and pollutant loads, especially FSP, and the importance of determining the maintenance required to retain effectiveness.

Table 1 summarizes the selected monitoring sites and their corresponding designation as catchment outfall and/or BMP effectiveness project. Total catchment area, percent impervious area in the catchment, and land-use distribution are also shown. The Other/Vegetated category includes mostly vegetated areas, but may also include unimproved roadside shoulders with sparse vegetation, and was not considered in the ranking.

Table 1: Selected monitoring sites and corresponding characteristics. Dark pink highlights the dominant urban land-use in the catchment, medium pink the second most dominant urban land-use, and light pink the third most dominant urban land-use.

Site Name	Outfall	BMP	# Monitoring Stations	Jurisdiction	Total Acres	% Impervious Area	Single Family Residential	Multi-Family Residential	CICU*	Primary Roads	Secondary Roads	Vegetated
SR431 (SR)	√	√ √	5	NDOT	0.61	99%	0%	0%	0%	95%	0%	5%
Incline Village (IV)	√		1	Washoe	83.6	46%	3%	38%	33%	10%	3%	13%
Tahoma (TA)	√		1	Placer, El Dorado, Caltrans	49.5	30%	41%	4%	12%	2%	15%	25%
Rubicon (RU)	√	√	2	El Dorado	13.8	24%	76%	0%	0%	0%	15%	8%
Pasadena (PD)	√	√	2	CSLT	78.9	39%	52%	13%	5%	0%	16%	13%

*Commercial, Industrial, Communications, Utilities

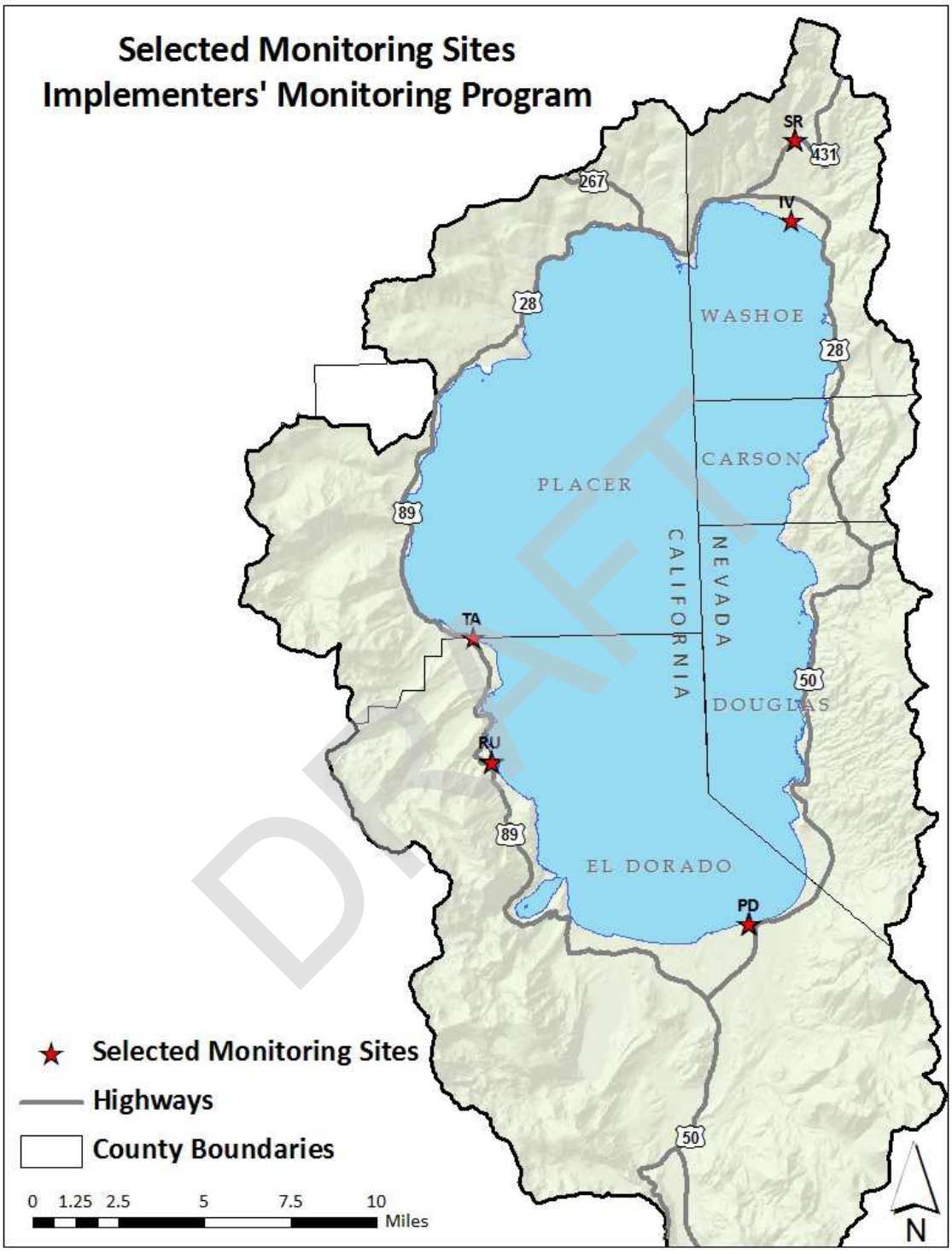

Figure 1: Distribution of selected monitoring sites. See Table 1 for site name acronyms and characteristics.

To reduce redundancy in data collection, each catchment has distinctive characteristics. SR431 is a small catchment dominated by primary road. Central Incline Village is a large catchment composed primarily of higher density development including multi-family residential and commercial properties and a relatively large proportion of primary roads. Tahoma and Pasadena are similar in that they are both medium density single-family residential neighborhoods crisscrossed with secondary roads, but they differ in size, slope, and distribution of the higher density land-uses of multi-family residential and commercial properties. Rubicon is a lower density single-family residential neighborhood with no multi-family residential or commercial properties. Though Tahoma, Pasadena, and Rubicon are all dominated by the single-family residential land-use classification, monitoring resources will be well spent because they represent the type of development most common around Lake Tahoe, and have widely different planned or implemented water quality improvement strategies. Water quality improvements in all five of these catchments span a wide range of strategies, from permeable pavement along roadway shoulders, to a variety of infiltration mechanisms, to treatment vaults, to erosion control methods. Each site has a unique combination of improvement strategies that will contribute to a greater understanding of their efficacy and avoid duplication of data collection efforts.

The chosen BMPs will provide comparative data from three different types of cartridge filter vault installations (a Contech Storm Filter, a Contech Media Filtration System (MFS) and an Imbrium Jellyfish membrane filtration cartridge) and evaluate a pair of subsurface infiltration chambers of a size and type commonly considered for private parcel BMPs as well as EIPs. As of 2006 (2NDNATURE, 2006) several infiltration basins and constructed wetlands had been monitored in the Tahoe Basin, but only one cartridge filter of the Storm Filter variety. The Storm Filter study was largely inconclusive due to sample handling discrepancies, difficulties monitoring low flow conditions, and poor maintenance practices. However, reductions in some pollutants were found to be significant. To date, no studies have been conducted to evaluate the efficiencies of the MFS or the Jellyfish, nor has conclusive study been done on a Storm Filter. This monitoring plan fills the need to monitor several different types of cartridge filters to begin to shed light on what type works best for stormwater characteristic to Lake Tahoe, especially with regards to FSP. Not only are the selected cartridge filter vaults designed specifically to remove FSP, but they offer the ability to treat stormwater in areas with limited space for treatment basin construction, a common problem in the densely developed areas that need stormwater treatment the most. Subsurface infiltration chambers are also a viable option for stormwater treatment in confined areas and preliminary unpublished studies have shown significant stormwater runoff volume reduction through infiltration. No formal studies have been done on infiltration chambers in the Tahoe Basin, but with their reputed effectiveness, they have the potential to become more widely used as a BMP. This monitoring plan will formally evaluate the effectiveness of infiltration chambers, providing efficiency data that may justify their widespread use. Monitoring data will also begin to inform maintenance schedules required for sustaining treatment effectiveness of each of the BMP types monitored. A detailed description of each site follows.

SR431

The SR431 monitoring site is located on State Route 431 in Washoe County above Incline Village, Nevada (Figure 2). At this location, State Route 431 is a two-lane road with a catchment area that includes 0.61 acres of NDOT right-of-way (ROW) of which approximately 95% of the surface is impervious. The catchment outfall discharges directly into a perennial stream called Deer Creek which connects with Third Creek and discharges into Lake Tahoe, giving this site the distinction of being directly connected to the lake despite being 2.5 miles from it. The adjacent, stabilized, vegetated hillside on the northeast side of the catchment represents approximately 14 acres and contributes no additional runon to the catchment. The area on the southwestern side of the highway slopes steeply downward and does not flow towards the catchment.

SR431 will be monitored as a catchment outfall site and for evaluating and comparing BMP effectiveness of two adjacent vaults containing different cartridge filter types. Though located in a rural area with moderate highway traffic density, SR431 is the only site that isolates the characterization of runoff from primary roads. All other selected sites have co-mingled runoff from various land-uses, making it difficult to determine FSP contribution from primary roads only. This is important because primary roads have been identified as the largest single generator of FSP in the Lake Tahoe basin (Lake Tahoe TMDL Technical Report, 2010). Though the catchment is of a size smaller than recommended for modeling using PLRM, this provides a unique opportunity to evaluate whether PLRM can reasonably estimate pollutant loads in a small catchment. Because the catchment is comprised of only a single land-use that is almost entirely impervious, PLRM has the potential to be acceptably effective at predicting pollutant loads, especially if coupled with shorter than 15 minute precipitation logging intervals. In addition, SR431 is the only site currently available where a true side-by-side comparison of stormwater cartridge filter types can be performed. There is little information available at this time regarding the FSP removal capability of different stormwater filter cartridges. This site will allow for a real-world comparison of two treatment technologies that may be applicable to stormwater treatment around the Lake Tahoe basin in the future.

An EIP (#01.01.02.11) was recently completed in this catchment. In addition to slope stabilization and installation of permeable pavers on the shoulders of the highway, two side-by-side stormwater cartridge filter vaults were installed on the south side of the highway, an Imbrium Jellyfish and a Contech MFS. Runoff sheetflows across a portion of State Route 431 and falls into a drop inlet (DI). Flow to the system is limited by an orifice plate installed in the drop inlet and the maximum amount of head that can be developed above the orifice. The DI includes a two-foot deep sump for capturing large particles. A 12-inch plastic pipe connects the DI to a splitter. The flow is split (approximately evenly) and runs 75 feet through two 8-inch plastic pipes to either the Jellyfish or the MFS. The stormwater is treated in one of the two cartridge filter vaults and discharged through two 8-inch outflow pipes to a short, steep swale that enters Deer Creek. Any flow exceeding the

restriction at the orifice plate bypasses the system and flows on the shoulder surface to a triple wide drop inlet and is discharged to the same creek through a 24-inch outflow pipe from the triple wide drop inlet.

Figure 2: SR431 monitoring site, including monitoring station locations, catchment boundary and land use distribution.

The Jellyfish (Figures 3 and 4) consists of three membrane filtration cartridges, each containing eleven 2.75 inch diameter cylindrical membrane filters or "tentacles" 54 inches in length contained within a six foot diameter fiberglass chamber. The design treatment flow rate for the installed Jellyfish is approximately 0.3 cfs. The high surface area of the membranes ensures long-lasting treatment. Vibrational pulses dislodge sediment from the membrane surfaces during filtration. In addition, filtered water backwashes membrane filtration tentacles and sediment is continuously removed from the tentacles by gravity. The coarse particles settle to the sump at the bottom of the fiberglass cartridge. The Jellyfish is designed to remove 100% of trash, 89% of total suspended solids, 60% of total

phosphorus, 50% of total nitrogen, greater than 50% of metals, and turbidity to less than 15 NTU.

Figure 3: View looking down on Imbrium Jellyfish membrane filtration cartridges installed in concrete vault at SR431.

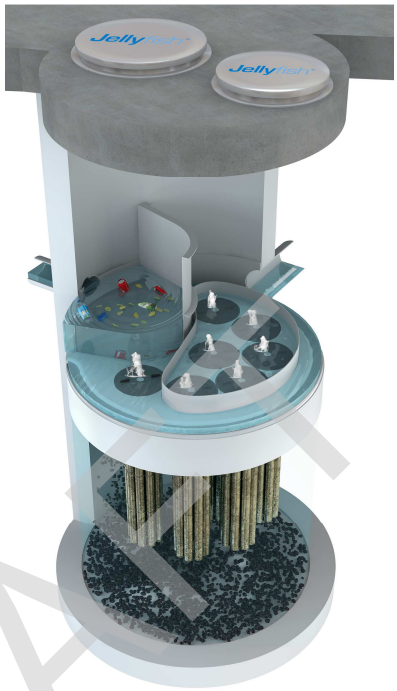

Figure 4: Schematic of inside of a single Imbrium Jellyfish membrane filtration cartridge (photo courtesy of Imbrium).

The Contech MFS consists of a series of nine upright, cylindrical filtration cartridges filled with media arrayed in an underground concrete vault (Figure 5). As stormwater enters the vault through an inflow pipe, the vault is filled and the cartridges are submerged. Polluted stormwater is forced through the outer screen of the cartridges and through the media, into a perforated center tube, and out through a pipe under the cartridges (Figure 6). The design treatment flow rate for the installed MFS is approximately 0.3 cfs, comparable to the Jellyfish. The outflow pipe will not discharge until the vault is filled to a certain level and float valve is opened. At SR431, the cartridges will be filled with perlite. Perlite was chosen as the media specifically because it has the potential to remove fine solids less than 15µm in diameter from runoff. Perlite will also remove a wide variety of other pollutants including heavy metals, oil and grease, and nutrients. In addition, the bottom of the concrete vault provides the opportunity for gravity settlement and storage of larger sized particles.

Figure 5: Contech MFS filter cartridges in underground concrete vault at SR431. Float valve is behind fiberglass shield. An outflow pipe runs underneath each row of cartridges.

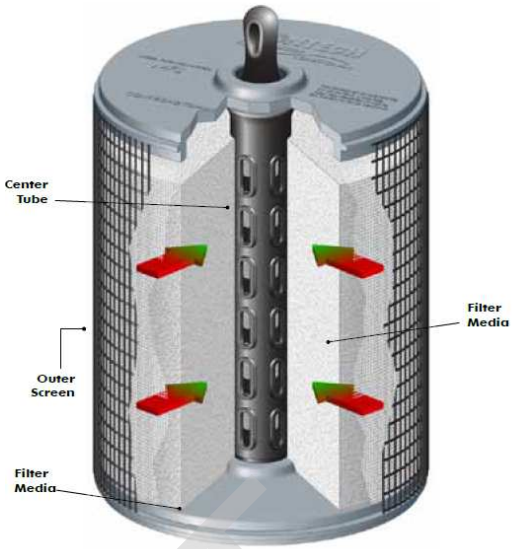

Figure 6: Schematic of single Contech MFS filter cartridge (photo courtesy of Contech).

Five monitoring stations will be instrumented at this site: on the inflow (J1) and outflow (J2) pipes of the Jellyfish, on the inflow (C1) and outflow (C2) pipes of the Contech MFS, and on the 24-inch bypass outflow pipe of the triple wide drop inlet (S1). Stations J1, J2, C1, and C2 each have a manhole specifically designed to facilitate monitoring and provide access to Parshall flumes designed for a wide range of flow rates in an 8-inch pipe. At S1, monitoring will occur directly in the outflow pipe that discharges the bypassed flow.

The sum of runoff volumes and pollutant loads from S1, J2, and C2 will be used to characterize the outfall from the catchment. Pollutant loads at the outflows of each cartridge filter type (J2 and C2) will be compared to pollutant loads at the inflows to each cartridge filter type (J1 and C1 respectively) to determine reductions attributable to each cartridge filter type. It is assumed that neither the Jellyfish nor the MFS retains or infiltrates any flow, so flow volumes will not be reduced. The two different cartridge filter types will also be compared to each other to determine which is more effective at retaining pollutants, FSP in particular. In addition, it is likely that after a certain amount of runoff volume, data will show that pollutant retention in the cartridge filter vaults begins to decline. Coupled with visual observations, this will help to determine maintenance schedules for the different cartridge filter types.

Incline Village

The Incline Village monitoring site is located on the western edge of the parking lot for Incline Beach Park near the end of Village Blvd on the south side of Lakeshore Blvd in Incline Village, Nevada. It will be monitored as a catchment outfall at one monitoring station (V1). At 83.6 acres, this is the largest catchment monitored and it includes runoff from Washoe County and NDOT jurisdictions. The catchment drains a relatively steep, highly urbanized area of Incline Village with dominant urban land-uses consisting of moderate to high density residential, commercial, and primary roads. Forty-six percent of the area is impervious and there is a lack of any intervening natural dispersion and infiltration areas. Runoff discharges directly to the lake via a 30-inch CMP that day-lights into a rock-lined ditch before entering Lake Tahoe. The monitoring station is located on the rock-lined ditch (Figure 7).

The catchment is located in the Wood Creek Watershed and includes both primary high-risk (Highway 28) and secondary high-risk (Village Blvd.) roads. Because of the highly urbanized nature of the catchment, the area has a high potential for generating FSP. There are numerous unarmored roadside ditches and bare shoulders used for parking that are known to contribute large amounts of sediment to runoff. Visual observations during past events have indicated that runoff is considerably turbid and therefore potentially high in nutrients and sediments (field observations by Andrea Parra).

Preliminary studies conducted during the Incline Village Commercial and Lower Wood Creek EIP#669 in 2000 have shown that an existing Vortechnics Vault immediately upstream of the monitoring station provides minimal treatment to approximately a quarter of the flow to the outfall, but the remainder of the flow is untreated (Lumos and Associates, 2000) as it flows through culvert pipes and compacted, eroding roadside ditches to the outfall location. The changes to FSP and nutrient concentrations are insignificant. A very small portion of the total flow from the catchment area (Lumos and Associates, 2000) is discharged to the east along the northern edge of Lakeshore Blvd. and does not go through the monitoring station. The loss will be accounted for when calculating total flow volumes from this catchment.

Washoe County has an EIP (#01.01.01.44) planned within this catchment that will extend to slightly outside of its borders for the summer of 2014. The main goal of the EIP is to improve stormwater quality, defined primarily by the reduction of FSP generated within the project area public ROW. Monitoring in this catchment will occur both during and post construction and will provide information regarding the efficacy of planned improvements. Anticipated improvements will be made in the County ROW or on public properties and include source controls in the form of slope, bare shoulder and channel stabilization. Other improvements include the installation of sediment traps throughout the project area to capture coarse sediments and the installation of a cartridge filter vault near the existing

Vortechnics Vault able to capture FSP. The possibility of eliminating parking along road shoulders will be analyzed, and the applicability of porous pavement will be explored as an infiltration option due to the absence of suitable infiltration areas. Some piped runoff on Village Blvd. may be diverted to a proposed infiltration feature on Incline Way outside of the catchment. Other potential water quality improvement strategies include various types of settlement and infiltration basins constructed where space allows, and the purchase of a high efficiency vacuum sweeper to remove a portion of the FSP generated on the roadways.

Because this catchment represents a large, directly connected, relatively densely urbanized area, it is likely to contribute large pollutant loads to Lake Tahoe. Monitoring at this site (station V1) will characterize the catchment outfall both pre- and post-construction, and will begin to allow for the evaluation of the efficacy of the planned water quality improvement strategies in reducing pollutant loads. The lessons learned in this catchment will likely have valuable application to other critical, large, highly urbanized areas around the lake that contribute significantly to pollutant loading. In addition, this catchment was monitored for flow and turbidity by 2NDNATURE from March 1, 2012 to February 28, 2013 and the final technical report is due for release in 2014. The data collected under this monitoring plan will expand the data set for this site using equipment already installed, allowing for cost savings. This is an excellent opportunity to collaborate with other stormwater monitoring efforts in the basin.

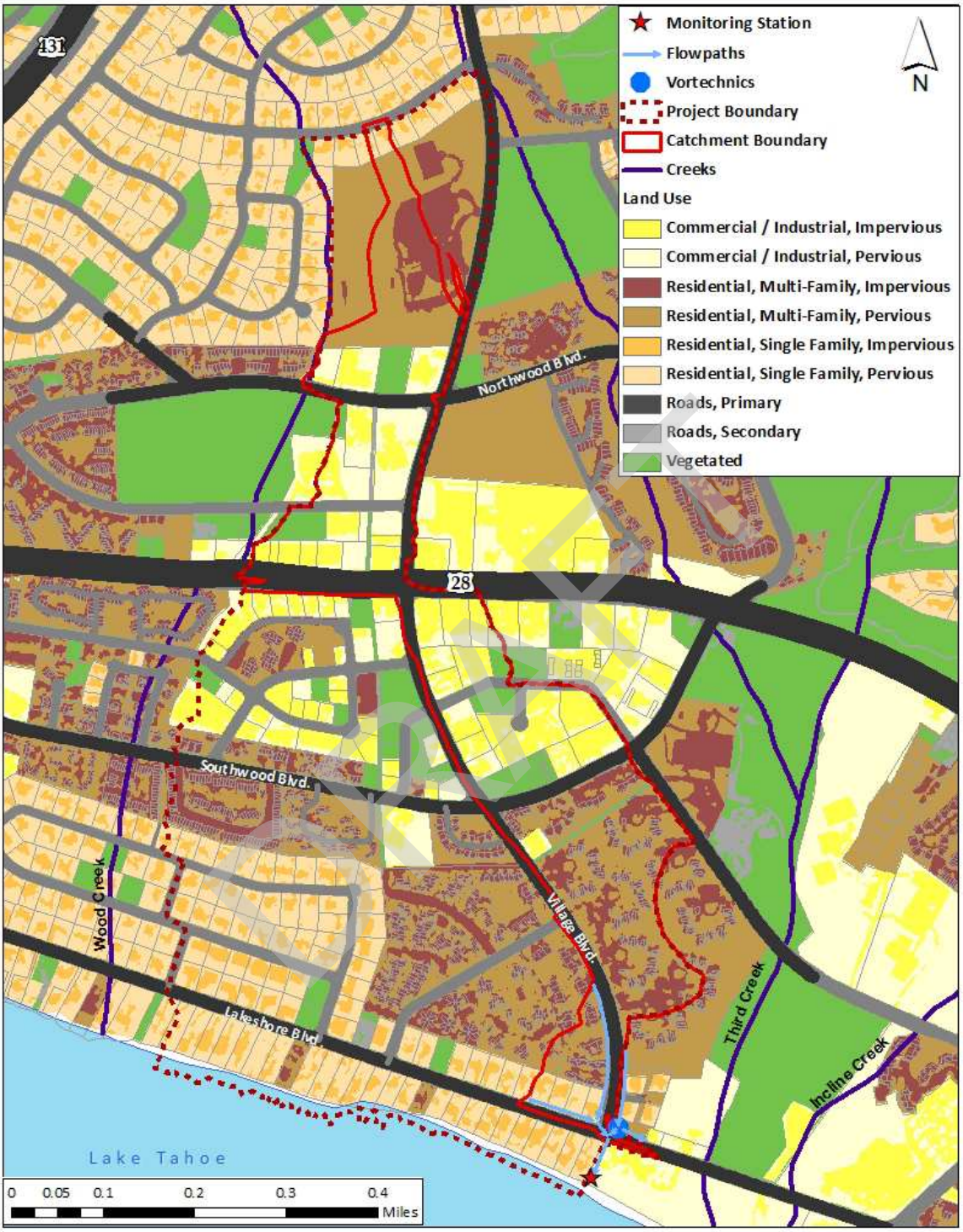

Figure 7: Central Incline Village II monitoring site, including monitoring station location, catchment boundary and land use distribution.

Tahoma

Tahoma will be monitored as a catchment outfall at one monitoring station (T1). The 49.5 acre catchment straddles the Placer County/El Dorado County border and comingles waters from both jurisdictions (Figure 8), plus waters from the Caltrans maintained Highway 89. The land-uses in this catchment are primarily moderate density residential and secondary roads in the Tahoe Cedars subdivision, but also include some commercial/industrial/communications/utilities (CICU) and primary roads. Twenty-eight percent of the catchment area is impervious. The runoff from this catchment discharges directly into Lake Tahoe via a 36-inch oval "squashed" corrugated metal pipe (CMP) at the bottom of the Water's Edge North condominium complex driveway without infiltration or treatment. Because of the high direct connectivity between the catchment and Lake Tahoe, this storm drain system has great potential to deliver high FSP loads to the lake. Runoff from this CMP has been monitored periodically in the past with grab samples, and has been shown to be elevated in both nutrients and sediments (unpublished data, UC Davis).

No recent water quality improvement projects have been completed in this drainage. However, due to steep roadways, road sand and cinder accumulation, eroding cut slopes, drainages, and roadside ditches, as well as direct discharges of untreated stormwater to Lake Tahoe, the TRPA has identified the area as one that requires erosion control and water quality treatment BMPs. Therefore, EIP projects are planned in and around this catchment by El Dorado County for 2015 (EIP#10062, see project boundary, Figure 8) and by Caltrans for 2014 (EIP#995 for 03-1A845, ED 89 24.9/27.2). The EIP projects will focus on reducing the delivery of FSP to the lake through source control, hydrologic design, and stormwater treatment. Source control will be achieved by stabilizing eroding cut slopes with vegetation and/or rock armoring, stabilizing existing drainages with rock, and where feasible, with bio-engineering techniques, and eliminating eroding roadside ditches by installing curb and gutter or rock-lined channels and vegetated swales. Improved hydrologic design will store and spread out stormwater more effectively in the upper watershed prior to reaching the 36-inch discharge CMP and infiltrate and/or treat runoff from the El Dorado County and Caltrans ROWs before it discharges to Lake Tahoe. El Dorado also proposes to work with Caltrans, the California Tahoe Conservancy (CTC), Placer County, and private land owners to develop a comprehensive watershed management plan within the project boundary.

The monitoring station (station T1) will be located near the mouth of the CMP, and data from this site will characterize the catchment outfall. Like Incline Village, this site also provides the unique opportunity to monitor pre- and post- water quality improvement project. The lessons learned in this catchment will be valuable to other moderate density residential neighborhoods with high direct hydrologic connectivity to Lake Tahoe.

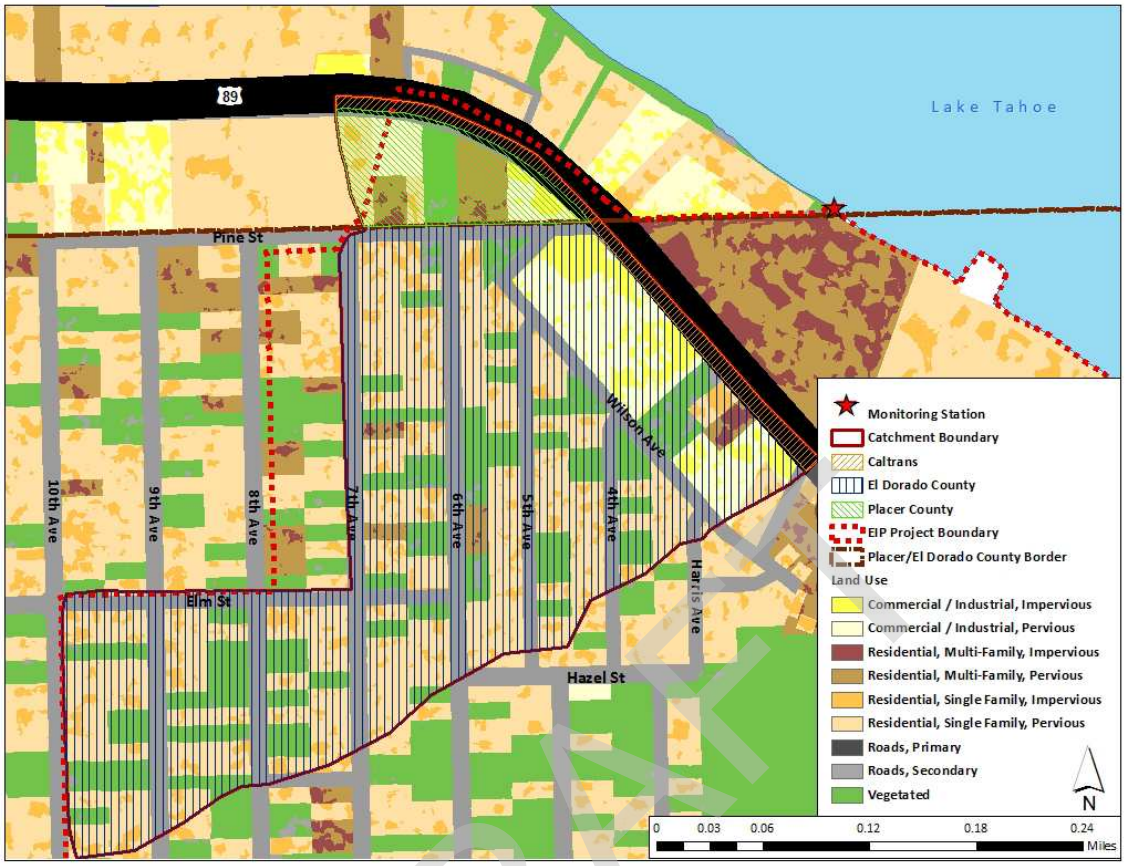

Figure 8: Tahoma monitoring site, including monitoring station location, catchment boundary, partial EIP project boundary, and land use distribution.

Rubicon

The Rubicon monitoring site is located on Rubicon Drive in the Rubicon Estates subdivision on the west shore of Lake Tahoe (Figure 9). At 13.8 acres, Rubicon is the second smallest monitored catchment and is characterized by low density single-family residential properties and relatively gentle slope near lake level. Most of the roadways have unimproved shoulders but a few steeper sections are lined by asphalt dikes. Twenty-four percent of the catchment is impervious.

Figure 9: Rubicon monitoring site, including monitoring station locations, Stormtech chambers location, catchment boundary, and land use distribution.

The Rubicon V Erosion Control Project in 2010 (EIP#713.3) installed two sets of parallel Stormtech stormwater retention chambers at the lowest point in the catchment to reduce stormwater runoff volumes prior to discharge into Lake Tahoe (Figure 10). Runoff primarily from Rubicon Dr. flows to a drop inlet where it is conveyed to a 48-inch diameter sediment trap for coarse particle removal before entering the Stormtech chambers. There are two additional sediment traps, one between the two sets of chambers and one at the outflow from the second set of chambers. Each chamber is a 51-inch long, 30-inch diameter half-pipe set atop two feet of rock. The first set consists of 24 chambers and the second set consists of 16 chambers. The combined volume capacity of both sets of chambers is 3,000cf. When all the chambers have filled, the overflow bubbles up through a grate in the roadway and then runs south along the shoulder to a residential property outfitted with several private property BMPs. Prior to installation, high end properties were being flooded by uncontrolled runoff that exited the County ROW only 400 feet from the lake. Being so near the lake, this site is highly hydrologically connected and allows for the potential transfer of large amounts of pollutants. The series of chambers were designed to infiltrate the runoff

that was causing flooding with the explicit goal of reducing the average annual runoff volume and the amount of very fine, fine, and coarse inorganic sediment loading by 33%.

Figure 10: Rubicon Stormtech chambers during installation, 2010 (photo courtesy of El Dorado County).

Also included within the catchment boundary are four “fill and spill” microbasins designed to detain a small portion of the runoff before entering the Stormtech chambers and a small perforated pipe infiltration gallery. The microbasins consist of shallow depressions in the ground with a sediment trap at the down-gradient end.

The Rubicon site will be monitored as a catchment outfall and a BMP effectiveness project at two monitoring stations, R1 and R2. R1 is located at the inflow to the Stormtech chambers and R2 is located at the outflow from the Stormtech chambers. Flow volumes from R2 will be compared to flow volumes at R1 to assess the effectiveness of the BMP at reducing stormwater runoff volumes. R2 captures all catchment discharges and will therefore also be used to characterize the catchment outfall. This BMP is not intended to change nutrient or FSP concentrations the way the cartridge filter vaults at SR431 and Pasadena are, and therefore only flow monitoring will occur at R1. Because of its designation as a catchment outfall site however, samples will be collected at R2 for nutrient and sediment analyses in accordance with permit requirements. Monitoring at Rubicon will also allow for a better understanding of the level of maintenance required to ensure functionality of an infiltration chamber like this one, especially with regards to how infiltration capacity decreases with time. This will inform future design considerations with regards to treatment capacity, installation requirements, and maintenance schedules.

Pasadena

The Pasadena monitoring site is located at the northern most end of Pasadena Ave. in the City of South Lake Tahoe (Figure 11). It will be monitored as a catchment outfall and BMP effectiveness site. A 36-inch outfall CMP emerging from the side of the steep slope at the end of Pasadena Ave conveys runoff directly to Lake Tahoe. The pipe is the terminus of a 78.9 acre catchment designated the "G12 basin" by the City of South Lake Tahoe. The dominant land uses are moderate density single and multi-family residential and secondary roads. Thirty-nine percent of the catchment is impervious.

This outfall was the former Regan Beach TMDL monitoring site, one of 19 sites in the Tahoe Basin equipped with auto-samplers and monitored during 2003 and 2004 as part of the Lake Tahoe TMDL research effort conducted by DRI and UCD. Data collected at this site was used in the Lake Tahoe TMDL Technical Report to establish Event Mean Concentrations (EMCs) for modeled land-use categories. In addition, this catchment was monitored for flow and turbidity by 2NDNATURE from March 1, 2012 to February 28, 2013 and the final technical report is due for release in 2014. The data collected under this monitoring plan will expand the data set for this site using equipment already installed, allowing for cost savings. This is an excellent opportunity to collaborate with other stormwater monitoring efforts in the basin.

An EIP completed in 2010 (Al Tahoe ECP 1 EIP#696) made several improvements to the catchment, including the installation of 9,694 square feet of permeable pavement on the shoulders of six blocks of residential streets and 3,891 linear feet of perforated storm drain pipes to increase in-situ infiltration wherever feasible throughout the project area. Due to the gentle slope in the area, erosion control measures such as rock-lined channels and stabilization of cut slopes were not as important here. The perforated storm drain pipes include approximately 2,750 linear feet of main line 18-inch and 24-inch perforated pipes under roadways, and smaller diameter perforated pipes connecting drain inlets and sediment traps to back-of-curb infiltration areas. The permeable pavement was an attempt to maximize infiltration and stabilize road shoulders while providing parking and unimpeded snow removal on a stable surface, a challenge that California jurisdictions have been struggling with in their project designs for more than twenty years.

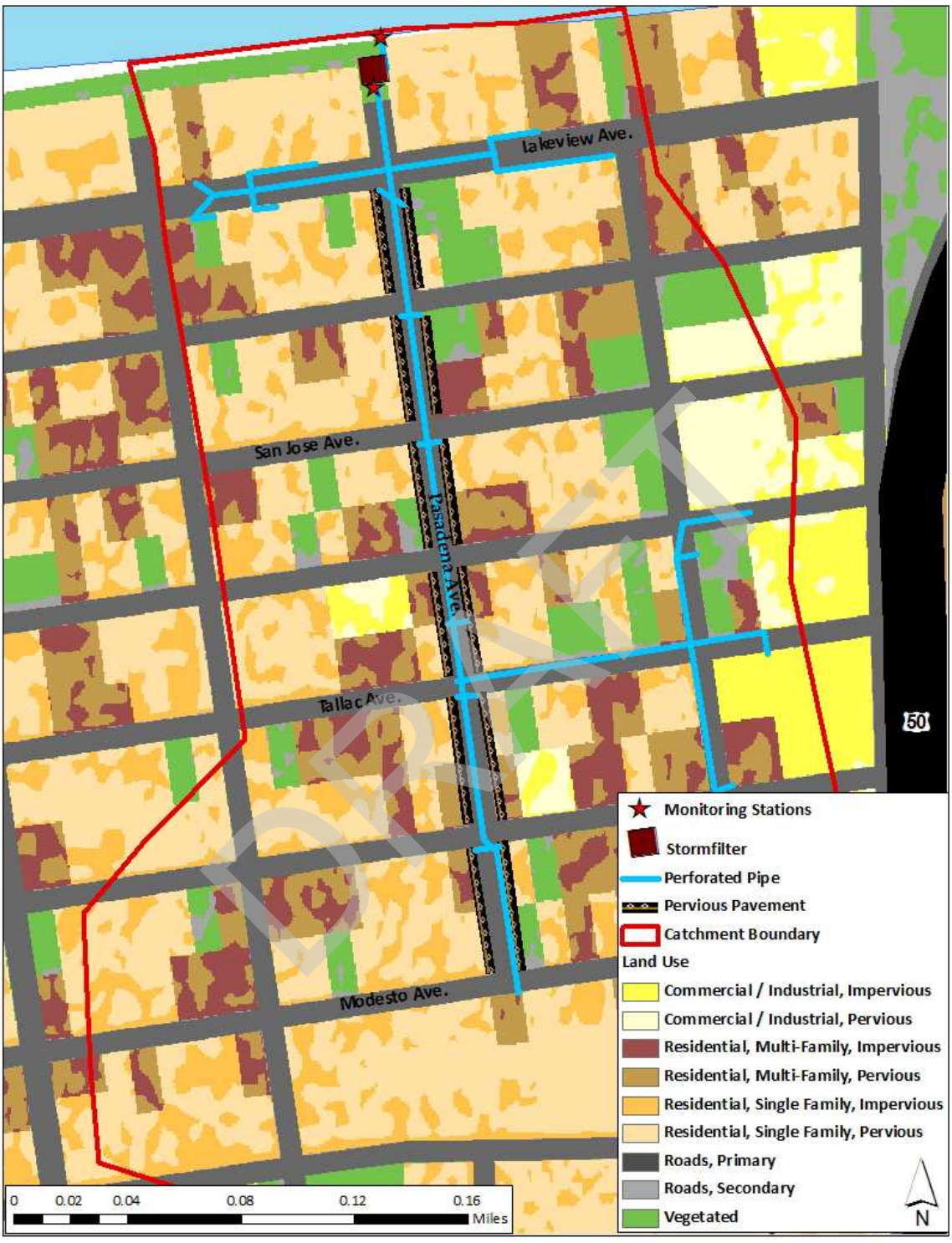

Figure 11: Pasadena monitoring site, catchment boundary and land use distribution.

In addition to the in-situ infiltration BMPs and a pre-treatment Vortechnics storm vault, two Contech Stormfilter vaults were installed in parallel at the end of the catchment before discharge to the lake through the 36-inch CMP. The vaults are configured as shown in Figure 12. The Contech Stormfilter installation located at the north end of Pasadena Ave. consists of two stormwater cartridge filter vaults, larger but outwardly similar to the Contech MFS vault installed at SR431. However, the MFS installed at SR431 has only one float valve that releases the treated stormwater from all the cartridges, while the Stormfilter cartridges have separate float valves on each cartridge (Figure 12). The Stormfilter cartridges have a different surface cleaning mechanism which Contech claims will extend maintenance intervals. The two Stormfilter cartridge vaults together are designed to treat up to 2.2 cfs, but as yet there is no confirmation that bypass starts when flows are greater than 2.2 cfs. Preliminary studies have estimated that only 1.1% of annual flows bypass the system.

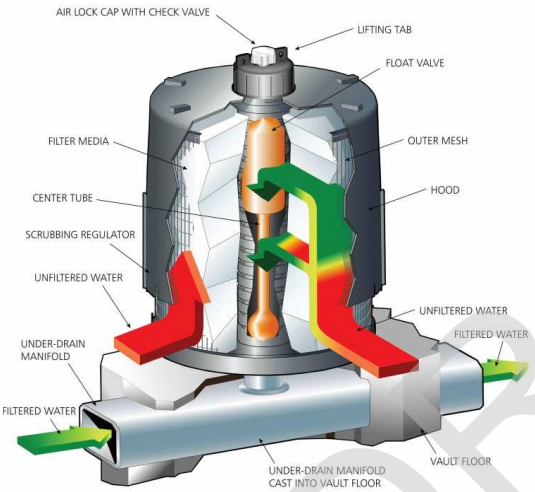

Figure 12: Schematic of single Contech Stormfilter cartridge (photo courtesy of Contech).

The two 8'x16' vaults contain Stormfilter cartridges filled with a media of zeolite, perlite and granular activated carbon, a mixture called ZPG. The first vault is designed for low-flow conditions. It contains twenty-five 27-inch tall cartridges with smaller orifices, each with a maximum flow rate of 0.025 cfs through a radial media depth of 7-inches. The second vault is designed to handle larger flows. It contains thirty-two 27-inch tall cartridges with orifices that allow for a maximum flow rate of 0.050 cfs through a radial media depth of 7-inches. The lower flow cartridges will retain more sediment but will need to be replaced more frequently than the higher flow cartridges. Maintenance will be based on such factors as depth of sediment accumulation in the bottom of the vaults or on top of the cartridges, depth of static water in the cartridge bay, plugged media pores, and the like. Cartridges containing different filter media are available from Contech for both the Stormfilter and the MFS. If monitoring from the SR 431 site suggests that the cartridges with perlite media may improve BMP effectiveness, the City of South Lake Tahoe could consider ordering perlite

cartridges when additional replacement cartridges are needed. By monitoring more than one type of a commonly-considered BMP (cartridge filters) as part of our collaborative monitoring effort, the IMP provides useful information on the effectiveness of Contech's filter cartridges, and improves our understanding of how cartridge filter systems should be maintained.

Two monitoring stations will be instrumented at Pasadena (Figure 13): one at the inflow to the Stormfilter vaults (M1) and one at the outflow from the vaults/catchment outfall (M2). Continuous flow measurements and samples taken at M1 will determine runoff volumes and pollutant loads exiting the dispersed small-scale infiltration BMPs in the catchment and entering the Stormfilter cartridge vaults. Continuous flow measurements and samples taken at M2 will determine runoff volumes and pollutant loads exiting the Stormfilter cartridge vaults, and characterize the catchment outfall. (It is assumed that the Vortechnics vault and junction box have negligible impacts on volume and FSP and nutrient load reductions.) Effluent pollutant loads will be compared to influent pollutant loads to assess the performance of the two-chambered Stormfilter cartridge vaults in reducing pollutant loading to Lake Tahoe. (It is assumed that the Stormfilter cartridge vaults have a negligible storage capacity and therefore will not reduce runoff volumes. In addition, preliminary data has shown that bypass occurs infrequently, however, a stage recorder will be installed at or near the junction box to confirm if/when bypass occurs, and adjustments to calculations will be made accordingly.)

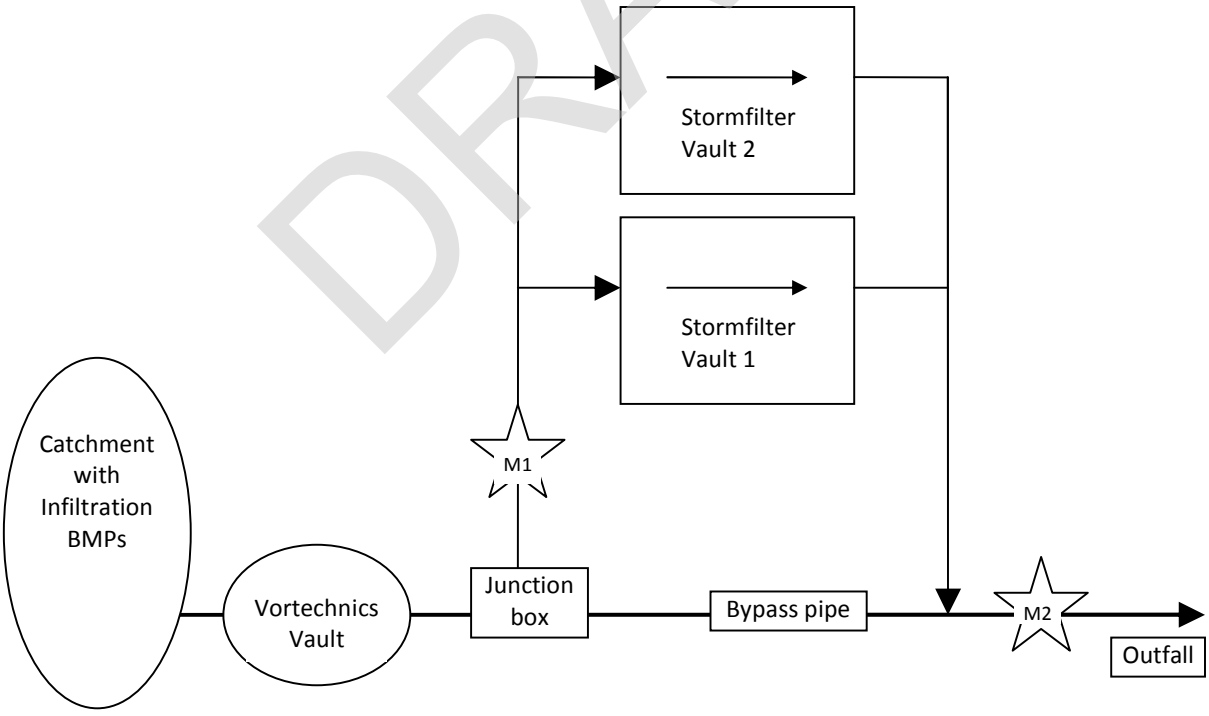

Figure 13: Contech Stormfilter vault configuration at Pasadena Ave. including flow routing and monitoring stations M1 and M2.

It is likely that after a large amount of runoff volume and/or FSP passes through the cartridges, data will show that the ability of the Stormfilter to retain pollutants diminishes. Coupled with visual observations and measurements, this will help to determine maintenance schedules for the two-chambered treatment system. Monitoring data could then be used to confirm whether maintenance, such as cartridge replacement, reverses declines in load reduction performance in the cartridge filter vaults.

STATION INSTRUMENTATION

Each of the eleven monitoring stations will be instrumented with similar equipment as suggested in the Regional Storm Water Monitoring Program Sampling and Analysis Plan (RSMWP SAP, Appendix C) section 6.4 and the Regional Storm Water Monitoring Program Quality Assurance Project Plan (RWSMP QAPP, Appendix D) section 11.1. Each station will have a Job Box to house all instrumentation and prevent loss of data and equipment from vandalism or theft.

The instrumentation at each station will include:

1. An automated sampler (Sigma or ISCO brand) for logging stage and turbidity readings, calculating flows, and collecting samples
2. A bubbler module for measuring stage or area-velocity sensor for measuring stage and velocity (dependent on site characteristics)

In addition, each monitoring site will include:

1. A solar panel for charging Marine Cycle 12V batteries to power equipment (unless access to electricity is available).
2. A nearby meteorological station to record, at a minimum, localized precipitation and ambient temperature. The meteorological station will have a heated tipping bucket to record precipitation so that an accurate reading can be made when precipitation falls as snow.

Turbidimeters for measuring continuous turbidity will be installed at a minimum of three of the five catchment outfalls.

Auto-samplers will be installed in accordance with suggestions outlined in the RSWMP SAP section 6.1.

SITE AND EQUIPMENT MAINTENANCE

The area surrounding each sampling station, as well as the equipment installed at each station will be maintained in accordance with guidelines outlined in the RSWMP SAP section 6.5 and the RWSMP QAPP sections 11.1 and 15. This includes (1) manual seasonal

calibration of flow monitoring equipment, turbidity and other sensors, (2) cleaning of equipment and housings, (3) verifying that hoses, intake strainers, and electronics are in good condition, (4) clearing flumes of accumulated sediment and debris, and (5) any other site-specific maintenance activities as determined by monitoring staff.

FLOW MEASUREMENT

Flow will be measured continuously at each of the eleven stations via a bubbler module or area-velocity sensor (AV sensor) as described in the RSWMP SAP section 6.2. The use of a bubbler module or AV sensor will depend on site-specific characteristics. A bubbler module is preferred if site characteristics are such that flow monitoring will be most accurate using a flume or weir. The bubbler will log stage, and flow will be calculated using an equation specific to the flume or weir. If a bubbler module is mounted in a culvert pipe, stage will be converted to flow using the Manning's equation. An AV sensor can be used in a culvert pipe assuming laminar flow and less than 5% slope. Laminar flow can be achieved with a smooth walled pipe insert.

All monitoring stations will be configured such that there is positive outfall from each flow measuring device (i.e. flume, weir, or culvert pipe). No station will experience back-watering as it greatly confounds the data and is nearly impossible to correct.

Flow data will be collected on a continuous basis at all eleven monitoring stations to support seasonal [fall/winter (October 1-February 28), snowmelt (March 1-May 31), and summer (June 1-September 30)] volume reporting.

Flow data will be offloaded using a Rapid Transfer Device (RTD) for ISCO samplers and a Data Transfer Unit (DTU) for Sigma samplers post precipitation event, or at regular intervals during dry periods. Raw data, including but not limited to, flow, stage, velocity, sampling times, turbidity readings, and precipitation, will be transferred and stored on one central District computer.

EVENT PREPARATION, MONITORING AND SAMPLING

All monitoring staff will be trained in accordance with guidelines outlined in the RWSMP SAP sections 7 and 8 and the RSWMP QAPP sections 11.2 and 11.3. This will include weather monitoring, sample bottle preparation, equipment preparation, auto-sampler programming, and sample collection.

WATER QUALITY SAMPLING SCHEDULE

Samples will be taken at each of the five monitoring stations associated with the catchment outfall sites according to the requirements outlined in the Municipal permit, Attachment C.III.A. Samples will be taken at each of the additional monitoring stations associated with the four BMPs (with the exception of R1 at Rubicon) according to the requirements outlined in the Municipal permit, Attachment C.III.B. The sampling requirements outlined in C.III.A and C.III.B are similar and therefore the same sampling strategy will be used for both catchment outfalls and BMP effectiveness evaluation sites. The Municipal permit requires that samples be collected for each seasonal event type. All sampling events will occur during runoff events and sampling will be triggered at a site-specific water level (stage). Runoff events, as defined by the permit, are the result of (a) fall rain, (b) rain-on-snow, (c) spring snowmelt, and (d) summer thunderstorms. These four event types will each be sampled once during the water year at each monitoring station with the exception of station R1 at the Rubicon site. Table 2 outlines the sampling strategy for each water year. The fall rain, rain-on-snow, and summer thunderstorm events will capture the first flush, the rising limb, and the falling limb of the hydrograph. Samplers will be programmed to capture a minimum of twelve samples across the event hydrograph. The first flush sample will be a single sample. The rising limb sample will be a flow-weighted composite of at least five single samples taken during the rising limb of the hydrograph. The falling limb sample will be a flow-weighted composite of at least five single samples taken during the falling limb of the hydrograph. In addition, two single samples at each station for each event will be analyzed for turbidity and FSP. These single samples will be used to establish a site-specific rating curve relating turbidity to FSP concentration. The single samples will be selected to represent the range of expected turbidity and FSP concentrations experienced at the catchment outfall.

For snowmelt events, hydrographs typically follow a diurnal pattern that can repeat for many consecutive days. Due to this duration and complexity, samples from four consecutive snowmelt diurnals will be collected and analyzed. These four consecutive diurnals will be called one snowmelt event. The first of the four snowmelt sampling events will occur on the first spring day warm enough to produce melt (generally over 50 degrees Fahrenheit). The first flush, rising limb and falling limb of the diurnal pattern in the hydrograph will be captured in the same way described above for precipitation events. The following three snowmelt events will each be represented by a composite of 10-12 samples covering a complete diurnal cycle in the hydrograph. An attempt will be made to capture the highest diurnal peaks in the hydrograph over the course of spring snowmelt. These three composite samples will not have designated first flush, rising limb, and falling limb samples, but will represent a diel and allow for a spring season EMC to be estimated for each year sampled.

The sampling frequency presented in this monitoring plan is designed to meet the minimum requirements of the NPDES permit. It should also be adequate for beginning to address the

secondary goal of enhancing the Permittees' existing load estimations, condition assessment methods, and the effectiveness of their overall pollutant load reduction program.

The monitoring methods implemented for this plan are comparable to methods outlined in the RSWMP SAP and the RSWMP QAPP. These methods have been developed over a decade, have withstood the rigors of intensive monitoring, and are generally used by the monitoring community in Lake Tahoe.

Table 2: The events sampled at each monitoring station, the corresponding samples generated for each event, and the total number of samples generated over the three year monitoring period.

Event #	Event Type	WYs monitored	Approximate Time Period	Season	Samples generated for TP, TN, TSS, Turbidity, and FSP analysis at each monitoring station per event		Additional samples generated for Turbidity and FSP analysis at each monitoring station per event		Total Samples Generated[2]
1	Fall Rain	14, 15, 16	October-November	Fall/Winter	1	first flush single			**159**
					1	rising limb composite	1	rising limb single	
					1	falling limb composite	1	falling limb single	
					0.3	QC samples[1]			
2	Rain on Snow	14, 15, 16	December-February	Fall/Winter	1	first flush single			**159**
					1	rising limb composite	1	rising limb single	
					1	falling limb composite	1	falling limb single	
					0.3	QC samples[1]			
3	Snowmelt	14, 15, 16	March-May	Spring	1	first flush single			**258**
					1	rising limb composite	1	rising limb single	
					1	falling limb composite	1	falling limb single	
					3	diel composites			
					0.6	QC samples[1]			
4	Thunderstorm	14, 15, 16	June-September	Summer	1	first flush single			**159**
					1	rising limb composite	1	rising limb single	
					1	falling limb composite	1	falling limb single	
					0.3	QC samples[1]			

[1]One QAQC sample will be taken at rotating sites for every 10 samples generated - does not consider additional FSP samples

[2]Number years*Number sites*Number samples per event*Number events per year

CONTINUOUS TURBIDITY MEASUREMENT

Recent studies have suggested that a significant site-specific correlation exists between turbidity and FSP concentration (2NDNATURE and NHC 2010b, Heyvaert et. al., 2010). Therefore, turbidity will be measured continuously at all sites unless site specific characteristics determine that the site is unsuitable for turbidimeter instrumentation. Coupled with the site-specific rating curve relating turbidity to FSP concentration generated by the required paired turbidity and FSP analyses, continuous turbidity readings are expected allow for reasonable estimation of FSP loading from each site. With the development of site-specific rating curves, monitoring efforts could become more cost-effective. In fact, if successful, turbidity data has the potential be used as a surrogate by which sediment and nutrient loads are extrapolated.

METEOROLOGICAL DATA

Meteorological data will be collected within 0.25 miles of the monitoring site. Depending on site specific characteristics, the data will be collected on a 5, 10 or 15 minute time interval and include, at a minimum, inches of precipitation and ambient temperature. These readings, coupled with long-term regional meteorological data, will allow for an assessment of whether the season was dry, average, or wet. In addition, collecting meteorological data is imperative to understanding runoff response to rain (i.e. calculating runoff coefficients (runoff volume per inch of rain) in each catchment). Determining rainfall-runoff response gives information as to the impervious connectivity, rainfall-runoff relationships, rainfall intensity and associated peak flows. The meteorological data is also critical for running catchment scale event simulations with the SWMM5 model. By analyzing multiple storm events with SWMM5, one can determine calibrated hydrologic parameters that can then be used in PLRM to generate pollutant load estimations with higher confidence. Indefinite model parameters such as connectivity, road condition, average slope, and others can be adjusted within a realistic range until the model reasonably predicts runoff volumes at each site. This work will be done in conjunction with NHC to ensure that parameters are adjusted in a manner consistent with previous modeling efforts. A strong correlation between model-predicted runoff volumes and empirical runoff volumes at each site can provide a better level of confidence in the PLRM predicted pollutant loads.

SAMPLE HANDLING AND PROCESSING

Sample handing and processing will follow guidelines outlined in the RSWMP SAP section 9 and the RSWMP QAPP section 12. This includes proper labeling of samples in the field, transporting samples to a laboratory immediately after collection in a cooler, compositing single samples on a flow-weighted basis, filtering samples within a 24-hour

period before shipping to an analytical laboratory, and proper chain-of-custody procedures.

QUALITY CONTROL

A minimum of 10% of all samples analyzed will be quality control (QC) samples to identify problems related to field sampling and sample processing. The samples will include the following QC types: field blanks, method blanks, and field replicates as defined in the RSWMP SAP section 11 and the RSWMP QAPP section 14.1. These samples will be used to ensure proper instrument function, sample handling procedures, and laboratory methods. This equates to approximately three QC samples per storm event, rotating sites and QC sample type throughout the year.

SAMPLE ANALYSIS

Samples will be analyzed for the Lake Tahoe TMDL pollutants of concern: FSP concentration, total nitrogen (TN) concentration, and total phosphorus (TP) concentration. In addition, samples will be analyzed for total suspended solids (TSS) and turbidity. In addition to the single first flush samples, two additional single samples (i.e. not composite samples) from each station for each runoff event will be analyzed for turbidity and FSP concentration to establish a site-specific rating curve relating these two analytes. The single samples selected for turbidity and FSP analysis will span the range of expected turbidity and FSP concentrations at each monitoring station. TN, TP and TSS concentrations will be reported in mg/L and turbidity in NTUs. FSP concentration will be reported in mg/L and converted to number of particles per liter using a formula outlined in Heyvaert et. al. 2011. In order to determine FSP concentration, the recommended bin sizes for reporting particle size distribution analysis are taken from the phi series (Heyvaert et.al., 2011) and are from 0.5µm to <1, <2, <4, <8, <16, <31, <63, <125, <250, <500, <1000, and <2000 µm. FSP concentration will be the sum off all bin sizes 16 µm and less.

Analytical laboratories are selected in accordance with the RSWMP QAPP section 13 and require certification. Samples will be analyzed using methods recommended in Table 3, or a proven similar method, and follow quality control requirements outlined in the RSWMP QAPP section 14.2.

Table 3: Recommended analytical methods and reporting limits.

Analyte	Methods	Description	Target Reporting Limit
Total Dissolved Phosphorus as P	EPA 365.1 w/ USGS I-4600-85; or EPA 365.2; or EPA 365.3; or SM 4500-P-F	Colorimetric, persulfate digestion, phosphomolybdate	10 ug/L
Total Kjeldahl Nitrogen	EPA 351.1; or EPA 351.2	Colorimetric, block digestion, phenate	50 ug/L
Total Suspended Solids	EPA 160.2 or SM 2540-D	Gravimetric	1 mg/L
Turbidity	EPA 180.1 or SM 2130-B	Nephelometric	0.1 NTU
Particle Size Distribution	SM 2560 or RSWMP addendum SOP	Laser backscattering	na

DATA MANAGEMENT

Data will be offloaded from the auto-samplers with data transfer devices at the time samples are collected or maintenance is required. Any other field measurements and observations will be recorded in a field notebook. Samples, data transfer devices and notes will be transported to a processing lab immediately after collection. Data transfer devices will be offloaded onto a computer, and all data will be input into an Excel template for storing continuous parameters as well as sample dates and times. Each monitoring site will have its own workbook. A separate Excel template will be used for calculating flow-weighted compositing schedules for the rising and falling limb composites at each monitoring station. All samples will be filtered for TSS and values will be recorded on standard data sheets in the laboratory and entered into an Excel template for storing nutrient and sediment data. All samples will also be sent to proper laboratories within appropriate holding times for total phosphorus, total nitrogen, and particle size distribution (FSP) analysis. Results from analytical laboratories will be entered into the Excel template for storing nutrient and sediment data. All Excel workbooks will be housed on one central computer (with backup device) and managed by District staff.

DATA REVIEW

Analytical results will need to be reviewed for accuracy and precision. Data quality will be reviewed and data will be accepted or rejected following rules outlined in the RSWMP SAP section 12.1.

Continuous data series logged at each monitoring station consist of parameters measured in the field at a constant time interval. These data will include, at a minimum, stage, flow, and turbidity readings. These series will be reviewed and corrected following rules outlined in the RSWMP SAP section 12.2.

DATA ANALYSIS AND REPORTING

Data contained in the Excel templates described in the Data Management section of this document will be used to calculate flow volumes and pollutants loads to Lake Tahoe. In particular, the collected data will be analyzed to serve the following purposes:

1. Continuous flow data will be used to calculate event, seasonal, and annual flow volumes in cubic feet for fall/winter (October 1 – February 28), spring snowmelt (March 1 – May 31), and summer (June 1 – September 30) at the catchment outfalls. These volumes will be reported.
2. Continuous flow data will be used to calculate event, seasonal, and annual influent and effluent volumes in cubic feet for fall/winter (October 1 – February 28), spring snowmelt (March 1 – May 31), and summer (June 1 – September 30) at the BMPs. These volumes will be reported.
3. Flow-weighted Event Mean Concentrations (EMCs) will be calculated and reported for each catchment outfall for each season (based on a single event) at each monitoring station for TN, TP, FSP, TSS, and turbidity using the first flush single sample, the flow-weighted rising limb composite sample, and the flow-weighted falling limb composite sample. In the case of spring snowmelt, the three flow-weighted diel composites will also be included in the flow-weighted EMC. In addition, the first flush concentration will be reported for each station for each season using only the first flush sample concentrations.
4. Influent and effluent concentrations of TN, TP, FSP, TSS, and turbidity will be calculated and reported for each BMP for each season (based on a single event) using the EMCs described in (3).
5. Concentrations of TN and TP will be reported in mg/L. Concentrations of FSP will be reported in mg/L and number of particles per liter. Concentrations of TSS will be reported in mg/L, and turbidity in NTUs.
6. TN, TP, FSP, and TSS loads will be calculated and reported for each catchment outfall for each season (based on a single event) using the EMCs described in (3) and the continuous flow data.

7. Influent and effluent TN, TP, FSP, and TSS loads will be calculated and reported for each BMP for each season using the EMCs described in (3) and the continuous flow data. The influent and effluent loads will be compared and the pollutant load reduction resulting from the cartridge filter vaults and subsurface infiltration chambers will be reported for each season (based on a single event).
8. Loads will be reported in kilograms for TN, TP and TSS, and in number of particles for FSP.
9. Paired turbidity and FSP concentrations on single samples will be used to establish site-specific rating curves relating FSP concentration to turbidity. These rating curves will be applied to the continuous turbidity data collected at select monitoring stations and allow for calculations of FSP loading per season to be made at the catchment outfalls. This is a second method for determining FSP loads from catchment outfalls. *(The seasonal FSP load reduction calculated using this method will be different than the one calculated in (6) because it will be based on continuous data as opposed to a single event.)*
10. Results from the QC samples collected for the year will be summarized and reported.
11. Catchments will be modeled using PLRM. Modeled estimates of runoff volumes and pollutant loads ("expected" conditions) will be compared to empirical data ("actual" conditions) in the context of water year type (wet, average, dry).
12. Beginning with the second year of monitoring, data from all eleven monitoring stations will be compared to results from previous years, noting trends and inter-annual variability in the context of water year type (wet, average, dry)

As condition assessments (i.e. Road RAM and BMP RAM) are performed and resulting RAM scores are obtainable, analysis may also include correlations between scores and monitoring data. Because previous work has identified that road condition is a strong indicator of resulting water quality (2NDNATURE and NHC, 2012), condition assessment data, where and when available, will be collated to better understand the relationship between observed catchment or BMP condition and measured pollutant loads.

Under Annual Reporting Requirements, Section IV of the permit's Monitoring and Reporting Program, the District will not fulfill the requirements outlined in sections A-E or G-J. The District will *only* be responsible for section IV.F., Stormwater Monitoring Report. However, results reported in the Stormwater Monitoring Report will inform many of the requirements outlined in sections IV.A-E and G-J. The District, on behalf of the IMP, will submit a single annual report by January 15th of the year following the end of each water year (September 30th) to each participating jurisdiction, synthesizing all data collected for stormwater monitoring, including results and analyses described above. Table 4 outlines the annual monitoring schedule for each water year monitored. All required details and discussions listed in Section IV.F.1-16 of the permit will be included. This annual Stormwater Monitoring Report is meant to be included in each participating jurisdiction's larger NPDES report due March 15th of the year following the end of each water year to the Lahontan Regional Water Quality Control Board.

All electronic data will be in a format compatible with the Surface Water Ambient Monitoring Program (SWAMP) database and entered into the California Environmental Data Exchange Network (CEDEN). All monitoring data and associated analytical reports will be available to managers on permittees' websites or through a regional data center. Stakeholders and members of the general public will be notified of the availability of electronic and paper monitoring reports through notices distributed by appropriate means.

Table 4: Annual monitoring schedule for each water year monitored.

Annual Monitoring Schedule Implementers' Monitoring Program												
Tasks	Repeating Schedule for Water Years 14-16											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Planning												
Data Collection												
Data Analysis												
Reporting												

MONITORING PLAN UPDATE OR REVISION

This monitoring plan may be revisited and revised as new information becomes available, such as recommendations from the forthcoming RSWMP effort, or in response to modifications to permit or agreement language. Any proposed modifications would need to consider budget constraints and dollars available to implement a revised monitoring plan.

BUDGET

Table 5 shows a detailed budget identifying how SNPLMA funds and in-kind salary and equipment match from the District and partnering jurisdictions are expected to be utilized. Because the District views this project as an important service to the public and the jurisdictions, grant management of this project, including operations and administration, will be just over 10% of the total budget. Personnel related to "District and NTCD Monitoring Staff" have yet to be determined and will be hired as needed when monitoring begins in October 2013. Catchment outfall and BMP data collection, analysis, and site management will account for up to 25% of the total budget. Modeling and data reporting is projected to make up less than 10% of the total budget. Contracted services with UCD and DRI will compose approximately 4% of the total budget. The sampling supplies category is broadly defined as the District is still working with partner equipment match to determine what can be borrowed and what must be purchased. The sampling and filtering supplies categories account for about 6% of the total budget. Sample analysis accounts for about 10% of the total budget. The remaining 35% is accounted for by in-kind and equipment match. Matched amounts shown in italics indicate $100,000 in cash matched by NDOT. Hours projected for each task are also identified in Table 5.

Table 5: Detailed budget outlining expenditures and match.

	Description	Total Hours	Matched Hours	Amount Requested	Amount Matched	Total Budget
Task 1	**Grant Management**					**$ 158,000**
District	Operations			$ 51,000		
District	John Skeel	477	429	$ 30,000	$ 27,000	
District	Kim Gorman	208	832	$ 10,000	$ 40,000	
Task 2	**Collaborative Monitoring Plan**					**$ 7,000**
District	Andrea Parra	25	149	$ 1,000	$ 6,000	
Task 3	**Catchment Outfall Data Collection, Data Analysis, and Site Mgmt**					**$ 179,000**
District	Andrea Parra	1,735	347	$ 70,000	$ 14,000	
District	Kim Gorman	374	218	$ 18,000	*$ 10,500*	
District	District Monitoring Staff	737	517	$ 28,500	*$ 20,000*	
NTCD	NTCD Monitoring Staff	293	81	$ 18,000		
Task 4	**BMP Effectiveness Data Collection, Data Analysis, and Site Mgmt**					**$ 179,000**
District	Andrea Parra	1,735	347	$ 70,000	$ 14,000	
District	Kim Gorman	374	218	$ 18,000	*$ 10,500*	
District	District Monitoring Staff	737	517	$ 28,500	*$ 20,000*	
NTCD	NTCD Monitoring Staff	293	81	$ 18,000		
Task 5	**PLRM Modeling**					**$ 40,000**
District	District Modeling Staff	462		$ 17,000		
District	Andrea Parra	570		$ 23,000		
Task 6	**Contracted Scientific Advisor**					**$ 19,000**
DRI	Alan Heyvaert	125		$ 19,000		
Task 7	**Project Reporting**					**$ 98,500**
District	Andrea Parra	1,252		$ 50,500		
District	Kim Gorman	499	499	$ 24,000	$ 24,000	
	Contracted Service Costs (Monitoring Site Design, Installation, and Maintenance)					**$ 55,000**
UCD	Raph Townsend	800		$ 55,000		
	Sampling Supplies					**$ 65,500**
	Autosamplers, accessories, solar panels, flumes			$ 25,500		
	Weather station, accessories			$ 4,000		
	FTS-DTS12 Continuous Turbidimeters			$ 11,000		
	Repairs, Maintenance and Miscellaneous Supplies			$ 25,000		
	Filtering Supplies					**$ 28,000**
	Glassware, filter towers, filters, bottles, coolers, lab gloves etc…			$ 15,000		
	Turbidity meter, Hach 2100N range <0.1-4,000 NTU			$ 3,000		
	DI water system, miscellaneous supplies, and maintenance			$ 10,000		
	Sample Analysis					**$ 146,000**
	Fine Sediment Particles (FSP) - 820 samples at $45 each			$ 37,000	*$ 3,000*	
	Nutrients (Total Nitrogen, Total Phosphorus) - 548 samples at $89 each			$ 49,000	*$ 3,000*	
	Margin of safety (roughly 25% of analysis costs)			$ 21,000		
NDOT	SR431 Data Resolution Pilot Study				*$ 33,000*	
	Total Budget			**$ 750,000**	**$ 225,000**	**$ 975,000**
	Matched amounts in italics indicate NDOT cash					

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APPENDIX C

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8.79.ord
01/09/13

ORDINANCE NO. 4992

THE BOARD OF SUPERVISORS OF THE COUNTY OF EL DORADO DOES ORDAIN AS FOLLOWS:

Section 1. Chapter 8.79 of Title 8 of the El Dorado County Ordinance Code is hereby added as follows:

Chapter 8.79 - Stormwater Quality Ordinance

8.79.010. Title.

This Ordinance shall be known as the "El Dorado County Stormwater Quality Ordinance," and may be so cited.

8.79.020. Purpose and intent.

A. The purpose of this Chapter is to ensure that El Dorado County is compliant with state and federal laws and fulfills its requirements to: (1) Protect the health, safety, and general welfare of the citizens of El Dorado County; (2) Enhance and protect the quality of Waters of the State in the Lake Tahoe Basin portion of El Dorado County by reducing pollutants in stormwater discharges to the maximum extent practicable and controlling non-stormwater discharges to a stormwater facility; and (3) To cause the use of Best Management Practices (section 8.79.050) by the County and its citizens that will reduce the adverse effects of polluted runoff discharges on Waters of the State.

B. This Chapter seeks to promote these purposes by: (1) Prohibiting illicit discharges to a stormwater facility; (2) Establishing authority to adopt requirements for stormwater management, including source control requirements, to reduce pollution to the Maximum Extent Practicable; (3) Establishing authority to adopt requirements for development projects to reduce stormwater pollution and erosion both during construction and after the project is complete; and (4) Establishing authority that will enable the County to implement and enforce any Stormwater Management Plan adopted by the County.

8.79.030. Findings.

The El Dorado County Board of Supervisors has determined that the health, safety, and general welfare of the citizens of El Dorado County is adversely affected by the discharge of pollution into stormwater facilities, surface waters and Waters of the State. The Board of Supervisors further finds that violation of this Ordinance may constitute a human and environmental health risk.

8.79.040. Applicability.

This Chapter applies to all unincorporated areas of El Dorado County within the Lake Tahoe Basin under the jurisdiction of the California Regional Water Quality Control Board, Lahontan Region.

8.79.050. Definitions.

A. **"Best Management Practices (BMPs)"** – Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources, such as pollutants carried by storm water runoff. "BMP" is a broad term that refers to many of the actions that are required under or could be completed as part of the NPDES Permit, including behavioral BMPs such as education (e.g., placing inlet stencils and regularly educating municipal

staff and others about measures to reduce pollution in stormwater) or discharging wash water to the sanitary sewer instead of the storm drain, structural BMPs such as source controls (e.g., double containment for hazardous materials) and treatment controls (e.g. vegetated swales and detention basins) to treat runoff before it is discharged to the storm drain or local waterway, and other practices that prevent or reduce pollutants from reaching the storm drain or other waters.

B. **"Clean Water Act (CWA)"** – The primary federal law in the United States governing water pollution. Formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972), is Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483 and Public Law 77-117, 33 U.S.C. 1251 et seq.

C. **"County"** – The unincorporated County of El Dorado within the Lake Tahoe Basin under the jurisdiction of the California Regional Water Quality Control Board, Lahontan Region.

D. **"Consent"** – To permit, approve, or agree; comply or yield.

E. **"Development"** – Any activity that moves soils or substantially alters the pre-existing vegetated or man-made cover of any and all land. Development includes any activity that may be considered new development or re-development. This also includes, but is not limited to, grading, digging, cutting, scraping, stockpiling or excavating of soil, placement of fill materials, paving, pavement removal, exterior construction, substantial removal of vegetation where soils are disturbed including but not limited to removal by clearing or grubbing, or any activity which bares soil or rock or involves streambed alterations or the diversion or piping of any watercourse. Development does not include routine maintenance to maintain original line and grade, hydraulic capacity, or the original purpose of the facility, nor does it include emergency construction activities (i.e. land disturbances) required to protect public health and safety.

F. **"Discharge"** – The release or placement of any material into stormwater facilities within the County's jurisdiction, including but not limited to stormwater, wastewater, solid materials, liquids, hazardous waste, raw materials, debris, litter, or any other substance.

G. **"Enforcement Agency"** – El Dorado County Storm Water Management Plan's Lead Department is the primary Enforcement Agency for the purposes of this Chapter.

H. **"Enforcement Official"** – Any County employee or agent of the County with the authority to enforce any provision of the Chapter and the authority to make any decision on behalf of the director required or called for by this Chapter.

I. **"Illicit Connection"** – Any man-made conveyance that is connected to the storm drain system without a permit or through which prohibited non-storm water flows are discharged, excluding roof-drains and other similar connections. Examples include channels, pipelines, conduits, inlets, or outlets that are connected directly to the storm drain system.

J. **"Illicit Discharge"** – Any discharge to a stormwater facility that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations, as well as any direct or indirect non-stormwater discharge to the County's municipal stormwater facilities, except as otherwise exempted pursuant to state or federal laws, this Chapter, or a separate NPDES permit.

K. **"Industrial Activity"** – Activities subject to NPDES permits as defined in 40 Code of Federal Regulations 122.26 (b)(14).

L. **"Maximum Extent Practicable (MEP)"** – The minimum required performance standard for implementation of municipal storm water management programs to reduce pollutants in storm water. Clean Water Act § 402(p)(3)(B)(iii) requires that municipal permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." MEP is the cumulative effect of implementing, evaluating, and making corresponding changes to a variety of technically appropriate and economically feasible BMPs, ensuring that the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative process.

M. **"Municipal Separate Storm Sewer System (MS4)"** – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, municipal stormwater facilities, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) owned or operated by a State, County, City, Town, or other public body, that is designed or used for collecting or conveying storm water, which is not a combined sewer, and which is not a part of a publicly owned treatment works.

N. **"National Pollutant Discharge Elimination System (NPDES)"** – The primary permitting program under the Clean Water Act (33 U.S.C. § 1251 et seq.) which regulates most discharges to surface waters.

O. **"Non-Stormwater Discharge"** – Any discharge to municipal stormwater collection systems that is not composed entirely of stormwater except discharges pursuant to an NPDES permit and discharges resulting from fire-fighting activities.

P. **"Pollutant"** – Anything which causes or contributes to pollution, as defined herein or in Chapter 15.14 of this Code. Pollutants include, but are not limited to: sediment, chlorine, paints, varnishes, solvents, fuel, oil, automotive fluids, yard wastes, refuse, rubbish, garbage, litter, food-related wastes, discarded or abandoned objects, floatable materials, pesticides, herbicides, fertilizers, detergents, soaps, hazardous substances, hazardous waste, sewage, fecal coliform and pathogens, dissolved and particulate metals, animal wastes, wastes and residues that result from

constructing a building or structure or from grading (including but not limited to sediments, slurries, and concrete residue), and noxious or offensive matter of any kind.

Q. **"Pollution"** – "The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water" (CWA Section 502 (19)). Pollution also means, "alteration of the quality of the Waters of the State by waste to a degree which unreasonably affects either the waters for beneficial uses of facilities which serve these beneficial uses" (California Water Code Section 13050 (1)).

R. **"Porter-Cologne Act"** – The Porter-Cologne Water Quality Control Act, as amended (California Water Code section 13000 et seq.).

S. **"Property Owner"** – Any person, entity, company, and/or authorized representative having title to real property within the geographic area affected by this Chapter.

T. **"Regional Water Quality Control Board"** – The California Regional Water Quality Control Board, Lahontan Region.

U. **"Stormwater"** – Storm water runoff, snowmelt runoff, and surface runoff and drainage [40 Code of Federal Regulations 122.26 (b)(13)]. As storm water flows over the land or impervious surfaces, it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the storm water is discharged untreated.

V. **"Stormwater Facility"** – Structures that are designed to capture, convey and treat stormwater runoff while removing pollutants and controlling flow rates. These facilities include pipes, ditches, swales, filters, ponds, basins, underground vaults and drop inlets. Facilities require maintenance in order to remain functional.

W. **"Stormwater Pollution Prevention Plan (SWPPP)"** – The construction site water quality management plan required by the State's construction general stormwater permit.

X. **"Surface Water"** – Includes, but is not limited to, perennial and ephemeral streams, lakes, wetlands, springs and similar waters which flow or reside in natural or artificial impoundments or drainage ways.

Y. **"Waters of the United States"** – Surface watercourses and water bodies as defined by 40 Code of Federal Regulations section 122.2, including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry stormwater at and during all times and seasons.

Z. **"Waters of the State"** – All surface watercourses and water bodies, including lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, marshes, inlets, canals, and all other bodies of surface waters (Porter Cologne Section 13050 (e)), and which are

within the unincorporated areas of County of El Dorado. This definition includes, but is broader than, Waters of the United States.

Any term(s) defined in the Federal Clean Water Act, as amended, and/or defined in the regulations for the stormwater discharge permitting program issued by the Environmental Protection Agency, as amended, and which are not specifically defined above, shall, when used in this Chapter, have the same meaning as set forth in said act or regulation.

8.79.060. Responsibility for Administration.

El Dorado County shall administer the provisions of this Chapter with all participating departments of the Storm Water Management Plan.

8.79.070. Conflicts with other laws.

In the event of any conflict between this Chapter and any federal or state law or regulation or County ordinance, that requirement which establishes the higher standard for public health shall govern. To the extent permitted by law, nothing in this Chapter shall preclude enforcement of any other applicable law, regulation, order, permit, or County ordinance.

8.79.080. Discharge Prohibitions.

Except as provided in Section 8.79.090, it is unlawful for any person to make or cause to be made any illicit connection to or illicit discharge into a stormwater facility.

Notwithstanding the exemptions provided by Section 8.79.090, if the Enforcement Agency determines any otherwise exempt discharge causes or significantly contributes to violations of any water quality standard, or conveys significant quantities of pollutants to stormwater facilities, surface water(s) or watercourse(s), or is a danger to public health or safety, then the Enforcement Agency may give written notice to the property owner or occupant that the otherwise applicable exemption will not apply to the subject discharge following expiration as noted by the applicable notice. Any such discharge shall thereafter be prohibited from entering the stormwater facility or surface water.

8.79.090. Exemptions to Prohibited Discharges.

Discharges from the following activities shall not be prohibited unless the Enforcement Agency determines that the discharge causes or significantly contributes to violations of any plan standard, or conveys significant quantities of pollutants to surface water or watercourses, or is a danger to public health or safety. The Enforcement Agency may give written notice to the property owner or occupant that the otherwise applicable exemption will not apply.

A. Water line flushing and discharges from potable water sources.
B. Landscape irrigation and lawn watering.
C. Diverted stream flows and irrigation water.

D. Springs, rising groundwater, and flows from riparian habitat and wetlands.
E. Uncontaminated groundwater infiltration (as defined at 40 Code of Federal Regulation Section 35.2005(b)(20)).
F. Uncontaminated pumped groundwater, foundation drains, footing drains, fountain drains and water from crawl space pumps.
G. Air conditioning condensation.
H. Individual residential car washing.
I. Dechlorinated, pollution-free swimming pool and spa water discharges from residential property.
J. Fire-fighting flows.

8.79.100. Discharge in Violation of Existing NPDES Permit.

Any person subject to any individual and/or industrial NPDES stormwater discharge permit shall comply with all provisions of such permit, SWPPP, and any regulations or ordinances promulgated thereto, including provisions outlined in Chapter 15.14 of this Code. Proof of compliance with said permit may be required in a form acceptable to the Enforcement Agency (1) prior to or as a condition of a subdivision map, site plan, building permit, or development, re-development, or improvement plan; (2) upon inspection of the facility; (3) during any enforcement proceeding or action; or (4) for any other reasonable cause at any other time.

8.79.110. Discharge in Violation of County's NPDES Permit; Indemnification.

Any discharge that would result in or contribute to a violation of the County's NPDES permit issued by the Regional Water Quality Control Board and any amendment, revision or reissuance thereof, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person(s) so causing or responsible for the discharge, and such persons shall defend, indemnify and hold harmless the County and it's officers, agents, employees, representatives, and volunteers from any and all claims in any administrative or judicial enforcement action relating to such discharge.

8.79.120. Acts Potentially Resulting in Violation of Federal Clean Water Act and/or Porter-Cologne Act.

The standards set forth herein and promulgated pursuant to this Chapter are minimum standards. This Chapter does not intend or imply that compliance with these minimum standards will ensure that there will be no contamination, pollution, or unauthorized discharge of pollutants into the Waters of the State. This Chapter shall not create liability on the part of the County, and its officers, agents, employees, representatives, and volunteers for any damage that results from any discharger's reliance upon this Chapter or any administrative decision made hereunder.

8.79.130. Right of Entry; Inspections.

A. The Enforcement Official is authorized to enter any building or premises upon consent through existing permit or written/verbal consent in accordance with the provisions of this

section for the purpose of making an inspection to enforce the provisions of this Chapter and to assure the proper implementation of BMPs. Inspections/investigations shall be based upon such reasonable selection processes as may be deemed necessary to carry out the objectives of the Chapter, including, but not limited to: visual evidence, complaints received, knowledge or physical evidence of industrial activities or other pollutant sources, random sampling, sampling in areas with evidence of stormwater contamination, illicit connections, illicit discharge, or similar factors.

B. Right to inspect. Unless inspections are authorized pursuant to an existing permit issued to the property owner or occupant, prior to commencing any inspection as hereinabove authorized, the Enforcement Official shall obtain either the consent of the property owner or occupant or shall obtain an administrative inspection warrant or criminal search warrant.

C. Compliance assessments. The Enforcement Official may inspect property for the purpose of verifying compliance with this Chapter, including but not limited to: (i) identifying products produced, processes conducted, chemicals used and materials stored on or contained within the property, (ii) identifying point(s) of discharge of all wastewater, process water systems and pollutants, (iii) investigating the natural slope, including drainage patterns and man-made conveyance systems, (iv) establishing the location of all points of discharge from the property, whether by surface runoff, snow melt, or through a stormwater facility, (v) locating any illicit connection or the source of any illicit discharge, and (vi) evaluating compliance with any stormwater discharge permit.

D. Portable equipment. For purposes of verifying compliance with this Chapter, the Enforcement Official may inspect any vehicle, truck, trailer, tank truck or other mobile equipment that may pose a threat to surface waters, stormwater facilities or the MS4.

E. Records review. The Enforcement Official may inspect all records of the property owner or occupant of property relating to State general permits, stormwater pollution prevention plans, monitoring program plans and any other record(s) relating to illicit connections, illicit discharges, or any other source of contribution or potential contribution of pollutants to a stormwater facility.

F. Sample and test. The Enforcement Official may inspect, sample and test any runoff, soils area, process discharge, materials within any waste storage area (including any container contents), and/or treatment system discharge for the purpose of determining the potential for contribution of pollutants to a stormwater facility. The Enforcement Official may investigate the integrity of all stormwater facilities or other pipelines on the property using appropriate tests, including but not limited to smoke and dye tests or video surveys. The Enforcement Official may take photographs or video tape, make surveys, measurements or drawings, and create any other record reasonably necessary to document conditions on the property.

G. Monitoring. The Enforcement Official may erect and maintain monitoring devices for the purpose of measuring any discharge or potential source of discharge to a stormwater facility.

H. Test results. The property owner or occupant of property subject to inspection shall, on submission of a written request to the Enforcement Official, receive copies of all monitoring and test results conducted during the investigation.

8.79.140. Concealment and Abetting.

Causing, permitting, aiding, abetting, or concealing a violation of any provision of this Chapter shall constitute a violation.

8.79.150. Reduction of Pollutants in Stormwater; Best Management Practices.

A. **General Requirements**
Any person engaging in activities that may result in pollutants entering a stormwater facility shall implement Best Management Practices to the maximum extent practicable (MEP), or as determined by the Enforcement Agency, to prevent such pollutants.

B. **Maintenance**
All BMPs shall be protected and maintained to ensure continuous and fully effective performance as designed.

C. **Illicit Connection**
It is unlawful and a violation of this Chapter for any person to establish, use, or maintain any unauthorized connection to a stormwater facility or MS4.

D. **Waste Disposal**
No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, in or upon any public or private property, driveway, parking area, street, alley, sidewalk, component of a stormwater facility or Waters of the State, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, and accumulations, so that the same may cause or contribute to pollution, as further proscribed by Section 8.42.700 et seq. of this Code.

E. **Construction Activities**
Any person performing construction work within the County shall implement appropriate BMPs to prevent the discharge from the site of pollutants, soil, or construction wastes or debris, including contaminants from construction materials, tools, and equipment to a stormwater facility.

F. **Watercourse Protection**
Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property reasonably free of trash, debris, and other obstacles that would pollute or contaminate the watercourse.

G. **Development / Redevelopment**
The County may require development and/or redevelopment projects to incorporate appropriate BMPs to control the volume, rate, and potential pollutant loading of stormwater runoff from such

development / redevelopment. These required BMPs may be contained in any land use entitlement, conditions of approval, grading plans, improvement plans, or any construction or building-related permit to be issued relative to such development / redevelopment. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and building permits as required elsewhere in County Code. The County may withhold final approvals or other authorizations if the owner or developer is in violation of the provisions of this Chapter.

8.79.160. Containment and Notification of Illegal Discharges.

Any person owning or occupying premises who has knowledge of any illicit discharge from or across those premises which might enter a stormwater facility, except as provided in Section 8.79.090, shall:

A. Immediately take all reasonable action to contain and abate the Illicit Discharge, and;

B. Notify the Enforcement Agency or its designated contact person within twenty-four (24) hours of discovery of the illicit discharge. The Enforcement Agency may require the property owner and/or the responsible person to take corrective actions within a specified time pursuant to this Chapter.

8.79.170. Enforcement.

Any person who violates a provision of this Chapter may be subject to administrative, civil, or criminal liability as provided in this Chapter, Chapter 1.24, and/or Chapter 9.02 of this Code.

A. **Primary Authority**
The Enforcement Agency is empowered to use any of the provisions of Sections 8.79.170 through 8.79.220, and the provisions found in Chapters 1.24 or 9.02, where appropriate to correct violations of, and secure compliance with the provisions of this Chapter.

B. **Warning Not Required**
Issuance of a warning shall not be a requirement prior to using any enforcement provision of this Chapter.

8.79.180. Violation.

A. **Informal Warning; Educational Materials**
Whenever the Enforcement Official determines that a violation of a provision of this Chapter has occurred or may occur, the Enforcement Official may provide a warning to any person and/or owner responsible for the condition giving rise to such violation or potential violation. Such warning may include the distribution of educational materials to assist in future compliance with this Chapter. This warning may be provided in person or in writing.

B. **Notice of Noncompliance**

Whenever the Enforcement Official determines that a violation has occurred, the Enforcement Official may serve a Notice of Noncompliance to any person and/or property owner responsible for the violation. Each Notice of Noncompliance shall contain the following information:

1. The date of the violation;
2. The address or a definite description of the location where the violation occurred;
3. The Chapter section violated and a description of the violation;
4. A description of how the violation can be corrected;
5. A time limit by which the violation shall be corrected, after which further enforcement and/or corrective actions may be taken by the County if the violation is not fully corrected;
6. The name and signature of the individual preparing the Notice of Noncompliance;
7. A statement outlining the procedure for appeal of the Notice of Noncompliance; and
8. Notice of potential liability under the federal Clean Water Act or State Porter Cologne Water Quality Act.

C. **Administrative Compliance Order**

Whenever the Enforcement Official determines that a violation has occurred, the Enforcement Official may serve an Administrative Compliance Order to any person and/or property owner responsible for the violation. Each Administrative Compliance Order shall contain the following information:

1. The date of the violation;
2. The address or a definite description of the location where the violation occurred;
3. The Chapter section violated and a description of the violation;
4. An order to cease all activities which are believed to be causing the violation;
5. A time limit by which the violation shall be corrected, after which corrective actions will be taken by the County if the violation is not fully corrected;
6. A statement that the County will charge the person and/or owner for all administrative costs associated with enforcement actions;
7. An order prohibiting the continuation or repeated occurrence of the violation;
8. The name and signature of the individual preparing the citation;
9. A statement outlining the procedure for appeal of the Order;
10. Notice to the violator of potential liability under the federal Clean Water Act or State Porter Cologne Water Quality Act; and
11. Any other terms or requirements reasonably calculated to achieve full compliance with the terms, conditions, and requirements of any permit issued pursuant hereto.

D. **Citation**

The Enforcement Official is authorized to issue citations for infractions of this section using the provisions found in Chapters 1.24 or 9.02 of this Code.

E. **Misdemeanor**
Any violation of this Chapter may, at the discretion of the Enforcing Agency, be considered a misdemeanor and, as such, may be punished using the provisions of Chapter 1.24, including a fine of not more than $500.00, imprisonment for a period not to exceed six (6) months, or both.

F. **Cost Recovery**
The Enforcement Official may deliver to the property owner or occupant, any permittee, or any other person who becomes subject to a Notice of Noncompliance or Administrative Compliance Order, an invoice for costs. An invoice for costs shall be immediately due and payable to the County for the actual costs incurred by the County in issuing and enforcing any notice or order.

If any owner or occupant, permittee, or any other person subject to an invoice for costs fails to either pay the invoice for costs or appeal successfully the invoice for costs or the underlying notice or order in accordance with this section, then the County may institute collection proceedings or resort to any collections methods authorized by Chapter 9.02 of this Code.

G. **Service**
The Enforcement Officer shall use the provisions of Section 9.02.120 of the County's Ordinance Code to serve a Notice of Noncompliance, Citation, Administrative Compliance Order, or Invoice for Costs to effectuate the provisions of this Chapter.

H. **Separate Violation Intent**

1. Each day in which a violation occurs and each separate failure to comply with any provision of this Chapter is a separate offense and punishable by penalties in accordance with this Chapter.

2. A violation of the provisions of this Chapter shall occur irrespective of the negligence or intent of the violator to construct, maintain, operate, or utilize an illicit connection, or to cause, allow or facilitate any illicit discharge or threatened illicit discharge.

8.79.190. Administrative Appeals.

A. Any person receiving a Notice of Noncompliance, Administrative Compliance Order, or Citation under Section 8.79.180, or any person required to perform monitoring, analysis, reporting or corrective activities by any Enforcement Official and who is aggrieved by such decision may appeal the Notice of Noncompliance, Administrative Compliance Order, Citation, or decision in writing to the Hearing Officer within ten days following the effective date of the subject action. Upon receipt of such appeal, the Hearing Officer shall request a report and recommendation from the authorized County employee and shall set the matter for hearing at the earliest practical date. At said hearing, the Hearing Officer may base his or her decision on additional evidence, and may reject, affirm or modify the Enforcement Official's decision.

B. The decision of the Hearing Officer may be appealed to the Board of Supervisors by filing a notice of appeal with the clerk of the Board of Supervisors within fifteen (15) days of receipt of the decision of the Hearing Officer. Such appeals shall be in writing and shall set forth

fully the grounds for the appeal. The Board of Supervisors shall thereupon fix a time and place for a public hearing of such appeal. The clerk of the Board of Supervisors shall give notice to the appellant of the time and place of hearing by serving it personally or by depositing it in the U.S. Post Office, postage prepaid, addressed to the appellant at his last known address at least five days prior thereto.

At the hearing before the Board of Supervisors, the appellant may appear in person or by counsel and present any relevant evidence relating to the grievance; the Enforcement Agency may present evidence in rebuttal thereof. The hearing may be continued from time to time, not to exceed thirty (30) days in all. The Board of Supervisors shall conduct a hearing and make findings as appropriate. The decision of the Board of Supervisors shall be final.

C. Notwithstanding the foregoing, these administrative appeal procedures shall not apply to criminal proceedings initiated to enforce this Chapter.

8.79.200. Nuisance Abatement; Summary Abatement.

A. **Nuisance Abatement**
The Enforcement Official may, in addition to other authorized procedures set forth in this Chapter, take action to abate any nuisance in accordance with the procedures found in Chapter 9.02 of this Code. The costs of any such abatement undertaken by the County shall be borne jointly and severally by the property owner and the person creating, causing, committing, allowing, or maintaining the nuisance and shall be collectable in accordance with the provisions of Chapter 9.02 of this Code.

B. **Summary Abatement**
The Enforcement Official may, in addition to other authorized procedures, take immediate action to abate any illicit discharge or threatened illicit discharge from any source to a stormwater facility when, in the discretion of the Enforcement Agency, the illicit discharge or threatened illicit discharge causes or threatens to cause a condition which presents an imminent danger to the public health, safety, or welfare, or the environment, or a violation of a permit. The Enforcement Official must first make reasonable attempts to contact and compel the responsible person and/or property owner to abate the illicit discharge or threatened illicit discharge in a satisfactory manner. The costs of any such abatement shall be borne jointly and severally by the property owner and the person creating, causing, committing, allowing, or maintaining the nuisance and shall be collectable in accordance with the provisions of Chapter 9.02 of this Code. Following the summary abatement hearing, within 10 days of taking action in accordance with this Section, there shall be a post abatement hearing in accordance with Section 9.02.310.

8.79.210. Civil Actions.

In addition to any other remedies provided in this Section, any violation of this Chapter may be enforced by civil action brought by the County. In any such action, the County may seek, as appropriate and allowed by law, any or all of the following remedies:

A. A temporary restraining order, preliminary and permanent injunction;

B. Reimbursement for the costs of any investigation, inspection or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing action under this division;

C. Costs incurred in removing, correcting or terminating the adverse effect(s) resulting from the violation;

D. Compensatory damages for loss or destruction of water quality, wildlife, fish and aquatic life. Costs and damages under this subsection shall be paid to the County and shall be used exclusively for costs associated with monitoring and establishing stormwater discharge pollution control system and/or implementing or enforcing the provisions of this division.

8.79.220. Regulatory Fee Structure Authorized.

The Enforcement Official shall collect such fees as may be authorized by the Board of Supervisors to establish and collect regulatory costs, which include routine inspections/investigations, and other regulatory functions associated with this Chapter. Any such fees shall be established by resolution of the Board of Supervisors.

8.79.230. Non-Exclusive Remedies.

Each and every remedy available for the enforcement of this Chapter shall be non-exclusive and it is within the discretion of the Enforcement Agency to seek cumulative remedies, including those specified in Chapter 9.02 of this Code, except that multiple monetary fines or penalties shall not be available for any single violation of this Chapter. Moreover, the remedies available to the County pursuant to this Chapter shall not limit the right of the County to seek any other remedy that may be available by law.

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8.79.240. Severability.

If any section, subsection, paragraph, sentence, or phrase of this Chapter is found to be invalid or unconstitutional for any reason, that finding shall not affect the remaining portions of this Chapter.

Section 2. This ordinance shall become effective thirty (30) days following adoption hereof.

PASSED AND ADOPTED by the Board of Supervisors of the County of El Dorado at a regular meeting of said Board, held on the 12 day of February, 2013, by the following vote of said Board:

Ayes: Brian K. Veerkamp, Norma Santiago
Ron Mikulaco, Raymond J. Nutting
Ron Briggs
Noes: None
Absent: None

Chair, Board of Supervisors
Ron Briggs

ATTEST
JAMES S. MITRISIN
Clerk of the Board of Supervisors

By _____
Deputy Clerk

APPROVED AS TO FORM
EDWARD KNAPP
COUNTY COUNSEL

By _____
David A. Livingston
Deputy County Counsel

I CERTIFY THAT:
THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE

Date _____
ATTEST: JAMES S. MITRISIN, Clerk of the Board of Supervisors
of the County of El Dorado, State of California.

By _____
Deputy Clerk

APPENDIX D

ANNUAL REPORTING REQUIREMENTS (DUE MARCH 15)

1. Pollutant Load Reduction Reporting

Each Permittee must describe actions taken to fulfill the requirements of Monitoring and Reporting Section I. Specifically, each Permittee's annual report must include a list of catchments registered in the Accounting and Tracking Tool and a summary of applicable condition assessment results for all registered catchments pursuant to Section I.D above.

Each Permittee shall list its total credit award for the previous water year to demonstrate progress at meeting pollutant load reduction requirements.

Each Permittee shall describe load reduction progress in context of its Pollutant Load Reduction Plan (PLRP), including a discussion of whether catchment registration, associated load reduction estimates, and implementation actions are consistent with the submitted and accepted PLRP. Permittees shall discuss any deviations from the accepted PLRP, provide rationale for those deviations, and, if necessary, describe how the Permittee will compensate for any noted shortfalls in expected pollutant load reductions.

2. Stormwater Facilities Inspection Report

The annual report shall include a summary report of all storm water facility inspections performed pursuant to Section II.A of this Monitoring and Reporting Program. The report shall include a list of all areas inspected, a description of identified pollutant sources and/or problem areas, and a discussion of any planned or completed maintenance and/or enforcement follow up activities.

Visual inspection of storm water collection, conveyance, and treatment facilities is the most efficient tool to assess facility function and evaluate maintenance needs.

For portions of a Permittee's jurisdiction not included in a Crediting Program registered catchment, Permittees shall inspect its storm water collection, conveyance, and treatment systems annually. Permittees shall conduct facilities inspections between the period of time following spring snow melt and before fall rain and snow storms each year to provide the opportunity to perform facilities maintenance as needed.

Storm water facilities shall be inspected for signs of needed maintenance, evidence of erosion, damage from snow removal equipment, and accumulated sediment and debris. During inspections, Permittees shall also consider potential storm water pollutant sources including but not limited to:

- Private property/residential runoff
- Commercial property runoff
- Eroding cut slopes
- Eroding road shoulders
- Traction abrasive application
- Dislodged sediment from snow removal activities
- Vehicles tracking sediment onto the roadway
- Parking related erosion

Permittees shall implement an inspection documentation and tracking system to record inspection findings and prioritize maintenance needs. At a minimum, the tracking system shall provide mechanisms to document the following:

- Inspector's name
- Date and time of inspection
- Field and weather conditions at the time of the inspection
- Mapped inspection location (i.e. catchment)
- Observed system condition at time of inspection
- An assessment of needed maintenance or other follow-up actions
- Prioritization of needed maintenance

3. Construction Site Inspection Report

The annual report shall include a summary report of all construction inspections performed pursuant to Section II.B of this Monitoring and Reporting Program. The summary report shall include a list of all construction sites inspected, a description of identified problems, and a discussion of any planned or completed enforcement follow up activities.

Permittees shall establish construction site inspection frequencies based on the water quality prioritization described in Permit Section III.B.1. At a minimum, Permittees shall conduct weekly inspections during the construction season of high priority construction projects and construction projects overseen by the Permittee (e.g. erosion control projects).

Permittees shall inspect each medium and low priority construction site at a frequency sufficient to ensure that sediment and other pollutants are properly controlled and that unauthorized, non-storm water discharges are prevented.

Permittees shall implement a construction site inspection documentation and tracking system to record inspection findings. At a minimum, the tracking system shall provide mechanisms to document the following:

- Inspector's name
- Date and time of inspection
- Field and weather conditions at the time of the inspection
- Inspection location
- Observed facility conditions
- A summary of follow up and enforcement actions taken, if violations are observed.

4. Commercial Industrial and Municipal Site Inspection Report

The annual report shall include a summary of all commercial, industrial, and municipal site inspections performed pursuant to Section II.C of this Monitoring and Reporting Program. The summary shall include a list of all commercial, industrial, and municipal sites inspected, a description of identified problems, and a discussion of any planned or completed enforcement follow up activities.

Permittees shall establish commercial, industrial, and municipal site inspection frequencies based on the water quality prioritization described in Permit Section III.B.2. Each Permittee shall inspect each high priority commercial, industrial, and municipal site annually.

Permittees shall implement a commercial, industrial, and municipal site inspection documentation and tracking system to record inspection findings. At a minimum, the tracking system shall provide mechanisms to document the following:

- Inspector's name

- Date and time of inspection
- Field and weather conditions at the time of the inspection
- Inspection location
- Observed facility conditions
- A summary of follow up and enforcement actions taken, if violations are observed

5. Traction Abrasive and Deicing Material Report

The annual report shall include a summary report of the monitoring data collected pursuant to Section II.C of this Monitoring and Reporting Program.

The goal of traction abrasive monitoring program is to measure the quality and quantity of material applied and recovered. To meet that objective, Permittees shall implement a program that, at a minimum, includes the following:

1. Specifications for the amounts of fine sediment particles, total nitrogen, and total phosphorus allowable in material the Permittee applies as traction abrasives.

2. A program to sample supplied traction abrasive materials to determine whether materials meet the specifications defined according to II.D.1 above.

3. A system to track and record the total amount of abrasive and deicing material applied to its roads and parking areas per winter season. Materials applied to Permittee roads by other authorized entities shall be tracked and recorded along with Permittee applied material.

4. A system to track and record the location and amount that maintenance crews, Permittee contractors, or other authorized entities apply abrasive and deicing material (i.e. amount applied per "zone").

6. Stormwater Monitoring report

By March 15, 2014 and by March 15 of each subsequent year of the Permit term, each Permittee shall submit a comprehensive electronic report that summarizes cumulative storm water monitoring results from the catchment load monitoring and BMP effectiveness evaluations conducted during the previous water year (October 1 – September 30).

The storm water monitoring report shall include, at a minimum, the following:

1. A discussion of monitoring purpose and study design and the underlying rationale.

2. Details of the data collection methods, sampling protocols and analytical methods including detection limits.

3. Quality Assurance/Quality Control summaries.

4. Maps and descriptions of all monitoring locations including latitude and longitude coordinates and data obtained at each location.

5. Raw analytical data that includes sample identification, collection date, time and analytical reporting results for all collected samples.

6. Documentation of data management procedure.

7. Details of data analysis, calculations and assumptions used to obtain results and draw conclusions.

8. Catchment outlet monitoring - data tables and graphical data summaries that include seasonal total volume (cubic feet), seasonal average concentrations (milligrams/liter and number of particles/liter) and load (kilograms and number of particles) of each pollutant outlined in section III.A.4 of this Monitoring and Reporting Program.

9. Catchment outlet monitoring – provide interpretation of annually collected data relative to modeled average annual estimates and conduct an assessment of this data in the context of the water year type (wet, average, dry) using the regional meteorological analysis.

10. For long-term catchment monitoring, provide recent data in context with cumulative comparable results from previous years, noting trends. Consider the season type (wet, average, dry,) for each seasonal data point when evaluating trends and inter-annual variability in catchment results. Compare measured pollutant loads with modeled average annual variables and model outputs.

11. For flow-through BMPs - data tables and graphical data summaries of seasonal volume (cubic feet), average inlet and outlet pollutant concentrations (milligrams/liter and number of particles/liter) and pollutant loads (kilograms and number of particles) for each pollutant outlined in section III.B.4 of this Monitoring and Reporting Program. Permittees shall report the seasonal storm water volume (cubic feet) and pollutant load reduced (kilograms and number of particles) for each pollutant for each season of measure.

12. For hydrologic or pollutant source control BMPs - data tables and graphical summaries of seasonal storm water volumes (cubic feet) (hydrologic source control) as a result of the BMP implementation and maintenance or seasonal pollutant mass (kilograms and number of particles) reduced over the area of land surface subject to the chosen BMP for each pollutant described in Section III.B.4. For multi-year BMP evaluations, provide recent data in context with cumulative comparable results from previous years, noting trends.

13. For BMP monitoring – provide interpretation of annually collected data relative to applicable model parameters and conduct an assessment of this data in the context of the water year type (wet, average, dry) using the regional meteorological analysis.

14. A final monitoring summary including the following values for each monitored location.

Season	Seasonal Volume (cf)	Pollutant	Seasonal Concentration (mg/L)	Seasonal Concentration (# particles/L)	Seasonal Load (kg)
Fall Winter (Oct 1-Feb 28)	x	FSP	x	x	x
		TSS	x		x
		TP	x		x
		TN	x		x
Spring Melt (Mar 1-May 31)	x	FSP	x	x	x
		TSS	x		x
		TP	x		x
		TN	x		x
Summer (June 1-Sept 31)	x	FSP	x	x	x
		TSS	x		x
		TP	x		x
		TN	x		x
Water Year Totals: Total WY precipitation (in/yr) Water year type: very dry, dry, average, wet, very wet					
Water Year Total	x	FSP			x
		TSS			x
		TP			x
		TN			x

15. A discussion of lessons learned from storm water monitoring efforts including, but not limited to, catchment water quality improvement strategies, pollutant sources analyses, pollutant fate and transport within sampled catchments, BMP design and/or implementation improvements, and maintenance strategy effectiveness (including techniques or frequency).

16. A discussion of any proposed changes to the storm water monitoring program and the rationale for each proposed change.

If Permittees are working collaboratively to meet the requirements specified in Section III of this Monitoring and Reporting Program, a single report for participating Permittees will be accepted.

7. Illicit Discharge Report

To assess compliance with Permit Sections I.A and III.B.5 each Permittee's annual report shall describe actions taken to prevent unauthorized non-storm water discharges and report any identified illicit discharges to its collection, conveyance, and treatment facilities. The report shall include a description of any education, outreach, or inspection activities conducted pursuant to Permit Sections III.B.1, III.B.2, III.B.3 and III.B.4 that support the Permittee's program to prohibit unauthorized non-storm water discharges.

8. Education Component Report

Each Permittee's annual report shall summarize all training and education activities conducted during the previous year, including a list of all education materials distributed and training provided to the public, to municipal employees, and to construction, commercial, industrial, or municipal site operators.

9. Impacts Influencing Baseline Pollutant Loads Report

In the annual report for the 2014 water year, each Permittee shall summarize the assessment conducted pursuant to Monitoring and Reporting Program Section I.G to demonstrate compliance with Permit Order IV.D.

In accordance with the Basin Plan and Permit Section IV.D, Permittees must ensure that changes in land use, impervious coverage, or operations and maintenance practices do not increase a catchment's average annual baseline pollutant load.

For the 2014 water year (October 1 2013 – September 30, 2014) each Permittee shall conduct a general assessment of the changes in land use, impervious coverage, and operations and maintenance practices to determine whether such changes have increased the baseline average annual pollutant loading as described in Permit Table IV.B. The assessment need only consider land use, impervious cover, and operations and maintenance changes that have occurred in hydraulically connected catchments not registered as part of the Crediting Program that may have occurred since the initial baseline analysis was conducted.

If Permittees determine that changes in baseline loading have occurred, each Permittee shall identify the specific catchments where pollutant loads have changes and ensure those catchments have been registered under the Crediting Program.

10. Provisions

Permittees shall comply with the "General Provisions for Monitoring and Reporting" dated September 1, 1994 that is attached to and made part of this Monitoring and Reporting Program as Attachment G.

APPENDIX E

Control Measure and Performance Standards		Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3,4]			
			2012				2013				2014				2015				2016				DOT Tahoe Engineering Unit	DOT Tahoe Maintenance	DSD - Building Division	Env. Mgmt. Div.
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
SECTION 1 - PROGRAM MANAGEMENT																										
	Meet With Copermittees quarterly	C						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P		S	S
	County Divisions - meet min. one time/quarter	E						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P		S	S
SECTION 2 - CONSTRUCTION PROGRAM COMPONENT (CO)																										
	Review and modify the Grading, Erosion, and Sediment Control Ordinance as needed	C															X	X	X	X	X	X	P			
	Assist in GIS work for construction site prioritization and inspection scheduling	E						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P		S	
SECTION 3 - COMMERCIAL, INDUSTRIAL, MUNICIPAL AND RESIDENTIAL COMPONENT (CIMR)																										
CIMR2 – Site Outreach																										
	Develop commercial business-specific BMP fact sheets	N							X	X	X	X											P			
	Perform Site Inspections as needed																						P			
CIMR4 – Site Enforcement																										
	Implement an enforcement policy	N											X	X	X	X							P			
	Track enforcement actions	N														X	X	X		X	X	X	P			
	Review procedures for notifying the Regional Board	N											X	X	X	X							P			
CIMR6 – Residential Property - Outreach and Education																										
	Distribute Outreach Materials	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
	Work with other Tahoe Basin agencies to develop and implment the residential outreach component	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
	Increase participation at workshops, events and meetings in the community	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
SECTION 4 - STORMWATER FACILITIES INSPECTION COMPONENT																										
SWFI1 – Storm Water Collection, Conveyance, and Treatment Facility mapping																										

	Continue to update the exsting GIS based infrastrueture and BMP map book	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
	Map and identify all new collection, conveyance and treatment faciclities	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
SWFI2 – Storm Water Collection, Conveyance, and Treatment Facility Inspections																											
Continually develop & maintain inventory																											
	Re-evaluate past inventory information	N						X	X	X													P			
	Incorporate newly developed BMP RAM into inspection protocols	N							X	X	X	X	X	X									P			
Continue to implement source identification during inspections for:																											
	Private property, commercial, eroding slopes, eroding shoulders, traction abrasives, snow removal activities, construction vehicle tracking and parking	N						X	X	X													P			
Expand BMP inspection program																											
	Re-evaluate past inventory information	N						X	X	X													P			
	Incorporate newly developed BMP RAM into inspection protocols	N							X	X	X	X	X	X									P			
	Continue to implement protocols for notifying maintenance personnel of needed maintenance	N							X	X	X	X	X	X									P			
SWFI3 – Storm Water Pollutant Source Identification and Evaluation																											
Continually develop & maintain inventory																											
	Work with appropriate Tahoe Basin agencies to continue to implement a comprehensive education and outreach program that targets identified high priority municipal, residential, commercial and industrial areas	N						X	X	X													P			
	Meet with appropriate Tahoe Basin agencies as needed to discuss the developmen and implementation of incentives for landowners to implement conservation practices	N							X	X	X	X	X	X									P			

	Inspect all road shoulders, cut slopes, and constructionentrances as needed to ensure that the storm drain system is not compromised or a threat to water quality in not present.	N						X	X	X													P			
	Work with maintenance to continue to track the quantity and quality of abrasives used during winter opertation including the amoun applied on all County roads basin wide.	N							X	X	X	X	X	X									P			
SWFI4 – Stormwater Systems Maintenance Needs Assessment																										
	Implement a sediment collection program based on priortization developed under the stormwater facilities inspection component	N						X	X	X													P			
	Continue to implement protocols for the proper dispoal of collected material	N							X	X	X	X	X	X									P			
	Refine and improve protocols for the identification and needs associated with sediment collection.	N						X	X	X													P			
	Continue to keep accurate logs and incorporate into the County inventory process	N							X	X	X	X	X	X									P			
SECTION 5 - ILLICIT DISCHARGE PROGRAM COMPONENT (ID)																										
Dry Weather Monitoring																										
	Continue to Implement Program	N										X	X	X		X	X	X		X	X	X	P			
	Develop action levels and source tracking protocols as needed	N						X	X	X	X												P			
	Develop follow-up investigation plan	N								X	X	X	X										P			
ID3 – Ordinance Enforcement																										
	Implement enforcement policy	N								X	X	X	X	X	X	X	X	X	X	X	X	X	P		S	S
SECTION 6 - NEW DEVELOPMENT AND REDEVELOPMENT COMPONENT																										
NDRC1 – 20 Year - 1 Hour Storm Requirement																										
	Develop a system with TRPA to track and monitor project subjetc to this requirement	N						X		X				X				X				X	P			

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3,4]			
		2012				2013				2014				2015				2016				DOT Tahoe Engineering Unit	DOT Tahoe Maintenance	DSD - Building Division	Env. Mgmt. Div.
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
SECTION 1 - PROGRAM MANAGEMENT																									
County Divisions - meet min. one time/quarter	E						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P		S	S
SECTION 2 - CONSTRUCTION PROGRAM COMPONENT (CO)																									
None																									
SECTION 3 - INDUSTRIAL AND COMMERCIAL PROGRAM COMPONENT (IC)																									
CIMR1 – Commercial, Industrial and Municipal Site Inventory and Prioritization																									
Update the existing Envision database inventory of industrial facilities and commercial businesses.	E						X	X	X	X	X				X				X			S		S	P
Update the industrial and commercial database to include and be searchable by specific business types.	E						X	X	X	X	X											S			P
Update the industrial and commercial database to include key information fields	E						X	X	X	X	X											S			P
Develop Geographical Information System (GIS) map to identify the location of the industrial and fixed commercial sites	N								X	X	X				X				X			S		S	P
Update inventory at least annually	N														X				X			S		S	P
CIMR3 – Commercial, Indutrail and Municipal Site Inspection																									
Update restaurant/food facility inspection program to address storm water issues during inspections.	E						X	X	X	X												S			P
Review information tracked by the Field Inspection System and revise as needed to ensure it is consistent with the inventory needs (see IC1) and addresses BMP implementation and follow-up actions.	E						X	X	X	X												S			P
Develop commercial inspection checklist	E						X	X	X	X												S			P

	Inspect fixed commercial businesses at least once during the permit term.	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P
	For businesses found to be non-compliant during the first inspection, conduct follow-up inspections.	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P
	Conduct additional inspections as needed	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P
CIMR2 – Site Outreach and BMP Implementation																										
Industrial																										
	Develop an outreach strategy for industrial facilities	N						X	X	X	X												S			P
	Implement an outreach strategy for industrial facilities	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P
	Review and revise the TRPA BMP Fact Sheet or develop a new BMP Fact Sheet for high-priority industrial facilities as needed	N						X	X	X	X												S			P
Commercial																										
	Develop an outreach program for mobile businesses	N						X	X	X	X	X											S			P
	Implement an outreach program for mobile businesses	N										X	X	X	X	X	X	X	X	X	X	X	S			P
	Develop commercial business-specific BMP fact sheets	N						X	X	X	X												P			S
	Distribute appropriate BMP fact sheets during initial and follow-up inspections	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P
	Distribute appropriate BMP fact sheets during additional inspections and via County website(s), County offices, and outreach events	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S			P
CIMR4 – Enforcement																										
	Develop and implement a progressive enforcement and referral policy	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S			S
	Modify, if necessary, County ordinance to support progressive enforcement and referral policy	N						X	X	X	X												S			
	Track enforcement actions using the industrial and commercial site inventory database (IC1)	N									X	X	X	X	X	X	X	X	X	X	X	X	S			P

	Review and modify, as necessary, the procedures for informing the Regional Board of non-compliant industrial facilities	C									X	X	X	X									S			P
CIMR5 – Oversight From Others																										
	Work with the TRPA to complete outreach and enforcement for commercial parcels	E						X	X	X	X	X				X				X			S		S	P
	Work with appropriate Tahoe Basin agencies to develop and implement and outreach program for high prioroty residential areas	E						X	X	X	X	X											S			P
	Meet with appropriate agencies to incentivize residential BMP and conservation practices	E						X	X	X	X	X											S			P
CIMR6– Residential Property - Outreach and Education																										
	Work with appropriate Tahoe Basin agencies to develop and implement and outreach program for high prioroty residential areas	E						X	X	X	X	X				X				X			S		S	P
	Meet with appropriate agencies to incentivize residential BMP and conservation practices	E						X	X	X	X	X											S			P
SECTION 5 - ILLICIT DISCHARGE PROGRAM COMPONENT (ID)																										
ID1 – Illicit Discharges Identification and Elimination																										
Public Reporting of Illicit Discharges and Illegal Connections																										
	Review current procedures for internal communication between County Departments and Divisions and modify as necessary.	E						X	X	X																P
	Create a flowchart summarizing the internal communication procedures	N						X	X	X																P
	Develop an illicit discharge and illegal connection complaint form based on the existing Hazardous Material Incident Report form	N							X	X	X															P
	Establish and maintain a 24-hour hotline	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				P
ID2 – Investigation/Inspection and Follow-Up																										
Investigation/Inspection																										

Control Measure and Performance Standards		Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3,4]		
			2012				2013				2014				2015				2016				DSD - Building Division	DOT Tahoe Engineering Unit	DOT Tahoe Maintenance	Env. Mgmt. Div.
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
SECTION 1 - PROGRAM MANAGEMENT																										
	County Divisions - meet min. one time/quarter	E						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S	P		S
SECTION 2 - CONSTRUCTION PROGRAM COMPONENT (CO)																										
CO1 – Construction Site Inventory																										
	Enhance tracking system (database) for construction projects	E						X	X	X													P	S		
	Maintain tracking system (database)	C						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S	S		
	Submit Construction Site Inventory Report on annual basis	C						X				X				X				X			P	S		
CO2 – Construction Site Outreach																										
	Enhance construction education and training programs	E						X	X	X													P	S		
	Increase awareness regarding construction activities by distributing educational materials, improving the County's website, and conducting additional workshops/events	E						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	S		
	Continue to implement construction education and training programs	C						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	S		
CO3 – Construction Site Prioritization																										
	Develop prioritization process for construction sites working with Engineering	N						X	X	X													P	S		
	Prioritize construction sites annually	N							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	S		
CO3 – Construction Site Inspections																										
	Continue to conduct construction site inspections	C						X	X	X		X	X	X		X	X	X		X	X	X	P	S		
	Review SWPPPs and work with TRPA to require a SWPPP for any project TRPA issues a permit for in El Dorado County that is one acre or larger	N						X	X	X		X	X	X		X	X	X		X	X	X	P	S		
	Conduct inspections per established frequencies based on threat to water quality prioritization	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	S		

	Enhance inspection forms	E						X			X	X			X	X			X	X			P	S		
	Enhance enforcement program	E						X			X	X			X	X			X	X			P	S		
	Submit Construction Site Inspection Report on annual basis for incorporation into annual report	C					X				X				X				X				P	S		
CO4 – Construction Site Enforcement																										
	Enhance enforcement program	E						X			X	X			X	X			X	X			P			
	Track Violations and follow up as needed							X	X	X		X	X	X		X	X	X		X	X	X				
	Document the number of grading plans reviewed by the County and how many required revisions	C							X	X	X	X	X	X	X	X	X	X	X	X	X	X	P			
	Submit annual report summarizing inpections out of compliance and corrective action taken	C					X				X			X				X				P			
CO5 – Oversight By Others																										
	Continue to work with TRPA and County Engineering	C					X				X			X				X				P			
SECTION 6 - NEW DEVELOPMENT AND REDEVELOPMENT COMPONENT																										
NDRC1 – 20 Year - 1 Hour Storm Requirement																										
	Continue to perform enforcement and compliance for permitted properties that fall under the guidance of the County under the TRPA MOU.	C						X		X				X				X				X	P			
NDRC2 – Numeric Effluent Limit Requirement																										
	Continue to perform enforcement and compliance for permitted properties that fall under the guidance of the County under the TRPA MOU. Work with County Engineering and ccordinate with the TRPA as needed	N						X		X				X				X				X	P			

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3,4]					
		2012				2013				2014				2015				2016				DOT Tahoe Engineering Unit	DOT Tahoe Maintenance	DSD - Building Division	Env. Mgmt. Div.	General Services	County Counsel
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
SECTION 1 - PROGRAM MANAGEMENT																											
Program Coordination																											
Review and revise TRPA MOU as necessary	N						X	X	X	X	X	X	X	X	X	X	X	X	X			S		S			P
Establish, review and revise cooperative agreements	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S		S	S		P
Legal Authority																											
Revise ordinance as needed	N						X	X	X													S		S	S		P
SECTION 2 - ILLICIT DISCHARGES PROGRAM ELEMENT (ID)																											
ID4 – Ordinance Enforcement																											
Develop a progressive enforcement policy	N						X	X	X													S			S		P
SECTION 5 - INDUSTRIAL AND COMMERCIAL PROGRAM ELEMENT (IC)																											
Progressive Enforcement and Referral Policy																											
progressive enforcement and referral policy	N						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S			S		P
Modify, if necessary, County ordinance to support progressive enforcement and referral policy	N						X	X	X	X												S					P

APPENDIX F

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March 13, 2012

VIA U.S. MAIL AND ELECTRONIC MAIL (hsinger@waterboards.ca.gov)

Harold J. Singer, P.E., Executive Director
California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150

Re: Statement of Legal Authority (Order No. R6T-2011-0101)

Dear Mr. Singer:

The County of El Dorado ("County") submits this statement in its capacity as a permittee under RWQCB Order No. R6T-2011-0101 (the "Permit") pursuant to Section III.A.3 thereof. As you know, the County, in conjunction with the other co-permittees, has filed an appeal of the Permit with the State Water Resources Control Board. By submitting this statement, the County in no way waives or relinquishes any rights it may have in that appellate proceeding.

In accordance with Section III.A.3 of the Permit, I reviewed the authority granted to the County to determine if the County has sufficient legal authority to comply with the Permit. Based on that review, I have determined that the County currently possesses most of the legal authority needed to comply with the Permit—specifically, those items set forth in Sections III.A.1 and III.A.2 of the Permit. The County intends to pursue additional authority through adoption of a comprehensive storm water quality ordinance.

Current ordinances utilized by the County to manage urban runoff include the following: Hazardous Materials (Chapter 8.38); Well Standards (Chapter 8.39); Solid Waste (Chapter 8.42); Code Enforcement (Chapter 9.02); Water Resources (Section 9.46.400); Sewage Disposal (Chapter 13.12); Grading, Erosion, and Sediment Control (Chapter 15.14); Private Sewage Disposal Systems (Chapter 15.32); and Major and Minor Land Division (Sections 16.12.030 et seq. and 16.44.030 et seq.). The County also has authority to manage urban runoff pursuant to the Tahoe Regional Planning Agency Code of Ordinances, Chapter 60.1 – Water Quality Control. The primary deficiency with the County's current legal authority is that, while those

ordinances provide general authority to control urban runoff and comply with the Permit, they do not specifically address some of the concerns unique to the Permit. For example, through its power to abate public nuisances and monitor building permits, the County can prohibit illicit connections and discharges to its system; however, the County does not yet have a storm water-specific ordinance addressing such illicit connections and discharges. In addition to those general deficiencies, there are some specific deficiencies that the County will need to address in order to comply with the legal authority requirements of the Permit.

Section III.A.2.f of the Permit requires the County to maintain sufficient legal authority to control the quality of storm water runoff from industrial and construction sites. To the extent a construction project requires a grading permit, the County has authority to control runoff pursuant to its Grading, Sediment, and Erosion Control Ordinance (in conjunction with its Design and Improvement Standards Manual[1]). The County, however, has limited authority (e.g., nuisance abatement) to control the quality of storm water runoff from industrial sites and construction sites not subject to a grading permit.

Section III.A.2.g of the Permit requires the County maintain sufficient legal authority to "[c]arry out all inspections, surveillance and monitoring procedures necessary to determine compliance and non-compliance with permit conditions including the prohibition on illicit discharges." The County has authority to enter property to inspect certain permitted activities. (See, e.g., County Ordinance Code Ch. 15.14 [grading] and § 15.32.080(B) [private sewer systems].) It also has authority, upon obtaining an appropriate warrant, to inspect property to investigate general code compliance and determine the existence of a public nuisance. (See County Ordinance Code § 9.02.030.) The County does not, however, have an unfettered right to enter any property and, indeed, it is questionable whether the County can lawfully obtain such power. In the course of developing a comprehensive storm water quality ordinance, the County intends to determine the best method for assuring that it has the ability to carry out necessary inspections within the confines of the law.

In sum, the County, primarily through its power to abate public nuisances, has legal authority to enforce many of the Permit's terms. The County intends to adopt a comprehensive storm water quality ordinance in order to provide it the additional authority it needs to assure full compliance with the Permit.

[1] Volume III, Section F.2.F of the County's Design and Improvement Standards Manual states, in part, "The permittee shall take all reasonable measures, as determined by the Director, to prevent or avoid: (1) Discharge of sediment from the site, in quantities exceeding State Water Resources Control Board standards, to any watercourse, drainage system, or adjacent property; (2) Damage to watercourses and adjacent properties in the form of erosion, flooding, or deposition which may result from the permitted grading; (3) Sediment deposition onto public or private vehicle ways."

If you have any questions or require additional information concerning this statement of legal authority, please do not hesitate to contact me.

Sincerely,

LOUIS B. GREEN
County Counsel

By: _____
David A. Livingston
Deputy County Counsel

cc: Steve Kooyman, DOT
Brendan Ferry, DOT
Bob Larsen, Regional Board (via e-mail to rlarsen@waterboards.ca.gov)

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