



Central Truckee Meadows  
Remediation District Program

# 2012 & 2013 RMP Report Card

## INTRODUCTION

This Remediation Management Plan (RMP) Report Card provides a status update on the specific goals of the Central Truckee Meadows Remediation District (CTMRD) program. The RMP is the guiding document for implementation of the CTMRD program, and is required by State law (NRS 540A.260). This Report Card reflects the goals defined by CTMRD stakeholder agencies. It presents current accomplishments along with challenges and constraints that are limiting progress toward those goals.

This Report Card covers the 2012-2013 biennium. The [2011 RMP Report Card](#) was the program's first. Future report cards will be published on an annual basis. Additional background, context, and detail are available in the RMP Activity Table and the 2012-2013 CTMRD Annual Report.

While the CTMRD program is implemented by Washoe County through its Community Services Department (WCCSD), several other agencies work collaboratively with the WCCSD to address the widespread tetrachloroethene (also known as PCE or PERC) groundwater contamination problem in the central Truckee Meadows. The stakeholder agencies include:

- Nevada Division of Environmental Protection (NDEP);
- Washoe County Health District (WCHD);
- Truckee Meadows Water Authority (TMWA);
- City of Reno;
- City of Sparks; and
- WCCSD.

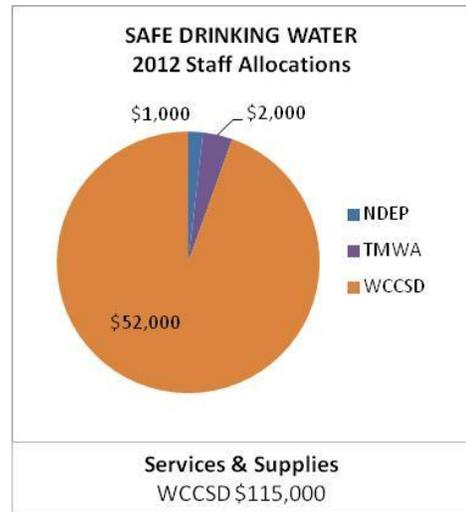
The CTMRD program and stakeholder agencies utilize a comprehensive approach to address the community's PCE problem. Agency activities focus on four key, complementary, and interdependent areas:

1. Providing safe drinking water by treating PCE-contaminated groundwater. Treatment also helps control the migration of PCE in the aquifer system.
2. Managing sources and potential sources of contamination to protect the aquifer from past, present, and future activities that involve PCE (in order to prevent additional groundwater contamination).
3. Groundwater investigation and monitoring to track conditions and assess PCE threats in the aquifer system; to provide information to support all aspects of the CTMRD program.
4. Coordination and outreach to ensure stakeholders work together in an effective and informed manner, and that interested parties are kept up to date with respect to the PCE problem, program activities, and how they might be affected.

## PROVIDING SAFE DRINKING WATER

Wellhead treatment is the most efficient and cost-effective way to deal with large volumes of groundwater contaminated with relatively low levels of PCE. Treatment systems that remove PCE from groundwater are in place at five municipal water supply wells in the central Truckee Meadows. Protection of groundwater is imperative as peak water demands cannot typically be met without the use of wells. Groundwater becomes even more important during times of low Truckee River flows (such as during drought).

Wellhead treatment occurs in accordance with the Pumping Plan (an agreement between Washoe County and TMWA), which specifies the amount of water to be pumped annually from each of the five wells equipped for PCE treatment. The two largest areas of PCE groundwater contamination (plumes) are more than 90% controlled by this pumping which protects other municipal supply wells from contamination. The CTMRD program keeps TMWA fiscally whole by reimbursing TMWA for the costs incurred in providing remedial benefit.



### Accomplishments

#### Providing Safe Drinking Water

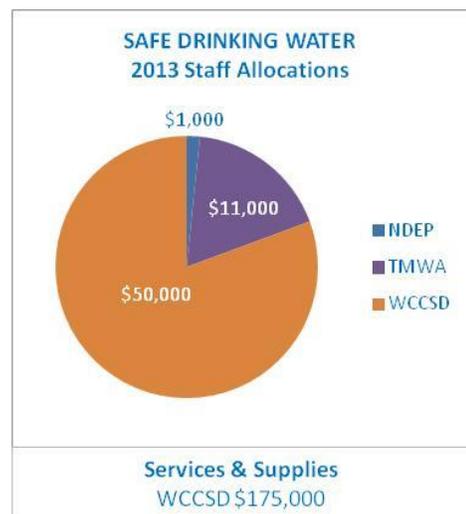
As a result of wellhead treatment, there continues to be no loss of groundwater capacity in the central Truckee Meadows because of PCE contamination:

- Treated more than 1.4 billion gallons of groundwater in 2012;
- Treated more than 1.8 billion gallons of groundwater in 2013; and
- Treated more than 27 billion gallons of groundwater from 1996 through 2013.

#### Removing PCE from Groundwater

Wellhead treatment remediates PCE in groundwater in the central Truckee Meadows:

- Removed more than 14 gallons of PCE from groundwater in 2012;
- Removed more than 25 gallons of PCE from groundwater in 2013; and
- Removed more than 292 gallons of PCE from groundwater from 1996 through 2013.



To put these numbers into perspective, a single tablespoon of PCE can contaminate over 1.2 million gallons of water (enough to fill two Olympic-sized swimming pools) and make it unsafe to drink.

**Restored Capacity of the Mill Street Well**

In 2012, WCCSD and TMWA worked together to increase the capacity of the Mill Street well from 1,650 gallons per minute (GPM) to more than 2,100 GPM. This increased capacity allowed the Pumping Plan target (the volume of groundwater needed to be pumped annually from a well to attain remedial benefit) to be reached for the first time since 2009. The increased capacity reduced the number of operating days required to meet the Pumping Plan target, thereby increasing TMWA’s operational flexibility.

Because of its location near the leading edge of the Downtown Reno plume, the Mill Street well exerts a strong influence on that plume. Regularly achieving the Pumping Plan target for the Mill Street well is essential for plume containment and protection of the aquifer and other down-gradient water supply wells.

**Meeting Pumping Plan Targets**

The combined annual groundwater pumping target for the five treated municipal supply wells is 1.55 billion gallons (or 4,750 acre-feet) per year. In 2012, Pumping Plan targets were met for three of the wells (highlighted in green). In 2013, Pumping Plan targets were met for two of the wells.

Well	PP Target (million gallons)	2012 Pumping (million gallons)	2013 Pumping (million gallons)
Corbett	150	153	282
Mill	255	188	442
High	375	342	341
Kietzke	475	474	448
Morrill	295	307	291
<b>Combined Total</b>	<b>1,550</b>	<b>1,466</b>	<b>1,806</b>

**Cost of Remediation**

The CTMRD program target is to maintain or decrease the current cost of obtaining remedial benefit through operation of the wells fitted with treatment equipment.

- Through 2005: the average treatment cost was \$174.60 per million gallons.
- From 2006 through 2013: the average treatment cost was \$95 per million gallons.

*Challenges and/or Considerations*

**Stakeholder Coordination and Collaboration**

Shifts in TMWA’s priorities for meeting the community’s water demands can result in changes to groundwater pumping that can potentially conflict with the Pumping Plan, and achievement of the targeted remedial benefit.

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## MANAGING SOURCES OF CONTAMINATION

The magnitude and complexity of the PCE problem in the central Truckee Meadows will require a significant amount of time and effort to assess threats, identify sources, evaluate options, and implement practical and cost-effective solutions.

PCE discharges from historical activities and from more recent and active PCE-using businesses have contributed to soil and groundwater contamination in the central Truckee Meadows. A fundamental objective of the CTMRD program is to manage potential sources of PCE in order to prevent or mitigate threats to groundwater (in a practical and cost effective way). Source management consists of activities that include: 1) prevention; 2) remediation; and, 3) investigation.

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### 1) Preventing Contamination from Current Users

As long as PCE is in use, accidental or illicit releases to the environment can occur. Proper disposal of PCE is critical to preventing contamination of soil and groundwater. Costs of proper disposal are minimal when compared to costs associated with cleaning up groundwater contamination after it has occurred: It costs \$5 to \$10 per gallon of PCE (paid by the PCE user) to properly dispose of PCE as a hazardous waste using a licensed waste handler. The average operating cost to remove PCE from groundwater in the central Truckee Meadows via wellhead treatment since the creation of the CTMRD has been \$10,568 per gallon of PCE (paid for by the remediation fee-payers).

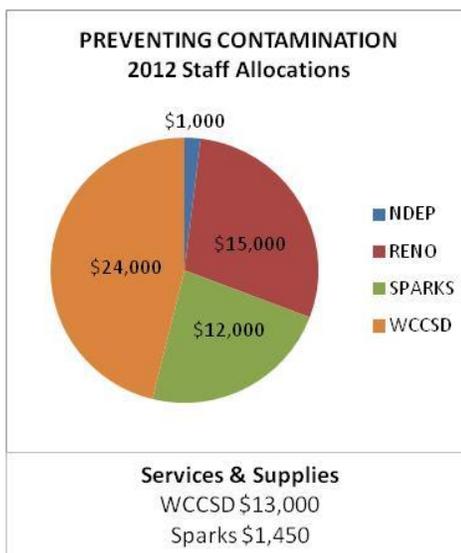
Stakeholder agencies work to prevent further PCE contamination of groundwater. In addition to implementing standardized sewer discharge regulations that prohibit the release of PCE into the sanitary sewer, Washoe County and the cities of Reno and Sparks maintain a collaborative Sewer Monitoring Program to ensure compliance. Key prevention objectives include:

- Promoting best management practices and use standards at dry cleaning businesses;
- Providing education on PCE-related hazards;
- Inspecting/monitoring PCE-using facilities to ensure regulatory compliance; and,
- Enforcing standards through a consistent and progressive regulatory response process.

### *Accomplishments*

#### **PCE-Using Dry Cleaners**

The number of dry cleaning businesses in the central Truckee Meadows decreased by 10% in 2012-2013. During that time, the number of dry cleaners switching to non-PCE alternatives also increased. As of the end of 2013, 40% of our community's dry cleaners no longer use PCE.



	2011	2012	2013
Total number of dry cleaners	30	30	27
Number of PCE-using dry cleaners	24	22	16
Number of dry cleaners using PCE alternatives	6	8	11

WCCSD, NDEP, City of Reno, and TMWA worked collaboratively with a dry cleaner in an area where PCE had impacted groundwater to demonstrate the threat to a nearby municipal water supply well had been mitigated. This increased stakeholder agency engagement also assisted the dry cleaner with transition from PCE-using equipment to non-PCE dry cleaning.

### Environmental Control Permits

Environmental Control Permits are issued to certain business types to regulate the nature and amount of waste discharged to the sanitary sewer system. Dry cleaners and other solvent-using businesses (such as auto paint and repair shops, chemical manufacturers, and fleet repair facilities), are required to have environmental permits. These facilities are subject to annual (at a minimum) inspections to ensure compliance with hazardous materials and waste discharge regulations.

	Environmental Control Officers	ECS Permit Holders	2012 Enforcement Actions	2013 Enforcement Actions
City of Sparks	3	895	54	58
City of Reno	5	1,600	174	150

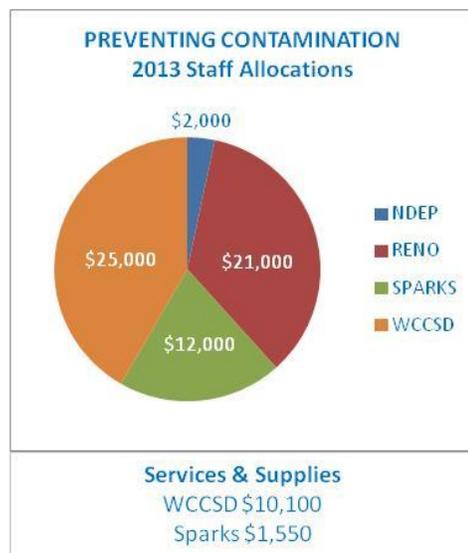
Regulatory actions may include notices of violation resulting from PCE discharges. The City of Reno’s Environmental Control section indicates that PCE-related violations (identified through the Sewer Monitoring Program) are typically between 5 and 10 percent of the total number of enforcement actions in a year.

### Sewer Monitoring Program Summary Report

In 2013, WCCSD staff completed a draft Sewer Monitoring Program summary report. The report presents sanitary sewer discharge data and regulatory response history for 2005 through 2013. It assesses compliance with existing discharge regulations and provides Reno, Sparks, and Washoe County with a basis for identifying ways to improve compliance and eliminate potential ongoing threats to groundwater.

### Sewer Replacement and Rehabilitation

To ensure the integrity of the sanitary sewer system, both Reno and Sparks make annual investments. These investments include sewer line repair (slip lining) and excavation and replacement of sewer lines. Projects typically follow road repair schedules to minimize additional road repair costs.



	FY2011-2012		FY2012-2013	
City of Sparks	3,109 feet (0.58 mile)	\$765,000	910 feet (0.17 mile)	\$330,000
City of Reno	53,674 feet (10.16 miles)	\$6,900,000	61,950 feet (11.73 miles)	\$5,600,000

### **Influent Sampling at Truckee Meadows Water Reclamation Facility**

The Truckee Meadows Water Reclamation Facility (TMWRF) is jointly owned and operated by the cities of Reno and Sparks. TMWRF serves the central Truckee Meadows and handles waste water generated in areas within the City of Reno, the City of Sparks, the Sun Valley General Improvement District, and portions of Washoe County within the Truckee Meadows and the Spanish Springs Valley. PCE is one of the priority compounds tested for in the annual influent sampling at TMWRF. Influent samples from 2012 and 2013 indicate that PCE was below the reporting limit (less than 1.0 micrograms per liter).

### *Challenges and/or Considerations*

#### **PCE Use/Disposal Violations**

The number of individual dry cleaning facilities with PCE discharges, and the total number of PCE discharges, has remained relatively consistent over the past three years.

	2011	2012	2013
Number of facilities with PCE discharges	9	8	7
Number of PCE discharges	14	13	13

It is possible that local jurisdictions have achieved the best discharge compliance possible under existing regulations and practices. If local policy makers determine that this level of compliance is inadequate, it will be important to identify practical and effective options for improvement.

## **2) Remediating Sources of Contamination**

When a person responsible for groundwater contamination has been identified (i.e., a responsible party), NDEP and/or WCHD oversee mitigation through a regulatory corrective action process to address any impacts or threats to groundwater.

A responsible party may not have the resources to comply with a corrective action in a timely or comprehensive manner. To address this possibility, NDEP and WCCSD are working together to determine if, and when, it would be beneficial and appropriate for the CTMRD program to get involved in either investigatory or remedial activities to ensure that groundwater is not further contaminated. In the event that CTMRD resources are utilized in circumstances where a responsible party has been identified, cost recovery from the responsible party through NDEP (pursuant to NRS 540A.280) can be pursued on behalf of CTMRD remediation fee payers.

<b>SOURCE REMEDIATION</b> <b>2012 Staff Allocations</b> NDEP \$15,000	<b>SOURCE REMEDIATION</b> <b>2013 Staff Allocations</b> NDEP \$15,000
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## Accomplishments

### Corrective Actions

At the end of 2013, eight corrective action cases for PCE releases in the central Truckee Meadows were being managed by NDEP. NDEP works with responsible parties to delineate contamination and evaluate site-specific remedial options. In 2013, one dry cleaner remediation site was closed. Two new corrective action sites (a dry cleaner and a former manufacturing facility) were identified in 2013. Site characterization and corrective action planning commenced in order to assess the contamination and potential threats to groundwater at these sites.

### Ongoing Remediation

Remediation systems are currently operating at the Sparks Solvent/Fuel Site and Old Town Cleaners. These systems may be re-configured or shut down given that they have achieved their remedial objectives in the current configuration.

### Contaminant Boundary Changes

The CTMRD contaminant boundary was reduced by more than 10% from 2012 to 2013 (from approximately 9.5 square miles to 8.5 square miles) by excluding an area of contamination caused by a responsible party. The removed area is being managed as an NDEP corrective action.

## Challenges and/or Considerations

### Stakeholder Coordination and Collaboration

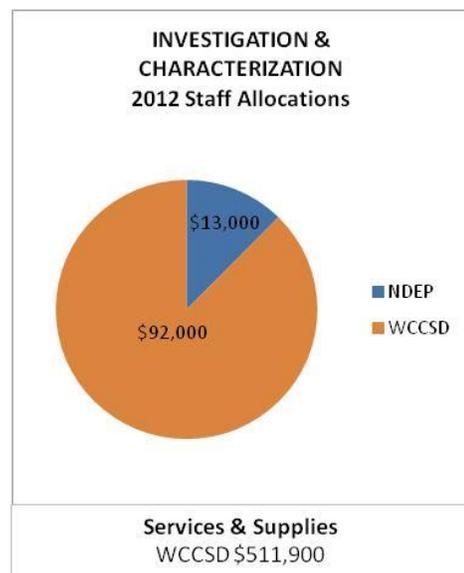
In 2011, NDEP and WCCSD began working to define the cost recovery process. NDEP resource constraints put this process on hold during 2012 and 2013.

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## 3) Investigating, Characterizing, and Mitigating Sources of Groundwater Contamination

Source remediation is implemented through the CTMRD program when a given source for groundwater contamination cannot be attributed to a viable responsible party. When dealing with groundwater contamination, mitigating the source for that contamination is an essential part of resolving the groundwater problem and eliminating any associated plume.

CTMRD program efforts over the last several years have focused on identifying sources of PCE for the groundwater plumes that have been identified to date. These efforts have been focused in areas (known as potential source areas or PSAs) where the plumes are interpreted to have originated and where land use history includes potential PCE-using businesses. The objective is to identify and mitigate any robust residual



sources that continue to release PCE to the plumes; such action will shorten plume life and decrease the total amount of time required for wellhead treatment.

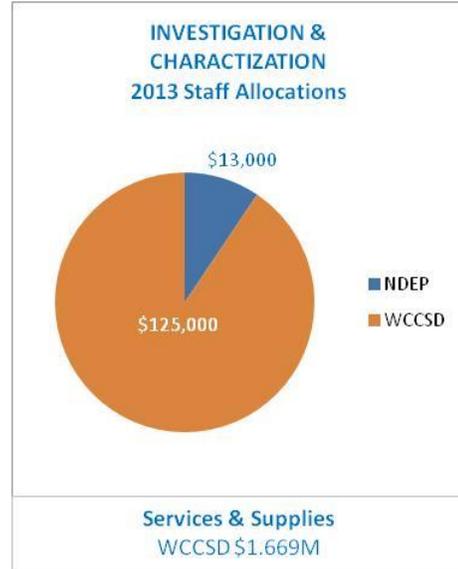
In order to screen for potential sources of groundwater contamination, PCE is measured throughout a PSA using a passive soil gas survey. High mass areas (HMAs) are local areas within a PSA where the maximum PCE concentration and total mass potentially pose a threat to groundwater.

**Accomplishments**

**Potential Source Area (PSA) Investigations**

By the end of 2013, 25 HMAs had been identified in 7 PSAs. Each PSA includes one or more HMA. HMA characterization work assesses the potential threat that each poses to groundwater.

The table summarizes PSA investigation progress through the end of 2013. Because activities to assess potential threats are ongoing, not all HMAs have been assessed to the point where a conclusive determination of the potential threat to groundwater can be made. As the table highlights, most of concluded threat assessments have taken place in the Mill/Kietzke, Condor, and Vassar/East Plumb PSAs.



Potential Source Area (PSA)	Total number of HMAs	Number of HMAs with substantiated groundwater threat	Number of HMAs with no apparent groundwater threat
Downtown Sparks	5		
El Rancho	1		
Mill/Kietzke	4	3	
West Fourth Street (Downtown Reno)	5	1	
Vassar/East Plumb	5	3	
Condor	4		4
Joule	1		

**INVESTIGATING AND MONITORING GROUNDWATER**

The CTMRD program’s Groundwater Monitoring Plan (GMP) includes regular and systematic monitoring of more than 200 wells. The GMP tracks groundwater conditions and assesses PCE threats in the aquifer system and supports all aspects of the CTMRD program.

## Accomplishments

### Hydrogeological Model Development

Over the 2012-13 biennium, staff derived important aquifer parameters for the CTMRD hydrogeological conceptual model by completing analyses of three long-duration aquifer tests. The hydrogeological model is scheduled for completion in 2018.

### Assessing Potential PCE Pathways

Staff advanced development of PCE threat assessments to municipal water supply wells by completing the Corbett-Mill Aquifer Test Analysis, and identifying potential pathways for PCE to reach the Terminal municipal supply well.

CTMRD program work confirmed that a local occurrence of TCE was limited to shallow groundwater, does not include PCE, and is not a near-term threat to the Longley Lane #1 municipal water supply well. TCE is a co-solvent of PCE, and is also a PCE daughter product (that can form if PCE breaks down in the environment).

### Pumping Plan Verification

Data was collected to assess the potential for increasing PCE capture and containment by significantly exceeding the Pumping Plan targets at the Corbett and Mill treatment wells. The data will be used to evaluate the potential for increasing effectiveness of, and possible changes to, the Pumping Plan.

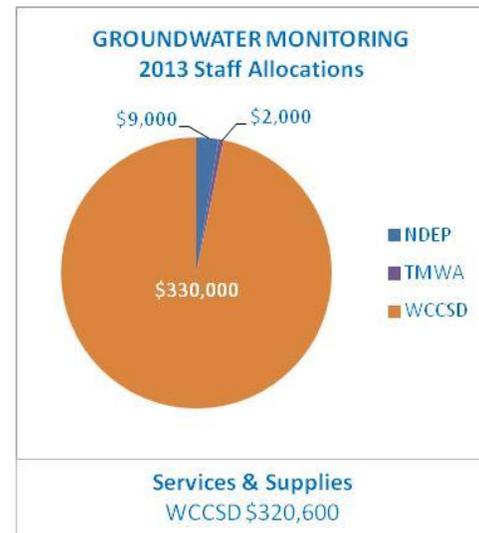
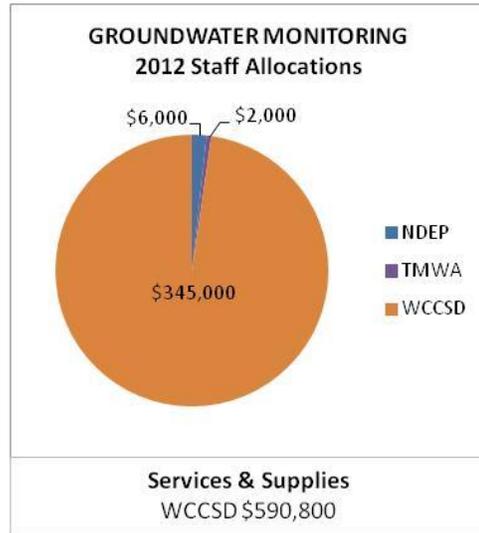
### Decreased Monitoring Costs

The costs of GMP sampling were reduced by approximately \$5,000 per year by eliminating monitoring wells that were no longer providing information of value.

## Challenges and/or Considerations

### Pumping Plan Assessment and Verification

While the data and understanding of the aquifer system (through the CTMRD Groundwater Monitoring Plan) has improved over time, the GMP has made limited progress toward providing robust recommendations for strategic, cost-effective improvements to the cleanup of contaminated groundwater in the central Truckee Meadows. Changes to the GMP in 2014 are planned to improve upon this.



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## ENHANCING COORDINATION AND OUTREACH

The CTMRD program stakeholder agencies are committed to proactively communicating in an efficient and coordinated manner with each other, policy-makers, affected business sectors, media, and the public about events or specific program activities that may directly affect the community. Effective outreach is a principal objective, and stakeholder information sharing to accomplish program goals is a key component in meeting that objective. The CTMRD Technical Working Group (which includes participants from all stakeholder agencies) meets regularly (and has done so since 2004) to formally discuss issues including corrective actions, ongoing remediation by responsible parties, specific CTMRD program activities, and any other related issues.

Three documents currently guide the coordination and outreach components of the CTMRD program:

1. The Community Relations and Communications Plan defines a framework for stakeholder agencies to communicate in a timely, consistent, and comprehensive manner.
2. The RMP guides the collaborative efforts of the stakeholder agencies in addressing the PCE problem. Originally adopted in 2002, an update to the RMP is being prepared in order to reflect the improved understanding of the PCE problem and ways in which stakeholders can more effectively work together to address it.
3. The CTMRD Activity Table (prepared as part of the ongoing RMP update) provides refined program goals and objectives and defines stakeholder roles and responsibilities in meeting them. The Activity Table also defines quantitative metrics for measuring progress and the current levels of success in reaching RMP goals.

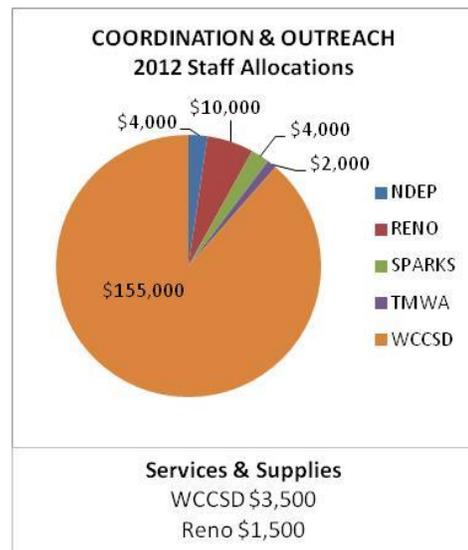
### Accomplishments

#### Community Relations and Communications Plan

The Community Relations and Communications Plan was updated in 2012 to reflect the latest communication strategies employed in program efforts. The Plan provides a framework for consistent and timely outreach and clarifies the stakeholder agency roles and responsibilities as they apply to both situation-specific and more general outreach efforts.

#### Business and Property Owner Outreach

In early 2012, CTMRD staff mailed a letter prepared by the joint stakeholder group to approximately 1,000 business and property owners where hazardous materials are used. This letter reiterated use, storage, and disposal requirements, and listed resources available to provide education if needed and to ensure compliance with current regulations.



In both 2012 and 2013, CTMRD program staff did extensive outreach to property owners and tenants located where PSA investigations took place. Information sheets and door hangers were distributed by hand and press releases were provided to media outlets. This information identified when and where traffic controls and work involving heavy equipment would occur and was provided in order to minimize disruptions to those potentially affected by these activities. Background information on the CTMRD program was also provided to advise people regarding what was being done to address the PCE problem in their area.

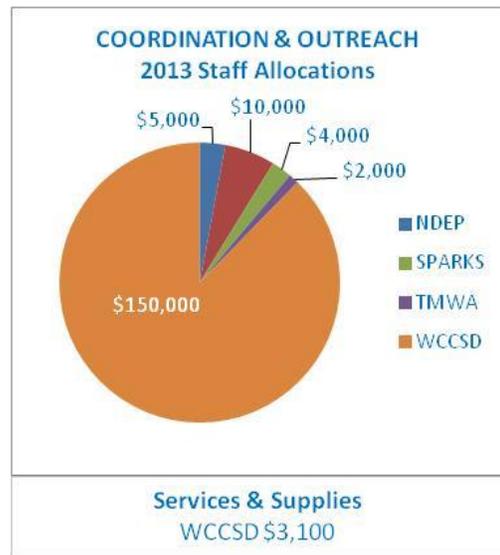
### *Challenges and/or Considerations*

#### **Resource Constraints**

Loss of a CTMRD program staff member in 2012 (the position was vacant through 2013) delayed progress on the RMP Update and development of additional outreach materials. This manpower shortage also delayed preparation of the Report Cards and Annual Reports for 2012 and 2013.

#### **Priorities and Commitments**

The CTMRD program offers a unique opportunity for local stakeholders to implement (and maintain local control over) a solution for the PCE groundwater contamination problem in the central Truckee Meadows. Full and engaged participation among all agencies creates the optimal situation for managing our community's PCE problem. However, the priorities and resource commitments of each agency do not always directly align with CTMRD goals and objectives. This means that program stakeholders need to work closely together to define and implement effective and mutually acceptable solutions to prevent potential conflicts and unnecessary delays.



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We hope that the information contained within this report has been useful. If you have any questions about this report, or for additional information about the CTMRD program, please visit the CTMRD website at <http://www.washoecounty.us/water/ctmrd-main.htm> or contact Lora R. Robb, Water Management Planner for the Central Truckee Meadows Remediation District, at (775) 954-4636 or [lrobb@washoecounty.us](mailto:lrobb@washoecounty.us).