Lake Tahoe TMDL

**California Regional Water Quality Control Board
Lahontan Region**

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Executive Officer

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What is the Lake Tahoe TMDL?

A science-based plan to restore Lake Tahoe's clarity

CA/NV

What pollutants are causing Lake Tahoe's clarity loss?
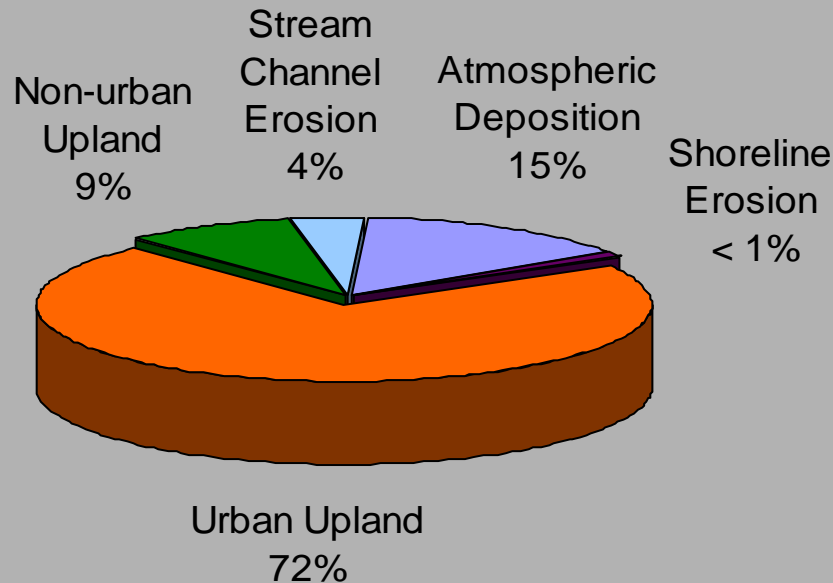
Lake Tahoe Clarity Model

- **10+ years of research and development**
- **A process-based numerical model**
- **Supported by several other models**
  - **Hydrodynamic/Thermodynamic Model**
  - **Biological/Ecological Model**
  - **Particle Fate Model**
  - **Optical Model**

What pollutants are causing Lake Tahoe's clarity loss?

- Suspended fine sediment particles (<16 micrometers, accounts for ~2/3 of the clarity conditions)

- Floating algae – fed by nutrients
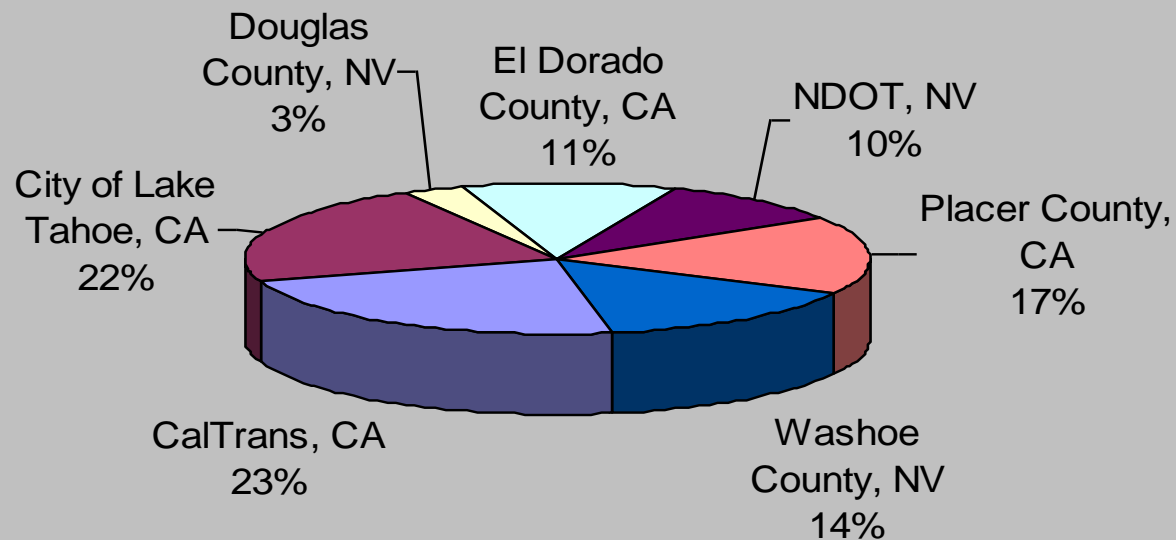
How much of each pollutant is reaching Lake Tahoe?

**Fine Sediment Particle Number Estimates
(particles less than 16 micrometers)
Percent Contribution per Source Category**

Stream
Channel
Erosion
4%

Non-urban
Upland
9%

Atmospheric
Deposition
15%

Shoreline
Erosion
< 1%

Urban Upland
72%

Total Fine Particle Load: 481 x 10^{18} Particles

Urban Particle Loads – How the 72% is Distributed

Urban Fine Sediment Particle Number Estimates - Percent by Jurisdiction

Douglas County, NV 3%

El Dorado County, CA 11%

NDOT, NV 10%

Placer County, CA 17%

City of Lake Tahoe, CA 22%

CalTrans, CA 23%

Washoe County, NV 14%

What is a reasonable interim target?

The Clarity Challenge: Reverse clarity decline and measurably improve clarity
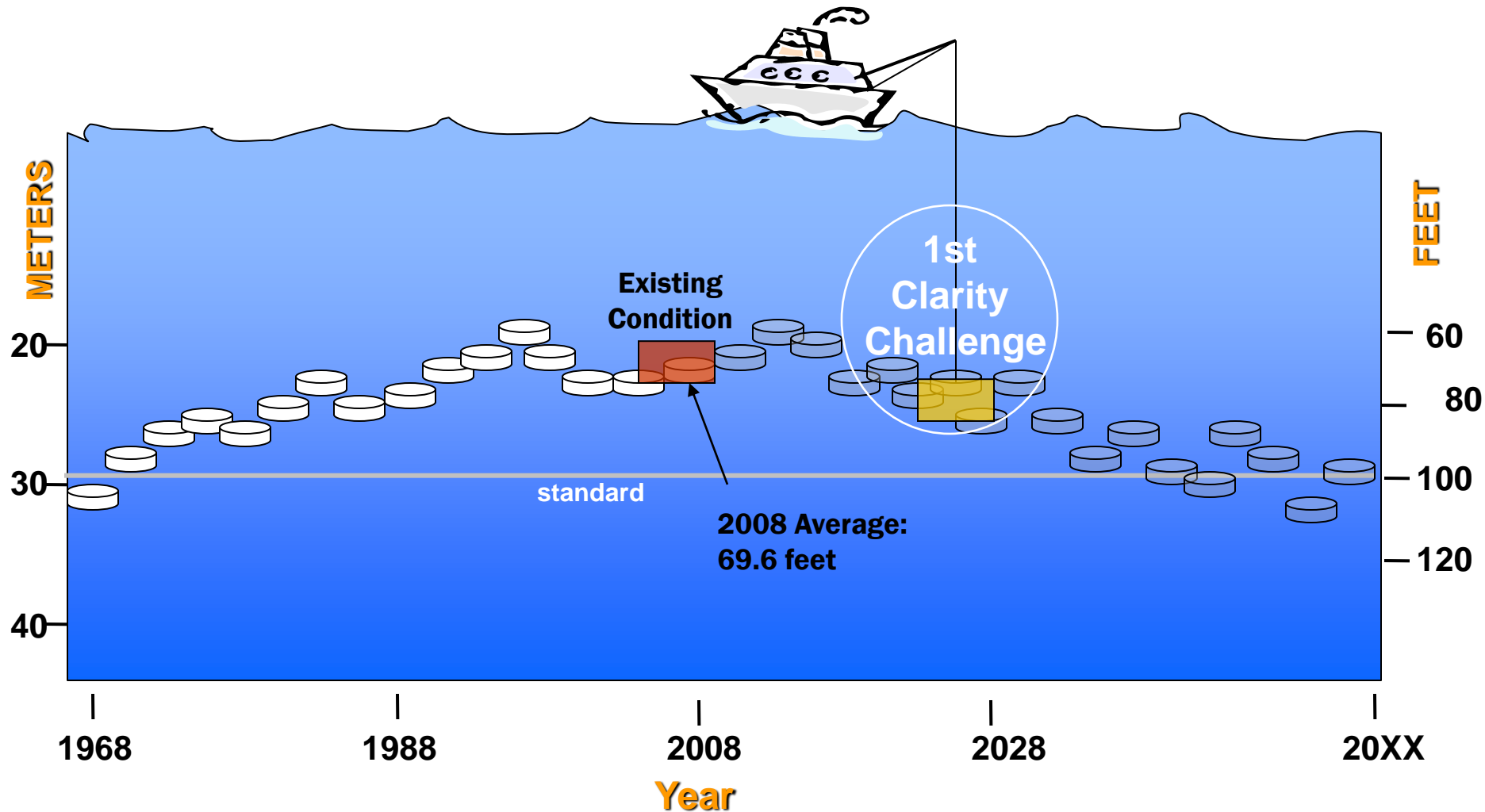
What are the options for reducing pollutant inputs to Lake Tahoe?

Pollutant Reduction Opportunity Project

Four Source Category Groups

Assessed different levels of effort

Evaluated site-scale and basin-wide implementation

Provided average load reductions and costs

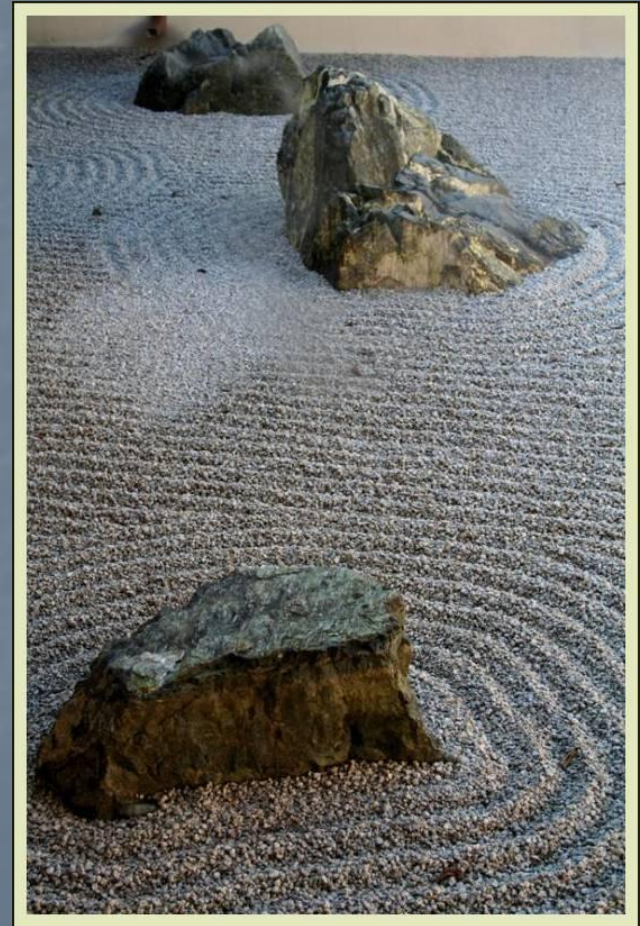**Estimates offer relative benefit comparisons**

Urban Uplands Recommended Strategy

Continue to implement known technologies

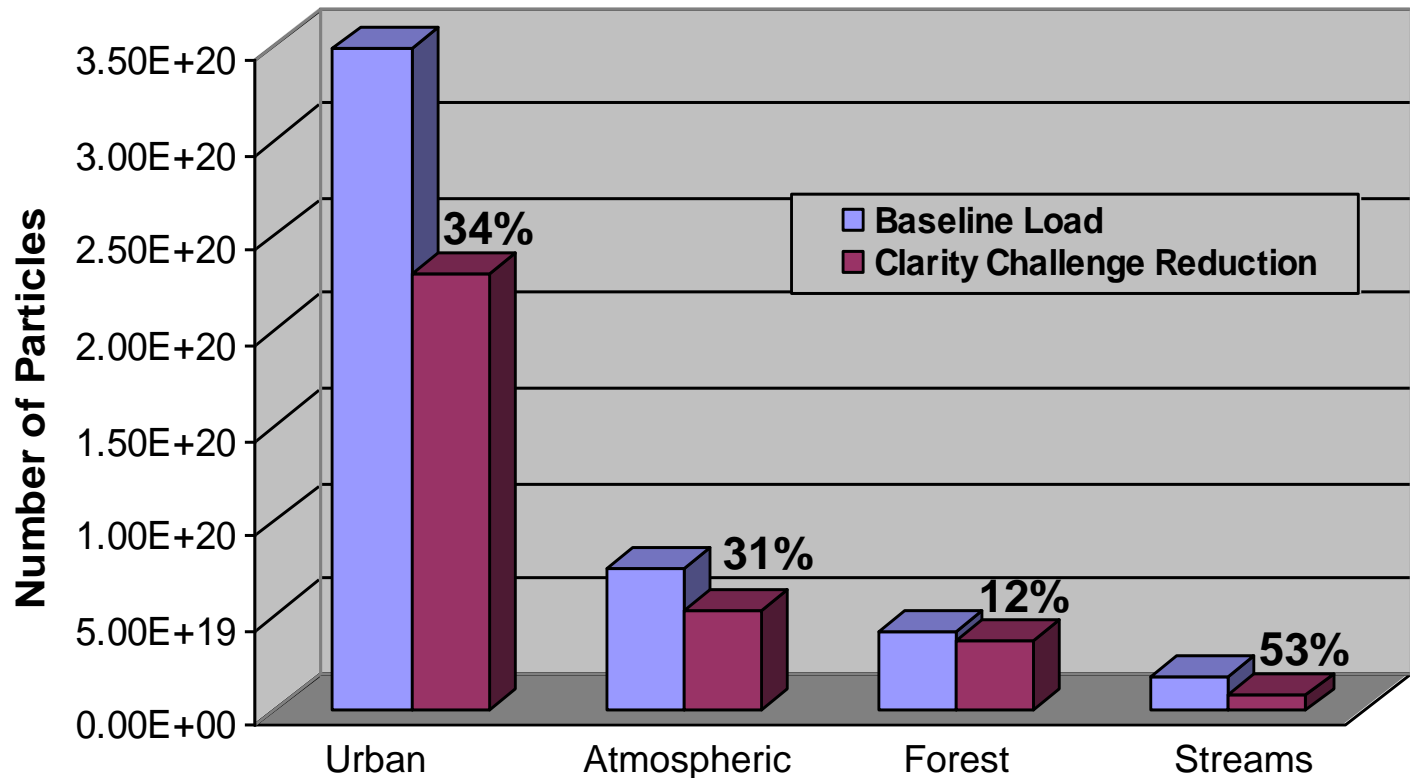**Move toward more innovative practices and intensive operations and maintenance**

Achieve ~25% reduction in total fine particle budget (34% of Urban Source)

Estimated Cost: $1.3B Capital, $6M Annual O&M

Recommended Strategy

Particle Load Reductions by Source Category

Are expected pollutant reductions being achieved?

Lake Clarity Crediting Program

Implementation Tools
   Pollutant Load Reduction Model
   Operations and Maintenance Rapid Assessment
   Roadway Conditions Rapid Assessment

TMDL Accounting and Tracking System

Lake Clarity Crediting Program

Link actions and activities in the <u>urban</u> landscape to fine sediment particle load reductions

Define a standard metric to track implementation progress

Provide regulatory stability

Motivate action, focus on effectiveness and create incentives for innovation

**Increase flexibility for and cooperation between permitted entities**

Lake Clarity Crediting Program

- Currently
  - measure number of projects and $ spent
  - build projects and move on
- Crediting Program
  - Estimate **credit potential** based on potential project effectiveness
  - Annually determine that pollution controls are **realizing load reduction potential**

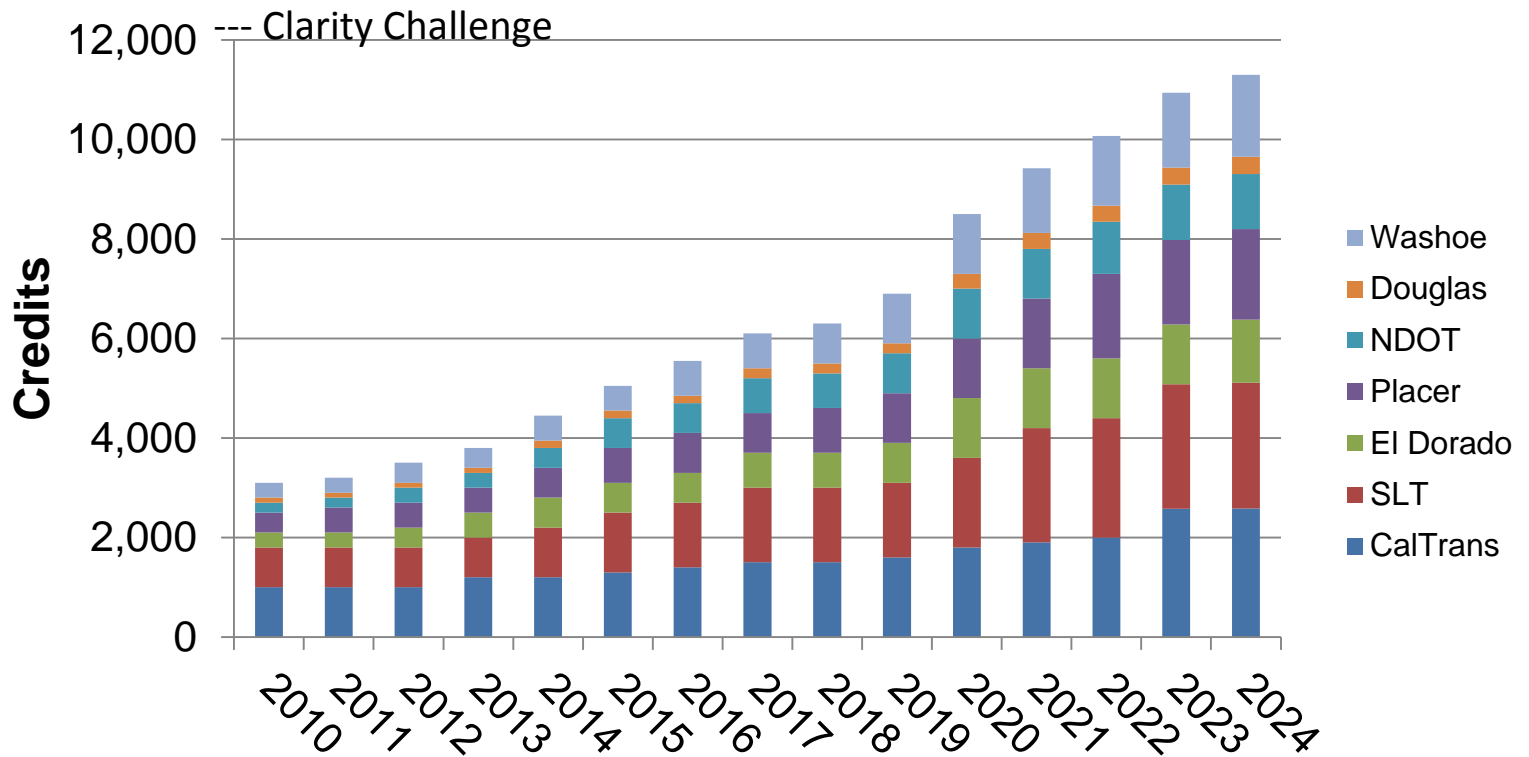# Lake Clarity Crediting Program
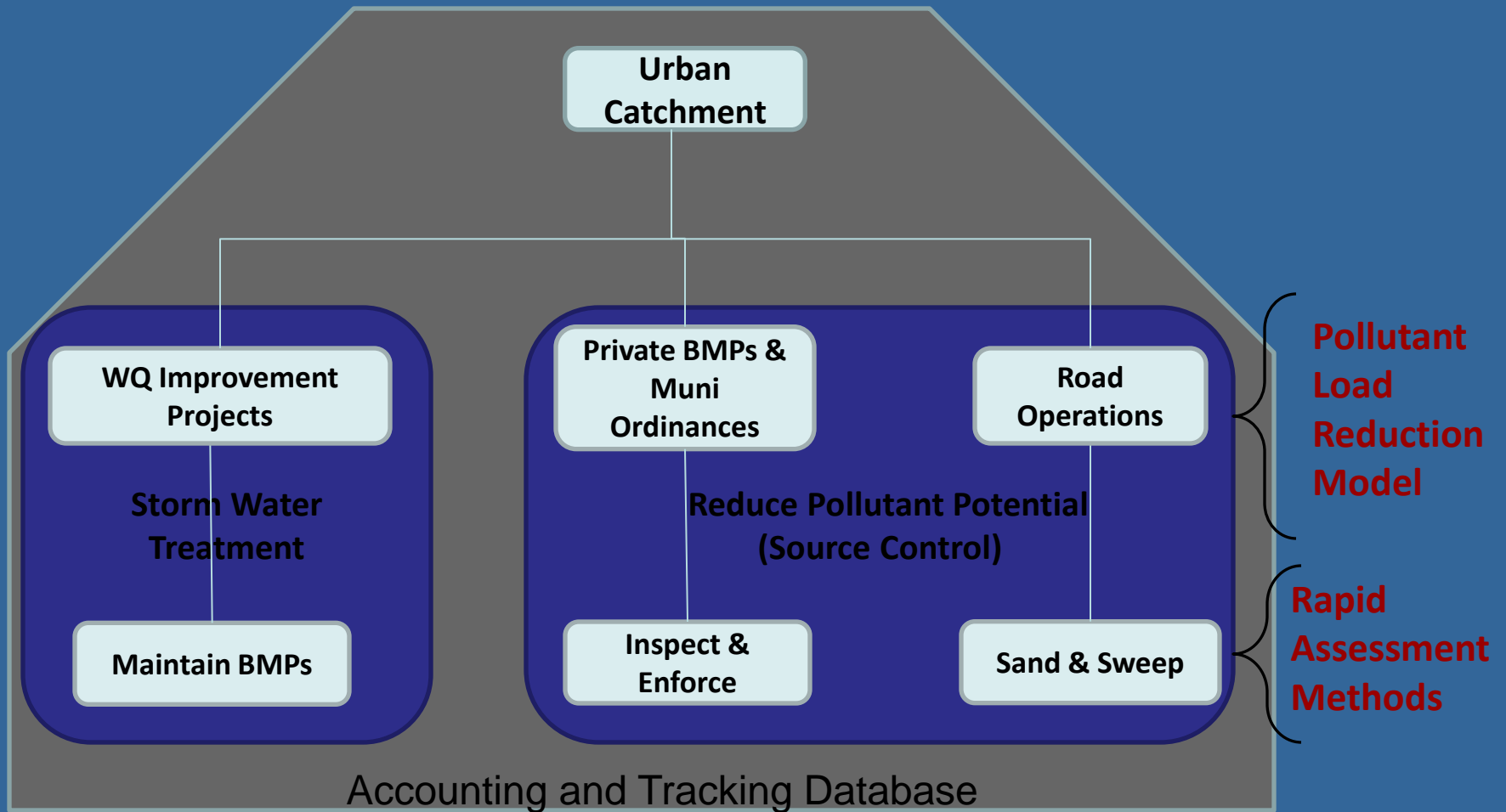

Total Credit Awards for an Urban Jurisdiction
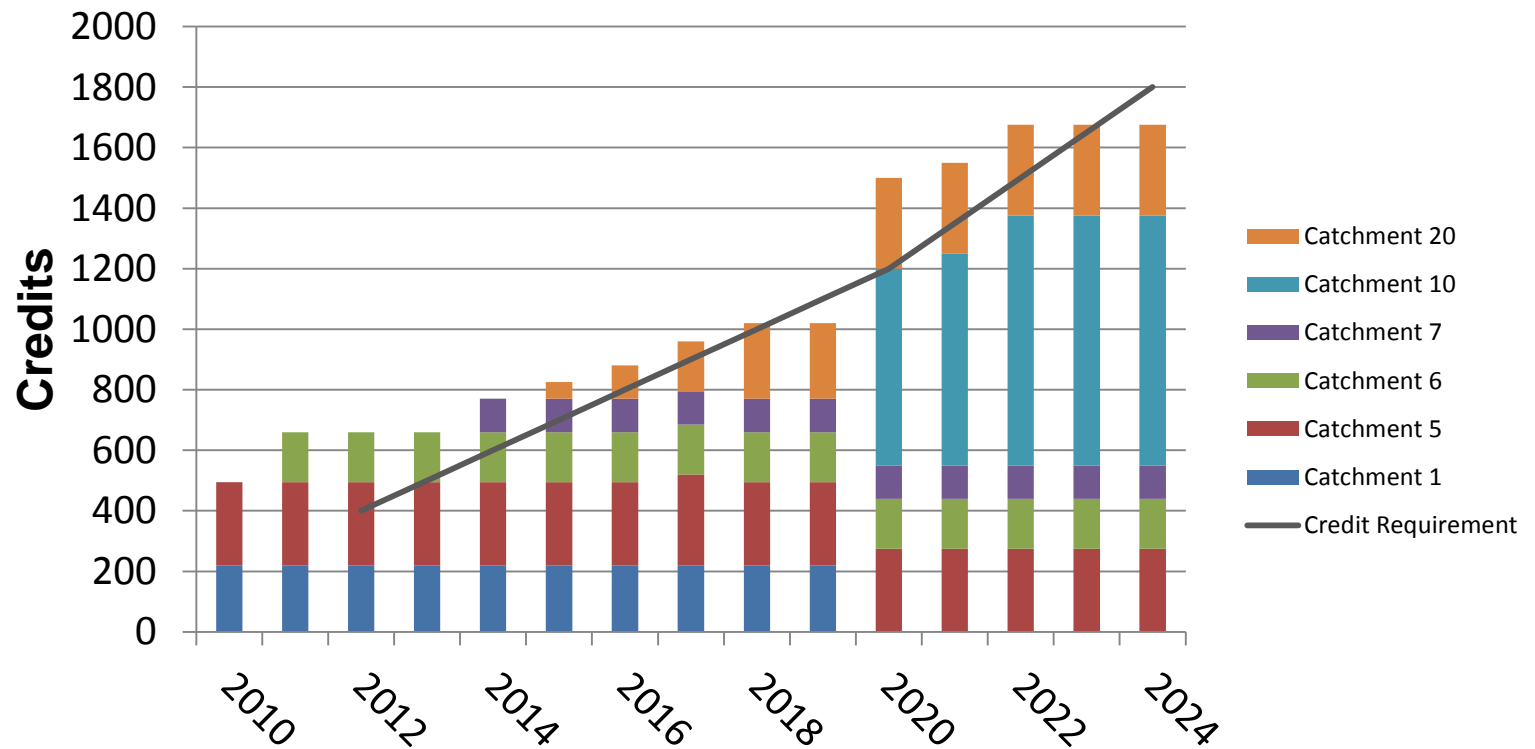
Lake Clarity Crediting Program

Basin-wide Credits By Urban Jurisdiction

Legend: Washoe, Douglas, NDOT, Placer, El Dorado, SLT, CalTrans

Clarity Challenge

Lake Clarity Crediting Program & Implementation Tools

Urban Catchment

WQ Improvement Projects

Storm Water Treatment

Maintain BMPs

Private BMPs & Muni Ordinances

Road Operations

Reduce Pollutant Potential (Source Control)

Inspect & Enforce

Sand & Sweep

Pollutant Load Reduction Model

Rapid Assessment Methods

Accounting and Tracking Database

Transition Process

One year "Beta" testing period:
Summer 2009-Summer 2010

- **Lake Clarity Crediting Program**
- **Pollutant Load Reduction Model**
- **Rapid Assessment Methodologies**
- **Accounting and Tracking System**

Stormwater Regulatory Approach

Revised Municipal Stormwater Permits

- Effluent Standards to Load Reductions
- Stormwater Management Plans will describe how load reduction requirements will be met
- Annual report on progress (credits)
- Regional Stormwater Monitoring Program
  - municipalities and state road departments
  - fulfill permit monitoring requirements

Schedule

Responses to Peer Review – Fall 2009

Agency and Public Review – Spring 2010

TMDL adoption – June 2010

Municipal NPDES Permit – Fall 2010

Questions