Area-wide Stormwater/Complete Streets Infrastructure

Presentation to the TRPA Advisory Planning Commission

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Area-wide Treatment

- Watershed Scale
- Infiltration Constraints
- Parcel Limitations
- Urban vs. Rural
- Facilitates Maintenance
- Multiple Benefits

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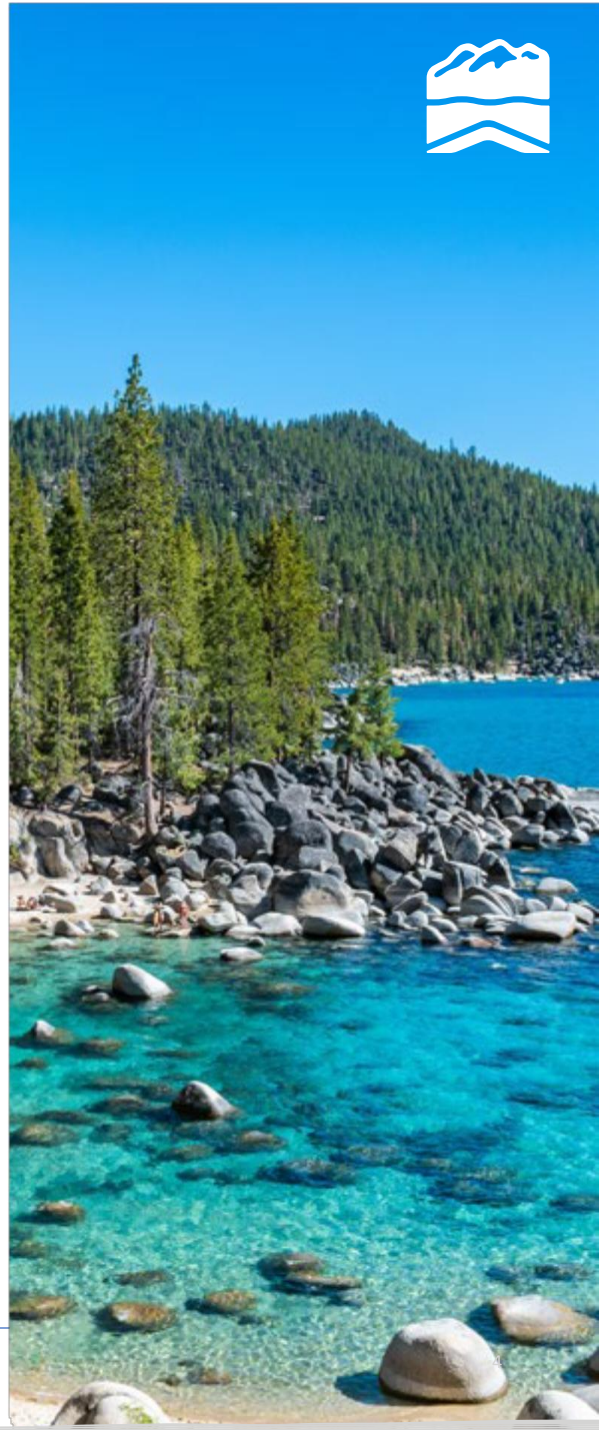
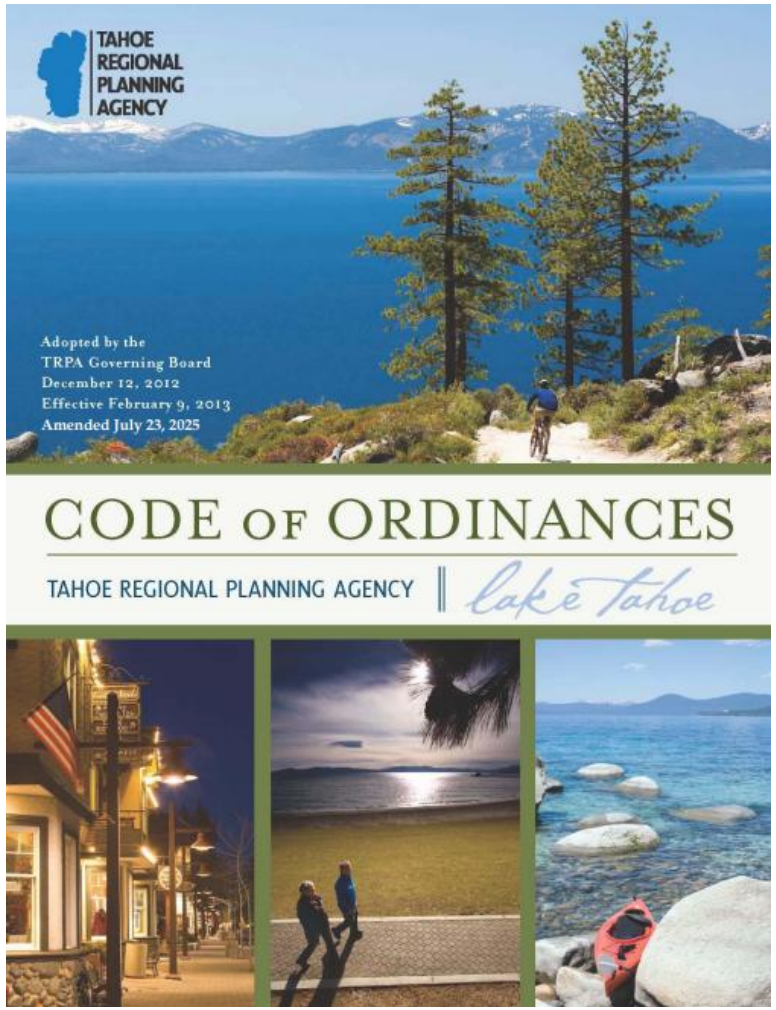
Overview

1. Opportunities for Area-wide Stormwater Implementation
2. Area-wide Stormwater Implementation Process
3. Stormwater/Complete Streets Plans and Detail Drawings/Typicals
4. Questions and Discussion



Opportunities for Area-wide Treatment



- Chapter 60: Water Quality
  - BMP Requirements for Special Circumstances
- Chapter 13: Area Plans
  - Area-wide Water Quality Treatments and Funding Mechanisms
- Chapter 30: Land Coverage
  - Stormwater Collection & Treatment Systems for Affordable, Moderate, and Achievable Housing

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Process Overview

PLRM Analysis of Service Area Pollutant Loads	Plan for Additional Treatment Facilities	Implementation Plan	TRPA Approval of Plans and Coverage Changes	Documentation and BMP Database Update
• All parcels with BMPs • Existing treatment facilities • Additional treatments to meet/exceed load reduction if all parcels with BMPs or to meet TRPA Code "special circumstances"	• Use "typicals" to prepare plan with additional treatment facilities	• Prepare plan with detail on ongoing funding and operations including facilities, parcels, and proposed coverage changes by phase • If use of interim treatments is proposed, provide same detail plus monitoring and maintenance	• Obtain TRPA approval of facilities and implementation plans, and proposed coverage changes as plan is implemented	• Provide documentation to TRPA as plans are implemented • TRPA to update BMP database and parcel tracker to show parcels included in areawide facilities and changes to allowed coverage

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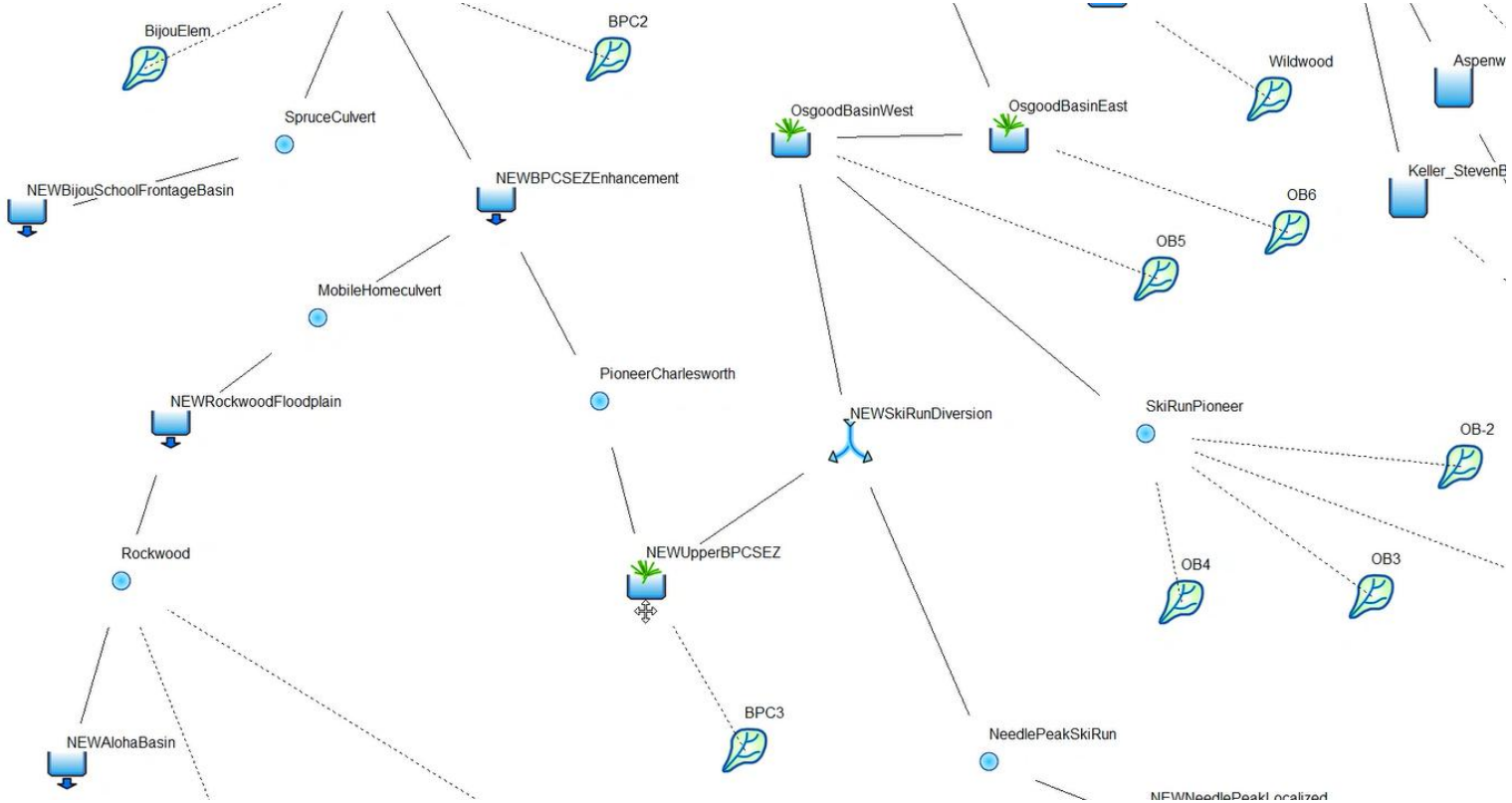
PLRM Analysis of Service Area Pollutant Loads



- All parcels with BMPs
- Existing treatment facilities
- Additional treatments to meet/exceed load reduction if all parcels with BMPs or to meet TRPA Code “special circumstances”

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Conceptual Plan for Additional Treatment Facilities

COMPLETE STREETS

- Spruce Ave between Glenwood Way and Blackwood Rd to Ski Run Blvd

ACTIVE TRANSPORTATION IMPROVEMENTS

- Hebert Ave (northern and southern portions)
- Blackwood Rd between Glenwood Way and Pioneer Trail
- Tamarack Ave
- Ski Run Blvd between Pioneer Trail and Needle Peak Rd
- Needle Peak Rd between Ski Run Blvd and Wildwood Ave
- Wildwood Ave between Osgood Ave and Pioneer Trail and between Needle Peak Rd and Heavenly California Lodge
- Markoffer Way

TRAIL CONNECTIONS

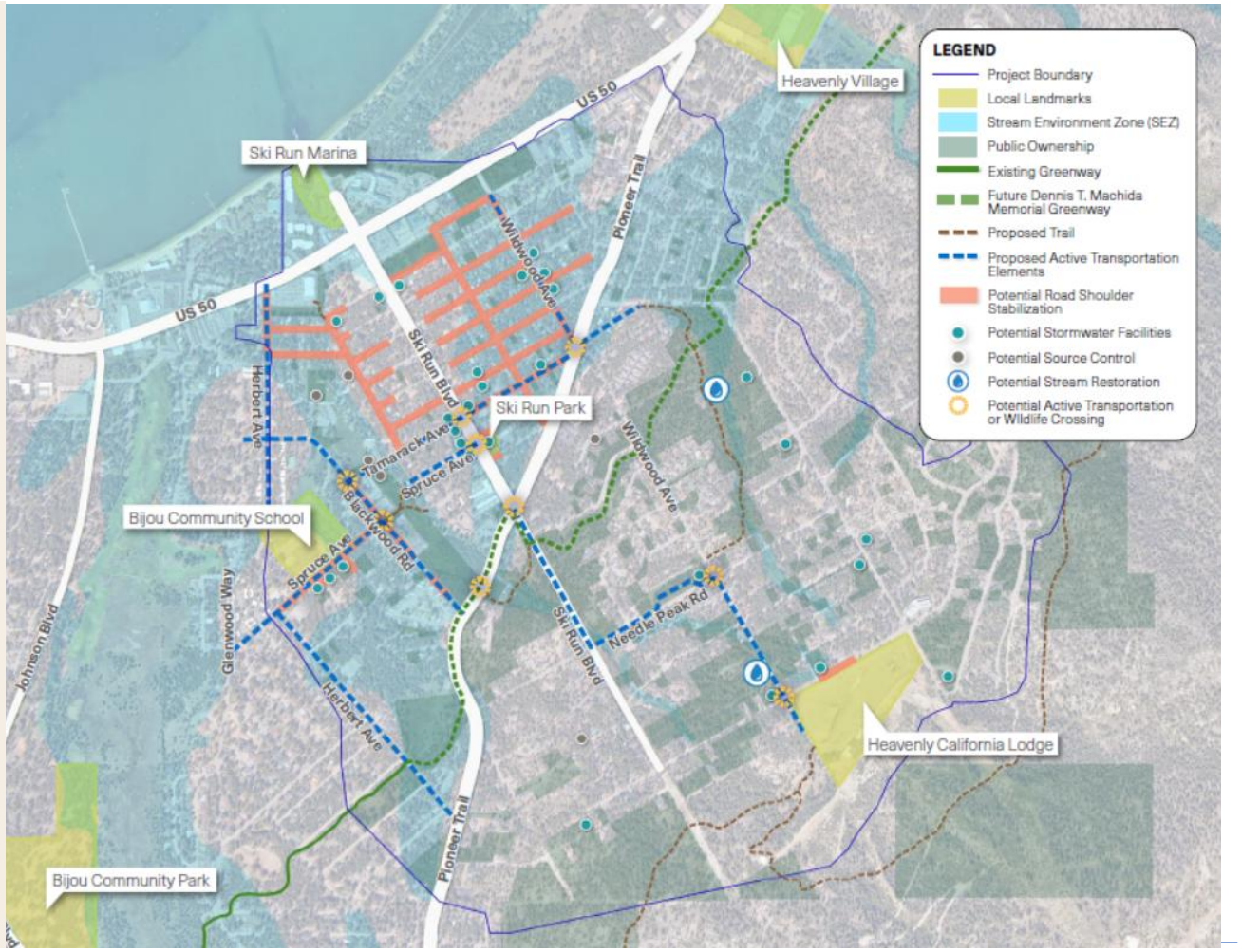
- Bowers Ave to Whole Foods
- Connector trail and bridge at Spruce Ave and Terry Ln
- Wildwood Trail to Keller
- Heavenly Base Connector
- Powerline to K2K
- Ski Run Blvd and Pioneer Trail connector

ACTIVE TRANSPORTATION AND WILDLIFE CROSSING IMPROVEMENTS

- Spruce Ave and Blackwood Rd
- Tamarack Ave and Blackwood Rd
- Spruce Ave and Ski Run Blvd
- Tamarack Ave and Ski Run Blvd
- Needle Peak Rd and Wildwood Ave
- Saddle Rd and Wildwood Ave
- Wildwood Ave and Pioneer Trail
- Pioneer Trail Wildlife Crossing

STORMWATER IMPROVEMENTS

- Stormwater basins
- Pervious shoulder green infrastructure and parking improvements
- Source control
- Stream restoration



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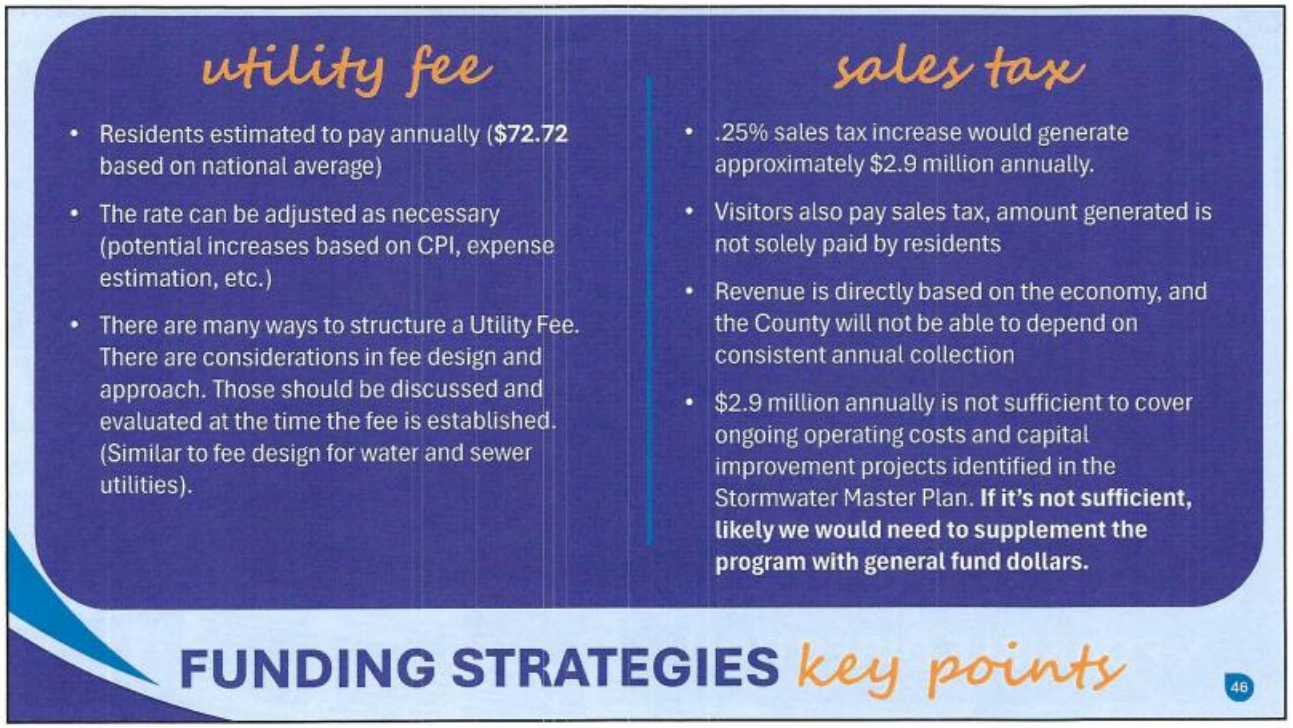
Implementation Plan



- Prepare plan with detail on ongoing funding and operations including facilities, parcels, and proposed coverage changes by phase
- If use of interim treatments is proposed, provide same detail plus monitoring and maintenance

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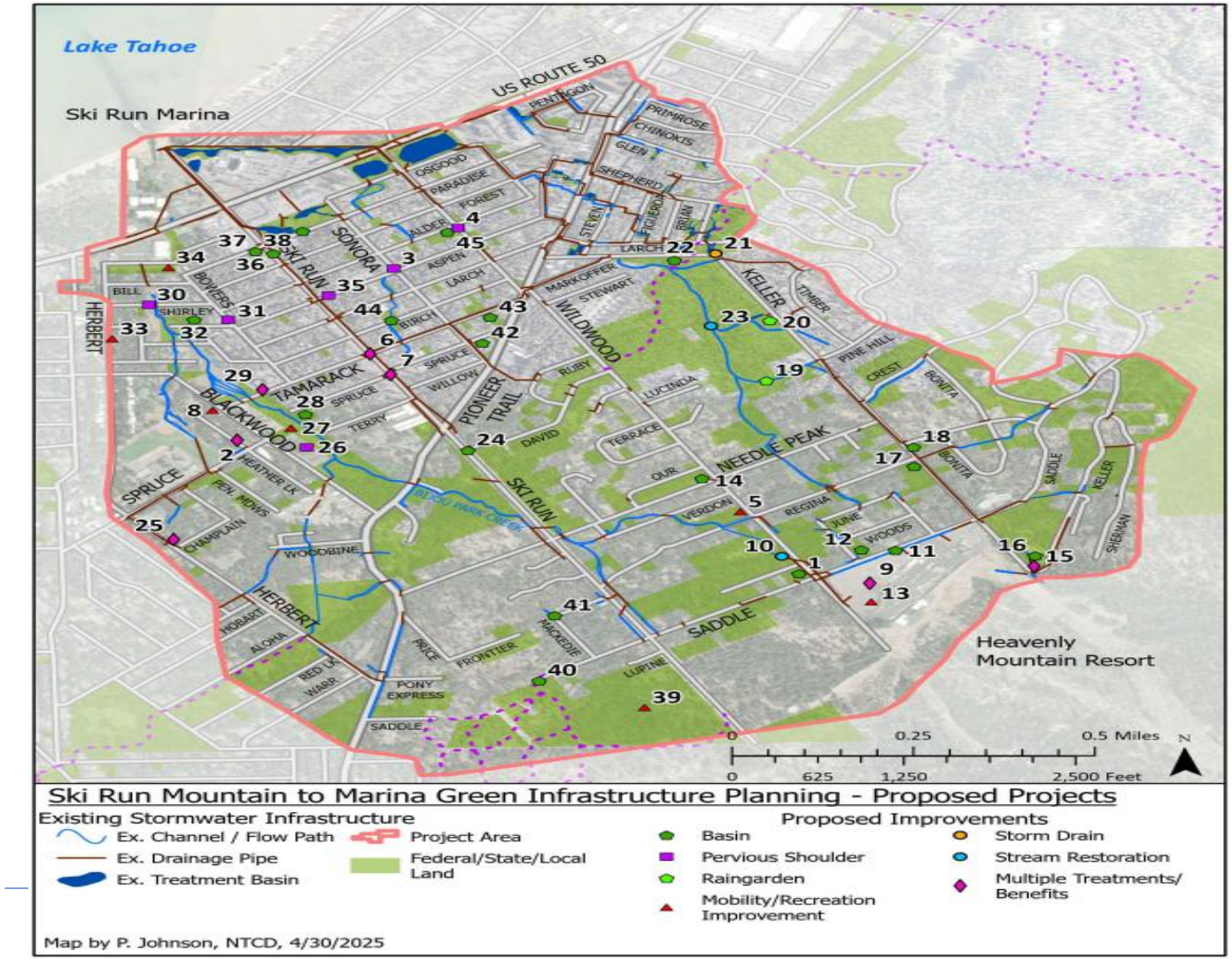
TRPA Approval of Plans and Coverage Changes



- Obtain TRPA approval of facilities and implementation plans, and proposed coverage changes as plan is implemented

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Documentation and BMP Database Update

BMP COMPLIANCE STATUS

View this Parcel in the BMP Database.

Print Certificate

BMP Certificate Issued?	Yes
BMP Certificate Issued Date	3/27/2015
BMP Certificate Number	17018
BMP Certificate Updated	4/14/2020 12:00:00 AM
Source Control Certificate Issued?	No
Area-wide Treatment Participant	Yes (Plan Name: Bijou)
Special Circumstances	*No record of any special circumstances*

Learn more at tahoebmp.org

- Provide documentation to TRPA as plans are implemented
- TRPA to update BMP database and parcel tracker to show parcels served by areawide facilities and changes to allowed coverage

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Stormwater/Complete Streets Plans

<u>Active</u>

- Tahoe City Wetlands
- Cave Rock
- Stateline Stormwater Association
- Stateline Erosion Control
- Bijou Erosion Control
- Harrison Avenue

<u>Planning</u>

- Mountain to Marina
- Tahoe Keys
- Placer County

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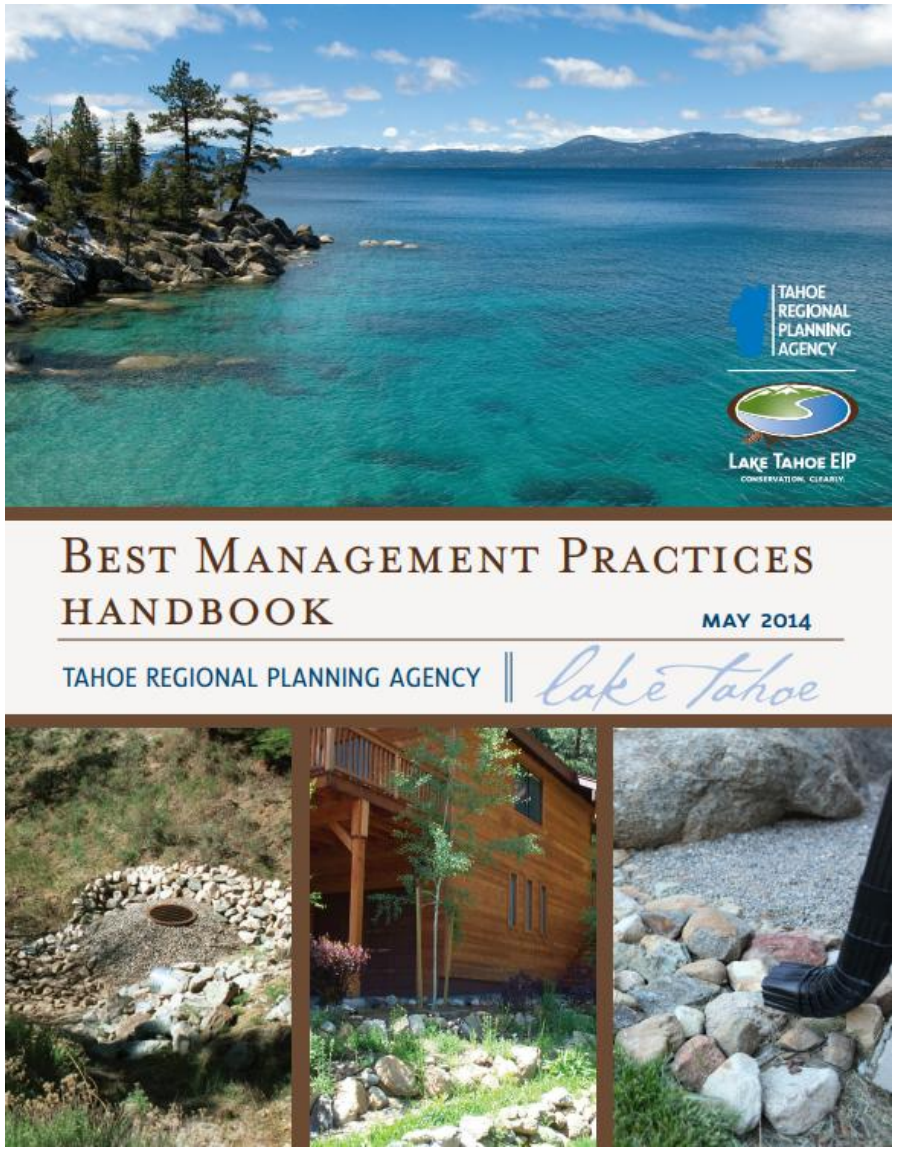
Detail Drawings/Typicals

A menu of detail drawings (a.k.a., “typicals”) for area-wide stormwater and complete streets infrastructure used in the public rights-of-way for inclusion in TRPA’s Best Management Practices Handbook



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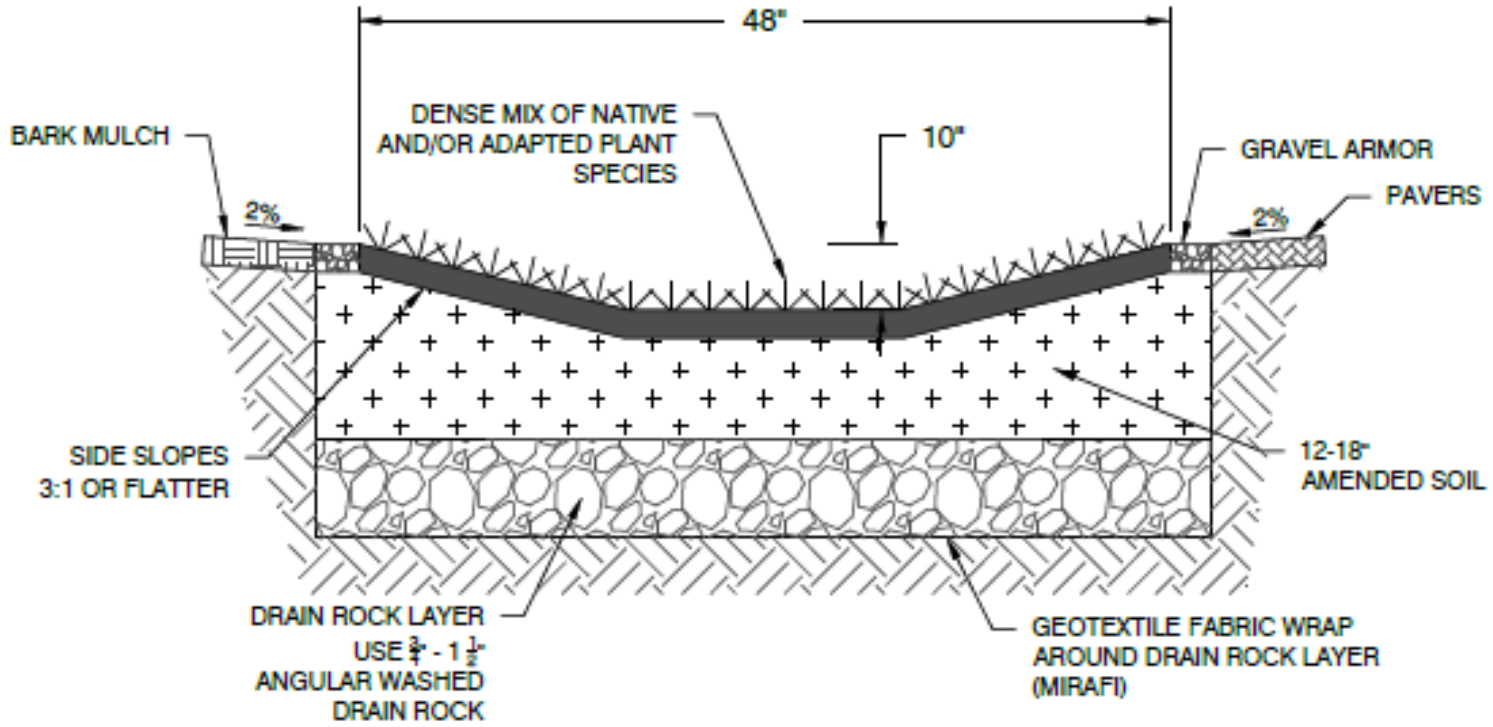
Area-wide Stormwater/Complete Streets Example BMP Detail/Typical



SHALLOW LINEAR BASIN

NO SCALE

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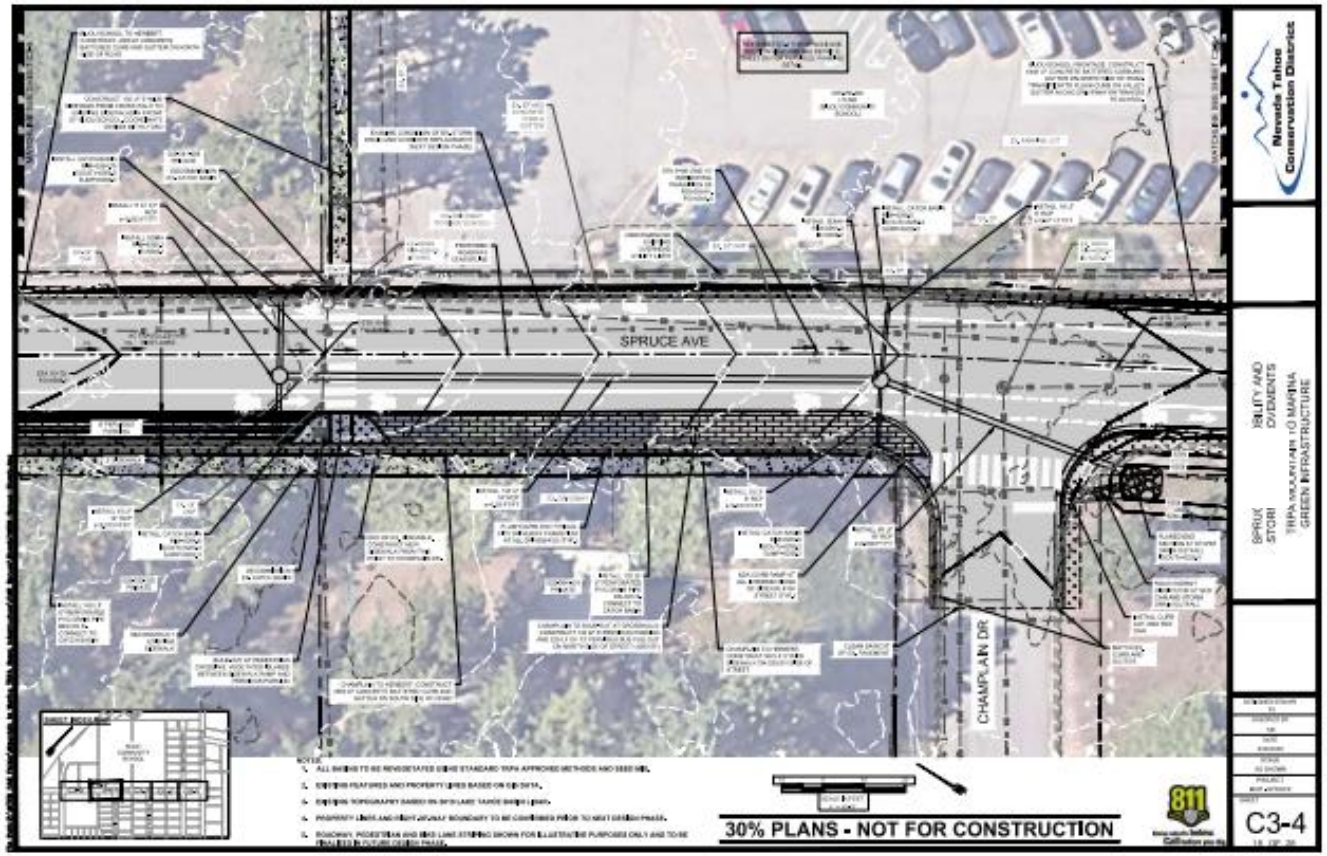
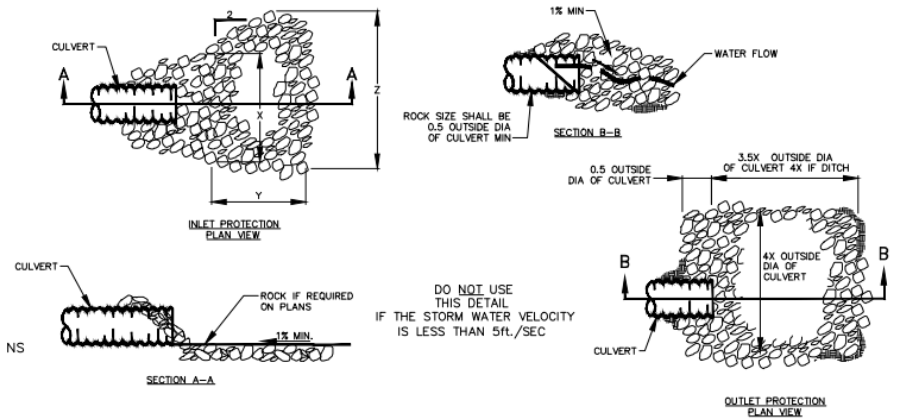
Use of Typicals to Prepare Facilities Plan with Additional Treatment Facilities





INLET PROTECTION MINIMUM DIMENSIONS				
ROCK CLASS	PIPE ø IN.	X FEET	Y FEET	Z FEET
NO. 1 BACKING	12	3	4	5
NO. 1 BACKING	18	4.5	6	7.5
NO. 1 BACKING	24	6	8	10
NO. 1 BACKING	30	7.5	10	12.5
NO. 1 BACKING	36	9	12	15
NO. 1 BACKING	42	10.5	14	17.5
NO. 1 BACKING	48	12	16	20

NOTES:
1. HAND PLACE ROCKS.
2. ALL ROCKS SHALL BE ANGULAR.
3. WHERE OUTLET SLOPE EXCEEDS 5%, A SEDIMENT BOWL OR ENERGY DISSIPATOR SHALL BE REQUIRED.
4. ROCK SLOPE PROTECTION SHALL BE SLOPED AT A MIN OF 1% INTO OR OUT OF CULVERT.
5. ALL CULVERTS OF 48 INCHES OR LARGER SHALL BE INSTALLED WITH REINFORCED CONCRETE HEADWALLS AND END WALLS WITH CUTOFF WALLS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. ON OUTLET APPLICATIONS, 50% OF THE ROCKS SHALL BE LARGER THAN HALF THE DIAMETER OF THE PIPE.

③ EROSION CONTROL OUTLET ROCK PROTECTION (SD86)

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Technical Working Group

TRPA, Local Governments, and NCE

Purpose

- Compile a menu of existing detail drawings (a.k.a., “typicals”) for stormwater infrastructure and complete streets

- Identify, prioritize, and prepare additional detail drawings for the same purposes

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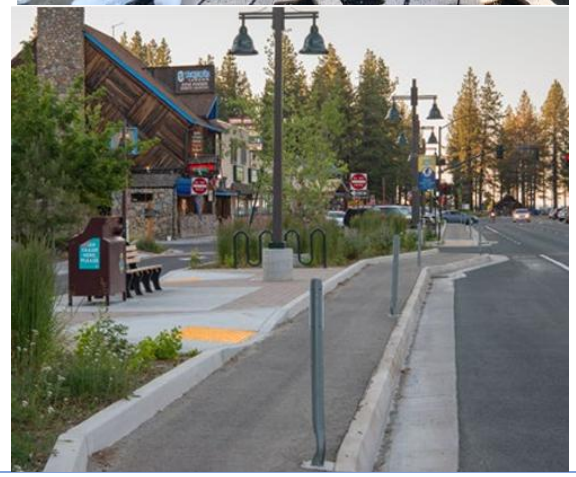
Area-wide Stormwater/Complete Streets Existing BMP Details/Typicals

1. Rock-lined & Vegetation Swale
2. Check-dam
3. Drainage Swale
4. Boulders and Cobbles
5. Parking Barriers Boulders & Bollard
6. Decomposed Granite
7. Drop Inlet/Drain Inlet/Catch Basin
8. Sed Can
9. Double Sed Can
10. Slotted Trench Drain
11. Beehive Grate
12. AC Swale/ Concrete Valley Gutter
13. Flush Curb
14. Storm Drain Trench
15. Pavement Repair
16. Infiltration Basin
17. Infiltration Basin Berm
18. Rock Dissipater
19. Rain Garden
20. Rolled Curb
21. Rock Armor Shoulder
22. Detached Sidewalk Crossing

Identified Gaps

- Perforated Pipe
- Pervious Pavers Front/Back of Curb
- Linear Basin
- Complete Street Features
- Tahoe Appropriate Designs



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Example Detail Needed: Intersection Crossing

- Bulb out shortens crossing length
- Plow friendly flush curb
- Infiltration basin/rain garden
- Boulder parking barrier - set back for snow storage/removal
- Use with Tahoe appropriate vegetation

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TRPA Best Management Practices (BMP) Handbook

BMP Details available electronically at TRPA Stormwater Management Program website: tahoebmp.org

Chapter 4 BMP Toolkit

4.1 Hydrologic Source Control

- Pervious Pavement
- Infiltration Basin
- Infiltration Trench
- Subsurface Infiltration System
- Rain Barrel and Cistern
- Rain Garden
- Filter Strip

4.2 Pollutant Source Controls

Roadway and Parking Lot Pollution Prevention

- Abrasive and Deicer Management
- Street Sweeping
- Snow Storage

Soil Stabilization

- Vegetated Slope Stabilization
- Terracing
- Retaining Wall
- Riprap
- Slope Shaping

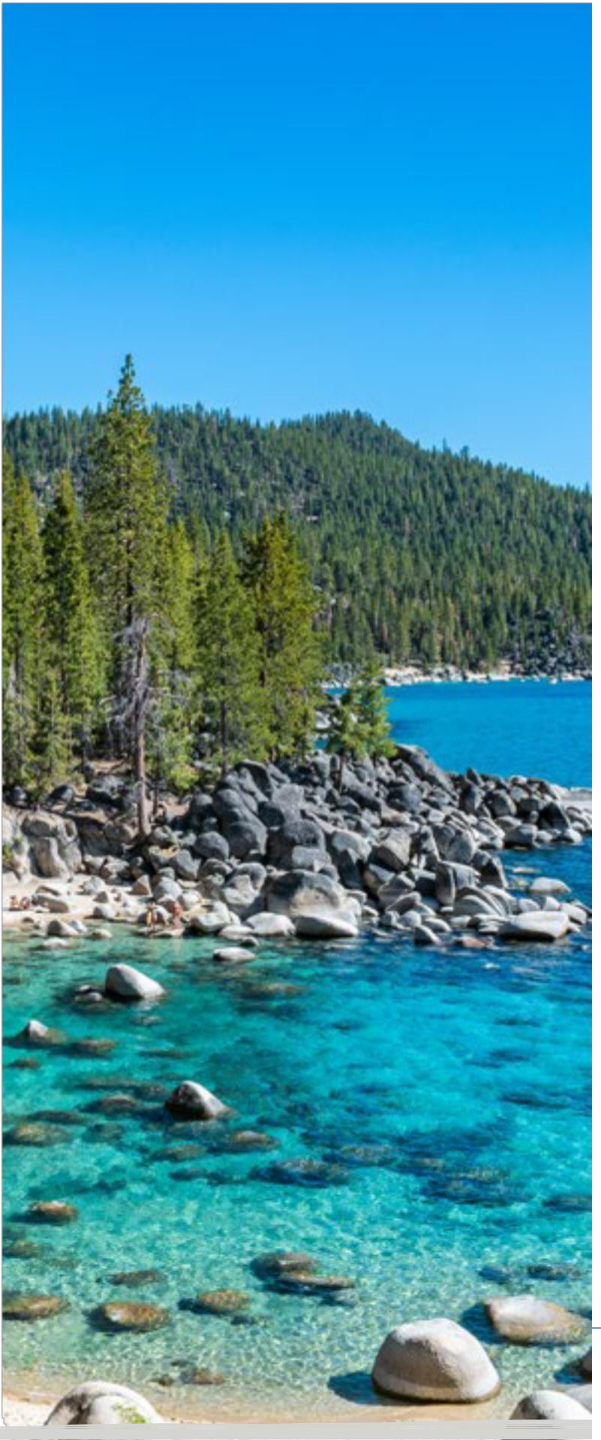
Soil Stabilization (Non-Vegetative)

- Paving Parking Areas and Roads
- Bare Soil Protection
- Deck Armor

BMP Drawings

Pervious Concrete: PDF DWG
Infiltration Basin: PDF DWG
Infiltration Trench: PDF DWG
Armored Dripline: PDF DWG
Planter Bed Dripline: PDF DWG
Infiltration Facility: PDF DWG
Vegetated Filter Strip: PDF DWG
Level Spreader: PDF DWG

Slope Protection: PDF DWG
Willow Wattle: PDF DWG
Terrace Walls: PDF DWG
Timber Retaining Wall PDF DWG
Stacked Rock Wall: PDF DWG
Riprap Slope Protections: PDF DWG
Slope Bottom Bench: PDF DWG
Serrations: PDF DWG
Contour Furrow: PDF DWG
Grading for Sheet Flow: PDF DWG
Rock Armor Elevated Structure: PDF DWG
Parking Barriers: PDF DWG



Summary/Next Steps

Area-wide Stormwater Implementation Process

PLRM
Conceptual Plan for Additional Treatment
Implementation Plan
TRPA Approval
Documentation/BMP Database

Stormwater/Complete Streets Detail Drawings/Typicals

- 1st Working Group meeting - compiling feedback, priorities, & existing resources
- Direct consultant to prepare drawings
- Review, finalize & update BMP Handbook

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Questions & Discussion