

Pyramid Lake Paiute Tribe Proposed Water Quality Standards and Future of the Truckee River Nutrient TMDL

Northern Nevada Water Planning Commission
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TMDL Background

- TMDL defines maximum loads that comply with water quality standards
 - Serve as the basis of NPDES permits for WWTPs and MS4s (stormwater)
- Existing Truckee River TMDL developed in 1994 by NDEP
 - Defined maximum nitrogen loading required to meet dissolved oxygen standards
 - Defined maximum phosphorus loading required to “meet” phosphorus standards
- Motivation for Third Party TMDL Review (Reno, Sparks, Washoe Co., TMWA)
 - Current treatment system at TMWRF will be unable to comply with TMDL as region grows and influent flows increase
 - Ability of Truckee River to assimilate nitrogen is potentially higher than it was in 1994



Current Truckee River TMDL Loads (1994)

Constituent	Non-point Source Load Allocation (LA), lbs/day	Waste Load Allocations, lbs/day					Total Maximum Daily Load (TMDL), lbs/day
		TMWRF	Vista Canyon Group	Sparks Marina Park	Wells-Bloomfield LLC	Total WLA	
Total Nitrogen	450	500	16.7	33.3	0	550	1,000
Total Phosphorus	75.25	134	4.75	0	0	138.75	214
Total Dissolved Solids	751,140	120,168 ¹	9,730	19,390	100	149,388	900,528

- Total phosphorus TMDL = 214 lbs/day
 - TMWRF WLA = 134 lb/day not based on modeling
 - Current TMWRF discharge ~65 lb/day
- Assumed average river flow to calculate loads that will comply with water quality standards
- More appropriate to use lower flows



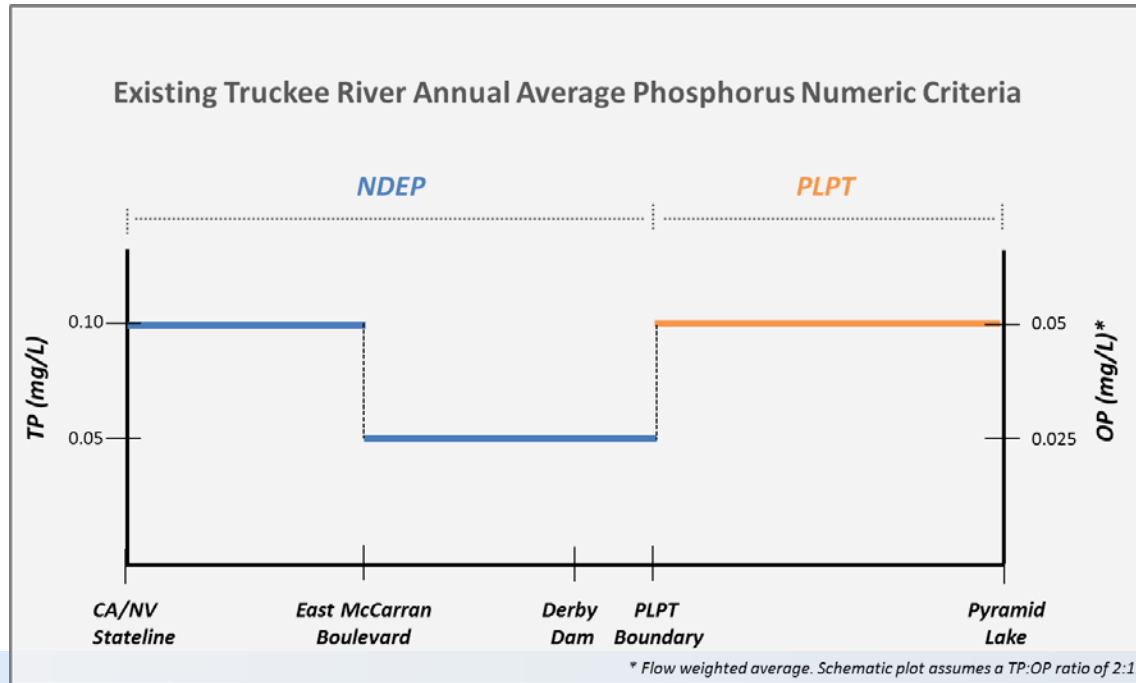
2008 TMDL Working Group Findings: Effect of NDEP Nutrient WQS on TMDL

- Ultimate target is DO standard, but revised TMDL must meet **all** NDEP WQS
- Nominal increase in allowable nitrogen load possible with existing nitrogen standard
- Revising phosphorus TMDL to meet current standard will require massive reduction in existing load
 - Although TMWRF discharging below TMDL limit, current TP in river exceeds WQS
- **Nevada nutrient standards must be reviewed/revised for TMDL to proceed**
 - 2011 NDEP announces triennial WQS Review process, solicits input
 - Third parties conduct technical work to understand potential changes in oxygen conditions if TN and TP WQS were modified



Current Numeric Nutrient Criteria

- Total nitrogen numeric criteria consistent for NDEP and PLPT
- Current phosphorus criteria differ between NDEP and PLPT

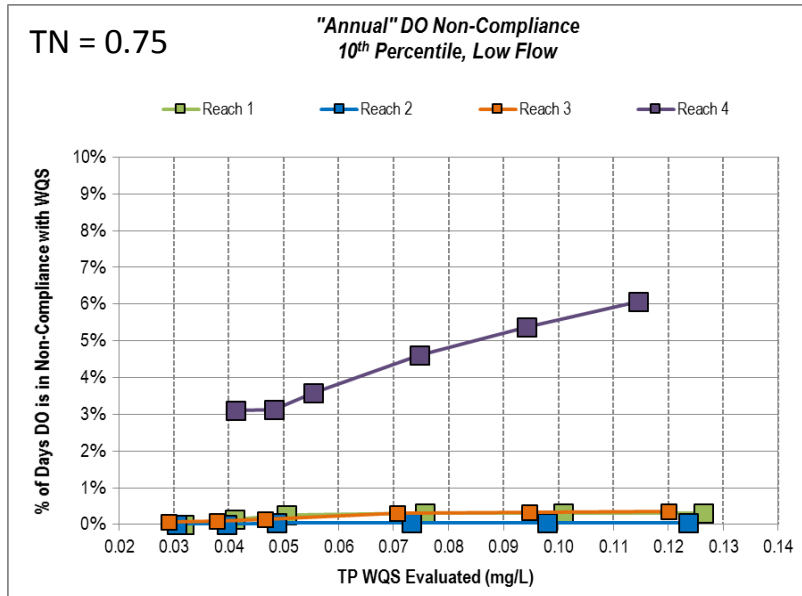


Final Results Total P

LimnoTech, 2014 Technical Rationale for Review and Revision of Truckee River Nutrient Water Quality Standards

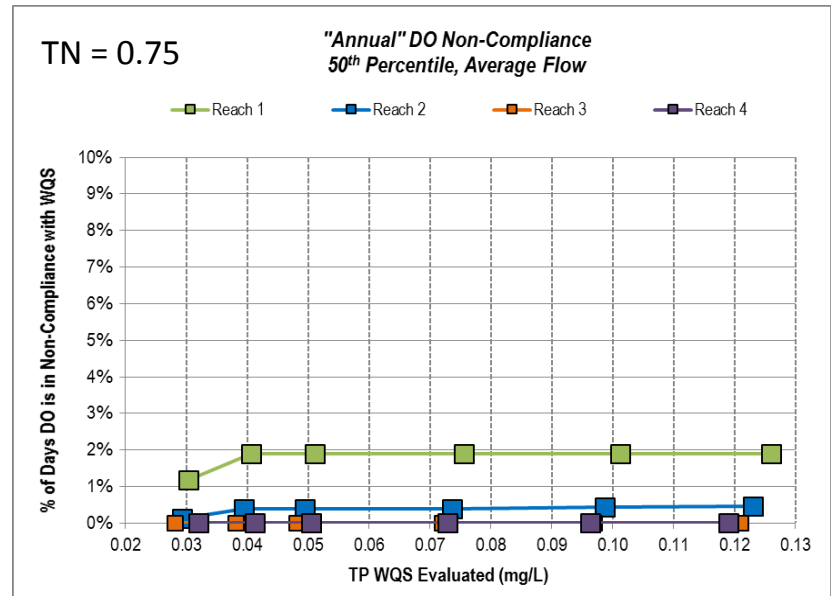
10th Percentile Flow: Reach Averaged

% of Days



50th Percentile Flow: Reach Averaged

% of Days



Summary of Technical Findings Related to Phosphorus

LimnoTech, 2014 Technical Rationale for Review and Revision of Truckee River Nutrient Water Quality Standards

Nevada Portion of the Truckee River

- With both low and average flow, no sensitivity of dissolved oxygen to increasing phosphorus concentrations

PLPT Portion of the Truckee River

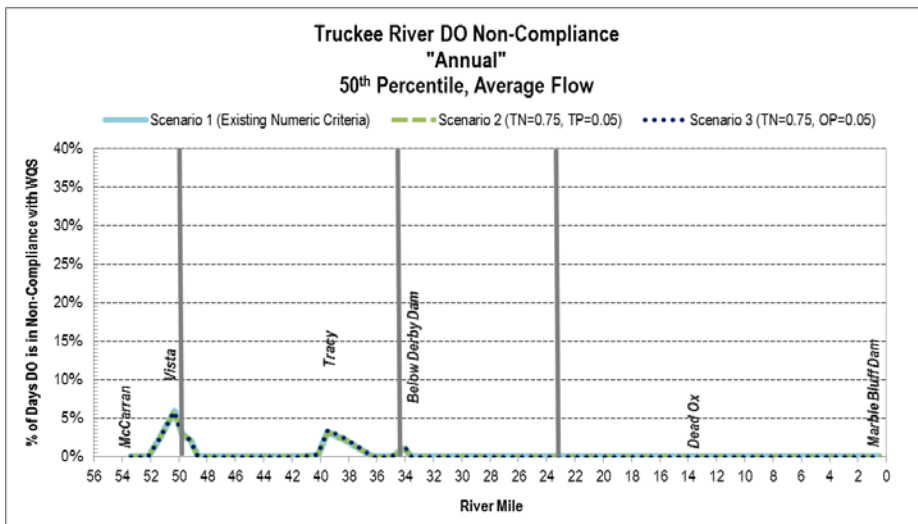
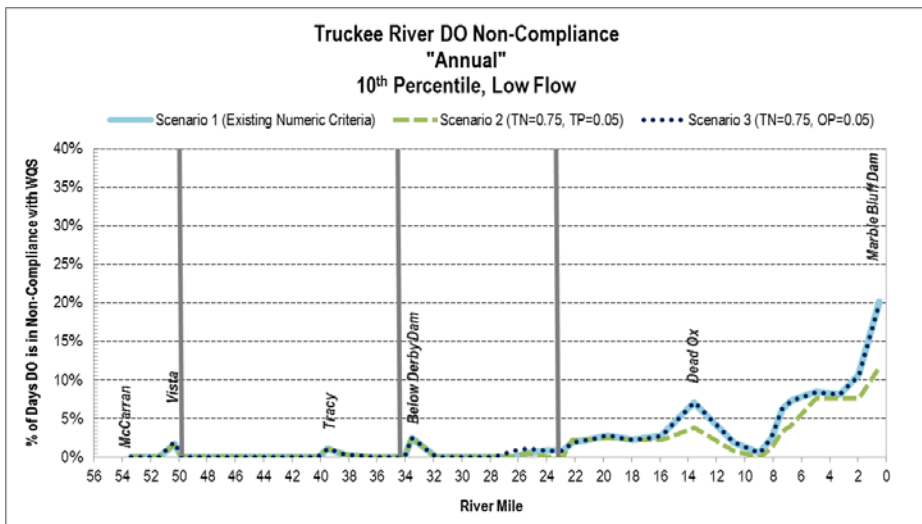
- At low flow, Truckee River oxygen is sensitive to the phosphorus concentration
- At average flow, no oxygen violations calculated
- Oxygen violations sensitive to other factors beyond phosphorus concentration
 - Flow condition, channel geometry and stream temperature



Examination of NDEP vs. PLPT Existing Phosphorus WQS

LimnoTech, 2014 Technical Rationale for Review and Revision of Truckee River Nutrient Water Quality Standards

- If the Nevada phosphorus criterion changed to be consistent with the current PLPT criterion, no expected increase in oxygen violations in the Truckee River under either low flow or average flow conditions compared to conditions under existing standards

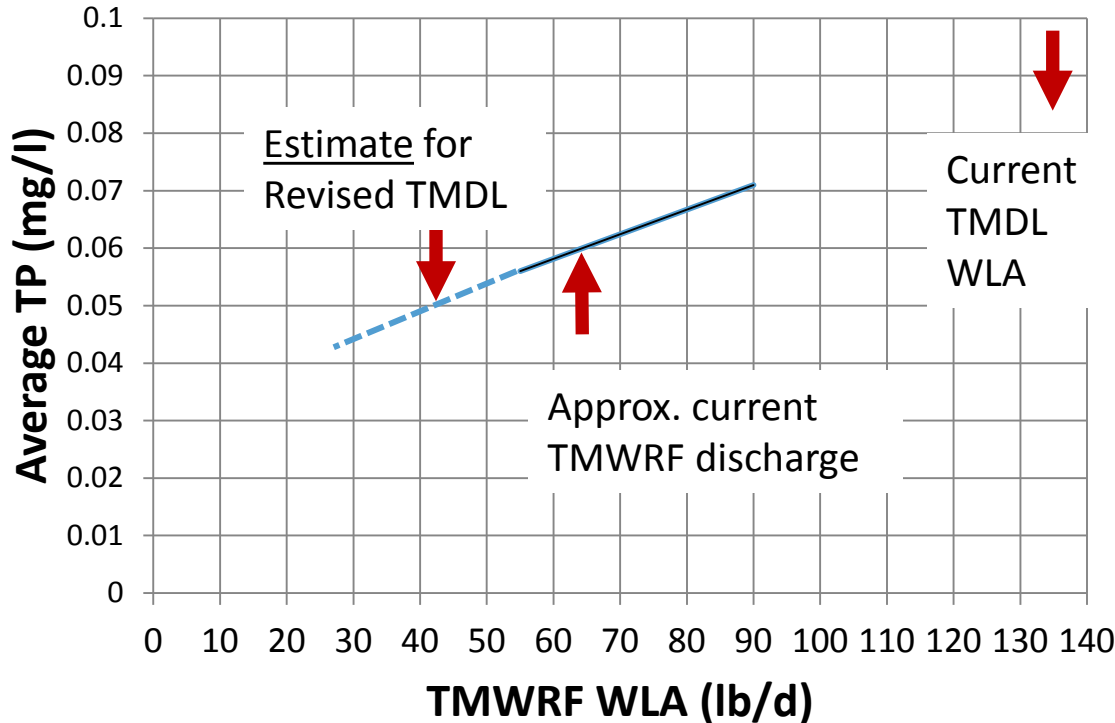


Proposed PLPT WQS Changes and Implications

- PLPT Triennial Review of WQS underway
 - Staffs of third party member agencies reviewed and prepared comments
- **Primary**: Proposed reduction of DRP criterion 0.05 mg/L to 0.022 mg/L
 - Justification: provide equivalence with existing NDEP TP criterion
 - No justification provided on appropriateness of current NDEP TP criterion
 - No consideration of ongoing NDEP WQS review
- If PLPT WQS is approved, unclear if NDEP WQS review would continue
 - Could remain at 0.05 mg/L TP – Back to status in 2008
 - **Current NV nutrient standards will/may prohibit TMDL revision**



Estimate of TP TMDL with No Change to NDEP Phosphorus WQS



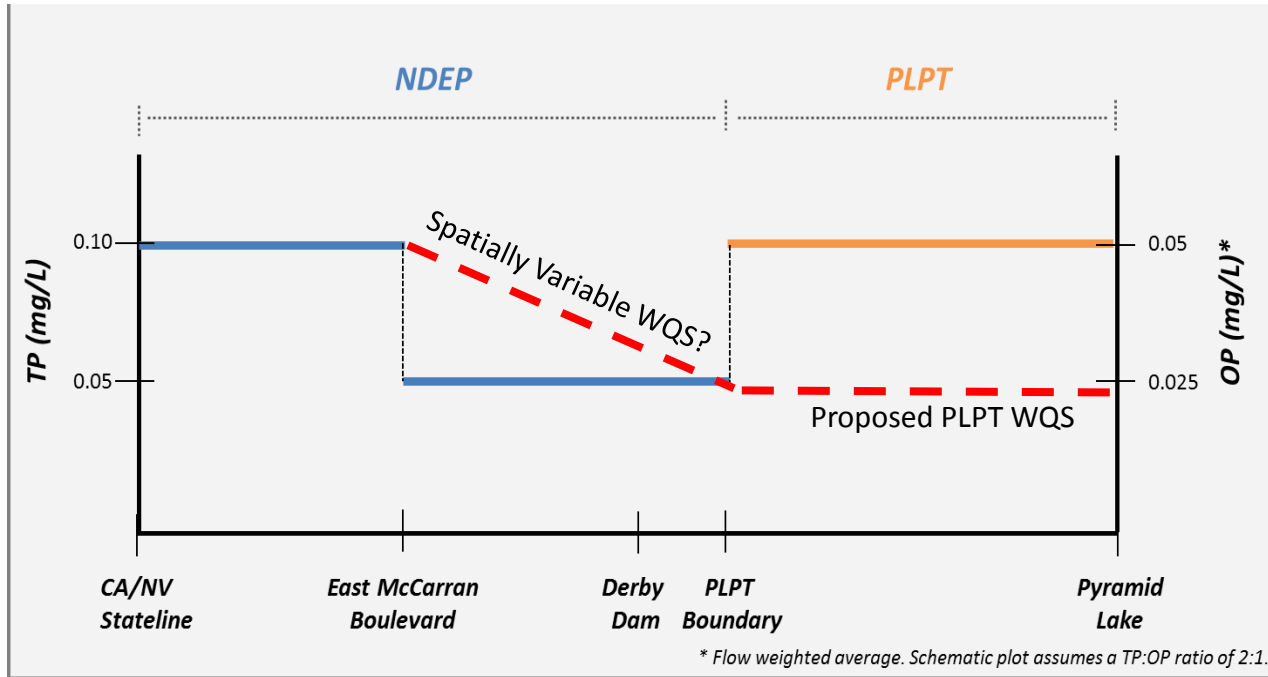
- Estimate for new TMDL: TMWRF WLA ~ 40 lbs/day
- Much lower than current TMDL or current discharge
- **Big financial and operational implications for TMWRF**

Potential Paths Forward

1. No change to PLPT phosphorus WQS
 - NDEP continues with WQS review process
 - NDEP potentially changes WQS to match existing PLPT, proceed with TMDL
 - Unlikely
2. PLPT phosphorus WQS changes to 0.022 mg/L
 - If no change to current NDEP TP WQS
 - If proceed with TMDL, potentially higher TMWRF allocation for Total Nitrogen
 - Prepare for significant reduction of TP load allocation for TMWRF
 - If NDEP considers a spatially variable TP WQS
 - Potentially justified because TP concentration declines along length of the river
 - Third parties could consider proceeding with TMDL



Concept for Spatially Variable NDEP TP WQS



Discussion of Comment Letter for PLPT Triennial Review of WQS



Extras

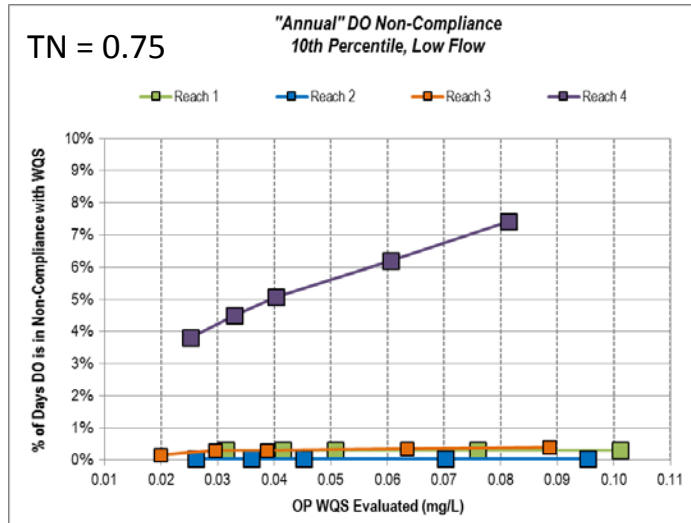


Final Results Ortho-P

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10th Percentile Flow: Reach Averaged

% of Days



50th Percentile Flow: Reach Averaged

% of Days

