



Quinn River, EF

Surface Water Quality Standards Triennial Review - 2021

*Water Quality Standards, Assessment &
Monitoring Branch
Bureau of Water Quality Planning*

November 16, 2021

Screen Setup - hide participants

- Mouse over slide
 - Icon should appear
 - Open pop-out window to open my screen in a new window
-
- Or you can grab vertical slide bar on the side of my screen and slide over participants

Open
Pop-out



Virtual World – New Normal?



The screenshot shows a Lifsize meeting window titled "screengrab". The main content area is a white box with a blue border containing a list of instructions. To the right of this box is a blue chat area with a "Chat" label. At the bottom of the screen is a control bar with icons for microphone, video, screen share, camera, and a hand icon. A yellow arrow points to the hand icon. A blue callout box points to the hand icon with the text "Microphone, video, and raise hand controls".

Lifsize

File Edit Window Help

screengrab

- All participants are muted
- During the meeting, **“raise your hand” to comment** by clicking the **raise hand** at the bottom of the screen, and we will unmute you.
- You can also **type your question into the chat**.
- Please wait until we call on you to speak
- Please state your first name, last name, and organization before speaking

Chat

Microphone, video, and raise hand controls

3:08

Meet the Team

Bureau of Water Quality Planning (BWQP)

Bureau Chief:

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Edgewood Creek, Tahoe Basin

Open Meeting Requirements

- Meeting is being recorded
- Open line for general comments
- Presentation
- Listening Session - discussion and comments related to Triennial Review
- End meeting/hearing
- Open line again for general comments
- Website will have all correspondence and recordings



Wild Horse Reservoir

Today's Outline

- Triennial Review
- Clean Water Act
- Nevada Water Quality Standards
 - How WQS are developed*
- Water quality monitoring
- Integrated Report
- Proposed future work
- TMDL/Vision planning
- Open floor for comments - What Else To Consider
- NDEP Water Quality Data Viewer



Triennial Review

- NDEP is required to review its water quality standards at least once every three years, required by Section 303(c) of the Clean Water Act
- Main purpose is to get feedback from the public on our proposed water quality standards
- No items will be voted on and no actions will be taken during this public meeting



Lahontan Reservoir

Clean Water Act

Objective – “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”

Goal – attain “fishable and swimmable” conditions wherever possible

Purpose - protect public health and welfare, enhance quality of water

Mason Valley Wildlife Management Area



Nevada Water Quality Standards

- NDEP is authorized by EPA to adopt water quality standards that:
 - Serve the purposes of the Clean Water Act
 - Protect public health and welfare
 - Enhance the quality of the water



Nevada Water Quality Standards

- Water quality standards consist of three elements:
 1. Designated beneficial uses
 2. Criteria to protect beneficial uses
 3. Antidegradation provisions



Nevada Water Quality Standards

1. Beneficial Uses, NAC 445A.122

- Municipal or domestic supply (MDS)
- Irrigation (IRR)
- Watering of livestock (WLS)
- Propagation of aquatic life (AQL)
- Recreation with water contact (RWC)
- Recreation without water contact (RNC)
- Propagation of wildlife (PWL)
- Industrial supply (IND)



South Fork Reservoir

Nevada Water Quality Standards

1. Beneficial Uses, NAC 445A.122 (continued)

- Enhancement of water quality (Lake Tahoe tributaries)
- Waters of extraordinary ecological or aesthetic value (Lake Tahoe)



Nevada Water Quality Standards

2. Criteria

- **EPA national criteria** are numeric values that protect specific beneficial uses
- **Site-specific criteria** can be developed following EPA guidance

Two types of criteria in the NAC

- **Numeric criteria** are provided in NAC tables
- **Narrative criteria** specify waters must be “free from...”

Nevada Water Quality Standards

Numeric Criteria

- **NAC 445A.1252-2234** - Apply to designated water and their tributaries
- **NAC 445A.118** - Ammonia tables
- **NAC 445A.1236** – “Toxics table” lists metals, pesticides, and other toxic chemical compounds

Tables for designated waters indicate the “most-restrictive” beneficial use



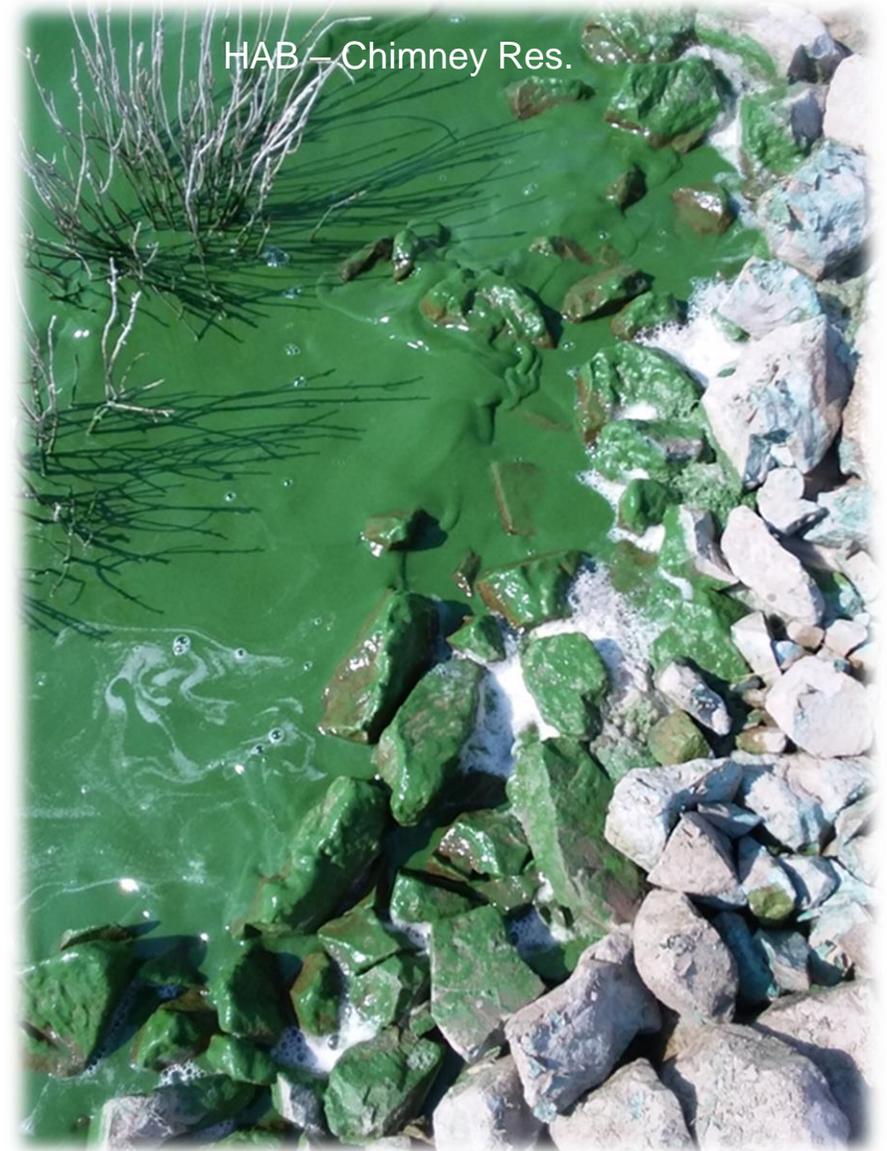
Nevada Water Quality Standards

Narrative Criteria (NAC 445A.121)

Apply to all surface waters in Nevada regardless of beneficial use

Waters must be “*free from*”

- Floating debris, oil and grease
- Toxic and corrosive compounds
- Radioactive materials
- High temperature, biocides, pathogens, etc.



Nevada Water Quality Standards

3. Antidegradation (implemented during the permitting process)

The Clean Water Act requires states to have an **antidegradation protection program** and **implementation procedures** that:

- Ensure beneficial uses of the receiving water are maintained and protected.
- Limit degradation of higher water quality conditions, where quality of receiving water is better than the water quality standards.
- Evaluate whether lowering water quality can be avoided with cost-effective practicable alternatives. If not, determine whether the lower water quality is justified based on economic and social benefits.
- Protect waters using a “tier” system for surface waters.
- Follow a “parameter-by-parameter” or “waterbody-by-waterbody” approach.



Nevada Water Quality Standards

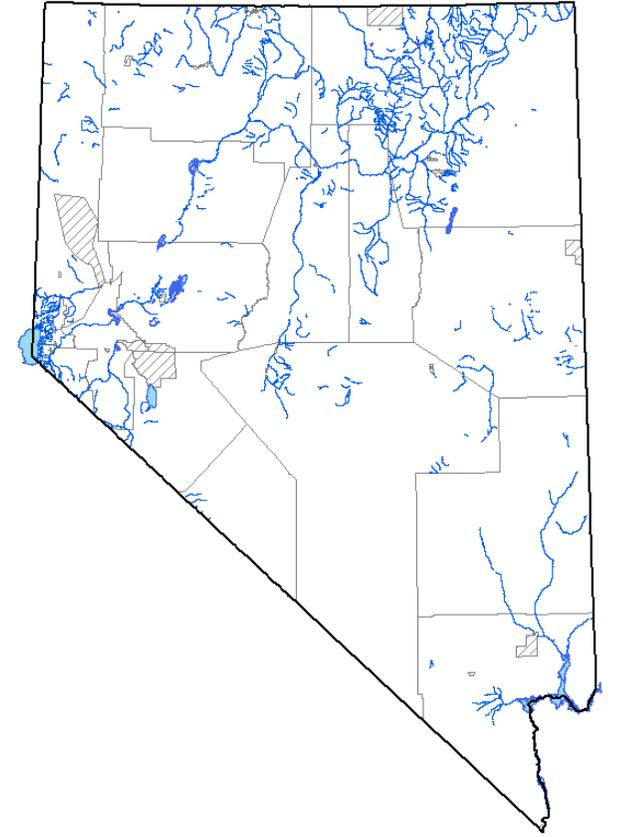
3. Antidegradation (Continued)

- Nevada Revised Statute (NRS) 445A.565 requires that any surface water whose quality is higher than the applicable water quality standards must be maintained in their higher quality
- Nevada uses a “parameter-by-parameter” approach: “requirements to maintain higher quality” (RMHQs)
- **Antidegradation** is typically **implemented** during the permitting process for discharges into surface water and is based on the quality of the receiving water.



How are water quality standards adopted?

- Conduct field investigation and monitoring
- Determine appropriate beneficial uses
- Review national criteria
- Draft rationale and petition to support the criteria
- Conduct public workshops
- Receive and review public comment
- Present proposed changes to the State Environmental Commission
- Obtain approval by State Legislative Committee
- Submit to EPA for approval



Recent Standards Revisions

Cadmium Petition – updated hardness-based equations in NAC 445A.1236 for calculating criteria to protect aquatic life

Chemical	Municipal or Domestic Supply (µg/l)	Aquatic Life ^(1,2) (µg/l)	Irrigation (µg/l)	Watering of Livestock (µg/l)
INORGANIC CHEMICALS⁽³⁾				
Antimony	146 ^a	-	-	-
Arsenic	50 ^b	-	100 ^c	200 ^d
1-hour average	-	340 ^{e,(4)}	-	-
96-hour average	-	150 ^{e,(4)}	-	-
Barium	2,000 ^b	-	-	-
Beryllium	0 ^a	-	100 ^c	-
Boron	-	-	750 ^a	5,000 ^d
Cadmium	5 ^b	-	10 ^d	50 ^d
1-hour average	-	(1.136672- $\{\ln(\text{hardness})(0.041838)\})$ $\ast e^{(1.0166-0.9789 \{\ln(\text{hardness})\} -3.924 -3.866)}$ ib,(4)	-	-
96-hour average	-	(1.101672- $\{\ln(\text{hardness})(0.041838)\})$ $\ast e^{(0.7409-0.7977 \{\ln(\text{hardness})\} -4.719 -3.909)}$ ib,(4)	-	-





Recent Standards Revisions

Colorado River: Lake Mohave

Colorado Petition

Add waterbodies to the WQS tables in the NAC:

Lake Mohave – added as a revision to the way the waterbody is segmented and given its own standards table.

Lake Las Vegas also added as a waterbody with its own table.

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY CRITERIA TO PROTECT BENEFICIAL USES	Beneficial Uses ^a												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
<i>Beneficial Uses</i>			X	X	X	X	X	X	X	X					
<i>Aquatic Life Species of Concern</i>			<i>Adult cold-water fishery.</i>												
Temperature - °C ΔT^b - °C	$\Delta T = 0$	S.V. ≤ 24 $\Delta T \leq 2$			*										
pH - SU		S.V. 6.5 - 9.0 $\Delta pH \neq 0.5$			*										
Dissolved Oxygen - mg/L		S.V. $\geq 5.0^c$			*										
Total Phosphorus (as P) - mg/L		A-Avg. ≤ 0.05			*	*									
Nitrate (as N) - mg/L		S.V. ≤ 10						*							
Nitrite (as N) - mg/L		S.V. ≤ 0.06			*										
Total Ammonia (as N) - mg/L		^d			*										
Total Suspended Solids - mg/L		S.V. ≤ 25			*										
Turbidity - NTU		S.V. ≤ 10			*										
Color - PCU		S.V. ≤ 75							*						
Total Dissolved Solids - mg/L		^e							*						
Chloride - mg/L		S.V. $\leq 400^e$							*						
Sulfate - mg/L		S.V. $\leq 500^e$							*						
Alkalinity (as CaCO ₃) - mg/L		S.V. ≥ 20			*										
E. coli - cfu/100 mL ^f		G.M. ≤ 126 S.V. ≤ 410				*									
Fecal Coliform - No./100 mL		S.V. $\leq 1,000$			*										
Toxic Materials		^g													



Water Quality Monitoring

- **Long Term** – consists of the mainstem waters: Truckee, Carson, Humboldt, Snake, etc.
 - Was quarterly, now conducted annually
- **Focus Basin** - Intensified sampling in the eastern portion of the Central Region
 - Conducted quarterly
- **Harmful Algal Blooms (HABs)**
 - Conducted on select reservoirs
- **Special Projects**
 - Segments of the Carson and Walker Rivers



Bioassessment Monitoring

- Since 2000 - evaluate the ecological integrity of our waters
 - Water quality conditions (temp, pH, DO, nutrients, metals)
 - Biological condition (benthic macroinvertebrates and periphyton)
 - Physical habitat (slope, canopy)
- Use of the data
 - EPA NARS program
 - Second line of evidence
 - No WQ standards



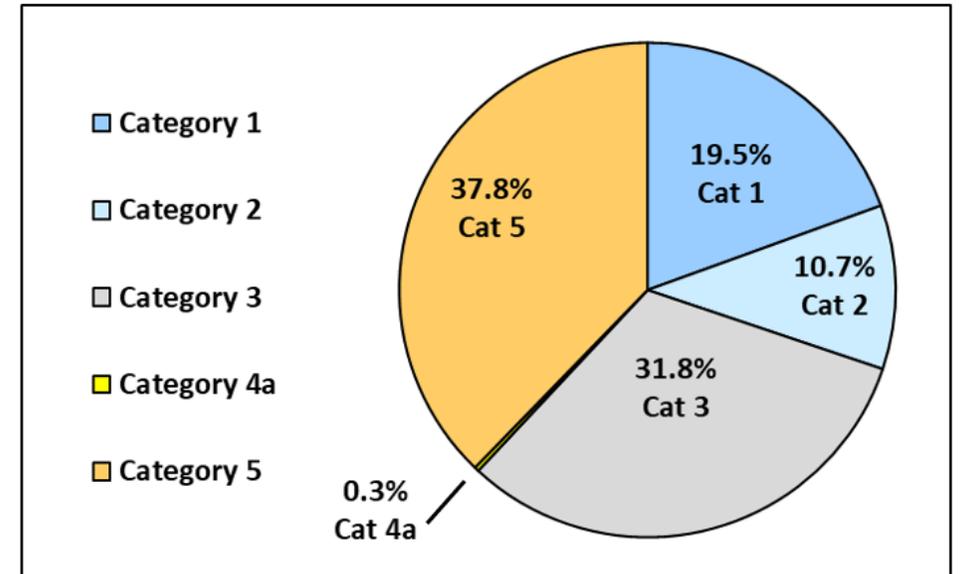
DRAFT 2020-2022 Nevada Water Quality Integrated Report

- Draft going out this week or next
- Assessment Period - October 1, 2013 through September 30, 2020

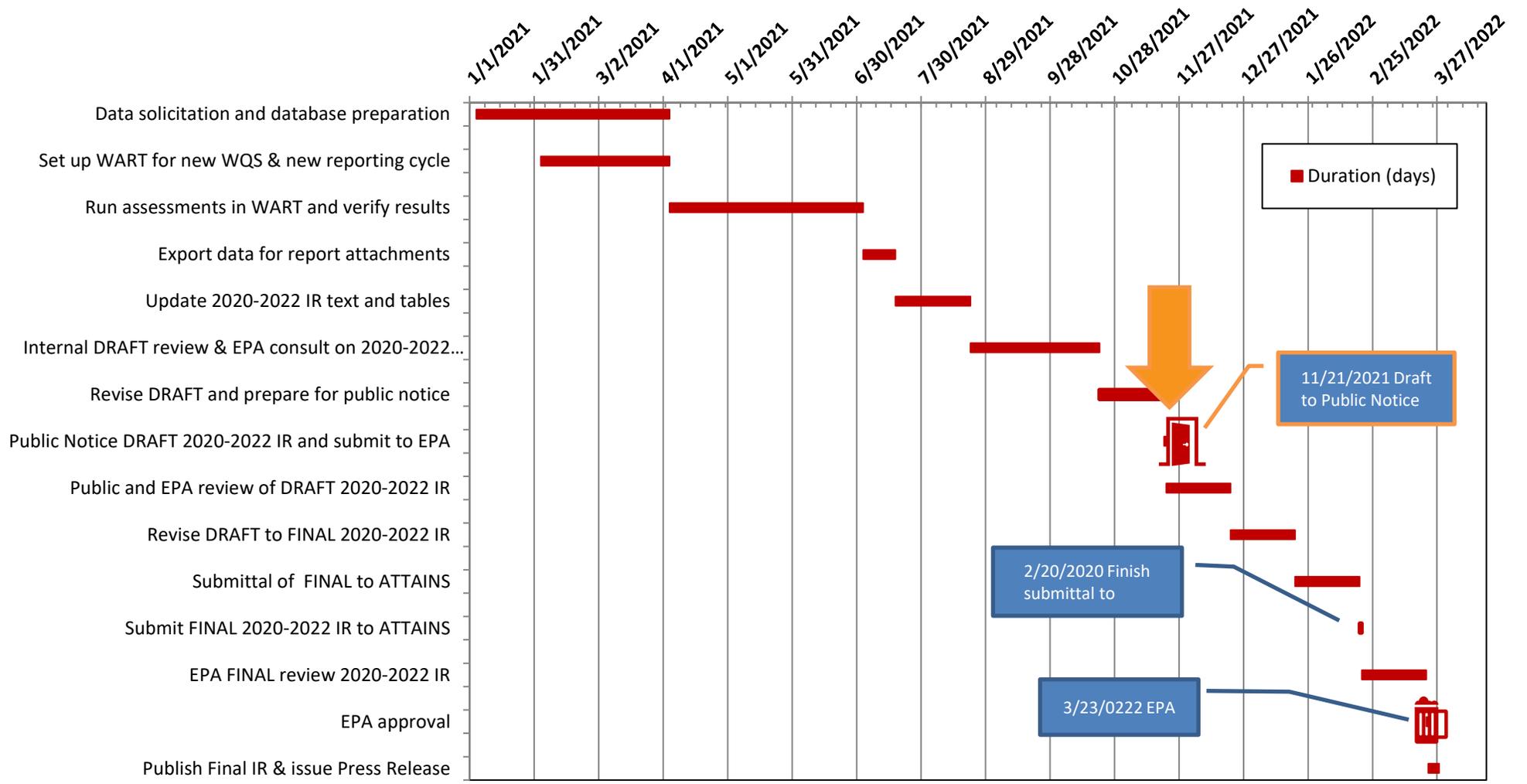
Table ES-1. Parameters Causing Impairments Overall and as a Percentage of Total Impairments

Parameter	Impairments by Parameter	% of Total Impairments	No. Impairments by Beneficial Use								
			AQL	FC	IRR	MDS	OO	RNC	RWC	WLS	W&O
Phosphorus, Total	153	19.3%	81							72	
Temperature	81	10.2%	81								
Beryllium	73	9.2%				73					
Iron	64	8.1%	61		3						
E. coli	40	5.1%						1		39	
Hg in fish	40	5.1%		40							
Total dissolved solids (TDS)	35	4.4%				32					3
Cadmium, dissolved	33	4.2%	33								
Turbidity	31	3.9%	31								
Selenium, total	22	2.8%	19		3						
Total suspended solids (TSS)	22	2.8%	22								
pH	19	2.4%	19								
Dissolved oxygen (DO)	17	2.1%	17								
Silver, dissolved	17	2.1%	17								

Figure ES-1. Percentage of Waterbodies in Each Assessment Category



Integrated Report Schedule



Proposed Future Work

- Evaluate policy and procedures for harmful algae blooms (HABs)
- Update ammonia criteria for aquatic life
- Update beryllium criteria (MDS is the most-restrictive beneficial use)
- Continue work on antidegradation regulations, implementation procedures, and permit writers' guidance
- Blackrock & Northwest focus basin standards evaluation
- Review other EPA criteria published, but not yet adopted by Nevada
- Enhance the use of biological monitoring in standards development and assessments

TMDL Vision Projects - coordinates with 319 funding

- Carson River
 - Projects are funded for bank stabilization and restoration
 - Data review suggested preparing a UAA to change certain segments of the river to a warmwater fishery
- Walker River
 - State park projects include weed abatement, bank stabilization, river trail access



Triennial Review - Summary

- NDEP is required to review its water quality standards at least once every three years.
- This process is required by Section 303(c) of the Clean Water Act
- The review must include public and EPA input on the standards and opportunity for comment.
- 2021 Triennial Review and past Triennial Review documents can be found on our website

Google it: Nevada triennial review



Listening Session

- What water quality standards or water quality issues do you think BWQP should review?
- Please state your name and organization (in case we have additional questions or need clarification)

**Comments accepted until
December 31, 2021**

Send comments to:

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Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**

Thank You

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www.ndep.nv.gov/water/rivers-streams-lakes

South Fork Reservoir