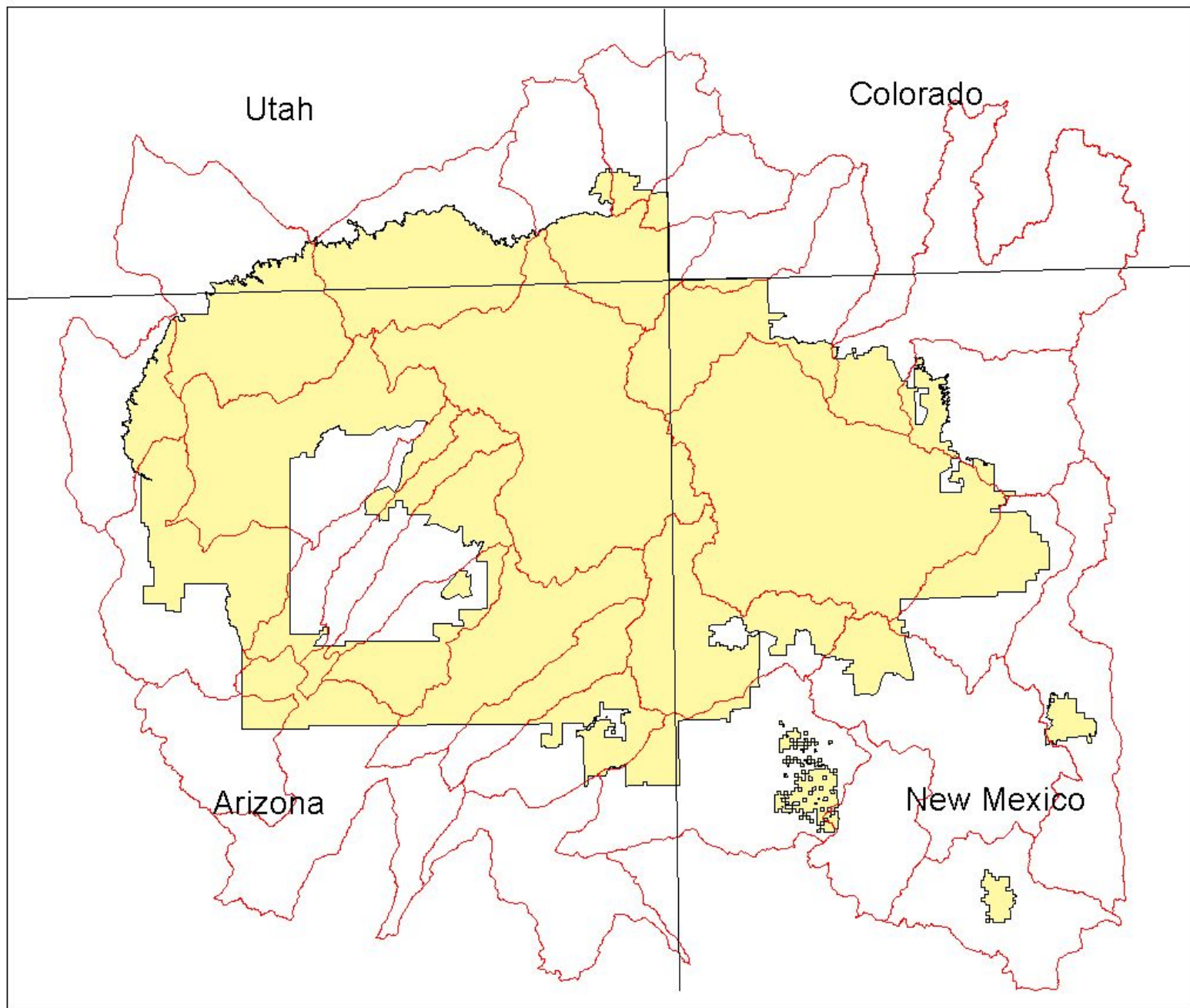


Eric Rich  
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Navajo Nation EPA  
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Tuba City Office  
928-283-3080

# Navajo Nation Environmental Protection Agency



## Water Quality Standards and Water Quality Sampling



<b>Watershed Name</b>	<b>2 digit code</b>	<b>8-digit HUC</b>
Chinle Wash	01	14080204
Lower San Juan - Four Corners	02	14080201
Montezuma Creek	03	14080203
McElmo Creek	04	14080202
Arroyo Chico	05	13020205
Chaco Wash	06	14080106
Mancos River	07	14080107
Upper San Juan River	08	14080101
Blanco Canyon	09	14080103
Middle San Juan River	10	14080105
Rio Puerco	11	13020204
Rio San Jose	12	13020207
Rio Salado	13	13020209
Zuni River	14	15020004
Upper Puerco River	15	15020006
Lower Puerco River	16	15020007
Leroux Wash	17	15020009
Cottonwood Wash	18	15020011
Middle Little Colorado River	19	15020008
Jeddito Wash	20	15020014
Polacca Wash	21	15020013
Canyon Diablo	22	15020015
Corn-Oraibi Wash	23	15020012
Dinnebito Wash	24	15020017
Lower Little Colorado River	25	15020016
Moenkopi Wash	26	15020018
Lower Colorado - Marble Canyon	27	15010001
Lower Lake Powell	28	14070006
Lower San Juan River	29	14080205
North Plains	30	13020206
Upper Little Colorado River	31	15020002





























8 10 '01



8 10'01





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# Navajo Nation Surface Water Quality Standards

- USEPA program delegation received in January
- Antidegradation
- Narrative Standards
- Designated Uses (Dom, FC, HC, AgWS, AqHbt, L&W)
- Numeric Standards
- Biological Standards (Reserved)



# Navajo Nation Surface Water Quality Standards

- Provides basis for 401 Certifications and NPDES Permits
- Provides numeric criteria to determine designated use support

# Sample Design

- Parameters
- Sampling Method
- Sampling Frequency (Minimum Data)
- QA/QC - Sampling and Representative Data



# Parameters

- Numeric Criteria (VOC's, semi-VOC's, nutrients, physical, radiological, metals, bacteriological)
- Transition from large analytical suites to site specific suites
- Revise suites based on frequency & sources
- Analytical limitations

















# Sampling Method

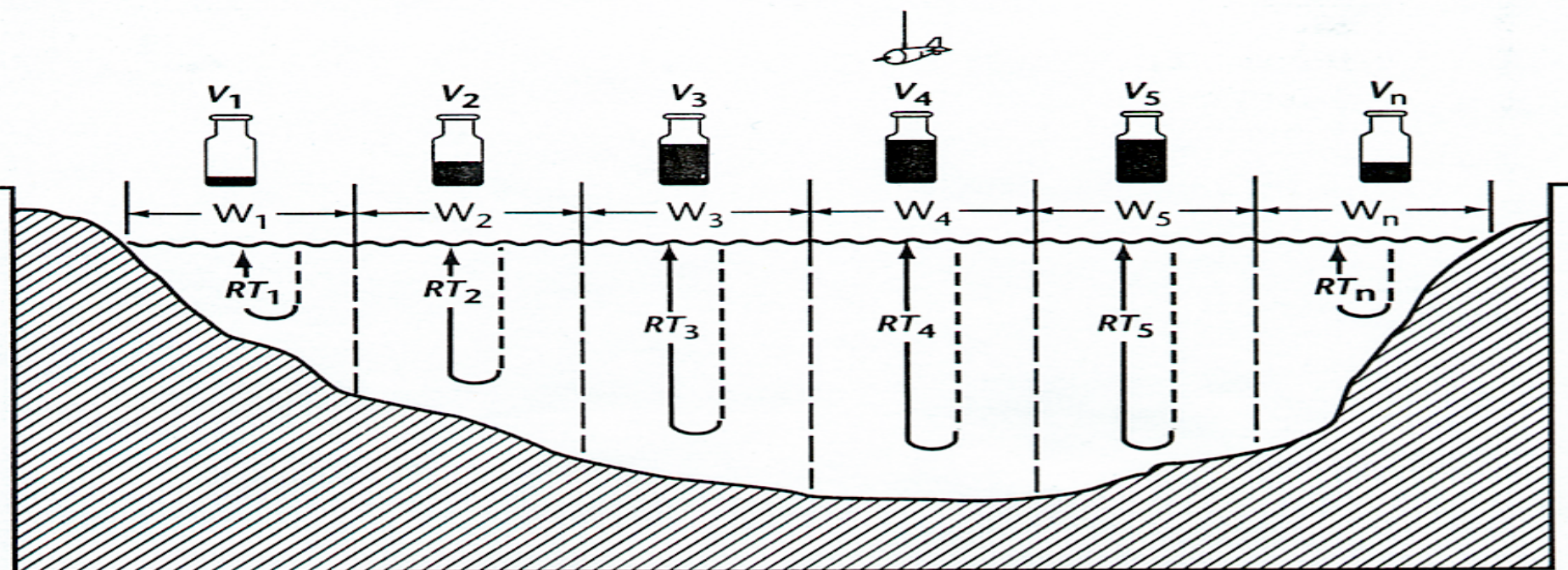
- Lowest standard drives sampling approach
- Clean hands/dirty hands required for low level mercury grab
- USGS National Field Manual
- Known source (stream) - grab
- Unknown source (stream) - EWI or grab







Samples are collected  
at the center of  
each increment




### EXPLANATION

**$RT$**  TRANSIT RATE (transit rate at each sampling vertical is equal)

**$W$**  WIDTH (width of each increment is equal)

**$V$**  VOLUME COLLECTED AT EACH VERTICAL IS PROPORTIONAL TO THE DISCHARGE OF EACH INCREMENT

 SAMPLING VERTICAL OF EACH EQUAL-WIDTH INCREMENT (SAMPLES COLLECTED)—The vertical transit rate relative to sample volume that is proportional to the stream discharge of each increment



# Sampling Frequency

- Flow weighted (base flow to flood flow and back)
- Seasonal considerations (agricultural or tourist season effluent)
- Statistical requirements (USEPA CALM)
- Adopt from other states

# QA/QC - Sampling and Representative Data

- Cation/anion samples?
- Duplicates, equipment blanks
- Reliability checks - anion cation ratios
- Laboratory results - holding times, chemical stability, pH/alkalinity agreement



# Thank You

