



NAVAJO TRIBAL UTILITY AUTHORITY
AN ENTERPRISE OF THE NAVAJO NATION

SECTION I. OVERVIEW ON REQUEST FOR PROPOSAL

- A. Navajo Tribal Utility Authority (NTUA) is a non-for-profit, multi-utility enterprise of the Navajo Nation which provides electric, water, wastewater, natural gas, photovoltaic, and telecommunication services covering approximately 27,000 square miles across northeastern Arizona, northwestern New Mexico and Utah. NTUA has seven main district offices located in strategic communities spanning the Navajo Reservation, with its corporate headquarters located in Fort Defiance, Arizona.

Type of Service: to provide, pilot test, and subsequently purchase a reverse osmosis (RO) treatment system for a public drinking water system in Halchita, Utah.

- B. Schedule of Activities:

- | | |
|--|-------------------------------------|
| 1. Advertisement Period | February 1 – 21, 2017 |
| 2. Mandatory Pre-Proposal Meeting | February 9, 2017 @ 2:00 p.m. (DST) |
| ➤ NTUA Deputy General Manager’s Building (Large Conference Room)
Fort Defiance, Arizona | |
| ➤ Call-In Information: | |
| ○ Dial number: (928) 729-6242 | |
| ○ Enter access code: 0115507 | |
| 3. Questions Due to NTUA | February 13, 2017 |
| 4. Answers to Questions | February 15, 2017 |
| 5. Proposal Due to NTUA | February 22, 2017 @ 5:00 p.m. (DST) |
| 6. Evaluation of Proposals | February 23 – 28, 2017 |
| 7. Execution of Contract | March 1, 2017 |

- C. Inquiries: All questions must be submitted in writing to Avis Jimm, Contract Administrator, at (928) 729-6243 or via email at avisj@ntua.com. NTUA will only respond to questions related to this RFP prior to the date indicated above. All such emails should have “Halchita Water Treatment System – QUESTIONS” in the subject line.

- D. Proposal and Cost shall each be submitted in separate sealed envelopes clearly marked as follows: for the Proposal “**DO NOT OPEN – HALCHITA WATER TREATMENT SYSTEM (PROPOSAL)**” and for the Cost “**DO NOT OPEN – HALCHITA WATER TREATMENT SYSTEM” (COST)**” received by February 22, 2017 @ 5:00 p.m. (DST) at the following destination:



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PHYSICAL ADDRESS: Navajo Tribal Utility Authority
ATTN: Avis Jimm, Purchasing Department
North Navajo Route 12 (Fed Ex/UPS)
Fort Defiance, Arizona 86504

- E. Proposal submission, firms must submit as required:
1. An Original proposal (marked 'Original') with one (1) electronic copy on flash drive **identical to the original** by the due date at the address provided above. Any supporting documentation and supplemental information may be included in subsequent appendices. Each page of the proposal shall include the company name and page numbering. All proposals shall be submitted using standard 8½ x 11 inch paper, printed double-sided and organized with tabs delineating each criteria as noted in Section II. Proposal Evaluation Criteria. Length of the proposal shall be limited to a maximum of twenty-five (25) numbered pages of text no smaller than 11 point, and/or graphics.
 2. One Original cost (marked 'Original' and to **not be included on the flash drive**) in a **separate sealed envelope** to be opened only after determination the PROPOSAL satisfies the requirements of this RFP. Each page of the cost shall include the company name and page numbering. The cost must be firm and cannot be increased, unless there is a change in NTUA requirements after the RFP submission, once a firm is selected.
 3. Ensure the proposal response is properly labeled on the outer part of the shipping package (hand-delivered, FedEx, or UPS). NTUA will not be responsible for the premature opening of proposal responses which have not been properly labeled.
- F. Proposers mailing their proposals shall allow sufficient time for delivery to ensure receipt by the due date and time. Late, facsimiled, or electronic mailed proposals will not be accepted.
- G. Only responsive proposals will be considered for award. In order for a proposal to be considered responsive, the proposal and cost must address the items listed in Section II, Proposal Evaluation Criteria.
- H. Addendum to the proposal: In the event it becomes necessary to revise any part of the proposal, the Contract Administrator shall issue a written addendum on the specifics of the change and inform all concerned. **Proposers shall ensure a signed copy of acknowledgment of any addendum is included with the proposal.**



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- I. All costs incurred by the proposer in preparing and responding to this solicitation are the sole responsibility of the proposer. Any proposal submitted pursuant to this solicitation is at the sole risk and responsibility of the party submitting such proposal.
- J. Rejection of Proposals: NTUA reserves the right to reject any or all proposals and to waive informalities in the proposals received whenever such rejection or waiver is in the best interest of NTUA. NTUA reserves the right to reject any proposal based on deficient past performance, including projects conducted with NTUA, other Navajo Nation agencies, the federal, state or local governments, or any commercial project.
- K. NTUA reserves the right to select more than one winning proposal. NTUA will select the winning proposal(s) on a best value basis, not strictly on a cost basis analysis e.g., the lowest cost, will be selected. As described in Section II – Proposal Evaluation Criteria and Section III – Scope of Work, the winning proposer(s) will best meet these evaluation criteria's, including, but not limited to, qualification, past performance, timeline to complete project, and cost. A successful proposer(s) is expected to perform at a high level to meet NTUA's contractual requirements.
- L. Contractual Clauses: In order for NTUA to contract for services of this nature, **the successful Proposer must agree to include as part of the Agreement the following two clauses:**
 - 1. Governing Law: The governing law and dispute jurisdiction will be the Navajo Nation Law and Courts. No provision of the contract shall constitute a waiver of sovereign immunity of the Navajo Nation.
 - 2. Navajo Nation Sales Tax: The successful Proposer shall include the Navajo Nation 5% tax within their cost proposal. It will be the successful proposer's responsibility to pay the sales receipt tax to the Navajo Nation.
- M. Award of Contract: Upon selection, a purchase order, together with a negotiated agreement of the terms and conditions (Agreement) will be prepared between NTUA and the successful proposer. The proposal submitted by the proposer(s) may also become part of the contract.
- N. Preference will be made in accordance with the Navajo Business and Procurement Act (12 N.N.C. § 1501 et seq.); the Navajo Nation Procurement Act (12 N.N.C. § 301 et seq.); the Navajo Nation Business Opportunity Act (5 N.N.C. § 201 et seq.) and other applicable statutory and regulatory requirements. Proposers shall submit evidence of their Preference Priority Certification if applicable.



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- O. NTUA Liability: The proposer agrees to indemnify, defend and hold harmless NTUA and its officers, agents, employees, community representatives and volunteers from any and all claims, judgments, losses, damages, payments, costs, and expenses of every nature and description, including attorney's fees, arising out of or resulting from the proposer's negligent performance of work, as described in any Agreement resulting from the RFP.

- P. Cost must be accompanied by proposal security made payable to Owner in an amount of 5% of proposer's maximum cost price and in the form of a certified check or a proposal bond (EJCDC No. C-430, 2007 Edition) issued by a surety meeting the requirement of paragraphs 5.01 and 5.02 of the General Conditions. The proposal security of the successful proposer will be retained until such proposer has executed the contract documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the proposal security will be returned. If the successful proposer fails to execute and deliver the contract documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the proposal security of the proposer will be forfeited. The proposal security of other proposers whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the effective date of the agreement or 61 days after the proposal opening, whereupon proposal security furnished by such proposers will be returned. Proposal security of other proposers whom OWNER believes do not have a reasonable chance of receiving the award will be returned within seven days after the proposal opening.



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SECTION II. PROPOSAL EVALUATION CRITERIA

A. 40 Points: Firm's Qualification.

1. Provide the name of Project Manager to be in charge of this project, including their professional qualifications, experience, and a statement indicating the tasks he/she will perform.
2. Provide evidence the firm is capable to perform the required Scope of Work.

B. 40 Points: Past Work Experience of the Firm.

1. Provide Three (3) examples of prior or current projects in which the similar Scope of Work was performed.
2. *If applicable*, provide two (2) examples of past performance on contracts with the Navajo Nation; in terms of mobilization, cost control, quality of work, compliance with performance schedules, and satisfactory performance of services provided.

C. 10 Points: Navajo Preference. Provide proof of the Navajo Preference certification from the Navajo Nation Division of Economic Development. Points shall be awarded as following:

1. Priority 1: 10 points
2. Priority 2: 5 points

D. 5 Points: Financial Capability of the Firm. Provide evidence of the financial capability to perform the required scope of work within the required timeframes.

1. Provide evidence the proposer has the financial capability to perform the required Scope of Work, as well as the technical and administrative support to complete within the required time frames.
2. Provide latest financial statement (official accounting statement), audited if available, including the primary proposer's latest balance sheet and income statements defining the following:
 - Current assets; Net Fixed Assets; Other Assets; Current Liabilities
3. Provide the name of the entity preparing the financial statement and date thereof if the Financial Statement is not audited.

Note: If financial statement is not for the identical organization named herein, explain the relationship and financial responsibility of the organization furnished.



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- E. **5 Points: Proof of Insurance.** Provide evidence of insurance coverage and shall name NTUA as additionally insured; a “sample” copy will not be acceptable:
1. Worker’s Compensation;
 2. General Property Liability;
 3. \$1,000,000 Professional Liability Insurance; and
 4. Motor Vehicle and/or other mode of transportation.



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SECTION III. SCOPE OF WORK

Project Description:

To provide, pilot test, and purchase a reverse osmosis (RO) treatment system for a public drinking water system in Halchita, Utah. The water source is an existing well next to the San Juan River near the existing Halchita surface water treatment plant (WTP). NTUA's intent is to replace the existing WTP with a new Reverse Osmosis (RO) treatment system and utilize existing facilities to convey the treated water to the storage and distribution system. It is understood that a proposed RO treatment system will need to include pre-treatment. Treated water must meet public drinking water standards. Figure 1 shows the location of the Halchita WTP and the community of Halchita.

Background Information:

The Halchita WTP is a traditional surface water treatment plant with feed tank and pre-sedimentation basin, coagulation/flocculation/sedimentation, media filter, and clearwell. Figure 2 shows the plan view and schematic of existing plant process. Water is pumped from the clearwell to two 187,635 gallon storage tanks (a distance of approximately 2 miles). The two tanks feed the distribution system that services the community of Halchita. The maximum day water demand for the system is 36,645 gallons/day (25.44 gpm). The average day demand is 20,360 gallons/day (14.11 gpm). Issues with the intake structure and fluctuations in the river water quantity and quality have caused NTUA to look for other viable options to supply drinking water to Halchita. The WTP is not in operation at this time and potable water is currently being hauled to the community of Halchita.

A well was drilled near the Halchita WTP next to the San Juan River in 2015 with the intent that groundwater would be used as the source for the Halchita water system. The well was pump tested at 80 gpm and water samples were taken on December 8, 2016 and December 16, 2016. The results of the tests show that the water is high in TDS, over 3,400 mg/L, and the turbidity is greater than 20 NTU. Water Quality test results of the samples taken on the 8th and 16th of December are included in the Appendix. The pump was pulled and the well is currently capped.

Scope of Work:

1. **Provide RO Treatment System.** Proposer will provide RO treatment system. It is assumed that the RO treatment system will include pre-treatment process equipment. Throughout the Scope of Work, RO treatment system infers all equipment and components for RO processing, pre-treatment, and system cleaning, maintenance, and proper handling of waste materials in coordination with NTUA.



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- a. The RO treatment system shall be complete with all pumps, tanks, compressors, strainers, and other ancillary systems needed for full operation during the pilot testing and anticipated future long term operation. Proposer will provide all maintenance equipment and chemicals required to maintain the treatment system. RO treatment system will be delivered by proposer to Halchita WTP site.
 - i. NTUA will provide and install well pump and connect to RO treatment system. NTUA will connect power and conduct SCADA programming. Proposer will ensure that all connections for power, SCADA, and plumbing are made in an appropriate manner to conduct the pilot test and are sufficient for future long term operation. Figure 3 shows a schematic of proposer provided system and NTUA provided system.
 - ii. Proposer will provide the RO Treatment System inlet pressure requirements in their proposal. This will be used to determine the well pump head requirements.

- b. Develop Treatment System Process Schematic. Proposer will develop a treatment process that will produce potable water to be non-scale forming, non-corrosive (**assumes that a small flow of pretreated water will be combined with RO treated water for corrosion control and to improve taste of water**), and meet public drinking water standards (both primary and secondary standards). Proposer will provide a treatment system process schematic that will treat and provide a treated product flow of 25 gpm and have the ability to expand to provide a treated product flow of 60 gpm in the future. The total pressure loss for the complete treatment process shall be less than 50 psi.
 - i. The schematic will show the proposer provided system to include pre-treatment requirements and facilities, cleaning and maintenance systems, and indicate what existing facilities and piping associated with the existing WTP will be utilized.
 - ii. Dimensions (height, length, and width) of RO treatment and Pre-Treatment system will be provided along with any associated tanks, piping, etc.

- c. A complete description of the operation of the treatment system will be provided. At a minimum the documentation will include a flow schematic of the process, tabulation of operating parameters, description of each unit process and mode of operation (filtration, backwash, daily chemical clean, clean-in-place.) instrumentation and controls. This documentation will become part of the data record for the testing program.



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- d. Provide Reject Water Flow Rate. Provide flow rate of reject water from treatment system for a product flow rate of 25 gpm and future product flow rate of 60 gpm. NTUA anticipates that reject water will discharge to existing evaporation ponds during pilot testing.
 - e. Provide Plumbing and Power Supply Requirements. Proposer will provide plumbing and power supply requirements to connect the RO treatment system such that well water will be supplied to the proposed RO treatment system. Power requirements will include what is needed to run the treatment system and allow for SCADA integration. Proposer will recommend head requirements for pre-treatment and RO pump suction operation.
2. **Install RO Treatment System.** Proposer will coordinate and assist with the installation of the RO treatment system in the existing Water Treatment Building. This will include: coordinating location for installation, coordination of power connection; integrating treatment system and well controls; plumbing installation from well to treatment system and discharges from treatment system to clear well and waste discharge; and any other requirements to ensure that the RO treatment system functions properly.
 3. **Provide RO Treatment System Pilot.** Conduct Process Piloting. Proposer will pilot RO treatment system for a period of four (4) weeks. During the pilot test the proposer will collect samples and conduct laboratory analysis. Results of analysis will be provided to NTUA. Proposer will support all requirements to conduct process piloting.
 4. **Provide RO Treatment System Operator Training.** Proposer will provide operator training, operations manual, and as built drawings to ensure that NTUA can operate the RO treatment system. Initial operator training will be conducted prior to pilot study to ensure that NTUA staff are proficient to conduct required operations during pilot. Additional operator training will be conducted after successful pilot to ensure NTUA staff are proficient and can conduct long term operations of the RO Treatment System.
 5. **Provide RO Treatment System Operations Support.** Proposer will provide a one - year performance guarantee to NTUA. This will include providing on site assistance to troubleshoot and resolve treatment system operating issues.



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Additional Information and assumptions:

- NTUA will provide connection from well to the inlet of the proposer provided treatment system and to the outlet of the treatment system.
- After proposer selection NTUA will meet with selected proposer to review power requirements, treatment system control requirements with integration of well pump, and coordinate installation roles and responsibilities.
- During pilot test NTUA's intent is that product water will be discharged to the San Juan River, reject water will be discharged to existing evaporation ponds.
- NTUA will coordinate and prepare all permits for discharge of the treated and reject water during the pilot study and future long term operation.
- Proposer will notify NTUA of additional water quality data that is required to prepare a proposal for submittal. Proposer shall ensure they understand how mineralized the well water is.



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Summarized Halchita Well Water Quality Data:

Well Wet Chemistry Results (Collected 12/8/15)		
Parameter	Results	Units
Laboratory pH	7.14	
TurProposality	20.8	NTU
Total Suspended Solids	12.8	mg/L
T. Alkalinity (CaCO ₃)	412	mg/L
Total Hardness	1,510	mg/L
Calcium	536	mg/L
Calcium (CaCO ₃)	1,340	mg/L
Magnesium	41.34	mg/L
Magnesium (CaCO ₃)	170	mg/L
Dissolved Solids	3,470	mg/L
Chloride ICS2000	171	mg/L
Fluoride ICS2000	0.60	mg/L
Phosphate ICS2000	< 0.3	mg/L
Sulfate ICS2000	1,880	mg/L
Nitrate	< 0.3	mg/L
Nitrite	< 0.3	mg/L

Well Heavy Metals Results (Collected 12/8/15)		
Parameter	Results	Units
Arsenic	< 0.003	mg/L
Barium	0.009	mg/L
Cadmium	< 0.001	mg/L
Chromium	< 0.006	mg/L
Copper	< 0.006	mg/L
Iron	0.018	mg/L
Lead	< 0.001	mg/L
Manganese	0.250	mg/L



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Mercury	Not analyzed	mg/L
Selenium	< 0.003	mg/L
Sodium	412	mg/L
Potassium	7.46	mg/L
Nickel	0.012	mg/L
Zinc	0.020	mg/L
Antimony	< 0.003	mg/L
Beryllium	< 0.001	mg/L
Thallium	< 0.0007	mg/L

Well Radiochemical Activity Results (Collected 12/8/15)		
Parameter	Results	Units
Gross Alpha Activity	13.6 ± 1.0	pCi/L
Uranium Activity	2.7 ± 0.6	pCi/L
Adjusted Gross Alpha	10.9 ± 1.2	pCi/L
Radium 226 Activity	2.5 ± 0.3	pCi/L
Radium 228 Activity	< 0.9	pCi/L
Total Radium	2.5 ± 0.3	pCi/L
Uranium 234	0.00022 ± 0.00005	ug/L
Uranium 235	0.027 ± 0.001	ug/L
Uranium 238	3.8 ± 0.8	ug/L
Total Uranium	3.8 ± 0.8	ug/L

Figures:

Figure 1 – Halchita Well and WTP Location

Figure 2 – Existing WTP Plan & Schematic

Figure 3 – Proposer Provided System – NTUA Provided System Schematic

Appendix:

Appendix A – Lab Report Data

Appendix B – Navajo Nation EPA Primary and Secondary Drinking Water Standards



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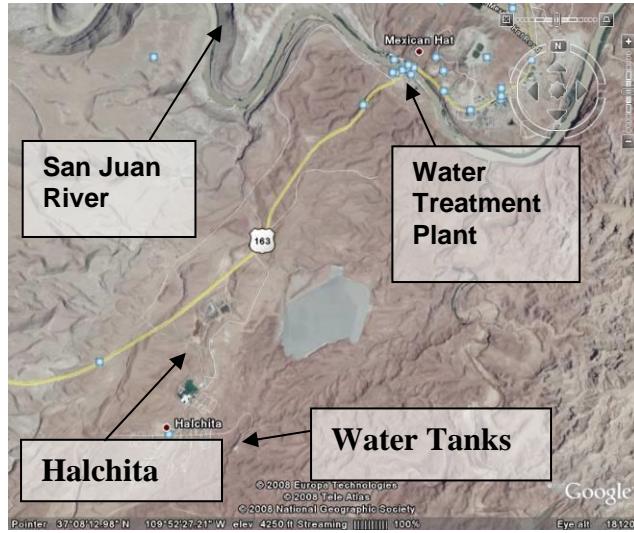
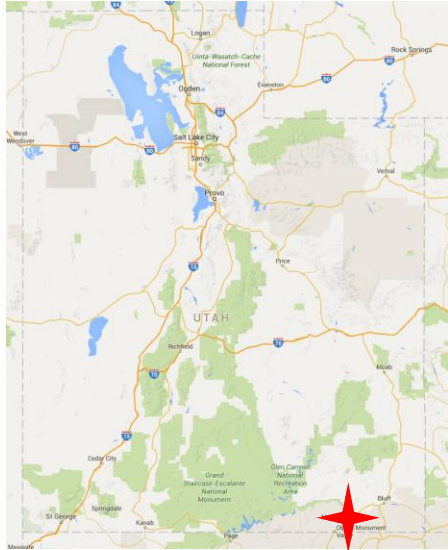


Figure 1 – Halchita Well and WTP Location



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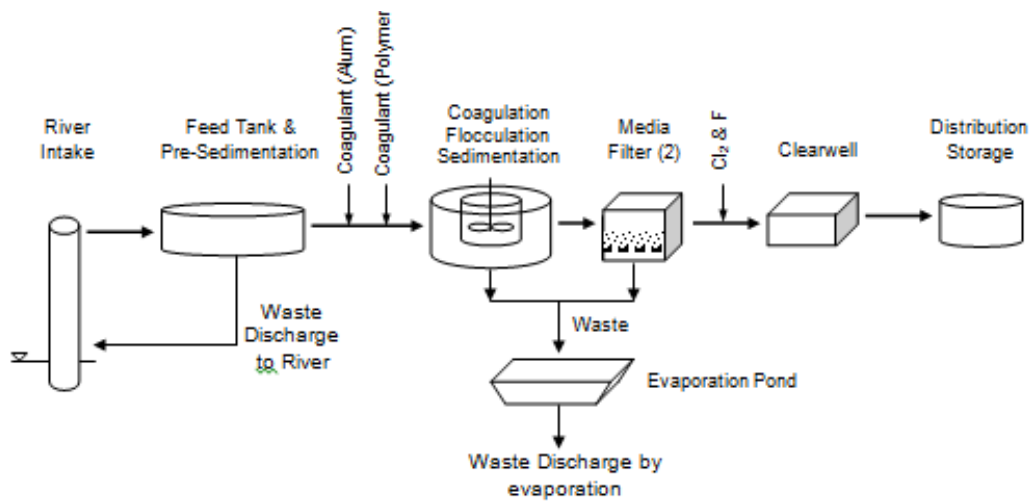


Figure 2 – Halchita WTP Plan and Schematic



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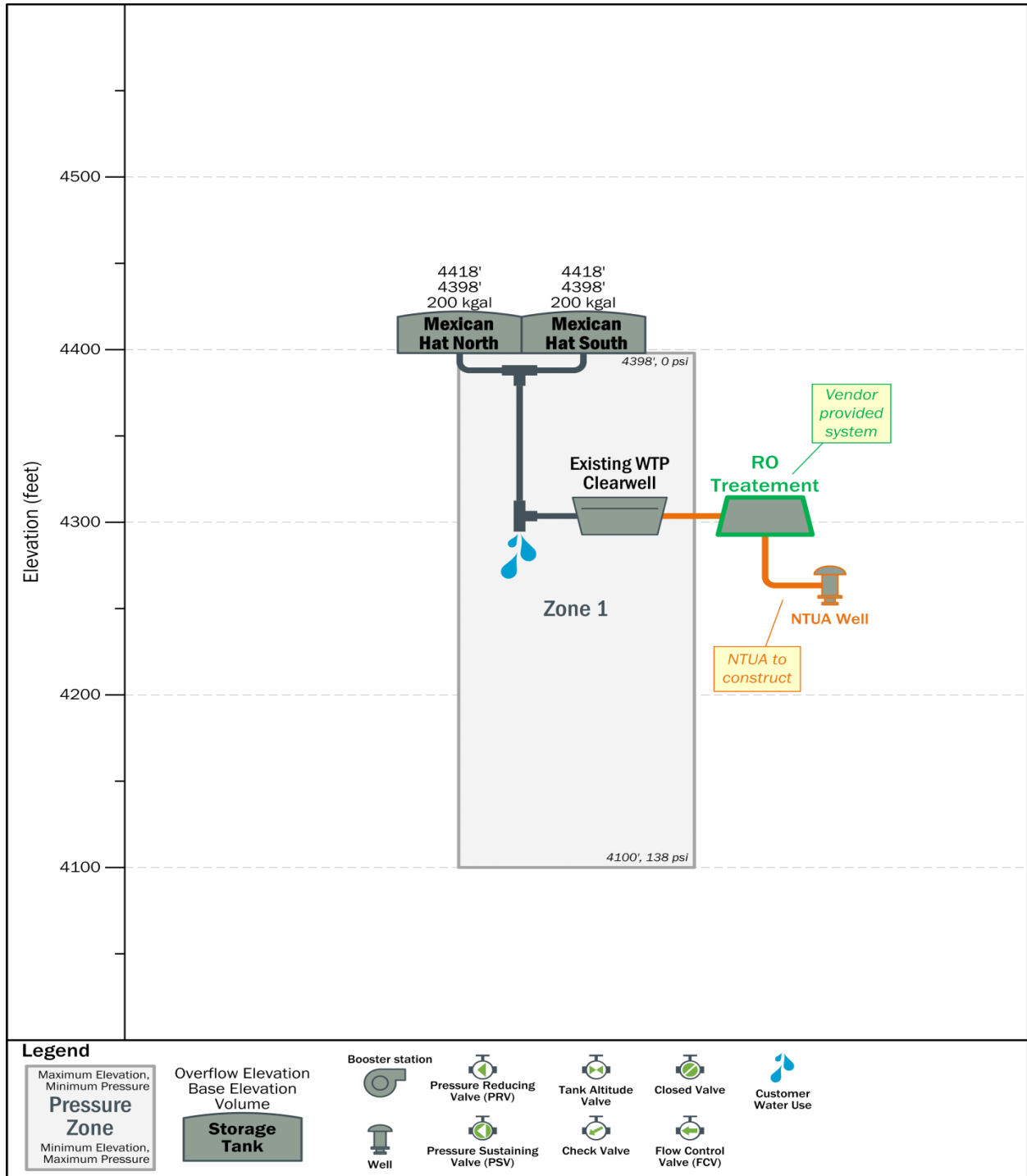


Figure 3 – Proposer Provided System / NTUA Provided System



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SECTION IV. COST ESTIMATE

THE UNDERSIGNED PROPOSER, HEREBY PROPOSES and agrees, if this cost estimate is accepted, to enter into Agreement to perform satisfactory work, based on the qualifications needed to complete the specific scope of work as requested by NTUA.

ITEM NO.	DESCRIPTION	ESTIMATE AMOUNT
1	Provide RO Treatment System	\$ _____
2	Install RO Treatment System	\$ _____
3	RO Treatment System Pilot Study	\$ _____
4	RO Treatment System Operator Training	\$ _____
5	RO Treatment System 1 year Operations Support (Performance Guarantee)	\$ _____
6	Navajo Nation 5% Sales Tax	\$ _____
Total Amount (Items 1 – 6)		\$ _____

Company Name: _____

Name/Title: _____

Signature: _____

Date: _____

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

WASTEWATER ANALYSIS

LAB #: 15-S423
FACILITY NAME:
FACILITY OWNER:

CLIENT: NTUA Kayenta

DATE RECEIVED: 12/ 9/15
TIME RECEIVED: 8:15
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/ 8/15
TIME COLLECTED: 10:05

POINT OF COLLECTION:
SAMPLE TYPE:

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	ANALYST	DATE ANALYZED
Laboratory pH	SM 4500-H B	7.14		DB	12/10/15
Laboratory Temperature	SM 2550 B	21.0	C	DB	12/10/15
Total Suspensible Solids	SM 2540 D	12.8	mg/L	BS	12/17/15
Dissolved Solids	SM 2540C	3,470	mg/L	DB	12/10/15

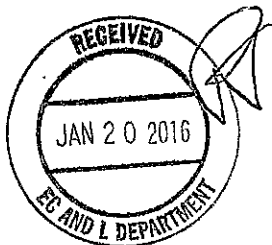
LOCATION DESCRIPTION: Mexican Hat Well
REMARKS:
COMMENTS: Wet Chemistry

DATE REPORTED: 12/15/15

ANALYST: DB GM

DATE REVIEWED: 1/8/16

REVIEWED BY: ⊖



Copies sent to: Kayenta
District Water Dept.
Environmental Ofc
USEPA Ofc
Original at Lab
Date Sent/Initial 01-21-16

E-MAILED
RW SENT TO DGM

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

WET CHEMISTRY ANALYSIS

PWSID #: NN 3032
EPA PWSID #: 4903032
LAB #: 15-S423
SYSTEM: Mexican Hat

DATE RECEIVED: 12/ 9/15
TIME RECEIVED: 8:15
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/ 8/15
TIME COLLECTED: 10:05

CLIENT: NTUA Kayenta

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	MCL	ANALYST	DATE ANALYZED
Laboratory pH	SM 4500-H B	7.14		6.5-8.5	DB	12/10/15
Turbidity	SM 2130B	20.8	ntu	1.0	DB	12/ 9/15
Total Suspensible Solids	SM 2540 D	12.8	mg/L		BS	12/17/15
T. Alkalinity (CaCO3)	SM 2320B	412	mg/L		DB	12/14/15
Total Hardness	SM 2340-C	1,510	mg/L	500	DB	12/10/15
Calcium	SM 3500-Ca D	536.0	mg/L	75-200	DB	12/10/15
Calcium (CaCO3)	SM 3500-Ca D	1,340	mg/L	75-200	DB	12/10/15
Magnesium	SM 3500-Mg B	41.34	mg/L		DB	12/10/15
Magnesium (CaCO3)	SM 3500-Mg E	170	mg/L		DB	12/10/15
Dissolved Solids	SM 2540C	3,470	mg/L	500	DB	12/10/15
Chloride ICS2000	EPA 300.0	171	mg/L	250	RT	12/ 9/15
Fluoride ICS2000	EPA 300.0	0.60	mg/L	4.0	RT	12/ 9/15
Phosphate ICS2000	EPA 300.0	< 0.3	mg/L		RT	12/ 9/15
Sulfate ICS2000	EPA 300.0	1,880	mg/L	250	RT	12/10/15

LOCATION DESCRIPTION: Mexican Hat Well

REMARKS:
COMMENTS: Wet Chemistry



Copies sent to:	Kayenta
District Water Dept.	
Environmental Ofc	
USEPA Ofc	KNEPA
Original at Lab	
Date Sent / Initial	

DATE REPORTED: 12/15/15

ANALYST: DB

DATE REVIEWED: 12/15/15

REVIEWED BY: e



NTUA LABORATORY
 P. O. BOX 170
 FORT DEFIANCE, AZ 86504
 (928) 729-5721
 Fax (928) 729-6249

Please Print Clearly

CLIENT INFORMATION

Client Name NTUA	Address PO Box 170	City Fort Defiance	State AZ	Zip 86504	Phone 928 729 5721	Fax
System Name	PMSID#/PDES#	Contact Raquele Whitehorse	Street Location	RD/C#	District	

Laboratory Analysis Options (Heavy Metals, Wet Chemistry and Wastewater)

Heavy Metals : Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ti, Zn
 Wet Chemistry : Alkalinity, Ca, Cl, Corrosivity, F, Total Hardness, Mg, NO₂, NO₃, pH, Phosphate, K, Na, SO₄, Total Dissolved Solids,
 Turbidity, and Temperature
 Wastewater: BOD, TSS, TDS, pH, Temperature, Total Residual Chlorine and Setttable Solids

Client Sample ID	NTUA Lab #	Date	Time	Preservative				No. of Sample Bottles	Compliance	WATER ANALYSIS					WASTEWATER ANALYSIS						
				HNO ₃	Ice	None	Other			Heavy Metals	Wet Chemistry	Lead/Copper	Nitrate (NO ₃)	Nitrite (NO ₂)	Biochemical Oxygen Demand	Total Suspended Solids	Total Dissolved Solids (TDS)	Potable TDS	Other		
<i>Mexican Hat Well</i>	155433	12/18/15	10:05A																		
COMPLETED																					

SAMPLES MUST BE RECEIVED BEFORE HOLDING TIMES EXPIRE

Comments :

LABORATORY USE ONLY

DATE: 12/19/15 TIME: 8:15A

SAMPLES RELEASED BY: *Marianne Gussler*

RECEIVED BY: *Reginald J*

SAMPLE CONDITION UPON RECEIPT

No. of Containers

Temperature

Preserved YES NO

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

ION CHROMATOGRAPHY ANALYSIS

PWSID #: NN 3032
EPA PWSID #: 4903032
LAB #: 15-S425
SYSTEM: Mexican Hat

CLIENT: NTUA Kayenta

DATE RECEIVED: 12/ 9/15
TIME RECEIVED: 8:15
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/ 8/15
TIME COLLECTED: 10:05

SAMPLE TYPE:

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	MCL	ANALYST	DATE ANALYZED
Nitrate	SM 4110 B	< 0.3	mg/L	10.0	RT	12/09/15
Nitrite	SM 4110 B	< 0.3	mg/L	1.00	RT	12/09/15

LOCATION DESCRIPTION: Mexican Hat Well

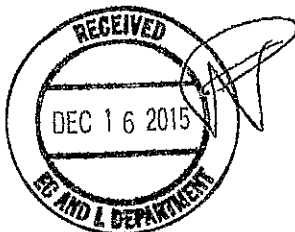
REMARKS:
COMMENTS: NO2/NO3


DATE REPORTED: 12/15/15

ANALYST: 

DATE REVIEWED: 12/15/15

REVIEWED BY: 



Copies sent to: Kayenta
District Water Dept.
Environmental Otc
USEPA Otc
Original at Lab
Date Sent / Initial 12/16/15 



NTUA LABORATORY
 P.O. BOX 170
 FORT DEFFANCE, AZ 86504
 (928) 729-5721
 Fax (928) 729-6249

NTUA CHAIN OF CUSTODY RECORD

Page 1 of 1

Please Print Clearly

CLIENT INFORMATION

Client Name: **NTUA** Address: **PO Box 170** City: **Fort Defiance** State: **AZ** ZIP: **86504** Phone: **928-729-5721** Fax: **928-729-6249**

System Name: **NTUA** PWSID/IN/PDESC#: Contact: **Raqueel Whitehorse** Sincification: RIDC#: District:

Laboratory Analysis Options (Heavy Metals, Wet Chemistry and Wastewater)

Heavy Metals : Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ti, Zn
 Wet Chemistry : Alkalinity, Ca, Cl, Compositiv, F, Total Hardness, Mg, NO₂, NO₃, pH, Phosphate, K, Na, SO₄, Total Dissolved Solids, Turbidity, and Temperature
 Wastewater: BOD, TSS, TDS, pH, Temperature, Total Residual Chlorine and Settable Solids

Client Sample ID	NTUALab #	Date	Time	Preservative				No. of Sample Bottles	Compliance	WATER ANALYSIS				WASTEWATER ANALYSIS					
				HNO ₃	Ice	None	Other			Heavy Metals	Wet Chemistry	Lead/Copper	Nitrate (NO ₃)	Nitrite (NO ₂)	Biochemical Oxygen Demand	Total Suspended Solids	Total Dissolved Solids (TDS)	Potable TDS	Other
<i>American Hot Well</i>	<i>155425</i>	<i>12/8/15</i>	<i>10:05A</i>																
COMPLETED																			
SAMPLES MUST BE RECEIVED BEFORE HOLDING TIMES EXPIRE																			

Comments :

LABORATORY USE ONLY

SAMPLES RELEASED BY:

RECEIVED BY:

Date: *12/9/15* Time: *8:15A*

Monique Landry

Reynolds

No. of Containers:

Temperature:

Preserved: YES NO

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

HEAVY METALS ANALYSIS

SYSTEM: Mexican Hat
PWSID #: NN 3032
EPA PWSID #: 4903032
LAB #: 15-S424

DATE RECEIVED: 12/ 9/15
TIME RECEIVED: 8:15
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/ 8/15
TIME COLLECTED: 10:05

CLIENT: NTUA Kayenta
SAMPLE TYPE:

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	MCL	ANALYST	DATE ANALYZED
Arsenic	EPA 200.5	< 0.003	mg/L	0.0100	RT	12/23/15
Barium	EPA 200.7	0.009	mg/L	2.00	RT	12/23/15
Cadmium	EPA 200.5	< 0.001	mg/L	0.005	RT	12/23/15
Chromium	EPA 200.7	< 0.006	mg/L	0.100	RT	12/23/15
Copper	EPA 200.7	< 0.006	mg/L	1.30	RT	12/23/15
Iron	EPA 200.7	0.018	mg/L	0.300	RT	12/23/15
Lead	EPA 200.5	< 0.001	mg/L	0.015	RT	12/23/15
Manganese	EPA 200.7	0.250	mg/L	0.050	RT	12/23/15
Mercury	EPA 245.1	Comment	mg/L	0.0020		
Selenium	EPA 200.5	< 0.003	mg/L	0.050	RT	12/23/15
Sodium	EPA 200.7	412	mg/L		RT	12/23/15
Potassium	EPA 200.7	7.46	mg/L		RT	12/23/15
Nickel	EPA 200.7	0.012	mg/L		RT	12/23/15
Zinc	EPA 200.7	0.020	mg/L	5.00	RT	12/23/15
Antimony	SM 3113B	< 0.003	mg/L	0.006	EB	1/20/16
Beryllium	EPA 200.5	< 0.001	mg/L	0.004	RT	12/23/15
Thallium	EPA 200.9	< 0.0007	mg/L	0.0020	EB	1/20/16

LOCATION DESCRIPTION: Mexican Hat Well

REMARKS:
COMMENTS: Heavy Metals
Comment: Hg not analyzed.



Copies sent to: *Kayenta*
District Water Dept.
Environmental Ofc
USEPA Ofc
Original at Lab
Date Sent / Initial

DATE REPORTED: 1/21/16

ANALYST: *D, et*

DATE REVIEWED: *1/27/16*

REVIEWED BY: *RW*

FIBERQUANT ANALYTICAL SERVICES

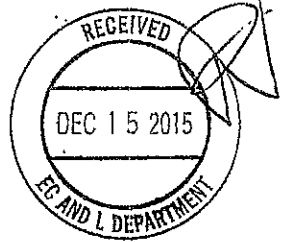
Date _____ Time _____

Determination of Asbestos in Water using TEM

Job Number: 201513128

Client: NAVAJO TRIBAL UTILITY AUTH
PO BOX 170

FT DEFIANCE, AZ 86504-0170
Office Phone: (928) 729-5721
FAX: (928) 729-6249



Samples: 1 TEM Rec: 12/9/2015 Method: EPA 100.1
Client Job: 15S428 - Mexican Hat Well - BOR
Report Date: 12/15/2015 Date Analyzed: 12/15/2015

TEM Water
PO Number: 4500055072
Routing Number: -

Method and Analysis Information: Fiberquant Internal SOP: TEMw

Samples are analyzed using the protocols given in EPA method 100.1, as amended by the 1993 EPA guidance. Samples should be un-preserved water in 1 L containers having about 200 ml headspace for shaking. There is a 48 hr deadline between the time the sample is taken and the time it is filtered to minimize loss of asbestos fibers due to biological interference. Each sample is shook for 1 minute, and ultrasonicated for at least 10 minutes, shaking every 5 minutes to disperse any fibers that are present. A measured amount of sample is then filtered through a 0.1 um pore size polycarbonate filter, backed by a 5 um pore size MCE filter and a glass frit. Several volumes of liquid may be filtered for each sample in order to assure that a properly loaded sample is obtained. A portion of each resulting filter (and blanks) is then coated with 100-200 um of carbon in a Denton 502A Carbon Evaporator. The carbon encapsulates all of the larger and most of the smaller particulate on the filter. Three mm square pieces of the coated filter are placed on three or more copper TEM grids, and the original filter material is dissolved away in a Jaffe wick and/or condensation washer. The finished replica in carbon containing the particulate is then examined on a JEOL 1200 or Phillips CM 10 transmission electron microscope at 10,000 to 20,000x magnification. All asbestos fibers >10um in length are tabulated and characterized as asbestos or non-asbestos using a combination of morphology, electron diffraction characteristics, and elemental composition. The result is calculated in millions of fibers per liter (MFL). The grid is scanned until 20 grid openings have been observed, or until an analytical sensitivity (the hypothetical observation of one fiber) of 0.2 MFL has been reached. The nominal 20 grid opening cut-off is used for those samples containing so much non-asbestos particulate that the desired analytical sensitivity is impractical to attain.

The method was designed to determine EPA drinking water compliance. The standard for drinking water is <7 MFL as measured by this method. Fiberquant maintains Arizona Environmental Laboratory license #AZ0633 covering EPA Method 100.1.

Overall, the coefficient of variation can be expected to be approximately 0.5 for analyses in which >20 asbestos fibers have been counted, ranging up to 1.00 for analyses in which only a few asbestos fibers are counted.

The analysis was performed under an ongoing quality assurance program which includes: Lab blanks, prepared with each set of samples and analyzed. Each analyst has suitable background credentials, such as at least a bachelor's degree in geology or chemistry, and has undergone extensive 2-6 month training in TEM techniques and mineralogy specific to TEM asbestos analysis before being allowed to perform client analyses. Unknown reference samples are routinely identified to ensure that each analyst can collect and correctly interpret TEM information. The TEM is aligned and its performance checked daily. Magnification, electron diffraction pattern size, and analytical performance characteristics are calibrated routinely. Samples are re-analyzed sometimes by the same analyst and sometimes by a different analyst in order to determine accuracy and precision. The total of QC analyses (blanks + recounts) are greater than 10% of analyzed samples. Each analyst participates in interlab round robins and proficiency testing in order to show correlation to other lab's analyses. Because TEM samples are not analyzed in batches, which would be traditional for most water analyses, and not every sample has a duplicate or replicate analysis associated with it, it is not possible to include a traditional QC report with the analysis. QC reports are produced monthly, and are available on request. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. Fiberquant is accredited by NVLAP to perform TEM analysis of asbestos in air samples, and has been found to be proficient in the EPA water proficiency program. Accreditation or proficiency does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

Sampled:	12/8/2015	10:05	By:	Curlay, Sherwin
Received:	12/9/2015	10:05		
Filtered:	12/9/2015	12:55		
Analyzed:	12/15/2015	14:30		

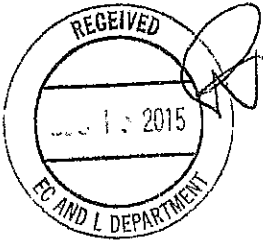
Copies sent to: *Kayenta*
District Water Dept.
Environmental Ofc
USEPA Ofc *NNEPA*
Original at Lab
Date Sent / Initial *12/15/15*

ENTERED
12-21-15

Job Number: 201513128

QA Report: Job Number: 201513128

1. Calibrations	
TEM magnification. date of last.	12/2/2015
TEM camera constant. date of last.	12/11/2015
EDS performance check (k-factors, resolution, low-e perf.). date of last.	6/26/2015
TEM stage drift, minimum beam size. date of last.	6/26/2015
plasma asher. date of last.	10/22/2015
2. Blanks (1/25 samples required)	
	Not Required This Job
3. Recounts (1/17 samples required)	
	Not Required This Job
4. Analyst Performance	
NVLAP proficiency testing	Current
verified counts. cum. % true positives	90.2
verification of diffraction pattern identifications. cum. % correct	99.5
verification of EDS spectra. cum. % correct	97.5



FIBERQUANT

ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.,
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company) Navajo Tribal Utility Authority	
Address PO Box 170	
City, State, Zip Code Fort Defiance, AZ 86504	
Phone (928) 729 5721	FAX (928) 729-6249
Email raquelw@ntua.com	
Invoice to (Company) Navajo Tribal Utility Authority	
Address PO Box 170	
City, State, Zip Code Fort Defiance, AZ 86504	
Phone (928) 729-5721	FAX (928) 729-6349
Contact (print) Raquel Whitehorse	
Sampled by (signature) Sherwin Curley	
Job Number or Project Name 155428	
PO Number	

Analysis Method Requested ONLY ONE METHOD per COC		Turn-around-time (circle one)			
		Rush		Norm	Ext.
Asbestos by PLM	Improved <input type="checkbox"/> Interim <input type="checkbox"/>	Urg Rush <3 hrs <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-3 days <input type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyze <input type="checkbox"/> All <input type="checkbox"/> ATPF				
	If so then by Layer <input type="checkbox"/> or Sample <input type="checkbox"/> Single Layer Protocol: Yes <input type="checkbox"/> No <input type="checkbox"/>				
Fibers by PCM	7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>		
Asbestos by TEM	AIR: AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>	
	Water: Water <input checked="" type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input checked="" type="checkbox"/>	N/A	
	Annex2 : Chatfield <input type="checkbox"/> Full <input type="checkbox"/>				
	Vacuum Dust (ASTM)	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A	
Pb by FLAA	Analyte: Pb Other	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A	
	Matrix: Filter: MCE <input type="checkbox"/>				
	Paint: by Area <input type="checkbox"/>				
	by Weight <input type="checkbox"/>				
	Soil <input type="checkbox"/> Wipe <input type="checkbox"/>				
	Initial here certifying wipes used are ASTM E 1792 compliant <input type="checkbox"/>				
Fungi	Air Sample: Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A	
	ID/Count: Bulk <input type="checkbox"/> Swab <input type="checkbox"/>				
	Tape: Qual (%) <input type="checkbox"/>				
	Tape: Quant (cm ²) <input type="checkbox"/>				
Other					
Dust	NIOSH 500 <input type="checkbox"/>	<4hr <input type="checkbox"/>	24h <input type="checkbox"/>	N/A	
Other		Call	Call		

Sample Number	Description/Location (include agar type/maker/exp. Date)	Sample Date	Sample Time	Vol/Area
1)	Mexican Hat Well - BOR	12/8/15	1005 am	1 L
2)				
3)				
4)				
5)				
6)				
7)				
8)	* 12-10-15			
9)	per Reynaldo			
10)	ALL			
11)				
12)				
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				

1) Relinquished by: <i>[Signature]</i>	Date: 12/8/15	Time: 1:25P	3) Relinquished by:	Date:	Time:
2) Received by: <i>[Signature]</i>	Date: 12-8-15	Time: 1008	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona			Print Name <i>[Signature]</i>		

Review of Analysis Request (Initials) *[Signature]*

Page 1 of 1
201513128

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

WET CHEMISTRY ANALYSIS

PWSID #: NN 3032
EPA PWSID #: 4903032
LAB #: 15-S446
SYSTEM: Mexican Hat

DATE RECEIVED: 12/17/15
TIME RECEIVED: 8:38
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/16/15
TIME COLLECTED: 10:20

CLIENT: NTUA Kayenta



MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	MCL	ANALYST	DATE ANALYZED
Laboratory pH	SM 4500-H B	7.13		6.5-8.5	DB	12/17/15
Conductivity	SM 2510B	3,990	umhos/cm		DB	12/23/15
Turbidity	SM 2130B	54.4	ntu	1.0	KC	12/17/15
Corrosivity	Langlier Index	0.55			DB	12/18/15
Total Suspendable Solids	SM 2540 D	5.4	mg/L		BS	12/17/15
T. Alkalinity (CaCO3)	SM 2320B	398	mg/L		DB	12/18/15
Total Hardness	SM 2340-C	1,380	mg/L	500	DB	12/18/15
Calcium	SM 3500-Ca D	380.0	mg/L	75-200	DB	12/18/15
Calcium (CaCO3)	SM 3500-Ca D	950	mg/L	75-200	DB	12/18/15
Magnesium	SM 3500-Mg B	104.6	mg/L		DB	12/18/15
Magnesium (CaCO3)	SM 3500-Mg E	430	mg/L		DB	12/18/15
Dissolved Solids	SM 2540C	3,412	mg/L	500	DB	12/18/15
Chloride ICS2000	EPA 300.0	163	mg/L	250	RT	12/17/15
Fluoride ICS2000	EPA 300.0	0.62	mg/L	4.0	RT	12/17/15
Phosphate ICS2000	EPA 300.0	< 0.3	mg/L		RT	12/17/15
Sulfate ICS2000	EPA 300.0	1,800	mg/L	250	RT	12/17/15

LOCATION DESCRIPTION: Mexican Hat Well - BOR

REMARKS:
COMMENTS: Wet Chemistry
No field pH and temperature.

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USEPA Ofc	WNEPA
Original at Lab	
Date Sent/Initial	01-10-16 [Signature]

DATE REPORTED: 12/23/15

ANALYST: [Signature], [Signature], [Signature], KC

DATE REVIEWED: 12/23/15

REVIEWED BY: [Signature]

E-MAILED
RW ENJO TO DBM

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

WASTEWATER ANALYSIS

LAB #: 15-S446
FACILITY NAME:
FACILITY OWNER:

CLIENT: NTUA Kayenta

DATE RECEIVED: 12/17/15
TIME RECEIVED: 8:38
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/16/15
TIME COLLECTED: 10:20

POINT OF COLLECTION:
SAMPLE TYPE:

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	ANALYST	DATE ANALYZED
Laboratory pH	SM 4500-H B	7.13		DB	12/17/15
Laboratory Temperature	SM 2550 B	15.4	C	DB	12/17/15
Total Suspensible Solids	SM 2540 D	5.4	mg/L	BS	12/17/15
Dissolved Solids	SM 2540C	3,412	mg/L	DB	12/18/15

LOCATION DESCRIPTION: Mexican Hat Well - BOR
REMARKS:

COMMENTS: Wet Chemistry
No field pH and temperature.

DATE REPORTED: 12/23/15

ANALYST: DB AR

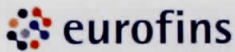
DATE REVIEWED: 1/8/16

REVIEWED BY: [Signature]



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USEPA Ofc
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E-MAILED
RW sent to DGM



Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345



Laboratory Report

Client: Navajo Tribal Utility Authority
Attn: Raquel Whitehorse
P. O. Box 170
Fort Defiance, AZ 86504

Report: 354917
Priority: Standard Written
Status: Final
PWS ID: Not Supplied
Lab ID#: AZ0432

Copies to: Edith Barber *15S419*

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3375655	Mexican Hat Well-BOR	335.4	12/16/15 10:20	Client	12/17/15 09:30
3375656	Mexican Hat Well-BOR	525.2	12/16/15 10:20	Client	12/17/15 09:30
3375657	Mexican Hat Well-BOR	531.2	12/16/15 10:20	Client	12/17/15 09:30
3375658	Mexican Hat Well-BOR	515.3	12/16/15 10:20	Client	12/17/15 09:30
3375660	Mexican Hat Well-BOR	1613	12/16/15 10:20	Client	12/17/15 09:30
3375661	Mexican Hat Well-BOR	549.2	12/16/15 10:20	Client	12/17/15 09:30
3375662	Mexican Hat Well-BOR	548.1	12/16/15 10:20	Client	12/17/15 09:30
3375663	Mexican Hat Well-BOR	547	12/16/15 10:20	Client	12/17/15 09:30
3375664	Mexican Hat Well-BOR	504.1	12/16/15 10:20	Client	12/17/15 09:30
3375665	Mexican Hat Well-BOR	524.2	12/16/15 10:20	Client	12/17/15 09:30

Report Summary

NTUA Lab#: 15S429

Note: Dioxin analysis was performed by Pace Analytical Services, Minneapolis, MN.

Note: In the Method 524.2 analysis, the bromomethane recovery in the CCC (59%) was outside the acceptance limits of 70-130%.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Jessie Varab at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

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Analytical Services Manager

Authorized Signature

Title

Date

01/15/2016

Client Name: Navajo Tribal Utility Authority
Report #: 354917

Sampling Point: Mexican Hat Well-BOR

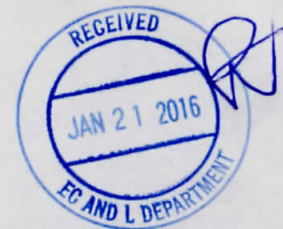
PWS ID: Not Supplied

General Chemistry

Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #	Data Qualifiers
Cyanide, Total	335.4	0.2 *	0.2	< 0.2	mg/L	12/21/15 13:36	12/21/15 15:46	3375655	--

Semi-volatile Organic Chemicals

Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed	EEA ID #	Data Qualifiers
1,2-Dibromo-3-chloropropane (DBCP)	504.1	0.0002 *	0.00002	< 0.00002	mg/L	12/24/15 11:29	12/24/15 21:11	3375664	--
1,2-Dibromoethane (EDB)	504.1	0.00005 *	0.00001	< 0.00001	mg/L	12/24/15 11:29	12/24/15 21:11	3375664	--
2,4-D	515.3	0.07 *	0.0001	< 0.0001	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Dalapon	515.3	0.2 *	0.0010	< 0.0010	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Dicamba	515.3	--	0.0001	< 0.0001	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Dinoseb	515.3	0.007 *	0.0002	< 0.0002	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Pentachlorophenol	515.3	0.001 *	0.00004	< 0.00004	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Picloram	515.3	0.5 *	0.0001	< 0.0001	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
2,4,5-TP (Silvex)	515.3	0.05 *	0.0002	< 0.0002	mg/L	12/29/15 08:45	12/31/15 01:48	3375658	--
Alachlor	525.2	0.002 *	0.0002	< 0.0002	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Aldrin	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Atrazine	525.2	0.003 *	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Benzo(a)pyrene	525.2	0.0002 *	0.00002	< 0.00002	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
gamma-BHC (Lindane)	525.2	0.0002 *	0.00002	< 0.00002	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Butachlor	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Dieldrin	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Di(2-ethylhexyl)adipate	525.2	0.4 *	0.0006	< 0.0006	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Di(2-ethylhexyl)phthalate	525.2	0.006 *	0.0006	< 0.0006	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Endrin	525.2	0.002 *	0.00001	< 0.00001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Heptachlor	525.2	0.0004 *	0.00004	< 0.00004	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Heptachlor epoxide	525.2	0.0002 *	0.00002	< 0.00002	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Hexachlorobenzene	525.2	0.001 *	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Hexachlorocyclopentadiene	525.2	0.05 *	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Methoxychlor	525.2	0.04 *	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Metolachlor	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Metribuzin	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Propachlor	525.2	--	0.0001	< 0.0001	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Simazine	525.2	0.004 *	0.00007	< 0.00007	mg/L	12/18/15 09:00	12/22/15 08:44	3375656	--
Aldicarb	531.2	--	0.0005	< 0.0005	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Aldicarb sulfone	531.2	--	0.0008	< 0.0008	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Aldicarb sulfoxide	531.2	--	0.0005	< 0.0005	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Carbaryl	531.2	--	0.0005	< 0.0005	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Carbofuran	531.2	0.04 *	0.0009	< 0.0009	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
3-Hydroxycarbofuran	531.2	--	0.0005	< 0.0005	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Methomyl	531.2	--	0.0005	< 0.0005	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
1-Naphthol	531.2	--	0.0010	< 0.0010	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Oxamyl	531.2	0.2 *	0.0020	< 0.0020	mg/L	12/23/15 09:08	12/28/15 21:33	3375657	--
Glyphosate	547	0.7 *	0.0060	< 0.0060	mg/L	12/22/15 13:30	12/23/15 01:17	3375663	--
Endothal	548.1	0.1 *	0.0090	< 0.0090	mg/L	12/21/15 07:55	12/21/15 23:26	3375662	--
Diquat	549.2	0.02 *	0.0004	< 0.0004	mg/L	12/18/15 07:45	12/21/15 20:34	3375661	--



Volatile Organic Chemicals									
Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #	Data Qualifiers
Benzene	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Bromobenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Bromochloromethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Bromodichloromethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Bromoform	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Bromomethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
n-Butylbenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
sec-Butylbenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
tert-Butylbenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Carbon tetrachloride	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Chlorobenzene	524.2	0.1 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Chloroethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Chloroform	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Chloromethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
2-Chlorotoluene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
4-Chlorotoluene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Dibromochloromethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Total Trihalomethanes	524.2	0.08 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,2-Dibromo-3-chloropropane (DBCP) @	524.2	--	0.0002	< 0.0002	mg/L	--	12/22/15 16:29	3375665	--
1,2-Dibromoethane (EDB) @	524.2	--	0.0002	< 0.0002	mg/L	--	12/22/15 16:29	3375665	--
Dibromomethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,2-Dichlorobenzene	524.2	0.6 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,3-Dichlorobenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,4-Dichlorobenzene	524.2	0.075 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Dichlorodifluoromethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,1-Dichloroethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,2-Dichloroethane	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,1-Dichloroethylene	524.2	0.007 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
cis-1,2-Dichloroethylene	524.2	0.07 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
trans-1,2-Dichloroethylene	524.2	0.1 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Dichloromethane	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,2-Dichloropropane	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,3-Dichloropropane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
2,2-Dichloropropane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,1-Dichloropropylene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
cis-1,3-Dichloropropylene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
trans-1,3-Dichloropropylene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,3-Dichloropropylene, cis & trans	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Ethylbenzene	524.2	0.7 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Hexachlorobutadiene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Isopropylbenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
4-Isopropyltoluene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Methyl-t-butyl ether (MTBE)	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Naphthalene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
n-Propylbenzene	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Styrene	524.2	0.1 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,1,1,2-Tetrachloroethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
1,1,1,2-Tetrachloroethane	524.2	--	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Tetrachloroethylene	524.2	0.005 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--
Toluene	524.2	1 *	0.0005	< 0.0005	mg/L	--	12/22/15 16:29	3375665	--



1,2,3-Trichlorobenzene	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,2,4-Trichlorobenzene	524.2	0.07 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,1,1-Trichloroethane	524.2	0.2 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,1,2-Trichloroethane	524.2	0.005 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
Trichloroethylene	524.2	0.005 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
Trichlorofluoromethane	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,2,3-Trichloropropane	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,2,4-Trimethylbenzene	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,3,5-Trimethylbenzene	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
Vinyl chloride	524.2	0.002 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,2-Xylene	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
1,3 + 1,4-Xylene	524.2	---	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---
Xylenes, Total	524.2	10 *	0.0005	< 0.0005	mg/L	---	12/22/15 16:29	3375665	---

Reference Lab Tests

Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed	UL ID #	Data Qualifiers
Dioxin	1613	3 e-8 *	5.0 e-9	< 5.0 e-9	mg/L	01/04/16 12:00	01/05/16 12:45	3375660	---

@ EEA does not hold certification in the state of origin for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!



Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.



110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Navajo Tribal Utility Authority
 Attn: Raquel Whitehorse
 P. O. Box 170
 Fort Defiance, AZ 86504

Report: 354917
 Priority: Standard Written
 Status: Final
 PWS ID: Not Supplied

Copies to: Edith Barber

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3375659	Mexican Hat Well-BOR	505	12/16/15 10:20	Client	12/17/15 09:30

Report Summary

Note: There were no reportable results for Method 505 due to matrix interference. The client was notified of the situation, and recollection of the sample was requested.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Jessie Varab at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.



Copies sent to:	<i>Kayenta</i>
District Water Dept.	
Environmental Ofc	
USEPA Ofc	
Original at Lab	
Date Sent / Initial	

Jessie Varab

Analytical Services Manager

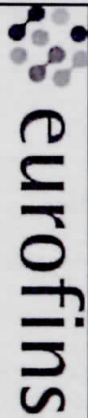
Authorized Signature

Title

Page 1 of 1

01/15/2016

Date



Eaton Analytical

110 S. Hill Street
 South Bend, IN 46617
 T: 1.800.332.4345
 F: 1.574.233.8207

Order # 287713
 Batch # 354917

CHAIN OF CUSTODY RECORD

Page 1 of 1

www.eatonanalytical.com

Shaded area for EEA use only

REPORT TO: Navajo Tribal Utility Authority - raquelw@ntua.com & edithh@ntua.com

BILL TO: Navajo Tribal Utility Authority - raquelw@ntua.com & edithh@ntua.com

SAMPLER (Signature): *Raquel W. ...*

COMPLIANCE MONITORING: Yes No

POPULATION SERVED: SOURCE WATER: *SW*

PROJECT NAME: NTL/A LAB #: 45-55644

PO#: 155429

STATE (sample origin):

LAB Number	COLLECTION		SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME				YES	NO			
1	03/16/15	10:00	X	Mexican Hat Well - bbr	335.4 Cyanide (Report as Free)			1	DW	SW
2					525.2 Pesticides			2	DW	SW
3					531.2 Carbamates			2	DW	SW
4					515.3 Chlorinated Acids			2	DW	SW
5					505 PCB/Toxaphene/Chlordane			2	DW	SW
6					1613 Dioxin			3	DW	SW
7					549.2 Diquat			1	DW	SW
8					548.1 Endothal			2	DW	SW
9					547 Glyphosate			2	DW	SW
10					504.1 EDB/DBCP			2	DW	SW
11					524.2 Volatiles			3	DW	SW
12					524.2 LTB			2	DW	SW
13					504.1 LTB			1	DW	SW
14										

RELINQUISHED BY: (Signature) *Raquel W. ...* DATE: 03/16/15 TIME: 1:45

RECEIVED BY: (Signature) _____ DATE: _____ TIME: _____

RECEIVED FOR LABORATORY BY: *K Davis* DATE: 12-17-15 TIME: 09:30

LAB COMMENTS: LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

CONDITIONS UPON RECEIPT (check one):
 Iced Wet/Blue Ambient

2 °C Upon Receipt N/A

MATRIX CODES:
 DW-DRINKING WATER
 RW-REAGENT WATER
 GW-GROUND WATER
 EW-EXPOSURE WATER
 SW-SURFACE WATER
 PW-POOL WATER
 WW-WASTE WATER

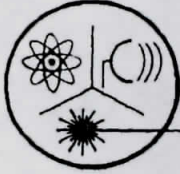
TURN-AROUND TIME (TAT) - SURCHARGES:
 SW = Standard Written (15 working days) 0%
 RW = Rush Written (5 working days) 50%
 RW = Rush Verbal (5 working days) 75%
 RW = Rush Written (5 working days) 75%

IV = Immediate Verbal (3 working days) 100%
 IW = Immediate Written (3 working days) 125%
 SP = Weekend, Holiday
 STAT = Less than 48 hours CALL

• Please call expedited service not available for all testing

06-LO-F0435 Issue 2.0 Effective Date 01/20/2012

Sample analysis will be provided according to the standard EEA Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Navajo Tribal Utility Authority
Box 170
Fort Defiance, AZ 86504

Sampling Date: December 08, 2015
Sample Received: December 09, 2015
Analysis Completed: December 28, 2015

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
Mexican Hat Well BOR	13.6 ± 1.0	2.7 ± 0.6	10.9 ± 1.2	2.5 ± 0.3	< 0.9	2.5 ± 0.3

Date of Analysis	12/9/2015	12/11/2015	12/11/2015	12/11/2015	12/11/2015	12/11/2015

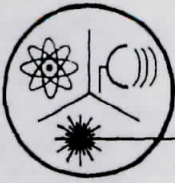


Copies sent to: *Karenta*
 District Water Dept.
 Environmental Ofc
 USEPA Ofc *NNEPA*
 Original at Lab
 Date Sent / Initial

Robert L. Metzger

Robert L. Metzger, Ph.D., C.H.P.

Laboratory License Number AZ0462



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

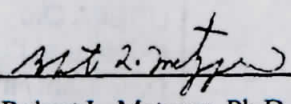
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Navajo Tribal Utility Authority
Box 170
Fort Defiance, AZ 86504

Sampling Date: December 08, 2015
Sample Received: December 09, 2015
Uranium Analysis Date: December 11, 2015

Sample No.	^{238}U	^{235}U	^{234}U	Total	
Mexican Hat Well BOR	1.3 ± 0.3	0.059 ± 0.002	1.4 ± 0.3	2.7 ± 0.6	Activity (pCi/L)
	3.8 ± 0.8	0.027 ± 0.001	0.00022 ± 0.00005	3.8 ± 0.8	Content (ug/L)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

Laboratory License Number AZ0462



Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

December 8, 2015 10:05 (24 hour clock) _____
 Sample Date Sample Time Owner/Contact Person

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point
 EPDS # _____

Compliance Sample Type:

- Reduced Monitoring Date Q1 collected: _____
- Quarterly Date Q2 collected: _____
- Composite of four quarterly samples Date Q3 collected: _____
- Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	12/11/2015	10.9 ± 1.2	
600/00-02		3 pCi/L	Gross Alpha	4002	12/9/2015	13.6 ± 1.0	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	12/11/2015	3.8 ± 0.8 µg/L	
			Uranium 234	4007	12/11/2015	0.00022 ± 0.00005	
			Uranium 235	4008	12/11/2015	0.027 ± 0.001	
			Uranium 238	4009	12/11/2015	3.8 ± 0.8	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	12/11/2015	2.5 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 226	4020	12/11/2015	2.5 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 228	4030	12/11/2015	< 0.9	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE53424
 Lab ID Number: AZ0462
 Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: Mexican Hat Well BOR

Authorized Signature: _____

Date Public Water System Notified: _____





NTUA LABORATORY
 P.O. BOX 170
 FORT DEFIANCE, AZ 86504
 (928) 729-5721
 Fax (928) 729-6249

NTUA CHAIN OF CUSTODY RECORD

Please Print Clearly

Client Name: NTUA Laboratory	Address: PO Box 170	City: Fort Defiance	State: AZ	Zip: 86515	Phone: (928)729-5721	Fax: (928)729-6249
System Name: PWS/CAMPDES	Contact: Raquel Whitehorse	Screen/Location:	ROCs:	District:		

Client Sample ID	NTUA Lab #	Date	Time	Preservative				No. of Sample Bottles	Compliance	WATER ANALYSIS					WASTEWATER ANALYSIS				RAD's		
				HNO ₃	Ice	None	Other			Heavy Metals	Wet Chemistry	Lead/Copper	Nitrate (NO ₃)	Nitrite (NO ₂)	Biochemical Oxygen Demand	Total Suspended Solids	Total Dissolved Solids (TDS)	Potable TDS			
Mexican Hat Well - BOR		12/8/15	1005			X		1	X												X

LABORATORY USE ONLY

Comments: RADs to include: R226, R228, G-alpha and Isotopic Ur. Please include NTUA lab number on final reports.

PO#: 45-55101

LABORATORY USE ONLY

SAMPLE CONDITION UPON RECEIPT	12/8/15	116 pm	<i>Shirley Lambey</i>	
No. of Containers				
Temperature				<i>116 pm</i>
Preserved	YES	NO		





NTUA LABORATORY
 P.O. BOX 170
 FORT DEFENCE, AZ 86504
 (928) 729-5721
 Fax (928) 729-6249

NTUA CHAIN OF CUSTODY RECORD

Page 1 of 1

1705015605

Please Print Clearly

CLIENT INFORMATION

Client Name: NTUA Laboratory

Address: PO Box 170

City: Fort Defiance

State: AZ

Zip:

####

Phone: 928-729-5721

Fax:

System Name:

PROJECT#

Contact Request With/Phone

Site/Location

RDC#

Distric

Laboratory Analysis Options (Heavy Metals, Wet Chemistry, and Wastewater)

WATER ANALYSIS

WASTEWATER ANALYSIS

Heavy Metals: Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ti, Zn
 Wet Chemistry: Alkalinity, Ca, Cl, Corrosivity, F, Total Hardness, Mg, NO₂, NO₃, pH, Phosphate, K, Na, SO₄, Total Dissolved Solids,
 Turbidity, and Temperature
 Wastewater: BOD, TSS, TDS, pH, Temperature, Total Residual Chlorine and Settable Solids

Client Sample ID

NTUA Lab #

Date

Time

Preservative
 HNO₃
 Ice
 None
 Other

Mexican Hat Well - BOR

195447

12/16/15

10:30A

No. of Sample Bottles

Compliance

Heavy Metals

Wet Chemistry

Lead/Copper

Nitrate (NO₃)

Nitrite (NO₂)

Biochemical Oxygen Demand

Total Suspended Solids

Total Dissolved Solids (TDS)

Potable TDS

RAD's

COMPLETED

SAMPLES MUST BE RECEIVED BEFORE HOLDING TIMES EXPIRE

Comments:

LABORATORY USE ONLY

Date

Time

SAMPLES RELEASED BY

RECEIVED BY

SAMPLE CONDITION UPON RECEIPT

12/17/15

8:38A

No. of Containers

1

Shawn Corley

Renee Miller

Temperature

10.8°C

Preserved

YES NO

NAVAJO TRIBAL UTILITY AUTHORITY
LABORATORY

HEAVY METALS ANALYSIS

SYSTEM: Mexican Hat
PWSID #: NN 3032
EPA PWSID #: 4903032
LAB #: 15-S445

DATE RECEIVED: 12/17/15
TIME RECEIVED: 8:43
COLLECTED BY: SCURLEY
DATE COLLECTED: 12/16/15
TIME COLLECTED: 10:20

CLIENT: NTUA Kayenta
SAMPLE TYPE:

MAILING ADDRESS OF REPORT: Kayenta
P.O Box 37
Kayenta, AZ 86033

PARAMETER	METHOD	RESULTS	UNITS	MCL	ANALYST	DATE ANALYZED
Arsenic	EPA 200.5	< 0.003	mg/L	0.0100	RT	12/23/15
Barium	EPA 200.7	0.010	mg/L	2.00	RT	12/23/15
Cadmium	EPA 200.5	< 0.001	mg/L	0.005	RT	12/23/15
Chromium	EPA 200.7	< 0.006	mg/L	0.100	RT	12/23/15
Copper	EPA 200.7	< 0.006	mg/L	1.30	RT	12/23/15
Iron	EPA 200.7	0.039	mg/L	0.300	RT	12/23/15
Lead	EPA 200.5	< 0.001	mg/L	0.015	RT	12/23/15
Manganese	EPA 200.7	0.237	mg/L	0.050	RT	12/23/15
Mercury	EPA 245.1	Comment	mg/L	0.0020		
Selenium	EPA 200.5	0.004	mg/L	0.050	RT	12/23/15
Sodium	EPA 200.7	383	mg/L		RT	12/23/15
Potassium	EPA 200.7	7.25	mg/L		RT	12/23/15
Nickel	EPA 200.7	0.013	mg/L		RT	12/23/15
Zinc	EPA 200.7	0.016	mg/L	5.00	RT	12/23/15
Antimony	SM 3113B	< 0.003	mg/L	0.006	EB	1/21/16
Beryllium	EPA 200.5	< 0.001	mg/L	0.004	RT	12/23/15
Thallium	EPA 200.9	< 0.0007	mg/L	0.0020	EB	1/21/16

LOCATION DESCRIPTION: Mexican Hat Well - BOR

REMARKS:

COMMENTS: Heavy Metals sample.
Comment: Hg not analyzed.



Copies sent to: Kayenta
District Water Dept.
Environmental Ofc
USEPA Ofc
Original at Lab
Date Sent / Initial

DATE REPORTED:

ANALYST: [Signature]

DATE REVIEWED: 1/27/16

REVIEWED BY: RW

FIBERQUANT ANALYTICAL SERVICES

Date _____ Time _____

Determination of Asbestos in Water using TEM

Job Number: 201513411

Client: NAVAJO TRIBAL UTILITY AUTH

PO BOX 170

FT DEFIANCE, AZ 86504-0170
Office Phone: (928) 729-5721
FAX: (928) 729-6249



Samples: 1 TEM Rec: 12/17/2015 Method: EPA 100.1
Client Job: 155431 *Mexican Hat Well - Boe*
Report Date: 12/23/2015 Date Analyzed: 12/23/2015

TEM Water
PO Number: 45-55072
Routing Number: -

Method and Analysis Information: Fiberquant Internal SOP: TEMw

Samples are analyzed using the protocols given in EPA method 100.1, as amended by the 1993 EPA guidance. Samples should be un-preserved water in 1 L containers having about 200 ml headspace for shaking. There is a 48 hr deadline between the time the sample is taken and the time it is filtered to minimize loss of asbestos fibers due to biological interference. Each sample is shook for 1 minute, and ultrasonicated for at least 10 minutes, shaking every 5 minutes to disperse any fibers that are present. A measured amount of sample is then filtered through a 0.1 um pore size polycarbonate filter, backed by a 5 um pore size MCE filter and a glass frit. Several volumes of liquid may be filtered for each sample in order to assure that a properly loaded sample is obtained. A portion of each resulting filter (and blanks) is then coated with 100-200 um of carbon in a Denton 502A Carbon Evaporator. The carbon encapsulates all of the larger and most of the smaller particulate on the filter. Three mm square pieces of the coated filter are placed on three or more copper TEM grids, and the original filter material is dissolved away in a Jaffe wick and/or condensation washer. The finished replica in carbon containing the particulate is then examined on a JEOL 1200 or Phillips CM 10 transmission electron microscope at 10,000 to 20,000x magnification. All asbestos fibers >10um in length are tabulated and characterized as asbestos or non-asbestos using a combination of morphology, electron diffraction characteristics, and elemental composition. The result is calculated in millions of fibers per liter (MFL). The grid is scanned until 20 grid openings have been observed, or until an analytical sensitivity (the hypothetical observation of one fiber) of 0.2 MFL has been reached. The nominal 20 grid opening cut-off is used for those samples containing so much non-asbestos particulate that the desired analytical sensitivity is impractical to attain.

The method was designed to determine EPA drinking water compliance. The standard for drinking water is <7 MFL as measured by this method. Fiberquant maintains Arizona Environmental Laboratory license #AZ0633 covering EPA Method 100.1.

Overall, the coefficient of variation can be expected to be approximately 0.5 for analyses in which >20 asbestos fibers have been counted, ranging up to 1.00 for analyses in which only a few asbestos fibers are counted.

The analysis was performed under an ongoing quality assurance program which includes: Lab blanks, prepared with each set of samples and analyzed. Each analyst has suitable background credentials, such as at least a bachelor's degree in geology or chemistry, and has undergone extensive 2-6 month training in TEM techniques and mineralogy specific to TEM asbestos analysis before being allowed to perform client analyses. Unknown reference samples are routinely identified to ensure that each analyst can collect and correctly interpret TEM information. The TEM is aligned and its performance checked daily. Magnification, electron diffraction pattern size, and analytical performance characteristics are calibrated routinely. Samples are re-analyzed sometimes by the same analyst and sometimes by a different analyst in order to determine accuracy and precision. The total of QC analyses (blanks + recounts) are greater than 10% of analyzed samples. Each analyst participates in interlab round robins and proficiency testing in order to show correlation to other lab's analyses. Because TEM samples are not analyzed in batches, which would be traditional for most water analyses, and not every sample has a duplicate or replicate analysis associated with it, it is not possible to include a traditional QC report with the analysis. QC reports are produced monthly, and are available on request. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. Fiberquant is accredited by NVLAP to perform TEM analysis of asbestos in air samples, and has been found to be proficient in the EPA water proficiency program. Accreditation or proficiency does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

Sampled:	12/16/2015	10:20	By:	Curley, S
Received:	12/17/2015	10:28		
Filtered:	12/17/2015	13:14		
Analyzed:	12/23/2015	11:10		

Copies sent to: *Kawenta*
District Water Dept.
Environmental Ofc
USEPA Ofc *NNEPA*
Original at Lab
Date Sent / Initial

Analysis Results:

Lab Number	Client Number	Date	Condition	Filtered Vol (ml)	#GOs	GO Area	MFL>10um	AsbestosType	Sensitivity (MFL>10um)
							Job Number:		201513411
2015-13411-1	Mexican Hat Well-BOF	12/16/2015	acceptable	90	5	0.00993	<0.2	-	0.2

David M. Schaller

Analyst: DAVID M. SCHALLER

Printed: 23-Dec-15

Original Print Date: 23-Dec-15

Larry S. Pierce

Larry S. Pierce, Approved Accreditation Signatory

Job Number: 201513411

QA Report: Job Number: 201513411

1. Calibrations	
TEM magnification. date of last.	12/2/2015
TEM camera constant. date of last.	12/16/2015
EDS performance check (k-factors, resolution, low-e perf.). date of last.	6/26/2015
TEM stage drift, minimum beam size. date of last.	6/26/2015
plasma asher. date of last.	10/22/2015
2. Blanks (1/25 samples required)	
	Not Required This Job
3. Recounts (1/17 samples required)	
	Not Required This Job
4. Analyst Performance	
NVLAP proficiency testing	Current
verified counts. cum. % true positives	90.2
verification of diffraction pattern identifications. cum. % correct	99.5
verification of EDS spectra. cum. % correct	97.5



Fiberquant Analytical Services

Fiberquant, Inc. 5025 S. 33rd St., Phoenix, Arizona 85040 602-276-6139 Fax 602-276-4558

TEM Water Sample Count Sheet

Method: EPA 100.1 (600/4-84-043)

Sample Information

Client: NAVAJO TRIBAL UTILITY AUTH

Client Smp #: Mexican Hat Well-BOR

Lab #: 2015-13411-1 Vol Filtered (ml) 90
 ___ MCE ___ PC Pore um: ___ 0.4 ___ 0.22 0.1

Grid Orientation
 Draw Asym Spot

Grid Information

#Grids Prepped: 3 GO Area: 0.00993 #GOs to Count 5

System Information

Est. % Loading 2

TEM: ___ Jeol N Jeol S Ac. Voltage: 100key or other: ___ keV
 Measured @20K Scanned @ 15K Alignment: + checked EDS: ___ callb + not used

Fiber Counts:

Grid Storage # 14145

Acceptable Prep + (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs)

E6	E7	E8	E9	E10	E11	E12	E13	E14	E15
F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
H6	H7	H8	H9	H10	H11	H12	H13	H14	H15
I6	I7	I8	I9			I12	I13	I14	I15
J6	J7	J8	J9			J12	J13	J14	J15
K6	K7	K8	K9	K10	K11	K12	K13	K14	K15
L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
N6	N7	N8	N9	N10	N11	N12	N13	N14	N15

Grid Map
 X denotes GO's on 1st grid; O denotes GO's on 2nd

Location		Str. Type				Size		Morphology		Diffraction Data							EDXA Data						Ident.'n				
GO #	STR #	FIBER	BUNDLE	MATRIX	CLUSTER	Length	Width	TUBULAR	BLOCKY	Negative #	52 A Row Spacing	Estimated In-Row Spacing	CHRY	AMPH	NONASB	NONPATT	File #	Na	Mg	Si	Ca	Fo	Other	File #	ASBTYPE	NONASB	
H1	NSD																										
K5	NSD																										

Grid Storage # 14146

Acceptable Prep + (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs)

L2	NSD																										
G9	NSD																										

Grid Storage # 14149

Acceptable Prep + (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs)

F11	NSD																										
-----	-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Abbreviations: NSD=No structures Detected, CH=chrysotile, GR=grunerite, AN=anthophyllite, TR=tremolite, AP=amphibole, GO=grid opening, NA=non-asbestos

Notes:

Totals:	CH > 10	<u>0</u>	AP > 10	<u>0</u>	GOs Counted	<u>5</u>	Results:	Str/mm2	<u>0.20</u>	MFL	<u>0.2</u>
---------	---------	----------	---------	----------	-------------	----------	----------	---------	-------------	-----	------------

Analyst: D. M. Schell Date: 12-23-15



Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company) Navajo Tribal Utility Authority

Address PO Box 170

City, State, Zip Code Fort Defiance, AZ 86504

Phone (928) 729 5721 FAX (928) 729-6249

Email raquelw@ntua.com

Invoice to (Company) Navajo Tribal Utility Authority

Address PO Box 170

City, State, Zip Code Fort Defiance, AZ 86504

Phone (928) 729-5721 FAX (928) 729-6349

Contact (print) Raquel Whitehorse

Sampled by (signature) _____

Job Number or Project Name 155431

PO Number 45-55072

Analysis Method Requested ONLY ONE METHOD per COC		Turn-around-time (circle one)			
		Rush	Norm	Ext.	
Asbestos by PLM	Improved <input type="checkbox"/> Interim <input type="checkbox"/>	Urg. Rush <3 hrs <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-3 days <input type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyze <input type="checkbox"/> All <input type="checkbox"/> ATPF				
	If so then by Layer <input type="checkbox"/> or Sample <input type="checkbox"/>				
Single Layer Protocol: Yes <input type="checkbox"/> No <input type="checkbox"/>					
Fibers by PCM	7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>		
Asbestos by TEM	AIR: AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>	
	Water: <u>Water</u> <input checked="" type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	
	Annex 2 : Chatfield <input type="checkbox"/> Full <input type="checkbox"/>				
	Vacuum Dust (ASTM)	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A <input type="checkbox"/>	
Pb by FLAA	Analyse: Pb Other	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A <input type="checkbox"/>	
	Matrix: Filler: MCE <input type="checkbox"/>				
	Paint: by Area <input type="checkbox"/>				
	by Weight <input type="checkbox"/>				
	Soil <input type="checkbox"/>				
Wipe <input type="checkbox"/>					
Initial here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>					
Fungi	Air Sample: Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A <input type="checkbox"/>	
	ID/Count: Bulk <input type="checkbox"/> Swab <input type="checkbox"/>				
	Tape: Qual (%) <input type="checkbox"/>				
	Tape: Quant (cm2) <input type="checkbox"/>				
Other					
Dust	NIOSH 500 <input type="checkbox"/>	<4hr <input type="checkbox"/>	24h <input type="checkbox"/>	N/A <input type="checkbox"/>	
Other		Call <input type="checkbox"/>	Call <input type="checkbox"/>		

Sample Number	Description/Location (include area type/maker/exp. Date)	Sample Date	Sample Time	Vol/Area
1)	Mexican Hat Well - BGR	12/16/15	1020	1L
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				

1) Relinquished by: <u>[Signature]</u>	Date: <u>12/16/15</u>	Time: <u>1345</u>	3) Relinquished by:	Date:	Time:
2) Received by: <u>[Signature]</u>	Date: <u>12/17/15</u>	Time: <u>1028</u>	4) Received by:	Date:	Time:
* TEM Water: Sample 5 noted Required by State of Arizona			Print Name <u>RA</u>		

Review of Analysis Request (Initials) [Signature] Page 1 of 1
201513411

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

**PART XVIII
SECONDARY DRINKING WATER STANDARDS**

§ 1801 PURPOSE

This part establishes the Navajo Nation's Secondary Drinking Water Standards pursuant to § 2532 of the NNSDWA. These standards control contaminants in drinking water that primarily affect aesthetic qualities relating to public acceptance of drinking water. At considerably higher concentrations of these contaminants, health implications may exist as well as aesthetic degradation. These standards serve as a goal and are not enforceable by the NNEPA.

§ 1802 SECONDARY MAXIMUM CONTAMINANT LEVELS

The secondary maximum contaminant levels (SMCL) for public water systems are as follows:

TABLE 1800.1 Secondary Maximum Contaminant Level

CONTAMINANT	LEVEL
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 COLOR UNITS
Copper	1.0 mg/L
Corrosivity	Non-corrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.1 mg/L
Sulfate	250 mg/L
Total Dissolved Solids (TDS)	500 mg/L
Zinc	5 mg/L

§1803 ANALYTICAL METHODS

- A. It is recommended that the parameters in these standards should be monitored at intervals no less frequent than the monitoring performed for inorganic chemical contaminants listed in the NNPDR as applicable to CWSs. More frequent monitoring would be appropriate for specific parameters such as pH, color, odor, or others under certain circumstances as recommended by the Director.
- B. Measurement of pH, copper and fluoride may be conducted with one of the methods in §402, Table 400.4. Analyses of aluminum, chloride, foaming agents, iron, manganese, odor, silver, sulfate, total dissolved solids (TDS) and zinc may be conducted with the methods in the following table. Criteria for analyzing aluminum, copper, iron, manganese, silver and zinc samples with digestion or directly without digestion, and other analytical test procedures are contained in *Technical Notes on Drinking Water Methods*, EPA-600/R-94-173, October 1994, which is available at NTIS PB95-104766.

Table 1800.2 METHODOLOGY

Contaminant	EPA	ASTM ³	SM4	Other
Aluminum	2200.7		3120B	

	² 200.8 ² 200.9		3113B 3111D	
Chloride	¹ 300.0	D4327-91	4110 4500-Cl-D	
Color			2120B	
Foaming Agent			5540C	
Iron	² 200.7 ² 200.9		3120B 3111B 3113B	
Manganese	² 200.7 ² 200.8 ² 200.9		3120B 3111B 3113B	
Odor			2150B	
Silver	² 200.7 ² 200.8 ² 200.9		3120B 3111B 3113B	I-3720-85 ⁵
Sulfate	¹ 300.0 ¹ 375.2	D4327-91	4110 4500-SO ₄ -F 4500-SO ₄ -C, D	
TDS			2540C	
Zinc	² 200.7 ² 200.8		3120B 3111B	

1. "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993. Available at NTIS, PB94-121811.

2. "Methods for the Determination of Metals in Environmental Samples-Supplement I", EPA-600/R-94-111, May 1994. Available at NTIS, PB94-184942.

3. The procedures shall be done in accordance with the *Annual Book of ASTM Standards*, 1994, Vols. 11.01 and 11.02, American Society for Testing and Materials. Copies may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street SW, Washington, D.C. 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C.

4. The procedures shall be done in accordance with the 18th edition, or latest edition, of *Standard Methods for the Examination of Water and Wastewater*, 1992. American Public Health Association. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW., Washington, D.C. 20005. Copies may be inspected at EPA's Drinking Water Docket, 401 M. Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, D.C.

5. Available from Books and Open-File Reports Section, USGS Federal Center, Box 25425, Denver, CO, 80225-0425.

§ 1804 COMPLIANCE WITH SECONDARY MAXIMUM CONTAMINANT LEVEL AND PUBLIC NOTIFICATION FOR FLUORIDE

A. CWSs, as defined in § 104 of these regulations, that exceed the SMCL for fluoride as determined by the last single sample taken in accordance with the requirements of § 406.1 of the NNPDWR, but not to exceed the MCL for fluoride as specified by § 204 of the NNPDWR, shall provide the notice described in subsection (B) of this section to all billing units annually, all new billing units at the time service begins, and the Director.

B. The notice required by subsection (A) of this section shall contain the following language, including the language necessary to replace the superscripts:

PUBLIC NOTICE

Dear User:

The Navajo Nation Environmental Protection Agency and the U.S. Environmental Protection Agency require that we send you this notice on the level of fluoride in your drinking water. The drinking

water in your community has a fluoride concentration of ¹ milligrams per liter (mg/l).

Both the Navajo Nation Primary Drinking Water Drinking Regulations and federal regulations require that fluoride, which may occur naturally in your water supply, not exceed a concentration of 4.0 mg/l in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect the public health. Exposure to drinking water levels above 4.0 m/l for many years may result in some cases of crippling skeletal fluorosis, which is a serious bone disorder.

Both Navajo Nation and federal law also require that we notify you when sampling indicates that the fluoride in your drinking water exceeds 2.0 mg/l. This is intended to alert families about dental problems that might affect children under nine years of age. The fluoride concentration of your water exceeds this guideline.

Fluoride in children's drinking water at levels of approximately 1 mg/l reduces the number of dental cavities. However, some children exposed to levels of fluoride greater than about 2.0 mg/l may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is a brown staining and/or pitting of the permanent teeth.

Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of nine are encouraged to seek other sources of drinking water for their children to avoid the possibility of staining and pitting.

Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below. Low fluoride bottled drinking water that would meet all standards is also commercially available.

For further information, contact ² at your water system.

¹PWS shall insert the compliance result which triggered notification under this part.

²PWS shall insert the name, address, and telephone number of a contact person at the PWS.

PART II
MAXIMUM CONTAMINANT LEVELS

§ 201 PURPOSE

The purpose of this part is to define the Maximum Contaminant Levels, or MCL, for each contaminant.

§ 202 SPECIAL MAXIMUM CONTAMINANT LEVELS for ARSENIC and NITRATE

- A. The MCL for arsenic of 0.010 mg/L or 10 parts per billion (10ppb) applies to community water systems and non-transient, non-community water systems and shall become effective January 23, 2006.
1. Compliance with the MCL for arsenic is calculated pursuant to § 405.
 2. The owner/operator shall report the most recent arsenic levels in their water systems. These levels and health effects shall be reported in the Consumer Confidence Reports required by Part XII of these regulations.
- B. The MCL for nitrate is 10mg/L or 10 parts per million (10ppm).
- C. At the discretion of the Director, nitrate levels not exceeding 20 mg/L may be allowed in a non-community water system if the public water system owner or operator demonstrates to the satisfaction of the Director that:
1. Such water will not be available to children under six months of age;
 2. There will be continuous public notification stating that nitrate levels exceed 10 mg/L and lists the potential health effects due to exposure;
 3. PWSSP shall be notified annually of nitrate levels that exceed 10 mg/L; and
 4. No adverse health effects shall result.

§ 203 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR INORGANIC CONTAMINANTS

- A. Applicability
1. The MCLs for inorganic contaminants (1)-(10), (12)-(13), and (17)-(18) of Table 200.1 applies to community water systems (CWS) and non-transient, non-community water systems (NTNCWS).
 2. The MCL specified in (11) of Table 200.1 only applies to CWSs.
 3. The MCLs specified in (14)-(16) of Table 200.1 apply to CWSs; NTNCWSs; and transient non-community water systems (TNCWS).
 4. The MCLs specified in (14), (15) and (16) of Table 200.1 apply to consecutive public water systems. Other MCL sampling requirements will be determined, by the Director, after a sanitary survey of the system, a wellhead protection delineation or a vulnerability assessment survey indicates that further sampling requirements are needed. MCL sampling for asbestos (4) is required for those systems with asbestos-cement pipe in the distribution system.
 5. BAT(s) are the best available technology, treatment technique, or other means available for achieving compliance with the MCLs for inorganic contaminants and are identified in Table 200.1.

TABLE 200.1 MAXIMUM CONTAMINANT LEVELS, MAXIMUM CONTAMINANT LEVEL GOALS with EFFECTIVE DATES for INORGANIC CONTAMINANTS

#	EFFECTIVE DATE	CONTAMINANT	MCL mg/L	MCLG mg/L	BATs
1	3/21/1996	Antimony	0.006	0.006	2,7

2	3/21/1996	Arsenic ⁴	0.05	Zero	1,2,5,6,7,9,12 ⁵
3	1/23/2006	Arsenic ⁴	0.010 ⁶	Zero	1,2,5,6,7,9,12 ⁵
4	3/21/1996	Asbestos	7 million fibers/liter (longer than 10µm)	7 million fibers/liter (longer than 10µm)	2,3,8
5	3/21/1996	Barium	2	2	5,6,7,9
6	3/21/1996	Beryllium	0.004	0.004	1,2,5,6,7
7	3/21/1996	Cadmium	0.005	0.005	2,5,6,7
8	3/21/1996	Chromium	0.1	0.1	2,5,6 ² , 7
9	3/21/1996	Copper		1.3	
10	3/21/1996	Cyanide (as free cyanide)	0.2	0.2	5,7,10
11	3/21/1996	Fluoride	4.0	4.0	
12	3/21/1996	Lead	0.015	Zero	
13	3/21/1996	Mercury	0.002	0.002	2 ¹ ,4,6 ¹ ,7 ¹
14	3/21/1996	Nitrate	10 (as Nitrogen)	10 (as Nitrogen)	5,7,9
15	3/21/1996	Nitrite	1 (as Nitrogen)	1 (as Nitrogen)	5,7
16	3/21/1996	Total Nitrate and Nitrite	10 (as Nitrogen)	10 (as Nitrogen)	
17	3/21/1996	Selenium	0.05	0.05	1,2 ³ ,6,7,9
18	3/21/1996	Thallium	0.002	0.0005	1,5

¹ BAT only if influent Hg concentrations #10 micrograms/liter.

² BAT for Chromium III only.

³ BAT for Selenium IV only.

⁴ BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

⁵ To obtain high removals, iron to arsenic ratio must be at least 20:1.

⁶ This MCL will replace the 0.05 mg/L MCL and will apply to CWS and NTNCWS, effective January 23, 2006.

Key to BAT(s) in Table 200.1

1 = Activated Alumina 2 = Coagulation/Filtration (Not BAT for systems <500 service connections) 3 = Direct & Diatomite Filtration	4 = Granular Activated Carbon 5 = Ion Exchange 6 = Lime Softening (Not BAT for systems <500 service connections)	7 = Reverse Osmosis 8 = Corrosion Control 9 = Electrodialysis 10= Chlorine 11= Ultraviolet 12= Oxidation / Filtration
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6. The Administrator, pursuant to section 1412 of the Safe Drinking Water Act (SDWA), hereby identifies in the following table the affordable technology, treatment technique or other

means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

TABLE 200.2 SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS)¹ FOR ARSENIC²

Small system compliance technology	Affordable for listed small system categories ³
Activated Alumina (centralized)	All size categories.
Activated Alumina (Point-of-Use) ⁴	All size categories.
Coagulation/Filtration ⁵	501-3,300 and 3,301-10,000.
Coagulation-assisted Micro-filtration	501-3,300 and 3,301-10,000.
Electrodialysis reversal ⁶	501-3,300 and 3,301-10,000.
Enhanced coagulation/Filtration	All size categories.
Enhanced lime softening (pH>10.5)	All size categories.
Ion Exchange	All size categories.
Lime Softening	501-3,300 and 3,301-10,000.
Oxidation/Filtration ⁷	All size categories.
Reverse Osmosis (centralized) ⁶	501-3,300 and 3,301-10,000.
Reverse Osmosis (Point-of-Use) ⁴	All size categories.

¹Section 1412 (b)(4)(E)(ii) of the SDWA specifies that SSCTs must be affordable and technically feasible for small systems.

²SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

³The Act (ibid.) Specifies three categories of small systems; (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300 but fewer than 10,001.

⁴When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

⁵Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

⁶Technologies reject a large volume of water, may not be appropriate for areas where water quantity may be an issue.

⁷To obtain high removals, iron to arsenic ratio must be at least 20:1.

§ 204 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR ORGANIC CONTAMINANTS

A. Applicability

1. The following MCLs for organic contaminants apply to CWSs and NTCWSs.

TABLE 200.3 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS for VOLATILE ORGANIC CHEMICALS with EFFECTIVE DATES

#	CAS ¹ No.	EFFECTIVE DATES	CONTAMINANT	MCL mg/L	MCLG mg/L
1	75-01-4	3/21/1996	Vinyl chloride	0.002	0.00
2	71-43-2	3/21/1996	Benzene	0.005	0.00
3	56-23-5	3/21/1996	Carbon tetrachloride	0.005	0.00
4	107-06-2	3/21/1996	1,2-Dichloroethane	0.005	0.00
5	79-01-6	3/21/1996	Trichloroethylene	0.005	0.00

6	106-46-7	3/21/1996	para-Dichlorobenzene	0.075	0.075
7	75-35-4	3/21/1996	1,1-Dichloroethylene	0.007	0.007
8	71-55-6	3/21/1996	1,1,1-Trichloroethane	0.2	0.20
9	156-59-2	3/21/1996	cis-1,2-Dichloroethylene	0.07	0.07
10	78-87-5	3/21/1996	1,2-Dichloropropane	0.005	0.00
11	100-41-4	3/21/1996	Ethylbenzene	0.7	0.7
12	108-90-7	3/21/1996	Monochlorobenzene	0.1	0.1
13	95-50-1	3/21/1996	o-Dichlorobenzene	0.6	0.6
14	100-42-5	3/21/1996	Styrene	0.1	0.1
15	127-18-4	3/21/1996	Tetrachloroethylene	0.005	0.00
16	108-88-3	3/21/1996	Toluene	1	1
17	156-60-5	3/21/1996	trans-1,2-Dichloroethylene	0.1	0.1
18	1330-20-7	3/21/1996	Xylenes (total)	10	10
19	75-09-2	3/21/1996	Dichloromethane	0.005	0.00
20	120-82-1	3/21/1996	1,2,4-Trichlorobenzene	0.07	0.07
21	79-00-5	3/21/1996	1,1,2-Trichloroethane	0.005	0.003

¹Chemical Abstract Service Number

2. The following MCLs and MCLGs for synthetic organic contaminants apply to CWSs and NTNCWS.

TABLE 200.4 MAXIMUM CONTAMINANT LEVELS, MAXIMUM CONTAMINANT LEVEL GOALS with EFFECTIVE DATES for SYNTHETIC ORGANIC CHEMICALS

#	CAS No.	EFFECTIVE DATES	CONTAMINANT	MCL mg/L	MCLG mg/L
1	15972-60-8	3/21/1996	Alachlor	0.002	0.00
2	116-06-3	3/21/1996	Aldicarb	0.003	0.001
3	1646-87-3	3/21/1996	Aldicarb sulfoxide	0.004	0.001
4	1646-87-4	3/21/1996	Aldicarb sulfone	0.002	0.001
5	1912-24-9	3/21/1996	Atrazine	0.003	0.003
6	1563-66-2	3/21/1996	Carbofuran	0.04	0.04
7	57-74-9	3/21/1996	Chlordane	0.002	0.00
8	96-12-8	3/21/1996	Dibromochloropropane	0.0002	0.00
9	94-75-7	3/21/1996	2,4-D	0.07	0.07
10	106-93-4	3/21/1996	Ethylene dibromide	0.00005	0.00

11	76-44-8	3/21/1996	Heptachlor	0.0004	0.00
12	1024-57-3	3/21/1996	Heptachlor epoxide	0.0002	0.00
13	58-89-9	3/21/1996	Lindane	0.0002	0.0002
14	72-43-5	3/21/1996	Methoxychlor	0.04	0.04
15	1336-36-3	3/21/1996	Polychlorinated biphenyls	0.0005	0.00
16	87-86-5	3/21/1996	Pentachlorophenol	0.001	0.00
17	8001-35-2	3/21/1996	Toxaphene	0.003	0.00
18	93-72-1	3/21/1996	2,4,5-TP	0.05	0.05
19	50-32-8	3/21/1996	Benzo[a]pyrene	0.0002	0.00
20	75-99-0	3/21/1996	Dalapon	0.2	0.2
21	103-23-1	3/21/1996	Di(2-ethylhexyl)adipate	0.4	0.4
22	117-81-7	3/21/1996	Di(2-ethylhexyl)phthalate	0.006	0.00
23	88-85-7	3/21/1996	Dinoseb	0.007	0.007
24	85-00-7	3/21/1996	Diquat	0.02	0.02
25	145-73-3	3/21/1996	Endothall	0.1	0.1
26	72-20-8	3/21/1996	Endrin	0.002	0.002
27	1071-83-6	3/21/1996	Glyphosate	0.7	0.7
28	118-74-1	3/21/1996	Hexachlorobenzene	0.001	0.00
29	77-47-4	3/21/1996	Hexachlorocyclopentadiene	0.05	0.05
30	23135-22-0	3/21/1996	Oxamyl (Vydate)	0.2	0.2
31	1918-02-1	3/21/1996	Picloram	0.5	0.5
32	122-34-9	3/21/1996	Simazine	0.004	0.004
33	1746-01-6	3/21/1996	2,3,7,8-TCDD (Dioxin)	3x10 ⁻⁸	0.00

B. The Administrator pursuant to §1412 of the SDWA has identified as indicated in Table 200.5 the granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) techniques as the best technology treatment technique or other means available for achieving compliance with the MCL for organic contaminants identified in subsections (A)(1) and (A)(2) of this section:

TABLE 200.5 BAT FOR ORGANIC CONTAMINANTS (SYNTHETIC AND VOLATILE)

#	CAS No.	CONTAMINANT	GAC	PTA	OX
1	15972-60-8	Alachlor	X		
2	116-06-3	Aldicarb	X		
3	1646-88-4	Aldicarb sulfone	X		
4	1646-87-3	Aldicarb sulfoxide	X		
5	1912-24-9	Atrazine	X		
6	71-43-2	Benzene	X	X	
7	50-32-8	Benzo[a]pyrene	X		
8	1563-66-2	Carbofuran	X		
9	56-23-5	Carbon tetrachloride	X	X	
10	57-74-9	Chlordane	X		
11	75-99-0	Dalapon	X		
12	94-75-7	2,4-D	X		
13	103-23-1	Di(2-ethylhexyl)adipate	X	X	
14	117-81-7	Di(2-ethylhexyl)phthalate	X		
15	96-12-8	Dibromochloropropane (DBCP)	X	X	
16	95-50-1	o-Dichlorobenzene	X	X	
17	106-46-7	para-Dichlorobenzene	X	X	
18	107-06-2	1,2-Dichloroethane	X	X	
19	75-35-4	1,1-Dichloroethylene	X	X	
20	156-59-2	cis-1,2-Dichloroethylene	X	X	
21	156-60-5	trans-1,2-Dichloroethylene	X	X	
22	75-09-2	Dichloromethane		X	
23	78-87-5	1,2-Dichloropropane	X	X	
24	88-85-7	Dinoseb	X		
25	85-00-7	Diquat	X		
26	145-73-3	Endothall	X		

27	72-20-8	Endrin	X		
28	100-41-4	Ethylbenzene	X	X	
29	106-93-4	Ethylene Dibromide (EDB)	X	X	
30	1071-83-6	Glyphosate			X
31	76-44-8	Heptachlor	X		
32	1024-57-3	Heptachlor epoxide	X		
33	118-74-1	Hexachlorobenzene	X		
34	77-47-3	Hexachlorocyclopentadiene	X	X	
35	58-89-9	Lindane	X		
36	72-43-5	Methoxychlor	X		
37	108-90-7	Monochlorobenzene	X	X	
38	23135-22-0	Oxamyl (Vydate)	X		
39	87-86-5	Pentachlorophenol	X		
40	1918-02-1	Picloram	X		
41	1336-36-3	Polychlorinated biphenyls (PCB)	X		
42	122-34-9	Simazine	X		
43	100-42-5	Styrene	X	X	
44	1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
45	127-18-4	Tetrachloroethylene	X	X	
46	108-88-3	Toluene	X	X	
47	8001-35-2	Toxaphene	X		
48	93-72-1	2,4,5-TP (Silvex)	X		
49	120-82-1	1,2,4-Trichlorobenzene	X	X	
50	71-55-6	1,1,1-Trichloroethane	X	X	
51	79-00-5	1,1,2-Trichloroethane	X	X	
52	79-01-6	Trichloroethylene	X	X	
53	75-01-4	Vinyl chloride		X	

54	1330-20-7	Xylene	X	X	
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§ 205 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR MICROBIOLOGICAL CONTAMINANTS

- A. A public water system must determine compliance with the MCL for total coliforms in subsections (B) and (C) of this section for each month in which it is required to monitor for total coliforms.
- B. Applicability
- Each CWS, NTNCWS, TNCWS and Consecutive system is required to comply with this section. The MCL for total coliform is based on the presence or absence in a sample, rather than coliform density.

TABLE 200.6 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR MICROBIOLOGICAL CONTAMINANTS

#	CONTAMINANT	MCL	MCLG
1	<i>Giardia lamblia</i>	zero	zero
2	Viruses	zero	zero
3	<i>Legionella</i>	zero	zero
4	Total coliforms (including fecal coliforms and <i>Escherichia coli</i>)	zero	zero
5	Cryptosporidium	zero	zero

- C. Compliance
- For a system that collects 40 or more samples per month, the system is in compliance with the MCL for total coliforms if no more than 5.0% of the samples collected during the month are total coliform-positive.
 - For a system that collects less than 40 samples per month, the system is in compliance with the MCL for total coliforms if no more than one sample collected during the month is total coliform-positive.
 - Any fecal coliform-positive repeat sample or *E.coli*-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or *E.coli*-positive routine sample constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in Part VI, this is a violation that may pose an acute risk to health.
- D. The following are identified as the best available technology, treatment techniques, or other means to achieve compliance with the MCL for total coliforms in subsections (B) and (C) of this section:
- Protection of wells from total coliform contamination by appropriate construction and location;
 - Maintain a disinfectant residual throughout the distribution system;
 - Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, adequate flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
 - Filtration and/or disinfection of surface water, as described in Parts VIII and XIII (General Requirements for Surface Water Treatment and Enhanced Surface Water Treatment), or disinfection of groundwater using strong oxidants such as chlorine, chlorine dioxide, or ozone;

5. For systems using groundwater, compliance with the requirements of an NNEPA-approved Wellhead Protection Program that is developed and implemented pursuant to § 2538 of the NNSDWA and Part XVII of these regulations-Wellhead Protection Regulations; and
6. Proper placement, maintenance and testing of backflow prevention and cross connection devices, as described in Part XX of these regulations.

§ 206 MAXIMUM CONTAMINANT LEVELS FOR TURBIDITY

The MCL for turbidity are applicable to both community and non-community water systems using surface water sources in whole or in part. The MCL for turbidity in drinking water, measured at a representative entry point(s) to the distribution system are:

- A. One turbidity unit (TU), as determined by a monthly average pursuant to § 414, except that five or fewer turbidity units may be allowed if the public water system owner or operator can demonstrate to the Director that the higher turbidity level does not:
 1. Interfere with disinfection;
 2. Prevent maintenance of an effective disinfectant agent throughout the distribution system; or
 3. Interfere with microbiological determinations.
- B. Five turbidity units based on an average for two consecutive days pursuant to § 414.

§ 207 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS for DISINFECTION BYPRODUCTS

A. Applicability

1. The MCLs and MCLGs for Disinfection Byproducts are as follows:

TABLE 200.7 MCLs FOR DISINFECTION BYPRODUCTS

Disinfection Byproduct	MCL (mg/L)	MCLG (mg/L)
Total Trihalomethanes (TTHM)	0.080	
Haloacetic acids (five) (HAA5)	0.060	
Bromate	0.010	Zero
Chlorite	1.0	0.8
Bromodichloromethane		Zero
Bromoform		Zero
Chloroform		0.07
Dichloroacetic Acid		Zero
Trichloroacetic Acid		0.02
Dibromochloromethane		0.06
Monochloroacetic Acid		0.07

B. Compliance Dates

1. All CWSs and NTNCWSs:
 - a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons must comply with this section upon promulgation of these regulations;
 - b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons must comply with this section beginning January 1, 2004;
 - c. Public water systems using only ground water not under the direct influence of surface water must comply with this section beginning January 1, 2004.
 - d. All systems must comply with the MCLs listed in this section until the date specified for Part XXIII compliance in §2300(C).
 - i. Part XXIII MCLs for TTHM and HAA5 must be complied with as a locational running annual average at each monitoring location beginning with the date specified for Part XXIII compliance in §2301(C).

2. A system that is installing GAC or membrane technology to comply with this section may apply to the Director for an extension of up to 24 months past the date of promulgation of these regulations, but not beyond December 31, 2003. In granting the extension, the Director must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of the NNPDWR.

C. The Administrator, pursuant to § 1412 of the SDWA, has identified the following as the best available technology, treatment techniques, or other means available to achieve compliance with the MCLs for disinfection byproducts identified in subsection (A) of this section:

TABLE 200.8 BATs FOR DISINFECTION BYPRODUCTS

Disinfection Byproduct	Best Available Technology
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
Bromate	Control of ozone treatment processes to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

D. The Administrator, pursuant to section 1412 of the SDWA, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHM and HAA5 identified in this subsection (D) for all systems that disinfect their source water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5).	Enhanced coagulation or enhanced softening, plus GAC10; or nanofiltration with a molecular weight cutoff ≤1000 Daltons; or GAC20.

E. The Administrator, pursuant to section 1412 of the SDWA, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHM and HAA5 identified in this subsection (E) for consecutive systems that buy or otherwise receive finished water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5).	Systems serving ≥10,000: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for disinfectant residual maintenance Systems serving ≤10,000: Improved distribution system and storage tank management to reduce residence time

§ 208 MAXIMUM RESIDUAL DISINFECTANT LEVELS and MAXIMUM RESIDUAL DISINFECTANT LEVEL GOALS

A. Applicability

1. The Maximum Residual Disinfectant Levels and Maximum Residual Disinfectant Level Goals are as follows:

TABLE 200.9 MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs) and MAXIMUM RESIDUAL DISINFECTANT LEVEL GOALS (MRDLGs)

Disinfectant residual	MRDL (mg/L)	MRDLG (mg/L)
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Chlorine	4.0 (as Cl ₂)	4.0 (as Cl ₂)
Chloramines	4.0 (as Cl ₂)	4.0 (as Cl ₂)
Chlorine dioxide	0.8 (as ClO ₂)	0.8 (as ClO ₂)

B. Compliance Dates

1. All CWSs and NTNCWSs:

- a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons must comply with this section upon promulgation of these regulations;
- b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons must comply with this section beginning January 1, 2004;
- c. Public water systems using only ground water, not under the direct influence of surface water, must comply with this section beginning January 1, 2004.

2. All TNCWSs:

- a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL upon promulgation of these regulations;
- b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004;
- c. Public water systems using only ground water, not under the direct influence of surface water, and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

C. The Administrator, pursuant to §1412 of the SDWA, has identified the following as the best available technology, treatment techniques, or other means available to achieve compliance with the maximum residual disinfectant levels identified in subsection (A) of this section: control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

§ 209 MAXIMUM CONTAMINANT LEVELS AND MAXIMUM CONTAMINANT LEVEL GOALS FOR RADIONUCLIDES

A. Applicability

1. The following MCLs and MCLGs for radionuclides apply to CWSs.

Table 200.10 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR RADIONUCLIDES

#	Contaminant	MCL	MCLG
1	Gross alpha particle activity	15 pCi/L (including radium-226 but excluding radon and uranium)	Zero
2	Combined radium-226 and radium-228	5 pCi/L (see note 1 below)	Zero
3	Beta particle and photon radioactivity	4 millirem/year (see notes 2 and 3 below)	Zero
4	Uranium	30 micrograms per liter (µg/L)	Zero

Notes:

- 1. The combined radium-226 and radium-228 value is determined by adding the results of the analysis for radium-226 and the analysis for radium-228.
- 2. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year).
- 3. Except for the radionuclides listed in Table 200.11, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liters per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce¹. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

¹ This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of this document are available from the National Technical Information Service, NTIS ADA 280 282, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

TABLE 200.11 AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF 4 mrem/yr

#	Radionuclide	Critical organ	pCi per liter
1	Tritium	Total body	20,000
2	Strontium-90	Bone marrow	8

B. Compliance dates for combined radium-226 and radium-228, gross alpha particle activity, gross beta particle, photon radioactivity, and uranium:

- CWSs must comply with the MCLs listed in Table 200.10 beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of § 411. Compliance with the reporting requirements for radionuclides is listed in Part XII (Consumer Confidence Report) Appendix F and Part VII (Public Notification) Appendices B and is required beginning December 8, 2003.

C. BATs for radionuclides

- The Administrator pursuant to § 1412 of the SDWA has identified as indicated in the following table, the best available technology to achieve compliance with the MCLs for combined radium-226 and radium-228, uranium, gross alpha particle activity, beta particle and photon radioactivity.

TABLE 200.12 BATs FOR COMBINED RADIUM-226 AND RADIUM-228, URANIUM, GROSS ALPHA PARTICLE ACTIVITY, BETA PARTICLE AND PHOTON RADIOACTIVITY

#	Contaminant	BATs
1	Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
2	Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/filtration
3	Gross alpha particle activity (excluding radon and uranium)	Reverse osmosis
4	Beta particle and photon radioactivity	Ion exchange, reverse osmosis

D. Compliance technologies for radionuclides for small water systems

TABLE 200.13 COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES FOR SMALL WATER SYSTEMS AND LIMITATIONS OF USE

#	Unit Technologies	Limitations (see footnotes)	Operator skill level ¹	Raw water quality range and considerations ¹
1.	Ion exchange (IE)	a	Intermediate	All ground waters
2.	Point of use (POU ²)	b	Basic	All ground waters
3.	Reverse osmosis (RO)	c	Advanced	Surface waters usually require pre-filtration
4.	POU ² RO	b	Basic	Surface waters usually require pre-filtration
5.	Lime softening	d	Advanced	All waters

6.	Green sand filtration	e	Basic	
7.	Co-precipitation with barium sulfate	f	Intermediate to Advanced	Ground waters with suitable water quality
8.	Electrodialysis/ electrodialysis reversal		Basic to Intermediate	All ground waters
9.	Pre-formed hydrous manganese oxide filtration	g	Intermediate	All ground waters
10.	Activated alumina	a, h	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency
11.	Enhanced coagulation/ filtration	i	Advanced	Can treat a wide range of water qualities

¹ National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997. Basic means Level 1, Intermediate means Level 2 or 3 and Advanced means Level 4 as defined in §1400.

² A POU, or "point-of-use" technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

- a The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.
- b When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.
- c Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.
- d The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.
- e Removal efficiencies can vary depending on water quality.
- f This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.
- g This technology is most applicable to small systems that already have filtration in place.
- h Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.
- i Assumes modification to a coagulation/filtration process already in place.

Table 200.14 COMPLIANCE TECHNOLOGIES BY SYSTEM SIZE CATEGORY FOR RADIONUCLIDES

#	Contaminant	Compliance Technologies ¹ for systems size categories (population served)		
		25-500	501-3,300	3,300-10,000
1	Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2	Gross alpha particle activity	3, 4	3, 4	3, 4
3	Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4	Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

NOTE: ¹Numbers correspond to those technologies found listed in the Table 200.13 of this section.

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