

Water Quality at the End of The World



Introduction: For a small Native American community located in the remote town of Neah Bay, in the Pacific Northwest region of Washington State, treated drinking water (common to cities and larger populated areas) has always been a problem for the tribe to obtain. In the past, the Makah Tribe has had difficulty with droughts, wells that have merged with salt water, and bacteria (due to drawing water from local streams). I believe that the raw water's bacteria will test positive and prove to be dangerous for drinking. The purpose of this research project is to test the raw water and tap water to detect the change of the water after it has been treated properly.



Raw Sample	Lead	Pesticides	Nitrite	Total Nitrite/Nitrate	PH	Hardness	Chlorine	Bacteria
Desired outcome	Below 15 ppb	Below 3 ppb	Below 1 ppm	Below 10 ppm	6.5-8.5	50 ppm or below	Below 4 ppm	None
Trial 1	Negative	Negative	0 ppm	0.5 ppm	7.5	50 ppm	0 ppm	Positive
Trial 2	Negative	Negative	0 ppm	0.5 ppm	7	50 ppm	0 ppm	Positive
Trial 3	Negative	Negative	0 ppm	0.5-2.0 ppm	7	50 ppm	0 ppm	Positive

Tap Sample	Lead	Pesticides	Nitrite	Total Nitrite/Nitrate	PH	Hardness	Chlorine	Bacteria
Desired outcome	Below 15 ppb	Below 3 ppb	Below 1 ppm	Below 10 ppm	6.5-8.5	50 ppm or below	Below 4 ppm	None
Trial 1	Negative	Negative	0 ppm	0 ppm	7.5	50 ppm	0 ppm	Negative
Trial 2	Negative	Negative	0 ppm	0.5 ppm	8	50 ppm	0 ppm	Negative
Trial 3	Negative	Negative	0 ppm	0.5 ppm	8	50 ppm	0 ppm	Negative

Procedure:

- Test the raw water and tap water samples 3 times per test kit material, which tests for lead, pesticides, nitrite, total nitrite/nitrate, PH, hardness, chlorine, and bacteria.
- Determine if test strips color test, line test, and bacteria vile with powder test within the safe parameters or unsafe parameters.
- Transfer data to the data table.

Conclusion:

My hypothesis proved to be correct after collecting the data samples from the raw water and the tap water, the raw samples proved to be dangerous due to the bacteria testing positive, the PH levels being slightly more acidic, and the total nitrite/nitrate levels being higher than the tap samples. In comparison to the raw water, the tap water levels of PH increased slightly, and the nitrite/nitrate levels decreased, and the bacteria testing negative, all of which are good signs.

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“I remember back in the early 70s when the water was brown, kind of rusty.”
 “Grandma’s water was salty and corroded her water tank.”
 –Mae Smith, a Makah Tribal elder