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ENVIRONMENTAL FACTORS INFLUENCING WATER CONSUMPTION AND ACCESS IN RURAL COMMUNITIES: CUBA, NEW MEXICO

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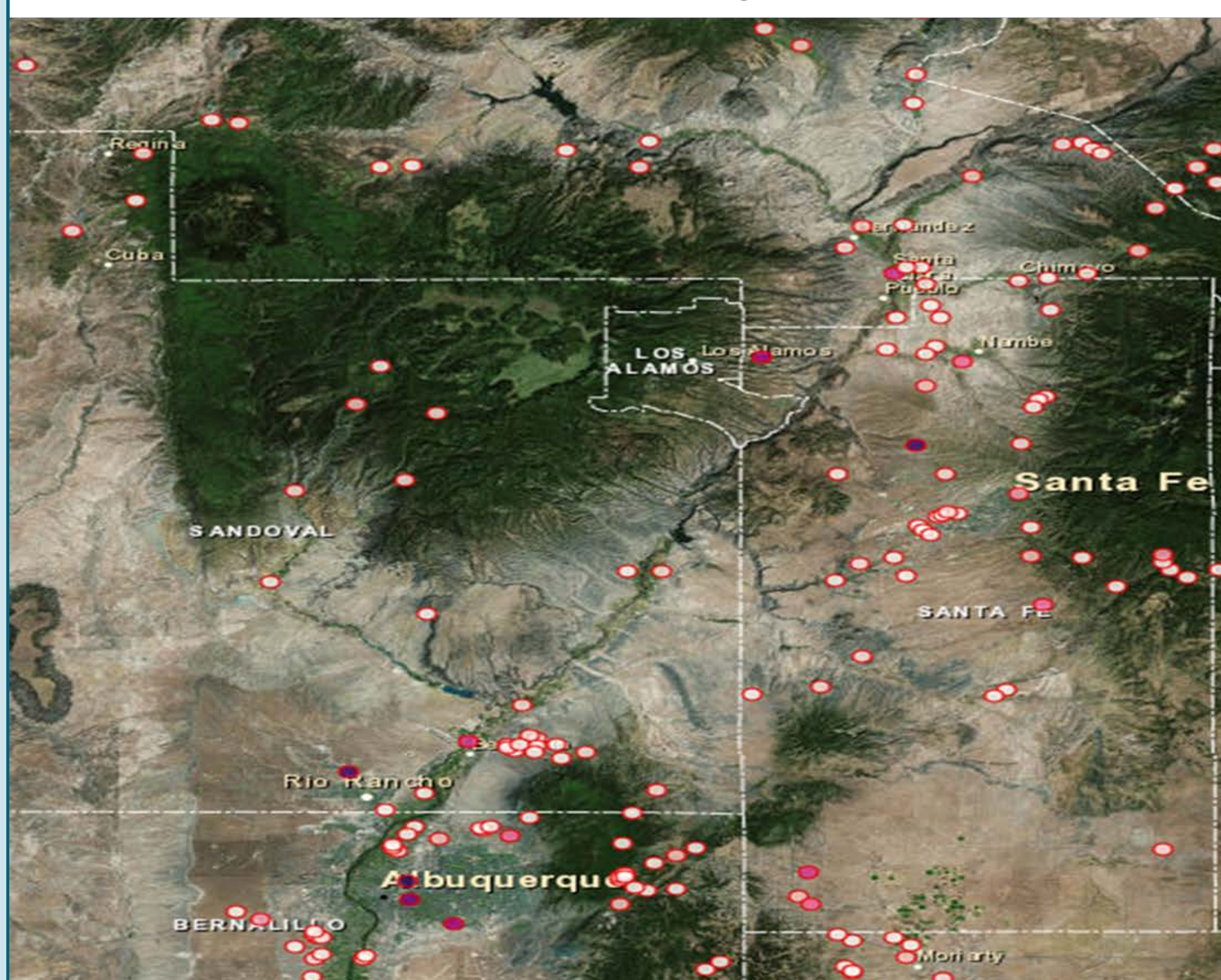
ABSTRACT

Consumption of sugar sweetened beverages (SSBs) contributes to increasing obesity rates because they are a highly caloric beverage with poor nutritional value. Substituting SSB consumption with water consumption will help to decrease obesity. Water consumption is affected by various factors, including water access, a clean water supply, SSB popularity, policies, recommendations, and individual perceptions. Little research has addressed water consumption in rural populations. We are investigating access to drinking water of residents of the rural multicultural town of Cuba, NM. A literature review has been conducted on the advantages of water consumption and adverse effects of SSBs. Field observations assessed access to water and water quality in schools. Federal, state, and local requirements for water in schools were reviewed. A modified version of the Nutrition Environment Measurements Survey assessed the availability and pricing of water in comparison to that of SSBs. An analysis of a transcribed meeting on community water consumption provided information on the knowledge, behaviors, and attitudes of community members regarding their water supply and consumption rates. A geographic information system map was used to document water sources and quality as previously determined by annual tests (2014). Our findings provided information on environmental factors influencing water consumption in Cuba that informed the development of a community guide to facilitate discussions about increasing water consumption in that community. This information also contributed to research on increasing drinking water consumption in other rural communities.

BACKGROUND

- More than 33% of U.S. adults and 17% of U.S. children are overweight or obese.¹
- SSBs have become the largest source of added sugar in the U.S. diet, resulting in greater total energy intake.²
- The VIVA II-Step Into Cuba research project assists with a community initiative to reduce chronic disease and improve health-related quality of life in Cuba, New Mexico.³
- Cuba is a rural town located in the northern region of Sandoval County; its population is approximately 731.⁴
- Cuba has a large Native American (36%) and Hispanic population (65%) in addition to non-Hispanic whites (United States Census, 2014).⁴

Populations Served by Community Water Systems, 2013



- > 93,030 to 601,983
- > 48,500 to 93,030
- > 28,845 to 48,500
- > 14,284 to 28,845
- > 7,433 to 14,284
- > 3,785 to 7,433
- > 1,840 to 3,785
- > 850 to 1,840
- > 279 to 850
- 0 to 279

METHODS

Literature Review

- Gathered current and past information from a variety of sources on water access and improving water quality

School Drinking Water Access Assessment

- Assessed residents' perceptions on drinking and the water access environment of the school
- Reviewed practices related to water access, water testing, and recommendations

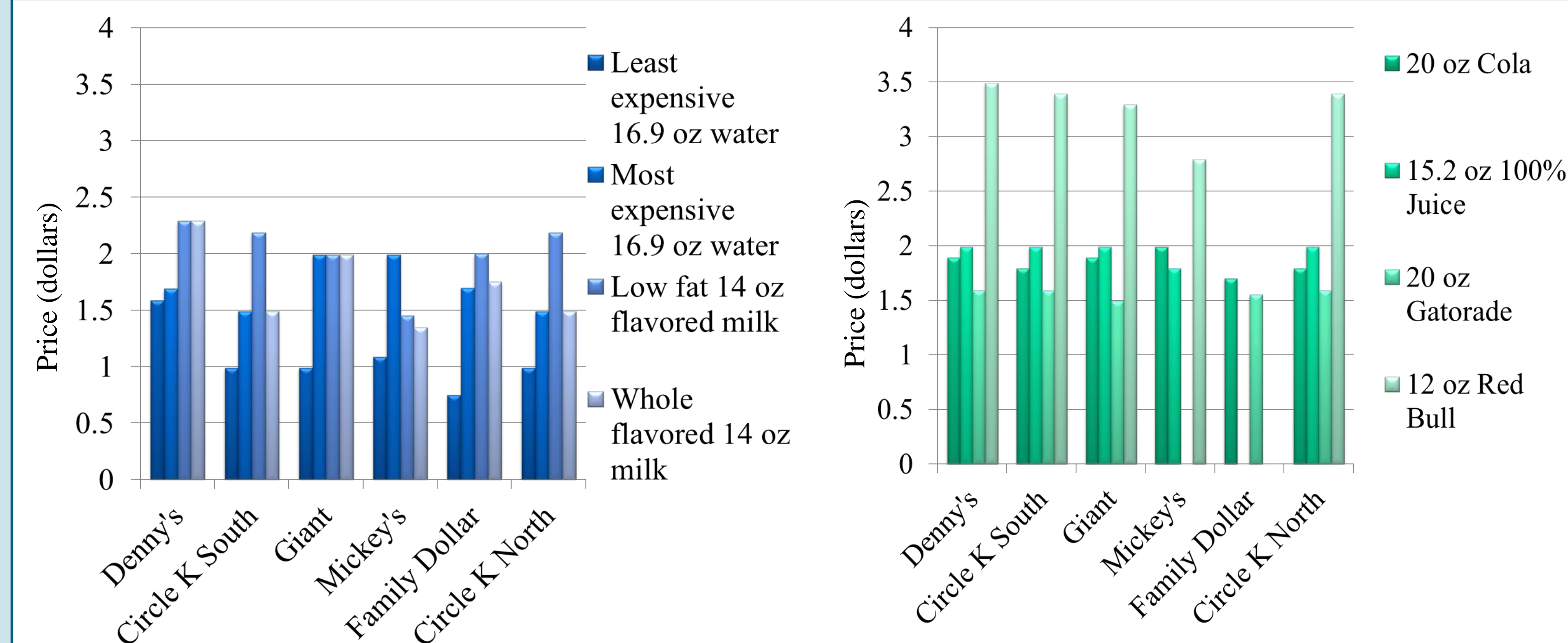
VIVA II Community Water Meeting

- Collected observations of the community member perceptions of water quality
- Discussed barriers and facilitators to increasing water consumption
- Discussed interventions to decrease consumption of SSBs

Nutrition Environment Measures Store Survey

- Evaluated access, availability, pricing, and promotion of beverages in store settings

STANDARD BEVERAGE COSTS IN CUBA STORES



No store had any healthy drinking marketing materials.

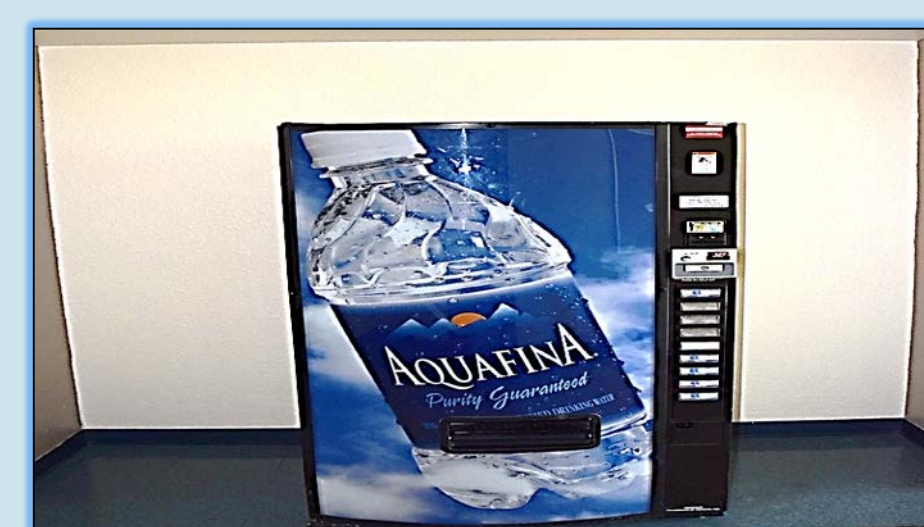
RESULTS

SCHOOL DRINKING WATER ACCESS ASSESSMENT

School	Meal Period Water Access	Water Access Policies	Water Fountains (No.)	Vending Machines (No.)	Signs Promoting Drinking Water	Drinking Water Perceptions
Cuba Elementary	No; juice or milk	Refillable bottles allowed	9	1 (water)	No	Tastes ok, staff prefer bottled water
Cuba Middle	No; milk	Clear refillable bottles allowed	8	2 (water)	No	Safer, preference for filtered or softened, lots of minerals
Cuba High	No; milk	Clear refillable bottles allowed	13 (4 broken)	0	No	Warm water, metallic undertone



Cuba Elementary School water fountains



Cuba Middle School vending machine



Cuba High School water fountains

CONCLUSIONS

- Schools in Cuba can potentially increase water consumption with meal period water access and signs promoting drinking water.
- School drinking water is perceived as tasting a lot better than other community drinking water.
- Residents of Cuba do not like the taste of their water and could benefit from an awareness campaign on limiting consumption of SSBs.
- The water quality in Cuba meets the mandatory requirements set by the Environmental Protection Agency.
- Water is the least expensive beverage available for purchase in local Cuba stores.

LIMITATIONS

- School Drinking Water Assessment: assessment performed during the summer
- Water Quality Reports: aesthetic factor testing results are unavailable for Cuba
- Nutrition Environment Measures Survey: prices may vary throughout the year

FUTURE DIRECTIONS

- Implementation of an increasing water consumption intervention along with the VIVA II-Step Into Cuba Project until September 2019.
- Development and use of focus group discussion guides aimed at increasing water consumption in Cuba.
- Increasing education about drinking water and increasing signs promoting drinking water in Cuba.

VIVA II COMMUNITY WATER MEETING

- People have access to water in Cuba, but there is widespread agreement that it tastes bad
- Navajo communities have water access problems
- Habit/addiction to sugary drinks
- Lack of awareness of contribution of soda to obesity and diabetes

2014 CUBA WATER QUALITY REPORT

Drinking Water Contaminant	MC (µg/L)	Drinking Water Contaminant	MC (µg/L)
Arsenic (SMCL 10 µg/L)	0.5	Total Trihalomethanes (SMCL µg/L)	0.5
Nitrate (SMCL 10 µg/L)	0.05	Trichloroethylene (SMCL 5 µg/L)	0.05
Di(2-ethylhexyl)phthalate (SMCL 6 µg/L)	0.02	Tetrachloroethylene (SMCL 5 µg/L)	0.04
Atrazine (SMCL 3 µg/L)	0.01	Uranium (SMCL 30 µg/L)	1
Haloacetic Acids (SMCL 60 µg/L)	0.5	Combined Radium 226 and 228 (SMCL 5 µg/L)	0.56

SMCL = Safe Maximum Concentration Level, MC = Maximum Concentration

Water quality in Cuba met the mandatory requirements set by the Environmental Protection Agency. Results were also similar to those in Albuquerque, NM.

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