2022 CONSUMER CONFIDENCE REPORT

Report Covers Calendar Year: January 1, 2022 - December 31, 2022

REPORTE ANUAL SOBRE LA CALIDAD DEL AGUA DEL 2022*

El reporte abarca del día 1 de Enero al 31 de Diciembre del 2022

Public Water System (PWS) Information

PWS Name:	City of Nogales	**PWS ID #**	AZ04-12004	**Owner/Operator Name:**	City of Nogales
Utilities Director:	Alejandro Barcenas	**Contact Person and Title:**	Ruben Artana Admin Service Coordinator		
Telephone #	(520) 287-6571	**Fax #**	(520) 287-8352	**E-mail**	rartana@nogalesaz.gov

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Our water source(s):	**Ground Water / Upper Santa Cruz River / Potrero Creek**

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Este reporte contiene información muy importante sobre la calidad del agua.
Es muy importante que busque a una persona que pueda ayudarle a traducirlo al español o se puede comunicar al (520) 285-5754 para obtener ayuda sobre este reporte en español.

Drinking Water Contaminants

Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides that may come from a variety of sources, such as agriculture, urban storm water runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also may come from gas stations, urban storm water runoff, and septic systems.

Radioactive contaminants, that can be naturally occurring or be the result of oil and gas production and mining activities.

Vulnerable Population

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV-AIDS or other immune system disorders, some elderly, and infants can be particularly at risk of infections. These people should seek advice about drinking water from their health care providers.

For more information about contaminants and potential health effects, or to receive a copy of the U.S. Environmental Protection Agency (EPA) and the U.S. Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and microbiological contaminants call the EPA *Safe Drinking Water Hotline* at 1-800-426-4791.

Source Water Assessment

Based on the information currently available on the hydrogeologic settings and the adjacent land uses that are in the specified proximity of the drinking water source(s) of this public water system, the Arizona Department of Environmental Quality (ADEQ) has given a high risk designation for the degree to which this public water system drinking water source(s) are protected. A designation of high risk indicates there may be additional source water protection measures which can be implemented on the local level. This does not imply that the source water is contaminated nor does it mean that contamination is imminent. Rather, it simply states that land use activities or hydrogeologic conditions exist that make the source water susceptible to possible future contamination.

Definitions

AL = Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements.
MCL = Maximum Contaminant Level - The "Maximum Allowed" is the highest level of a contaminant that is allowed in drinking water.
MCLG = Maximum Contaminant Level Goal - The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to health.
MFL = Million fibers per liter.
MRDL = Maximum Residual Disinfectant Level.
MRDLG = Maximum Residual Disinfectant Level Goal.
MREM = Millirems per year – a measure of radiation absorbed by the body.
NA = Not Applicable, sampling was not completed by regulation or was not required. ND = Not Detectable, results are below the laboratory sample detection limit.
NTU = Nephelometric Turbidity Units, a measure of water clarity.
PCi/L = Picocuries per liter - picocuries per liter is a measure of the radioactivity in water.
PPM = Parts per million or Milligrams per liter (mg/L).
PPB = Parts per billion or Micrograms per liter (µg/L).
PPT = Parts per trillion or Nanograms per liter.
PPQ = Parts per quadrillion or Picograms per liter.

ppm x 1000 = ppb
ppb x 1000 = ppt
ppt x 1000 = ppq

TT = Treatment Technique - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Health Effects Language

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. "High nitrate levels in drinking water can cause blue baby syndrome". Nitrate levels may rise quickly for short periods-of-time because of rainfall or agricultural activity. If you are caring for an infant, and detected nitrate levels are above 5 ppm, you should ask advice from your health care provider.

If **arsenic** is less than or equal to the MCL, your drinking water meets ADEQ (Arizona Department of Environmental Quality) and EPA's standards. ADEQ and EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. ADEQ and EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Lead Information Statement:
Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. ***City Of Nogales*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *www.epa.gov/safewater/lead.*

Water Quality Data

Microbiological (RTCR)	Violation Y or N	Number of Positive Samples	Positive Sample(s) Month & Year	MCL	MCLG	Samples per Month or Year	Likely Source of Contamination
Total Coliform	N	0	0	0	0	25/month 300/year	Human and animal fecal waste
Fecal Indicator (coliphage, enterococci and/or E. coli)	N	0	0	0	0	25/month 300/year	Human and animal fecal waste

Disinfectants	Violation Y or N	Running Annual Average (RAA)	Range of All Samples (L-H)	MRDL	MRDLG	Samples per Month or Year	Likely Source of Contamination
Chlorine (ppm)	N	0.54ppm	.40 – .64ppm	MRDL = 4	MRDLG = 0	25/month 300/year	Water additive used to control microbes
Disinfection By-Products	**Violation Y or N**	**Running Annual Average (RAA)**	**Range of All Samples (L-H)**	**MRDL**	**MCLG**	**Sample Month & Year**	**Likely Source of Contamination**
Total Trihalomethanes (ppb) (TTHM)	N	19ppb	.18- 19ppb	80ppb	N/A	2022	Byproduct of drinking water disinfection
Haloacetic Acids(HAA5)(ppb)	N	2ppb	ND – 2.3ppb	60ppb	N/A	2022	Byproduct of drinking water disinfection
Lead & Copper	**Violation Y or N**	**90_{th} Percentile AND Number of Samples Over the AL**	**Range of All Samples (L-H)**	**AL**	**ALG**	**Year Sample Dates**	**Likely Source of Contamination**
Copper (ppm)	N	.20 0 samples	0.004 – 0.183ppm	1.3	1.3	2021	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	N	<1ppb 0 samples	ND	15	0	2021	Corrosion of household plumbing systems; erosion of natural deposits
Radionuclides	**Violation Y or N**	**Running Annual Average (RAA)**	**Range of All Samples (L-H)**	**MCL**	**MCLG**	**Year Sample Dates**	**Likely Source of Contamination**
Beta / photon emitters (mrem/yr)	N	< 4.0 mrem/yr	ND	4	0	2022	Decay of natural and man-made deposits
Alpha emitters (pCi/L)	N	4.7 pCi/L	4.7 pCi/L	15	0	2022	Erosion of natural deposits
Combined Radium 226 & 228 (pCi/L)	N	< 0.8pCi/L	ND	5	0	2021	Erosion of natural deposits
Uranium (ug/L)	N	7.2 ug/L	7.2 ug/L	30	0	2020	Erosion of natural deposits
Inorganic Chemicals (IOC)	**Violation Y or N**	**Running Annual Average (RAA)**	**Range of All Samples (L-H)**	**MCL**	**MCLG**	**Year Sample Dates**	**Likely Source of Contamination**
Antimony (ppb)	N	< .5ppb	ND	6	6	2021	Discharge from petroleum refineries; fire retardants; ceramics, electronics and solder
Arsenic (ppb)	N	8 ppb	4 - 8 ppb	10	0	2022	Erosion of natural deposits, runoff from orchards, runoff from glass and electronics production wastes
Asbestos (MFL)	N	0.05MFL	<.2 – 23.5MFL	7	7	2021	Decay of asbestos cement water mains; Erosion of natural deposits
Barium (ppm)	N	0.022 - 0.024ppm	0.022 – 0.024ppm	2	2	2021	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits
							Discharge from metal

Beryllium (ppb)	N	< .25ppb	ND	4	4	2021	refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	N	< .25ppb	ND	5	5	2021	Corrosion of galvanized pipes; natural deposits; metal refineries; runoff from waste batteries and paints
Chromium (ppb)	N	1.6ppb	1.6ppb	100	100	2021	Discharge from steel and pulp mills; Erosion of natural deposits
Cyanide (ppb)	N	< .10ppb	ND	200	200	2021	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories
Fluoride (ppm)	N	0.55 – 0.66ppm	0.55 – 0.66ppm	4	4	2021	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Mercury (ppb)	N	< .10ppb	ND	2	2	2021	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills and cropland.
Nitrate (ppm)	N	2.0ppm	2.0ppm	10	10	2022	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (ppm)	N	< .20ppm	ND	1	1	2022	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium (ppb)	N	< .25ppb	ND	50	50	2021	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Sodium (ppm)	N	27ppm	21 – 23ppm	N/A	N/A	2021	Erosion of natural deposits
Thallium (ppb)	N	<.5ppb	ND	2	0. 5	2021	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Chemicals (SOC)	**Violation Y or N**	**Running Annual Average (RAA)**	**Range of All Samples (L-H)**	**MCL**	**MCLG**	**Year Sample Dates**	**Likely Source of Contamination**
2,4-D (ppb)	N	< .245ppb	ND	70	70	2022	Runoff from herbicide used on row crops
Alachlor (ppb)	N	< .2ppb	ND	2	0	2022	Runoff from herbicide used on row crops
Atrazine (ppb)	N	< .1ppb	ND	3	3	2022	Runoff from herbicide used on row crops
Benzo (a) pyrene (PAH) (mg/L)	N	< .02	ND	200	0	2022	Leaching from linings of water storage tanks and distribution lines
Carbofuran (ppb)	N	< .9ppb	ND	40	40	2022	Leaching of soil fumigant used on rice and alfalfa
Chlordane (ppb)	N	<.2ppb	ND	2	0	2022	Residue of banned termiticide
							Runoff from herbicide

Dalapon (ppb)	N	< .245ppb	< .1 - < .39ppb	200	200	2022	used on rights of way
Dibromochloropropane (ppt)	N	< .04ppt	<.08 - <.08ppt	200	0	2022	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
Dinoseb (ppb)	N	< .485ppb	< .2 - < .77ppb	7	7	2022	Runoff from herbicide used on soybeans and vegetables
Diquat (ppb)	N	< .4ppb	ND	20	20	2022	Runoff from herbicide use
Dioxin [2,3,7,8-TCDD] (ppq)	N	< 5 x 10(-9)ppq	<5x10(-9)-<4.8x10(-9)ppq	30	0	2022	Emissions from waste incineration and other combustion; discharge from chemical factories
Endothall (ppb)	N	< .9ppb	ND	100	100	2022	Runoff from herbicide use
Endrin (ppb)	N	< .01ppb	ND	2	2	2022	Residue of banned insecticide
Ethylene dibromide (ppt)	N	< .09ppt	<.01 - <.08ppt	50	0	2022	Discharge from petroleum refineries
Glyphosate (ppb)	N	< .6ppb	ND	700	700	2022	Runoff from herbicide use
Heptachlor (ppt)	N	< .4ppt	ND	400	0	2022	Residue of banned temiticide
Hexachlorobenzene (ppb)	N	< .1ppb	ND	1	0	2022	Discharge from metal refineries and agricultural chemical factories
Lindane (ppt)	N	< .02ppt	ND	200	200	2022	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor (ppb)	N	< .1ppb	ND	40	40	2022	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl [Vydate] (ppb)	N	< .2ppb	ND	200	200	2022	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Pentachlorophenol (ppb)	N	< .095ppb	<.04 - <.15ppb	1	0	2022	Discharge from wood preserving factories
Picloram (ppb)	N	< .245ppb	< .1 - < .39ppb	500	500	2022	Herbicide runoff
Simazine (ppb)	N	< .07ppb	ND	4	4	2022	Herbicide runoff
Toxaphene (ppb)	N	< .8ppb	<.5 - <.1ppb	3	0	2022	Runoff/leaching from insecticide used on cotton and cattle
Volatile Organic Chemicals (VOC)	**Violation Y or N**	**Running Annual Average (RAA)**	**Range of All Samples (L-H)**	**MCL**	**MCLG**	**Year Sample Dates**	**Likely Source of Contamination**
Benzene (ppb)	N	< .5ppb	ND	5	0	2022	Discharge from factories; leaching from gas storage tanks and landfills
Chlorobenzene (ppb)	N	< .5ppb	ND	100	100	2022	Discharge from chemical and agricultural chemical factories
p-Dichlorobenze(ppb)	.13ppb	.13ppb	ND - .51ppb	75	75	2022	Discharge from Industrial and chemical factories

1,2 – Dichloromethane (ppb)	N	< .5ppb	ND	5	0	2022	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	N	< .5ppb	ND	700	700	2022	Discharge from petroleum refineries
Styrene (ppb)	N	< .5ppb	ND	100	100	2022	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (ppb)	N	< .5ppb	ND	5	0	2022	Discharge from factories and dry cleaners
Trichloroethylene (ppb)	N	< .5ppb	ND	5	0	2022	Discharge from metal degreasing sites and other factories
Toluene (ppm)	N	< .5ppm	ND	1	1	2022	Discharge from petroleum factories
Vinyl Chloride (ppb)	N	< .5ppb	ND	2	0	2022	Leaching from PVC piping; discharge from chemical factories
Xylenes (ppm)	N	< .15	ND	10	10	2022	Discharge from petroleum or chemical factories

Water Quality Table - Unregulated Contaminant Monitoring Rule

Metals	Detected (Y/N)	Average	Range of All Samples (Low-High)	MRL	Likely Source of Contamination
Germanium (ppt)	Y	737	690-830	300	Naturally-occurring element; commercially available in combination with other elements and minerals; a byproduct of zinc ore processing; used in infrared optics, fiber-optic systems, electronics and solar applications
Manganese (ppt)	N	1.56	0.40 – 3.13	400	Naturally-occurring element; commercially available in combination with other elements and minerals; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient
Pesticides	**Detected (Y/N)**	**Average**	**Range of All Samples (Low-High)**	**MRL**	**Likely Source of Contamination**
Alpha-hexachlorocyclohexane (ppt)	N	<.1ppt	<.1 - <.1ppt	10	Component of benzene hexachloride (BHC); formerly used as an insecticide
Chlorpyrifos (ppt)	N	<.3ppt	<.3 - <.3ppt	30	Organophosphate; used as an insecticide, acaricide and miticide
Dimethipin (ppt)	N	<.2ppt	<.2 - <.2ppt	200	Used as an herbicide and plant growth regulator
Ethoprop (ppt)	N	<.3ppt	<.3 - <.3ppt	30	Used as an insecticide
Oxyfluorfen (ppt)	N	<.5ppt	<.5 - <.5ppt	50	Used as an herbicide
Profenofos (ppt)	N	<.3ppt	<.3 - <.3ppt	300	Used as an insecticide and acaricide
Tebuconazole (ppt)	N	<.2ppt	<.2 - <.2ppt	200	Used as a fungicide
Total permethrin (cis- & trans-) (ppt)	N	<.4ppt	<.4 - <.4ppt	40	Used as an insecticide
Pesticides Manufacturing By-Product	**Detected (Y/N)**	**Average**	**Range of All Samples (Low-High)**	**MRL**	**Likely Source of Contamination**
Tribufos (ppt)	N	<.7ppt	<.7 - <.7ppt	700	Used as an insecticide and cotton defoliant Water additive used to control microbes
Alcohols	**Detected (Y/N)**	**Average**	**Range of All Samples (Low-High)**	**MRL**	**Likely Source of Contamination**
1-butanol (ppb)	N	<2ppb	<2 - <2ppb	2	Used as a solvent, food additive and in production of other chemicals

2-methoxyethanol (ppt)	N	<.40ppt	<.40 - <.40ppt	400	Used in a number of consumer products, such as synthetic cosmetics, perfumes, fragrances, hair preparations and skin lotions
2-propen-1-ol (ppt)	N	<.50ppt	<.50 - <.50ppt	500	Used in the production flavorings, perfumes and other chemicals
Semivolatile Chemicals	**Detected (Y/N)**	**Average**	**Range of All Samples (Low-High)**	**MRL**	**Likely Source of Contamination**
Butylated hydroxyanisole (ppt)	N	<.3ppt	<.3 - <.3ppt	30	Used as a food additive (antioxidant)
O-toluidine (ppt)	N	<.07ppt	<.07 - <.07ppt	7	Used in the production of dyes, rubber, pharmaceuticals and pesticides
Quinolone (ppt)	N	<.2ppt	<.2 - <.2ppt	20	Used as a pharmaceutical (anti-malarial) and flavoring agent; produced as a chemical intermediate; component of coal
Disinfection By-Products	**Detected (Y/N)**	**Average**	**Range of All Samples (Low-High)**	**MRL**	Likely Source Of Contamination
Haloacetic Acids (HAA6BR) (ppb)	Y	0.9ppb	ND – 2.12ppb	NA	Byproduct of drinking water disinfection
Haloacetic Acids (HAA9)(ppb)	Y	1.4ppb	.54-3.5ppb	NA	Byproduct of drinking water disinfection
Haloacetic Acids (HAA9)(ppb)	Y	1.4ppb	.54-3.19ppb	NA	Byproduct of drinking water disinfection
Bromide (ppb)	Y	54.6ppb	22-77.9ppb	NA	Byproduct of drinking water disinfection

Violation Summary (for MCL, MRDL, AL, TT, or Monitoring & Reporting Requirement)

Violation Type	Explanation	Time Period	Corrective Action
NONE			