2019 Water Quality Report

Serrano Water District

DATA FOR 2018

Your 2019 Water Quality Report

Since 1990, California public water utilities have been providing an annual Water Quality Report to their customers. **This year's report covers calendar year 2018 drinking water quality testing and reporting.**

Serrano Water District vigilantly safeguards its water supply and, as in years past, the water delivered to your home meets the quality standards required by federal and state regulatory agencies. The U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board, Division of Drinking Water (DDW) are the agencies responsible for establishing and enforcing drinking water quality standards.

In some cases, Serrano Water District goes beyond what is required by testing for unregulated chemicals that may have known health risks but do not have drinking water standards. For example, the Orange County Water District (OCWD), which manages the groundwater basin, tests for unregulated chemicals in our groundwater supply. Unregulated chemical monitoring helps USEPA and DDW determine where certain chemicals occur and whether new standards need to be established for those chemicals.

Through drinking water quality testing programs carried out by OCWD for groundwater and Serrano Water District for the Santiago Reservoir Treatment Facility and distribution system, your drinking water is constantly monitored from source to tap for regulated and unregulated constituents.

The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

The Quality of Your Water Is Our Primary Concern

Sources of Supply

Your drinking water is a blend of local native surface water and imported Metropolitan Water District (MWD) water impounded within Santiago Reservoir. Additionally, groundwater is pumped from the local aquifer managed by OCWD that stretches from the Prado Dam and fans across the north western portion of Orange County, excluding the communities of Brea and La Habra, and stretching as far south as El Toro.

Basic Information About Drinking Water Contaminants

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

Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria, which 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 runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production or mining activities.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gasoline stations, urban stormwater runoff, agricultural application and septic systems.

In order to ensure that tap water is safe to drink, USEPA and the DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems.

The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that must provide the same protection for public health. 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.

More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at (800) 426-4791.

Disinfectants and Disinfection Byproducts

Disinfection of drinking water was one of the major public health advances in the 20th century. Disinfection was a major factor in reducing waterborne disease epidemics caused by pathogenic bacteria and viruses, and it remains an essential part of drinking water treatment today.

Chlorine disinfection has almost completely eliminated from our lives the risks of microbial waterborne diseases. Chlorine is added to your drinking water at the source of supply (groundwater well or surface water treatment plant). Enough chlorine is added so that it does not completely dissipate through the distribution system pipes. This "residual" chlorine helps to prevent the growth of bacteria in the pipes that carry drinking water from the source into your home.

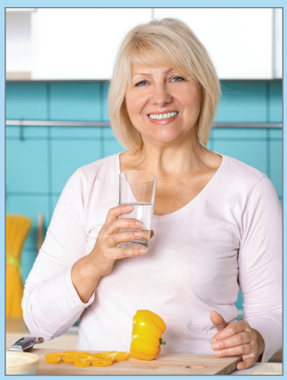
However, chlorine can react with naturally-occurring materials in the water to form unintended chemical byproducts, called disinfection byproducts (DBPs), which may pose health risks. A major challenge is how to balance the risks from microbial pathogens and DBPs. It is important to provide protection from these microbial pathogens while simultaneously ensuring decreasing health risks from disinfection byproducts. The Safe Drinking Water Act requires the USEPA to develop rules to achieve these goals.

Trihalomethanes (THMs) and Haloacetic Acids (HAAs) are the most common and most studied DBPs found in drinking water treated with chlorine. In 1979, the USEPA set the maximum amount of total THMs allowed in drinking water at 100 parts per billion as an annual running average. Effective in January 2002, the Stage 1 Disinfectants / Disinfection Byproducts Rule lowered the total THM maximum annual average level to 80 parts per billion and added HAAs to the list of regulated chemicals in drinking water. Your drinking water complies with the Stage 1 Disinfectants / Disinfection Byproducts Rule.

Stage 2 of the regulation was finalized by USEPA in 2006, which further controls allowable levels of DBPs in drinking water without compromising disinfection itself. A required distribution system evaluation was completed in 2008 and a Stage 2 monitoring plan has been approved by DDW. Full Stage 2 compliance began in 2012.

Please be advised, in 2013 our disinfection was changed to chloramines.

Immuno-Compromised People



Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as those with cancer who are undergoing chemotherapy, persons who have had organ transplants, people with HIV/AIDS or other immune system disorders, some elderly persons and infants can be particularly at risk to infection. These people should seek advice about drinking water from their health care providers.

The USEPA and the federal Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from USEPA's Safe Drinking Water Hotline at (800) 426-4791 between 10 a.m. and 4 p.m. Eastern Time (7 a.m. to 1 p.m. in California).

Questions about your water? Contact us for answers.

For information about this report, or your water quality in general, please contact Mike Mastin at the District Office, (714) 538-0079. The Serrano Water District Board of Directors meets at 8:30 am the second Tuesday of each month at 18021 Lincoln Street, Villa Park, California. Please feel free to attend these meetings.

For more information about the health effects of the listed contaminants in the following tables, call the USEPA hotline at (800) 426-4791.

Federal and State Water Quality Regulations

— Water Quality Issues that Could Affect Your Health —

About Lead in Tap Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Serrano Water District 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.

If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, (800) 426-4791, or on the web at: www.epa.gov/safewater/lead.

Cloudy Water?

The cloudy water you observe from time to time is entrapped air. It is a by-product of pumping from deep wells. If you fill a glass of water from your tap and let it sit for a few minutes, the air will dissipate. This air is not harmful.

Colored Water? Here's What to Do . . .

There are some things you can do yourself or with the help of a plumber to fix colored water problems. There is a chance that the problem lies with your water utility and they should be notified if your problems can't be easily fixed. You can get a good idea of where the problem is coming from by answering the following questions:

What are Water Quality Standards?

Drinking water standards established by USEPA and DDW set limits for substances that may affect consumer health or aesthetic qualities of drinking water. The chart in this report shows the following types of water quality standards:

- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Secondary MCLs:** Set to protect the odor, taste, and appearance of drinking water.
- **Primary Drinking Water Standard:** MCLs for contaminants that affect health along with their monitoring and reporting requirements and water treatment requirements.
- **Regulatory Action Level (AL):** The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

How are Contaminants Measured?

Water is sampled and tested throughout the year. Contaminants are measured in:

- parts per million (ppm) or milligrams per liter (mg/L)
- parts per billion (ppb) or micrograms per liter (µg/L)
- parts per trillion (ppt) or nanograms per liter (ng/L)

What is a Water Quality Goal?

In addition to mandatory water quality standards, USEPA and DDW have set voluntary water quality goals for some contaminants. Water quality goals are often set at such low levels that they are not achievable in practice and are not directly measurable. Nevertheless, these goals provide useful guideposts and direction for water management practices. The chart in this report includes three types of water quality goals:

- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by USEPA.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Public Health Goal (PHG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

2018 Serrano Water District Groundwater Quality

Chemical	MCL	PHG (MCLG)	Average Amount	Range of Detections	MCL Violation?	Most Recent Sampling Date	Typical Source of Contaminant
Inorganic Chemicals							
Fluoride (ppm)	2	1	0.19	0.19 – 0.21	No	2018	Erosion of Natural Deposits
Nitrate (ppm as N)	10	10	1.78	1.68 – 1.86	No	2018	Fertilizers, Septic Tanks
Nitrate+Nitrite (ppm as N)	10	10	1.79	1.68 – 1.87	No	2018	Fertilizers, Septic Tanks
Secondary Standards*							
Chloride (ppm)	500*	n/a	118	102 – 125	No	2018	Erosion of Natural Deposits
Iron (ppb)	300*	n/a	<100	ND – 144	No	2018	Erosion of Natural Deposits
Specific Conductance (µmho/cm)	1,600*	n/a	1,085	1,020 – 1,130	No	2018	Substances That Form Ions
Sulfate (ppm)	500*	n/a	166	150 – 176	No	2018	Erosion of Natural Deposits
Total Dissolved Solids (ppm)	1000*	n/a	692	636 – 730	No	2018	Erosion of Natural Deposits
Turbidity (NTU)	5*	n/a	0.2	ND – 0.8	No	2018	Erosion of Natural Deposits
Unregulated Chemicals							
Alkalinity, total (ppm as $CaCO_3$)	Not Regulated	n/a	215	195 – 225	n/a	2018	Erosion of Natural Deposits
Bicarbonate (ppm as HCO_3)	Not Regulated	n/a	261	237 – 274	n/a	2018	Erosion of Natural Deposits
Boron (ppm)	NL = 1	n/a	0.17	0.16 – 0.18	n/a	2018	Erosion of Natural Deposits
Calcium (ppm)	Not Regulated	n/a	101	94.4 – 105	n/a	2018	Erosion of Natural Deposits
Hardness, total (ppm as $CaCO_3$)	Not Regulated	n/a	375	358 – 382	n/a	2018	Erosion of Natural Deposits
Magnesium (ppm)	Not Regulated	n/a	29.9	29.1 – 31.5	n/a	2018	Erosion of Natural Deposits
pH (units)	Not Regulated	n/a	7.8	7.7 – 7.9	n/a	2018	Acidity, hydrogen ions
Potassium (ppm)	Not Regulated	n/a	2	1.8 – 2.2	n/a	2018	Erosion of Natural Deposits
Sodium (ppm)	Not Regulated	n/a	80.5	78.4 – 83.8	n/a	2018	Erosion of Natural Deposits

ppb = parts-per-billion; **ppm** = parts-per-million; **pCi/L** = picoCuries per liter; **NTU** = nephelometric turbidity units; **ND** = not detected; **n/a** = not applicable;
MCL = Maximum Contaminant Level; **(MCLG)** = federal MCL Goal; **PHG** = California Public Health Goal; **µmho/cm** = micromho per centimeter; **NL** = Notification Level;
*Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

2018 Serrano Water District Distribution System Water Quality

Disinfection Byproducts	MCL (MRDL/MRDLG)	Average Amount	Range of Detections	MCL Violation?	Typical Source of Contaminant
Total Trihalomethanes (ppb)	80	8	3.8 – 10	No	Byproducts of Chlorine Disinfection
Haloacetic Acids (ppb)	60	5	2.6 – 4	No	Byproducts of Chlorine Disinfection
Chlorine Residual (ppm)	(4 / 4)	2.4	2 – 2.5	No	Disinfectant Added for Treatment
Aesthetic Quality					
Color (color units)	15*	<3	ND – 5	No	Erosion of Natural Deposits
Odor (threshold odor number)	3*	1	1	No	Naturally Present in Groundwater
Turbidity (NTU)	5*	0.3	ND – 0.8	No	Naturally Present in Groundwater

Four locations in the distribution system are tested monthly for color, odor and turbidity.
Two sites are tested quarterly for disinfection byproducts – total trihalomethanes and haloacetic acids.
MRDL = Maximum Residual Disinfectant Level; **MRDLG** = Maximum Residual Disinfectant Level Goal;
*Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

Lead and Copper Action Levels at Residential Taps

	Action Level (AL)	Health Goal	90th Percentile Value	Sites Exceeding AL / Number of Sites	AL Violation?	Typical Source of Contaminant
Copper (ppm)	1.3	0.3	0.21	0/22	No	Corrosion of Household Plumbing
Lead (ppb)	15	0.2	ND	0/22	No	Corrosion of Household Plumbing

Every three years, 22 residences are tested for lead and copper at-the-tap. The most recent set of samples was collected in 2017.
Lead was detected in 2 samples; none exceeded the regulatory action level. Copper was detected in 7 samples; none exceeded the regulatory action level.
A regulatory action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

In 2018, no school submitted a request to be sampled for lead.

1) Is the water colored when you first turn on the tap in the morning or after it hasn't been used for a while?
2) Does the water run clear after a few minutes?
3) Is the colored water coming out of just some of your taps?
4) Are you the only one in the neighborhood with the problem?
5) Is only the hot water colored?

If you answered yes to any of the first four questions, then the problem is probably with your own plumbing.
If you answered yes to the last question, the problem is likely related to your water heater. In either case, a plumber should be able to help.

If you answered no to these questions, you should notify your water utility.

Common Household Issues that May Effect Water Quality

Water Softener Units require regularly scheduled maintenance. A rupture can occur inside the water softener unit and materials (brownish beads) can be discharged into the water system plumbing. This causes faucets to clog and deposits to collect in toilet tanks. The salt tank should be inspected for debris or odors on a regular basis, as well. Manufacturers of the units usually provide a toll free number to receive services and to answer questions about the unit.

Hot Water Heaters: Many odor complaints may be traced to the home's hot water heater. Remember to follow manufacturer's instructions and flush hot water heaters regularly. This will flush out any sediments that may have accumulated, provide good water turnover to maximize water quality, and help keep your unit in good working order.

Point-of-Use or Home Water Filtration Units: Be vigilant in changing or cleaning any filters or media on your home units. Always follow the manufacturers instructions. Remember, the water is only as clean as the filter allows. Improperly maintained filters can deliver very poor quality water.

Want Additional Information?

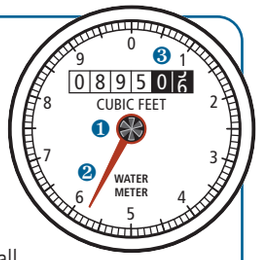
There's a wealth of information on the internet about Drinking Water Quality and water issues in general. A good place to begin your own research is the Serrano Water District website:

www.SerranoWater.org

or you may email us at info@serranowater.org

In addition to extensive information about your local water and the support and services we offer, you'll find links for many other local, statewide, and national resources.

How to Read Your Water Meter



Your water meter is usually located between the sidewalk and curb under a cement cover. Remove the cover by inserting a screwdriver in the hole in the lid and then carefully lift the cover. The meter reads straight across, like the odometer on your car. Read only the black numbers (0895).

If you are trying to determine if you have a leak, turn off all the water in your home, both indoor and outdoor faucets, and then check the dial for any movement of the low-flow indicator. If there is movement, that indicates a leak between the meter and your plumbing system.

❶ **Low-Flow Indicator** ~ The low flow indicator will spin if any water is flowing through the meter.

❷ **Sweep Hand** ~ Each full revolution of the sweep hand indicates that one cubic foot of water (7.48 gallons) has passed through the meter. The markings at the outer edge of the dial indicate tenths and hundredths of one cubic foot.

❸ **Meter Register** ~ The meter register is a lot like the odometer on your car. The numbers keep a running total of all the water that has passed through the meter. The register shown here indicates that 89,505 cubic feet of water has passed through this meter.

2018 Santiago Reservoir Source for Serrano Water District Surface Water Treatment

(All Results are from Testing Prior to Filtration Treatment except for Aluminum, Manganese and Filter Effluent Turbidity)

Chemical	MCL	PHG (MCLG)	Santiago Reservoir Average	Santiago Reservoir Range	MCL Violation?	Typical Source of Contaminant
Radiologicals – Tested in 2012						
Beta Radiation (pCi/L)	50	(0)	2.9	ND – 6.5	No	Decay of Man-Made Deposits
Uranium (pCi/L)	20	0.43	1.7	1.7	No	Erosion of Natural Deposits
Inorganic Chemicals – Tested in 2018						
Aluminum (ppm) Source	1	0.6	0.12	ND – 0.21	No	Erosion of Natural Deposits
Aluminum (ppm) Treated	1	0.6	0.18	ND – 0.33	No	Erosion of Natural Deposits
Fluoride (ppm)	2	1	0.33	0.21 – 0.38	No	Erosion of Natural Deposits
Secondary Standards* – Tested in 2018						
Aluminum (ppb) Treated	200*	600	179	ND – 330	No	Treatment Process Residue
Chloride (ppm)	500*	n/a	90	77 – 110	No	Erosion of Natural Deposits
Color (color units)	15*	n/a	16	7.5 – 80	No	Erosion of Natural Deposits
Iron (ppb)	300*	n/a	126	ND – 850	No	Erosion of Natural Deposits
Manganese (ppb) Source	50*	n/a	118	ND – 570	No	Erosion of Natural Deposits
Manganese (ppb) Treated	50*	n/a	9	ND – 65	No	Erosion of Natural Deposits
Odor (threshold odor number)	3*	n/a	1	1 – 2	No	Erosion of Natural Deposits
Specific Conductance (µmho/cm)	1,600*	n/a	1,075	1,000 – 1,100	No	Erosion of Natural Deposits
Sulfate (ppm)	500*	n/a	293	280 – 310	No	Erosion of Natural Deposits
Total Dissolved Solids (ppm)	1,000*	n/a	656	610 -710	No	Erosion of Natural Deposits
Unregulated Chemicals – Tested in 2018						
Bicarbonate (ppm)	Not Regulated	n/a	186	170 – 220	n/a	Erosion of Natural Deposits
Boron (ppm)	NL = 1	n/a	184	160 – 210	n/a	Erosion of Natural Deposits
Calcium (ppm)	Not Regulated	n/a	86	74 – 96	n/a	Erosion of Natural Deposits
Magnesium (ppm)	Not Regulated	n/a	30	29 – 38	n/a	Erosion of Natural Deposits
pH (pH units)	Not Regulated	n/a	8.3	7.7 – 8.7	n/a	Erosion of Natural Deposits
Potassium (ppm)	Not Regulated	n/a	5.4	5.0 – 5.8	n/a	Erosion of Natural Deposits
Sodium (ppm)	Not Regulated	n/a	100	84 – 130	n/a	Erosion of Natural Deposits
Total Alkalinity (ppm as $CaCO_3$)	Not Regulated	n/a	154	140 – 180	n/a	Erosion of Natural Deposits
Total Hardness (ppm as $CaCO_3$)	Not Regulated	n/a	368	310 – 390	n/a	Erosion of Natural Deposits

ppb = parts-per-billion; **ppm** = parts-per-million; **pCi/L** = picoCuries per liter; **NTU** = nephelometric turbidity units; **ND** = not detected; **n/a** = not applicable;
MCL = Maximum Contaminant Level; **(MCLG)** = federal MCL Goal; **PHG** = California Public Health Goal; **µmho/cm** = micromho per centimeter; **NL** = Notification Level;
*Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

Turbidity – combined filter effluent	Treatment Technique	Turbidity Measurements	TT Violation?	Typical Source of Contaminant
1) Highest single turbidity measurement	0.3 NTU	0.22	No	Soil Run-off
2) Percentage of samples less than 0.3 NTU	100%	100%	No	Soil Run-off

Turbidity is a measure of the cloudiness of the water, an indication of particulate matter, some of which might include harmful microorganisms.
Low turbidity in Serrano Water District's treated water is a good indicator of effective filtration. Filtration is called a "treatment technique" (TT).
A treatment technique is a required process intended to reduce the level of contaminants in drinking water that are difficult and sometimes impossible to measure directly.

Source Water Assessments

There are two assessments of drinking water sources for Serrano Water District — one ground water assessment and a surface water assessment that includes Santiago Reservoir and Villa Park Dam.

The ground water assessment was prepared by Boyle Engineering Corporation in August 2001. This included all of the Serrano Water District's wells and considered any vulnerable contaminants associated with the surrounding residential neighborhoods. The most vulnerable threat detected was a potential residential sewer system failure.

The Surface Source Water Assessment was completed in December 2014 by Karen E. Johnson, Water Resources Planning and Water Quality & Treatment Solutions, Inc. Santiago Reservoir (Irvine Lake) includes 63.1 square miles of watershed. Also included is 20.3 square miles of Villa Park Dam watershed. The consultants concluded the areas are most vulnerable to septic tank, landfill and dump activities.

Serrano Water District samples each water source on a regular basis and has the water samples analyzed by a California-certified analytical laboratory. The Serrano Water District reviews the laboratory results and evaluates the findings relative to the regulatory limits as presented in California Drinking Water Maximum Contaminant Levels (MCLs), Primary MCLs, Secondary MCLs, and unregulated Chemicals. These laboratory results are then submitted to the SWRCB, Division of Drinking Water.

You may request a summary or a complete copy of the assessments (for the cost of reproduction) be sent to you by contacting:

State Water Resources Control Board,
Division of Drinking Water
2 MacArthur Place, Suite 150
Santa Ana, California 92707 • (714) 558-4410
or
Serrano Water District
18021 Lincoln Street • Villa Park, CA 92861
(714) 538-0079 • www.serranowater.org

You Can Depend On Us to Deliver Quality Water

Turn the tap and the water flows, as if by magic. Or so it seems. The reality is considerably different, however. Delivering high-quality drinking water to our customers is a scientific and engineering feat that requires considerable effort and talent to ensure the water is always there, always safe to drink.

Because tap water is highly regulated by state and federal laws, water treatment and distribution operators must be licensed and are required to complete on-the-job training and technical education before becoming a state certified operator.

Our licensed water professionals have an understanding of a wide range of subjects, including mathematics, biology, chemistry, physics, and engineering. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water;
- Monitoring and inspecting machinery, meters, gauges, and operating conditions;
- Conducting tests and inspections on water and evaluating the results;
- Documenting and reporting test results and system operations to regulatory agencies; and
- Serving our community through customer support, education, and outreach.

So, the next time you turn on your faucet, think of the skilled professionals who stand behind every drop.

This report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Serrano Water District
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Villa Park, California 92861-6446

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