

# REGIONAL DISTRICT OF NANAIMO

## Water Service Area Annual Report 2023



### Westerne Heights Water Service Area

June 2024



**REGIONAL DISTRICT OF NANAIMO**

*Water Services Department*

6300 Hammond Bay Rd, Nanaimo, BC Canada V9T 6N2 | Ph 250-390-6560

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Appendix A - Map of Westerne Heights Water Service Area

Appendix B - Water Quality Testing Results

Appendix C - Emergency Response & Contingency Plan

## 1.0 Introduction

The following annual report describes the Westurne Heights Water Service Area and summarizes the water quality and production data from 2023. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response & Contingency Plan, and the Cross Connection Control Program. This report is to be submitted to Island Health by the spring of 2024.

## 2.0 Westurne Heights Water Service Area

The Westurne Heights Water Utility is located 2.2 kilometers south of the intersection of Highway 4 and Chatsworth Road in Whiskey Creek. The utility was established in 1995 to service properties along Westurne Heights Road. Ownership of the water utility was transferred to the RDN in September 2016. The water system is comprised of one groundwater well, two underground cisterns, a pumphouse, and a short network of watermains. There are 17 residential connections in this water system. The water source is chlorinated and pumped into the system on demand via two pressure tanks. A backup generator is present on-site in the event of a power outage. A map of the Westurne Heights Water Service Area is provided in Appendix A for reference.

### 2.1 Groundwater Wells

One groundwater production well is present at the reservoir site at 1262 Westurne Heights Road, west of Coombs, B.C.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
#1	26.2 m	Yes	Treated

### 2.2 Reservoirs

Two below-ground cisterns are present at 1262 Westurne Heights Road, and have a combined water storage capacity of 13 m<sup>3</sup> (2,800 imperial gallons). Water supply is pumped into the system via a dual pressure tank arrangement.

### 2.3 Distribution System

The water distribution system is comprised of 0.21 km of 75mm diameter PVC watermains. Three below-ground flushouts are present at the end of each watermain. There are no fire hydrants located within the system.

*Note: 'PVC' is poly-vinylchloride (plastic)*



**Westurne Heights  
Well #1**

### 3.0 Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. Notably, the chlorine residual levels are tested weekly to ensure the absence of bacterial regrowth in the water mains. The following table includes a summary of all testing.

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total coliforms, E.Coli, Temperature, pH, Conductivity, Chlorine residual, Salinity, TDS
Weekly	BC Centre for Disease Control	Total coliforms, E.Coli
Annual Source Water Testing (every Fall)	Bureau Veritas	Complete potability testing of raw well water, including T-Ammonia
Annual System Water Testing (every Spring)	Bureau Veritas	Complete potability testing of distribution system, including T-Ammonia

### 4.0 Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website at [www.rdn.bc.ca/westurne-heights](http://www.rdn.bc.ca/westurne-heights). Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.



**Westurne Heights  
Pumphouse and Buried Cisterns**

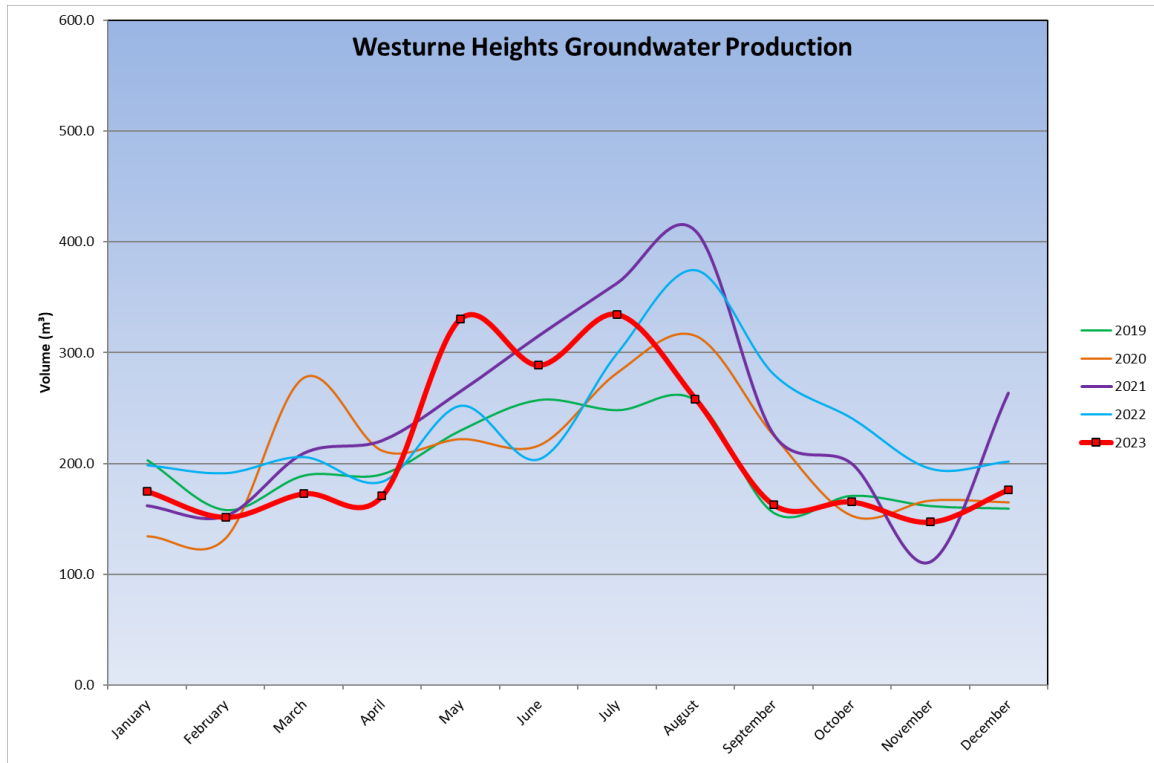
## 5.0 Water Quality Inquiries and Complaints

A few inquiries and complaints were received from the Westerne Heights water service area in 2023 and were typically related to temporary power outages in the area. The on-call water services staff respond to water system emergencies and alarms within minutes of receiving each call. A summary of the water system incidents in 2023 is given in the table below.

Activity in 2023	Date(s)	History/Notes
Boil Water Advisories	None	None
High Turbidity Events	None	None
Equipment Malfunction	None	None
Water Main Breaks	None	None
Pump Failures	None	None

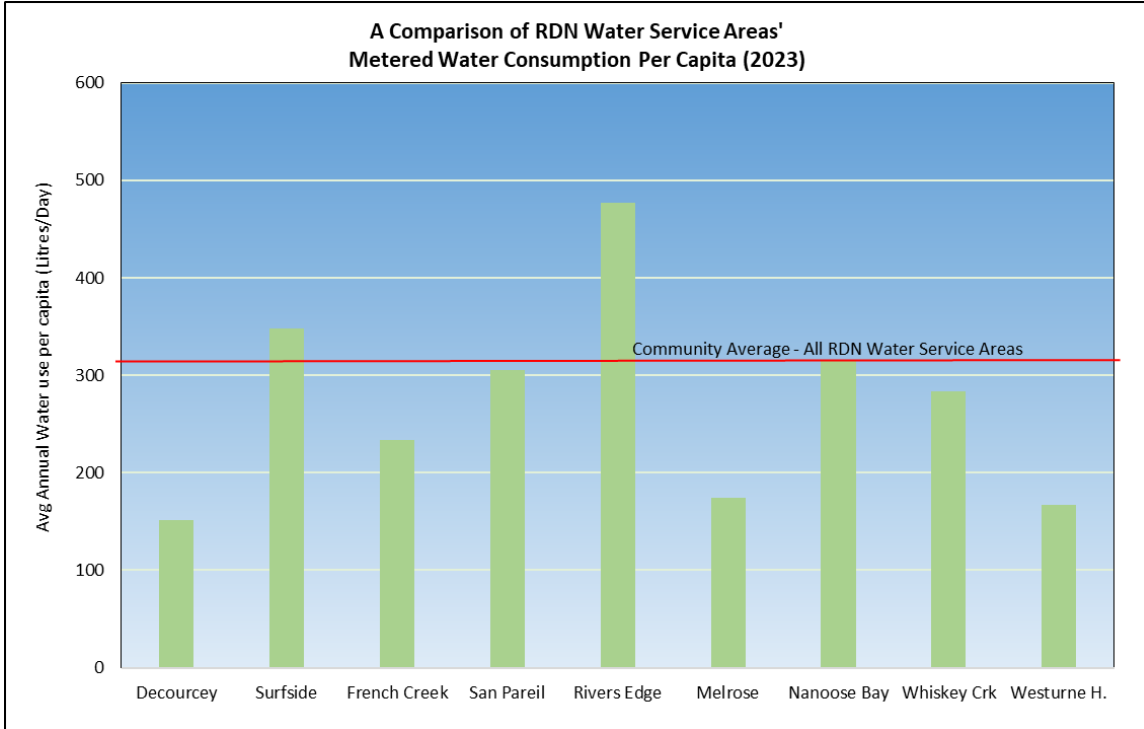
## 6.0 Groundwater Production and Consumption

The monthly groundwater production in the Westerne Heights Water Service Area over the past 5 years is shown in the graph below.



**Consumption**

In the Fall/Winter of 2023, the average usage per home in the Westerne Heights Water Service Area was 0.35 cubic metres per day (77 imperial gallons). In the summer, the average water usage was 0.51 cubic metres per day (112.2 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 167 L/day (based on 2.4 people per household). This consumption is *47% lower* than the average of all the other RDN water systems of 313 L/day/capita for 2023.



**7.0 Maintenance Program**

Weekly pump station inspections are carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Watermains are flushed once a year in the spring. The water storage cisterns are drained and cleaned as required. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.



**Pressure tanks in the Westerne Heights pump house**

## 8.0 Operator Certification

The Regional District Water & Utility Services staff are comprised of one Manager, one Project Engineer, one Engineering Technologist, one Engineering Technician, one Chief Operator, and seven certified operators. The operators receive ongoing training and certification in:

- |                            |   |                            |
|----------------------------|---|----------------------------|
| ✓ Water Treatment          | ✓ Chlorine Handling                                       | ✓ Confined Space Awareness |
| ✓ Water Distribution       | ✓ WHMIS (Workplace Hazardous Material Information System) | ✓ Fall Protection          |
| ✓ Wastewater Collection    | ✓ TDG (Transportation of Dangerous Goods)                 | ✓ First Aid                |
| ✓ Cross Connection Control |   | ✓ Silica Awareness         |
| ✓ Asbestos Awareness       |   |                            |

## 9.0 Water Service Area Projects

### 9.1 2023 Completed Studies & Projects

- Corresponded with residents regarding water conservation;
- Utilized leak detection equipment and tracking;
- Began billing for metered consumption based on revised water rates;
- Followed Cross Connection Control program to reduce backflow prevention risks;
- Enforced outdoor watering restrictions during summer months;
- Advised residents regarding water leak repairs and bill adjustments;
- Continued the 2021-2030 Water Conservation Plan;
- Completed regular watermain flushing ;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Implemented Phase 2 Water Systems SCADA Master Plan; and
- Continued valve maintenance program.

### 9.2 2023 Proposed Projects & Upgrades

- Complete irrigation checks for high-water users;
- Continue watermain flushing and maintenance program;
- Continue leak detection equipment utilization program;
- Continue valve maintenance program;
- Continue the DWWP Water Conservation Plan; and
- Continue to offer numerous water saving incentives via rebates.
- Continue to offer numerous water-saving incentives via rebates.



Westurne Heights well site and fence

## 10.0 Emergency Response & Contingency Plan

The Regional District Emergency Response & Contingency Plan (ERCP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERCP was reviewed and updated in 2023, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERCP is also attached to this report in Appendix C.

## 11.0 Supply Security

The RDN continues to effectively manage water supply in its service areas in response to ongoing demand and the effects of climate change. Most RDN water service areas are unlikely to expand, so growth in demand is not expected. Initiatives that provide resiliency for the groundwater sources that serve residents remain a high priority. Reservoir capacity and redundancy are reviewed with regards to water storage during periods of drought, and water from backup sources is available to be delivered in the case of an emergency. Groundwater quality is regularly tested in all RDN water service areas. The aquifers within the regional district are monitored through the RDN's Drinking Water and Watershed Protection (DWWP) program. The most sustainable way to protect water supply is through demand management (conservation), which is promoted through outreach and stewardship initiatives provided by the RDN's Team WaterSmart, as well as the RDN Water Service Area's Water Conservation Plan 2020-2030. Rebates for well water testing, water smart landscaping, and rainwater harvesting further assist RDN residents to reduce water usage in high demand seasons. A new tiered system for water rates introduced in 2022/23 will help promote conservation by rewarding low water users with reduced rates and encouraging high water users to seek ways to use less. Additional planning and preparation initiatives will be introduced in the future to support water supply security.

## 12.0 Cross Connection Control

The RDN's Cross Connection Control Program was put in place to protect the public health by reducing the risk of contaminants flowing back into the public water supply. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

The RDN's Cross Connection Control Program addresses cross connection threats through operating policies and procedures, as well as assisting customers with backflow preventer selection, installation, testing, maintenance and reporting. The program receives its authority from RDN Cross Connection Control Regulation Bylaw No. 1788, and the British Columbia Building Code, Part 7, which requires that potable water be protected from contamination. Additionally, a webpage has been established at <https://rdn.bc.ca/cross-connection-control-program> to educate RDN water service customers about cross connection hazards, and lists the relevant links to current standards and resources.

Two of the RDN's water system operators carry certification as backflow assembly testers through the British Columbia Water & Waste Association (BCWWA), and one operator is additionally certified as a Cross Connection Control Inspector.



### **13.0 Cyber Security**

The RDN uses a multi-level approach to cyber-security. Corporate network security is employed via a universal threat management gateway that implements various methods of data security, which includes daily definition updates to block known cyber threats. In addition, all RDN PC's are protected with anti-virus software. RDN water systems are connected to the corporate network via IP-Sec VPN's for remote management by information technology and equipment operators. Future infrastructure upgrades will see our water systems located on segregated networks to limit the vulnerability from cybersecurity threats. All RDN employees are required to regularly complete extensive training on cyber security awareness.

### **14.0 Closing**

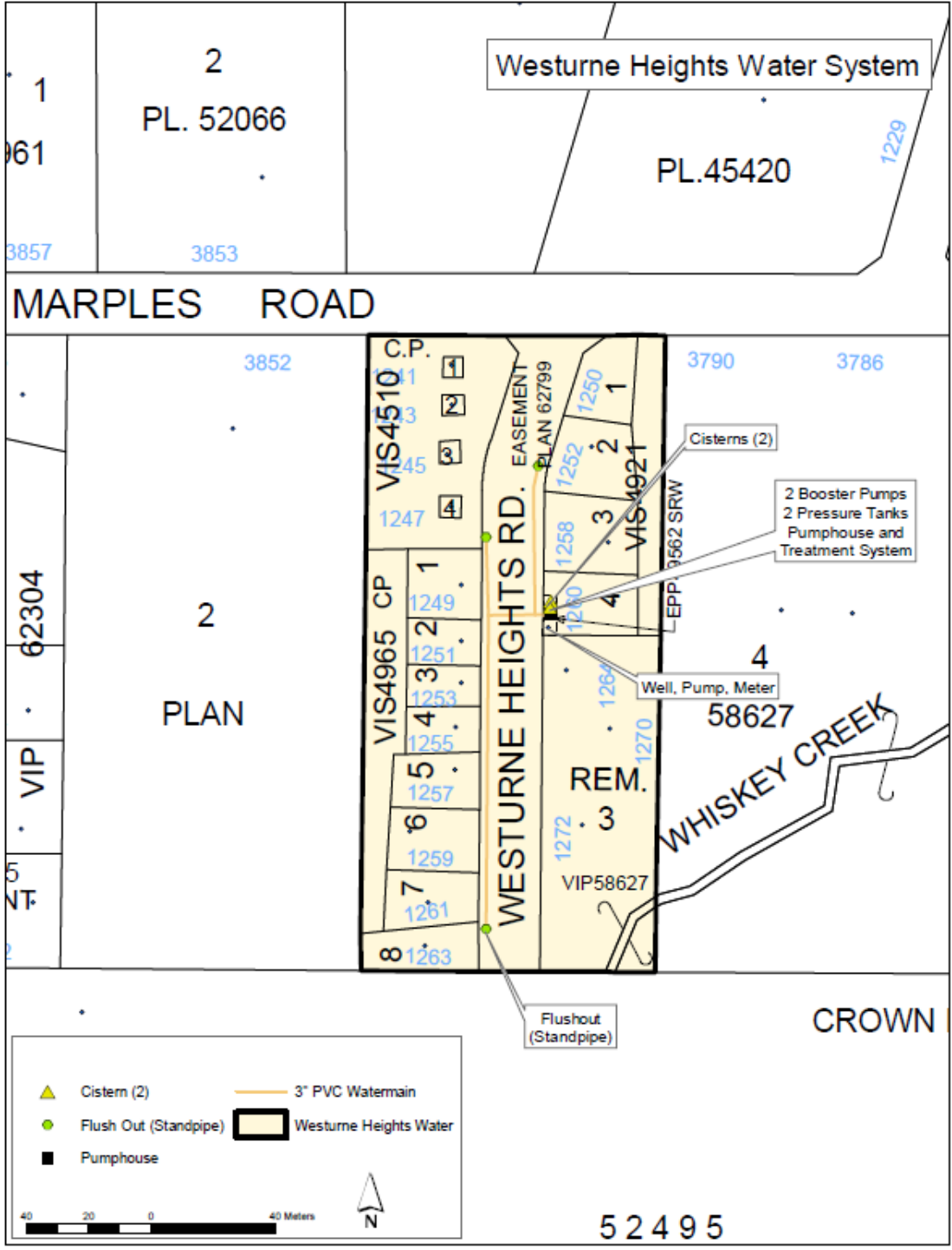
An annual report for the year 2024 will be prepared and submitted to Island Health in the Spring of 2025. Annual reports are also available on our website at: [www.rdn.bc.ca/westerne-heights](http://www.rdn.bc.ca/westerne-heights).

**APPENDIX A**

**MAP OF WESTURNE HEIGHTS**

**WATER SERVICE AREA**

WESTERNE HEIGHTS WATER SERVICE AREA



## **APPENDIX B**

### **WATER QUALITY TESTING RESULTS**

# WESTERNE HEIGHTS WATER SERVICE AREA



**Facility Location:**

1262 Westerne Heights Road, Qualicum Beach

**Facility Information:** Facility Type: 15-300 connections DWC

**Facility Sampling History:**

<u>Site Name</u>	<u>Total Coliform</u>	<u>Total E. Coli</u>	<u>Date Reported</u>
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	6/1/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	12/1/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	01/20/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	01/27/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	10/2/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	02/15/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	02/23/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	2/3/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	9/3/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	03/15/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	03/22/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	03/29/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	5/4/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	04/14/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	04/21/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	QRWRT	QRWRT	04/28/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	5/5/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	12/5/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	05/17/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	05/26/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	8/6/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	06/15/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	06/22/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	06/29/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	6/7/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	07/14/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	07/20/2023
Well Head Sample Port - 1260 Westerne Heights Rd.	LT1	LT1	07/28/2023
WESTURNE Sample Port - 1263 Westerne Heights Rd.	LT1	LT1	3/8/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	10/8/2023
Westerne Sample Port - 1252 Westerne Heights Rd.	LT1	LT1	08/17/2023

Well Head Sample Port - 1260 Westurne Heights Rd.	LT1	LT1	08/25/2023
WESTURNE Sample Port - 1263 Westurne Heights Rd.	LT1	LT1	8/9/2023
Well Head Sample Port - 1260 Westurne Heights Rd.	LT1	LT1	09/15/2023
WESTURNE Sample Port - 1263 Westurne Heights Rd.	LT1	LT1	09/22/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	09/29/2023
WESTURNE Sample Port - 1263 Westurne Heights Rd.	LT1	LT1	5/10/2023
Well Head Sample Port - 1260 Westurne Heights Rd.	LT1	LT1	10/13/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	10/20/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	10/25/2023
WESTURNE Sample Port - 1263 Westurne Heights Rd.	LT1	LT1	8/11/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	11/17/2023
Well Head Sample Port - 1260 Westurne Heights Rd.	LT1	LT1	11/22/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	11/30/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	7/12/2023
WESTURNE Sample Port - 1263 Westurne Heights Rd.	LT1	LT1	7/12/2023
Well Head Sample Port - 1260 Westurne Heights Rd.	LT1	LT1	12/15/2023
Westurne Sample Port - 1252 Westurne Heights Rd.	LT1	LT1	12/22/2023

### **Interpreting Sample Reports**

In VIHA, the results of drinking water sampling are reported using the following coding system:

- LT1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present
- L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present