



LEEDS DOMESTIC
WATERUSERS ASSOCIATION

A private non-profit, shareholder owned culinary water utility.



WATER SOURCE PROTECTION PLAN

WS001 :: Oak Grove Spring
WS002 :: Highlands Well

Updated: January 2026



Water Source Protection Plan

Leeds Domestic Waterusers Association — Leeds, Utah

Prepared for: Leeds Domestic Waterusers Association

System location: Leeds, Washington County, Utah

Plan type: Revised Source Protection Plan :: WS001 – Oak Grove Spring

Effective date: 01/21/2026

Prepared by: Mark Osmer & Doris McNally

1. Purpose and Regulatory Basis

This Drinking Water Source Protection Plan has been prepared for Leeds Domestic Waterusers Association (LDWA) to serve as a practical, working document for protecting the Association's drinking water sources from existing and future sources of contamination. The plan is intended to organize current source protection information, identify and evaluate potential contamination sources, establish land-management and protection strategies, and provide an implementation and recordkeeping framework that can be used by the Association on an ongoing basis. It is also intended to support Utah Department of Environmental Quality, Division of Drinking Water sanitary survey and Drinking Water Source Protection planning review requirements.

The regulatory basis for this plan is Utah Administrative Code R309-600, Source Protection: Drinking Water Source Protection for Groundwater Sources, which establishes the statewide program and minimum requirements for public water systems to protect groundwater sources used for drinking water. Under this rule, public water systems are responsible for developing, submitting, implementing, and periodically updating Drinking Water Source Protection Plans for their groundwater sources. Required plan elements include delineation of protection zones and management areas, an inventory and assessment of potential contamination sources, management programs for preexisting and future potential contamination sources, an implementation schedule, resource evaluation, and recordkeeping. The plan should be maintained so that it reflects current system conditions and current conditions within the applicable protection zones and management areas.

2. Introduction

2.1 System Information

LDWA is a Private NON-PROFIT, SHAREHOLDER OWNED COMMUNITY culinary water utility company serving the citizens of Leeds Utah and is not an extension of local or state government. We are committed to providing clean, safe, water while delivering responsible water services to our shareholders, in customer service and environmental stewardship.



Item	Information
Water system name	Leeds Domestic Waterusers Association [LDWA]
Office mailing address	PO Box 460627 Leeds, UT 84746-0627
Office physical address	545 N Main St, Unit# 7 Leeds, UT 84746-0627
Email address	LDWAcorp@infowest.com
Phone #	(435) 879-0278
Website	ldwacorp.org
Community served	Leeds, Utah and connected service area
Water System ID	UTAH 27010
System classification	Community public water system; confirm classification with Utah Division of Drinking Water records
Population served / service connections	Population: 856 Service connections: 387

2.2 Source Information

Item	Information
Water sources	Well(s), spring(s), purchased water, or other approved source(s): ▪ <u>Oak Grove Spring (WS001)</u> Location: S 811 ft W 291 ft from E4 cor Sec 36 T40S R14W SL ▪ <u>Highlands Well No. 1 (WS002)</u> Location: N 2958 ft E 1124 ft from SW cor Sec 31 T40S R13W SL ▪ <u>Highlands Well No. 2 (WS004) (FUTURE)</u> Location: N 204 ft E 1046 ft from W4 cor Sec 31 T40S R13W SL

2.3 Storage Information

Item	Information
Storage facilities	Tank(s) / reservoir(s): ▪ Large Green Tank (ST001) [060-1 Tank] Above Ground ACTIVE ▪ Small Green Tank (ST001) [030-2 Tank] Above Ground ACTIVE ▪ Pink Tank (ST003) [450-3 Tank] Above Ground ACTIVE ▪ Bonanza Tank (ST004) [125-4 Tank] InGround INACTIVE ▪ SR Highlands Tank (ST005) [350-5 Tank] Above Ground ACTIVE ▪ Oak Grove Tank (ST006) [120-6 Tank] InGround ACTIVE

2.4 Designated Person - R309-600-5:

Item	Information
Operator / sampler	Name: Mark Osmer Phone: (435) 772-1970 Email: LDWAfieldops@infowest.com Certification Type: Certified Operator License #: 12818 Certification Type: Cross Connection Control # 20131
Office Manager/ Corp. Secretary	Name: Layna Larsen – CORPORATE SECRETARY Phone: (702) 277-9687 Email: LDWA-Layna@infowest.com
Board members	- Name: Donald Fawson - PRESIDENT Phone: (435) 668-5327 Email: LDWA-Don@infowest.com Certification Type: Cross Connection Control # 22127 - Name: Doris McNally – VICE PRESIDENT Phone: (732) 429-4950 Email: LDWA-Doris@infowest.com - Name: Brant Jones – MEMBER Phone: (435) 632-2925 Email: brant@infowest.com - Name: Michelle Peot – MEMBER Phone: (213) 500-9846 Email: LDWA-Michelle@infowest.com - Name: Donald Baldwin – MEMBER Phone: (435) 232-3560 Email: LDWA-Donald@infowest.com

3. THE DELINEATION REPORT - R309-600-9(5)

3.1 Geologic Data - R309-600-9(6)(a)(i)

There are no changes

This section provides the geologic description required by Utah Administrative Code R309-600-9(6)(a)(i) for the Leeds Domestic Waterusers Association (LDWA) public water system in Leeds, Washington County, Utah. LDWA serves the Town of Leeds and currently relies on two sources: Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002). The discussion below summarizes the geologic features, aquifer characteristics, stratigraphy, lithology, confining units, fractures, solution features, and faults known or reasonably inferred for the source area and potential source-protection zones.

3.1.1 Source and Hydrogeologic Setting

Oak Grove Spring is identified in state water-right records as Quail Creek Spring, also known as Oak Grove, located north of Leeds and diverted by a collection system and pipeline. LDWA project information identifies Oak Grove Spring and Highland(s) Well as the system's existing sources and reports approximate source capacities from the spring and well. Highlands Well No. 1 is understood to be completed in the local bedrock aquifer system that supplies LDWA's well field area. The protection zones for the spring and well are expected to include bedrock outcrop areas, alluvial drainage areas, and structurally controlled groundwater-flow pathways near Leeds.

3.1.2 Stratigraphy, Lithology, and Aquifer Characteristics

The principal regional bedrock aquifer near Leeds is the Jurassic Navajo Sandstone and associated Glen Canyon Group strata. Regional studies of the central Virgin River basin describe the Navajo Sandstone as a major water-bearing unit in southwestern Utah, with groundwater stored and transmitted through primary intergranular porosity and through secondary openings such as joints and fractures. The Navajo Sandstone is typically a well-sorted, fine- to medium-grained, cross-bedded sandstone deposited in an eolian setting. Where saturated and sufficiently fractured, it can yield groundwater to wells and springs. In the LDWA source area, Highlands Well No. 1 is interpreted to obtain water from this sandstone aquifer or from hydraulically connected units.

Potential confining or semi-confining units in and near the source-protection zones may include the Kayenta Formation and other finer-grained interbeds or underlying units of the Glen Canyon Group. Published geologic descriptions of the Kayenta Formation identify sandstone and shale lithologies, including irregularly bedded sandstone and sandy shale. In the Leeds area, these finer-grained intervals may locally impede vertical groundwater movement, create perched or semi-confined conditions, or redirect groundwater laterally toward springs, seeps, or structurally transmissive zones.

3.1.3 Fractures, Solution Cavities, and Faults

Fractures and joints are important potential controls on groundwater occurrence and movement in the Navajo Sandstone aquifer. Regional groundwater investigations in the central Virgin River basin document jointing in Navajo Sandstone outcrop areas and indicate that open joints can be observed in well logs. For the LDWA source area, fractures should be described from available outcrops, well logs, and drilling records by noting aperture or size, abundance, spacing, orientation, and whether fractures are open, mineralized, stained, or water-bearing. In the absence of site-specific measurements, fractures are expected to occur as vertical to steeply dipping joints and bedding-parallel openings within sandstone beds; these features may increase hydraulic conductivity and can provide preferential pathways for recharge or contaminant migration.

Solution cavities are not expected to be a dominant feature of the sandstone aquifer unless carbonate-cemented zones, calcareous beds, or adjacent carbonate units are present locally. Any cavities or vugs observed in outcrop, cuttings, or drill logs should be documented by approximate size, abundance, spacing, and relation to bedding or fractures.

Faults mapped in or near the protection zones should be described by their location relative to Oak Grove Spring, Highlands Well No. 1, and the capture zones; their approximate trend and dip; and whether they appear to juxtapose contrasting lithologies or form barriers or conduits to groundwater flow. Because faults and fracture zones can strongly influence spring discharge and well productivity, any mapped or inferred structures near the well or spring should be evaluated as potential preferential flow paths.

3.1.4 Source-Specific Geologic Observations

Oak Grove Spring (WS001). *Oak Grove Spring is a spring source north of Leeds and is likely controlled by the intersection of groundwater-bearing sandstone, local drainage incision, permeability contrasts, and/or fracture zones. The spring discharge may represent groundwater issuing where the saturated aquifer intersects land surface or where a lower-permeability unit restricts downward movement and directs flow laterally. Field verification should document nearby bedrock units, bedding attitude, fracture orientations, staining, seep zones, and any evidence of faults or lithologic contacts that influence discharge.*

Highlands Well No. 1 (WS002). *Highlands Well No. 1 is interpreted to derive water from the local sandstone aquifer system. Well cuttings, drillers' logs, geophysical logs, and pumping-test records should be reviewed to identify the depth and thickness of water-bearing intervals, lithologic changes, fracture zones, static water level, screened or open-hole intervals, and any confining beds encountered during drilling. If available, the well log should be used to confirm whether the aquifer is Navajo Sandstone, a hydraulically connected sandstone unit, or an alluvial/bedrock composite interval.*

3.1.5 Data Limitations and Recommended Verification

This geologic description is based on available regional geologic and groundwater information and should be refined with site-specific LDWA records. Recommended source documents include well construction and lithologic logs for Highlands Well No. 1, spring-collection construction records for Oak Grove Spring, field notes from outcrop observations, geologic maps of the Leeds quadrangle or surrounding area, and any aquifer-test or source-protection-zone reports prepared for LDWA. Site-specific field descriptions should include stratigraphic names, lithology, bedding, fracture size and spacing, solution features if present, and mapped or inferred fault locations and orientations.

3.2 Aquifer Data - R309-600-9(6)(a)(iv):

There are no changes

This section provides the geologic description required by Utah Administrative Code R309-600-9(6)(a)(i) for the Leeds Domestic Waterusers Association (LDWA) public water system in Leeds, Washington County, Utah. LDWA serves the Town of Leeds and currently relies on two sources: Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002). The discussion below summarizes the geologic features, aquifer characteristics, stratigraphy, lithology, confining units, fractures, solution features, and faults known or reasonably inferred for the source area and potential source-protection zones.

3.2.1 Source Setting and Aquifer Overview

Oak Grove Spring (WS001). *Oak Grove Spring is a developed spring source located north of Leeds and associated with the Quail Creek/Oak Grove spring system. For source-protection purposes, the spring is treated as a groundwater source where recharge, subsurface flow paths, spring collection works, and any surface-water influence should be documented in the delineation report. Available LDWA materials identify Oak Grove Spring as one of LDWA's existing sources, and Utah water-right records identify Quail Creek Spring, also known as Oak Grove, as a source used by Leeds Domestic Waterusers Association.*

Highlands Well No. 1 (WS002). *Highlands Well No. 1 is LDWA's groundwater well source. Available LDWA project information indicates that the existing well has been evaluated for additional capacity and that nearby well development has targeted the same aquifer system. The protection-plan aquifer discussion should identify the producing interval, static water level, pumping water level, drawdown, pumping rate, aquifer-test results, and any evidence of hydraulic connection to nearby sources or surface-water features.*

3.2.2 Aquifer Data to be Maintained in the DWSP File

- *Well logs, spring-development records, construction details, and as-built drawings for Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002).*
- *Geologic and hydrogeologic mapping showing recharge areas, groundwater-flow direction, aquifer boundaries, faults, fractures, confining layers, and hydraulic barriers.*
- *Static water levels, pumping water levels, drawdown data, pumping rates, and aquifer-test results for Highlands Well No. 1 and any nearby wells used to characterize the aquifer.*
- *Spring discharge records, seasonal variability, collection-system information, and observations of storm response or surface-water influence for Oak Grove Spring.*
- *Water-quality data, including routine bacteriological, inorganic, organic, radiological, nitrate, and other monitoring results relevant to source susceptibility.*
- *Documentation of the delineation method, data assumptions, time-of-travel calculations, and the basis for protection-zone boundaries.*

3.2.3 Data Limitations and Update Procedure

Where site-specific aquifer parameters are not available, LDWA will rely on the best available professional hydrogeologic information, including construction records, water-level records, spring-flow observations, published geologic mapping, Utah Division of Water Rights data, Utah Geological Survey groundwater resources, and prior DWSP delineation reports. Any assumptions used in delineating source protection zones should be documented and retained with the DWSP records.

LDWA will review and update this aquifer data section when new hydrogeologic information becomes available, when source construction or pumping conditions change, when new wells are developed, or when protection-zone delineations are revised. Updates will be retained in the DWSP recordkeeping file to support ongoing compliance with Utah drinking-water source protection requirements.

3.3 Hydrogeologic Methods and Calculations - R309-600-9(6)(a)(vii)

There are no changes

The Leeds Domestic Waterusers Association (LDWA) water system serves the Town of Leeds, Utah. LDWA currently relies on two public drinking water sources: Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002). This section describes the hydrogeologic methods, assumptions, and calculations used to support the Drinking Water Source Protection delineations for these sources.

3.3.1 Hydrogeologic Setting

The LDWA sources are located in the Leeds area of Washington County, Utah. Groundwater occurrence and movement in this area are influenced by local topography, geologic structure, bedrock fractures, alluvial deposits, and recharge from precipitation and snowmelt in surrounding upland areas. Groundwater generally moves from recharge areas toward points of discharge, including springs, seeps, and production wells.

3.3.2 Source-Specific Delineation Approach

Oak Grove Spring (WS001). *Because Oak Grove Spring is a spring source, the delineation approach emphasizes identification of the spring recharge area, contributing watershed, geologic contacts, fracture pathways, and surface-water/groundwater interaction that may influence spring discharge.*

Highlands Well No. 1 (WS002). *Because Highlands Well No. 1 is a groundwater well, the delineation approach emphasizes aquifer properties, groundwater gradients, pumping influence, available well construction records, and analytical time-of-travel calculations for groundwater moving toward the well.*

3.3.3 Methods & Calculations

Groundwater velocity and travel time were estimated using Darcy's Law and average linear velocity relationships. Where source-specific aquifer test data were unavailable, representative hydrogeologic values from available records, geologic interpretation, and Utah drinking water source protection guidance were used.

Average Linear Groundwater Velocity: $V = (K \times i) / n_e$

Where V is average linear groundwater velocity, K is hydraulic conductivity, i is hydraulic gradient, and n_e is effective porosity.

Groundwater Time of Travel: $t = L / V$

Where t is travel time, L is flow-path length, and V is average linear groundwater velocity. These calculations provide the basis for estimating time-of-travel distances used in protection zone delineation.

3.3.4 Protection Zone Delineation

Zone One: *The immediate protection area surrounding each source. For the well, Zone One is generally the area within a 100-foot radius of the wellhead. For the spring, Zone One includes the immediate spring collection and diversion area.*

Zone Two: *The area representing the estimated 250-day groundwater time of travel to the source, or the applicable hydrogeologic boundary, whichever is closer.*

Zone Three: *The area representing the estimated 3-year groundwater time of travel beyond Zone Two, or the applicable hydrogeologic boundary, whichever is closer.*

Zone Four: *The remaining area contributing recharge to the source beyond Zone Three. Zone Four is based on the source recharge area, watershed limits, groundwater divides, geologic boundaries, and inferred groundwater flow paths.*

3.3.5 Assumptions and Limitations

The delineations are based on the best available hydrogeologic information at the time of preparation. The protection-zone boundaries should be refined if additional aquifer testing, groundwater-level monitoring, geologic mapping, spring-discharge measurements, or Utah Division of Drinking Water review comments provide more source-specific data. The methods and calculations described in this section provide a technically reasonable basis for protecting Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002) as part of the LDWA Drinking Water Source Protection Program.

3.4 Map Showing Boundaries of the DWSP Zones - R309-600-9(6)(a)(viii):

There are no changes

This section documents the map that shows the boundaries of the Drinking Water Source Protection (DWSP) zones for the Leeds Domestic Waterusers Association (LDWA) water protection plan. LDWA serves the Town of Leeds, Utah and operates two groundwater sources for culinary water supply: Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002).

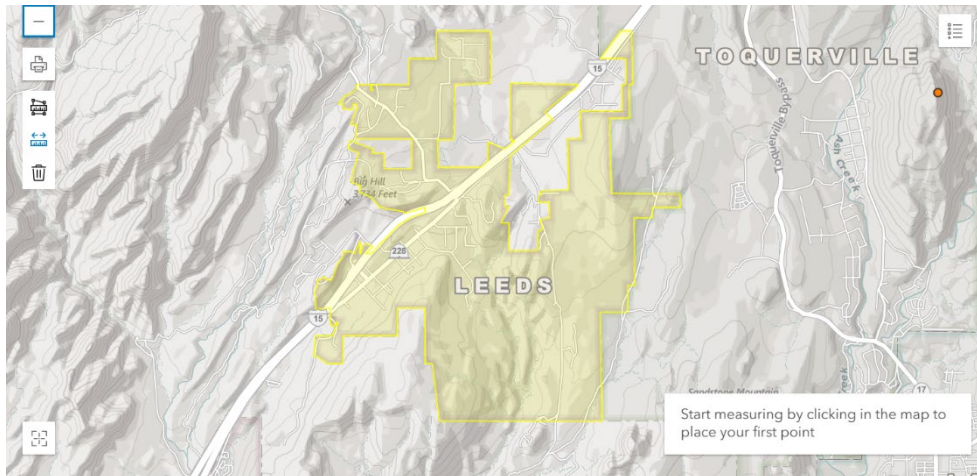
Utah Administrative Code R309-600-9 requires public water systems to delineate drinking water source protection zones or a management area around each groundwater source. For the preferred delineation procedure, Zone 1 is the area within a 100-foot radius of the wellhead or margin of the collection area, Zone 2 extends to the 250-day groundwater time-of-travel boundary, Zone 3 extends to the 3-year groundwater time-of-travel boundary, and Zone 4 extends to the 15-year groundwater time-of-travel boundary or a limiting hydrogeologic boundary, as applicable.¹

Utah DDW groundwater source protection zone mapping data indicate that DWSP zones are submitted to the Utah Division of Drinking Water as part of DWSP plans and that base maps are required to be at a scale of 1:24,000. The LDWA DWSP map shall therefore be prepared on a suitable 1:24,000-scale base map, or equivalent GIS map product, and shall show the delineated boundary for each applicable protection zone associated with Oak Grove Spring (WS001) and Highlands Well No. 1 (WS002).²

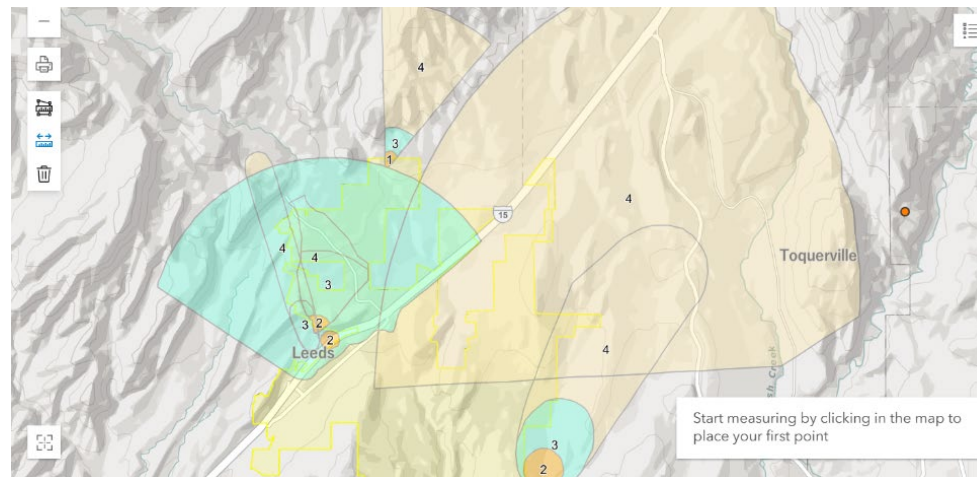
¹ [Utah Admin. Code R309-600-9 - Delineation of Protection Zones and ...](#)

² [Utah DDW Groundwater Source Protection Zones \(FeatureServer\)](#)

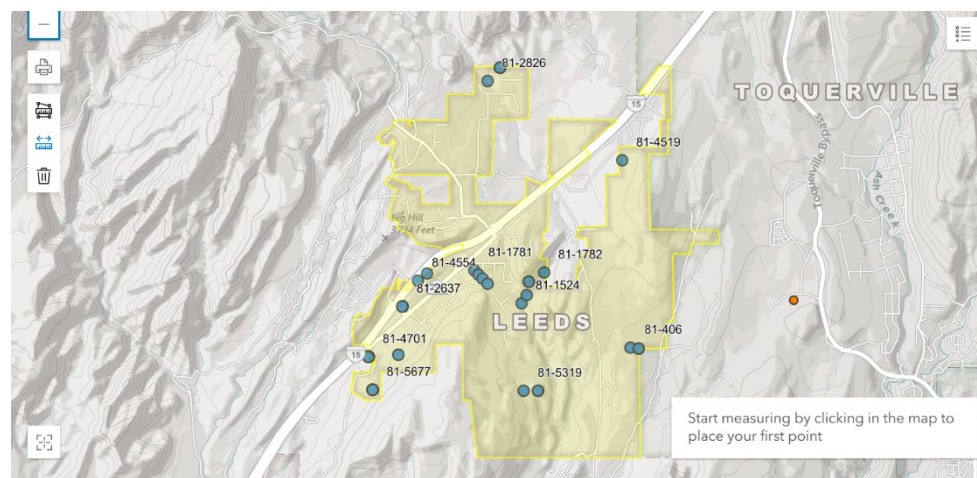
3.4.1 Map Content



GROUND WATER PROTECTION



GROUND WATER PROTECTION ZONES



WATER RIGHTS POINT OF DIVERSIONS

4. POTENTIAL CONTAMINATION SOURCES - R309-600-10

4.1 List Potential Contamination Sources - R309-600-10(1)

There are no changes. There are currently no potential sources within the zones.

4.2 Identify Hazards

There are no changes. There are currently no potential sources within the zones.

4.3 Prioritize the Inventory - R309-600-10(1)

There are no changes. There are currently no potential sources within the zones.

4.4 Potential Contamination Source Location - R309-600-10(1)

There are no changes. There are currently no potential sources within the zones.

4.5 Potential Contamination Sources Plotted on Map

There are no changes. There are currently no potential sources within the zones.

5. MANAGEMENT PROGRAM FOR EXISTING POTENTIAL CONTAMINATION SOURCES (PCS) - R309-600-11

5.1 Management of Existing Potential Contamination Sources

There are no changes. There are currently no potential sources within the zones.

6. MANAGEMENT PROGRAM FOR FUTURE POTENTIAL CONTAMINATION SOURCES - R309-600-12

6.1 Management of Future Potential Contamination Sources

If a new PCS (for example, as residence) is identified within the protection areas for the well, the system will follow the outline below in order to manage the potential PCS:

- 1. Contact each PCS as it moves into the protection area.*
- 2. Determine whether it is a PCS.*
- 3. If it is, add to our Source Protection plan inventory.*
- 4. Identify and assess it's controls, and*
- 5. Plan and implement land mgt. strategies if the PCS is not adequately controlled.*

Washington County creates "use districts" where establishments of pollution sources is limited or prohibited. The public water system must submit map of their protection zones prepared by a licensed civil engineer to the County Recorder's office. Notice of the filing of the map must be given to each property owner within the boundaries of the zones.

7. IMPLEMENTATION SCHEDULE - R309-600-7(1)(e)

7.1 Implementation Schedule

There are no PCS's determined in the original source protection plans therefore there is nothing to implement.

8. RESOURCE EVALUATION - R309-600-7(1)(f)

8.1 Resource Evaluation

There are no changes. *The actions described in this plan will have a minimal effect on the water system's resources, and can be completed with the system's existing resources.*

9. RECORDKEEPING SECTION - R309-600-7(1)(g)

9.1 Recordkeeping Section

No changes

10. THE CONTINGENCY PLAN - R309-600-14

10.1 Contingency Plan

Previously approved by the Division – no changes

11. PUBLIC NOTIFICATION – R309-600-15

This requirement has been completed by the LDWA.

11.1 Public Notification Plan

The Drinking Water Source Protection Plan for The Leeds Domestic Waterusers Association (UT27010) is available for your review. It contains information about source protection zones, potential contamination sources, and management strategies to protect our drinking water. Potential contamination sources common in our protection areas are septic tanks, roads, residential areas, industrial areas. Additionally, our (well(s) and/or spring(s)) have a (low) susceptibility to potential contamination. We have also developed management strategies to further protect our sources from contamination. Please contact us at LDWAcorp@infowest.com, if you have questions or concerns about our source protection plan.

12. WAIVERS

12.1 Use Application Waiver

See attached USE APPLICATION WAIVER

USE APPLICATION WAIVER

Susceptibility Waiver Application for: **VOC's and Pesticides**

Name of Water System: **Leeds Domestic Waterusers Association**

Water System #: **27074**

Name of Drinking Water Source(s): **Oak Grove Spring (WS001)**

Highlands Well No. 1 (WS002)

I, **Mark Osmer** Designated Person (per R309-600) for the Leeds Domestic Waterusers Association Water System, hereby state that I am confident that a susceptibility waiver for VOCs and/or pesticides will not threaten public health.

Signature:

Mark Osmer, Certified Operator | License #: 12818

Date:

