

**Yakima Valley Dairies**

**Quality Assurance Project Plan**

**Residential Well Sampling**

Administrative Order on Consent

SDWA-10-2013-0080

April 26, 2013

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**Yakima Valley Dairies, Washington**

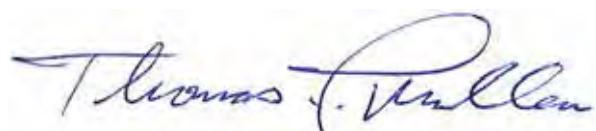
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## **Quality Assurance Project Plan**

### **Residential Well Sampling**

Prepared for:  
Yakima Valley Dairies

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**Acronyms and Abbreviations**

AOC	Administrative Order on Consent
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HSP	Health and Safety Plan
MCL	maximum contaminant level
mg/L	milligrams per liter
PARCC	precision, accuracy, representativeness, comparability, and completeness
PC	Project Coordinator
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	quality control
RO	reverse osmosis
SOP	standard operating procedure
SOW	Statement of Work
SSC/STL	Site Safety Coordinator/Sampling Team Leader

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## **1. Project Management (Group A)**

### **1.1 Project/Task Organization (A4)**

This section presents the organization structure and lines of communication that will be followed to implement the residential well sampling activities presented in this Residential Well Sampling Quality Assurance Project Plan (QAPP).

The Yakima Valley Dairies (Dairies) have retained ARCADIS to develop and implement the Residential Well Sampling QAPP. The QAPP has been developed in accordance with requirements identified in Section III.A of the Statement of Work (SOW) (Appendix B of Administrative Order on Consent (AOC) SDWA-10-2013-0080). The QAPP was prepared in accordance with "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA 2002) and "EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5)" (EPA 2001, reissued May 2006). To ensure usability, completeness, and compliance with U.S. Environmental Protection Agency (EPA) guidance, QAPP elements are designated throughout this document by EPA guidance-defined groups, identified by numbers in parentheses next to headings and titles (e.g., A1, A2). In addition to the above guidance, data quality objectives (DQOs) were developed using the requirements included in the SOW and in accordance with the "Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4)" (EPA 2006).

The project organization and lines of authority and communication are illustrated schematically on Figure 1.

The Project Coordinator (PC) will be responsible for the implementation of activities identified in the QAPP and will maintain communication with the EPA PC as required to communicate progress and resolve issues that may arise during the implementation of the QAPP, if necessary. The PC has overall authority over the project team and implementation of the QAPP.

The project chemist and Quality Assurance Manager (QAM) will assist in the development and review of project planning documents, evaluation of data, and preparation of deliverables.

Laboratory analysis of project samples will be performed by TestAmerica Analytical Laboratories, Inc. (TestAmerica) located at 11922 E 1<sup>st</sup> Avenue, Spokane, Washington, 509.924-9200. TestAmerica will analyze project samples for nitrate using EPA Method

300.0. Due to a short holding time for nitrate, the laboratory will analyze samples immediately upon receipt.

The Site Safety Coordinator/Sampling Team Leader (SSC/STL) will lead the project sampling team. The sampling team will implement the QAPP and Health and Safety Plan (HSP).

The PC, project chemist, and QAM will develop appropriate corrective actions to address any potential quality assurance issues or deficiencies that may occur. Corrective actions will be communicated to the EPA PC and will be implemented and documented by the STL or laboratory, as required.

## **1.2 Problem Definition/Background (A5)**

### **1.2.1 Purpose**

This QAPP defines and describes the processes and methods that will be employed to perform the Residential Well Sampling required under Section III.D of the AOC SOW. The QAPP was developed to document the type, quantity, and quality of data needed to meet project objectives and support key decisions, and describes the methods for collecting and assessing data collected as part of QAPP implementation.

### **1.2.2 Problem Statement**

Pursuant to Section III.D of the AOC SOW, the Dairies shall offer to provide reverse osmosis (RO) treatment systems, or other alternative water if mutually approved by the EPA and the Dairies, to each residence that does not already have a RO treatment system or alternative water where testing shows that nitrate concentrations in the drinking water supply exceed the nitrate maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) provided that the residence is within:

- The boundary of the Dairy Facilities (Figure 2 and Figure 3), or
- One mile downgradient of the boundary of the Dairy Facilities (Figure 2 and Figure 3).

Collection and analysis of drinking water samples are required in order to determine the need for RO treatment systems or alternative water supply at residences within the boundaries identified in Figure 2, hereafter referred to as the “area of interest”.

For residences where RO systems are in place, no sampling of the water supply will be conducted. The Dairies will offer to provide professional maintenance of these systems at the Dairies cost.

### **1.3 Project/Task Description and Schedule (A6)**

#### **1.3.1 Project/Task Description**

The scope of the Residential Well Sampling includes the collection and analysis of drinking water samples from residences within the area of interest defined in Section 1.2.2.

Activities to be performed as part of the Residential Wells Sampling are as follows:

- Identification of residences located within the area of interest (Figure 2)
- Communication with residents within the area of interest via:
  - Notification letters mailed prior to Residential Well Sampling
  - Home visits during Residential Well Sampling
  - “Not-at-home” notification left at residences where contact could not be made with the occupants.
- Collection of drinking water samples for nitrate concentration field screening at residences where permission to collect samples is granted. Drinking water samples will be screened in the field at the time of collection using Hach test strips to estimate nitrate concentrations.
- At residences where field screening samples indicate nitrate concentrations greater than 5 mg/L, drinking water samples will be collected and shipped to a certified drinking water laboratory for nitrate analysis. The sample collection procedure is presented in Section 2.2 of this QAPP.
- Following laboratory analysis, residences where nitrate concentrations in drinking water exceed the 10 mg/L MCL will be offered RO treatment systems or other alternative water.

- Where offers of RO treatment systems of alternative water are accepted, they will be installed and maintained by the Dairies.

## 1.3.2 Project Schedule

<b>Task</b>	<b>Start Date</b>	<b>Completion Date</b>
Notification Letter Mailing	Upon EPA Approval of the QAPP	1 week following EPA Approval of the QAPP
Residential Well Sampling	1 week following completion of notification letter mailing	60 days after approval of the QAPP
Notification of Refusals to EPA	As received	60 days after approval of QAPP
Submittal of screening data and preliminary laboratory results to EPA	14 days after data are initially received. Weekly submittals on Monday of each week during active sampling.	14 days after completion of sampling activities
Submittal of validated laboratory analytical data to EPA and resident	21 days after sample collection. Weekly submittals to EPA on Monday of each week during active sampling.	21 days after completion of sampling activities
Offer of RO system or alternative water to residence with nitrate concentration greater than 10 mg/L, and provision of RO system or alternate water if offer is accepted.	As data is received.	30 days after receipt of validated data
Residential Well Sampling Report		150 days after approval of the QAPP

## **1.4 Quality Objectives and Criteria (A7)**

### **1.4.1 Project Quality Objectives**

Project-specific Data Quality Objectives (DQOs) were identified through the DQO process (EPA 2006) to meet the data user's needs for each activity. The specific data needs for the Residential Wells Sampling focus on nitrate concentrations in groundwater. The DQO decision-making process for the Residential Wells Sampling is described in Appendix A.

The data needs for the Residential Wells Sampling are summarized in Table 1. This table lists the specific analytes, regulatory limits, and data uses. The different criteria that were evaluated to develop the data needs are described in the DQO decision-making process (Appendix A).

### **1.4.2 Measurement Performance Criteria**

Measurement performance criteria are often expressed in terms of data quality indicators. The principal indicators of data quality are precision, accuracy, representativeness, comparability, and completeness (PARCC criteria). The following are definitions for the assessment of data quality indicators summarized from "Guidance for Quality Assurance Project Plans (EPA QA/G-5) (EPA 2002):

**Precision** is the measure of agreement among repeated measurements of the same property under identical or substantially similar conditions and is calculated as either the range or standard deviation.

**Accuracy** is a measure of the overall agreement of a measurement to a known value. It includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations.

**Representativeness** is a qualitative term that expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process conditions, or an environmental condition.

**Comparability** is a qualitative term that expresses the measure of confidence that one data set can be compared to another and can be combined for the decision to be made.

**Completeness** is a measure of the amount of valid data needed to be obtained from a measurement system.

Precision, accuracy, and completeness criteria are shown in Table 2.

#### **1.5 Special Training/Certification (A8)**

All personnel working on the project site will be trained in health and safety in accordance with the Health and Safety Plan (HSP). All personnel will comply with the requirements included in the HSP regarding site-specific hazards and conditions. Training requirements, documentation, and tracking are included in the HSP.

The laboratory performing analysis of drinking water supply samples is TestAmerica Analytical Laboratories, Inc. (TestAmerica). Section III.A.3.a of the AOC SOW requires laboratories analyzing drinking water samples to be certified drinking water laboratories. TestAmerica's certification is included in Appendix B. TestAmerica will comply with the requirements for analytical laboratories described in Section III.A.3.c of the AOC SOW.

#### **1.6 Documents and Records (A9)**

All field activities will be documented in field notebooks and the appropriate field forms included in Appendix C. Field documentation may include, but is not limited to:

- Residence sampling form
- Sample container labels
- Hach test strip log.

All field team-generated documentation will be compiled and submitted to the STL and PC for distribution, inclusion in the project records, and use in subsequent reporting.

Laboratory documentation will be provided in accordance with the methods and protocols discussed in Section 4 of this QAPP. Hach test strip and laboratory analytical data will be distributed to the PC. The PC will distribute the data to the EPA, project team members, and others as required.

## **2. Data Generation and Acquisition (Group B)**

### **2.1 Sampling Design (Experimental Design) (B1)**

Considering the primary objective of the project (as detailed in Section 1.2.2), a field activity and sampling strategy has been designed to ensure that the residences within the area of interest are identified; efforts are made to gain permission, sample, and analyze the drinking water at each residence; and that RO treatment systems or alternative water supply is offered where nitrate concentrations exceed the MCL.

#### **2.1.1 Residence Identification and Communication**

Following approval of the QAPP and prior to initiation of field activities, a Residential Well Sampling notification letter will be sent to each of the 178 residences that have been identified within the area of interest. Appendix D lists the 178 residences by street address. A copy of the notification letter is included in Appendix E. The notification letter is in English and Spanish and includes the following information:

- Notification of the purpose of the Residential Well Sampling
- Dates when sampling crews will be in the area
- An invitation for response to:
  - Ask questions about the sampling
- Contact information for both the PC and the EPA PC.

Any responses to notification letters will be documented and categorized as they are received. For residences where positive responses are received, sampling appointments will be scheduled. For negative responses, the name and address associated with the residence will be forwarded to the EPA PC by the PC.

Residences listed in Appendix D will be visited by the field sampling teams. The field teams will include personnel capable of communicating to residents in Spanish, or that such personnel will be available by telephone. Field sampling teams will inform the residents of the Residential Well Sampling and request permission to sample. Where permission is granted, samples will be collected. For residences where permission is denied, the refusal will be documented, and the name and address associated with the residence will be forwarded to the EPA PC by the PC. For residences where no one is present, a "not-at-home" note will be left either on the door or in an area believed to readily visible by the resident. The names and addresses associated with "not-at-home" residences will be forwarded to the EPA PC by the PC. If a positive response for

sampling is received as a result of the “not-at-home” note, a sampling appointment will be scheduled with the resident. Residences that declined sampling via response to the initial notification letter will not be visited by the field sampling teams.

### 2.1.2 Residential Well Sampling

This section presents an overview of the sampling design that field sampling crews will use to collect drinking water samples for nitrate concentration analysis. Section 2.2 presents a detailed description of the sampling methodology that will be employed to collect samples.

Where residents grant permission for the sampling crews to enter the premises, the sampling crews will initially inquire as to presence or absence of (1) a reverse osmosis (RO) system or (2) a water treatment (such as a water softener) system at the residence. If an RO system is present, the sampling team will document the type of system present, including its make and model. The sampling team will inquire if the RO system is professionally maintained, and if so, who performs the maintenance (including contact information, if available). Offers for professional RO system maintenance at the Dairies’ cost will be made to all residences with existing RO systems. No samples will be collected at residences where RO systems are found to be installed.

Upon receiving permission to collect a water sample at the residence, an initial screening sample will be collected. If a water softener is present, field sampling crews will ensure that samples are collected upstream of the treatment system. The screening sample will be analyzed using Hach test strips. If the Hach test strip indicates that nitrate concentrations are less than 5 mg/L, no additional samples will be collected. If the Hach test strip indicates that nitrate concentrations are equal to or greater than 5 mg/L, a sample will be collected as described in Section 2.2 of this QAPP for laboratory analysis. In all cases, the results of the Hach test strip analysis will be shared with the resident and documented on the residence field data sheet and in the Hach test strip log.

Laboratory analytical results will be used to determine the need for an offer of an RO treatment system or alternative water supply. If the nitrate concentration is confirmed by laboratory analysis to be greater than 10 mg/L, an offer will be made. If the nitrate concentration is less than 10 mg/L, no offer will be made. In all cases, the laboratory analytical results will be provided to both the resident and EPA.

## 2.2 Sampling Methods (B2)

This section presents the sampling methodology for the collection of screening and laboratory analytical samples from residences where positive responses to requests for sampling have been obtained. As noted in Section 2.1, initial sampling activities will focus on residences where positive responses have been received from the initial request letter, followed by residences where permission is obtained by site visit. The sampling and site visit activities will be conducted by field teams of 2 field staff.

- a) Ask the resident if an RO system or water softener is present at the residence.
- b) If an RO system is present, visually observe the system to document the make and model. Ascertain and document if the system is professionally maintained. No sample will be collected from the residence.
- c) If a water softener is present, visually verify the location of the system and determine the appropriate location at the residence to collect a water sample upstream of the treatment system or ensure that the treatment system is in "bypass" mode during sampling.
- d) Endeavor to collect the sample from an outdoor hose bib. Outside hose bibs are typically located upstream of treatment systems, and use of an outdoor sampling location will eliminate the need to enter the residence, result in less inconvenience to the resident, and will allow for purge water to be spread on the lawn or other outside area. If an outdoor hose bib is not present or accessible, collect the samples from a utility or kitchen area sink.
- e) If an indoor faucet is to be used for sampling, remove any filters or aerators prior to sampling.
- f) Don clean nitrile gloves and disinfect the hose bib or faucet prior to sampling using a disinfecting spray or wipe and then dry using a clean paper towel.
- g) Fit variable width tubing over the disinfected hose bib or faucet and cut to an appropriate length to allow sampling. If necessary, hose clamps may be used to attach the tubing to the water supply.
- h) After attaching tubing, run the water source for 5 minutes to remove stagnant water from the water system.
- i) After 5 minutes, take a nitrate Hach test strip measurement, following manufacturer instructions.
- j) Shut off the water.
- k) Follow test strip manufacturer instructions to determine the nitrate concentration in the sample.
- l) Record the results on the residence sample sheet and in the test strip result log and share the results with resident.

- m) If the nitrate test strip indicates a nitrate concentration of less than 5 mg/L, disassemble the sampling equipment, restore the resident's property (e.g., aerators, filters, garden hose) to its original location prior to sampling, and depart location.
- n) If the nitrate test strip indicates a nitrate concentration of 5 mg/L or greater, turn on water source and allow it to run for 1 minute.
- o) Fill the sample bottle to within 1 inch of the top and seal with the lid. Do not overflow.
- p) Collect duplicate samples for laboratory analysis at a frequency of one out of every ten samples.
- q) Fill out the chain-of-custody form and sample bottle label, and record sample numbers on the residence sampling field sheet and sample log forms. Unique sample numbers for each residence will be provided to the sample teams by the STL prior to sampling activities. If a duplicate sample is collected, follow the duplicate sample number guidance provided in Section 2.5.2.
- r) Place samples on ice in coolers for shipment to the laboratory.
- s) Disassemble sampling equipment and restore resident's property (e.g., aerators, filters, garden hose) to its original location prior to sampling.
- t) Prior to departing, collect and decontaminate all non-disposable sampling equipment (e.g., hose clamps, screwdrivers) using a disinfectant spray or wipe. All disposable sampling equipment (e.g., tubing, gloves, disinfectant wipes) will be contained in a garbage bag and disposed of in an appropriate trash receptacle identified by the STL at the end of each day.
- u) The GPS coordinates of the location for each well sampled will be measured and recorded. GPS data will include latitude, longitude, and elevation. Coordinates will be recorded in decimal degrees.

### **2.3 Sample Handling and Custody (B3)**

This section describes sample management and documentation procedures that will be followed during the Residential Well Sampling to ensure that samples keep their original condition during sample collection, transportation, storage, and analysis.

The purpose of the chain of custody is to ensure that the possession of samples is traceable from the time of sample collection until the samples are analyzed. A sample is considered to be in custody when:

- It is in your possession.
- It is in your view, after being in your possession.

- It was in your possession and then you secured it.
- It is in a designated secure area that has restricted access.

To ensure proper control of samples in the field, it is important that as few people as possible handle the samples. The field sampler is the primary person responsible for the care and custody of samples until they are transferred or shipped. The PC and STL will determine if proper custody procedures have been followed during field activities and, if deficiencies are found, will determine if additional sample collection is warranted.

All samples will be accompanied by a chain-of-custody record. When custody of samples is transferred, the individuals relinquishing and receiving the samples will sign and date the chain-of-custody record. The chain-of-custody record documents custody transfer from the sampler, often through another agent (shipping/transport company), to the laboratory sample custodian.

Prior to shipment, samples will be packaged properly and a chain-of-custody record will accompany each shipping container. All shipping containers will be sealed with custody seals for shipment/transport to the laboratory. Custody seals will be placed in a manner that will indicate if the container has been opened during shipment. Courier names and other pertinent information will be documented on the chain-of-custody record. All shipments will be accompanied by the chain-of-custody record that identifies the contents of the shipment. The original and one copy will be included in the shipment, an additional copy will be retained by the sampler and provided to the PC. All shipping documentation (e.g., freight bills) will be retained as part of the chain-of-custody documentation by the PC.

All samples collected for laboratory nitrate concentration analysis will be received by Ms. Cat Stapleton at TestAmerica located at 11922 E 1<sup>st</sup> Avenue, Spokane, Washington, 509.924-9200. Upon arrival at the laboratory, the TestAmerica sample custodian will accept custody of the samples from the carrier and enter information about the shipment into a sample receipt log that will include the initials of the person delivering the package and the status of custody seals on the containers. The sample custodian will log in the samples following the laboratory standard operating procedure (SOP). Following sample analysis, the unused portions of all samples will be disposed of by TestAmerica in accordance with their laboratory SOP.

In addition to the chain-of-custody documentation described above, field sampling forms will be completed at each residence and will indicate if samples are collected,

sample numbers, duplicate samples, and other pertinent information including significant events and observations that occur during sampling activities. Sufficient information will be noted on field sampling forms to enable participants to reconstruct events that occurred and to refresh the memory of field personnel if needed. Original copies of all field forms and chain-of-custody documents will be retained by the PC in the project files.

Because of the 48-hour holding time for nitrate analysis by EPA method 300.0, samples will be shipped using an overnight delivery service each day (Monday through Thursday). TestAmerica will analyze the samples immediately upon receipt to ensure holding time compliance.

#### **2.4 Analytical Methods (B4)**

Table 2 presents the analyte, method, container, preservation method, and holding times for the nitrate samples collected during the Residential Wells Sampling.

#### **2.5 Quality Control (B5)**

This section presents the field and laboratory quality control (QC) requirements for Residential Wells Sampling.

##### **2.5.1 Field Quality Control Samples**

The Residential Wells Sampling includes the collection of field QC samples including field duplicates and field blanks. The field duplicate samples will be collected immediately following collection of target samples using the same collection procedures. Field duplicate samples will be collected at a frequency of one in every ten samples. A field blank QC sample will be prepared by the sampling team at the beginning of each sampling day by filling a sample bottle with laboratory supplied deionized water. The field blank will remain in the sample container throughout the day. Field blanks will be prepared for each sample container and will be sent to the laboratory for analysis.

##### **2.5.2 Sample Labeling Methodology**

All samples collected for laboratory analysis will be assigned a unique sample number and will include samples, field duplicates, and field blanks using the nomenclature

system described in this section. Sample identification for well samples, duplicates, and field blanks will be as follows:

Well sample	RW-1###
Field duplicate	RW-2###
Field blank	RW-3###

where "###" is a numerical number pre-assigned to a particular residence. One field duplicate sample will be collected for every ten samples. Field blanks will be prepared daily. For example, sample no. RW-1052 would refer to well sample number 52. Comparatively RW-2003 would refer to field duplicate number 3, and RW-3010 would refer to field blank number 10.

Each sample collected in the field will be labeled for future identification. Sample labels will be filled out as completely as possible by a member of the sampling team prior to the start of the day's field sampling activities. The date, time, sampler's signature, and the last field of the sample identification number should not be completed until the sample is actually collected. All sample labels will be filled out using waterproof ink. At a minimum, each label will contain the following information:

- Sampler's initials
- Sampler's company affiliation
- Site location
- Sample identification number
- Date and time of sample collection
- Analyses required
- Sample matrix
- Sampler's signature.

Sample designation, sampling time and date, sampling personnel, and analyses will also be recorded on the field records, sample labels, and chains of custody.

### 2.5.3 Laboratory Quality Control Procedures

Laboratory QC procedures include the following:

- Nitrate analysis of water samples according to EPA Method 300.0
- Instrument calibration and standards as defined in EPA Method 300.0
- Laboratory blank measurements at a minimum 5 percent or one per batch frequency

- Accuracy and precision measurements at a minimum of one in 20 or one per set
- Data reduction and reporting according to EPA Method 300.0
- Laboratory documentation according to EPA Method 300.0 and laboratory SOP requirements.

## **2.6 Instrument/Equipment Testing, Inspection, and Maintenance**

Instrument maintenance logbooks will be maintained in the laboratory at all times and will include a schedule of maintenance as well as a complete history of past maintenance for equipment used for the analysis of Residential Well Sampling samples.

## **2.7 Instrument/Equipment Calibration and Frequency**

The analytical laboratory will follow all calibration procedures and frequencies specified in EPA Method 300.0.

## **2.8 Inspection/Acceptance of Supplies and Consumable (B8)**

Supplies and consumables will be inspected upon receipt. All sample bottles used for the collection of laboratory analysis samples will be provided by the laboratory and will be new and certified clean. Field sampling team members will make note of the information on the certificate of analysis that accompanies sample containers to ensure that they meet the specifications and guidance for contaminant-free sample containers. Any discrepancies will be brought immediately to the attention of the STL.

## **2.9 Non-direct Measurements (B9)**

No pre-existing data will be used to make decisions in support of the Residential Wells Sampling. All data used to support decision-making will be collected during the Residential Wells Sampling.

## **2.10 Data Management (B10)**

All field data collected during the Residential Wells Sampling will be recorded on field forms. Pertinent information, such as Hach test strip results, will be transferred to an Excel spreadsheet or similar electronic data management tool.

The analytical data obtained from the laboratory will be maintained in an electronic data management tool. All data will undergo review and validation as described in Section 4.

In addition, the data provided to the EPA will be in accordance with the procedures presented in "EPA Region 10 Monitoring and Analytical Data Deliverables Data Submission Process for Water Quality Exchange (WQX) Compatible Deliverables for Yakima Dairies (Docket No. SDWA-10-2013-0080), and "EPA Region 10 Geographic Information System Data Deliverable Guidance for Yakima Dairies (Docket No. SDWA-10-2013-0080). These documents are presented in Appendix F.

Data submitted to the EPA will be provided in the requested format which will be consistent with the examples provided by the EPA to ARCADIS. An example of the required file format was provided to ARCADIS in EPA file R10WQXEDD.zip.

### **3. Assessment and Oversight (Group C)**

#### **3.1 Assessments and Response Actions (C1)**

The PC, QAM, and project chemist will monitor the performance of the QA procedures presented in this QAPP. The PC has the ultimate responsibility for implementation of this QAPP. If problems arise, or if directed by the PC, the QAM will conduct a field audit for the purpose of evaluating compliance with the guidance presented in this QAPP.

Laboratory analysis of samples collected during the Residential Wells Sampling will be conducted by TestAmerica. TestAmerica will be responsible for complying with EPA Method 300.0 and internal SOPs for sample analysis; QC; and instrument testing, inspection, maintenance, and calibration. If deficiencies are noted, TestAmerica will notify the PC. If such cases occur, the PC will notify the EPA PC and corrective action procedures will be implemented.

#### **3.2 Reports to Management (C2)**

Preliminary and validated data reports will be provided by the laboratory to the PC. The PC, QAM, and project chemist will review the data reports from the laboratory and will evaluate the data validation and usability as described in Section 4. Validated data, the validation report, and associated raw data will be submitted to EPA in accordance with the AOC.

A Residential Wells Sampling Report will be created that documents the following:

- All residences identified within the area of interest
- All efforts to contact residents to sample drinking water supplies
- All screening and laboratory analytical results
- Records of offers for treatments systems and resident responses.

The following information will either be supplied by the laboratory as a hard copy deliverables to support project activities, data validation and the documentation of data quality or maintained at the laboratory and available on request:

<b>Data Deliverables (or maintained at the laboratory)</b>
Case narrative including a discussion of nonconformance and corrective actions
Sample data and QC data summary forms
Chain-of-custody (COC) forms, sample receipt forms, logbook pages, shipping manifests
Verification of sample temperature on receipt
Copies of temperature logs for storage coolers used to store samples
Certificate of cleanliness for all laboratory-supplied sample bottles
Internal COC
Copies of SOPs
Sample and Standard preparation logs
Instrument Operating Conditions
Copies of sample analysis logbooks and analyst's notes
Instrument Run Log including copies of autosampler loading and verification of the autosampler loading
Raw data for instrument – hardcopy or electronic for field, calibration, and QC samples
Data review sheets
Example calculations

<b>Data Deliverables (or maintained at the laboratory)</b>
Control charts for method blanks, replicates, matrix spikes, matrix spike duplicates, laboratory control samples, and surrogates
Pertinent Method Detection Limit (MDL) studies and supporting information
Standards, standards reference materials, balance weights, and thermometer certificates
Verification of autopipettors and volumetric glassware
Balance calibration logs
Equipment maintenance records
Consumables acceptance and tracking records
Analyst's demonstration of precision and accuracy

The validated data, the data validation report, and the associated laboratory data will be submitted to the EPA in accordance with the AOC.

#### **4. Data Validation and Usability (Group D)**

##### **4.1 Data Review, Verification, and Validation (D1)**

Data verification will be conducted by the laboratory prior to submission to the PC. Data review, validation, and verification performed by the laboratory will comply with EPA Method 300.0 requirements and laboratory SOPs.

##### **4.2 Verification and Validation Methods (D2)**

Prior to submitting the analytical samples to the laboratory, the sampling team leader or a designate will review the field notes and chain of custody for accuracy and completeness. The notes will be reviewed for appropriate documentation of the field work pertinent activities, including verifying complete residential information. The chain of custodies will be reviewed for appropriate sample nomenclature and selected analysis.

The analytical data generated shall be reduced, validated, and reported by the laboratory as described in EPA Method 300.0 and laboratory SOPs. Data verification will be performed by the laboratory for all analyses prior to the release of the data to ARCADIS. The laboratory will archive the analytical data in their own laboratory data management system. In addition, the project chemist will validate laboratory data upon receipt.

#### 4.2.1 Validation

An ARCADIS chemist will validate laboratory data upon receipt. The chemist will perform a Level II validation consistent with the National Functional Guidelines (EPA 2010). The following checklist will be used in the validation process.

SW-846 300.0 Nitrate	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Ion Chromatography						
Tier II Validation						
Holding times						
Reporting limits (units)						
Blanks						
A. Method blanks						
B. Equipment blanks						
C. Trip blanks						
Laboratory Control Sample (LCS)						
Laboratory Control Sample Duplicate (LCSD)						

SW-846 300.0 Nitrate	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Ion Chromatography					
LCS/LCSD Precision (RPD)					
Matrix Spike (MS)					
Matrix Spike Duplicate (MSD)					
MS/MSD Precision (RPD)					
Field/Lab Duplicate (RPD)					
Dilution Factor					

%RSD      Relative standard deviation

%R      Percent recovery

RPD      Relative percent difference

%D      Percent difference

#### 4.3 Reconciliation with User Requirements (D3)

Analytical data results obtained during the Residential Wells Sampling will be reconciled with precision, accuracy, and completeness criteria shown in Table 2

## **5. References Cited**

U.S. Environmental Protection Agency (EPA). 2001. EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5). Office of Environmental Information, Washington, D.C. EPA/240/B-01/1003. March (reissued 2006).

EPA. 2002. Guidance for Quality Assurance Project Plans (EPA QA/G-5). Office of Environmental Information, Washington, D.C. EPA/240/R-02/009. December.

EPA. 2006. Guidance on Systematic Planning Using Data Quality Objectives Processes (EPA QA/G-4). Office of Environmental Information, Washington, D.C. EPA/240/B-06/001. February.

EPA. 2010. National Functional Guidelines for Inorganic Superfund Data Review. EPA/540/R-10/011. Contract Laboratory Program. January.

EPA. 2013. Administrative Order on Consent (AOC) Docket No. SDWA-10-2013-0080, March 19.

## **6. Certifications**

### **6.1 Cow Palace Certification**

I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Cow Palace LLC

Signature:

A handwritten signature in black ink that reads "R. William Dolsen".

Name:

R. William Dolsen

Title:

President

Date:

April 8, 2013

**6.2 D & A Dairy and George DeRuyter & Son Dairy Certification**

I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

D & A Dairy, LLC (also known as D and A Dairy L.L.C.),  
George DeRuyter & Son Dairy, L.L.C.

Signature:



Name:

Dan DeRuyter

Title:

Member

Date:

4/8/13

**6.3 George & Margaret Certification**

I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George & Margaret, L.L.C.

Signature: Dan DeRuyter

Name: Dan DeRuyter

Title: Member

Date: 4/8/13

**6.4 Liberty Dairy Certification**

I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Liberty Dairy, LLC and its associated dairy facility  
H & S Bosma Dairy

Signature:



Name:

Henry Bosma

Title:

Partner

Date:

4-26-13

**Tables**

**Table 1**  
**Data Needs**  
**Residential Well Sampling**  
**Yakima Valley Dairies**

<b>Matrix</b>	<b>Analyte</b>	<b>Units</b>	<b>Lowest Potential Regulatory Level</b>	<b>Data Use</b>
<b>Drinking Water</b>				
On-site Measurements	Nitrate	mg/L	10	Support decision to collect laboratory sample
Off-site Laboratory	Nitrate	mg/L	10	Support decision for provision of water

**Note:**

mg/L = milligrams per liter

**Table 2**  
**Data Needs**  
**Residential Well Sampling**  
**Yakima Valley Dairies**

Analyte	Method	Reporting Limit	Container	No. of Containers	Hold Time	Preservation	Accuracy	Precision	Completeness
<b>Field Measurements</b>									
Nitrate	Test Strips	1 mg/L	NA	NA	NA	NA	80-120%	+/-20%	90%
<b>Laboratory Measurements</b>									
Nitrate	EPA 300.0	0.2 mg/L	500 ml polye hylene or glass	1	48 hrs	4 °C	80-120%	+/-20%	90%

**Notes:**

EPA = U.S. Environmental Protection Agency

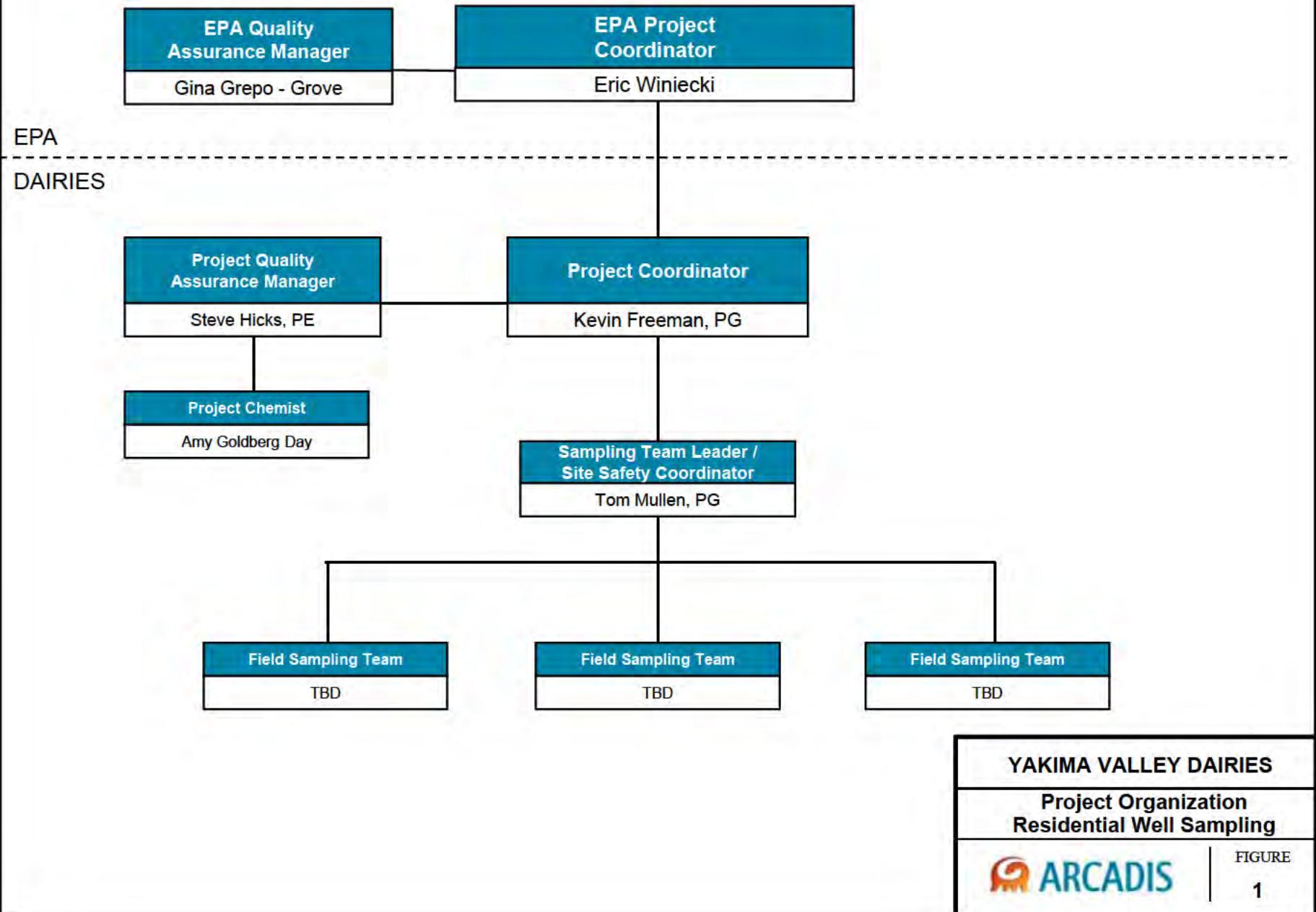
mg/L = milligrams per liter

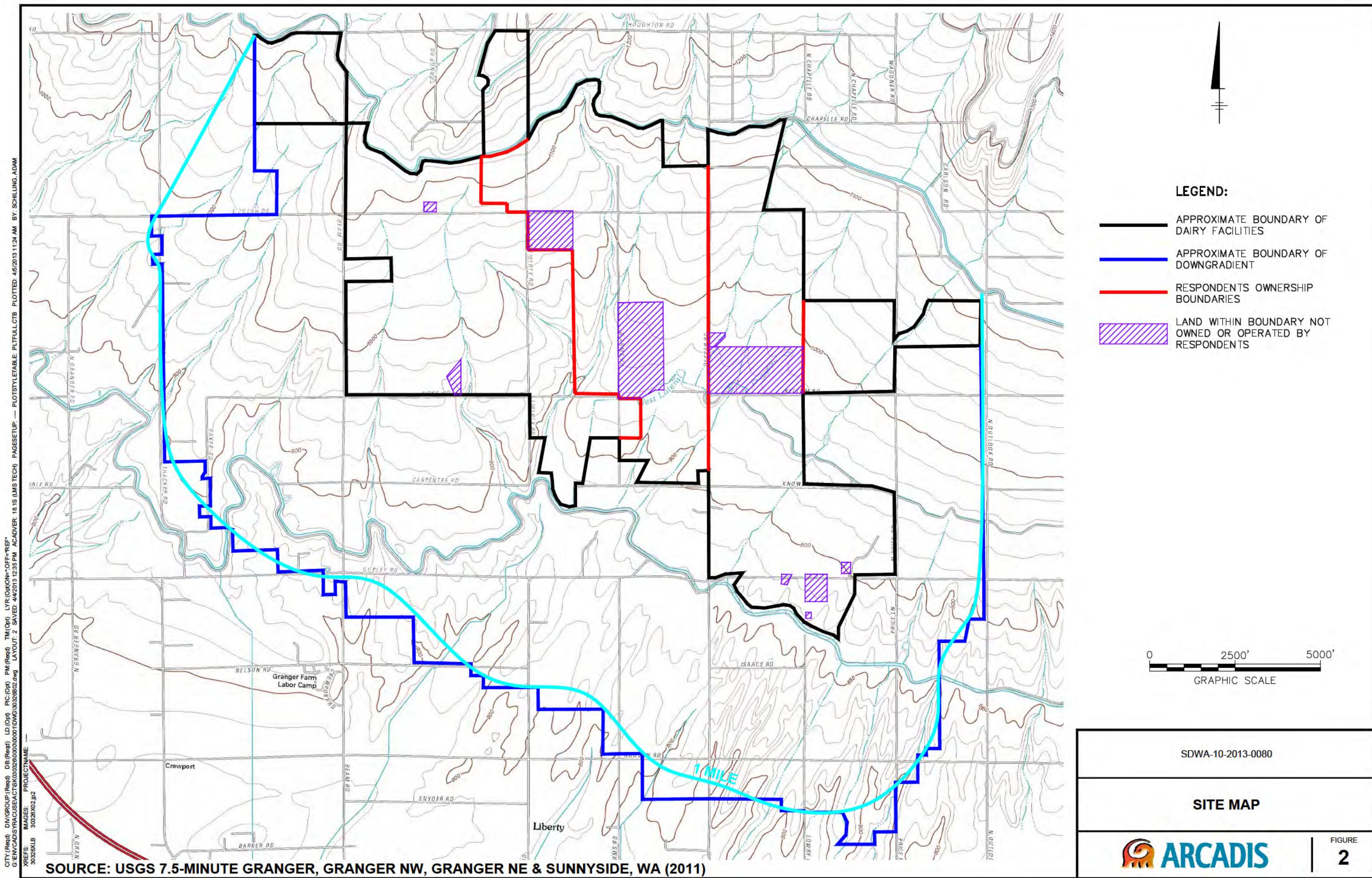
NA = Not applicable

ml = milliliter

°C = celsius

**Figures**





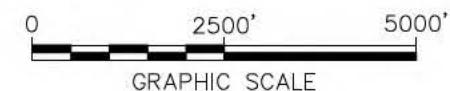
ELKHORN CTR BLOTTED 11/20/2013 12:10 PM BY SCHILLING ADAM

4/4/2013 12:19 PM B1: SIGHTING, ALPIN



**LEGEND:**

- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- APPROXIMATE BOUNDARY OF DOWNGRADIENT
- RESPONDENTS OWNERSHIP BOUNDARIES
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS



SDWA-10-2013-0080

## AERIAL PHOTOGRAPH

## **Appendix A**

Data Quality Objectives

## Appendix A – Data Quality Objectives for Residential Well Sampling

Step 1: State the Problem	<p>Pursuant to Section III.D of the Administrative Order on Consent (AOC) Statement of Work (SOW), the Dairies shall offer to provide reverse osmosis (RO) treatment systems, or other alternative water if mutually approved by EPA and the Dairies, to each residence that does not already have a treatment system or alternative water where testing shows that nitrate concentrations in the drinking water supply exceed the nitrate maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) provided that the residence is within:</p> <ul style="list-style-type: none"> <li>• The boundary of the Dairy Facilities (Figure 2 of the QAPP), or</li> <li>• One mile downgradient of the boundary of the Dairy Facilities (Figure 2 of the QAPP)</li> </ul>
Step 2: Identify the Decision	<p>Primary Question: Do nitrate concentrations in the drinking water supply at the residence exceed the MCL of 10 mg/L?</p>
Step 3: Identify Inputs to the Decision	<ul style="list-style-type: none"> <li>• Location of residences with respect to the area of interest boundary.</li> <li>• Water samples collected from drinking water supply wells located within the area of interest and analyzed for nitrate concentration.</li> </ul>
Step 4: Define the Boundaries of the Study	<ul style="list-style-type: none"> <li>• Spatial Boundary: Residences with drinking water supplies sourced from shallow groundwater within the area of interest boundary shown in Figure 2 of the QAPP.</li> <li>• Temporal Boundary: Pursuant to the AOC SOW, collection of water samples from residences must be completed within 60 days of approval of the QAPP.</li> <li>• Media of Interest: Drinking water sourced from shallow groundwater.</li> </ul>
Step 5: Develop a Decision Rule	<p>Primary Decision Rule: If the nitrate concentration in a residential drinking water well located within the area of interest is confirmed by laboratory analysis to exceed the 10 mg/L MCL, then the Dairies will offer an RO treatment system or other alternative water to the resident.</p>
Step 6: Specify Tolerable Limits on Decision Errors	<p>The Residential Well Sampling was designed to provide complete coverage for residences located within the area of interest. Nitrate concentrations will be measured in drinking water supplies at the residences within the area of interest where permission is given for sampling by the resident. Therefore, sampling will only be conducted at those residences where permission is granted. Potential exists for nitrate concentrations to be greater than the 10 mg/L MCL and not identified in those drinking water samples where sampling permission was denied.</p>
Step 7: Develop the Plan for Obtaining Data	<ol style="list-style-type: none"> <li>1. Residences located within the area of interest will be identified using geographical information system (GIS), county assessor information, and visual observation.</li> <li>2. Residential Well Sampling notification letters will be sent to residences located within the area of interest followed by visits to the residence by the field sampling team.</li> <li>3. Residences that deny sampling permission will be inventoried and the information will be provided to the EPA PC.</li> <li>4. At each resident where sampling permission is granted, samples will be collected to evaluate nitrate concentrations.</li> </ol>

	<ol style="list-style-type: none"><li>5. The initial sample collected at each residence will be a screening sample. Nitrate concentration will be evaluated in the screening sample using a Hach test strip. If the Hach test strip indicates a nitrate concentration of 5 mg/L or greater (half of the MCL), a sample will be collected for laboratory analysis for nitrate using EPA Method 300.0.</li><li>6. If the laboratory analyzed nitrate concentration in a sample exceeds 10 mg/L, then the resident will be offered an RO treatment system or other alternative water.</li></ol>
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**Appendix B**

Laboratory Certification

# WASHINGTON STATE DEPARTMENT OF ECOLOGY

## ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

### SCOPE OF ACCREDITATION

#### TestAmerica Spokane

#### Spokane Valley, WA

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. Accreditation for U.S. Environmental Protection Agency (EPA) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) is for the latest version of the method. SM refers to EPA approved editions of "Standard Methods for the Examination of Water and Wastewater." ASTM is the American Society for Testing and Materials. Other references are described in notes.

Matrix/Analyte	Method	Notes
<b>Drinking Water</b>		
Turbidity	EPA 180.1_2_1993	
Chloride	EPA 300.0_2.1_1993	
Fluoride	EPA 300.0_2.1_1993	
Nitrate	EPA 300.0_2.1_1993	
Nitrite	EPA 300.0_2.1_1993	
Sulfate	EPA 300.0_2.1_1993	
Color	SM 2120 B-01	
Alkalinity	SM 2320 B-97	
Hardness	SM 2340 B-97	
Specific Conductance	SM 2510 B-97	
Solids, Total Dissolved	SM 2540 C-97	
Aluminum	EPA 200.7_4.4_1994	
Barium	EPA 200.7_4.4_1994	
Beryllium	EPA 200.7_4.4_1994	
Cadmium	EPA 200.7_4.4_1994	
Calcium	EPA 200.7_4.4_1994	
Chromium	EPA 200.7_4.4_1994	
Copper	EPA 200.7_4.4_1994	
Iron	EPA 200.7_4.4_1994	
Magnesium	EPA 200.7_4.4_1994	
Manganese	EPA 200.7_4.4_1994	
Nickel	EPA 200.7_4.4_1994	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
Silver	EPA 200.7_4.4_1994	
Sodium	EPA 200.7_4.4_1994	
Zinc	EPA 200.7_4.4_1994	
Mercury	EPA 245.1_3_1994	
Total Coli/Ecoli - count	SM 9223 B (Colilert® QTray)	
Total Coli/Ecoli - detect	SM 9223 B Colilert	1
<b>Non-Potable Water</b>		
Specific Conductance	EPA 120.1_1982	
Turbidity	EPA 180.1_2_1993	
Chloride	EPA 300.0_2.1_1993	
Fluoride	EPA 300.0_2.1_1993	
Nitrate	EPA 300.0_2.1_1993	
Nitrite	EPA 300.0_2.1_1993	
Sulfate	EPA 300.0_2.1_1993	
Chemical Oxygen Demand (COD)	EPA 410.4_2_1993	
Color	SM 2120 B-01	
Alkalinity	SM 2320 B-97	
Hardness	SM 2340 B-97	
Specific Conductance	SM 2510 B-97	
Solids, Total Dissolved	SM 2540 C-97	
Solids, Total Suspended	SM 2540 D-97	
Dissolved Oxygen	SM 4500-O G-01	
Phosphorus, total	SM 4500-P E-99	
Biochemical Oxygen Demand (BOD)	SM 5210 B-01	
Aluminum	EPA 200.7_4.4_1994	
Antimony	EPA 200.7_4.4_1994	
Arsenic	EPA 200.7_4.4_1994	
Barium	EPA 200.7_4.4_1994	
Beryllium	EPA 200.7_4.4_1994	
Boron	EPA 200.7_4.4_1994	
Cadmium	EPA 200.7_4.4_1994	
Calcium	EPA 200.7_4.4_1994	
Chromium	EPA 200.7_4.4_1994	
Cobalt	EPA 200.7_4.4_1994	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
Copper	EPA 200.7_4.4_1994	
Iron	EPA 200.7_4.4_1994	
Lead	EPA 200.7_4.4_1994	
Magnesium	EPA 200.7_4.4_1994	
Manganese	EPA 200.7_4.4_1994	
Molybdenum	EPA 200.7_4.4_1994	
Nickel	EPA 200.7_4.4_1994	
Potassium	EPA 200.7_4.4_1994	
Selenium	EPA 200.7_4.4_1994	
Silver	EPA 200.7_4.4_1994	
Sodium	EPA 200.7_4.4_1994	
Thallium	EPA 200.7_4.4_1994	
Tin	EPA 200.7_4.4_1994	
Vanadium	EPA 200.7_4.4_1994	
Zinc	EPA 200.7_4.4_1994	
Mercury	EPA 245.1_3_1994	
Total Coli/Ecoli - count	SM 9223 B (Colilert® QTray)	

**Solid and Chemical Materials**

pH	EPA 9045D_2002
Aluminum	EPA 6010C_(2/07)
Antimony	EPA 6010C_(2/07)
Arsenic	EPA 6010C_(2/07)
Barium	EPA 6010C_(2/07)
Beryllium	EPA 6010C_(2/07)
Boron	EPA 6010C_(2/07)
Cadmium	EPA 6010C_(2/07)
Calcium	EPA 6010C_(2/07)
Chromium	EPA 6010C_(2/07)
Cobalt	EPA 6010C_(2/07)
Copper	EPA 6010C_(2/07)
Iron	EPA 6010C_(2/07)
Lead	EPA 6010C_(2/07)
Magnesium	EPA 6010C_(2/07)
Manganese	EPA 6010C_(2/07)

TestAmerica Spokane

Matrix/Analyte	Method	Notes
Molybdenum	EPA 6010C_(2/07)	
Nickel	EPA 6010C_(2/07)	
Potassium	EPA 6010C_(2/07)	
Selenium	EPA 6010C_(2/07)	
Silver	EPA 6010C_(2/07)	
Thallium	EPA 6010C_(2/07)	
Vanadium	EPA 6010C_(2/07)	
Zinc	EPA 6010C_(2/07)	
Mercury	EPA 7471B_(1/98)	
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8011-94	
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8011-94	
Aroclor-1016 (PCB-1016)	EPA 8082A_(2/07)	
Aroclor-1221 (PCB-1221)	EPA 8082A_(2/07)	
Aroclor-1232 (PCB-1232)	EPA 8082A_(2/07)	
Aroclor-1242 (PCB-1242)	EPA 8082A_(2/07)	
Aroclor-1248 (PCB-1248)	EPA 8082A_(2/07)	
Aroclor-1254 (PCB-1254)	EPA 8082A_(2/07)	
Aroclor-1260 (PCB-1260)	EPA 8082A_(2/07)	
Total Pet Hydrocarbons - Diesel	WDOE NWTPH-Dx_(1997)	
Total Pet Hydrocarbons - Gasoline	WDOE NWTPH-Gx_(1997)	
1,1,1,2-Tetrachloroethane	EPA 8260C_(8/06)	
1,1,1-Trichloro-2,2,2-trifluoroethane	EPA 8260C_(8/06)	
1,1,1-Trichloro-2-propanone	EPA 8260C_(8/06)	
1,1,1-Trichloroethane	EPA 8260C_(8/06)	
1,1,2,2-Tetrachloroethane	EPA 8260C_(8/06)	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260C_(8/06)	
1,1,2-Trichloroethane	EPA 8260C_(8/06)	
1,1,2-Trichlorofluoroethane	EPA 8260C_(8/06)	
1,1-Dichloro-1-fluoroethane	EPA 8260C_(8/06)	
1,1-Dichloroethane	EPA 8260C_(8/06)	
1,1-Dichloroethylene	EPA 8260C_(8/06)	
1,1-Dichloropropene	EPA 8260C_(8/06)	
1,2,3,4-Diepoxybutane	EPA 8260C_(8/06)	
1,2,3-Trichlorobenzene	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
1,2,3-Trichloropropane	EPA 8260C_(8/06)	
1,2,3-Trimethylbenzene	EPA 8260C_(8/06)	
1,2,4-Trichlorobenzene	EPA 8260C_(8/06)	
1,2,4-Trimethylbenzene	EPA 8260C_(8/06)	
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260C_(8/06)	
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260C_(8/06)	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	EPA 8260C_(8/06)	
1,2-Dichloro-1,1,2-trifluoroethane	EPA 8260C_(8/06)	
1,2-Dichlorobenzene	EPA 8260C_(8/06)	
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260C_(8/06)	
1,2-Dichloropropane	EPA 8260C_(8/06)	
1,2-Dimethoxyethane	EPA 8260C_(8/06)	
1,3,5-Trimethylbenzene	EPA 8260C_(8/06)	
1,3-Butanediol	EPA 8260C_(8/06)	
1,3-Dichloro-2-propanol	EPA 8260C_(8/06)	
1,3-Dichlorobenzene	EPA 8260C_(8/06)	
1,3-Dichloropropane	EPA 8260C_(8/06)	
1,3-Dichloropropene	EPA 8260C_(8/06)	
1,4-Butanediol	EPA 8260C_(8/06)	
1,4-Dichloro-2-butene	EPA 8260C_(8/06)	
1,4-Dichlorobenzene	EPA 8260C_(8/06)	
1,4-Difluorobenzene	EPA 8260C_(8/06)	
1,4-Dioxane (1,4- Diethyleneoxide)	EPA 8260C_(8/06)	
1-Butene	EPA 8260C_(8/06)	
1-Chloro-1,2,2-trifluoroethane (Freon 133)	EPA 8260C_(8/06)	
1-Chlorobutane	EPA 8260C_(8/06)	
1-Chlorohexane	EPA 8260C_(8/06)	
1-Heptene	EPA 8260C_(8/06)	
1-Hexene	EPA 8260C_(8/06)	
1-Methyl-2-n-propylbenzene	EPA 8260C_(8/06)	
1-Propene	EPA 8260C_(8/06)	
2,2,4-Trimethylpentane	EPA 8260C_(8/06)	
2,2-Dichloro-1,1,1-trifluoroethane (Freon 123)	EPA 8260C_(8/06)	
2,2-Dichloropropane	EPA 8260C_(8/06)	
2,2-Dimethylbutane	EPA 8260C_(8/06)	
2,2'-Oxybis(1-chloropropane)	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
2,3,4-Trimethylpentane	EPA 8260C_(8/06)	
2,3-Dichloropropene	EPA 8260C_(8/06)	
2,3-Dimethylbutane	EPA 8260C_(8/06)	
2,3-Dimethylpentane	EPA 8260C_(8/06)	
2,4-Dimethylpentane	EPA 8260C_(8/06)	
2-Bromofluorobenzene	EPA 8260C_(8/06)	
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260C_(8/06)	
2-Chloro-2-methylbutane (tert-Amyl chloride)	EPA 8260C_(8/06)	
2-Chloroethanol	EPA 8260C_(8/06)	
2-Chloroethyl vinyl ether	EPA 8260C_(8/06)	
2-Chlorotoluene	EPA 8260C_(8/06)	
2-Ethylhexanol (2-Ethyl-1-hexanol)	EPA 8260C_(8/06)	
2-Ethyltoluene	EPA 8260C_(8/06)	
2-Hexanone	EPA 8260C_(8/06)	
2-Hexene	EPA 8260C_(8/06)	
2-Hydroxypropionitrile	EPA 8260C_(8/06)	
2-Methoxyethanol (Methyl cellosolve)	EPA 8260C_(8/06)	
2-Methyl-1,3-dioxolane	EPA 8260C_(8/06)	
2-Methyl-2-Butene	EPA 8260C_(8/06)	
2-Methylaniline (o-Toluidine)	EPA 8260C_(8/06)	
2-Methylbutadiene (Isoprene)	EPA 8260C_(8/06)	
2-Methylbutane (Isopentane)	EPA 8260C_(8/06)	
2-Methylheptane	EPA 8260C_(8/06)	
2-Methylhexane	EPA 8260C_(8/06)	
2-Methylpentane (Isohexane)	EPA 8260C_(8/06)	
2-methylpropane (Isobutane)	EPA 8260C_(8/06)	
2-Nitropropane	EPA 8260C_(8/06)	
2-Pentanone	EPA 8260C_(8/06)	
2-Picoline (2-Methylpyridine)	EPA 8260C_(8/06)	
3-Bromofluorobenzene	EPA 8260C_(8/06)	
3-Butene-1-ol	EPA 8260C_(8/06)	
3-Chloropropionitrile	EPA 8260C_(8/06)	
3-Ethyltoluene	EPA 8260C_(8/06)	
3-Methyl-1-Butene	EPA 8260C_(8/06)	
3-Methylheptane	EPA 8260C_(8/06)	
3-Methylhexane	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
3-Methylpentane	EPA 8260C_(8/06)	
4-Bromofluorobenzene	EPA 8260C_(8/06)	
4-Chlorotoluene	EPA 8260C_(8/06)	
4-Ethyltoluene	EPA 8260C_(8/06)	
4-Isopropyltoluene (p-Cymene)	EPA 8260C_(8/06)	
4-Methyl-1-Pentene	EPA 8260C_(8/06)	
4-Methyl-2-pentanone (MIBK)	EPA 8260C_(8/06)	
4-Methylaniline (p-Toluidine)	EPA 8260C_(8/06)	
Acetamide	EPA 8260C_(8/06)	
Acetone	EPA 8260C_(8/06)	
Acetonitrile	EPA 8260C_(8/06)	
Acetylene	EPA 8260C_(8/06)	
Acrolein (Propenal)	EPA 8260C_(8/06)	
Acrylamide	EPA 8260C_(8/06)	
Acrylic acid	EPA 8260C_(8/06)	
Acrylonitrile	EPA 8260C_(8/06)	
Adsorbable Organic Halides (AOX)	EPA 8260C_(8/06)	
Allyl alcohol	EPA 8260C_(8/06)	
Allyl chloride (3-Chloropropene)	EPA 8260C_(8/06)	
alpha-Methylstyrene	EPA 8260C_(8/06)	
Benzene	EPA 8260C_(8/06)	
beta-Propiolactone	EPA 8260C_(8/06)	
bis(2-Chloroethyl) sulfide	EPA 8260C_(8/06)	
bis(Chloromethyl)ether	EPA 8260C_(8/06)	
Bromoacetone	EPA 8260C_(8/06)	
Bromobenzene	EPA 8260C_(8/06)	
Bromochloromethane	EPA 8260C_(8/06)	
Bromodichloromethane	EPA 8260C_(8/06)	
Bromoethane (Ethyl Bromide)	EPA 8260C_(8/06)	
Bromoethene	EPA 8260C_(8/06)	
Bromoform	EPA 8260C_(8/06)	
Butyl acetate	EPA 8260C_(8/06)	
Carbon disulfide	EPA 8260C_(8/06)	
Carbon tetrachloride	EPA 8260C_(8/06)	
Chloral hydrate	EPA 8260C_(8/06)	
Chloroacetonitrile	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
Chlorobenzene	EPA 8260C_(8/06)	
Chlorodibromomethane	EPA 8260C_(8/06)	
Chlorodifluoromethane (Freon-22)	EPA 8260C_(8/06)	
Chloroethane (Ethyl chloride)	EPA 8260C_(8/06)	
Chloroform	EPA 8260C_(8/06)	
Chloromethyl methyl ether	EPA 8260C_(8/06)	
Chloroprene (2-Chloro-1,3-butadiene)	EPA 8260C_(8/06)	
cis & trans-1,2-Dichloroethene	EPA 8260C_(8/06)	
cis-1,2-Dichloroethylene	EPA 8260C_(8/06)	
cis-1,3-Dichloropropene	EPA 8260C_(8/06)	
cis-1,4-Dichloro-2-butene	EPA 8260C_(8/06)	
cis-2-Butene	EPA 8260C_(8/06)	
cis-2-Hexene	EPA 8260C_(8/06)	
cis-2-pentene	EPA 8260C_(8/06)	
Cycloate	EPA 8260C_(8/06)	
Cyclohexane	EPA 8260C_(8/06)	
Cyclohexanol	EPA 8260C_(8/06)	
Cyclohexanone	EPA 8260C_(8/06)	
Cyclopentane	EPA 8260C_(8/06)	
Cyclopentene	EPA 8260C_(8/06)	
Decanal	EPA 8260C_(8/06)	
Dibromochloropropane	EPA 8260C_(8/06)	
Dibromofluoromethane	EPA 8260C_(8/06)	
Dibromomethane (Methylene bromide)	EPA 8260C_(8/06)	
Dichlorodifluoromethane (Freon-12)	EPA 8260C_(8/06)	
Dichlorofluoromethane (Freon 21)	EPA 8260C_(8/06)	
Dichlorotetrafluoroethane	EPA 8260C_(8/06)	
Dicyclopentadiene	EPA 8260C_(8/06)	
Diethyl ether	EPA 8260C_(8/06)	
Diethylamine	EPA 8260C_(8/06)	
Diethylene glycol	EPA 8260C_(8/06)	
Dimethyl disulfide	EPA 8260C_(8/06)	
Dimethyl sulfoxide	EPA 8260C_(8/06)	
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	EPA 8260C_(8/06)	
Ethane	EPA 8260C_(8/06)	
Ethanol	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
Ethene	EPA 8260C_(8/06)	
Ethyl acetate	EPA 8260C_(8/06)	
Ethyl acrylate	EPA 8260C_(8/06)	
Ethyl methacrylate	EPA 8260C_(8/06)	
Ethyl tert-Butyl alcohol	EPA 8260C_(8/06)	
Ethylbenzene	EPA 8260C_(8/06)	
Ethylene glycol	EPA 8260C_(8/06)	
Ethylene oxide	EPA 8260C_(8/06)	
Ethylene thiourea	EPA 8260C_(8/06)	
Ethyleneimine	EPA 8260C_(8/06)	
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropan	EPA 8260C_(8/06)	
Fluorobenzene	EPA 8260C_(8/06)	
Fluoromethane (Freon 41)	EPA 8260C_(8/06)	
Heptanal	EPA 8260C_(8/06)	
Hexachlorobutadiene	EPA 8260C_(8/06)	
Hexachloroethane	EPA 8260C_(8/06)	
Iodomethane (Methyl iodide)	EPA 8260C_(8/06)	
Isobutyl alcohol (2-Methyl-1-propanol)	EPA 8260C_(8/06)	
Isopropyl acetate	EPA 8260C_(8/06)	
Isopropyl alcohol (2-Propanol, Isopropanol)	EPA 8260C_(8/06)	
Isopropylbenzene	EPA 8260C_(8/06)	
m+p-xylene	EPA 8260C_(8/06)	
Malononitrile	EPA 8260C_(8/06)	
Methacrylonitrile	EPA 8260C_(8/06)	
Methane	EPA 8260C_(8/06)	
Methanol	EPA 8260C_(8/06)	
Methyl acetate	EPA 8260C_(8/06)	
Methyl acrylate	EPA 8260C_(8/06)	
Methyl bromide (Bromomethane)	EPA 8260C_(8/06)	
Methyl chloride (Chloromethane)	EPA 8260C_(8/06)	
Methyl formate	EPA 8260C_(8/06)	
Methyl methacrylate	EPA 8260C_(8/06)	
Methyl tert-butyl ether (MTBE)	EPA 8260C_(8/06)	
Methylcyclohexane	EPA 8260C_(8/06)	
Methylcyclopentane	EPA 8260C_(8/06)	
Methylene chloride (Dichloromethane)	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
m-Xylene	EPA 8260C_(8/06)	
n, n-Dimethylformamide	EPA 8260C_(8/06)	
n-Amyl acetate	EPA 8260C_(8/06)	
n-Amyl alcohol	EPA 8260C_(8/06)	
Naphthalene	EPA 8260C_(8/06)	
n-Butane	EPA 8260C_(8/06)	
n-Butyl alcohol (1-Butanol, n-Butanol)	EPA 8260C_(8/06)	
n-Butylbenzene	EPA 8260C_(8/06)	
n-Butylcyclopentane	EPA 8260C_(8/06)	
n-Heptane	EPA 8260C_(8/06)	
n-Hexane	EPA 8260C_(8/06)	
Nitrobenzene	EPA 8260C_(8/06)	
n-Nitroso-di-n-butylamine	EPA 8260C_(8/06)	
n-Nonane	EPA 8260C_(8/06)	
n-Octane	EPA 8260C_(8/06)	
n-Pentane	EPA 8260C_(8/06)	
n-Propane	EPA 8260C_(8/06)	
n-Propanol (1-Propanol)	EPA 8260C_(8/06)	
n-Propylamine	EPA 8260C_(8/06)	
n-Propylbenzene	EPA 8260C_(8/06)	
o-Xylene	EPA 8260C_(8/06)	
p-Diethylbenzene	EPA 8260C_(8/06)	
Pentachloroethane	EPA 8260C_(8/06)	
Pentafluorobenzene	EPA 8260C_(8/06)	
Propargyl alcohol	EPA 8260C_(8/06)	
Propionitrile (Ethyl cyanide)	EPA 8260C_(8/06)	
Propyne	EPA 8260C_(8/06)	
Purgeable Organic Halides	EPA 8260C_(8/06)	
p-Xylene	EPA 8260C_(8/06)	
Pyridine	EPA 8260C_(8/06)	
Sec-Amyl Alcohol (2-Pentanol)	EPA 8260C_(8/06)	
sec-Butylbenzene	EPA 8260C_(8/06)	
S-Methyl thioacetate (S-Methyl etanethioate)	EPA 8260C_(8/06)	
Styrene	EPA 8260C_(8/06)	
tert-Amyl alcohol (TAA)	EPA 8260C_(8/06)	
tert-Amyl ethyl ether (TAEE)	EPA 8260C_(8/06)	

TestAmerica Spokane

Matrix/Analyte	Method	Notes
tert-amylmethylether (TAME)	EPA 8260C_(8/06)	
tert-Butyl alcohol	EPA 8260C_(8/06)	
tert-Butylbenzene	EPA 8260C_(8/06)	
Tetrachloroethylene (Perchloroethylene)	EPA 8260C_(8/06)	
Tetrahydrofuran (THF)	EPA 8260C_(8/06)	
Toluene	EPA 8260C_(8/06)	
Total Trihalomethanes	EPA 8260C_(8/06)	
Total Volatile Petroleum Hydrocarbons (VPH)	EPA 8260C_(8/06)	
trans-1,2-Dichloroethylene	EPA 8260C_(8/06)	
trans-1,3-Dichloropropylene	EPA 8260C_(8/06)	
trans-1,4-Dichloro-2-butene	EPA 8260C_(8/06)	
trans-2-Butene	EPA 8260C_(8/06)	
trans-2-Hexene	EPA 8260C_(8/06)	
trans-2-pentene	EPA 8260C_(8/06)	
Trichloroethene (Trichloroethylene)	EPA 8260C_(8/06)	
Trichlorofluoromethane (Fluorotrichloromethane, Fr)	EPA 8260C_(8/06)	
Triethylamine	EPA 8260C_(8/06)	
Trifluoromethane (Freon 23)	EPA 8260C_(8/06)	
Vinyl acetate	EPA 8260C_(8/06)	
Vinyl bromide	EPA 8260C_(8/06)	
Vinyl chloride	EPA 8260C_(8/06)	
Xylenes (total)	EPA 8260C_(8/06)	
2-Methylnaphthalene	EPA 8270D_(2/07)	
Acenaphthene	EPA 8270D_(2/07)	
Acenaphthylene	EPA 8270D_(2/07)	
Anthracene	EPA 8270D_(2/07)	
Benzo(a)anthracene	EPA 8270D_(2/07)	
Benzo(a)pyrene	EPA 8270D_(2/07)	
Benzo(g,h,i)perylene	EPA 8270D_(2/07)	
Benzo(k)fluoranthene	EPA 8270D_(2/07)	
Benzo[b]fluoranthene	EPA 8270D_(2/07)	
Biphenyl	EPA 8270D_(2/07)	
Chrysene	EPA 8270D_(2/07)	
Dibenz(a,h) acridine	EPA 8270D_(2/07)	
Dibenz(a,h) anthracene	EPA 8270D_(2/07)	
Dibenz(a,j) acridine	EPA 8270D_(2/07)	

TestAmerica Spokane

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Matrix/Analyte	Method	Notes
Dibenzo(a,e) pyrene	EPA 8270D_(2/07)	
Fluoranthene	EPA 8270D_(2/07)	
Fluorene	EPA 8270D_(2/07)	
Indeno(1,2,3-cd) pyrene	EPA 8270D_(2/07)	
Naphthalene	EPA 8270D_(2/07)	
Phenanthrene	EPA 8270D_(2/07)	
Pyrene	EPA 8270D_(2/07)	
Ignitability	EPA 1010A - 2004	

**Accredited Parameter Note Detail**

(1) Interim accreditation pending the successful completion of an on-site audit to verify method capabilities (WAC 173-50-100).



01/08/2013

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Authentication Signature

Date

Alan D. Rue, Lab Accreditation Unit Supervisor

**Analytical Method Information**

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Blank Spike / LCS %R	RPD
<b>Nitrate 300.0 in Water (EPA 300.0)</b>							
Preservation:	Store cool at 4°C						
Container:	Glass or Plastic		Amount Required: 250 mls		Hold Time: 2 days		
Nitrate-Nitrogen	0.100	0.200 mg/l		13.1	80 - 120	12.1	90 - 110
							20

## **Appendix C**

Field Forms

## RESIDENTIAL WELL SAMPLING RECORD

SAMPLE ID: \_\_\_\_\_

Project No: \_\_\_\_\_ Project Name: Yakima Valley Dairies \_\_\_\_\_ Date: \_\_\_\_\_

Parcel No: \_\_\_\_\_

Address: \_\_\_\_\_

Sample Collection Team: \_\_\_\_\_

Weather (at time of sample collection) \_\_\_\_\_

Treatment System Present: Yes \_\_\_\_\_ No \_\_\_\_\_ Type of Treatment System \_\_\_\_\_

Filters or Aerators Present: Yes \_\_\_\_\_ No \_\_\_\_\_ Treatment System Bypassed or Filters/Aerators Removed: Yes \_\_\_\_\_ No \_\_\_\_\_

Where Sample Was Taken (hose bib, indoor faucet, etc.): \_\_\_\_\_

### HACH TEST

INSTRUMENTS (indicate make, model, i.d.): \_\_\_\_\_

Test Strip >5mg/l: Yes \_\_\_\_\_ No \_\_\_\_\_ Test Strip Result: \_\_\_\_\_

### QUALITY ASSURANCE

Nitrile Gloves: Yes \_\_\_\_\_ No \_\_\_\_\_ Disinfect Hose Bib/Faucet: Yes \_\_\_\_\_ No \_\_\_\_\_

Purge Water Before Hach Test: Yes \_\_\_\_\_ No \_\_\_\_\_ Purge Water Prior to Collecting Sample Yes \_\_\_\_\_ No \_\_\_\_\_

### SAMPLING INVENTORY

Bottles Collected				Filtered (Y/N)	Preserved (type)	Analysis	Remarks (dups, blanks, QC)	
Date/Time	Sample ID	Container (glass, plastic)	Quantity/ Vol					

### SAMPLING LOCATION MAP

(reference permanent landmarks, indicate scale, approx. North, direction of flow)

Chain-of-Custody Record No. \_\_\_\_\_

#### ABBREVIATIONS:

ft. - feet

C - Celsius

cfs - cubic feet per second

gal. - gallons

gpm - gallons per minute

ARCADIS U.S., INC.  
695 NORTH LEGACY RIDGE DRIVE  
SUITE 200  
LIBERTY LAKE, WASHINGTON 99019  
509.928.3369

**HACH TEST STRIP LOG  
RESIDENTIAL WELL SAMPLING  
YAKIMA VALLEY DAIRIES**

**HACH TEST STRIP LOG  
RESIDENTIAL WELL SAMPLING  
YAKIMA VALLEY DAIRIES**

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RESIDENTIAL WELL SAMPLING  
YAKIMA VALLEY DAIRIES**

**SAMPLE LOG  
RESIDENTIAL WELL SAMPLING  
YAKIMA VALLEY DAIRIES**

**SAMPLE LOG  
RESIDENTIAL WELL SAMPLING  
YAKIMA VALLEY DAIRIES**

## **Appendix D**

### Sampling Locations

**Appendix D**  
**Sampling Locations**  
**Residential Well Sampling**  
**Yakima Valley Dairies**

## Appendix D

### Sampling Locations

#### Residential Well Sampling

#### Yakima Valley Dairies

## Appendix D

### Sampling Locations

#### Residential Well Sampling

#### Yakima Valley Dairies

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#### Residential Well Sampling

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## Appendix D

### Sampling Locations

#### Residential Well Sampling

#### Yakima Valley Dairies

## Appendix D

### Sampling Locations

#### Residential Well Sampling

#### Yakima Valley Dairies

## **Appendix E**

Communication/Notification  
Documents



ARCADIS U.S., Inc.  
695 North Legacy Ridge Drive  
Suite 200  
Liberty Lake  
Washington 99019  
Tel 509 928 3369  
Fax 509 928 3075  
[www.arcadis-us.com](http://www.arcadis-us.com)

[RecipientName]  
[Address Max. 6 lines]

Dear Resident and/or Owner:

Date:  
[MonthDay, Year]

As part of the recent agreement between the U.S. Environmental Protection Agency (the “EPA”) and several Yakima Valley Dairies (the “Dairies”), this residence may be entitled to a drinking water treatment system at no cost. **PLEASE READ THIS LETTER.** ARCADIS U.S., Inc. (“ARCADIS”) is employed to test private drinking water wells located within one mile of the southern edge of these Dairies. **You received this letter because, if a drinking water well is located at this residence, the well is located within the testing boundary.** The testing will measure the amount of nitrate present in the water.

**ARCADIS representatives will visit this residence sometime after May XX.** We will be visiting residences Sunday through Thursday, between the hours of 8 am and 8 pm. **If you wish to arrange a time that is convenient to you, please contact the ARCADIS Project Coordinator listed below.** At the time of our visit, the ARCADIS representative will ask permission of the resident to obtain a sample of well water from a water tap or faucet. The water sample will be screened for nitrate using a chemical test strip. If the chemical test strip shows that the water contains more than 5 parts per million of nitrate, an additional sample will be collected and sent to a testing laboratory for further analysis. If this analysis finds that the water contains more than the EPA Maximum Contaminant Level for nitrate of 10 parts per million, the Dairies will offer to install and maintain a reverse osmosis water filter at no cost to the residence. This filter will reduce the amount of nitrate in the residence’s drinking water to below the Maximum Contaminant Level.

**If you have any questions or concerns, we urge you to contact either of the following:**

Kevin Freeman  
Project Coordinator  
ARCADIS  
695 N. Legacy Ridge Drive, Suite 200  
Liberty Lake, WA 99019  
855-509-WELL (9355) Toll-Free  
[YakimaDairies@arcadis-us.com](mailto:YakimaDairies@arcadis-us.com)

Eric Winiecki  
EPA Project Coordinator  
U.S. EPA, Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
206-553-6904  
[Winiecki.Eric@epa.gov](mailto:Winiecki.Eric@epa.gov)

We look forward to the opportunity to visit your residence and offer this service. Thank you for your time.

Sincerely,

**ARCADIS U.S., Inc.**

[RecipientName]  
[Address Max. 6 lines]

ARCADIS U.S., Inc.  
695 North Legacy Ridge Drive  
Suite 200  
Liberty Lake  
Washington 99019  
Tel 509 928 3369  
Fax 509 928 3075  
[www.arcadis-us.com](http://www.arcadis-us.com)

Estimado Residente y/o Propietario:

Date:  
[MonthDay, Year]

Como parte del reciente acuerdo entre la Agencia de Protección Ambiental de Estados Unidos (EPA) y varias lecherías, Yakima Valley Dairies (Lecherías), esta residencia podría calificar para la instalación de un sistema de tratamiento de agua potable sin costo para usted. **POR FAVOR LEA ESTA CARTA.** ARCADIS U.S., Inc. (ARCADIS) ha sido contratado para recolectar muestras de agua potable de pozos privados ubicados a una milla de la orilla sur de estas Lecherías. La prueba mide la cantidad de nitrato presente en el agua. **Usted ha recibido esta carta porque un pozo de agua potable se encuentra en ésta residencia, y está ubicado dentro de los límites del área de muestreo.**

**Un representante de ARCADIS visitará esta residencia después del XX Mayo.** Visitaremos las residencias de lunes a viernes, entre las 8 am y las 5 pm. **Si usted desea agendar una visita a una hora que sea conveniente para usted, por favor comuníquese con el Coordinador de Proyecto de ARCADIS detallado abajo.** Al momento de nuestra visita, el representante de ARCADIS pedirá permiso al residente para obtener una muestra de agua de la llave o grifo proveniente del pozo. La muestra de agua será analizada para determinar el contenido de nitrato usando una tira de prueba química. Si la tira de análisis química muestra que el agua contiene más de 5 partes por millón de nitrato, una muestra adicional será recogida y enviada a un laboratorio para análisis adicional. Si el resultado de este análisis muestra que el agua contiene más que el nivel máximo de contaminante de nitratos de 10 partes por millón establecido por EPA, las Lecherías se ofrecerán para instalar y mantener un filtro de agua de osmosis inversa sin costo alguno para la residencia. Este filtro reducirá la cantidad de nitrato en el agua potable de la residencia por debajo del nivel máximo de contaminante.

**Si usted tiene alguna pregunta o duda, le instamos a comunicarse con cualquiera de los siguientes:**

Kevin Freeman  
Coordinador de Proyecto  
ARCADIS  
695 N. Legacy Ridge Drive, Suite 200  
Liberty Lake, WA 99019  
855-509-WELL (9355) *Llamada gratuita*  
[YakimaDairies@arcadis-us.com](mailto:YakimaDairies@arcadis-us.com)

Eric Winiecki  
EPA Coordinador de Proyecto  
U.S. EPA, Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
206-553-6904  
[Winiecki.Eric@epa.gov](mailto:Winiecki.Eric@epa.gov)

Esperamos con interés la oportunidad de visitar su residencia y ofrecer este servicio. Gracias por su tiempo.

Sinceramente,

**ARCADIS U.S., Inc.**

# SORRY WE MISSED YOU

An ARCADIS representative stopped at this residence today at \_\_\_\_\_  
to sample the nitrate level in your drinking water. **We would like to return  
soon and test your drinking water.** To have ARCADIS return to this  
residence and test the nitrate level in your drinking water, please call:  
\_\_\_\_\_ at \_\_\_\_\_

and we will arrange a time to return that is convenient to you. **If you have  
any questions about this testing,** please contact either of the following:



**Kevin Freeman**  
695 N. Legacy Ridge Drive, Suite 200  
Liberty Lake, WA 99019  
**Phone: 855-509-WELL (9355) [Toll-Free]**  
**E-mail: YakimaDairies@arcadis-us.com**



**Eric Winiecki**  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
**Phone: 206-553-6904**  
**E-mail: Winiecki.Eric@epa.gov**

# SORRY WE MISSED YOU

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**Phone: 206-553-6904**  
**E-mail: Winiecki.Eric@epa.gov**

# Sentimos no haberlo encontrado

Un representante de ARCADIS estuvo hoy en esta residencia a las \_\_\_\_\_  
para tomar una muestra del agua potable para medir el contenido de nitrato. **Nos**  
**interesa volver pronto para tomar la muestra de agua potable.** Para agendar  
una visita de toma de muestra por favor comunicarse con ARCADIS llamando a

AM  
PM

\_\_\_\_\_ al \_\_\_\_\_  
y coordinaremos una hora que sea conveniente para usted. **Si tiene dudas al  
respecto de este muestreo** por favor comuníquese con uno de los siguientes  
contactos :



**Kevin Freeman**  
695 N. Legacy Ridge Drive, Suite 200  
Liberty Lake, WA 99019  
**Teléfono: 855-509-WELL (9355)** *Llamada gratuita*  
**E-mail: YakimaDairies@arcadis-us.com**



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## **Appendix F**

EPA Deliverable Guidance  
Documents

**EPA Region 10**  
**Monitoring and Analytical Data Deliverables**  
**Data Submission Process for WQX Compatible Deliverables**  
**For Yakima Dairies**  
**(Docket No. SDWA-10-2013-0080)**

Water Quality Exchange (WQX) is EPA's national database for long term storage of environmental monitoring data. Data that are placed in WQX are available to the public via both table-downloading functionality and map viewing applications deployed by EPA Headquarters. EPA Region 10 maintains a local version of WQX (called AWQMS) from which project-specific data mapping applications are served. Together these databases and mapping applications provide critical data-sharing and archiving functionality to project teams, external partners and stakeholders, and the public.

Data deliverables must contain the information specified in the Region 10 WQX Electronic Data Deliverable Specifications document (R10WQXEDD), contained in the attached zip file.

**Data Submission Process for WQX Compatible Data**

Monitoring and analytical data shall be submitted in tab-delimited text files prepared in accordance with specifications in the Region 10 WQX Electronic Data Deliverable (R10WQXEDD) which accompanies this document in zip file format (R10WQXEDD.zip).

Completed data files must be sent to EPA Region 10 via email. Each submittal must be accompanied by a cover letter that includes the following information:

- Submitting entity's name, affiliation, physical address, phone number, and email address
- Point of contact name, phone number, and email address
- Date of submittal
- Data file type, data file name, number of records
- Yakima Dairies (Docket No. SDWA-10-2013-0080)
- Comments or other information relating to the data submittal

**Format of WQX Compatible Electronic Data Deliverables**

All electronic data deliverables shall be reviewed for completeness as well as compliance with the R10WQXEDD specifications prior to submittal to EPA Region 10. The submitting entity is responsible for the content and quality of the data provided. If the deliverable is incomplete or erroneous, corrected data shall be re-submitted.

There are three general categories of data that are addressed in the attached R10WQXEDD: projects; stations; and physical and chemical results data. The R10WQXEDD provides detailed specifications on how each category of data should be formatted, identifies allowable values for the data fields (also known as data codes or valid values), and provides example data submittals.

Data shall be prepared as tab-delimited text files with column headers. Many software products allow for export of tab delimited text files (including Excel, Access, Notepad, and Open Office products). No other delimiters, such as quotation marks, commas, colons, or semi-colons shall be included in the files. No tabs shall be included in the actual data values themselves, and additional limitations on the use of special characters are identified in the R10WQXEDD. A set of allowable values are identified in the R10WQXEDD; however, because these may have been updated since release of the R10WQXEDD, referencing the most current list is recommended. It is available at: [http://www.epa.gov/storet/wqx/wqx\\_getdomainvalueswebService.html](http://www.epa.gov/storet/wqx/wqx_getdomainvalueswebService.html).

The attached R10WQXEDD.zip file contains the R10 WQX Electronic Data Deliverable (R10WQXEDD). It includes the following three templates which specify the format of data deliverables:

- R10WQXEDDPart1-ProjectandMonitorLocationTemplate.xlsx
- R10WQXEDDPart2-ActivitiesAndResultsTemplate.xlsx
- R10WQXEDDTemplateExamples.xlsx

**EPA Region 10**  
**Geographic Information Systems Data Deliverable Guidance**  
**For Yakima Dairies**  
**(Docket No. SDWA-10-2013-0080)**

### **Introduction and Scope**

This document is intended to provide specific requirements and file delivery formats for Geographic Information System (GIS) products which are generated by external entities for submission to EPA. These products include GIS and imagery files.

### **GIS Data Files**

GIS data files must be in a format specified in this document. All electronic geospatial data, whether vector or raster, must include a correct definition of the map projection and coordinate system, either embedded in, or associated with, the data file. In the case of CAD data, the projection must NOT be in page space or a custom site-specific projection. All CAD data shall be in known real world coordinate space, ideally in geographic/decimal degrees/NAD83. Should tabular data containing attribute information be appropriate to connect to location information then documentation must be provided that describes the nature of the relationship between the location data and tabular data, including cardinality, primary and foreign keys, and field definitions. Should coordinate information be provided in tabular format it should contain at minimum the following fields:

- ID – a unique identifier given to each feature
- Latitude – the Y coordinate in decimal degrees
- Longitude – the X coordinate in decimal degrees
- Horizontal Datum – the datum of the coordinates
- Collection Method – if known provide a brief description (e.g. GPS, address geocoding, map interpolation)

Additionally, all static maps must be in an electronic Adobe PDF format with fonts embedded and at a resolution of 300 dots per inch (dpi) or greater. Finally, all ArcMap documents (.mxd) or equivalent map document files used in final map production are also required for delivery to EPA with accompanying data in a stand-alone directory structure. Map document (.mxd) formats also need to be configured to use relative paths and not be set to use a printer-specific paper setting.

### **Metadata and Projection Requirements**

Federal Geographic Data Committee (FGDC) compliant metadata on all GIS data files must be developed for deliverables. It is important to understand that deliverables are not considered complete without metadata. Region 10 also requires that all dynamic maps (ArcMap documents) have metadata completed. The Content Standard for Digital Geospatial Metadata can be found at

<http://www.fgdc.gov/>. Metadata, including information about the data's projection, can be developed using one of several built-in or add on tools within a GIS, and typically is associated with the geometry file as an XML file. EPA has created the EPA Metadata Editor (EME) which is available for free download from: <https://edg.epa.gov/EME/> and this tool can be used to help create FGDC compliant metadata.

All GIS files submitted to EPA must have spatial reference information that describes the projection, datum, and where applicable the collection methods. All vector data must be submitted in geographic coordinate system, decimal degree units, and either NAD83 or WGS84 datum. Raster data, such as aerial photographs may be submitted in their native projection, and maps should be in the appropriate projection/coordinate system for the area depicted.

### **Delivery Requirements and Standard Organizational Structures**

EPA will accept data delivered on CD-ROM, DVD, or external hard drive, as well as direct electronic submission via email or FTP site.

A directory structure and readme text file in the upper level directory that describes the structure are required. A recommended directory structure is as follows:

#### **<Project\_Name>**

- |\_ Docs** (reports, SOPs, correspondence, and other such documents)
- |\_ Images** (aerial photos, satellite imagery, logos, DEMs, and other raster type data)
- |\_ Maps** (MXDs and PDFs. Map names should use the project name as a prefix)
- |\_ Shapes** (geodatabases, shape files, and other approved vector data formats)
- |\_ Source** (original unmodified data that may have been acquired from external/internal sources)
- |\_ Tables** (MS-Access databases, spreadsheets, delimited text files, or other such tabular data not stored in a geodatabase)

File naming conventions shall be descriptive, dated, consistent, and contain no spaces or special characters. An underscore may be used in lieu of a space.

## EPA Acceptable Data Formats

The following file formats are considered acceptable and all maps and data must include an associated metadata document:

<b>DATA</b>	
<b>Vector - projected to geographic, decimal degrees, NAD83/WGS84 (preferred) – other defined projections allowed</b>	
Shape File (.shp, .shx, .dbf, .prj, .sbx, .sbn)	
File Geodatabase (.gdb)	
Personal Geodatabase (.mdb)	
XML Workspace Document with dependencies clearly documented (.xml)	
<b>Raster - native projection acceptable</b>	
TIFF image with world reference file or as a GeoTIFF (.tif, .tfw)	
JPEG image with world reference file (.jpg, .jpw)	
ERDAS Imagine image with pyramid file (.img, .rrd)	
MrSid image (.sid)	
ESRI Grid	
DEM	
<b>Terrain Dataset - appropriate real world projection/coordinate system for the area depicted</b>	
File Geodatabase (.gdb) for mass point collections (e.g. lidar, sonar, photogrammetric data)	
<b>TINs - appropriate real world projection/coordinate system for the area depicted</b>	
ESRI TIN	
<b>CAD - appropriate real world projection/coordinate system for the area depicted</b>	
DXF layer separates (.dxr)	
<b>Tabular - primary and foreign keys should be clearly identified/documentated</b>	
MS-Access database (.mdb)	
MS-Excel spreadsheet (.xls)	
Delimited text file (.txt, .csv)	
<b>MAPS</b>	
<b>Static</b>	
Adobe PDF at 300 dpi or better with embedded fonts (.pdf)	
<b>Dynamic</b>	
ArcMap document with associated data files in a stand-alone directory structure using relative paths (.mxd)	
<b>FGDC Compliant METADATA</b>	
XML (.xml)	
FGDC CSDGM XML (.xml)	
ArcMap (.mxd) "Description" metadata within the document	

## CHECKLIST

The following checklist may be used to assist in complying with these standards:

<b>DATA</b>	
	Is each vector file, CAD included, in geographic, decimal degrees, NAD83 or WGS84?
	Is each raster file in its native projection?
	Is each data file one of the EPA acceptable formats?
	Does each data file have FGDC compliant metadata in an associated file?
	Are the primary and foreign keys documented for tabular data?
	Is a README text file included with a directory structure explaining how the structure is organized?
<b>MAPS</b>	
	Is each static map provided in an electronic format at a resolution of 300 dpi or higher?
	Does each static map have fonts embedded?
	Has the page and print setup for map documents been configured to NOT use printer-specific paper settings?
	Are map documents set to use relative paths?
	Are map names prefixed with the project name?
	Are map documents accompanied with their relevant data in a stand-alone directory structure?
	Does each map have FGDC compliant metadata in an associated file?