Rural North Vacaville Water District #4810013
Bacteriological Sample Siting Plan 2021

This Sample Siting Plan details the distribution system bacteriological monitoring program for the Rural North Vacaville Water District (RNVWD) #CA4810013. Bacteriological samples will be collected throughout the distribution system according to this plan to ensure the quality of water being delivered to the customer meets drinking water standards.

System Description

The System is a small public water system that in 2020 delivered over 49.99 million gallons of drinking water to 398 metered service connections serving approximately 1,126 customers.

The System's water source is groundwater from two wells (one is a standby source) supplying water for five pressure zones. There are two distribution reservoirs. The water is disinfected with Sodium Hypochlorite before distribution to the customers.

Water Source

The following table lists the System's groundwater sources with the State Water Resources Control Board – Division of Drinking Water (DDW) Source Names and Source Numbers used for sampling and reporting purposes.

System Name	System #	Source Name	Source Number
RNVWD	CA4810013	Well 1	CA4810013_001_001
RNVWD	CA4810013	Well 2	CA4810013_002_002

Routine Sampling Requirements

Based on population figures the System is required to take a minimum of one routine sample per month. Because the System is near the bottom of the next range of 401-890 connections that requires 2 routine samples a month, we will sample more than required to better confirm bacterial quality in different areas of the remote distribution system.

Sample Locations

The system has four dedicated sample stations, and one backflow device for Routine sampling of the distribution system. The sample locations are listed below:

#2 3955 Estate Drive (ss) – End of English Hills to Estate Drive sample station is on the left

#3 4380 Cantelow Road (ss)– Cantelow Road before Gibson Canyon Road (east) the sample station is on the north side of Cantelow Road, east of Gibson Canyon Road

#4 3859 Joslyn Lane (ss)– Steiger Hill Road to Joslyn Lane, the sample station on the right

#5 3749 Ciarlo Lane (ss) – English Hills Road to Ciarlo Lane, go way up the hill to the end

#6 3771 Cantelow Road (bf) – Backflow 15 yards south of the driveway

The routine compliance locations will be sampled as follows:

#2, and #3 one month, #4, and #5 the next month. We will alternate by month between these 2 groups.

Pressure zone	Sample location
1	#3 4380 Cantelow Road
2	#2 3955 Estate Drive
3	#4 3859 Joslin Lane
4	#6 3771 Cantelow Road
5	#5 3749 Ciarlo Lane

Sampling Procedures

All compliance samples will be collected by staff certified by the DDW as a Distribution System Operator, or trained samplers from BSK Laboratory.

Before collecting a sample, water from the sample station will be allowed to flow for two to three minutes or sufficiently so that fresh water from the distribution system is being sampled. Fresh water is indicated by a constant chlorine residual.

The sampler will first sample for chlorine residual using a field test kit which meets DDW standards. The amount of chlorine residual present will be recorded. The residual chlorine level from routine and repeat samples will be used to determine the Running Annual Average determined quarterly.

The sampler will only collect samples in specific bacteriological sample containers provided by the analyzing laboratory. These sterile bottles contain the dechlorinating agent Sodium Thiosulfate, and are marked with a 100 ml fill line.

The sampler will use sterile technique and follow laboratory, Standard Methods and AWWA sampling directions for bacteriological sampling.

Each sample will be clearly designated as routine, routine replacement, repeat, or other. The samples will be analyzed for Presence/Absence of total coliform and E. coli.

The sampler will complete a chain of custody (COC) to accompany each sample provided to the laboratory. This COC, completed in the field, will document Site ID, date, time, sampler ID, chlorine residual, laboratory test requested, and sample type designation.

If the free chlorine residual is less than 0.2 ppm, the sampler will take an additional 100 ml sample and request the laboratory analyze the second sample for Heterotrophic Plate Count (HPC).

Field samples will be held in an ice chest below 10°C, and be transported to the laboratory on the same day as sampling.

Repeat Sampling

If a distribution coliform sample is positive, BSK Laboratory must DIRECTLY notify SID staff within 24 hours. The Bacteriological Notification Plan gives directions to the analyzing laboratory regarding whom to directly notify at SID, or whom to notify at DDW if SID staff cannot be reached. A copy of these instructions is included with this bacteriological sample siting plan.

When the laboratory notifies us that a routine sample is coliform-positive, we will conduct triggered source monitoring, and a repeat sample set will be taken within 24 hours. For this system that collects two samples per month, a repeat sample set shall be at least four samples for each total coliform-positive sample.

Repeat sample site No. 1 will be a sample of the original routine sample site.
Repeat sample site No. 2 will be within five connections upstream.
Repeat sample site No. 3 will be within five connections downstream.
Repeat sample site No. 4 will be at Well 1 before chlorination.

These samples will be analyzed for total coliform, and E. coli.

This process will continue until no coliform are present in a complete repeat sample set or until the MCL for total coliform has been exceeded and DDW has been notified. Arrangements will be made with the laboratory to bring in water samples on weekends and holidays.

As a public water system that collects fewer than five routine samples per month if we have one or more total coliform-positive samples, we will collect at least five routine samples the following month.

Sample month following a positive sample No. 1 will be routine sample site #2
Sample month following a positive sample No. 2 will be routine sample site #3
Sample month following a positive sample No. 3 will be routine sample site #4
Sample month following a positive sample No. 4 will be routine sample site #5
Sample month following a positive sample No. 5 will be 7672 Acacia Lane backflow

These samples will be analyzed for total coliform, and E. coli.

This process will continue until no coliform are present in a complete repeat sample set or until the MCL for total coliform has been exceeded and DDW has been notified. Arrangements will be made with the laboratory to bring in water samples on weekends and holidays.

MCL Violation

The following constitute an MCL violation and **require immediate notification to the DDW.**

1. More than one sample collected during any month is total coliform-positive; or
2. Any repeat sample is E. coli-positive; or
3. Any repeat sample following an E. coli-positive routine sample is total coliform-positive.

Significant Rise in Bacterial Count

The following constitute an MCL violation and **require immediate notification to the DDW.**

1. The system has a sample positive for E. coli
2. The system fails the total coliform MCL

DDW Notification

If an MCL violation has occurred or the System is experiencing a significant rise in bacterial count, SID staff will notify the DDW by the end of the business day on which the compliance violation was determined, or if the DDW office is closed within 24 hours of the laboratory notification.

The current DDW engineer contact is DDW District Engineer Marco Pacheco at 510-620-3454 office phone or cell phone 510-421-8382.

Customer Notification

The System shall also notify the customers, after consultation with the DDW, with a Tier 1 Public Notice (within 24 hours) if:

- Any repeat sample is positive for E. coli
- Any repeat sample following an E. coli-positive is total coliform-positive

Tier I Notification shall be delivered to the public consistent with the System's Water Quality Emergency Notification Plan.

The System shall also notify customers, after consultation with the DDW, with a Tier II Pubic Notice (within 30 days) if:

- Monitoring for coliform bacteria is not conducted according to this plan
- More than one sample collected during any month is total coliform-positive

Tier II Notification shall be provided to the public consistent with the System's Water Quality Emergency Notification Plan.

DDW Reporting

All analyses completed in a given month will be reported to the DDW by the tenth day of the following month. A copy of the Monthly Summary of Distribution System Coliform Monitoring form is included with this plan. Laboratory reports shall be retained for at least five years.

Customer Reporting

The Annual Water Quality Report provides the public with information regarding any detection of coliform during routine sampling over the past year. This report will detail the range and average of percent positive samples, the MCL, PHG, and most likely source of contamination. This report will also review any compliance violations that may have occurred during the year.

Laboratory Analysis

BSK Laboratory will analyze the distribution system routine and repeat samples for total coliform, and E.coli. using DDW approved methods. Heterotrophic plate count will be performed on any sample with a chlorine residual <0.2 ppm. BSK Laboratory is located at 3140 Gold Camp Drive Suite 160, Sacramento, CA 95670, the phone number is 916-853-9293, ext. 110. During business hours, licensed microbiologists are available to assist with questions, sample drop off, and supply pick-ups. The Laboratory is flexible and will arrange to meet our repeat sampling needs on weekends or holidays.

Sampler Training

The sampler will read and follow the instructions of this Sample Site Plan, and will receive field training from qualified staff with prior field experience.

Other Samples

The System staff will take Other samples due to:

- Construction or repair of wells
- Main installation or repairs
- Construction, repair, or maintenance of storage facilities
- Any loss of system pressure to less than five psi, then sample in the affected portion of the distribution system
- Investigations
- Customer concerns

Maps

A Map is provided showing the service area, the sources, the distribution system, and the Routine sample site locations.

MONTHLY SUMMARY OF REVISED TOTAL COLIFORM RULE DISTRIBUTION SYSTEM MONITORING

(For public water systems serving more than 400 service connections OR 1,000 persons, OR wholesaler systems)

(Includes triggered source monitoring reporting for Groundwater Rule compliance)

System Name	System Number
Sampling Period	
Month	Year

	Number Required	Number Collected	Number Total Coliform Positives	Number E.coli Positives
1. Routine Samples (see note 1)				
2. Repeat Samples following samples that are Total Coliform Positive and *E.coli* **Negative** (see notes 2, 10 and 11)				
3. Repeat Samples following Routine Samples that are **Total Coliform Positive** and ***E. coli*** **Positive** (see notes 2, 3, 10 and 11)				
4. Coliform Treatment Technique (TT) Trigger Exceedance & *E.coli* MCL Computation for TC/*E. coli* Positive Samples a. Totals (sum of columns)				
b. If 40 or more samples collected in month, determine percent of samples that are total coliform positive [(total number positive/total number collected) x 100] =	%			

c. Did the system violate the *E. coli* MCL (see notes 2 through 5)? ☐ **Yes** ☐ **No**

Did the system exceed… …a **Level 2** Coliform TT trigger? ☐ **Yes** ☐ **No**
(see notes 2, 3, 4, 5 and 6 for trigger info)

If yes, see note 8 below.

...a **Level 1** Coliform TT trigger? ☐ **Yes** ☐ **No**
(see note 7 for trigger info)

If yes, see note 9 below.

5. Triggered Source Samples per Groundwater Rule (see notes 12 and 13)				

6. Invalidated Samples

(Note what samples, if any, were invalidated; the lab who authorized the invalidation; and when replacement samples were collected. Attach additional sheets, if necessary.)

7. Summary Completed By:

Name/Signature	Title	Date

NOTES AND INSTRUCTIONS:

1. Routine samples include:
   a. Samples required pursuant to 22 CCR Section 64423 and any additional samples required by an approved routine sample siting plan established pursuant to 22 CCR Section 64422.
   b. Extra samples for systems with high source water turbidities that are using surface water or groundwater under direct influence of surface water and do not practice filtration in compliance with regulations;

Notes 2-5 (boxed entries) are *E. coli* MCL violations and require immediate notification to the Division (22 CCR, Section 64426.1):

2. Any E.coli positive repeat following a total coliform positive sample.
3. A total coliform positive repeat, following an E.coli positive routine sample.
4. Failure to take all required repeat samples following an E. coli positive routine sample.
5. Failure to test for E. coli when any repeat sample tests positive for total coliform

6. Second Level 1 coliform treatment technique trigger exceedance in a rolling 12-month period.

7. Level 1 Coliform Treatment Technique (TT) Triggers:
   a. For systems collecting less than 40 samples, if two or more samples are total coliform positive, then the TT is exceeded and a Level 1 Assessment is required.
   b. For systems collecting 40 or more samples, if more than 5.0 percent of samples collected are total coliform positive, then the TT is exceeded and a Level 1 Assessment is required.
   c. If a trigger is exceeded as a result of a total coliform positive repeat sample, the system must notify the Division by the end of business day, section 64424(c)

8. Contact the Division as soon as practical to arrange for the Division to conduct a Level 2 Assessment of the water system. The water system shall complete a Level 2 Assessment and submit it to the Division within 30 days of learning of the trigger exceedance.
9. Conduct a Level 1 Assessment as soon as practical that covers the minimum elements (22 CCR, Section 64426.8 (a)(2). Submit the report to the Division within 30 days of learning of the trigger exceedance.
10. Positive results and their associated repeat samples are to be tracked on the Coliform Monitoring Worksheet.
11. Repeat samples must be collected within 24 hours of being notified of the positive results. At least 3 repeat samples must be collected for each total coliform positive sample.
12. For systems subject to the Groundwater Rule: Positive results and the associated triggered source samples are to be tracked on the Coliform Monitoring Worksheet.
13. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E.coli* -positive triggered sample (boxed entry) **requires immediate notification to the Division, Tier 1 public notification, and corrective action.**

COLIFORM MONITORING WORKSHEET

Page ________ of ______________

(COMPLETED FOR POSITIVE ROUTINE SAMPLES, ALL REPEAT SAMPLES, AND ALL TRIGGERED SOURCE SAMPLES) Report Month __________ Year___________

Routine Samples [10]			Repeat Samples [11]					Triggered Source Samples [12]			
					Coliform Results (Check one box)						
TC+ Sample Date	TC+ Sample Site ID	*E. coli* Results	Repeat Collection Date	Repeat Sample Site IDs	TC-	TC+ BUT *E. coli* -	TC+ AND *E. coli* +	Source Sample Date	Groundwater Source(s) Sampled	[15]TC Results	[15, 16]*E. coli* Results
				1						(+ / -)	(+ / -)
		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)
				1						(+ / -)	(+ / -)
		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)
				1						(+ / -)	(+ / -)
		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)
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		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)
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		(+ / -)		2						(+ / -)	(+ / -)
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		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)
				1						(+ / -)	(+ / -)
		(+ / -)		2						(+ / -)	(+ / -)
				3						(+ / -)	(+ / -)

Comments:

NOTES AND INSTRUCTIONS:

14. Repeat samples must be collected within 24 hours of being notified of the positive results. Three repeat samples must be collected for each total coliform positive sample.

15. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E.coli* positive triggered sample (boxed entry) **requires immediate notification to the Department, Tier 1 public notification, and corrective action.**

16. Circle the appropriate result.

Abbreviations: TC = Total Coliform, EC = *E. coli*

QUARTERLY SUMMARY OF RAW GROUNDWATER COLIFORM MONITORING

For groundwater (not GWUDI) sources that are treated with a primary or residual disinfectant on a continuous basis

Samples must be taken prior to chlorination. If a quarterly sample is total coliform positive, sampling must increase to monthly.

Water System Name **Water System Number**

Sampling Period:

Month Year

Well Name/Number	Status (On/Off)	Sample Time & Date	Total Coliforms (P/A or MPN)	*E. coli* (P/A or MPN)

Solano Irrigation District and ELAP certified Laboratory Communications Procedures for: Coliform Positive or Invalidated Results from Routine, Repeat, or Replacement Samples

The following procedure applies to Solano Irrigation District's (SID) Routine, Repeat, or Replacement samples from our public water systems. SID staff will indicate on each sampling slip whether the sample qualifies as Routine, Repeat, Replacement, or Other.

In the event of an after hours sample invalidation or positive coliform result for a Routine, Repeat, Replacement of Other sample, within 24 hours the laboratory must notify SID.

- Analytical results indicate the presence of total coliform, or E. Coli, Or
- HPC is greater than 500 CFU/ml for any drinking water sample, OR
- A bacterial sample is invalidated due to a laboratory analytical interference problem.

During SID business hours Monday through Friday, 7:00 a.m.-3:30 p.m., excluding holidays, the following personnel may be reached by calling their office phone numbers first, then their cell phone numbers. LEAVE A MESSAGE AT EACH OF THE HIGHLIGHTED NUMBERS FIRST.

BSK Lab Manager: Brenda Hamilton,**916-853-9293 ext. 306**, (916-825-0135 cell), is at the Rancho Cordova Lab, 3140 Gold Camp Drive, Suite 160, Rancho Cordova, CA Brenda's email is bhamilton@bskassociates.com More information about the BSK Lab can be found at the corporate website, www.bskassociates.com

Name	Title	Phone Office/ Cell		Evening
Sue Murphy	**Water Quality Specialist**	**707-455-4021**	**707-249-6007**	**916-969-6831**
Joseph Cardera	M&I Superintendent	707-455-4019	707-761-7761	call cell

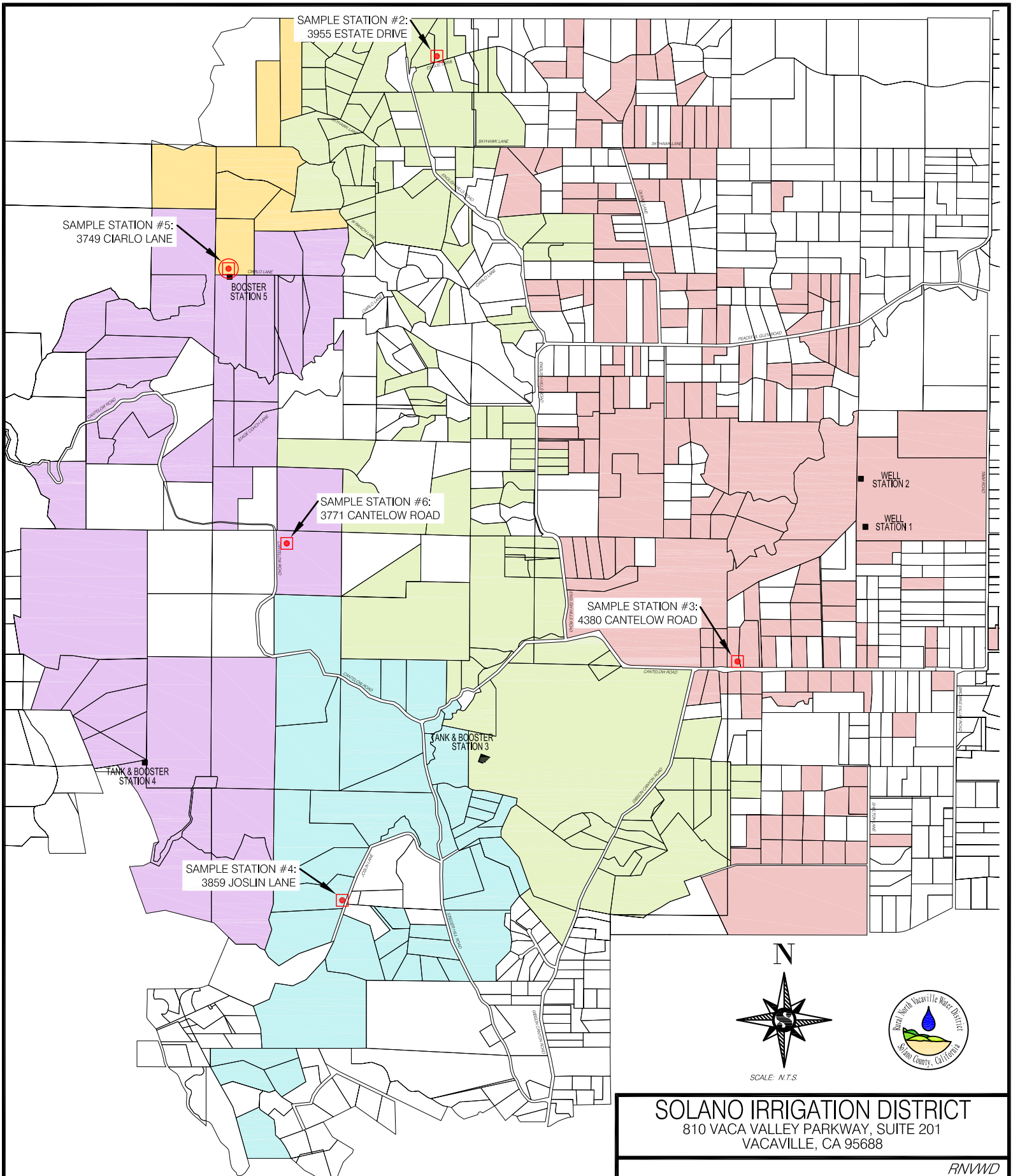
If the lab cannot reach the designated SID personnel within 24 hours, the lab must contact the appropriate SWRCB Division of Drinking Water Engineer for the following public water systems.

Alla Lilichenko	DDW Engineer	510-620-3601	925-451-5406	call cell
Marco Pacheco	S.F. District Engineer	510-620-3454	510-421-8382	call cell

These instructions are for the following SID public water systems:

SID-Stocking Ranch PWS	#CA4800767	Rural North Vacaville WD	#CA4810013
Suisun-Solano Water Authority	#CA4810005	SID-Blue Ridge Oaks PWS	#CA4810024
SID-Gibson Canyon PWS	#CA4810010	SID-Pleasant Hills Ranch PWS	#CA4810025
SID-Elmira PWS	#CA4810011	SID-Peabody PWS	#CA4810026
SID-Quail Canyon PWS	#CA4810012		

Updated 4/15/2021



LEGEND

- STATION - BACTERIA & Cl_2
- SAMPLE SITE - TTHM & HAA5

- PRESSURE ZONE 1
- PRESSURE ZONE 2
- PRESSURE ZONE 3
- PRESSURE ZONE 4
- PRESSURE ZONE 5

SOLANO IRRIGATION DISTRICT

810 VACA VALLEY PARKWAY, SUITE 201
VACAVILLE, CA 95688

RNVWD

RURAL NORTH VACAVILLE WATER DISTRICT
SAMPLE STATION LOCATION MAP

Date:	06-29-2017	Work Order No.
Drawn By:	JS	CAD File: RNV SAMPLE STN MAP.DWG
Checked By:	SM	Dwg. No.