Agenda

Sacramento Suburban Water District

Water Quality Committee

3701 Marconi Avenue, Suite 100
Sacramento, CA 95821

Monday, July 17, 2017
3:00 p.m.

Public documents relating to any open session item listed on this agenda that are distributed to the Committee members less than 72 hours before the meeting are available for public inspection in the customer service area of the District's Administrative Office at the address listed above.

The public may address the Committee concerning any item of interest. Persons who wish to comment on either agenda or non-agenda items should fill out a Comment Card and give it to the General Manager. The Committee Chair will call for comments at the appropriate time. Comments will be subject to reasonable time limits (3 minutes).

In compliance with the Americans with Disabilities Act, if you have a disability, and you need a disability-related modification or accommodation to participate in this meeting, then please contact Sacramento Suburban Water District Human Resources at (916)679-3972. Requests must be made as early as possible and at least one-full business day before the start of the meeting.

Call to Order

Roll Call

Public Comment
This is an opportunity for the public to comment on non-agenda items within the subject matter jurisdiction of the Committee. Comments are limited to 3 minutes.

Consent Items
The committee will be asked to approve all Consent Items at one time without discussion. Consent Items are expected to be routine and non-controversial. If any member of the Committee, staff or interested person requests that an item be removed from the Consent Items, it will be considered with the action items.

1. **Meeting Notes of the March 27, 2017 Water Quality Committee Meeting**
   Recommendation: Approve subject minutes.

Items for Discussion and Action

2. **Aerojet Plume Update**
   Receive written staff report.

3. **Update on Water Quality - TCE at Well #N15**
   Receive written staff report.

4. **Water Quality Test Reports**
   Receive written staff report.

5. **Lead Monitoring in Schools Update**
   Receive written staff report.

6. **New Replacement Well #N6A – Water Quality**
   Receive written staff report.

Adjournment

* *

Upcoming Meetings:

Thursday, July 27, 2017 at 4:00 p.m., Facilities and Operations Committee Meeting
Monday, August 21, 2017 at 6:30 p.m., Regular Board Meeting

* *

I certify that the foregoing agenda for the July 17, 2017, meeting of the Sacramento Suburban Water District Water Quality Committee was posted by July 13, 2017, in a publicly-accessible location at the Sacramento Suburban Water District office, 3701 Marconi Avenue, Suite 100, Sacramento, California, and was made available to the public during normal business hours.

Robert S. Roscoe
General Manager/Secretary
Sacramento Suburban Water District

ITEM 1

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Meeting Notes

Sacramento Suburban Water District
Water Quality Committee
Monday, March 27, 2017

Call to Order
Director Wichert called the meeting to order at 3:01 p.m.

Roll Call

Directors Present:	Bob Wichert and Dave Jones.
Directors Absent:	None.
Staff Present:	General Manager Rob Roscoe, Assistant General Manager Dan York, Amy Bullock, Mitch Dion, David Armand, Doug Cater and James Arenz.

Public Present: William Eubanks and Jeffrey Bensch.

Public Comment
None.

Announcements
None.

Consent Items
None.

Items for Discussion and Action

1. **Water Quality Committee Mission Statement and Charter**
   Public comment from William Eubanks (Mr. Eubanks). Mr. Eubanks commented that he does not understand why a Water Quality Committee has been formed. He would like some clarification on why the Committee was formed. Mr. Eubanks stated that he thinks that too much detailed information to the general public could be misunderstood and detrimental to the organization.

   Director Wichert stated that if the District is doing everything really great, then this will be the Committee to showcase that success. If the District has areas in which they could improve on, then this will be the Committee where those areas can be addressed and potentially improved on.

   General Manager Rob Roscoe (GM Roscoe) stated that he does not think that it is unusual for water districts to have separate committees like this Water Quality Committee. In the past, water quality issues have gone through the Facilities and Operation Committee. If the District and Directors in the future decide that there is no need for a separate Committee, then they can choose to no longer have the Committee and any future meetings.

Director Jones addressed Mr. Eubanks' comments and concerns and stated that he thinks it's good to have the Committee set-up and established for potential needs the District might be faced with.

Director Jones stated that in regards to the Mission Statement, he wants to make sure that the Water Quality Committee does not take any authority away from staff. Staff has full authority to move on anything without coming to the Directors and Committee first.

GM Roscoe stated that he would like to take the Water Quality Committee's Mission Statement and Charter to the full Board for approval. Assistant General Manager Dan York (AGM) York stated that it did need to go to the full Board due to the fact the Committee is asking for authority to approve issues less than $25,000.

Director Wichert recommended to the full Board approval and adoption of the Water Quality Committee Mission Statement and Charter; Director Jones second the motion. The motion passed by unanimous vote.

2. **Update on Water Quality - TCE at Well #N15**
Mitch Dion (Mr. Dion) presented the staff report and introduced Jeffrey Bensch (Mr. Bensch) with Sierra West Consultants, Inc. Mr. Bensch went through a PowerPoint presentation.

Director Wichert inquired on what Trichloroethylene (TCE) is used for.

Mr. Bensch stated that TCE is an industrial solvent used as a degreaser.

Director Wichert inquired where TCE is used today.

Mr. Bensch stated that he was unsure where TCE is used today and does not believe it is a banned substance.

Director Wichert inquired if legal has looked at any of this.

GM Roscoe stated that legal has not looked at this and recommends that staff take the next steps to investigate.

Director Jones inquired when TCE first showed up in the wells and when the well went into service.

David Armand (Mr. Armand) stated that he has records of TCE from 2007 but levels of TCE have been there prior to 2007. The well went into service in the 60's.

Mr. Dion stated that this process is the same process the District goes through when the District is entertaining purchasing property when drilling new wells.

Mr. Roscoe stated that the sanitary sewer might be another possible source.

This was an informational item and staff will report back with an update at the next Water Quality Committee meeting if anything new has come about.

3. **Water Quality 101 – Title 22**
Mr. Armand presented the staff report.

Director Wichert stated that he would like to get an environment or atmosphere of discussion where the District does not just meet the regulatory limits, but the District exceeds them.

Mr. Armand stated that he believes the District does go above and beyond and exceeds the regulatory limits.

Director Wichert would like to know how the District is complying and requested an update on where the District is at on these scheduled tests.

Mr. Roscoe stated that we can provide the Directors with the requested information, but staff needs to know what exactly the Committee is looking to be updated on.

Director Jones would like to know why and when wells are taken down or even out of service. And if a well has been taken out of service, why it has been taken out of service.

AGM York requested that Mr. Armand clarify quarterly sampling and why it is done quarterly and when that may fall off the required sampling.

Mr. Armand stated that regulation states that its quarterly sampling for a minimum of a year and if Nitrates show stabilization the District can request yearly sampling.

Director Wichert inquired what the cost is for sampling.

Mr. Armand stated that a majority of the cost is staff labor. The sampling lab fee for nitrate is roughly $60.00 to $70.00 per sample. The more significant cost is the staff's time to obtain the sample.

This item was an informational item and an update to the Committee.

4. **Division of Drinking Water Annual System Inspection**
Jim Arenz (Mr. Arenz) presented the staff report and provided an update to the Committee.

Director Wichert inquired if there were any significant findings.

Mr. Arenz stated that there are no significant findings to report.

Mr. Arenz did inform the Committee that there were a large number of errors in the report and staff is in the process of informing the Division of Drinking Water of the errors for correction.

This item was an informational item and an update to the Committee.

5. **Division of Drinking Water Monthly Water Quality Report**
James Arenz (Mr. Arenz) presented the staff report.

Mr. Arenz stated that the report goes through a chain of command for multiple reviews.

This item was an informational item and an update to the Committee.

6. **Water Quality Advisory Group**
Public comment from Mr. Eubanks. Mr. Eubanks inquired about the intended use of a Water Quality Advisory Group.

Director Wichert stated that the group is so customers can address issues or concerns with the District's water quality.

Mr. Eubanks stated that he is not happy with the quality of water, stated it has too many minerals in the water. He has to replace shower heads every few years. Mr. Eubanks is concerned that having this advisory group could open up the doors to problems if the public interprets the information incorrectly.

Director Wichert stated that he is curious on the staff feelings on the new Water Quality advisory group.

Mr. Roscoe stated that he does not want to preclude the notion for a customer Water Quality advisory group but personally does not see the need for a citizen Committee at this time and if the District is going to form one, staff needs to set some firm ground rules on what the Committee authority is.

No action taken at this time. A determination for the need of a Water Quality Advisory Group will be made at a later date.

7. **Determine Frequency of Future Water Quality Committee Meetings**
Public comment from Mr. Eubanks. Mr. Eubanks stated that there should not be future meetings because you could be opening a can of worms. If these discussions are necessary, maybe consider an Ad Hoc Committee. Does not see any sense of having a standing public Committee meeting.

Director Wichert would like the Water Quality Committee meetings to be quarterly on the Monday that the Regular Board meeting occurs.

Adjournment
Director Wichert adjourned the meeting at 4:36 p.m.

Robert S. Roscoe
General Manager/Secretary
Sacramento Suburban Water District

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SACRAMENTO SUBURBAN WATER DISTRICT

Water Quality Committee

Agenda Item: 2

Date: July 6, 2017

Subject: Aerojet Plume Update

Staff Contact: David Armand, Environmental Compliance Supervisor

Alex MacDonald, Civil Engineer with the Central Valley Regional Water Quality Control Board, will be presenting a brief overview of groundwater contamination in the Western Groundwater Operable Unit, associated with groundwater contamination originating from the Aerojet-Rocketdyne and Inactive Rancho Cordova Test Site. Mr. MacDonald has been actively engaged in regulatory oversight of the groundwater contaminant and remediation for many years, and is extremely knowledgeable on issues associated with contaminant plume migration and ongoing clean-up efforts.

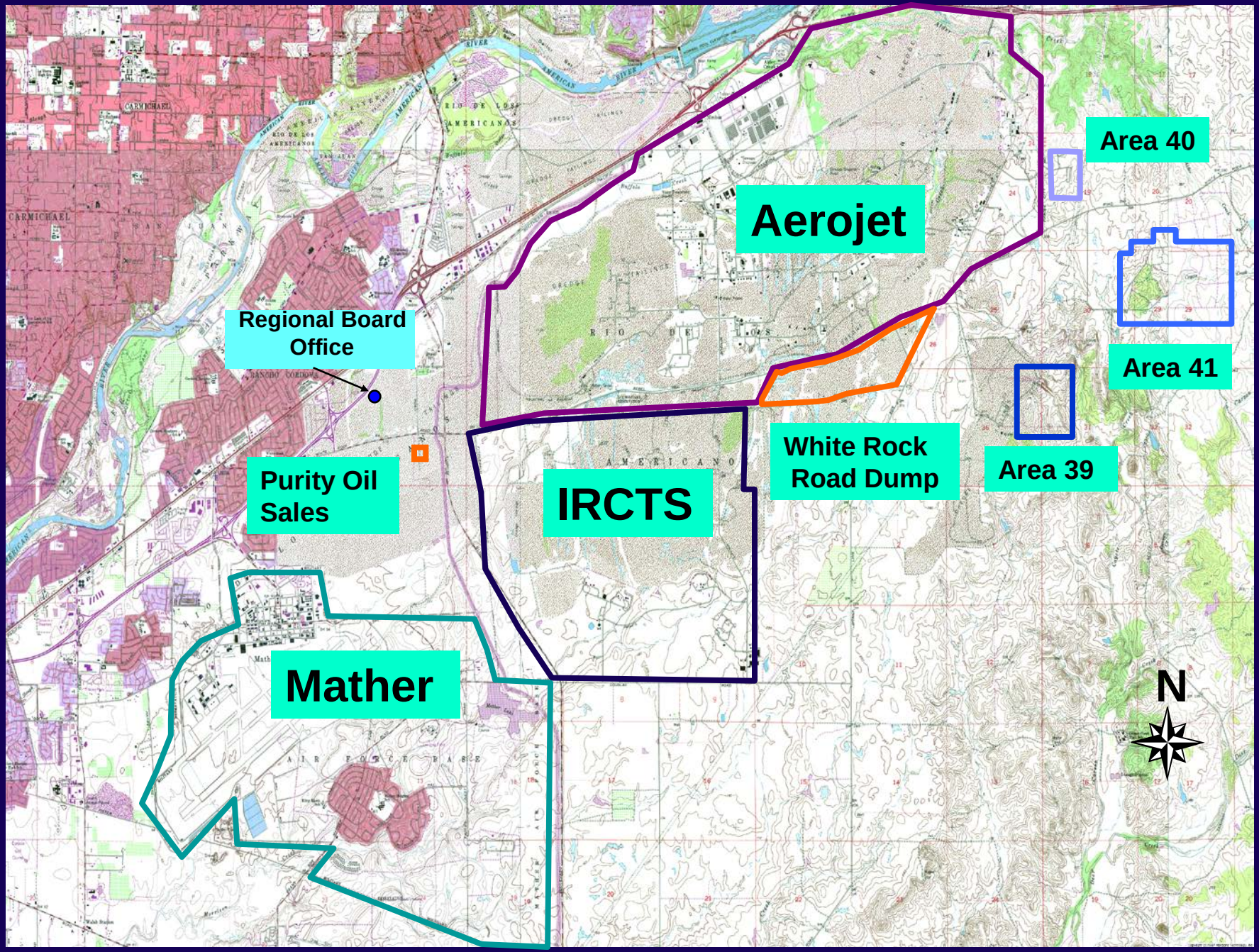
AEROJET UPDATE

July 2017

Alexander MacDonald

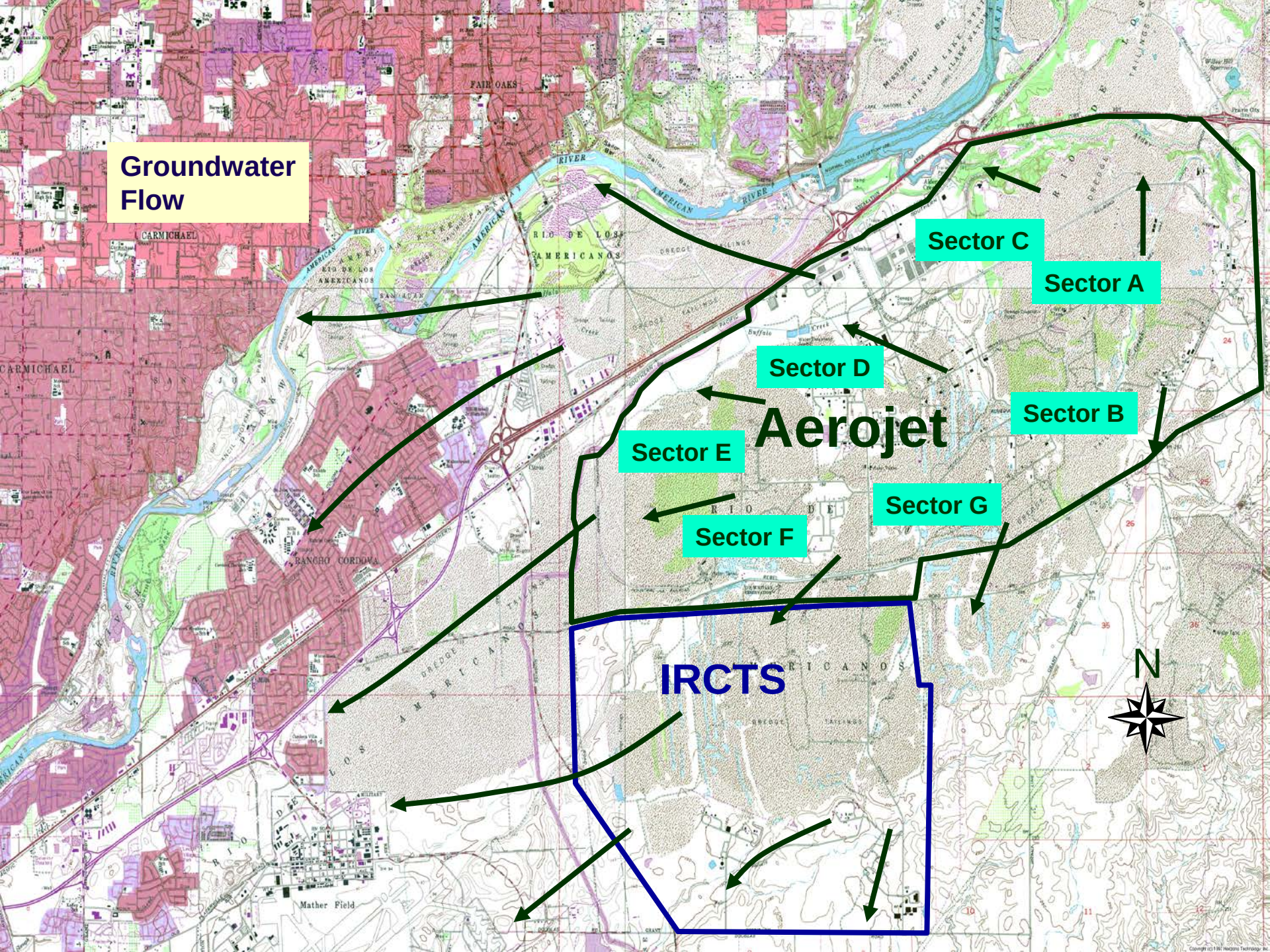
916-464-4625

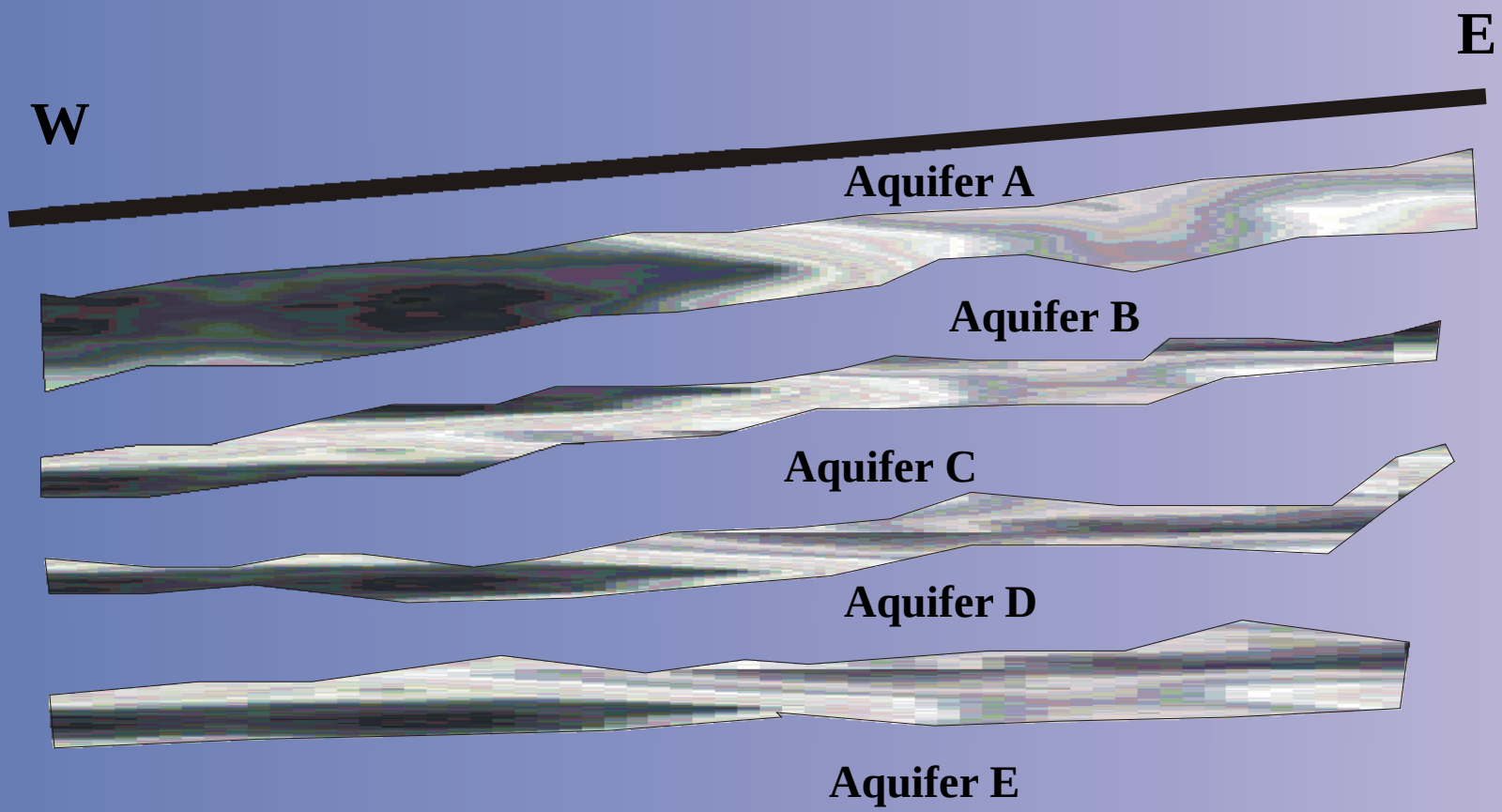
amacdonald@waterboards.ca.gov


Area 40
Aerojet
Area 41
Regional Board Office
White Rock Road Dump
Area 39
Purity Oil Sales
IRCTS
Mather
N

Contaminants of Concern

- Solvents - TCE, PCE, Freon, Chloroform – level of concern low ppb
- Perchlorate – component of solid rocket propellant - level of concern low ppb
- NDMA – associated with liquid rocket fuel - level of concern low ppt
- Fuels – hydrazine-based, kerosene

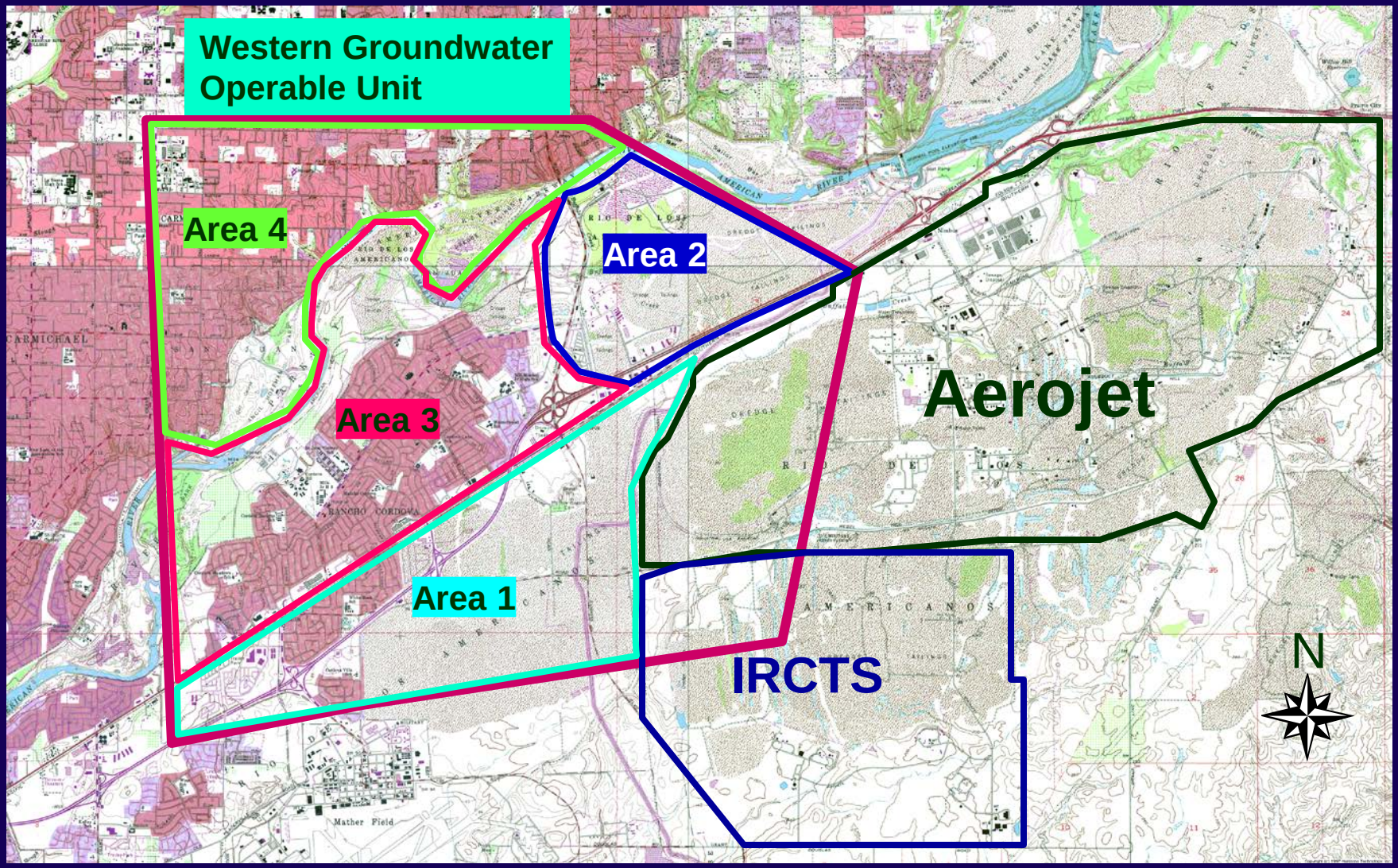

Groundwater Flow
Sector C
Sector A
Sector D
Sector B
Aerojet
Sector E
Sector G
Sector F
IRCTS
N
FAIR OAKS
CARMICHAEL
RANCHO CORDOVA
Mather Field
AMERICAN RIVER
RIO DE LOS AMERICANOS


E
W
Aquifer A
Aquifer B
Aquifer C
Aquifer D
Aquifer E

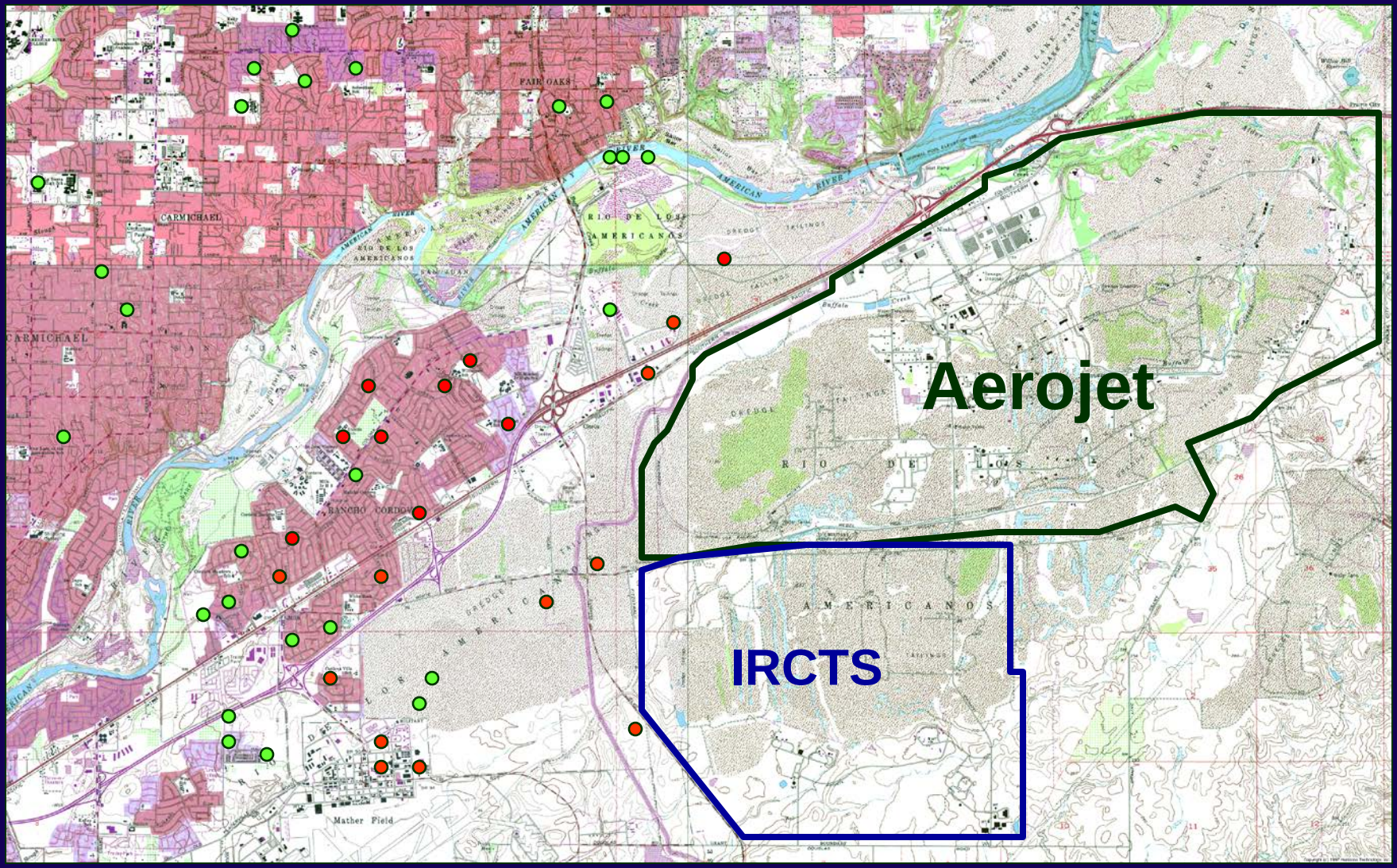
General Timeline

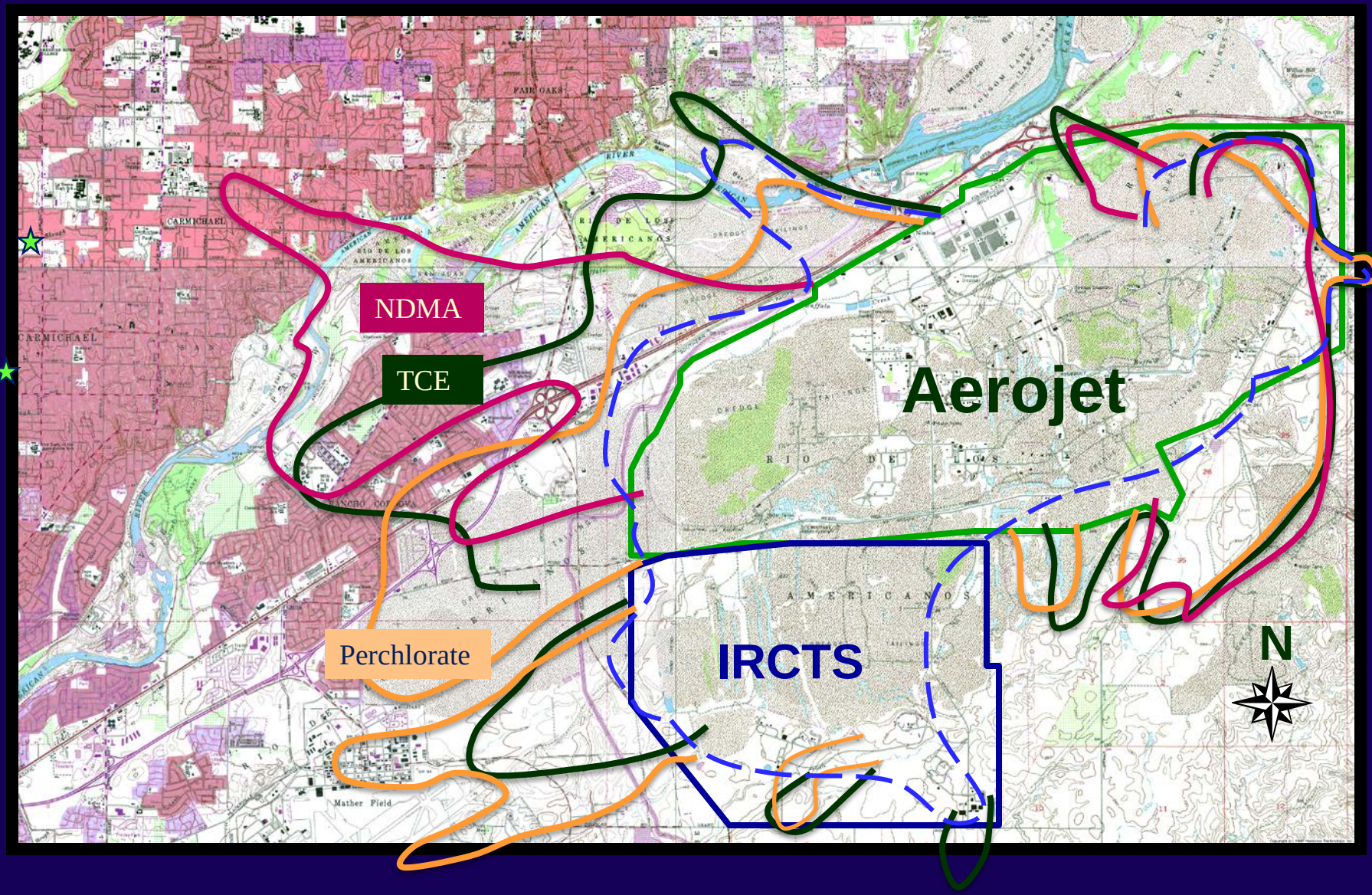
- 1996 Regional Board Request Aerojet to Create Operable Unit and Investigate Extent of Pollution to the West
- 2001 – Record of Decision for Western Groundwater Operable Unit
- 2002-2011 - Construct Six Treatment Systems in Western Groundwater
- 2011 USEPA Issues Operational and Functional Designation for Treatment Systems

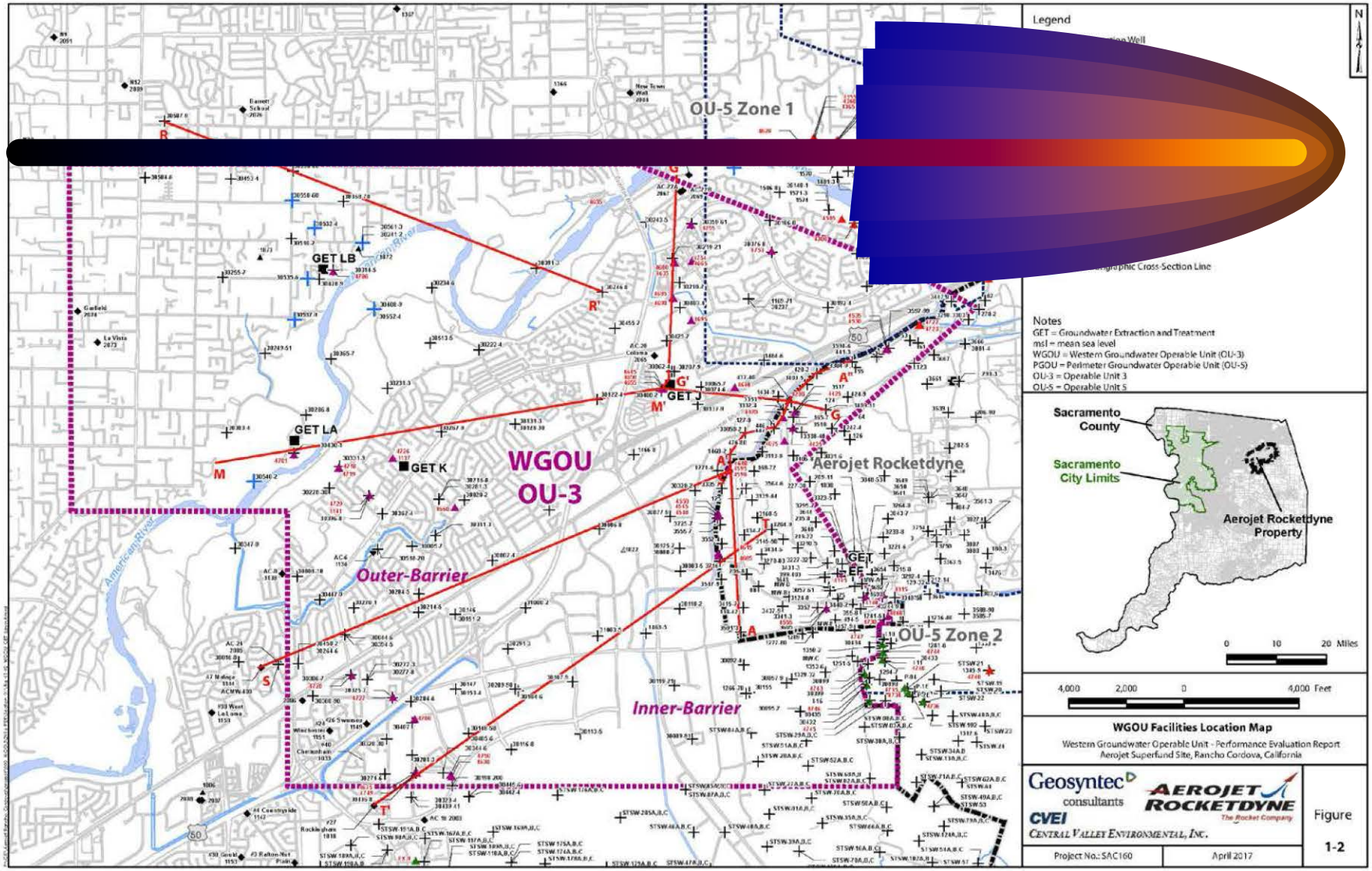
Western Groundwater Operable Unit ROD 2001

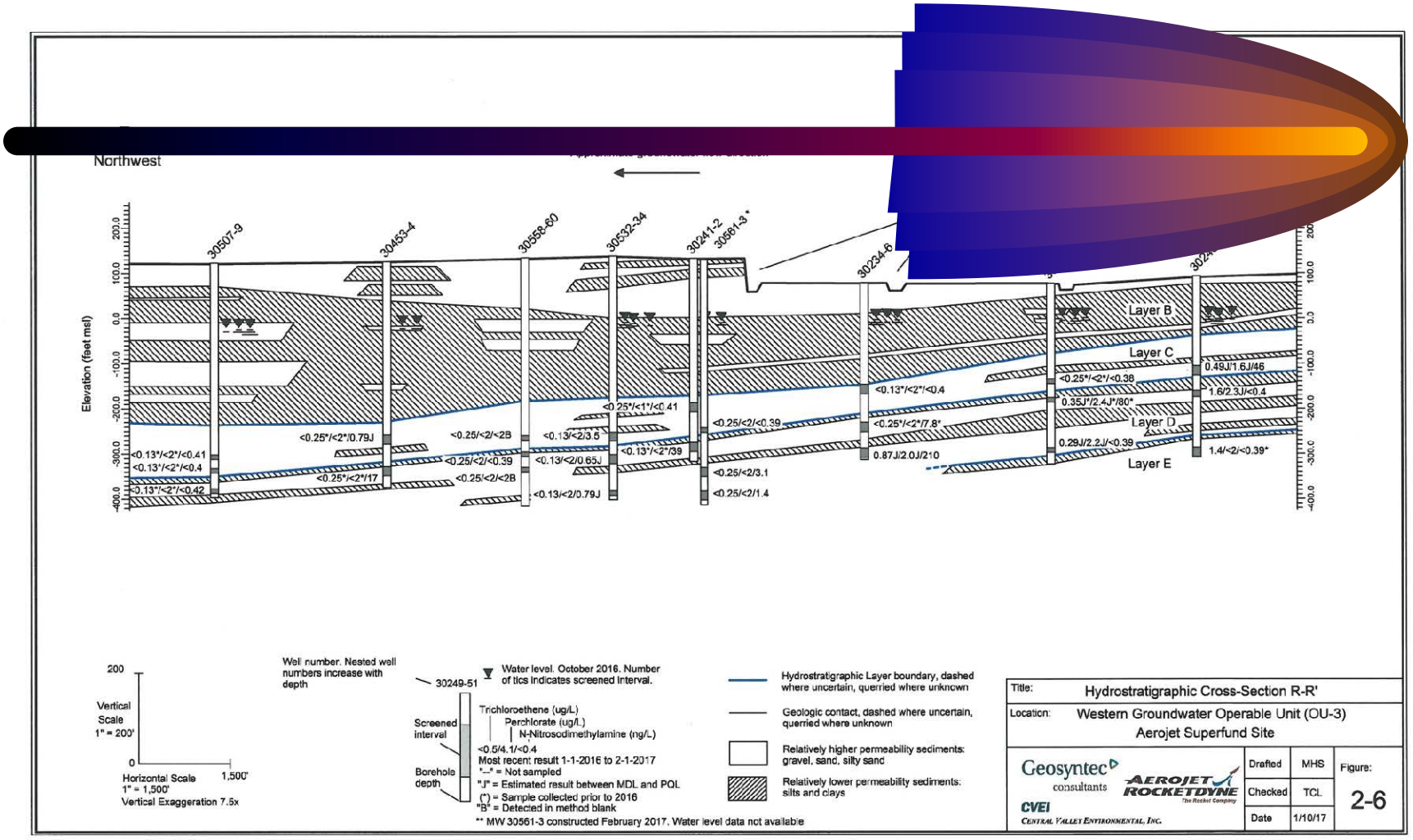


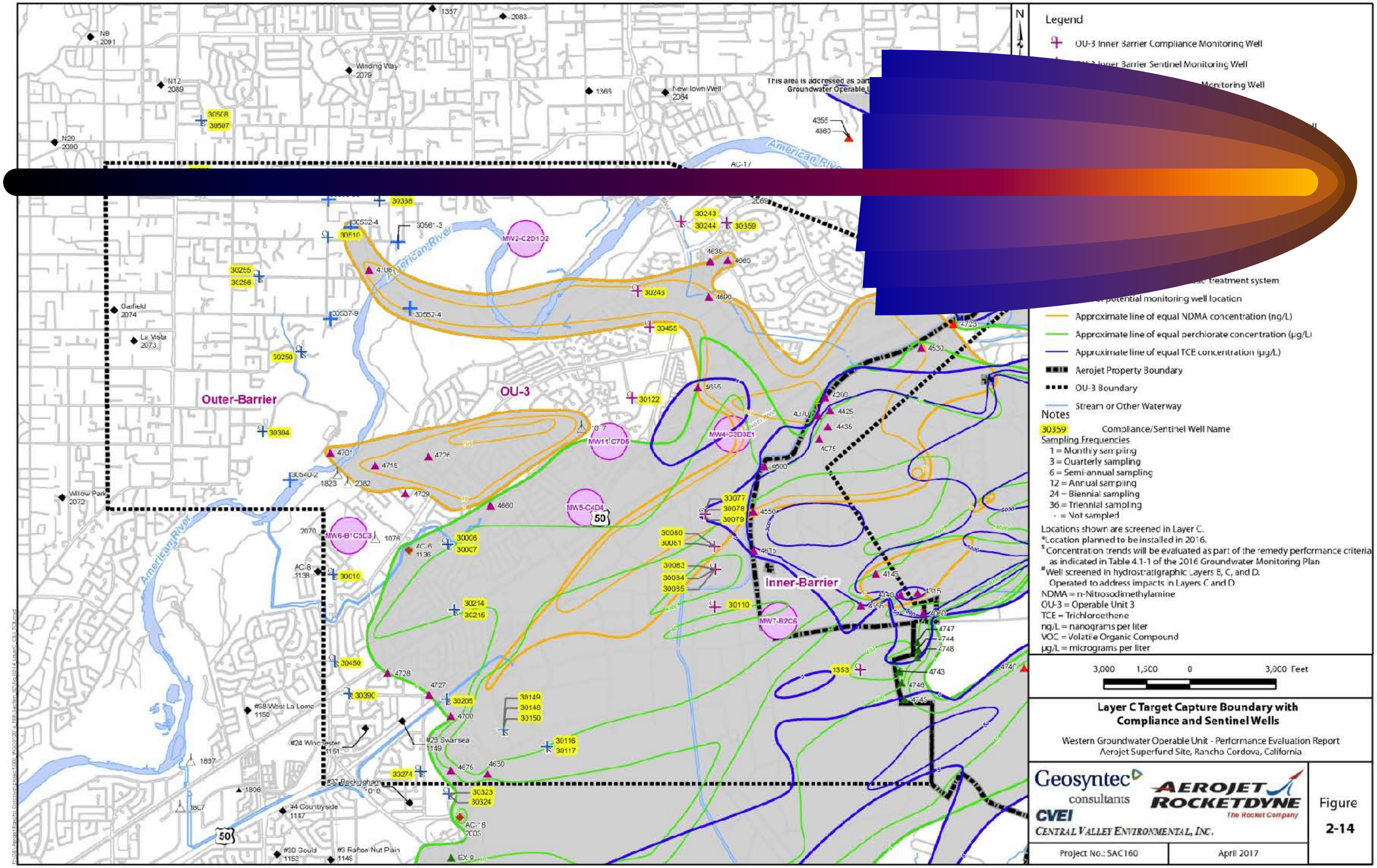
Public Water Supply Wells in the Vicinity of Aerojet



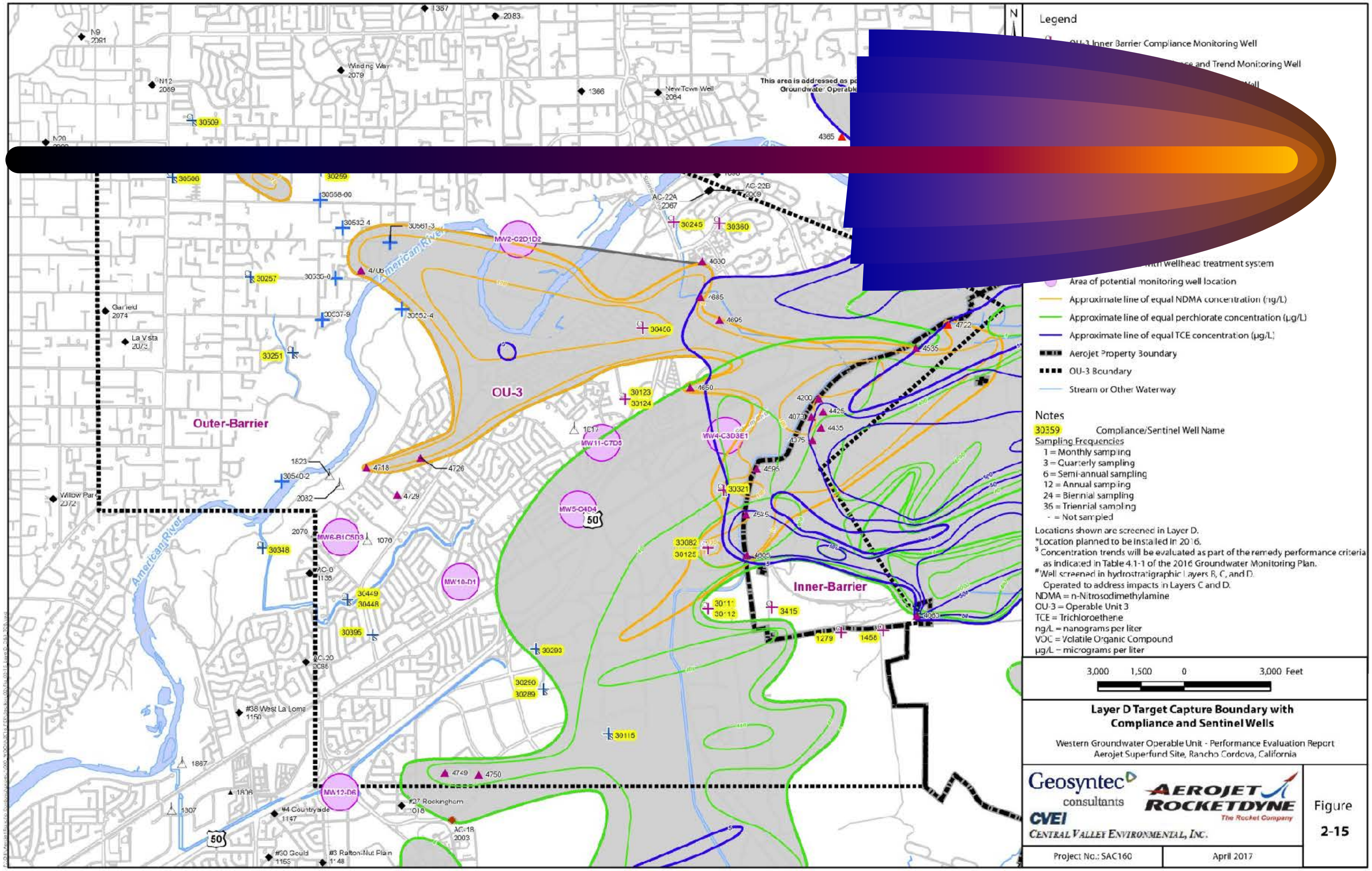

NDMA
TCE
Perchlorate
Aerojet
IRCTS
N
CARMICHAEL
FAIR OAKS
Mather Field


OU-5 Zone 1
GET LB
GET LA
GET K
GET J
GET E
WGOU
OU-3
Aerojet Rocketdyne
Outer-Barrier
Inner-Barrier
OU-5 Zone 2
Legend
Notes
GET = Groundwater Extraction and Treatment
msl = mean sea level
WGOU = Western Groundwater Operable Unit (OU-3)
PGOU = Perimeter Groundwater Operable Unit (OU-5)
OU-3 = Operable Unit 3
OU-5 = Operable Unit 5
Sacramento County
Sacramento City Limits
Aerojet Rocketdyne Property
0 10 20 Miles
4,000 2,000 0 4,000 Feet
WGOU Facilities Location Map
Western Groundwater Operable Unit - Performance Evaluation Report
Aerojet Superfund Site, Rancho Cordova, California
Geosyntec consultants
CVEI
Central Valley Environmental, Inc.
AEROJET ROCKETDYNE
The Rocket Company
Figure
1-2
Project No.: SAC160
April 2017


Northwest
Elevation (feet msl)
200.0
100.0
0.0
-100.0
-200.0
-300.0
-400.0
30507-9
30453-4
30558-60
30532-34
30241-2
30561-3 *
30234-6
Layer B
Layer C
Layer D
Layer E
<0.25*/<2*/0.79J
<0.13*/<2*/<0.41
<0.13*/<2*/<0.4
<0.25*/<2*/17
<0.13*/<2*/<0.42
<0.25/<2/<2B
<0.25/<2/<0.39
<0.25/<2/<2B
<0.13/<2/3.5
<0.13/<2/0.65J
<0.13/<2/0.79J
<0.25*/<1*/<0.41
<0.13*/<2*/39
<0.25/<2/<0.39
<0.25/<2/3.1
<0.25/<2/1.4
<0.13*/<2*/<0.4
<0.25*/<2*/7.8*
0.87J/2.0J/210
<0.25*/<2*/<0.38
0.35J*/2.4J*/80*
0.29J/2.2J/<0.39
0.49J/1.6J/46
1.6/2.3J/<0.4
1.4/<2/<0.39*
200
Vertical Scale 1" = 200'
0
Horizontal Scale 1" = 1,500'
1,500'
Vertical Exaggeration 7.5x
Well number. Nested well numbers increase with depth
30249-51
Water level. October 2016. Number of tics indicates screened interval.
Screened interval
Borehole depth
Trichloroethene (ug/L)
Perchlorate (ug/L)
N-Nitrosodimethylamine (ng/L)
<0.5/4.1/<0.4
Most recent result 1-1-2016 to 2-1-2017
"--" = Not sampled
"J" = Estimated result between MDL and PQL
(*) = Sample collected prior to 2016
"B" = Detected in method blank
** MW 30561-3 constructed February 2017. Water level data not available
Hydrostratigraphic Layer boundary, dashed where uncertain, querried where unknown
Geologic contact, dashed where uncertain, querried where unknown
Relatively higher permeability sediments: gravel, sand, silty sand
Relatively lower permeability sediments: silts and clays
Title: Hydrostratigraphic Cross-Section R-R'
Location: Western Groundwater Operable Unit (OU-3) Aerojet Superfund Site
Geosyntec consultants
AEROJET ROCKETDYNE The Rocket Company
CVEI Central Valley Environmental, Inc.
Drafted MHS
Checked TCL
Date 1/10/17
Figure: 2-6
N:/Aerojet/Rockware File Library/WGOU/2017 PER/2017 RR'



Legend
OU-3 Inner Barrier Compliance Monitoring Well
Approximate line of equal NDMA concentration (ng/L)
Approximate line of equal perchlorate concentration (µg/L)
Approximate line of equal TCE concentration (µg/L)
Aerojet Property Boundary
OU-3 Boundary
Stream or Other Waterway
Notes
30359 Compliance/Sentinel Well Name
Sampling Frequencies
1 = Monthly sampling
3 = Quarterly sampling
6 = Semi-annual sampling
12 = Annual sampling
24 = Biennial sampling
36 = Triennial sampling
- = Not sampled
Locations shown are screened in Layer C.
NDMA = n-Nitrosodimethylamine
OU-3 = Operable Unit 3
TCE = Trichloroethene
ng/L = nanograms per liter
VOC = Volatile Organic Compound
µg/L = micrograms per liter
Outer-Barrier
OU-3
Inner-Barrier
American River
Layer C Target Capture Boundary with Compliance and Sentinel Wells
Western Groundwater Operable Unit - Performance Evaluation Report
Aerojet Superfund Site, Rancho Cordova, California
Geosyntec consultants
AEROJET ROCKETDYNE
CVEI
Central Valley Environmental, Inc.
Figure
2-14
Project No.: SAC160
April 2017


Legend
Area of potential monitoring well location
Approximate line of equal NDMA concentration (ng/L)
Approximate line of equal perchlorate concentration (µg/L)
Approximate line of equal TCE concentration (µg/L)
Aerojet Property Boundary
OU-3 Boundary
Stream or Other Waterway
Notes
30359 Compliance/Sentinel Well Name
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1 = Monthly sampling
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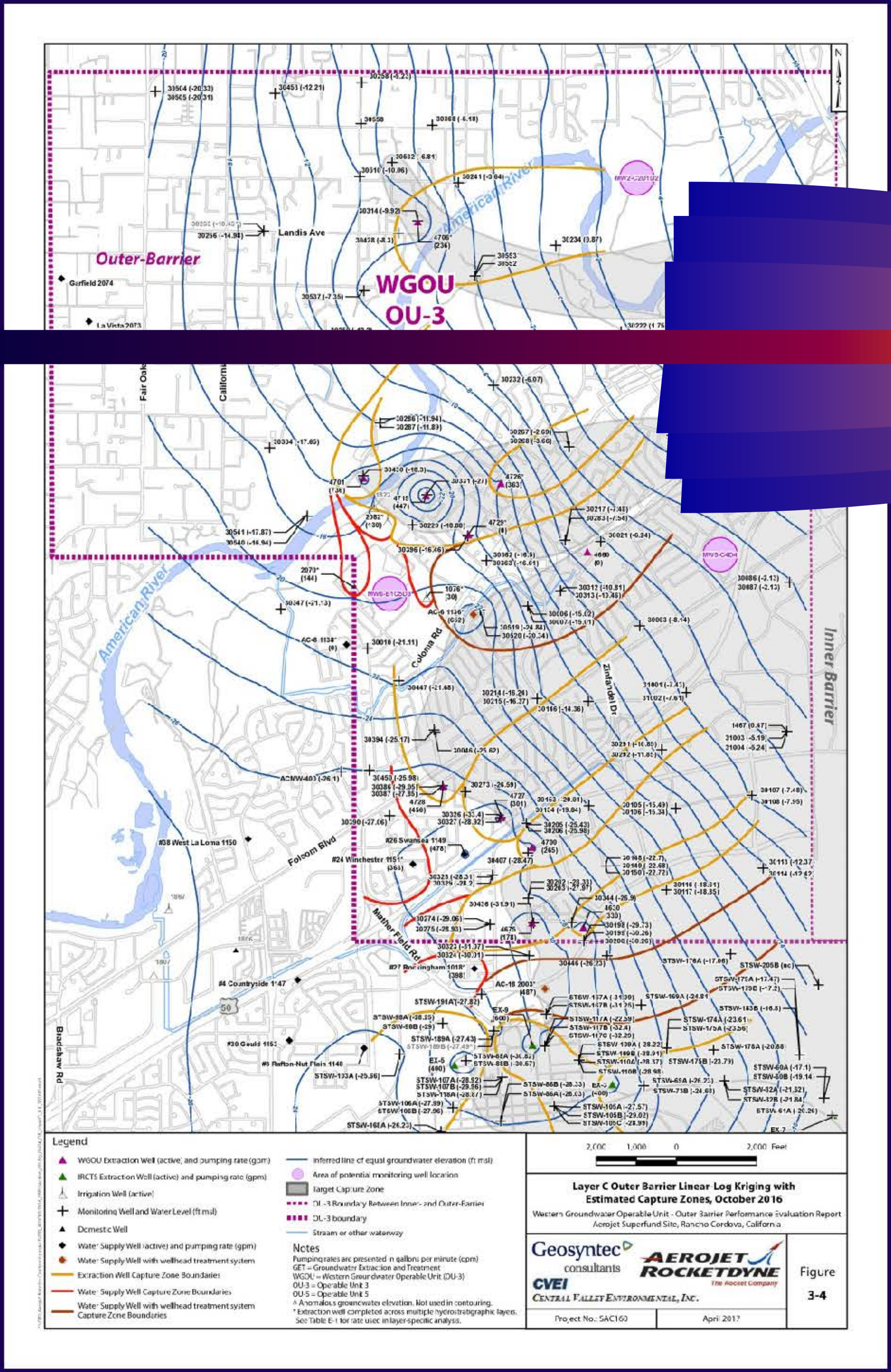
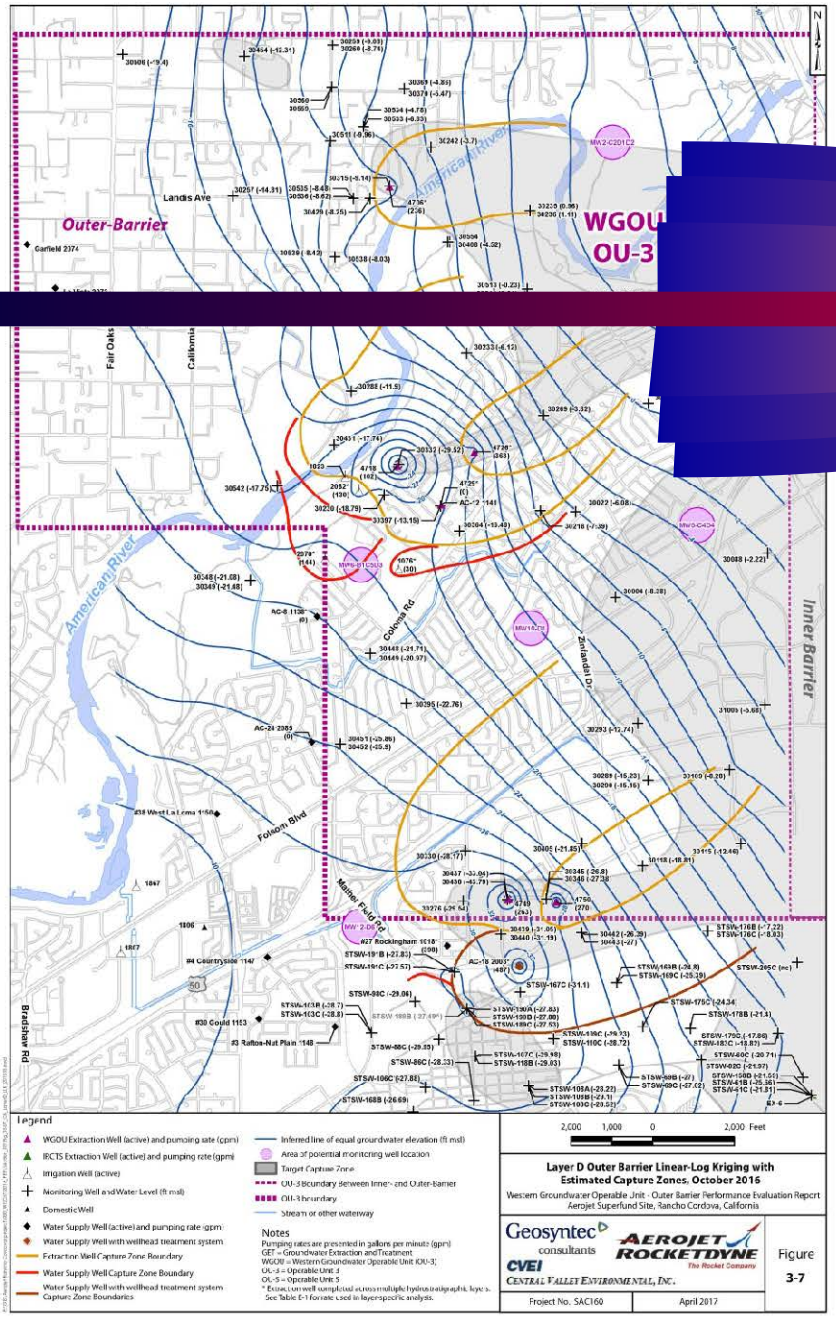
NDMA = n-Nitrosodimethylamine
OU-3 = Operable Unit 3
TCE = Trichloroethene
ng/L = nanograms per liter
VOC = Volatile Organic Compound
µg/L = micrograms per liter
3,000 1,500 0 3,000 Feet
Layer D Target Capture Boundary with Compliance and Sentinel Wells
Western Groundwater Operable Unit - Performance Evaluation Report
Aerojet Superfund Site, Rancho Cordova, California
Geosyntec consultants
AEROJET ROCKETDYNE
CVEI
Central Valley Environmental, Inc.
Figure 2-15
Project No.: SAC160
April 2017
OU-3
Outer-Barrier
Inner-Barrier
American River



Outer-Barrier
WGOU
OU-3
American River
Inner Barrier
Landis Ave
Folsom Blvd
Colonia Rd
Zinfandel Dr
Mather Field Rd
Legend
WGOU Extraction Well (active) and pumping rate (gpm)
IRCTS Extraction Well (active) and pumping rate (gpm)
Irrigation Well (active)
Monitoring Well and Water Level (ft msl)
Domestic Well
Water Supply Well (active) and pumping rate (gpm)
Water Supply Well with wellhead treatment system
Extraction Well Capture Zone Boundaries
Water Supply Well Capture Zone Boundaries
Water Supply Well with wellhead treatment system Capture Zone Boundaries
Inferred line of equal groundwater elevation (ft msl)
Area of potential monitoring well location
Target Capture Zone
OU-3 Boundary Between Inner- and Outer-Barrier
OU-3 boundary
Stream or other waterway
Notes
Pumping rates are presented in gallons per minute (gpm)
GET = Groundwater Extraction and Treatment
WGOU = Western Groundwater Operable Unit (OU-3)
OU-3 = Operable Unit 3
OU-5 = Operable Unit 5
^ Anomalous groundwater elevation. Not used in contouring.
* Extraction well completed across multiple hydrostratigraphic layers. See Table E-1 for rate used in layer-specific analysis.
2,000 1,000 0 2,000 Feet
Layer C Outer Barrier Linear Log Kriging with Estimated Capture Zones, October 2016
Western Groundwater Operable Unit - Outer Barrier Performance Evaluation Report
Aerojet Superfund Site, Rancho Cordova, California
Geosyntec consultants
CVEI
Central Valley Environmental, Inc.
Aerojet Rocketdyne
The Rocket Company
Figure 3-4
Project No.: SAC160
April 2017


Outer-Barrier
Lands Ave
WGOU
OU-3
American River
Fair Oaks
California
Colocse Rd
Zinfandel Dr
Inner Barrier
Folsom Blvd
Bradshaw Rd
Mather Field Rd
Legend
WGOU Extraction Well (active) and pumping rate (gpm)
IRCTS Extraction Well (active) and pumping rate (gpm)
Irrigation Well (active)
Monitoring Well and Water Level (ft msl)
Domestic Well
Water Supply Well (active) and pumping rate (gpm)
Water Supply Well with wellhead treatment system
Extraction Well Capture Zone Boundary
Water Supply Well Capture Zone Boundary
Water Supply Well with wellhead treatment system Capture Zone Boundaries
Inferred line of equal groundwater elevation (ft msl)
Area of potential monitoring well location
Target Capture Zone
OU-3 Boundary between Inner- and Outer-Barrier
OU-3 boundary
Stream or other waterway
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WGOU = Western Groundwater Operable Unit (OU-3;
OU-3 = Operable Unit 3
OU-5 = Operable Unit 5
2,000 1,000 0 2,000 Feet
Layer D Outer Barrier Linear-Log Kriging with Estimated Capture Zones, October 2015
Western Groundwater Operable Unit - Outer Barrier Performance Evaluation Report
Aerojet Superfund Site, Rancho Cordova, California
Geosyntec consultants
CVEI
Central Valley Environmental, Inc.
Aerojet Rocketdyne
The Rocket Company
Figure 3-7
Project No. SAC160
April 2017

QUESTIONS?

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SACRAMENTO SUBURBAN WATER DISTRICT

Water Quality Committee

Agenda Item: 3

Date: July 3, 2017

Subject: Update on Water Quality – TCE at Well #N15

Staff Contact: John E. Valdes, Engineering Manager

Recommended Committee Action:
Receive report on the investigation for the source of Trichloroethylene (TCE) contamination at the District's Cabana Well (#N15).

Background:
In 2016, well #N15 was taken off-line due to concentrations of TCE above the maximum contaminant level (MCL) being detected. TCE is a volatile solvent commonly used as an industrial degreaser or is a by-product of Tetrachloroethylene (PCE) degradation. The well also has elevated concentrations of iron and manganese, but these are below MCL for drinking water standards, as well as other challenges.

The District had the well assessed and a reconnaissance level report completed, which evaluated suitable alternatives to address the water quality and complexities for water production at this site. The report was prepared by Wood Rodgers, Inc. and expressed an opinion that the source of contamination was in a higher aquifer and the well might be restored for service (likely at a lower rate of water production) with treatment following a regime of additional study and with retrofitting for isolation of production zones. However, the site has physical limitations regarding access and overall size to accommodate the work and possible treatment requiring additional evaluation.

Discussion:
In November 2016, the District retained Sierra West Consulting (SWC) to perform a study in an attempt to determine the source of the TCE contamination. SWC's scope of work included searching various databases for nearby properties where environmental cleanup occurred; confirming the general groundwater flow direction; identifying nearby properties with Potentially Contaminating Activities (PCAs); developing a Drinking Water Source Assessment

and Protection (DWSAP) style evaluation to understand the aquifer capture zone of Well #N15 and the corresponding recharge areas; analyzing historical aerial photos of the recharge area; and preparing a report summarizing their findings.

SWC completed these tasks and their findings and recommendations were presented to the Water Quality Committee Meeting at a meeting on March 27, 2017. They concluded that "the most likely sources of TCE in Well #N15 are Camp Kohler, nearby industrial activities and gas stations." They also concluded that "more in-depth analyses of the identified locations would include further review of historical activities and land uses, preliminary site investigations and limited Phase II investigations to test soil and groundwater."

District staff directed SWC to develop a scope of work and fee estimate for a second phase of the TCE contamination investigation in order to try and identify the possible responsible party(ies). A scope and budget has been negotiated with SWC and a contract has been executed for the second phase of their investigation. Their scope of work is provided in the attached Exhibit 1. As noted, the contract amount for this second phase is $26,200. As also noted, SWC's scope of work for this second phase includes evaluating the potential costs of well rehabilitation and wellhead treatment. A kickoff meeting with District and SWC representatives was held on June 16, 2017, and this work is now underway.

District staff and SWC want to be as thorough as possible in investigating the possible sources of the TCE contamination. After the contract for the second phase was executed, SWC presented the option of using a nationally recognized firm, History Associates, to assist in the investigation. Specifically, for a fee not to exceed $8,500, History Associates will conduct targeted historical research into whether the WWII era Army Signal Corps facility at Camp Kohler could have discharged TCE containing compounds to the subsurface. Staff subsequently directed SWC to include this extra work with History Associates as a subconsultant. The attached Exhibit 2 is a letter proposal from SWC dated June 30, 2017, that includes a detailed description of the work to be conducted by History Associates. A contract amendment will be issued to SWC to add this work.

It is anticipated that SWC will attend the next Water Quality Committee Meeting to provide an update on their conclusions and findings from the second phase of the investigation.

Fiscal Impact:

Unknown at the present time. Future costs could include further environmental investigation(s), water treatment, etc. could prove infeasible to pursue. The contract amount with SWC for the current phase of the investigation is $26,200. The cost to add the services of History Associates, as described above, is $8,500 resulting in a revised cost of $34,700. The cost for the initial phase of the investigation was $14,800.

Strategic Plan Alignment:

Water Supply – 1.D. Manage the District's water supplies to ensure their quality and quantity.

This item is in alignment with this goal because adequate supplies of uncontaminated groundwater are crucial to the health of consumers. District customers benefit by exercising diligence and taking action to identify sources of contamination and recovering damages when possible.

Exhibit 1

SIERRA WEST
CONSULTANTS, INC.

Environmental Engineering | Water Resources | Construction Management | Project Administration

April 14, 2017

Sacramento Suburban Water District
3701 Marconi Avenue, #100
Sacramento, CA 95821

Attn: Mr. Mitch Dion, Technical Services Director

Re: Proposal for Desktop Investigation of TCE Impacts
Well N15 (the Cabana Well)

Dear Mr. Dion,

Sierra West Consultants (Sierra West) appreciates this opportunity to assist Sacramento Suburban Water District (District) with their evaluation of water supply well N15, the Cabana Well, located at 4402 Greenholme Drive in North Highlands, California. Sierra West completed an initial review of potential sources of the trichloroethylene (TCE) present in the well. This evaluation concluded that likely sources are in the vicinity of Well 15 and further investigations are warranted.

Identified sources included Camp Kohler, a former military facility used primarily during World War II, Planned Maintenance Services Haz-Waste Hauler, Hillsdale Auto Repair, a few gas stations, and a couple of dry cleaners. Camp Kohler had a rail yard, motor pool, sewage plant, and a laundry that could have used TCE during the 1940s. The gas stations are considered unlikely sources because the amount of TCE used at gas stations was relatively small and most gas stations have been investigated under the State of California's underground storage tank program. The dry cleaners are also considered unlikely source because these cleaners would have used tetrachloroethylene (PCE), and PCE has not been observed in Well N15.

The proposed approach is to further research the activities at Camp Kohler to determine or verify the use of TCE. The approach also includes researching TCE contamination at McClellan Air Force Base where similar rail yard and motor pool activities occurred. Further data reviews of the Planned Maintenance Service facility and Hillsdale Auto Repair are also included. The goal of this research is to more clearly identify potentially responsible parties for the TCE in groundwater and develop a data package that may be submitted, if warranted, to an oversight regulatory agency, such as the Sacramento County Environmental Management Department or the State of California Central Valley Regional Water Quality Control Board.

Sierra West also proposes to evaluate potential well improvements that could prevent TCE from entering the well. In addition, Sierra West will evaluate potential treatment technologies that could be installed at Well N15 to remove the TCE from the drinking water. Possible hexavalent chromium (Cr-6) impacts will also be considered in the evaluation.

Scope of Work

Further research into historical activities in the vicinity of Well N15 are proposed along with evaluations of alternatives to allow continued use of the well. Sierra West proposes the following specific tasks:

1. Conduct a project kick-off meeting with District staff to review project goals, activities, and available new information about the well and surrounding area.
2. Research historical activities at Camp Kohler, including looking for decommissioning documentation to seek evidence of industrial equipment or practices that were known to use TCE.
3. Research the levels of TCE impacts in soil and groundwater near rail yard, motor pool, wastewater treatment, and laundry services at McClellan Air Force Base.
4. Research business activities and environmental investigation and cleanup activities at the Planned Maintenance Service facility and Hillsdale Auto Repair shop near Well N15.
5. Evaluate well rehabilitation alternatives to prevent TCE from entering Well N15. Prepare planning-level budget estimates for the preferred alternative.
6. Evaluate water treatment alternatives to remove TCE and Cr-6 from extracted groundwater. Prepare planning-level budget estimates for the preferred alternative.
7. Prepare a draft written report documenting the evaluation activities and results. The draft report will be presented to District staff for review and Sierra West will conduct a review meeting to present the results and answer questions.
8. Incorporate District comments, make formal presentation to the District's Water Quality Committee, and prepare the final report.

Project Team

Sierra West will continue with the same team that conducted the recent source area review for Well N15, including:

Project Manager/Lead Engineer:	Jeffrey Bensch, P.E.
Lead Hydrogeologist:	Thomas Ballard, PG, CHG
Project Geologist:	Brian Whalen, PG

Project Budget

The estimated project budget is $26,200. The project budget by task is:

1.	Project Kick-off Meeting and Initial Data Review	$1,400
2.	Research activities at Camp Kohler	$3,900
3.	Research activities and TCE impacts at McClellan AFB	$3,100
4.	Research Planned Maintenance Service and Hillsdale Auto Repair	$2,300
5.	Evaluate well rehabilitation alternatives	$2,500
6.	Evaluate water treatment alternatives	$3,500
7.	Prepare Draft Report and Conduct Review Meeting	$5,300
8.	Presentation to the WQ Committee and Final Report	$4,200

Sierra West proposes to conduct the work on a time and materials basis under the terms and conditions of the District's standard services agreement, using Sierra West's Standard Billing Rate Schedule (attached).

Sierra West appreciates this opportunity to work with Sacramento Suburban Water District. If you have any questions, please contact me.

Sincerely,
Sierra West Consultants, Inc.

Jeffrey C. Bensch, P.E.
Principal Engineer

Cc: John Valdes, Sacramento Suburban Water District

SIERRA WEST
CONSULTANTS, INC

Schedule of Billing Rates

Sierra West Consultants, Inc.

January 2017

Grade	Rate ($/hour)
Principal Professional	165
Senior Professional Project Manager	139
Project Professional	119
Staff Engineer/Geologist	99
Senior Technician	92
Technician	79
CADD Operator/Drafting	73
Clerical	59
Litigation Support, Deposition, or Expert Witness Services	250

Hourly Rates are subject to annual review and adjustment.

Reimbursable expenses will be billed at cost plus 15%. Auto mileage will be billed at government established rates in effect at the time of travel.

Exhibit 2

SIERRA WEST
CONSULTANTS, INC.

Environmental Engineering | Water Resources | Construction Management | Project Administration

June 30, 2017

Sacramento Suburban Water District
3701 Marconi Avenue, #100
Sacramento, CA 95821

Attn: Mr. John E. Valdes, Engineering Manager

Re: Addendum for Historical Research
Desktop Investigation of TCE Impacts
Well N15 (the Cabana Well)

Dear Mr. Valdes,

Sierra West Consultants (Sierra West) appreciates this opportunity to assist Sacramento Suburban Water District (District) with their evaluation of water supply well N15, the Cabana Well, located at 4402 Greenholme Drive in North Highlands, California. The current scope of work is being expanded to include the services of Historical Associates, Inc. (HA).

HA will conduct targeted historical research into whether the World War II era facilities at Camp Kohler could have discharged TCE containing compounds to the subsurface. HA's proposal, including their detailed scope of work, is attached.

The estimated budget increase is $8,500. HA's budget is slightly more than this, but their work is offset by other previous budget allocations.

Sierra West appreciates this opportunity to work with Sacramento Suburban Water District. If you have any questions, please contact me.

Sincerely,
Sierra West Consultants, Inc.

Jeffrey C. Bensch, P.E.
Principal Engineer

attachments

History Associates Camp Kohler Research Proposal

Inbox x

Mike Reis Jun 14 Reply

to me, Jason, Nancy

Privileged and Confidential/Work Product Protection

Dear Jeff,

Thank you for contacting us about the Camp Kohler investigation and the need for targeted historical research. I am providing below a Project Scope along with a concise Research Plan and Cost Estimate for a Phase I effort addressing your questions of interest.

Project Scope
From our email and telephone conversations, we understand that Sierra West, Inc., on behalf of the Sacramento Suburban Water District, would like History Associates to conduct targeted Phase I historical research into whether the WWII era Army Signal Corps facility at Camp Kohler, located twelve miles northeast of Sacramento, could have discharged TCE containing compounds to the subsurface. Background documentation you have shared indicates that a Sacramento Suburban Water District groundwater well (N15) has recently become contaminated with trichloroethylene (TCE). The well is located near the former military Camp Kohler, which was shut down in 1946-1947. The military camp had a motor pool, rail yard, and other activities. Preliminary research also suggests that Camp Kohler, located where a Japanese-American internment assembly center had briefly been in 1942, served primarily in WWII as the Western Signal Corps Replacement Center and later the Western Signal Corps Unit Training Center, under jurisdiction of the U.S. Army Signal Corps. At a certain point after the war, the camp also fell under San Francisco Port of Embarkation officials, aiding in demobilization efforts. Portions of the Camp Kohler area may also have included a WWII era Army Corps of Engineers facility, the Walerga Engineer Sub-depot, and may have served as an Overseas Replacement Center for the Army Air Forces. Specifically, you would like History Associates to perform research to document whether or not there were any degreasers or other equipment at Camp Kohler that would indicate that TCE was used on site. History Associates has checked for potential conflicts of interest regarding this matter and this site. History Associates is not, nor has it ever been, engaged by the parties in the matter and is thus free and clear to work on the matter. We recognize that History Associates' proposed research is in support of ongoing environmental and regulatory actions and that any communications in connection with this proposal, as well as any work we may perform, should be treated as privileged and confidential.

Please let me know if History Associates' understanding of the project scope meets your requirements. If our understanding of the project scope does not accurately reflect your research needs, I can modify our research plan and cost estimate accordingly.

Research Plan
The Phase I research plan below lays out a step-by-step approach, with a corresponding cost estimate with time built in for consultation, coordination, and conference call updates.

Review of Previously Collected Materials
Prior to beginning the work outlined below, we recommend that a short kickoff consultation be held to address any issues or questions concerning the project. In connection with this, we would also review any documents that you have already secured in order to incorporate them into our research plan, including the materials you have already shared as well as any further documents of interest and any research notes pertaining to previous investigation and document collection. We will closely coordinate

with you to understand what research has already been conducted to avoid duplication and to assess gaps in knowledge.

Research into Select Military and Civilian Agency Records at National Archives Facilities
As the military was active at the Camp Kohler site mainly during WWII, we propose for this Phase I effort to investigate and collect site-specific records from a variety of fairly readily accessible collections of military and civilian records of the era held at the National Archives in College Park, MD (NARA-CP) and the National Archives in Washington, DC (NARA-DC). Due to its direct operational responsibility for Camp Kohler through much of the war, the *Army Signal Corps* may have kept files on equipment used there and such files may be among that command's records at NARA-CP. Military construction and real property files exist at NARA-CP from the *Army Corps of Engineers* and *Army Air Forces* (both of which utilized the site along with the *Army Signal Corps*) and these records may yield government-owned equipment inventories.

Similarly, site-specific files of the *Army Inspector General* at NARA-CP and the *Army Judge Advocate General* at NARA-DC, each of which kept information about government property on federal lands, will be worth examination. The various property transfers and surplus disposals of materiel at the site may also have occasioned site inspections and inventories compiled by certain civilian officials; we propose to investigate inspection files at NARA-CP from the *White House Bureau of Budget War Project Units* as well as the *War Assets Administration (WAA)* and its successor the *General Services Administration (GSA)*, which oversaw surplus disposal of property including equipment for the military along with civilian agencies.

Our preliminary research moreover indicates that there are some Camp Kohler files within *Army Corps of Engineers, WAA, GSA, Public Buildings Service*, and *Federal Property Resources Service* records held at the regional branch of the National Archives in San Bruno, CA (NARA-SB). In Phase I, we will contact archivists at NARA-SB to learn more about these files and remotely order copies of them, if as suspected some or all contain equipment and structure inventories and plans.

Other Remote Inquiries
One other significant remote inquiry we propose to make in Phase I will be to reach out to the *Army Communications-Electronics Command (CECOM) History Office* in Fort Monmouth, NJ. For prior projects, we have successfully secured unit histories and other materials regarding Army Signal Corps field facilities from this office.

In addition, the Air Force Historical Research Agency (AFHRA) at Maxwell AFB in Montgomery, Alabama, holds a number of USAF reports regarding the WWII use of the Camp Kohler site as an Army Air Corps Replacement Center. We will investigate/collect these reports from this office.

Document Transmittal
As the project progresses we will provide you with periodic updates on the status of our work. We can also provide you with rolling deliverables upon request. At the conclusion of our work, we will transmit all remaining relevant collected documents. In doing so, we will mark each document forwarded to you with "provenance" information that indicates the file location of the original document.

History Associates will also retain a mirror file of all documents sent to you, which will allow us to respond to inquiries from you, facilitate the collection of additional certified copies for submission to courts, or replace any misplaced or damaged documents. Throughout the project, we will maintain our customary research notes that document our research methodology and findings.

Potential for Phase II Research
In addition to the research outlined above, there may be other potential avenues for further research that History Associates could undertake, based on our findings from the above-outlined work. A deeper investigation of Army Signal Corps files at NARA-CP, for instance, could yield more information about the use of degreasers and TCE on-site, assuming Phase I research shows that such equipment and chemicals were present. Similarly, state and local environmental and public

health files and judicial materials may details any historical disputes over alleged contamination at the site stemming from WWII activities. At the conclusion of Phase I, we will be happy to discuss with you these or other options for Phase II work and to prepare a separate work plan and cost estimate covering such options.

Cost Estimate

Attached are our current labor rates for litigation research and analysis, which will apply to the project. History Associates estimates that we can complete the aforementioned Phase I research and document transmittal tasks on a time-and-materials basis for a total cost not to exceed **$10,000.** We may find that we can do the work for less than our estimate. In any case, we will keep you informed regarding our research progress and budgetary expenditures and, if necessary, adjust our work plan or request additional funds to complete the work.

EXCLUSIONS, ASSUMPTIONS, AND CONSTRAINTS

- Based on our current contract obligations and assuming we encounter no unforeseen obstacles, we estimate that we can complete the work above within approximately 3 to 4 weeks from the date of authorization.
- All deliverables will be developed and presented in Microsoft Word/Adobe PDF or Microsoft Excel format unless otherwise specified.
- Changes to the scope, schedule, or costs shall be handled through a mutually agreed-upon change order.
- Progress reports detailing the work accomplished during the billing period will be submitted to Sierra West, Inc. with monthly invoices.
- This proposal and all other communications regarding this matter will be treated as privileged and confidential.

CLIENT OBLIGATIONS

- Scope, cost, or schedule change requests shall be approved in five (5) business days from submission in support of achieving project schedule and associated milestones.
- Sierra West, Inc. will designate a primary point-of-contact who will be solely responsible for the review and approval of the work product.
- We submit this proposal for your consideration and evaluation. Client agrees that the content of this proposal is proprietary and remains the property of History Associates until work is authorized.

Again, thanks for the opportunity to submit the foregoing proposal. Please let us know if you have any questions or would like us to proceed with the Phase I work we have outlined.

Best regards,

Michael Reis
Senior Vice President

History Associates Incorporated
300 North Stonestreet Avenue | Rockville, MD 20850-1655
Tel: 301-279-9697
Fax: 301-279-9224
mreis@historyassociates.com
www.historyassociates.com

HISTORY ASSOCIATES INCORPORATED

LABOR RATES FOR HISTORICAL RESEARCH

Labor Category	Hourly Rate
Senior Associate III	$256.00
Senior Associate II	$196.00
Senior Associate I	$164.00
Senior Historian III	$162.00
Senior Historian II	$146.00
Senior Historian I	$140.00
Historian III	$134.00
Historian II	$119.00
Historian I	$109.00
Research Historian	$96.00
Manuscript Specialist	$93.00
Project Support	$77.00

Other direct expenses including, but not limited to, costs for document reproduction, postage and shipping, telecommunications, and local and long-distance travel are additional.

Back to Agenda

SACRAMENTO SUBURBAN WATER DISTRICT

Water Quality Committee

Agenda Item: 4

Date: July 6, 2017

Subject: Water Quality Test Reports

Staff Contact: David Armand, Environmental Compliance Supervisor

Recommended Committee Action:
Receive written staff report.

WATER QUALITY MONITORING

2017 Monitoring Plan

The 2017 Monitoring Plan (Exhibit 1) is a master schedule that lists the monitoring requirements for each of the District's groundwater wells. The monitoring plan also shows the following general information for each well:

- Service area
- Name and number
- Permitted status
- The next time main groups of contaminants require monitoring

The monitoring plan also indicates which of the South Service Area (SSA) wells have fluoridation facilities. The monitoring plan for the SSA shows that most of the sampling is scheduled for the third quarter of 2017.

Second Quarter 2017 Monitoring

Second quarter 2017 monitoring (sampling) is primarily composed of routine quarterly sampling that is required by regulation, or a water supply permit condition. Examples of each include weekly distribution system Total Coliform Rule monitoring (regulation) and quarterly, untreated (raw) well water bacteriological monitoring. Most of the second quarter monitoring (non-bacteriological related) required by regulation was triggered by events such as:

- Volatile organic compound (VOC) detection
- Nitrate detection over one-half of the MCL
- Secondary MCL exceedance
- Initial monitoring for a new source

Second quarter monitoring also includes monthly monitoring at some sources that was triggered by unique events. Other sampling required during the second quarter 2017 that is not on the monitoring plan includes, sampling that was scheduled to be conducted previously but could not be performed because the wells were not in service.

Individual analytical results from the second quarter 2017 monitoring are attached as Exhibits 2 – 7. Second quarter monitoring was conducted in accordance with the 2017 Monitoring Plan (Exhibit 1). It also includes previously scheduled monitoring at specific sources that was not completed because they off-line pending repairs or upgrades. Exhibits 2 – 7 also include explanations as to why each source was monitored during the second quarter. The data presented is limited to that received from the lab through June 30, 2017.

WATER QUALITY INVESTIGATIONS

Background

When select contaminants are detected for the first time in a source or detected at levels exceeding regulatory thresholds, District staff perform investigations to determine appropriate follow-up actions. These investigations include conferring with laboratory staff and the sampler to address any potential analysis or sampling errors. It is critical to ensure the results are representative of the water intended, prior to collecting additional samples. Water quality and production data for the source is taken into account to place the detection into context. Once external errors are ruled out, a follow-up action plan is developed.

Laboratory Error

Multiple investigations by District staff have resulted in laboratory corrections of erroneous data. In one such case, volatile organic chemical (VOC) detections were erroneously reported for Well #9. Trichloroethylene (TCE) was reported at 33 parts per billion (ppb), significantly above the Maximum Contaminant Level (MCL) of 5 ppb. Additionally, 1,1-Dichloroethene and cis-1,2-Dichloroethene were reported at lower levels below the MCL.

Well #9 did not have a history of VOC detections, so the results were highly suspect. District staff immediately contacted the laboratory upon receiving notification of the results and requested detailed analytical information. It was then discovered the detections were for another client's samples, not the District's Well #9. The laboratory reanalyzed the sample from Well #9, confirmed that all of the results were non-detect, then issued an amended report. If the District had not immediately cleared the results with the laboratory, the District would have been

required to notify the State Water Resources Control Board, Division of Drinking Water (DDW). Even if confirmation samples were collected with non-detect results, the originally reported results would remain permanently in DDW's public database. With the laboratory's corrected data, the originally reported results are no longer associated with the District's Well #9.

Laboratory error was also recently discovered in a synthetic organic chemical (SOC) detection. Dibromochloropropane (DBCP) was reported at 0.017 ppb (below the MCL of 0.2 ppb) in a sample collected from Well #N36. If confirmed, quarterly monitoring for DBCP and public disclosure in the District's Consumer Confidence Report (CCR) would have been required. The detection was concerning because DBCP is a banned pesticide previously used to kill nematodes. To investigate the validity of the result, District staff checked for any historical SOC detections and also examined the levels of another contaminant associated with agricultural practices, nitrate. No historical SOC detections were found and the nitrate levels were unremarkably low, suggesting that the DBCP result was suspect.

To follow up on the suspect DBCP result, District staff requested the laboratory confirm the analysis and if confirmed, check for trace detections below the reporting level on historical SOC samples. Upon further review of the data, the laboratory found that the reported DBCP detection was caused by a matrix interference that was erroneously reported. The laboratory report was amended to show that all of the SOC results were non-detect. Thus, no further sampling was required for Well #N36 and the erroneous data was not reported to DDW's public database.

Another case of laboratory error occurred in one of the District's Stage 2 Disinfection By-Product Rule (DBPR) samples from the distribution system. The Total Trihalomethanes (TTHM) concentration was reported at 200 ppb for the sample station at 4431 Altadena Way. The MCL for TTHM is 80 ppb, based on the Locational Running Annual Average (LRAA) for the sample site. Though the LRAA was still below the MCL, the sample result was alarmingly high and it was not consistent with the five Haloacetic Acids (HAA5) result, which was non-detect.

District staff investigated the anomalous TTHM result by comparing it to the results of other DBPR samples collected that day. In consideration of the sources supplying the area of 4431 Altadena Way and the other sampling stations, the TTHM result did not seem plausible. Thus, District staff inquired with the laboratory for any potential causes. District staff were informed that the samples had been analyzed in the incorrect order and the elevated TTHM result was in fact for another client's sample. The laboratory report was amended and the accurate results were reported in the following DBPR report to DDW.

Contamination Investigations and Mitigation

If the laboratory data is determined to be accurate, District staff investigates the circumstances of the sampling event to identify factors which may have influenced the anomalous result. Well #N15 Cabana had been on quarterly TCE monitoring for several years with detectable levels below the MCL of 5 ppb. When a result above the MCL at 5.8 ppb was received, District staff immediately removed the well from service and notified DDW, then began investigating the sampling event circumstances. District staff found Well #N15 had been offline in the recent period prior to the sampling event, and the runtime prior to sample collection was shorter than usual. Analysis of historical water quality and production data suggested an inverse relationship between runtime and TCE levels.

Running Well #N15 flush-to-waste, District staff collected process samples in addition to the required confirmation samples, in an effort to verify the apparent relationship between runtime and TCE levels. The samples collected shortly after start-up had TCE concentrations above the MCL, then the TCE levels fell below the MCL within half an hour. District staff used this data, along with the well construction details, to hypothesize how TCE was entering the well and to propose mitigation options. The information suggested TCE may have been entering from the upper portions of the well. Because treatment was not believed to be an option due to site conditions, District staff recommended sampling for TCE using a packer, cleaning the well screens through mechanical and chemical action, and isolating the TCE by either installing a liner or partially removing the gravel pack and grouting the annulus. At this time, the pump has been pulled and the options are being evaluated to determine what, if any, action to mitigate TCE at Well #N15 should be pursued.

Another case in which runtime affected the sampling results was at Well #59A. This well was previously equipped with a Byron-Jackson submersible pump with a mercury seal that failed, thereby releasing mercury into the well. In response to the pump failure, the District removed the well from service, pulled the pump, and videoed the well. The District developed a plan to remove as much of the mercury as possible then encapsulate any remaining mercury with cement, of which the plan was approved by DDW. In addition, the pump was properly disposed of, in accordance with hazardous materials regulations for mercury.

After the remediation was completed at Well #59A, the well was pumped flush-to-waste and sampled. The first sample collected showed a mercury detection of 0.27 ppb (below the MCL of 2 ppb) and the second sample collected was non-detect. The results raised some concerns regarding what the concentrations may be at shorter runtimes. Because the mercury was released into the well itself and was not present in the aquifer, mercury concentrations were expected to decrease over runtime. Thus, to further evaluate the issue, the well was pumped flush-to-waste again and sampled shortly after start-up. All of the results from this sampling event were non-

detect, revealing that mercury was no longer present in the well. Thus, the well was brought back online after demonstrating that the issue had been effectively resolved.

In some cases, water quality investigations reveal operational process changes that can be made to mitigate the problem. As part of Unregulated Contaminant Monitoring Rule 3 (UCMR3) monitoring, chlorate was detected in the treated water from Well #75 at 1.8 parts per million (ppm) and 2.1 ppm. Because the results exceeded the chlorate notification level of 0.8 ppm, the District notified the Sacramento County Board of Supervisors. Subsequently, chlorate levels above the notification level were also detected in the treated water from Wells #41, Well #28, Well #26, and Well #N7, and the Sacramento County Board of Supervisors was notified for these sources.

Research on chlorate and investigation of the sources in which chlorate was found in the highest concentrations revealed the cause of the problem. Chlorate is a disinfection by-product and can form from the dissociation of sodium hypochlorite, which is the liquid chlorine solution the District uses for its wells. The wells associated with elevated levels of chlorate are infrequently used sources, meaning that the sodium hypochlorite on site had time to age. Subsequent samples with freshly-added sodium hypochlorite showed dramatically lower chlorate levels, well below the notification level. For example, the initial result at Well #N7 was 2.5 ppm and the subsequent result was 0.34 ppm.

To prevent the chlorate problem from occurring in the future, District staff improved the process for managing the sodium hypochlorite at well sites. Now, the sodium hypochlorite tank levels at lag wells are not kept higher than needed for emergency readiness. Additionally, lag wells are operated as needed to use the sodium hypochlorite before it ages. If the solution is inadvertently allowed to age, it is removed off-site rather than being used to treat the water. In this manner, investigation by District staff revealed the cause of a problem that could be corrected operationally, so a plan was implemented to effectively mitigate the issue.

Summary

As demonstrated in the above examples, there are numerous instances in which careful consideration of sampling and analytical processes is critical for determining subsequent actions. Correcting erroneous data is critical because if inaccurate data is reported, it can inappropriately alarms customer and cause a loss of confidence in their water supply, while diverting staff time and District resources. If the result is not due to laboratory error, the response must consider the site-specific factors contributing to the elevated result, in order to develop a mitigation plan. Additional samples are collected in a prudent manner to gain more information about the problem. In some cases, the mitigation plan can be implemented through operational changes, while in others, source rehabilitation or treatment is required.

SACRAMENTO SUBURBAN WATER DISTRICT
2017 MONITORING PLAN

Exhibit 1

NSA Monitoring Plan 2017				2017																
This plan is subject to changes that result from: well status or condition, monitoring results, waivers, new regulations and/or other requirements.				Raw Bac-T	Inorganics	Secondary	Perchlorate	Chrome 6 (Cr+6)[3]	Nitrate (as N)	Annual Fluoride	Special Fe/Mn	VOC	SOC	Radionuclides	Asbestos	Pb & Cu	Stage 2 DBPs	Other - Special	Nitrosamines (Process Sampling)
Area	Facility Name (F)[2]	No.	Status																
N	Melrose / Channing	27	Active	Q1-4					Q3										
N	Watt / Elkhorn	31A	Active	M					Q3		M	Q3							
N	La Cienega / Melrose	34	Stand-by	Next monitoring= 2022															
N	Thomas / Elkhorn	39	Stand-by	Next monitoring= 2022															
N	Weddigen / Gothberg	52	Active	Q1-4					Q3										
N	Fairbairn / Karl	56A	Active	Q1-4					Q3			Q3							
N	Thirty Second / Elkhorn	58	Active	Q1-4					Q3			Q3							
N	Bainbridge / Holmes School	59A	Active	Q1-4					Q3									M-Hg	
N	Galbrath / Antelope Woods	64	Active	M-10T					Q3										
N	Capehart 1-C	MC-C1	Stand-by	Next monitoring= 2022															
N	Capehart3-C	MC-C3	Stand-by	Next monitoring= 2022															
N	McClellan Well 10	MC10	Active	Q1-4	INORGANICS PART OF TITLE 22 NEXT DUE 2019	SECONDARIES PART OF TITLE 22 NEXT DUE 2019	PERCHLORATE PART OF TITLE 22 NEXT DUE 2019	Cr+6 PART OF TITLE 22 NEXT DUE 2019	Q3	NOT REQUIRED IN NORTH SERVICE AREA		Q3	SOCs PART OF TITLE 22 NEXT DUE 2019	RADs DUE EVERY COMPLIANCE CYCLE. NEXT DUE 2023[4] - GA ONLY	DISTRIBUTION SYSTEM SAMPLES; SYSTEM ASBESTOS NEXT DUE 2020, SOURCE ASBESTOS NEXT DUE 2022 (request triennial system waiver)	DISTRIBUTION SYSTEM SAMPLES DUE: JUNE - SEPTEMBER 2019	QUARTERLY DISTRIBUTION SYSTEM SAMPLES		
N	Evergreen	N1	Active	Q1-4					Q3										
N	Engle	N3	Active	Q1-4					Q1-4										Q1-4
N	Hillsdale	N5	Active	Q1-4					Q3			Q3							
N	Palm	N6	Destroyed																
N	Rosebud	N7	Active	Q1-4					Q3			Q3							
N	Field	N8	Active	Q1-4					Q3			Q1-4							
N	Cameron	N9	Active	Q1-4					Q3										
N	Walnut	N10	Active	Q1-4					Q3			Q1-4							
N	St. Johns	N12	Active	Q1-4					Q1-4			Q3							Q1-4
N	Orange Grove	N14	Active	Q1-4					Q3			Q3							
N	Cabana	N15	Active	Q1-4					Q3			Q1-4							
N	Oakdale	N17	Active	Q1-4					Q3			Q3							
N	Cypress	N20	Active	Q1-4					Q3		Q1-4								Q1-4
N	River College	N22	Active	Q1-4					Q3										
N	Freeway	N23A	Active	Q1-4					Q3			Q1-4							
N	Don Julio	N24	Active	Q1-4					Q3										
N	Sutter	N25	Active	Q1-4					Q3										
N	Monument	N26	Active	Q1-4					Q3			Q3							
N	Merrihill	N29	Active	Q1-4					Q1-4										
N	Park Oaks	N30	Active	Q1-4					Q1-4			Q3							
N	Barrett Meadows	N31	Inactive																
N	Poker 1	N32-A	Active	Q1-4					Q3			Q1-4							
N	Poker 2	N32-B	Active	Q1-4					Q3		Q1-4	Q1-4							
N	Poker 3	N32-C	Stand-by	Next monitoring= 2022															
N	Walerga	N33	Stand-by	Next monitoring= 2022															
N	Cottage	N34	Active	Q1-4					Q3			Q3							
N	North Antelope	N35	Active	Q1-4					Q3			Q1-4							
N	Verner	N36	Active	Q1-4					Q3		Q1-4	Q3							
N	Coyle	N38	Active	Q1-4					Q3		Q3	Q3							
N	Rutland	N39	Active	M thru Sep			Q1		Q3			Q1-2	Q1-2	Q1-2					
N	Distribution System	NA	NA												Q2		Q1-4		

SACRAMENTO SUBURBAN WATER DISTRICT
2017 MONITORING PLAN

Exhibit 1

SSA Monitoring Plan 2017				2017															
This plan is subject to changes that result from: well status or condition, monitoring results, waivers, new regulations and/or other requirements.				Raw Bac-T	Inorganics	Secondary	Perchlorate	Chrome 6 (Cr+6)[3]	Nitrate (as N)	Annual Fluoride	Special Fe/Mn	VOC	SOC	Radionuclides	Asbestos	Pb & Cu	Stage 2 DBPs	Other - Special	Nitrosamines (Process Sampling)
Area	Facility Name (F)[2]	No.	Status																
S	El Prado / Park Estates (F)	2A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3	RADs DUE EVERY COMPLIANCE CYCLE. NEXT DUE 2023[4] - GA ONLY	DISTRIBUTION SYSTEM SAMPLES; SYSTEM ASBESTOS NEXT DUE 2020, SOURCE ASBESTOS NEXT DUE 2023 (request triennial system waiver)	DISTRIBUTION SYSTEM SAMPLES DUE: JUNE - SEPTEMBER 2019	QUARTERLY DISTRIBUTION SYSTEM SAMPLES		
S	Kubel / Armstrong	3A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Bell / Marconi (F)	4B	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Bell / El Camino	5	Inactive																
S	Ravenwood / Eastern (F)	9	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Hernando / Santa Anita Park	12	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Calderwood / Marconi (F)	13	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Marconi South / Fulton	14	Active	M Jan-July,Q4	Q3	Q3	Q3	Cr-T	Q1-4	---	Fe,Q1,2,4	Q3	Q1/3						
S	Riding Club / Ladino (F)	18	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Watt / Arden (F)	20A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	West / Bercerra (F)	22	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Marconi North / Fulton	23	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Beccerra / Woodcrest (F)	24	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q1-4	---		Q1&3	Q1/3						
S	Thor/Mercury (F)	25	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Greenwood / Marconi (F)	26	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q1-4	---		Q1-4	Q1/3						
S	Red Robin / Darwin (F)	28	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Rockbridge / Bowling Green (F)	30	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Eden / Root (F)	32A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---	M	Q3	Q1/3						Q3
S	Eden / Root - Treated	32A	Active	-----	Q3	Q3	---	---	---	---	M	---	---					---	---
S	Auburn / Norris (F)	33A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Ulysses/Mercury (F)	35	Active	M-10T	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Morse / Cottage Park	37	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Watt / Auburn	38	Stand-by	Next monitoring= 2023															
S	Auburn / Yard	40	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Auburn / Yard (F)	40A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---	---	Q3	Q1/3						
S	Albatross / Iris (F)	41	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Edison / Truax (F)	43	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Jamestown / Middleberry	45	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Jonas / Sierra Mills	46	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q1-4	---		Q3	Q1/3						
S	Copenhagen / Arden (F)	47	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						Q3
S	Stewart / Lynndale (F)	55A	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Whitney / Concetta (F)	60	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Merrily / Annadale (F)	65	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q1-4	---		Q3	Q1/3						
S	Eastern / Woodside Church (F)	66	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Northrop / Dornajo	68	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---	Q1,2,4	Q3	Q1/3						
S	Hilldale / Cooper (F)	69	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Sierra / Blackmer (F)	70	Active	M start Apr	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Rodney T. Franz (F)	71	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	River Walk / NETP (F)	72	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---	As+Fe,Q 1,2,4	Q3	Q1/3						
S	River Walk / NETP East (F)	73	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q1-4	Q1/3						
S	River Walk / NETP South (F)	74	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Enterprise / Northrop (F)	75	Inactive																
S	Enterprise / Northrop - Treated	75	Inactive																
S	Fulton / Fair Oaks	76	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Larch / Northrup	77	Active	Q1-4	Q3	Q3	Q3	Cr-T	Q3	---		Q3	Q1/3						
S	Distribution System	NA	NA												Q2		Q1-4		

SSWD Q2 2017
TCR MONITORING

Exhibit 2

30 samples are required every week to ensure that the water served to customers is free of (the ubiqitous, albeit harmless) total coliform bacteria. Chlorine residual monitoring is also required for disinfectant residual reporting. SSWD also monitors system residual to ensure facilities are operating as intended. Anomalies are investigated and addressed as soon as they are identified. Target range= 0.30 - 1.20 mg/L.			Chlorine	Total Coliform	E. coli
Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	01B - BREWSTER MILL CIRCLE	04/04/2017	0.77	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	04/04/2017	0.60	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	04/04/2017	0.82	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	04/04/2017	0.75	A	A
TCR Sample Station	05B - 3311 Q Street	04/04/2017	0.80	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	04/04/2017	0.69	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	04/04/2017	0.66	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	04/04/2017	0.73	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	04/04/2017	0.80	A	A
TCR Sample Station	10B - 6512 32ND STREET	04/04/2017	0.81	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	04/04/2017	0.71	A	A
TCR Sample Station	12B - 3917 RENICK WAY	04/04/2017	0.71	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	04/04/2017	0.78	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	04/04/2017	0.76	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	04/04/2017	0.68	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	04/04/2017	0.71	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	04/04/2017	0.80	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	04/04/2017	0.79	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	04/04/2017	0.70	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	04/04/2017	0.72	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	04/04/2017	0.97	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	04/04/2017	0.95	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	04/04/2017	0.63	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	04/04/2017	0.76	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	04/04/2017	0.69	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	04/04/2017	0.98	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	04/04/2017	1.16	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	04/04/2017	0.66	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	04/04/2017	0.38	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	04/04/2017	0.86	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	04/11/2017	0.57	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	04/11/2017	0.85	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	04/11/2017	0.67	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	04/11/2017	0.81	A	A
TCR Sample Station	05B - 3311 Q Street	04/11/2017	0.67	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	04/11/2017	0.48	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	04/11/2017	0.63	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	04/11/2017	0.57	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	04/11/2017	0.67	A	A
TCR Sample Station	10B - 6512 32ND STREET	04/11/2017	1.24	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	04/11/2017	1.02	A	A
TCR Sample Station	12B - 3917 RENICK WAY	04/11/2017	0.72	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	04/11/2017	0.51	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	04/11/2017	0.82	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	04/11/2017	1.05	A	A

SSWD Q2 2017
TCR MONITORING

Exhibit 2

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	04/11/2017	0.69	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	04/11/2017	0.77	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	04/11/2017	1.00	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	04/11/2017	0.60	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	04/11/2017	0.59	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	04/11/2017	0.76	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	04/11/2017	1.01	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	04/11/2017	0.89	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	04/11/2017	0.69	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	04/11/2017	0.74	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	04/11/2017	0.80	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	04/11/2017	1.38	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	04/11/2017	0.49	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	04/11/2017	0.36	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	04/11/2017	0.87	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	04/18/2017	0.78	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	04/18/2017	0.74	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	04/18/2017	0.73	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	04/18/2017	0.81	A	A
TCR Sample Station	05B - 3311 Q Street	04/18/2017	0.45	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	04/18/2017	0.74	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	04/18/2017	0.94	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	04/18/2017	0.89	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	04/18/2017	0.82	A	A
TCR Sample Station	10B - 6512 32ND STREET	04/18/2017	0.66	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	04/18/2017	1.09	A	A
TCR Sample Station	12B - 3917 RENICK WAY	04/18/2017	0.76	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	04/18/2017	0.88	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	04/18/2017	0.81	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	04/18/2017	0.84	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	04/18/2017	0.81	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	04/18/2017	0.70	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	04/18/2017	0.60	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	04/18/2017	0.88	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	04/18/2017	0.81	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	04/18/2017	0.79	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	04/18/2017	0.93	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	04/18/2017	0.91	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	04/18/2017	0.65	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	04/18/2017	0.73	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	04/18/2017	0.85	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	04/18/2017	0.63	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	04/18/2017	0.35	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	04/18/2017	0.30	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	04/18/2017	0.65	A	A

SSWD Q2 2017
TCR MONITORING

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	01B - BREWSTER MILL CIRCLE	04/25/2017	0.88	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	04/25/2017	0.74	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	04/25/2017	0.70	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	04/25/2017	0.75	A	A
TCR Sample Station	05B - 3311 Q Street	04/25/2017	1.02	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	04/25/2017	0.74	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	04/25/2017	0.94	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	04/25/2017	0.88	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	04/25/2017	0.71	A	A
TCR Sample Station	10B - 6512 32ND STREET	04/25/2017	1.33	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	04/25/2017	0.98	A	A
TCR Sample Station	12B - 3917 RENICK WAY	04/25/2017	0.67	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	04/25/2017	0.62	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	04/25/2017	0.78	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	04/25/2017	0.67	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	04/25/2017	0.74	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	04/25/2017	0.68	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	04/25/2017	0.94	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	04/25/2017	0.71	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	04/25/2017	0.74	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	04/25/2017	0.71	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	04/25/2017	0.94	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	04/25/2017	1.97	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	04/25/2017	0.64	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	04/25/2017	0.82	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	04/25/2017	0.18	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	04/25/2017	0.73	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	04/25/2017	0.48	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	04/25/2017	0.26	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	04/25/2017	0.91	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	05/02/2017	0.75	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	05/02/2017	0.43	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	05/02/2017	0.96	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	05/02/2017	0.70	A	A
TCR Sample Station	05B - 3311 Q Street	05/02/2017	0.72	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	05/02/2017	0.62	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	05/02/2017	1.04	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	05/02/2017	0.63	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	05/02/2017	0.66	A	A
TCR Sample Station	10B - 6512 32ND STREET	05/02/2017	0.61	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	05/02/2017	0.93	A	A
TCR Sample Station	12B - 3917 RENICK WAY	05/02/2017	0.60	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	05/02/2017	0.45	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	05/02/2017	0.56	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	05/02/2017	0.49	A	A

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	05/02/2017	0.55	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	05/02/2017	0.75	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	05/02/2017	0.68	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	05/02/2017	0.62	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	05/02/2017	0.53	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	05/02/2017	0.86	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	05/02/2017	0.48	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	05/02/2017	0.64	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	05/02/2017	0.60	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	05/02/2017	0.54	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	05/02/2017	0.84	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	05/02/2017	1.09	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	05/02/2017	0.49	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	05/02/2017	0.34	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	05/02/2017	0.42	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	05/09/2017	0.75	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	05/09/2017	0.71	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	05/09/2017	1.00	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	05/09/2017	0.66	A	A
TCR Sample Station	05B - 3311 Q Street	05/09/2017	0.78	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	05/09/2017	0.63	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	05/09/2017	0.89	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	05/09/2017	0.79	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	05/09/2017	0.72	A	A
TCR Sample Station	10B - 6512 32ND STREET	05/09/2017	0.77	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	05/09/2017	1.12	A	A
TCR Sample Station	12B - 3917 RENICK WAY	05/09/2017	0.79	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	05/09/2017	0.73	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	05/09/2017	0.75	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	05/09/2017	0.85	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	05/09/2017	0.83	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	05/09/2017	0.79	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	05/09/2017	0.62	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	05/09/2017	0.76	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	05/09/2017	0.72	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	05/09/2017	0.87	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	05/09/2017	0.57	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	05/09/2017	0.74	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	05/09/2017	0.55	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	05/09/2017	0.73	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	05/09/2017	0.61	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	05/09/2017	0.91	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	05/09/2017	0.51	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	05/09/2017	0.34	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	05/09/2017	0.63	A	A

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Exhibit 2

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	01B - BREWSTER MILL CIRCLE	05/16/2017	0.76	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	05/16/2017	0.77	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	05/16/2017	0.80	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	05/16/2017	0.70	A	A
TCR Sample Station	05B - 3311 Q Street	05/16/2017	0.51	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	05/16/2017	0.56	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	05/16/2017	1.22	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	05/16/2017	0.70	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	05/16/2017	0.78	A	A
TCR Sample Station	10B - 6512 32ND STREET	05/16/2017	0.73	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	05/16/2017	1.37	A	A
TCR Sample Station	12B - 3917 RENICK WAY	05/16/2017	0.66	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	05/16/2017	0.68	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	05/16/2017	0.79	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	05/16/2017	0.83	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	05/16/2017	0.62	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	05/16/2017	0.75	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	05/16/2017	0.84	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	05/16/2017	0.98	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	05/16/2017	0.70	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	05/16/2017	0.84	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	05/16/2017	0.55	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	05/16/2017	0.69	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	05/16/2017	0.68	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	05/16/2017	0.83	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	05/16/2017	1.11	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	05/16/2017	0.84	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	05/16/2017	0.09	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	05/16/2017	0.24	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	05/16/2017	0.93	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	05/23/2017	0.83	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	05/23/2017	0.77	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	05/23/2017	0.67	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	05/23/2017	0.76	A	A
TCR Sample Station	05B - 3311 Q Street	05/23/2017	0.83	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	05/23/2017	0.72	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	05/23/2017	0.79	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	05/23/2017	0.76	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	05/23/2017	0.75	A	A
TCR Sample Station	10B - 6512 32ND STREET	05/23/2017	0.82	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	05/23/2017	0.63	A	A
TCR Sample Station	12B - 3917 RENICK WAY	05/23/2017	0.71	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	05/23/2017	0.65	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	05/23/2017	0.74	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	05/23/2017	0.78	A	A

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	05/23/2017	0.70	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	05/23/2017	0.78	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	05/23/2017	0.77	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	05/23/2017	0.70	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	05/23/2017	0.76	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	05/23/2017	1.08	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	05/23/2017	1.00	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	05/23/2017	0.74	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	05/23/2017	0.79	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	05/23/2017	0.52	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	05/23/2017	0.77	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	05/23/2017	0.91	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	05/23/2017	0.42	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	05/23/2017	0.43	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	05/23/2017	0.04	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	05/31/2017	0.61	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	05/31/2017	0.73	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	05/31/2017	0.56	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	05/31/2017	0.64	A	A
TCR Sample Station	05B - 3311 Q Street	05/31/2017	1.02	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	05/31/2017	0.81	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	05/31/2017	0.91	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	05/31/2017	0.68	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	05/31/2017	0.67	A	A
TCR Sample Station	10B - 6512 32ND STREET	05/31/2017	1.05	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	05/31/2017	0.98	A	A
TCR Sample Station	12B - 3917 RENICK WAY	05/31/2017	0.58	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	05/31/2017	0.55	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	05/31/2017	0.74	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	05/31/2017	0.75	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	05/31/2017	0.64	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	05/31/2017	0.82	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	05/31/2017	0.79	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	05/31/2017	0.99	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	05/31/2017	0.61	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	05/31/2017	1.40	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	05/31/2017	0.98	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	05/31/2017	0.72	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	05/31/2017	0.58	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	05/31/2017	0.59	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	05/31/2017	0.73	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	05/31/2017	0.77	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	05/31/2017	0.93	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	05/31/2017	1.36	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	05/31/2017	0.82	A	A

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	01B - BREWSTER MILL CIRCLE	06/06/2017	0.63	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	06/06/2017	0.56	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	06/06/2017	0.72	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	06/06/2017	0.85	A	A
TCR Sample Station	05B - 3311 Q Street	06/06/2017	1.05	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	06/06/2017	0.91	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	06/06/2017	0.96	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	06/06/2017	0.82	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	06/06/2017	0.84	A	A
TCR Sample Station	10B - 6512 32ND STREET	06/06/2017	1.16	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	06/06/2017	1.01	A	A
TCR Sample Station	12B - 3917 RENICK WAY	06/06/2017	0.80	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	06/06/2017	0.61	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	06/06/2017	0.85	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	06/06/2017	0.81	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	06/06/2017	0.79	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	06/06/2017	0.84	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	06/06/2017	0.83	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	06/06/2017	1.06	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	06/06/2017	0.78	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	06/06/2017	0.94	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	06/06/2017	0.84	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	06/06/2017	0.92	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	06/06/2017	0.75	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	06/06/2017	0.93	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	06/06/2017	0.69	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	06/06/2017	0.95	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	06/06/2017	1.27	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	06/06/2017	1.23	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	06/06/2017	0.88	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	06/13/2017	0.78	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	06/13/2017	0.75	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	06/13/2017	0.77	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	06/13/2017	0.66	A	A
TCR Sample Station	05B - 3311 Q Street	06/13/2017	0.95	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	06/13/2017	0.56	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	06/13/2017	0.57	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	06/13/2017	0.66	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	06/13/2017	0.74	A	A
TCR Sample Station	10B - 6512 32ND STREET	06/13/2017	1.13	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	06/13/2017	0.71	A	A
TCR Sample Station	12B - 3917 RENICK WAY	06/13/2017	0.71	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	06/13/2017	0.55	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	06/13/2017	0.74	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	06/13/2017	0.70	A	A

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	06/13/2017	0.65	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	06/13/2017	0.80	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	06/13/2017	0.91	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	06/13/2017	0.68	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	06/13/2017	0.68	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	06/13/2017	0.98	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	06/13/2017	1.13	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	06/13/2017	0.80	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	06/13/2017	0.86	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	06/13/2017	0.58	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	06/13/2017	1.17	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	06/13/2017	0.92	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	06/13/2017	1.09	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	06/13/2017	1.14	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	06/13/2017	0.87	A	A
TCR Sample Station	01B - BREWSTER MILL CIRCLE	06/20/2017	0.64	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	06/20/2017	0.72	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	06/20/2017	0.76	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	06/20/2017	0.77	A	A
TCR Sample Station	05B - 3311 Q Street	06/20/2017	0.79	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	06/20/2017	0.52	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	06/20/2017	0.50	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	06/20/2017	0.63	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	06/20/2017	0.75	A	A
TCR Sample Station	10B - 6512 32ND STREET	06/20/2017	0.44	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	06/20/2017	0.49	A	A
TCR Sample Station	12B - 3917 RENICK WAY	06/20/2017	0.65	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	06/20/2017	0.68	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	06/20/2017	0.74	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	06/20/2017	0.86	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	06/20/2017	0.81	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	06/20/2017	0.75	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	06/20/2017	0.73	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	06/20/2017	0.54	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	06/20/2017	0.75	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	06/20/2017	1.23	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	06/20/2017	1.11	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	06/20/2017	0.67	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	06/20/2017	0.71	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	06/20/2017	0.77	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	06/20/2017	0.83	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	06/20/2017	0.95	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	06/20/2017	0.64	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	06/20/2017	1.15	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	06/20/2017	0.82	A	A

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Facility	**Sampling Point**	**Collection Date**	**mg/L**	**P/A**	**P/A**
TCR Sample Station	01B - BREWSTER MILL CIRCLE	06/27/2017	0.64	A	A
TCR Sample Station	02B - 7840 AZTEC WAY	06/27/2017	0.83	A	A
TCR Sample Station	03B - 4501 COURTYARD WAY	06/27/2017	0.86	A	A
TCR Sample Station	04B - 4535 DUNNBURY WAY	06/27/2017	0.80	A	A
TCR Sample Station	05B - 3311 Q Street	06/27/2017	0.86	A	A
TCR Sample Station	06B - 6813 SPRIG DRIVE	06/27/2017	0.73	A	A
TCR Sample Station	07B - 6020 GILMAN WAY	06/27/2017	0.87	A	A
TCR Sample Station	08B - 6447 VILLA DRIVE	06/27/2017	0.76	A	A
TCR Sample Station	09B - 4528 LOCH HAVEN WAY	06/27/2017	0.74	A	A
TCR Sample Station	10B - 6512 32ND STREET	06/27/2017	0.70	A	A
TCR Sample Station	11B - 5436 POPLAR AVE.	06/27/2017	0.71	A	A
TCR Sample Station	12B - 3917 RENICK WAY	06/27/2017	0.72	A	A
TCR Sample Station	13B - 3406-08 McClellan Mall	06/27/2017	0.69	A	A
TCR Sample Station	14B - 3632 JENNY LIND AVE.	06/27/2017	0.68	A	A
TCR Sample Station	15B - 6013 BROKEN ARROW COURT	06/27/2017	0.78	A	A
TCR Sample Station	16B - 5569 KEONCREST CIRCLE	06/27/2017	0.80	A	A
TCR Sample Station	17B - 5607 MILBURN STREET	06/27/2017	1.13	A	A
TCR Sample Station	18B - 4876 CRESTVIEW DRIVE	06/27/2017	0.65	A	A
TCR Sample Station	19B - 4817 BRITTNEY LEE COURT	06/27/2017	0.72	A	A
TCR Sample Station	20B - 4607 RUTGERS WAY	06/27/2017	0.70	A	A
TCR Sample Station	21B - 3517 DOMICH WAY	06/27/2017	0.98	A	A
TCR Sample Station	22B - 4722 OAKSHIRE COURT	06/27/2017	0.83	A	A
TCR Sample Station	23B - 1939 IRIS AVE.	06/27/2017	0.70	A	A
TCR Sample Station	24B - 3211 CHENU AVE.	06/27/2017	0.86	A	A
TCR Sample Station	25B - 1812 JAMESTOWN DRIVE	06/27/2017	0.73	A	A
TCR Sample Station	26B - 3750 RANDOM LANE	06/27/2017	0.74	A	A
TCR Sample Station	27B - 2016 SANTA LUCIA COURT	06/27/2017	0.66	A	A
TCR Sample Station	28B - 5011 KEANE DRIVE	06/27/2017	0.61	A	A
TCR Sample Station	29B - 3853 EXMOOR CIRCLE	06/27/2017	0.99	A	A
TCR Sample Station	30B - 1128 WAYLAND AVE.	06/27/2017	0.82	A	A
		Max	**1.97**		
		Min	**0.04**		
		Average	**0.76**		

SSWD Q2 2017
RAW WATER BACTI MONITORING

Exhibit 3

Raw water bactis are collected every quarter in accordance with WSP requirements. If a trend of "P" occurs at any source, a sanitary survey is conducted. Deficiencies are defined and mitigated ASAP. DDW also may increase monitoring frequency to monthly if they believe that a source requires more frequent surveillance.			Total coliforms	E. coli	Total coliforms	E. coli
Service Area	**Sampling Point**	**Collection Date**	**P/A**	**P/A**	**MPN/100mL**	**MPN/100mL**
NSA	27 - Melrose/Channing	04/25/2017	A	A		
NSA	52 - WEDDIGEN/GOTHBERG	04/12/2017	A	A		
NSA	56A - FAIRBAIN/KARL	04/12/2017	A	A		
NSA	58 - THIRTY SECOND/ELKHORN	04/25/2017	A	A		
NSA	59A - BAINBRIDGE/HOLMES SCHOOL	04/26/2017	A	A		
NSA	64 - GALBRATH/ANTELOPE WOODS	04/05/2017			< 1	< 1
NSA	64 - GALBRATH/ANTELOPE WOODS	05/11/2017			< 1.1	< 1.1
NSA	MC10 - McCLELLAN PARK	04/05/2017	A	A		
NSA	N 1 - EVERGREEN	04/03/2017	A	A		
NSA	N 3 - ENGLE	04/03/2017	A	A		
NSA	N 5 - HILLSDALE	04/25/2017	A	A		
NSA	N 7 - ROSEBUD	04/19/2017	A	A		
NSA	N 9 - CAMERON	04/19/2017	A	A		
NSA	N10 - WALNUT	04/03/2017	A	A		
NSA	N12 - ST. JOHNS	04/19/2017	A	A		
NSA	N14 - ORANGE GROVE	04/04/2017	A	A		
NSA	N20 - CYPRESS	04/24/2017	A	A		
NSA	N22 - RIVER COLLEGE	04/04/2017	A	A		
NSA	N23A - FREEWAY 2013 - RAW	04/04/2017	A	A		
NSA	N24 - DON JULIO	04/18/2017	A	A		
NSA	N25 - SUTTER	04/20/2017	A	A		
NSA	N26 - MONUMENT	04/18/2017	A	A		
NSA	N29 - MERRIHILL	04/20/2017	**P**	A		
NSA	N29 - MERRIHILL	04/26/2017			**1**	< 1
NSA	N29 - MERRIHILL	05/03/2017			< 1	< 1
NSA	N30 - PARKOAKS	04/20/2017	A	A		
NSA	N32A - POKER LANE CENTER N32A	04/25/2017	A	A		
NSA	N32B - POKER LANE EAST N32B	04/25/2017	A	A		
NSA	N34 - COTTAGE	04/12/2017	A	A		
NSA	N35 - ANTELOPE NORTH	04/18/2017	A	A		
NSA	N36 - VERNER WELL	04/25/2017	A	A		
NSA	N38 - COYLE WELL	04/20/2017	A	A		
NSA	N39 - RUTLAND	04/26/2017	A	A		
NSA	N39 - RUTLAND	05/15/2017	A	A		
SSA	2A - El Prado/Park Estates	04/19/2017	A	A		
SSA	3A - Kubel/Armstrong	05/02/2017	A	A		
SSA	4B - BELL/MARCONI	04/20/2017	A	A		
SSA	9 - RAVENWOOD/EASTERN	04/20/2017	A	A		
SSA	12 - HERNANDO/SANTA ANITA PARK	04/26/2017	**P**	A		
SSA	12 - HERNANDO/SANTA ANITA PARK	05/04/2017			< 1	< 1
SSA	14 - MARCONI SOUTH/FULTON	04/10/2017	A	A		
SSA	14 - MARCONI SOUTH/FULTON	05/08/2017	A	A		
SSA	18 - RIDING CLUB/LADINO	04/24/2017	A	A		
SSA	20A - WATT/ARDEN	04/20/2017	A	A		
SSA	24 - BECERRA/WOODCREST	04/10/2017	A	A		
SSA	25 - THOR/MERCURY	04/20/2017	A	A		
SSA	26 - GREENWOOD/MARCONI	04/25/2017	**P**	A		

SSWD Q2 2017
RAW WATER BACTI MONITORING

Exhibit 3

Raw water bactis are collected every quarter in accordance with WSP requirements. If a trend of "P" occurs at any source, a sanitary survey is conducted. Deficiencies are defined and mitigated ASAP. DDW also may increase monitoring frequency to monthly if they believe that a source requires more frequent surveillance.			Total coliforms	E. coli	Total coliforms	E. coli
Service Area	**Sampling Point**	**Collection Date**	**P/A**	**P/A**	**MPN/100mL**	**MPN/100mL**
SSA	26 - GREENWOOD/MARCONI	04/27/2017			< 1	< 1
SSA	28 - RED ROBIN/DARWIN	04/25/2017	A	A		
SSA	30 - ROCKBRIDGE/BOWLING GREEN	04/19/2017	A	A		
SSA	32A - EDEN/ROOT	04/11/2017	A	A		
SSA	33A - AUBURN/NORRIS	04/03/2017	A	A		
SSA	35 - ULYSSES/MERCURY	04/11/2017			< 1.1	< 1.1
SSA	35 - ULYSSES/MERCURY	05/11/2017			< 1.1	< 1.1
SSA	37 - MORSE/COTTAGE	04/25/2017	A	A		
SSA	40A - AUBURN/YARD (40A)	04/05/2017	A	A		
SSA	41 - ALBATROSS/IRIS	04/25/2017	A	A		
SSA	43 - EDISON/TRUAX	04/06/2017	A	A		
SSA	46 - JONAS/SIERRA MILLS	04/24/2017	A	A		
SSA	47 - COPENHAGEN/ARDEN	04/18/2017	A	A		
SSA	55A - STEWART/LYNNDALE	04/20/2017	A	A		
SSA	60 - WHITNEY/CONCETTA	04/06/2017	A	A		
SSA	65 - MERRILY/ANNADALE	04/18/2017	A	A		
SSA	66 - EASTERN/WOODSIDE CHURCH	04/18/2017	A	A		
SSA	68 - NORTHROP/DORNAJO	04/20/2017	A	A		
SSA	69 - HILLDALE/COOPER	04/18/2017	**P**	A		
SSA	69 - HILLDALE/COOPER	04/20/2017			**1**	< 1
SSA	70 - SIERRA/BLACKMER	04/26/2017	A	A		
SSA	71 - RIVER DRIVE	04/04/2017	A	A		
SSA	72 - RIVER WALKNETP	04/18/2017	A	A		
SSA	73 - RIVER WALKNETP EAST	04/05/2017	A	A		
SSA	74 - RIVER WALKNETP SOUTH	04/27/2017	A	A		
SSA	76 - FULTON/FAIR OAKS	04/25/2017	**P**	A		
SSA	76 - FULTON/FAIR OAKS	04/27/2017			**1**	< 1
SSA	76 - FULTON/FAIR OAKS	05/04/2017			< 1	< 1
SSA	77 - LARCH/NORTHROP	04/18/2017	A	A		

Exhibit 4

SSWD Q2 2017
DISINFECTION BY-PRODUCT MONITORING

Disinfection By-Products (DBP) monitoring is required at eight distribution system locations by the Stage 2 DBP Rule.			Bromodichloromethane	Bromoform	Chloroform	Dibromochloro-methane	Total Trihalomethanes / TTHM
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
System	3853 Exmoor Cir.	04/11/2017	**0.74**	ND	**0.68**	0.66	**2.1**
System	4431 Altadena Way	04/11/2017	**2.0**	0.55	**26**	1.2	**30**
System	4501 Courtyard Way	04/11/2017	ND	ND	ND	ND	**ND**
System	4535 Dunnbury Way	04/11/2017	**0.71**	ND	**9.3**	ND	**10**
System	5641 Luce Ave	04/11/2017	**5.3**	1.2	**33**	4.2	**44**
System	6447 Villa Dr.	04/11/2017	**1.2**	0.52	**14**	0.71	**16**
System	6813 Sprig Dr.	04/11/2017	**0.65**	ND	**6.9**	0.53	**8.1**
System	7800 Antelope North Rd.	04/11/2017	**1.6**	ND	**34**	ND	**36**
System	Antelope Gardens SW EP	04/11/2017	**1.6**	ND	**35**	ND	**37**

			Dibromoacetic acid	Dichloroacetic acid	Monobromoacetic acid	Monochloroacetic acid	Trichloroacetic acid	Haloacetic acids 5 / HAA5
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
System	3853 Exmoor Cir.	04/11/2017	ND	ND	ND	ND	ND	**ND**
System	4431 Altadena Way	04/11/2017	ND	11	ND	ND	13	**24**
System	4501 Courtyard Way	04/11/2017	ND	ND	ND	ND	ND	**ND**
System	4535 Dunnbury Way	04/11/2017	ND	4.2	ND	ND	4.9	**9.1**
System	5641 Luce Ave	04/11/2017	ND	13	ND	ND	15	**28**
System	6447 Villa Dr.	04/11/2017	ND	6.2	ND	ND	7.2	**13**
System	6813 Sprig Dr.	04/11/2017	ND	8.2	ND	ND	9.7	**18**
System	7800 Antelope North Rd.	04/11/2017	ND	16	ND	ND	18	**34**
System	Antelope Gardens SW EP	04/11/2017	ND	15	ND	ND	18	**33**

DBPs form when a drinking water disinfectant reacts with organic matter that may be present in the water. Most disinfected GW will produce little to none DBPs. DBPs are typically associated with surface water as they tend to have elevated levels of OM. DBP formation type and amount are controlled by: amount of OM present, amount and type of disinfectant and contact time between the two.

Results reported: 1 April - 30 June 2017

SSWD Q2 2017
IOC MONITORING

Exhibit 5

See the notes below for the discussion describing why specific monitoring was performed.			Barium	Chloride	Fluoride	Iron	Manganese	Mercury	Sodium
Service Area	**Sampling Point**	**Collection Date**	**ug/L**	**mg/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**mg/L**
NSA	59A - BAINBRIDGE/HOLMES SCHOOL RAW (1)	04/11/2017						ND	
NSA	N20 - CYPRESS RAW (2)	04/24/2017				85	**68**		
NSA	N32B - POKER LANE EAST N32B RAW (2)*	04/25/2017	79	62			33		50
NSA	N36 - VERNER WELL RAW (2)	04/25/2017				80	**140**		
NSA	59A - BAINBRIDGE/HOLMES SCHOOL RAW (1)	05/09/2017						ND	
SSA	32A - EDEN/ROOT RAW (3)	04/11/2017				ND	**140**		
SSA	32A - EDEN/ROOT TREATED (3)	04/11/2017				ND	**ND**		
SSA	70 - SIERRA/BLACKMER RAW (4)	04/26/2017			ND				
SSA	14 - MARCONI SOUTH/FULTON RAW (2)	05/08/2017				ND			
SSA	32A - EDEN/ROOT RAW (3)	05/11/2017				ND	**130**		
SSA	32A - EDEN/ROOT TREATED (3)	05/11/2017				ND	ND		

(1). Monthly Hg monitoring required following catastrophic failure of a submersible pump with a mercury seal. WQ staff worked with a consultant to develop and implement a plan designed to remove most of the Hg, then encase any that remained in concrete. The plan was approved by DDW and implemented. Monthly monitoring (for 1 year total) to date indicates the plan worked as intended.

(2). Secondary MCL exceedance triggered quarterly monitoring. Compliance is based on a RAA. Sources where the RAA is over the Secondary MCL, are generally set for fire flow/emergency use only. Possible mitigation may include: abandoning deeper sections of the well, swadging sections of screen, or treatment.

(3). Mn/Fe removal treatment plant, pre and post filter results. Treated water monitoring required monthly, raw water required quarterly, however, monitored monthly to evaluate removal efficiency and assess raw water changes.

(4) monitoring that was required previously but not performed due to construction/maintenance.

*: Note N32B monitoring includes additional analytes used as control for in-house blending study.

SSWD Q2 2017
NITRATE MONITORING

Exhibit 6

Q2 2017 nitrate monitoring was required at the following wells due to either: (1) a previous detection over one-half (5 mg/L) of the MCL, or (2) monitoring that was required previously but not performed due to construction/maintenance.			Nitrate (as N)
Service Area	**Sampling Point**	**Collection Date**	**mg/L**
NSA	N12 - ST. JOHNS RAW (1)	04/19/2017	4.7
NSA	N29 - MERRIHILL RAW (1)	04/20/2017	5.7
NSA	N30 - PARKOAKS RAW (1)	04/20/2017	4.1
NSA	N 3 - ENGLE RAW (2)	05/15/2017	1.7
SSA	14 - MARCONI SOUTH/FULTON RAW (1)	04/10/2017	1.9
SSA	24 - BECERRA/WOODCREST RAW (1)	04/10/2017	6.6
SSA	65 - MERRILY/ANNADALE RAW (1)	04/18/2017	4.8
SSA	46 - JONAS/SIERRA MILLS RAW (1)	04/24/2017	5.2
SSA	26 - GREENWOOD/MARCONI RAW (1)	04/25/2017	2.5
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	0.93

SSWD Q2 2017
VOC MONITORING

The following wells were monitored for VOCs during Q2 for several reasons including: (1) previous detections (below an MCL) that triggered quarterly monitoring, (2) DDW directive associated with local GW contamination, (3) initial monitoring requirements for new sources, and (4) District staff's concerns.			1,1,2,2-Tetrachloroethane	1,1-Dichloroethylene	1,3-Dichloropropene	cis-1,3-Dichloropropene	Methyl tert-butyl ether / MTBE	m- + p-Xylene	o-Xylene	Xylenes (total)	trans-1,3-Dichloropropene
Service Area	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N23A - FREEWAY 2013 - RAW (1)	04/04/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N35 - ANTELOPE NORTH RAW (1)	04/12/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N39 - RUTLAND RAW (3)	04/17/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N32A - POKER LANE CENTER N32A RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N32B - POKER LANE EAST N32B RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N8 - FIELD*	N/A									
NSA	N10 - WALNUT RAW (1) & (4)	04/26/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N15 - CABANA**	N/A									
SSA	73 - RIVER WALKNETP EAST RAW (1)	04/05/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA	26 - GREENWOOD/MARCONI RAW (1) & (2)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND

*: N8 is off line for rehab

**: N15 is not being monitored because previous WQ data shows that TCE exceeded the MCL. The District's NPDES permit precludes discharge of water exceeding a DW MCL.

SSWD Q2 2017
VOC MONITORING

The following wells were monitored for VOCs during Q2 for several reasons including: (1) previous detections (below an MCL) that triggered quarterly monitoring, (2) DDW directive associated with local GW contamination, (3) initial monitoring requirements for new sources, and (4) District staff's concerns.			Trichlorofluoromethane	Trichlorotrifluoroethane	1,1,1 - Trichloroethane	1,1,2 - Trichloroethane	1,1-Dichloroethane	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene
Service Area	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N23A - FREEWAY 2013 - RAW (1)	04/04/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N35 - ANTELOPE NORTH RAW (1)	04/12/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N39 - RUTLAND RAW (3)	04/17/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N32A - POKER LANE CENTER N32A RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N32B - POKER LANE EAST N32B RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N8 - FIELD*	N/A							
NSA	N10 - WALNUT RAW (1) & (4)	04/26/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N15 - CABANA**	N/A							
SSA	73 - RIVER WALKNETP EAST RAW (1)	04/05/2017	ND	ND	ND	ND	ND	ND	ND
SSA	26 - GREENWOOD/MARCONI RAW (1) & (2)	04/25/2017	ND	ND	ND	ND	ND	ND	ND

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SSWD Q2 2017
VOC MONITORING

The following wells were monitored for VOCs during Q2 for several reasons including: (1) previous detections (below an MCL) that triggered quarterly monitoring, (2) DDW directive associated with local GW contamination, (3) initial monitoring requirements for new sources, and (4) District staff's concerns.			1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dichlorobenzene	Benzene	Carbon tetrachloride	cis-1,2-Dichloroethylene	Dichloromethane	Ethylbenzene
Service Area	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N23A - FREEWAY 2013 - RAW (1)	04/04/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N35 - ANTELOPE NORTH RAW (1)	04/12/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N39 - RUTLAND RAW (3)	04/17/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N32A - POKER LANE CENTER N32A RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N32B - POKER LANE EAST N32B RAW (1)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N8 - FIELD*	N/A								
NSA	N10 - WALNUT RAW (1) & (4)	04/26/2017	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N15 - CABANA**	N/A								
SSA	73 - RIVER WALKNETP EAST RAW (1)	04/05/2017	ND	ND	ND	ND	ND	ND	ND	ND
SSA	26 - GREENWOOD/MARCONI RAW (1) & (2)	04/25/2017	ND	ND	ND	ND	ND	ND	ND	ND

*: N8 is off line for rehab

**: N15 is not being monitored because previous WQ data shows that TCE exceeded the MCL. The District's NPDES permit precludes discharge of water exceeding a DW MCL.

SSWD Q2 2017
VOC MONITORING

The following wells were monitored for VOCs during Q2 for several reasons including: (1) previous detections (below an MCL) that triggered quarterly monitoring, (2) DDW directive associated with local GW contamination, (3) initial monitoring requirements for new sources, and (4) District staff's concerns.			Chlorobenzene	Styrene	Tetrachloroethylene / PCE	Toluene	trans-1,2-Dichloroethylene	Trichloroethylene / TCE	Vinyl chloride
Service Area	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N23A - FREEWAY 2013 - RAW (1)	04/04/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N35 - ANTELOPE NORTH RAW (1)	04/12/2017	ND	ND	1.8	ND	ND	ND	ND
NSA	N39 - RUTLAND RAW (3)	04/17/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N32A - POKER LANE CENTER N32A RAW (1)	04/25/2017	ND	ND	1.5	ND	ND	ND	ND
NSA	N32B - POKER LANE EAST N32B RAW (1)	04/25/2017	ND	ND	1.5	ND	ND	ND	ND
NSA	N8 - FIELD*	N/A							
NSA	N10 - WALNUT RAW (1) & (4)	04/26/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N15 - CABANA**	N/A							
SSA	73 - RIVER WALKNETP EAST RAW (1)	04/05/2017	ND	ND	ND	ND	ND	ND	ND
SSA	26 - GREENWOOD/MARCONI RAW (1) & (2)	04/25/2017	ND	ND	ND	ND	ND	ND	ND

*: N8 is off line for rehab

**: N15 is not being monitored because previous WQ data shows that TCE exceeded the MCL. The District's NPDES permit precludes discharge of water exceeding a DW MCL.

SSWD Q2 2017
SOC MONITORING

Exhibit 8

Three wells required SOC monitoring during Q2 as a result of either: (1) initial monitoring requirements for new sources, or (2) missed Q1 monitoring because sources were off-line for construction/maintenance activities.			2,4,5-T	3-Hydroxycarbofuran	Aldicarb	Aldicarb sulfone	Aldicarb sulfoxide	Aldrin	Bentazon	Benzo(a)pyrene	Bromacil	Butachlor	Carbaryl	Diazinon	Dicamba
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N39 - RUTLAND RAW (1)	04/17/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N3 - ENGLE RAW*	05/15/2017													
NSA	N12 - ST. JOHNS RAW*	05/08/2017													
NSA	N20 - CYPRESS RAW*	05/12/2017													
SSA	43 - EDISON/TRUAX RAW (2)	04/06/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*: Quarterly NDMA only, these wells are the District's easternmost wells that are downgradient of the Aerojet NDMA plume.

SSWD Q2 2017
SOC MONITORING

Three wells required SOC monitoring during Q2 as a result of either: (1) initial monitoring requirements for new sources, or (2) missed Q1 monitoring because sources were off-line for construction/maintenance activities.			Dieldrin	Dimethoate	Methomyl	Metolachlor	Metribuzin	Molinate	N-Nitrosodimethylamine / NDMA	Pentachlorophenol / PCP	Polychlorinated Biphenyls / PCBs	Propachlor
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ng/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N39 - RUTLAND RAW (1)	04/17/2017	ND	ND	ND	ND	ND	ND		ND	ND	ND
NSA	N3 - ENGLE RAW*	05/15/2017							ND			
NSA	N12 - ST. JOHNS RAW*	05/08/2017							ND			
NSA	N20 - CYPRESS RAW*	05/12/2017							ND			
SSA	43 - EDISON/TRUAX RAW (2)	04/06/2017	ND	ND	ND	ND	ND	ND		ND	ND	ND
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	ND	ND	ND	ND	ND	ND		ND	ND	ND

*: Quarterly NDMA only, these wells are the District's easternmost wells that are downgradient of the Aerojet NDMA plume.

SSWD Q2 2017
SOC MONITORING

Exhibit 8

Three wells required SOC monitoring during Q2 as a result of either: (1) initial monitoring requirements for new sources, or (2) missed Q1 monitoring because sources were off-line for construction/maintenance activities.			Thiobencarb	1,2-Dibromo-3-chloropropane / DBCP	2,4,5-TP / Silvex	2,4-Dichlorophenoxyacetic acid / 2,4-D	Alachlor	Atrazine	Carbofuran	Chlordane	Dalapon	Di(2-ethylhexyl)adipate
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N39 - RUTLAND RAW (1)	04/17/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N3 - ENGLE RAW*	05/15/2017										
NSA	N12 - ST. JOHNS RAW*	05/08/2017										
NSA	N20 - CYPRESS RAW*	05/12/2017										
SSA	43 - EDISON/TRUAX RAW (2)	04/06/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*: Quarterly NDMA only, these wells are the District's easternmost wells that are downgradient of the Aerojet NDMA plume.

SSWD Q2 2017
SOC MONITORING

Three wells required SOC monitoring during Q2 as a result of either: (1) initial monitoring requirements for new sources, or (2) missed Q1 monitoring because sources were off-line for construction/maintenance activities.			Di(2-ethylhexyl)phthalate / DEHP	Dinoseb	Diquat	Endothall	Endrin	Ethylene dibromide / EDB	Glyphosate	Heptachlor	Heptachlor epoxide	Hexachlorobenzene
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N39 - RUTLAND RAW (1)	04/17/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA	N3 - ENGLE RAW*	05/15/2017										
NSA	N12 - ST. JOHNS RAW*	05/08/2017										
NSA	N20 - CYPRESS RAW*	05/12/2017										
SSA	43 - EDISON/TRUAX RAW (2)	04/06/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*: Quarterly NDMA only, these wells are the District's easternmost wells that are downgradient of the Aerojet NDMA plume.

SSWD Q2 2017
SOC MONITORING

Three wells required SOC monitoring during Q2 as a result of either: (1) initial monitoring requirements for new sources, or (2) missed Q1 monitoring because sources were off-line for construction/maintenance activities.			Hexachlorocyclopentadiene / HEX	Lindane	Methoxychlor	Oxamyl	Picloram	Simazine	Toxaphene
Facility	**Sampling Point**	**Collection Date**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
NSA	N39 - RUTLAND RAW (1)	04/17/2017	ND	ND	ND	ND	ND	ND	ND
NSA	N3 - ENGLE RAW*	05/15/2017							
NSA	N12 - ST. JOHNS RAW*	05/08/2017							
NSA	N20 - CYPRESS RAW*	05/12/2017							
SSA	43 - EDISON/TRUAX RAW (2)	04/06/2017	ND	ND	ND	ND	ND	ND	ND
SSA	70 - SIERRA/BLACKMER RAW (2)	04/26/2017	ND	ND	ND	ND	ND	ND	ND

*: Quarterly NDMA only, these wells are the District's easternmost wells that are downgradient of the Aerojet NDMA plume.

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SACRAMENTO SUBURBAN WATER DISTRICT

Water Quality Committee

Agenda Item: 5

Date: July 6, 2017

Subject: Lead Monitoring in Schools Update

Staff Contact: David Armand, Environmental Compliance Supervisor

Recommended Committee Action:
Receive written staff report.

In mid-January2017, the State Water Resources Control Board, Division of Drinking Water (DDW) unilaterally amended the water supply permits of all public water systems (PWS) that provide domestic water service to a K-12 school through a utility meter. The permit amendment requires the PWS to perform tasks associated with drinking water lead monitoring at each facility, if requested to do so. Specific requirements are included in the permit amendments and in an attached guidance document. The guidance specifies the tasks that the PWS is required to complete and the time frame in which they must be completed. All requests for a PWS to conduct drinking water lead monitoring at a K-12 school must be submitted in writing.

By July 1, 2017, PWS were required to submit a comprehensive list to DDW that provides the names and addresses of all K-12 schools within the service area. That task included selecting schools within the service area from a California Department of Education (CDE) website, confirming the information listed and adding them to each PWS inventory. PWS were also required to add schools within their service area that were not included in the CDE list. DDW's drinking water lead monitoring in schools program is scheduled to end on November 1, 2019. By that time, it is likely that USEPA will have revised their existing drinking water lead monitoring in schools regulations that currently place the monitoring responsibility on schools.

In addition to those discussed above, DDW's amended water supply permits and associated guidance include numerous other requirements and tasks that PWS must fulfill when a written drinking water lead monitoring request is received from a K – 12 school. Exhibit 1 provides a summary of those requirements.

To date, the District has received written requests from two school districts, Roseville Joint Union High School District (RJUHSD) and Twin Rivers Unified School District (TRUSD). RJUHSD has one school within the District's service area and TRUSD has 19. Environmental Compliance staff has completed sampling at all 20 campuses. Final reporting remains for about half of the TRUSD schools.

All but three schools had five sampling locations. Initial sampling results for the 20 schools monitored ranged from < 1 ppb (not detected) to 27 ppb. Four schools had < 1 ppb (not detected) reported for all samples. Three schools had Action Level exceedances (16 ppb, 21 ppb and 27 ppb) that required follow-up activity by the schools, and in one case, Check sampling by the District. Corrective actions at the three schools included, two fixtures being permanently removed and one fixture replaced. Check sample results for the replaced fixture were well below (at 4.8 ppb) the 15 ppb Action Level.

Just before the end of the Spring 2017 semester, the District received a verbal drinking water lead sampling inquiry from a San Juan Unified School District administrator. Environmental Compliance staff forwarded a written request form template via email. While we have not yet received the official request, we expect to receive it shortly after the Fall 2017 semester begins in August. SJUSD has a total of 26 K-12 schools in the District's service area.

Fiscal Impact:

Total laboratory analytical and reporting costs for the 20 schools is $1,305. That includes a special $5.00 per sample fee to upload the data to DDW's portal. Total vehicle costs associated with surveys and sampling is approximately $1,000. To date, Environmental Compliance staff have spent 218 hours on phone calls, meetings, surveys, sampling, documenting and reporting. The corresponding labor cost to the District is approximately $10,900.

Exhibit 1

Specific requirements and tasks (and the corresponding time frames within which they must be completed, if applicable) that a PWS is required to perform.

- By July 1, 2017, submit a comprehensive list to DDW that provides
- Conduct sampling and associated tasks at K-12 schools that have submitted a written request prior to November 1, 2019.
- Respond within 60 days of receiving a K-12 school's written request to perform drinking water lead sampling.
- Schedule a meeting with school officials to develop a Sampling Plan.
- Finalize a sampling plan and complete sampling within 90 days of receiving a written request to perform drinking water lead sampling.
- PWS that cannot meet the 90-day time period to finalize the plan and complete the sampling must submit a proposed schedule to DDW and have it approved in writing.
- Collect up to five samples from regularly-used fixtures that are used for drinking or cooking on any Tuesday, Wednesday, Thursday or Friday (not preceded by a holiday) when school is in regular session.
- Submit samples to a certified laboratory and require the laboratory to upload the results to DDW database.
- Provide copies of laboratory results to the authorized school representative.
- Discuss the laboratory results with the school representative within 10 days from receiving them from the laboratory. If one or more results exceeds the 15 parts per billion (ppb) Action Level, then the school official must be notified within two days from receipt of the laboratory results.
- Where a sampling result exceeds 15 ppb and the fixture remains in service, another ("Repeat") sample must be collected within 10 days from laboratory notification to confirm the first. If the second result is less than 15 ppb and the fixture remains in service, a third ("Confirmation") sample must be collected within 10 days from laboratory notification (tie-breaker).
- If a sample result exceeds 15 ppb, the school must develop a "Corrective Action Plan."
- If laboratory results determine that lead is present at a level over 15 ppb, the PWS should advise the school to remove the fixture from service, or implement another form of corrective action.
- Where a sample result exceeds 15 ppb and the fixture is removed from service, no further sampling is required unless the school implements another form of corrective action.

- If a sample result exceeds 15 ppb and the school replaces the fixture and/or other components in accordance with their Corrective Action Plan, then a "Check" sample is required.
- Continued Check sampling is required after each corrective action, unless the fixture is removed.
- Wait at least 60 days following receipt of the initial lead sampling results from the laboratory before releasing the data to the public.
- The PWS is responsible for all costs associated with laboratory analysis and reporting as well as all staff time dedicated to the tasks outlined in the permit amendment.

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SACRAMENTO SUBURBAN WATER DISTRICT

Water Quality Committee

Agenda Item: 6

Date: July 7, 2017

Subject: New Replacement Well #N6A – Water Quality

Staff Contact: David Espinoza, Associate Engineer

Recommended Committee Action:
Receive written staff report.

Background:
To serve our customers, the District currently operates approximately 76 active groundwater wells. Over time, it is common for the characteristics of a well to change as the water quality and/or quantity may diminish. Also, wells eventually outlive their useful life which is generally estimated at around 50 years. In order to meet customer's needs, the District is continually constructing new wells, replacing and/or rehabilitating existing wells.

The Palm Well site is located on Palm Avenue, west of the intersection of Palm Avenue and Hackberry Lane in the Foothill Farms area of Sacramento County. The previous well (#N6) at this site was originally constructed in 1960 and since then has had casing failures and declining water quality. The 2016/2017 Palm Well Project consists of drilling a new well at the site and equipping it with a new pump station with related controls and valves. The target production rate for the well is 1,500 gallons per minute (gpm).

Discussion:
This staff report provides a brief overview of the Palm Well #N6A. The well is a replacement to #N6 on the same site. The new well was recently drilled and found to have manganese at/near the Secondary Drinking Water Maximum Contaminant Level (MCL). This report briefly provides the project background and a status report on a treatment process evaluation that was recently completed to determine the feasibility and cost of a manganese treatment system for this well.

Well Construction Timeline
March 2016 – Following a qualification based selection process, the District contracted with Luhdorff & Scalmanini Consulting Engineers (LSCE) for the #N6A well and pump station

replacement project. Well #N6A is a replacement for Well #N6 which was destroyed by the District in 2016 due to well casing failures.

June 2016 - LSCE completed site-specific hydrogeological investigations for the design of the well. Well #N6A was designed to match the old well in terms of the target aquifer zones (screen intervals span across 375 to 515 ft.). A deeper sanitary seal (260 ft.) was incorporated to satisfy concerns Division of Drinking Water (DDW) had regarding proximity to the adjacent creek.

August 2016 - Well construction bids were received and the work was awarded to Roadrunner Drilling.

October 2016 - Well construction commenced.

November 15, 2016 – Well testing was completed. The well was test pumped at 1,000 gpm to 3,000 gpm and sampled at flow rate of 3,000 gpm. The higher flow rate was selected after initial pumping indicated it is a good producer and staff was interested in keeping options open to explore a larger capacity well.

December 16, 2016 – Initial laboratory water quality results were received. The well meets all Title 22 drinking water standards. Manganese was detected at 48 parts per billion (ppb), and the Secondary Drinking Water MCL for manganese is 50 ppb. LSCE had the lab re-test the same sample which confirmed the concentration in the collected sample. The manganese concentration is marginal in terms of compliance and considered unacceptable for delivery in the water system. Manganese was not anticipated based on having no historical evidence of manganese in the old well. LSCE was instructed to hold off on any further design efforts until the issue could be evaluated further.

Well Re-Testing

The old well and the new well are targeting the same depth and aquifer zones, and they are 20 feet apart from each other. The major difference between the two wells appears to be the flow rate was increased in the new well. LSCE considered various possibilities for the elevated manganese levels in N6A including laboratory reporting error, change in down hole flow regime at the higher test rates, loading of zones due to differential head pressures within the well, or changes in local and regional aquifer conditions resulting in more flow from zones with higher manganese than historically.

To assess causes of the elevated manganese and to develop a strategy to potentially reduce it, LSCE recommended additional pump testing at variable rates and water sampling. Staff proceeded with additional testing in January 2017 to test the hypothesis. Testing also included static and dynamic flow surveys, and collection of samples at specific depths under pumping conditions.

Results of the testing demonstrate that manganese is present at or just above the MCL at all flow rates tested from 1,000 gpm to 3,000 gpm. Except for the deepest portion of the screened section, manganese was present throughout the zone completed in the subject well. Reducing the

pumping rate did not lower the manganese concentration to a great degree such that there is assurance of meeting the MCL under normal operating conditions.

LSCE indicated that they do not believe there is a viable operational or well modification option available to reduce the concentration of manganese and staff concluded that treatment would be required to reliably maintain the concentration of manganese below the MCL.

Scope for Treatment Feasibility

Due to the significant resources invested into the Palm replacement well, staff has explored the feasibility and cost of treatment at this site. Staff initially asked LSCE to provide a scope and budget to conduct a feasibility analysis, with treatment options and design of pumping plant to incorporate the selected treatment system. After reviewing the consultant's proposed scope and budget, staff decided it was prudent to explore a more cost-efficient approach for the initial feasibility of treatment. Prior to engaging LSCE with a contract amendment staff decided to address the feasibility assessment internally, and work with the consultant, as needed, but keeping their involvement to a minimum during the initial feasibility assessment. While staff seeks to standardize on treatment technologies and treatment strategies for other sites, staff's approach here will not only reduce costs but it will allow staff to develop additional internal expertise on these treatment systems.

Status of Treatment Feasibility

Staff had set out to answer the following questions to address feasibility:

1. What are the available and relevant treatment technologies, pros/cons, and costs?
2. What are the space requirements, loading rates and backwash and solids handling requirements?
3. What are possible site layout options a treatment system to physically fit on this site given its relative small size while still maintaining access to the well for maintenance and rehabilitation?

The following are a summary of efforts to-date to answer these questions.

- Through a combination of white-paper research, phone calls with manufacturers and review of prior studies conducted for the District to evaluate manganese treatment options, staff has developed a starting point in terms of the types of filter media and potential manufacturers to contact. The next step is to formalize initial findings in a memorandum and visit existing local treatment plants provided by treatment vendors.
- There are three types of media filter systems that staff explored:
    - Manganese greensand media systems. Typical of existing Loprest filters at the Enterprise and Eden Root wells. Other vendors are available but staff has focused on Loprest due to their history with the District and vast project examples in California. The District's Operations Department has been operating the two Loprest treatment facilities with success and satisfaction.

- Pyrolusite Ore media systems. The consultant directed us to ATEC Systems Associates who have systems in California (to name a few: Marysville, Live Oak, San Francisco PUC, and Fresno). They have a unique design, and tend to have slightly lower initial costs. The costs savings are diminished once required pilot testing is performed and added liability is assumed due to the lack of ASME certification on the treatment vessels.

- Proprietary media systems. Most common examples in California are Filtronics or Pureflow. These systems are not deemed to be suitable for the needs of the District as standardization. They will have a higher capital cost and a sole source fixed partnership for media replacements.

- Staff (Engineering and Operations), in conjunction with LSCE, has completed the evaluation of the costs and other non-monetary factors for manganese treatment systems from these manufacturers, and the pros/cons of the filter configurations/operations of each system. Based on the evaluation and findings, Loprest is unanimously recommended to provide the manganese treatment system for the Palm Well. Therefore, staff has directed LSCE to move ahead with final pump station and manganese treatment facility design.

- Cursory evaluation of space requirements indicates the filters and backwash tanks could fit on the site. A 22-foot diameter backwash storage and 200 square foot footprint would be situated near the back of the site to maintain space in the front of the site for well head access for maintenance. Wellhead maintenance for future well rehabs may consist of fixed-derrick well rig, baker tanks, and stem trailers. The consultant will assist with situating the components on the site.

Summary

Staff and LSCE have completed studying the feasibility of treatment at this location and performing the fact finding research necessary to make a well informed decision. As discussed above, Loprest is unanimously recommended to provide the manganese treatment system for the replacement Palm Well. LSCE has been asked to move ahead with final pump station and manganese treatment facility design.

Fiscal Impact:

The fiscal impact created by the necessity of treating for manganese will range anywhere from $500,000 to $1,150,000 in capital cost with ongoing operational costs associated with each treatment option. Note that this is just the added cost for engineering and construction related to manganese treatment and does not include the costs (engineering and construction) for other pump station facilities.