On 27 March 2018, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff observed the collection of citrus samples by Advanced Environmental Concepts, Inc., a third-party consulting group collecting samples on behalf of Cawelo Water District. Central Valley Water Board staff (staff) obtained ownership of all samples directly from sample team. Citrus samples were shipped via FedEx to Weck Laboratories, Inc. (Weck), for analysis.

PARTIES PRESENT

Sample Team from Advanced Environmental Concepts, Inc. (AEC)

- Field Staff and Project Manager
- Field Staff

Representatives from Cawelo Water District (Cawelo)

- Superintendent
- General Manager

Central Valley Regional Water Quality Control Board (Central Valley Water Board)

- Rebecca T. Asami, Engineering Geologist
GENERAL SAMPLING PROCEDURES

Equipment:
1. Nitrile gloves
2. Glass mason jars (sample container)
3. Ice chests
4. Baby wipes (Huggies Natural Care)
5. Knife (for cutting samples from tree)
6. Ladder
7. Measuring tape

Sampling Handling:
1. Nitrile gloves were used by samplers at all times
2. Citrus samples taken in a manner that kept whole fruit and peel intact (picked by hand, or cut from trees with a knife) and placed directly into glass mason jars
3. Whole samples were picked directly from the tree
4. Samples wiped clean with baby wipes before being placed in sampling containers
5. No stems or leaves were included with samples
6. Fruit was not peeled, cut, or altered in any way
7. Each sample container was sealed with tape
8. Sample containers were wrapped in bubble wrap before being placed in ice chest
9. Sample containers remained in ice chest until delivered to the laboratory

Sample Selection Criteria:
1. Minimum distance from main road was at least 100 feet
2. Minimum distance from access road was at least 100 feet
3. At least three trees were sampled at each sampling location
4. At each sample site, samples were picked from nearby trees (from adjacent trees when possible)
5. All samples appeared to be ripe, ready for harvest
6. Samples did not appear to have any unfavorable features or colors
7. Samples appeared to be representative of what an average consumer would find at a store

SAMPLE ANALYSIS

The Chain of Custody specifies the following analysis:
4. Methanol – US EPA Method 8015D
SAMPLE SITE NOTES

Site 1
Site Name: L-NAV
Fruit Type: Navel Oranges
Weather: Warm, sunny, dry

Approximate Row: 25
Approximate Distance into the Field: 140 ft

Time at the Sample Site: 0655-0740
Sample Name(s): A-O-12-032718-0715
A-O-11-032718-0725
(Dup)

Notes: Orchard had already been harvested. Samples picked near each other but not from adjacent trees. Samples were picked from tree by hand (samplers used nitrile gloves)

Oranges were large compared to the mouth of the sampling container, and had to be pushed into the jars, but were not damaged. Whole oranges comprised the samples. Most sampling jars contained two oranges. Fruit appeared ripe and ready for harvest. Workers were in the field during the sampling event, and appeared to be trimming trees. Ground was moist in the sampling field.

Site 2
Site Name: 4-LEM
Fruit Type: Lemon
Weather: Warm, sunny, dry

Approximate Row: 7-10
Approximate Distance into the Field: 100 ft.

Time at the Sample Site: 0845-0907
Sample Name(s): B-L-4-032718-0850
B-L-11-032718-0900
(Dup)

Notes: Whole fruit picked by hand (samplers used nitrile gloves), or cut from tree with a knife if needed. Orchard had not been harvested. Three adjacent trees sampled. Each sample jar contained 2-3 lemons. Whole, undamaged fruit placed in sampling jars. Samples appeared ripe and ready for harvest. Ground in the field was moist.

Site 3
Site Name: 7-NAV
Fruit Type: Navel Oranges
Weather: Warm, sunny, dry

Approximate Row: 7-10
Approximate Distance into the Field: 100 ft.

Time at the Sample Site: 0921-0955
Sample Name(s): B-O-7-032718-0925
B-O-11-032718-0935
(Dup)
Notes: Orchard had not been harvested. Three adjacent trees were sampled. Samples appeared ripe and ready for harvest. Two oranges were placed in each sample container. Oranges had to be pushed into sampling jars, but were not damaged. All samples were unpeeled, whole, and intact. Some samples taken from tree by hand (samplers used nitrile gloves), some samples were cut from the tree with a knife. Ground in field was moist.

Site 4
Site Name: 10-MAN  Site Name: 10-MAN
Fruit Type: Mandarin  Approximate Row: 6-10
Weather: Warm, sunny, dry  Approximate Distance into the Field: 110 ft.
Time at the Sample Site: 1008-1030
Sample Name(s): B-M-10-032718 1015

Notes: Orchard had already been harvested. Samples were not taken from adjacent trees. Samples picked as close together as possible. Some of the trees had small blossoms.

Each jar contained 3-4 samples. Whole samples were taken from the tree by hand (nitrile gloves were used by the samplers) or were cut from the tree using a knife. Samples appeared ripe and ready for harvest. Ground in field was moist.

Site 5
Site Name: 8-NAV  Site Name: 8-NAV
Fruit Type: Navel Orange  Approximate Row: 11
Weather: Clear, dry, warm  Approximate Distance into the Field: 110 ft.
Time at the Sample Site: 1111-1139
Sample Name(s): B-O-8-032718-1115

Notes: Orchard had not been harvested. Fruit appeared ripe and ready for harvest. Adjacent trees were sampled. Samples were picked directly from the tree by hand (samplers used nitrile gloves). Each sample jar contained two oranges. Oranges had to be pushed into sampling jars but were not damaged. Whole, intact fruit comprised the final sample. The ground in the field was moist.

Site 6
Site Name: 5-LEM  Site Name: 5-LEM
Fruit Type: Lemon  Approximate Row: 7
Weather: Clear, dry, warm  Approximate Distance into the Field: 110 ft.
Time at the Sample Site: 1141-1206
Sample Name(s): B-L-5-032718-1150
Notes: The orchard had been harvested. Fruit was not sampled from adjacent trees, but from nearby trees. Fruit appeared ripe and ready for harvest. Trees were in bloom. Whole fruit taken from tree and placed directly into jars. Approximately two lemons were placed in each sampling jar. Ground in the field was moist.

**Site 7**

Site Name: 12-MAN  
Fruit Type: Mandarin  
Weather: Warm, dry, clear

Time at the Sample Site: 1222-1307
Sample Name(s): B-M-12-032718-1230  
B-M-13-032718-1240  
(Dup)

Notes: The orchard had not been harvested. Three adjacent trees were sampled. Samples appeared ripe and ready for harvest. Samples picked by hand directly (samplers were using nitrile gloves). The trees were in bloom. Samples were placed in jars as whole, intact fruit with peel. Approximately 3-4 samples were placed in each jar. The ground in the field was dry.

**Site 8**

Site Name: 6-LEM Fruit  
Type: Lemon  
Weather: Warm, dry, clear

Time at the Sample Site: 1310-1335
Sample Name(s): B-L-6-032718-1315

Notes: The orchard had been harvested. Trees were not sampled adjacent. Samples were taken close to each other. Fruit appeared ripe, ready for harvest. Fruit had to be taken from the trees with a knife. Some trees had started to bloom. Two fruit samples were placed in each jar. Samples were whole, intact fruit with peel. Ground in the field was dry.

**Site 9**

Site Name: 11-MAN Fruit  
Type: Mandarin  
Weather: Warm, clear, dry

Time at the Sample Site: 1340-1400
Sample Name(s): B-M-11-032718-1350
Notes: Orchard had not been harvested. Trees were sampled adjacent. Some of the trees were in bloom. Fruit appeared ripe, ready for harvest. Each sampling container held 3-4 pieces of fruit. Samples were taken from the tree by hand (samplers were using nitrile gloves). Whole samples were taken from the tree, intact, with peels. Ground within the sampling field was dry.

**Site 10**

Site Name: 9-NAV  
Fruit Type: Ruby Navel Orange  
Weather: Warm, dry, clear  

Time at the Sample Site: 1402-1415  
Sample Name(s): B-O-9-032718-1405

Notes: Orchard had not been harvested. Adjacent trees sampled. Fruit appeared ripe, ready for harvest. Samples had to be pushed into jars, but were not damaged before being placed in jars. Trees appeared dry, leaves looked slightly damaged. Most of the trees were in bloom. Samples were taken directly from the tree by hand (samplers used nitrile gloves). Whole, intact fruit with peels were placed into sampling jars. Ground in the sampling field was dry.
PHOTOGRAPHS

Photo 1. Sample location L-NAV. Sample being taken from tree.

Photo 2. Sample location L-NAV. Photo shows sample, sample containers, and wipes.

Photo 3. Sample location 4-LEM.

Photo 4. Sample location 4-LEM. Sample being prepped with a wipe.

Photo 5. Sample location 7-NAV. Sample location was not harvested.

Photo 6. Sample location 7-NAV. Sample being placed in sample container. Samples had to be pushed into jar but were not damaged.
Photo 7. Sample location 8-NAV. Sample being placed in container. Had to be pushed in container, but was not damaged.

Photo 8. Sample location 8-NAV. Sample being taken from tree.

Photo 9. Sample location 8-NAV. Sample container with container.

Photo 10. Sample location 5-LEM. Sample being prepped before being placed in sampling jar.

Photo 11. Sampling location 5-LEM. Sample field had not been harvested.

Photo 12. Sampling location 5-LEM. Sample being taken from tree with knife.
Photo 13. Sample location 12-MAN. Ice chest with sample containers prepped for delivery to the laboratory.

Photo 14. Sample location 6-LEM. Fruit sample taken from tree with a knife.

Photo 16. Sample location 6-LEM. Sample jars prepped for packaging in the ice chest.

Photo 17. Sample location 6-LEM. Sample jars prepped for packaging in the ice chest.

Photo 18. Samples packed with ice, being prepped for shipping to the laboratory.

Photo 19. Ice chest prepped with samples inside. Ready to be shipped to the laboratory.
Central Valley Regional Water Quality Control Board

TO: Clay L. Rodgers
Assistant Executive Officer
Dale W. Harvey
Supervising Engineer

FROM: Joshua G. Mahoney
Water Resource Control Engineer

SAMPLE DATE: 28 March 2018

SUBJECT: NOTES ON COLLECTION OF CITRUS FRUIT SAMPLES IRRIGATED WITH PRODUCED WASTEWATER IN CAWELO WATER DISTRICT / KERN-TULARE WATER DISTRICT AND NON-PRODUCED WASTEWATER NEAR CAWELO WATER DISTRICT / KERN-TULARE WATER DISTRICT

On 28 March 2018, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff observed the collection of fruit samples by Advanced Environmental Concepts, Inc., a third party consulting group. Central Valley Water Board staff (Staff) obtained ownership of all samples throughout the sampling event. Citrus samples were shipped, via FedEx overnight delivery, to Weck Laboratories, Inc., (Weck) for analysis.

PARTIES PRESENT

Project Manager and Field Staff from Advanced Environmental Concepts, Inc. (AEC)

District Manager and Superintendent from Cawelo Water District (Cawelo)

Central Valley Regional Water Quality Control Board (Central Valley Water Board)
  • Joshua Mahoney, Water Resource Control Engineer

GENERAL SAMPLING PROCEDURES

Equipment:
  1. Nitrile gloves.
  2. Mason jars (hereafter sample container).
  3. Ice chest.

Procedures for Handling Fruit:
  1. Nitrile gloves were used at all times.
2. Samples were collected from trees.
3. Fruit samples were put in sample containers.
4. Samples were not peeled or altered from the tree to the sample container.
5. Sample containers were sealed.
6. Sample containers remained in ice chest until delivered to the laboratory.

Sample Selection Criteria:
1. Minimum distance from main road was at least 100 feet.
2. Minimum distance from access road was at least 100 feet.
3. Samples were picked from three different trees located within close proximity to each other.
4. All samples appeared to be ripe and ready for harvest.
5. Samples did not appear to have any unfavorable features or colors.
6. The rind was not damaged or peeled prior to being received by Weck Laboratories, Inc.
7. Samples appeared to be representative of what an average consumer would find at a store.

SAMPLE ANALYSIS

The Chain of Custody specifies the following analysis:

1. Volatile Organic Compounds - US EPA Method 8260B (Full Analysis)
2. Semi-Volatile Organic Compounds – US EPA Method 8270C-SIM (Full Analysis)
4. Methanol – US EPA Method 8015D

SAMPLE SITES

Site 1

Site Name: A-Man (A-M-1)  
Fruit Type: Mandarin  
Time at the Sample Site: 0640 – 0704

Sample Name(s): A-M-1-032818-0640  
A-M-11-032818-0645 (dup)

Notes: Irrigated with blended produced wastewater.

Site 2

Site Name: D-Navel (A-O-4)  
Fruit Type: Navel  
Time at the Sample Site: 0730-0805

Sample Name(s): A-O-4-032818-0730  
A-O-14-032818-0740 (dup)

Notes: Irrigated with blended produced wastewater.

Four rows from a propane wind fan.
Site 3
Site Name: B-Man (A-M-2)                Crop Row: 8, 9, 10
Fruit Type: Mandarin                    Crop Count from road: 18, 18, 18
Time at the Sample Site: 0825-0843 Sample
Name(s): A-M-2-032818-0825
Notes: Irrigated with blended produced wastewater.

Site 4
Site Name: G-Lem (A-L-7)                Crop Row: 13, 14, 15
Fruit Type: Lemon                       Crop Count from road: 6, 6, 6
Time at the Sample Site: 0855-0926 Sample Name(s): A-L-7-032818-0855
                                           A-L-11-032818-0905 (dup)
Notes: Irrigated with blended produced wastewater.

Site 5
Site Name: H-Lem (A-L-8)                Crop Row: 4, 5, 6
Fruit Type: Lemon                       Crop Count from road: 7, 7, 7
Time at the Sample Site: 0955-1009 Sample Name(s): A-L-8-032818-0955
Notes: Organic farm.                   Irrigated with blended produced wastewater.

Site 6
Site Name: E-Nav (A-O-5)                Crop Row: 7, 8, 9
Fruit Type: Navel                       Crop Count from road: 7, 7, 7
Time at the Sample Site: 1020-1042 Sample Name(s): A-O-5-032818-1020
Notes: Irrigated with blended produced wastewater.

Site 7
Site Name: J-Lem (A-L-10)                Crop Row: 14, 15, 16
Fruit Type: Lem                         Crop Count from road: 7, 7, 7
Time at the Sample Site: 1125-1142 Sample Name(s): A-L-10-032818-1125
Notes: Irrigated with blended produced wastewater.

**Site 8**

Site Name: F-Nav (A-O-6)  
Fruit Type: Navel  
Crop Row: 9, 10, 11  
Crop Count from road: 8, 8, 8

Time at the Sample Site: 1155-1212 Sample  
Name(s): A-O-6-032818-1200

Notes: Irrigated with blended produced wastewater.

**Site 9**

Site Name: K-Man (A-M-12)  
Fruit Type: Mandarin  
Crop Row: 4, 5, 6  
Crop Count from road: 11, 11, 11

Time at the Sample Site: 1230-1251 Sample  
Name(s): A-M-12-032818-1230

Notes: Irrigated with blended produced wastewater.

**Site 10**

Site Name: A-KT-1  
Fruit Type: Navel  
Crop Row: 3, 4, 5  
Crop Count from road: 6, 9, 6

Time at the Sample Site: 1330-1358 Sample  
Name(s): A-KT-1-032818-1330

Notes: Propane fan approximately 500 feet away.  
Inactive oil well approximately 300 feet away. Irrigated with blended produced wastewater. Kern-Tulare Water District.

**Site 11**

Site Name: A-KT-2  
Fruit Type: Valencia  
Crop Row: 2, 3, 4  
Crop Count from road: 7, 7, 7

Time at the Sample Site: 1407-1429 Sample  
Name(s): A-KT-2-032818-1410

Notes: Irrigated with blended produced wastewater.  
Kern-Tulare Water District.
Site 12

Site Name: B-O/KT-1  
Fruit Type: Navel  
Time at the Sample Site: 1450-1513 Sample  
Name(s): B-O/KT-1-032818-1450

Notes: Irrigated with non-produced wastewater.

Site 13

Site Name: B-O/KT-2  
Fruit Type: Valencia  
Time at the Sample Site: 1518-1543 Sample  
Name(s): B-O/KT-2-032818-1520

Notes: Irrigated with non-produced wastewater.
SITE PHOTOS

Photo 1 – Orange trees at Site A-O-5.

Photo 2 – Orange samples at Site A-O-5.

Photo 3 – Lemon trees at Site A-L-7.

Photo 4 – Lemon samples at Site A-L-7

Photo 5 – Mandarin trees at Site A-M-11.

Photo 6 – Mandarin samples at Site A-M-112.