

**2018 WATER QUALITY MONITORING
REPORT FOR THE BIG TUJUNGA WASH
MITIGATION AREA**

Prepared for:

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SECTION 1.0 – EXECUTIVE SUMMARY

As part of a water quality monitoring program on-going since 2000, sampling of the Big Tujunga Ponds and Haines Canyon Creek was conducted on December 17, 2018. The results of the water quality sample are summarized below:

- Dissolved oxygen levels were below the recommended minimum (5.0 mg/L) at all three stations.
- Observed pH levels were within Basin Plan recommendations for aquatic life at one station (Haines Canyon Creek leaving the site). Observed pH levels were below the Basin Plan recommendations at the remaining two sites.
- Nutrient levels were low with one exception; the total phosphorus level was slightly above EPA's recommendations for streams in the outflow from the Tujunga Ponds and slightly below the EPA's recommendations at the remaining two sites.
- No pesticides or residual chlorine were observed.
- Turbidity levels were low.
- Bacteria levels were above the freshwater bacteria standard at two stations (in the ponds and at the outflow from the ponds). However, the standards are for *E.coli* and the water quality results are for fecal coliform and total coliform.

SECTION 2.0 – BACKGROUND

The County of Los Angeles Department of Public Works (LACDPW) purchased an approximately 210-acre parcel in Big Tujunga Wash as a mitigation area for Los Angeles County Flood Control District (LACFCD) projects throughout Los Angeles County. In coordination with local agencies, the LACDPW defined a number of measures to improve habitat quality at the site. A Final Master Mitigation Plan (FMMP) was prepared to guide the implementation of these enhancements. The FMMP also includes a monitoring program to gather data on conditions at the site during implementation of the improvements. The FMMP was prepared and is currently being implemented by Chambers Group, Inc. (Chambers Group). Water quality monitoring was conducted on a quarterly basis from the fourth quarter of 2000 through the fourth quarter of 2005. In 2006, monitoring was conducted on a semi-annual basis. In 2007 through 2009 monitoring was conducted annually, in December. In 2010, monitoring was conducted in November; pesticide sampling was conducted in early December. In 2012, monitoring was conducted in February and November. Since that time, monitoring has been conducted once per year in the fall. This report presents the results of the water quality sampling for December 2018.

The project site is located just east of Hansen Dam in the Shadow Hills area of the City of Los Angeles. Both Big Tujunga Wash, an intermittent stream, and Haines Canyon Creek, a perennial stream, traverse the project site in an east-to-west direction. The two Tujunga Ponds are located outside of the site boundary, at the far eastern side of the site.

2.1 PROJECT SITE ACTIVITIES

A timeline of project-related activities including water quality sampling events is presented in Table 1.

Table 1: Major Activities to Date at the Big Tujunga Wash Mitigation Area

| Date | Activity |
|----------------------------------|---|
| 2000, April | Baseline water quality sampling |
| 2000, November to 2001, November | Arundo, tamarisk, and pepper tree removal Chemical (Rodeo®) application |
| 2000, December to 2000, November | Water hyacinth removal |
| 2000, December | Fish Sampling at Haines Canyon Creek |
| 2000, December | Water quality sampling |
| 2001, January to present | Exotic aquatic wildlife (non-native fish, crayfish, bullfrog, and turtle) removal – conducted quarterly |
| 2001, February | Partial riparian planting |
| 2001, March | Selective clearing at Canyon Trails Golf Club |
| 2001, March | Water quality sampling |
| 2001, June | Water quality sampling |
| 2001, July | Fish Sampling at Haines Canyon Creek |
| 2001, September | Water quality sampling |
| 2001, October to 2001, November | Fish Sampling at Haines Canyon Creek |
| 2001, December | Water quality sampling |

| Date | Activity |
|----------------------------------|---|
| 2002, January | Final riparian planting |
| 2002, July | Upland replacement planting |
| 2002, March | Water quality sampling |
| 2002, June | Water quality sampling |
| 2002, July | Fish Sampling at Haines Canyon Creek |
| 2002, September | Water quality sampling |
| 2002, October | Grading at Canyon Trails Golf Club begins |
| 2002, November | Fish Sampling at Haines Canyon Creek |
| 2002, December | Water quality sampling |
| 2003, March | Water quality sampling |
| 2003, April | Meeting with Canyon Trails Golf Club to discuss future use of herbicides and fertilizers |
| 2003, June | Water quality sampling |
| 2003, August | Fish Sampling at Haines Canyon Creek |
| 2003, September | Water quality sampling |
| 2003, fall | Completion of the golf course construction |
| 2003, December | Water quality sampling |
| 2004, January | Fish Sampling at Haines Canyon Creek |
| 2004, April | Water quality sampling |
| 2004, April | Rock Dam Removal Day |
| 2004, June | Angeles National Golf Club (previously named Canyon Trails) opens to the public |
| 2004, July | Water quality sampling |
| 2004, October | Water quality sampling |
| 2004, December | Water quality sampling |
| 2005, April | Water quality sampling |
| 2005, June | Water quality sampling |
| 2005, October | Water quality sampling |
| 2005, December | Water quality sampling |
| 2006, July | Water quality sampling |
| 2006, December | Water quality sampling |
| 2007, December | Water quality sampling |
| 2008, December | Water quality sampling |
| 2009, August to October | The Station Fire was the largest fire in the recorded history of Angeles National Forest and the 10th largest fire in California since 1933. The fire burned a total of 160,577 acres. The fire was fully contained on October 16, 2009. (Source: Angeles National Forest Incident Update available - http://www.inciweb.org/incident/1856/) |
| 2009, December | Water quality sampling |
| 2010, November | Water quality sampling |
| 2010, December | Water quality sampling for pesticides |
| 2011, September to 2012, January | Water lettuce removal |
| 2012, February | Water quality sampling |
| 2012, November | Water quality sampling |

| Date | Activity |
|-------------------|--|
| 2013, October | Water quality sampling |
| 2014, October | Water quality sampling |
| 2015, November | Water quality sampling |
| 2016, November 7 | Water quality sampling |
| 2017, December | The Creek Fire began on December 5, 2017, approximately 4 miles east of Sylmar, California. The Creek Fire burned a total of 15,619. Much of the Mitigation Area burned, and close to 75 percent of the entire site exhibited signs of severe surface burns, including approximately all of the riparian communities found along Haines Canyon Creek, and more than half of the vegetation within the Big Tujunga Wash area. The fire was fully contained on January 9, 2018. (Sources: Angeles National Forest Incident Update available - https://inciweb.nwccg.gov/incident/5669/ ; Chambers Group 2018 Post Fire Assessment Report) |
| 2017, December 21 | Water quality sampling |
| 2018, December 17 | Water quality sampling |

2.2 UPSTREAM LAND USES

The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). The golf course has been operating since June 2004. Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. Pesticides potentially used at the Angeles National Golf Course include herbicides, insecticides, fungicides, and grass growth inhibitors (Table 2).

Actual use of pesticides is based on golf course maintenance needs. Based on the pesticide use information from the Golf Club, analysis of water samples for glyphosate, chlorpyrifos, other organophosphorous pesticides, and organochlorine pesticides is included in the sampling program for the Big Tujunga Wash Mitigation Area.

Table 2: Pesticides Potentially Used at the Angeles National Golf Club

| Manufacturer and Product Name | Active Ingredient | Use |
|--|--|---|
| Syngenta Primo Maxx | trinexapac-ethyl | grass growth inhibitor used for turf management |
| Syngenta Reward | diquat dibromide | landscape and aquatic herbicide |
| Syngenta Barricade | prodiamine | pre-emergent herbicide |
| Bayer Prostar 70 WP | flutolanil | fungicide |
| Monsanto QuikPRO | ammonium salt of glyphosphate and diquat dibromide | herbicide |
| Monsanto Rodeo® Verdicon Kleenup® Pro Lesco Prosecutor | glyphosate | emerged aquatic weed and brush herbicide |
| Valent ProGibb T&O | gibberellic acid | plant growth regulator |
| BASF Insignia 20 WG | pyraclostrobin | fungicide |

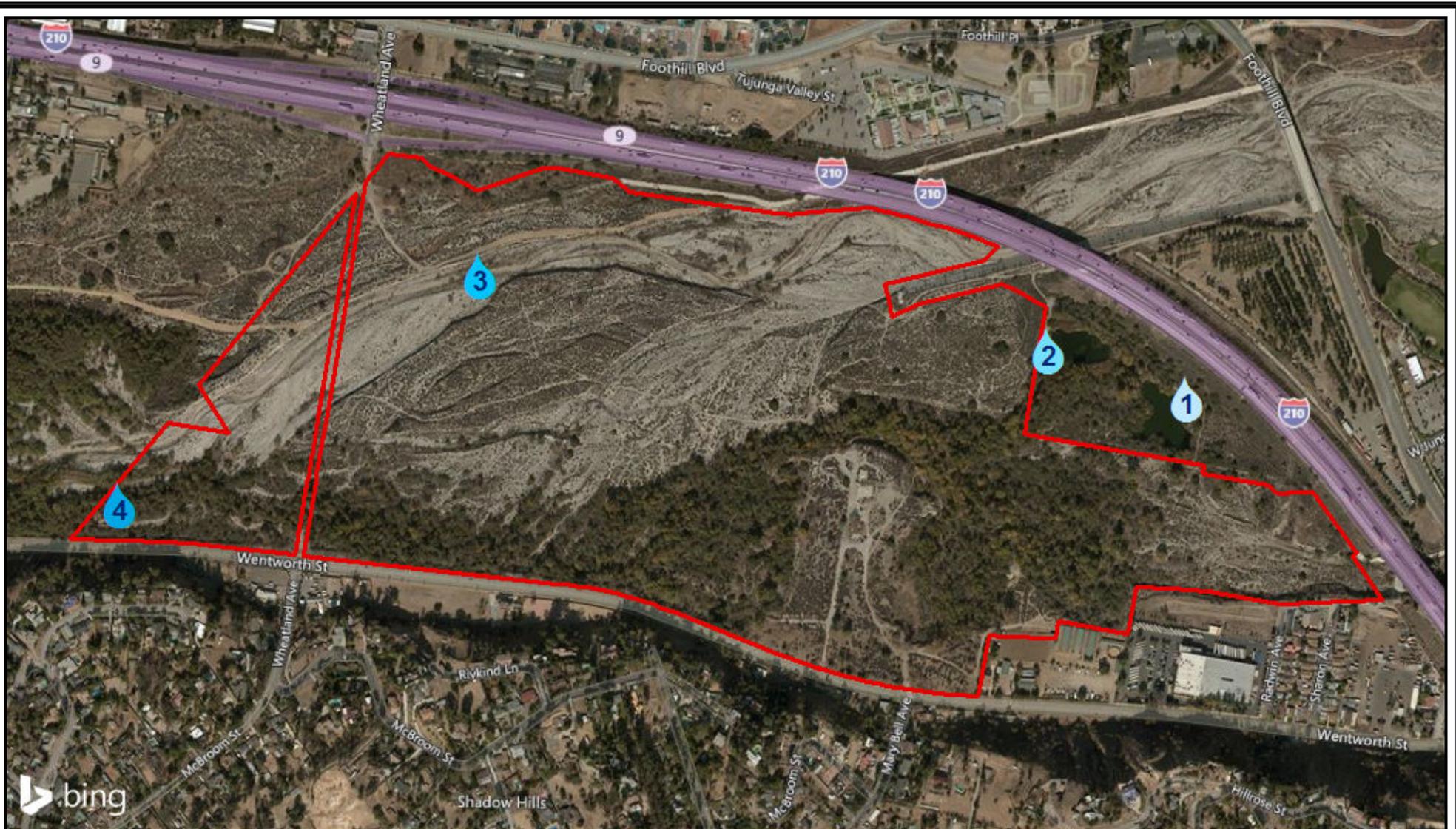
| | | |
|-------------------------------|---------------------------------|-------------|
| BASF Stalker | Isopropylamine salt of Imazapyr | herbicide |
| Dow Agrosciences Surflan A.S. | oryzalin | herbicide |
| Dow Agrosciences Dursban Pro | chlorpyrifos | insecticide |
| Mycogen Scythe | pelargonic acid | herbicide |

Sources: J. Reidinger, Angeles National Golf Club, pers. comm. to M. Chimienti, LACDPW, March 18, 2004 and Angeles National Golf Club Monthly Summary Pesticide Use Reports (December 2004, February 2005 and April 2007).

SECTION 3.0 – MATERIALS AND METHODS

3.1 SAMPLING STATIONS

Four sampling locations have been identified for the monitoring program for the Big Tujunga Wash Mitigation Area (Figure 1). Table 3 summarizes sampling locations and the conditions observed on December 17, 2018.



Legend

- Mitigation Area
- 💧 **Water Quality Sampling Station**
- 💧 1 - Inflow to Tujunga Ponds
- 💧 2 - Outflow from Tujunga Ponds
- 💧 3 - Big Tujunga Wash
- 💧 4 - Haines Canyon Creek, just before exit from site

Figure 1
Water Quality
Sampling Stations

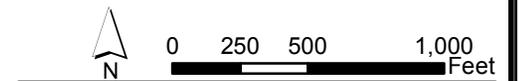


Table 3: Water Quality Sampling Locations and Conditions for December 2018

| | | | |
|---|---|-------------------|-----------------------|
| Date | December 17, 2018 | | |
| Air Temperature | Approximately 14.4 (°Celsius) during sample collection period | | |
| Skies | Cloudy | | |
| Observations | Water clear at all locations | | |
| Sampling Locations | Latitude | Longitude | Time of sample |
| Haines Canyon Creek | 34 16' 0.092" N | 118 21' 25.716' W | 1230 |
| Haines Canyon Creek, inflow to Tujunga Ponds | 34 16' 6.040" N | 118 20' 22.616" W | 1050 |
| Haines Canyon Creek, outflow from Tujunga Ponds | 34 16' 8.263" N | 118 20' 30.824" W | 1130 |
| Big Tujunga Wash | 34 16' 11.615" N | 118 21' 4.519" W | station dry |

3.2 SAMPLING PARAMETERS

Water Quality. Table 4 summarizes the sampling parameters included in the water quality monitoring program. The following meter was used in the field:

- Dissolved oxygen, pH and temperature – YSI 556-01 Multi Probe System

Analytical results were performed at Enthalpy Analytical, LLC, located in Orange, California and Test America, located in Savannah, Georgia. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. Quality assurance/quality control (QA/QC) procedures in each laboratory followed the methods described in their respective Quality Assurance Manuals.

Table 4: Water Quality Sampling Parameters

| Parameter | Analysis Location | Analytical Method |
|--|-------------------|-----------------------------------|
| total Kjeldahl nitrogen (TKN) | laboratory | EPA 351.2 |
| nitrite - nitrogen (NO ₂ -N) | laboratory | EPA 300.0 by IC |
| nitrate-nitrogen (NO ₃ -N) | laboratory | EPA 300.0 by IC |
| ammonia (NH ₄) | laboratory | EPA 350.1 |
| orthophosphate - P | laboratory | Standard Methods 4500PE/EPA 365.1 |
| total phosphorus - P | laboratory | Standard Methods 4500PE/EPA 365.1 |
| total coliform | laboratory | Standard Methods 9221B |
| fecal coliform | laboratory | Standard Methods 9221C |
| turbidity | field | EPA 180.1 |
| glyphosate (Roundup/Rodeo) ¹ | laboratory | EPA 547 |
| chlorpyrifos and organophosphorous pesticides ² | laboratory | EPA 8141A |
| organochlorine pesticides ³ | laboratory | EPA 608 |
| dissolved oxygen | field | Standard Methods 4500-O G |
| total residual chlorine | laboratory | Standard Methods 4500-Cl |
| temperature | field | Standard Methods 2550 |
| pH | field | Standard Methods 4500-H+ |

Sources for analytical methods:

EPA. Method and Guidance for Analysis of Water.

American Public Health Association, American Waterworks Association, and Water Environment Federation. 1998. Standard Methods for the Examination of Water and Wastewater, 20th Edition. Washington D.C.

1 First analysis completed in the first quarter of 2004

2 First analysis completed in the fourth quarter of 2004. This analytical method tests for the following chemicals: azinphos- methyl, bolster, coumaphos, diazinon, chlorpyrifos, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stiropfos, parathion-methyl, tokuthion, and trichloronate.

3 First analysis completed in December 2007. EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, toxaphene and PCB.

SECTION 4.0 – RESULTS

4.1 BASELINE WATER QUALITY

Sampling and analysis conducted by LACDPW prior to implementation of the FMMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are presented in Table 5. Higher bacteria and turbidity observed in the 4/18/2000 samples are attributable to a rain event. Phosphorus levels were also high in the 4/18/2000 samples, due to release from sediments.

4.2 DECEMBER 2018 RESULTS

Water Quality. Results of analyses conducted by Enthalpy Analytical and Test America are appended to this report (Appendix A) and summarized in Table 6.

Table 5: Baseline Water Quality (2000)

| Parameter | Units | Date (2000) | Haines Canyon Creek, Inflow to Tujunga Ponds | Haines Canyon Creek, Outflow from Tujunga Ponds | Big Tujunga Wash | Haines Canyon Creek, just before exit from site |
|----------------------|------------|-------------|--|---|------------------|---|
| Total coliform | MPN/100 ml | 4/12 | 3,000 | 5,000 | 170 | 1,700 |
| | | 4/18 | 2,200 | 170,000 | 2,400 | 70,000 |
| Fecal coliform | MPN/100 ml | 4/12 | 500 | 300 | 40 | 80 |
| | | 4/18 | 500 | 30,000 | 2,400 | 50,000 |
| Ammonia-N | mg/L | 4/12 | 0 | 0 | 0 | 0 |
| | | 4/18 | 0 | 0 | 0 | 0 |
| Nitrate-N | mg/L | 4/12 | 8.38 | 5.19 | 0 | 3.73 |
| | | 4/18 | 8.2 | 3.91 | 0.253 | 0.438 |
| Nitrite-N | mg/L | 4/12 | 0.061 | 0 | 0 | 0 |
| | | 4/18 | 0.055 | 0 | 0 | 0 |
| Kjeldahl-N | mg/L | 4/12 | 0 | 0.1062 | 0.163 | 0 |
| | | 4/18 | 0 | 0.848 | 0.42 | 0.428 |
| Dissolved phosphorus | mg/L | 4/12 | 0.078 | 0.056 | 0 | 0.063 |
| | | 4/18 | 0.089 | 0.148 | 0.111 | 0.163 |
| Total phosphorus | mg/L | 4/12 | 0.086 | 0.062 | 0 | 0.066 |
| | | 4/18 | 0.113 | 0.153 | 0.134 | 0.211 |
| pH | std units | 4/12 | 7.78 | 7.68 | 7.96 | 7.91 |
| | | 4/18 | 7.18 | 7.47 | 7.45 | 7.06 |
| Turbidity | NTU | 4/12 | 1.83 | 0.38 | 1.75 | 0.6 |
| | | 4/18 | 4.24 | 323 | 4070 | 737 |

MPN – most probable number NTU – nephelometric turbidity units

Table 6: Summary of Water Quality Results – December 17, 2018

| Parameter | Units | Haines Canyon Creek, Inflow to Tujunga Ponds | Haines Canyon Creek, Outflow from Tujunga Ponds | Big Tujunga Wash | Haines Canyon Creek, just before exit from site |
|-------------------------|--------------|--|---|------------------|---|
| Dissolved Oxygen | mg/L | 9.3† | 6.8† | NA | 10.8† |
| pH | std units | 6.49 | 6.3 | NA | 6.4 |
| Total residual chlorine | mg/L | ND | ND | NA | ND |
| Ammonia-Nitrogen | mg/L | ND | ND | NA | ND |
| Kjeldahl Nitrogen | mg/L | ND | ND | NA | ND |
| Nitrite-Nitrogen | mg/L | ND | ND | NA | ND |
| Nitrate-Nitrogen | mg/L | 9.00 | 6.91 | NA | 5.48 |
| Orthophosphate-P | mg/L | ND | ND | NA | ND |
| Total phosphorus-P | mg/L | 0.03 | 0.03 | NA | ND |
| Glyphosate | µg/L | ND | ND | NA | ND |
| Chloropyrifos* | µg/L | ND | ND | NA | ND |
| Pesticides (EPA 608)** | µg/L | ND | ND | NA | ND |
| Turbidity | NTU | 0.79 | 1.05 | NA | 0.33 |
| Fecal Coliform Bacteria | (MPN/100 ml) | 13 | 33 | NA | 20 |
| Total Coliform Bacteria | (MPN/100 ml) | 920 | 540 | NA | >1600 |

NA – data not available; station dry on the sample date **NTU** – nephelometric turbidity units

MPN – most probable number

ND – non-detect

* The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stiropfos, parathion-methyl, tokuthion, and trichloronate.

** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene

† Due to equipment calibration errors on December 17, 2018, dissolved oxygen readings were retaken on March 1, 2019.

4.3 COMPARISON OF RESULTS WITH AQUATIC LIFE CRITERIA

Tables 7 through 12 present objectives established by the United States Environmental Protection Agency (USEPA) and the Los Angeles Regional Water Quality Control Board (Regional Board) for protection of beneficial uses including freshwater aquatic life.

Table 7: National and Local Recommended Water Quality Criteria - Freshwaters

| Parameter | Basin Plan Objectives ^a | EPA Criteria | | |
|--------------------------------|--|---|--|---|
| | | CMC | CCC | Human Health |
| Temperature (°C) | b | See Table 13 | See Table 13 | -- |
| Dissolved oxygen (mg/L) | >7.0 mean >5.0 min | 5.0 ^c (warmwater, early life stages, 1-day minimum) | 6.0 ^c (warmwater, early life stages, 7-day mean) | -- |
| pH | 6.5 - 8.5 | -- | 6.5-9.0 ^{d,e} | 5.0-9.0 ^{d,e} |
| Total residual chlorine (mg/L) | 0.1 | 0.019 ^{d,e} | 0.011 ^{d,e} | 4.0 (maximum residual disinfectant level goal) |
| Fecal coliform (MPN/100 ml) | 126 ^f (geometric mean for <i>E. coli</i>) (water contact recreation) | -- | -- | Swimming stds: 33 ^g (geometric mean for enterococci) 126 ^g (geometric mean for <i>E. coli</i>) |
| Ammonia-nitrogen (mg/L) | See Tables 11 and 12 | See Table 9 | See Table 10 | -- |
| Nitrite-nitrogen (mg/L) | 1 | -- | -- | 1 (primary drinking water std.) |
| Nitrate-nitrogen (mg/L) | 10 | -- | -- | 10 (primary drinking water std.) |
| Total phosphorus (mg/L) | -- | <0.05 – 0.1 ^e (recommendation for streams, no criterion) | | -- |
| Turbidity (NTU) | h | i | i | 5 (secondary drinking water standard) 0.5 – 1.0 (std. for systems that filter) |

Notes:

-- No criterion

CMC Criteria Maximum Concentration or acute criterion

CCC Criteria Continuous Concentration or chronic criterion

a Source: California Regional Water Quality Control Board, Los Angeles Region. 1994. Water Quality Control Plan (Basin Plan). As amended.

- b** Narrative criterion: “The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.”
- c** Source: USEPA. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440-5-86-003. Washington, D.C. d Source: USEPA. 1999. National Recommended Water Quality Criteria – Correction. EPA 822-Z-99-001. Washington, D.C.
- e** Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.
- f** Single sample limits – E. coli density shall not exceed 235/100 ml.
- g** Source: USEPA. 1986. Ambient Water Quality Criteria for Bacteria – 1986. EPA 440-5-84-002. Washington, D.C.
- h** Narrative criterion: “Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.”
- i** Narrative criterion for freshwater fish and other aquatic life: “Settleable and suspended solids should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life.”

Table 8: Temperature and pH-Dependent Values of the CMC (Acute Criterion) Mussels Absent

| CMC: Mussels Absent, mg N/L | | | | | | | | | | |
|-----------------------------|------------------------|------|------|------|------|------|------|------|------|-------|
| pH | Temperature (°Celsius) | | | | | | | | | |
| | 0 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 6.5 | 58.0 | 58.0 | 58.0 | 58.0 | 43.7 | 37.0 | 31.4 | 26.6 | 22.5 | 19.1 |
| 6.6 | 55.7 | 55.7 | 55.7 | 55.7 | 41.9 | 35.5 | 30.1 | 25.5 | 21.6 | 18.3 |
| 6.7 | 53.0 | 53.0 | 53.0 | 53.0 | 39.9 | 33.8 | 28.6 | 24.3 | 20.6 | 17.4 |
| 6.8 | 49.9 | 49.9 | 49.9 | 49.9 | 37.6 | 31.9 | 27.0 | 22.9 | 19.4 | 16.4 |
| 6.9 | 46.5 | 46.5 | 46.5 | 46.5 | 35.1 | 29.7 | 25.2 | 21.3 | 18.1 | 15.3 |
| 7.0 | 42.9 | 42.9 | 42.9 | 42.9 | 32.3 | 27.4 | 23.2 | 19.7 | 16.7 | 14.1 |
| 7.1 | 39.1 | 39.1 | 39.1 | 39.1 | 29.4 | 24.9 | 21.1 | 17.9 | 15.2 | 12.8 |
| 7.2 | 35.1 | 35.1 | 35.1 | 35.1 | 26.4 | 22.4 | 19.0 | 16.1 | 13.6 | 11.5 |
| 7.3 | 31.2 | 31.2 | 31.2 | 31.2 | 23.5 | 19.9 | 16.8 | 14.3 | 12.1 | 10.2 |
| 7.4 | 27.3 | 27.3 | 27.3 | 27.3 | 20.6 | 17.4 | 14.8 | 12.5 | 10.6 | 8.98 |
| 7.5 | 23.6 | 23.6 | 23.6 | 23.6 | 17.8 | 15.1 | 12.8 | 10.8 | 9.18 | 7.77 |
| 7.6 | 20.2 | 20.2 | 20.2 | 20.2 | 15.3 | 12.9 | 10.9 | 9.27 | 7.86 | 6.66 |
| 7.7 | 17.2 | 17.2 | 17.2 | 17.2 | 12.9 | 11.0 | 9.28 | 7.86 | 6.66 | 5.64 |
| 7.8 | 14.4 | 14.4 | 14.4 | 14.4 | 10.9 | 9.21 | 7.80 | 6.61 | 5.60 | 4.74 |
| 7.9 | 12.0 | 12.0 | 12.0 | 12.0 | 9.07 | 7.69 | 6.51 | 5.52 | 4.67 | 3.96 |
| 8.0 | 9.99 | 9.99 | 9.99 | 9.99 | 7.53 | 6.38 | 5.40 | 4.58 | 3.88 | 3.29 |
| 8.1 | 8.26 | 8.26 | 8.26 | 8.26 | 6.22 | 5.27 | 4.47 | 3.78 | 3.21 | 2.72 |
| 8.2 | 6.81 | 6.81 | 6.81 | 6.81 | 5.13 | 4.34 | 3.68 | 3.12 | 2.64 | 2.24 |
| 8.3 | 5.60 | 5.60 | 5.60 | 5.60 | 4.22 | 3.58 | 3.03 | 2.57 | 2.18 | 1.84 |
| 8.4 | 4.61 | 4.61 | 4.61 | 4.61 | 3.48 | 2.95 | 2.50 | 2.11 | 1.79 | 1.52 |
| 8.5 | 3.81 | 3.81 | 3.81 | 3.81 | 2.87 | 2.43 | 2.06 | 1.74 | 1.48 | 1.25 |
| 8.6 | 3.15 | 3.15 | 3.15 | 3.15 | 2.37 | 2.01 | 1.70 | 1.44 | 1.22 | 1.04 |
| 8.7 | 2.62 | 2.62 | 2.62 | 2.62 | 1.97 | 1.67 | 1.42 | 1.20 | 1.02 | 0.862 |

| CMC: Mussels Absent, mg N/L | | | | | | | | | | |
|-----------------------------|------------------------|------|------|------|------|------|-------|-------|-------|-------|
| pH | Temperature (°Celsius) | | | | | | | | | |
| | 0 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 8.8 | 2.19 | 2.19 | 2.19 | 2.19 | 1.65 | 1.40 | 1.19 | 1.00 | 0.851 | 0.721 |
| 8.9 | 1.85 | 1.85 | 1.85 | 1.85 | 1.39 | 1.18 | 1.00 | 0.847 | 0.718 | 0.608 |
| 9.0 | 1.57 | 1.57 | 1.57 | 1.57 | 1.19 | 1.00 | 0.851 | 0.721 | 0.611 | 0.517 |

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CMC – Criteria Maximum Concentration (ammonia)

Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C

Table 9: Temperature and pH-Dependent Values of the CCC (Chronic Criterion) Mussels Absent and Early Fish Life Stages Present

| CCC: Mussels Absent and Early Fish Life Stages Present, mg N/L | | | | | | | | | | |
|--|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| pH | Temperature (°Celsius) | | | | | | | | | |
| | 0 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 6.5 | 6.36 | 6.36 | 6.36 | 6.36 | 6.36 | 6.11 | 5.37 | 4.72 | 4.15 | 3.65 |
| 6.6 | 6.26 | 6.26 | 6.26 | 6.26 | 6.26 | 6.02 | 5.29 | 4.65 | 4.09 | 3.60 |
| 6.7 | 6.15 | 6.15 | 6.15 | 6.15 | 6.15 | 5.91 | 5.19 | 4.57 | 4.01 | 3.53 |
| 6.8 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 5.77 | 5.08 | 4.46 | 3.92 | 3.45 |
| 6.9 | 5.84 | 5.84 | 5.84 | 5.84 | 5.84 | 5.61 | 4.93 | 4.34 | 3.81 | 3.35 |
| 7.0 | 5.64 | 5.64 | 5.64 | 5.64 | 5.64 | 5.42 | 4.76 | 4.19 | 3.68 | 3.24 |
| 7.1 | 5.41 | 5.41 | 5.41 | 5.41 | 5.41 | 5.20 | 4.57 | 4.02 | 3.53 | 3.10 |
| 7.2 | 5.14 | 5.14 | 5.14 | 5.14 | 5.14 | 4.94 | 4.35 | 3.82 | 3.36 | 2.95 |
| 7.3 | 4.84 | 4.84 | 4.84 | 4.84 | 4.84 | 4.66 | 4.09 | 3.60 | 3.16 | 2.78 |
| 7.4 | 4.52 | 4.52 | 4.52 | 4.52 | 4.52 | 4.34 | 3.82 | 3.36 | 2.95 | 2.59 |
| 7.5 | 4.16 | 4.16 | 4.16 | 4.16 | 4.16 | 4.00 | 3.52 | 3.09 | 2.72 | 2.39 |
| 7.6 | 3.79 | 3.79 | 3.79 | 3.79 | 3.79 | 3.65 | 3.21 | 2.82 | 2.48 | 2.18 |
| 7.7 | 3.41 | 3.41 | 3.41 | 3.41 | 3.41 | 3.28 | 2.89 | 2.54 | 2.23 | 1.96 |
| 7.8 | 3.04 | 3.04 | 3.04 | 3.04 | 3.04 | 2.92 | 2.57 | 2.26 | 1.98 | 1.74 |
| 7.9 | 2.67 | 2.67 | 2.67 | 2.67 | 2.67 | 2.57 | 2.26 | 1.98 | 1.74 | 1.53 |
| 8.0 | 2.32 | 2.32 | 2.32 | 2.32 | 2.32 | 2.23 | 1.96 | 1.72 | 1.52 | 1.33 |
| 8.1 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.92 | 1.69 | 1.49 | 1.31 | 1.15 |
| 8.2 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 | 1.64 | 1.45 | 1.27 | 1.12 | 0.982 |
| 8.3 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.40 | 1.23 | 1.08 | 0.949 | 0.835 |
| 8.4 | 1.23 | 1.23 | 1.23 | 1.23 | 1.23 | 1.18 | 1.04 | 0.914 | 0.804 | 0.706 |
| 8.5 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 0.999 | 0.878 | 0.772 | 0.679 | 0.597 |
| 8.6 | 0.878 | 0.878 | 0.878 | 0.878 | 0.878 | 0.844 | 0.742 | 0.652 | 0.573 | 0.504 |
| 8.7 | 0.742 | 0.742 | 0.742 | 0.742 | 0.742 | 0.714 | 0.628 | 0.552 | 0.485 | 0.426 |
| 8.8 | 0.631 | 0.631 | 0.631 | 0.631 | 0.631 | 0.606 | 0.533 | 0.469 | 0.412 | 0.362 |
| 8.9 | 0.539 | 0.539 | 0.539 | 0.539 | 0.539 | 0.518 | 0.455 | 0.400 | 0.352 | 0.309 |
| 9.0 | 0.464 | 0.464 | 0.464 | 0.464 | 0.464 | 0.446 | 0.392 | 0.345 | 0.303 | 0.266 |

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CCC – Criteria Continuous Concentration (ammonia)

Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C.

Table 10: 30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the “Early Life Stage Present” Condition (mg N/L)

| pH | Temperature (°Celsius) | | | | | | | | |
|-----|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 6.5 | 6.67 | 6.06 | 5.33 | 4.68 | 4.12 | 3.62 | 3.18 | 2.80 | 2.46 |
| 6.6 | 6.57 | 5.97 | 5.25 | 4.61 | 4.05 | 3.56 | 3.13 | 2.75 | 2.42 |
| 6.7 | 6.44 | 5.86 | 5.15 | 4.52 | 3.98 | 3.50 | 3.07 | 2.70 | 2.37 |
| 6.8 | 6.29 | 5.72 | 5.03 | 4.42 | 3.89 | 3.42 | 3.00 | 2.64 | 2.32 |
| 6.9 | 6.12 | 5.56 | 4.89 | 4.30 | 3.78 | 3.32 | 2.92 | 2.57 | 2.25 |
| 7.0 | 5.91 | 5.37 | 4.72 | 4.15 | 3.65 | 3.21 | 2.82 | 2.48 | 2.18 |
| 7.1 | 5.67 | 5.15 | 4.53 | 3.98 | 3.50 | 3.08 | 2.70 | 2.38 | 2.09 |
| 7.2 | 5.39 | 4.90 | 4.31 | 3.78 | 3.33 | 2.92 | 2.57 | 2.26 | 1.99 |
| 7.3 | 5.08 | 4.61 | 4.06 | 3.57 | 3.13 | 2.76 | 2.42 | 2.13 | 1.87 |
| 7.4 | 4.73 | 4.30 | 3.78 | 3.32 | 2.92 | 2.57 | 2.26 | 1.98 | 1.74 |
| 7.5 | 4.36 | 3.97 | 3.49 | 3.06 | 2.69 | 2.37 | 2.08 | 1.83 | 1.61 |
| 7.6 | 3.98 | 3.61 | 3.18 | 2.79 | 2.45 | 2.16 | 1.90 | 1.67 | 1.47 |
| 7.7 | 3.58 | 3.25 | 2.86 | 2.51 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 |
| 7.8 | 3.18 | 2.89 | 2.54 | 2.23 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 |
| 7.9 | 2.80 | 2.54 | 2.24 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 | 1.03 |
| 8.0 | 2.43 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 | 1.16 | 1.02 | 0.897 |
| 8.1 | 2.10 | 1.91 | 1.68 | 1.47 | 1.29 | 1.14 | 1.00 | 0.879 | 0.773 |
| 8.2 | 1.79 | 1.63 | 1.43 | 1.26 | 1.11 | 0.973 | 0.855 | 0.752 | 0.661 |
| 8.3 | 1.52 | 1.39 | 1.22 | 1.07 | 0.941 | 0.827 | 0.727 | 0.639 | 0.562 |
| 8.4 | 1.29 | 1.17 | 1.03 | 0.906 | 0.796 | 0.700 | 0.615 | 0.541 | 0.475 |
| 8.5 | 1.09 | 0.990 | 0.870 | 0.765 | 0.672 | 0.591 | 0.520 | 0.457 | 0.401 |
| 8.6 | 0.920 | 0.836 | 0.735 | 0.646 | 0.568 | 0.499 | 0.439 | 0.386 | 0.339 |
| 8.7 | 0.778 | 0.707 | 0.622 | 0.547 | 0.480 | 0.422 | 0.371 | 0.326 | 0.287 |
| 8.8 | 0.661 | 0.601 | 0.528 | 0.464 | 0.408 | 0.359 | 0.315 | 0.277 | 0.244 |
| 8.9 | 0.565 | 0.513 | 0.451 | 0.397 | 0.349 | 0.306 | 0.269 | 0.237 | 0.208 |
| 9.0 | 0.486 | 0.442 | 0.389 | 0.342 | 0.300 | 0.264 | 0.232 | 0.204 | 0.179 |

Source: California Regional Water Quality Control Board, Los Angeles Region. 2005. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Early Life Stage Implementation Provisions of the Inland Surface Water Ammonia Objectives for Freshwaters. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 11: One-Hour Average Objective for Ammonia-N for Freshwaters (mg N/L)

| pH | Waters Designated COLD and/or MIGR | Waters Not Designated COLD and/or MIGR |
|-----|------------------------------------|--|
| 6.5 | 32.6 | 48.8 |
| 6.6 | 31.3 | 46.8 |
| 6.7 | 29.8 | 44.6 |
| 6.8 | 28.1 | 42.0 |
| 6.9 | 26.2 | 39.1 |
| 7.0 | 24.1 | 36.1 |
| 7.1 | 22.0 | 32.8 |
| 7.2 | 19.7 | 29.5 |
| 7.3 | 17.5 | 26.2 |
| 7.4 | 15.4 | 23.0 |
| 7.5 | 13.3 | 19.9 |
| 7.6 | 11.4 | 17.0 |
| 7.7 | 9.65 | 14.4 |
| 7.8 | 8.11 | 12.1 |
| 7.9 | 6.77 | 10.1 |
| 8.0 | 5.62 | 8.40 |
| 8.1 | 4.64 | 6.95 |
| 8.2 | 3.83 | 5.72 |
| 8.3 | 3.15 | 4.71 |
| 8.4 | 2.59 | 3.88 |
| 8.5 | 2.14 | 3.20 |
| 8.6 | 1.77 | 2.65 |
| 8.7 | 1.47 | 2.20 |
| 8.8 | 1.23 | 1.84 |
| 8.9 | 1.04 | 1.56 |
| 9.0 | 0.885 | 1.32 |

COLD – Beneficial use designation of Cold Freshwater Habitat

MIGR – Beneficial use designation of Migration of Aquatic Organisms

Source: California Regional Water Quality Control Board, Los Angeles Region. 2002. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Inland Surface Water Ammonia Objectives. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 12: Example Calculated Values for Maximum Weekly Average Temperature for Growth and Short-Term Maxima for Survival of Juvenile and Adult Fishes During the Summer

| Species | Growth (°Celsius) | Maxima (°Celsius) |
|-----------------|-------------------|-------------------|
| Black crappie | 27 | -- |
| Bluegill | 32 | 35 |
| Channel catfish | 32 | 35 |
| Emerald shiner | 30 | -- |
| Largemouth bass | 32 | 34 |
| Brook trout | 19 | 24 |

Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

SECTION 5.0 – DISCUSSION

Results from the December 2018 sampling are described by parameter in Table 13.

Table 13: Discussion of November 2018 Water Quality Sampling Results

| Parameter | Discussion |
|--|---|
| Dissolved oxygen | <ul style="list-style-type: none"> Due to equipment calibration errors on December 17, 2018, dissolved oxygen (DO) readings were retaken on March 1, 2019, and reflect the conditions present at the sampling locations on that day. DO levels ranged from 6.8 mg/L in the Haines Canyon Creek outflow from the Tujunga Ponds to 10.8 mg/L in Haines Canyon Creek leaving the site. DO levels at all three sample stations were above the minimum recommended level (5.0 mg/L) for warmwater fish species. |
| pH | <ul style="list-style-type: none"> The lowest pH was observed in the Haines Canyon Creek outflow from the Tujunga Ponds (6.30), with highest pH observed in the Tujunga Ponds (6.49). On this date, pH readings in all three stations were below the 6.5 to 8.5 range identified in the Basin Plan. |
| Total residual chlorine | <ul style="list-style-type: none"> No residual chlorine was detected at any station. |
| Nitrogen | <ul style="list-style-type: none"> Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L. Ammonia was not detected at all stations. |
| Phosphorus | <ul style="list-style-type: none"> The observed concentration at the ponds (0.04) and in the outflow from the ponds (0.03) is below the lower end of the EPA's recommended range. Phosphorus was not detected at Haines Canyon Creek leaving the site. |
| Glyphosate | <ul style="list-style-type: none"> Glyphosate was not detected at any station. |
| Chloropyrifos and Organophosphorous Pesticides | <ul style="list-style-type: none"> Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station. |
| Organochlorine Pesticides | <ul style="list-style-type: none"> Pesticides analyzed by EPA Method 608 were not detected at any station. |
| Turbidity | <ul style="list-style-type: none"> Turbidity levels were very low (<2.5 NTU) at all stations. |

| Parameter | Discussion |
|-----------|--|
| Bacteria | <ul style="list-style-type: none"> The fresh water bacteria standard for water contact recreation is for <i>E. coli</i> (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Observed fecal coliform levels were below the standard at all three stations. Sampling specifically for <i>E. coli</i> was not conducted. Total coliform levels ranged from 540 MPN/100 ml at the outflow from the ponds to >1,600 MPN/100 ml in Haines Canyon Creek leaving the site. [Note that recreation standards are for <i>E. coli</i>. Total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.] |

mg/L – milligrams per liter NTU – nephelometric turbidity units MPN – most probable number

SECTION 6.0 – GLOSSARY

Ammonia-Nitrogen – $\text{NH}_3\text{-N}$ is a gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia (NH_3) is toxic to aquatic organisms. The proportions of NH_3 and ammonium (NH_4^+) and hydroxide (OH^-) ions are dependent on temperature, pH, and salinity.

Chlorine, residual – The chlorination of water supplies and wastewaters serves to destroy or deactivate disease-producing organisms. Residual chlorine in natural waters is an aquatic toxicant.

Chloropyrifos - white crystal-like solid insecticide widely used in homes and on farms. Used to control cockroaches, fleas, termites, ticks crop pests.

Coliform Bacteria – several genera of bacteria belonging to the family Enterobacteriaceae. Based on the method of detection, the coliform group is historically defined as facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within 48 hours at 35 C.

Fecal Coliform Bacteria – part of the intestinal flora of warm-blooded animals. Presence in surface waters is considered an indication of pollution.

Glyphosate - white compound broad-spectrum herbicide used to kill weeds.

Kjeldahl Nitrogen – Named for the laboratory technique used for detection, Kjeldahl nitrogen includes organic nitrogen and ammonia nitrogen.

Nitrate-Nitrogen – $\text{NO}_3\text{-N}$ is an essential nutrient for many photosynthetic autotrophs.

Nitrite-Nitrogen – $\text{NO}_2\text{-N}$ is an intermediate oxidation state of nitrogen, both in the oxidation of ammonia to nitrate and in the reduction of nitrate.

Orthophosphorus – the reactive form of phosphorus, commonly used as fertilizer.

pH – the hydrogen ion activity of water (pH) is measured on a logarithmic scale, ranging from 0 to 14. The pH of “pure” water at 25°C is 7.0 (neutral). Low pH is acidic; high pH is basic or alkaline.

Total Phosphorus – In natural waters, phosphorus occurs almost solely as orthophosphates, condensed phosphates, and organically bound phosphate. Phosphorus is essential to the growth of organisms.

Turbidity – attributable to the suspended and colloidal matter in water, including clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. The reduction of clearness in turbid waters diminishes the penetration of light and therefore can adversely affect photosynthesis.

APPENDIX A – 2018 LABORATORY RESULTS





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Client: Chambers Group
Address: 5 Hutton Centre Drive
Suite 750
Santa Ana, CA 92707
Attn: Heather Franklin

Lab Request: 410049
Report Date: 01/03/2019
Date Received: 12/17/2018
Client ID: 14294

Comments: Big Tujunga

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

Sample # **Client Sample ID**

410049-001 Ponds Inlet
410049-002 Ponds Outlet
410049-003 Haines Creek Exit

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Diane Galvan, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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| | | |
|------------------------------------|-------------------------------------|--------------------------|
| Matrix: Water | Client: Chambers Group | Collector: client |
| Sampled: 12/17/2018 10:50 | Site: | |
| Sample #: <u>410049-001</u> | Client Sample #: Ponds Inlet | Sample Type: |

| Analyte | Result | DF | RDL | Units | Prepared | Analyzed By | Notes |
|---------------------------------|-------------------------|----|----------------------|-----------|----------------|----------------|-------|
| Method: ALCH 4025 | Prep Method: None | | QCBatchID: | | | | |
| Total Nitrogen | 9.00 | 1 | 0.5 | mg/L | | 01/02/19 | SLL |
| Method: EPA 300.0 | Prep Method: Method | | QCBatchID: QC1199064 | | | | |
| Nitrate, as Nitrogen | 9.00 | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 18:19 | JP |
| Nitrite, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 18:19 | JP |
| Method: EPA 350.1 | Prep Method: Method | | QCBatchID: QC1199346 | | | | |
| Ammonia, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/21/18 | 12/26/18 | TP |
| Method: EPA 351.2 | Prep Method: Method | | QCBatchID: QC1199236 | | | | |
| Total Kjeldahl Nitrogen | ND | 1 | 0.4 | mg/L | 12/19/18 | 12/20/18 | TP |
| Method: EPA 547 | Prep Method: Method | | QCBatchID: | | | | |
| See Attached | | 1 | | | | | |
| Method: EPA 8141A <i>NELAC</i> | Prep Method: EPA 3510C | | QCBatchID: | | | | |
| See Attached | | 1 | | | | | |
| Method: SM 4500-Cl | Prep Method: Method | | QCBatchID: QC1199015 | | | | |
| Chlorine, Total Residual | ND | 1 | 0.1 | mg/L | | 12/17/18 18:31 | WW T2 |
| Method: SM 4500-P-B-5-E | Prep Method: 4500-P-B-5 | | QCBatchID: QC1199447 | | | | |
| Total Phosphorous as P | 0.031 | 1 | 0.02 | mg/L | 12/27/18 | 12/28/18 | TP |
| Total Phosphorous as PO4 | 0.095 | 1 | 0.06 | mg/L | 12/27/18 | 12/28/18 | TP |
| Method: SM 4500-P-E | Prep Method: Method | | QCBatchID: QC1199452 | | | | |
| Orthophosphate, as P | ND | 1 | 0.02 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Orthophosphate, as PO4 | ND | 1 | 0.06 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Method: SM 9221-B | Prep Method: Method | | QCBatchID: QC1198987 | | | | |
| Coliform, Total | 920 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/21/18 11:45 | CO |
| Method: SM 9221-E | Prep Method: Method | | QCBatchID: QC1198987 | | | | |
| Coliform, Fecal | 13 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/20/18 12:08 | SEM |

| | | |
|------------------------------------|--------------------------------------|--------------------------|
| Matrix: Water | Client: Chambers Group | Collector: client |
| Sampled: 12/17/2018 11:30 | Site: | |
| Sample #: <u>410049-002</u> | Client Sample #: Ponds Outlet | Sample Type: |

| Analyte | Result | DF | RDL | Units | Prepared | Analyzed By | Notes |
|---------------------------------|-------------------------|----|----------------------|-----------|----------------|----------------|-------|
| Method: ALCH 4025 | Prep Method: None | | QCBatchID: | | | | |
| Total Nitrogen | 6.91 | 1 | 0.5 | mg/L | | 01/02/19 | SLL |
| Method: EPA 300.0 | Prep Method: Method | | QCBatchID: QC1199064 | | | | |
| Nitrate, as Nitrogen | 6.91 | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 18:41 | JP |
| Nitrite, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 18:41 | JP |
| Method: EPA 350.1 | Prep Method: Method | | QCBatchID: QC1199346 | | | | |
| Ammonia, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/21/18 | 12/26/18 | TP |
| Method: EPA 351.2 | Prep Method: Method | | QCBatchID: QC1199236 | | | | |
| Total Kjeldahl Nitrogen | ND | 1 | 0.4 | mg/L | 12/19/18 | 12/20/18 | TP |
| Method: EPA 547 | Prep Method: Method | | QCBatchID: | | | | |
| See Attached | | 1 | | | | | |
| Method: EPA 8141A <i>NELAC</i> | Prep Method: EPA 3510C | | QCBatchID: | | | | |
| See Attached | | 1 | | | | | |
| Method: SM 4500-Cl | Prep Method: Method | | QCBatchID: QC1199015 | | | | |
| Chlorine, Total Residual | ND | 1 | 0.1 | mg/L | | 12/17/18 18:31 | WW T2 |
| Method: SM 4500-P-B-5-E | Prep Method: 4500-P-B-5 | | QCBatchID: QC1199447 | | | | |
| Total Phosphorous as P | 0.030 | 1 | 0.02 | mg/L | 12/27/18 | 12/28/18 | TP |
| Total Phosphorous as PO4 | 0.092 | 1 | 0.06 | mg/L | 12/27/18 | 12/28/18 | TP |
| Method: SM 4500-P-E | Prep Method: Method | | QCBatchID: QC1199452 | | | | |
| Orthophosphate, as P | ND | 1 | 0.02 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Orthophosphate, as PO4 | ND | 1 | 0.06 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Method: SM 9221-B | Prep Method: Method | | QCBatchID: QC1198987 | | | | |
| Coliform, Total | 540 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/21/18 11:45 | CO |
| Method: SM 9221-E | Prep Method: Method | | QCBatchID: QC1198987 | | | | |
| Coliform, Fecal | 33 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/20/18 12:08 | SEM |

| | | |
|------------------------------------|---|--------------------------|
| Matrix: Water | Client: Chambers Group | Collector: client |
| Sampled: 12/17/2018 12:30 | Site: | |
| Sample #: <u>410049-003</u> | Client Sample #: Haines Creek Exit | Sample Type: |

| Analyte | Result | DF | RDL | Units | Prepared | Analyzed By | Notes |
|--------------------------------|-------------------------|----|------|-----------|----------------|----------------------|-------|
| Method: ALCH 4025 | Prep Method: None | | | | | QCBatchID: | |
| Total Nitrogen | 5.48 | 1 | 0.5 | mg/L | | 01/02/19 | SLL |
| Method: EPA 300.0 | Prep Method: Method | | | | | QCBatchID: QC1199064 | |
| Nitrate, as Nitrogen | 5.48 | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 19:02 | JP |
| Nitrite, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/17/18 | 12/17/18 19:02 | JP |
| Method: EPA 350.1 | Prep Method: Method | | | | | QCBatchID: QC1199346 | |
| Ammonia, as Nitrogen | ND | 1 | 0.1 | mg/L | 12/21/18 | 12/26/18 | TP |
| Method: EPA 351.2 | Prep Method: Method | | | | | QCBatchID: QC1199236 | |
| Total Kjeldahl Nitrogen | ND | 1 | 0.4 | mg/L | 12/19/18 | 12/20/18 | TP |
| Method: EPA 547 | Prep Method: Method | | | | | QCBatchID: | |
| See Attached | | 1 | | | | | |
| Method: EPA 8141A <i>NELAC</i> | Prep Method: EPA 3510C | | | | | QCBatchID: | |
| See Attached | | 1 | | | | | |
| Method: SM 4500-Cl | Prep Method: Method | | | | | QCBatchID: QC1199015 | |
| Chlorine, Total Residual | ND | 1 | 0.1 | mg/L | 12/17/18 18:31 | WW | T2 |
| Method: SM 4500-P-B-5-E | Prep Method: 4500-P-B-5 | | | | | QCBatchID: QC1199447 | |
| Total Phosphorous as P | ND | 1 | 0.02 | mg/L | 12/27/18 | 12/28/18 | TP |
| Total Phosphorous as PO4 | ND | 1 | 0.06 | mg/L | 12/27/18 | 12/28/18 | TP |
| Method: SM 4500-P-E | Prep Method: Method | | | | | QCBatchID: QC1199452 | |
| Orthophosphate, as P | ND | 1 | 0.02 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Orthophosphate, as PO4 | ND | 1 | 0.06 | mg/L | 12/18/18 12:15 | 12/18/18 12:15 | TP |
| Method: SM 9221-B | Prep Method: Method | | | | | QCBatchID: QC1198987 | |
| Coliform, Total | >1600 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/20/18 12:01 | SEM |
| Method: SM 9221-E | Prep Method: Method | | | | | QCBatchID: QC1198987 | |
| Coliform, Fecal | 20 | 1 | | MPN/100ml | 12/17/18 14:10 | 12/20/18 12:08 | SEM |

| | | |
|-----------------------------|-----------------------------|---------------------------------|
| QCBatchID: QC1199015 | Analyst: wei | Method: SM 4500-Cl |
| Matrix: Water | Analyzed: 12/17/2018 | Instrument: CHEM (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|--------------------------|--------------|-------|-----|-------|
| QC1199015MB1 | | | | |
| Chlorine, Total Residual | ND | mg/L | 0.1 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|--------------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199015LCS1 | | | | | | | | | | | |
| Chlorine, Total Residual | 1 | | 0.98 | | mg/L | 98 | | | 80-120 | | |

Duplicate Summary

| Analyte | Sample Amount | Duplicate Amount | Units | RPD | Limits RPD | Notes |
|--------------------------|---------------|------------------|-------|-----|------------|---------------------------|
| QC1199015DUP1 | | | | | | |
| Chlorine, Total Residual | ND | ND | mg/L | 0.0 | 20 | Source: 410049-002 |

| | | |
|------------------------------------|-----------------------------|----------------------------------|
| QCBatchID: <u>QC1199064</u> | Analyst: JParedes | Method: EPA 300.0 |
| Matrix: Water | Analyzed: 12/17/2018 | Instrument: AAICP (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|----------------------|--------------|-------|-----|-------|
| QC1199064MB1 | | | | |
| Nitrate, as Nitrogen | ND | mg/L | 0.1 | |
| Nitrite, as Nitrogen | ND | mg/L | 0.1 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|--------------------------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199064LCS1, QC1199064LCSD1 | | | | | | | | | | | |
| Nitrate, as Nitrogen | 9.03 | 9.03 | 9.37 | 9.28 | mg/L | 104 | 103 | 1 | 90-110 | 20 | |
| Nitrite, as Nitrogen | 9.15 | 9.15 | 9.94 | 9.83 | mg/L | 109 | 107 | 1 | 90-110 | 20 | |

| | | |
|-----------------------------|-----------------------------|---------------------------------|
| QCBatchID: QC1199236 | Analyst: trinh | Method: EPA 351.2 |
| Matrix: Water | Analyzed: 12/20/2018 | Instrument: CHEM (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|-------------------------|--------------|-------|-----|-------|
| QC1199236MB1 | | | | |
| Total Kjeldahl Nitrogen | ND | mg/L | 0.4 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|-------------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199236LCS1 | | | | | | | | | | | |
| Total Kjeldahl Nitrogen | 2.5 | | 2.6 | | mg/L | 104 | | | 80-120 | | |

Matrix Spike/Matrix Spike Duplicate Summary

| Analyte | Sample Amount | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|------------------------------------|---------------|--------------|------|--------------|-----|-------|------------|-----|-----|--------|-----|---------------------------|
| | | MS | MSD | MS | MSD | | MS | MSD | RPD | %Rec | RPD | |
| QC1199236MS1, QC1199236MSD1 | | | | | | | | | | | | |
| Total Kjeldahl Nitrogen | 0.389 | 12.5 | 12.5 | 13 | 13 | mg/L | 101 | 101 | 0.0 | 80-120 | 20 | Source: 410093-008 |

| | | |
|-----------------------------|-----------------------------|---------------------------------|
| QCBatchID: QC1199346 | Analyst: trinh | Method: EPA 350.1 |
| Matrix: Water | Analyzed: 12/26/2018 | Instrument: CHEM (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|----------------------|--------------|-------|-----|-------|
| QC1199346MB1 | | | | |
| Ammonia, as Nitrogen | ND | mg/L | 0.1 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|----------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199346LCS1 | | | | | | | | | | | |
| Ammonia, as Nitrogen | 5 | | 4.98 | | mg/L | 100 | | | 80-120 | | |

Matrix Spike/Matrix Spike Duplicate Summary

| Analyte | Sample Amount | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|---|---------------|--------------|-----|--------------|------|-------|------------|-----|-----|--------|-----|-------|
| | | MS | MSD | MS | MSD | | MS | MSD | RPD | %Rec | RPD | |
| QC1199346MS1, QC1199346MSD1 Source: 410049-001 | | | | | | | | | | | | |
| Ammonia, as Nitrogen | ND | 5 | 5 | 5.87 | 5.95 | mg/L | 117 | 119 | 1.4 | 80-120 | 20 | |

| | | |
|------------------------------------|-----------------------------|---------------------------------|
| QCBatchID: <u>QC1199447</u> | Analyst: trinh | Method: SM 4500-P-B-5-E |
| Matrix: Water | Analyzed: 12/28/2018 | Instrument: CHEM (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|--------------------------|--------------|-------|------|-------|
| QC1199447MB1 | | | | |
| Total Phosphorous as P | ND | mg/L | 0.02 | |
| Total Phosphorous as PO4 | ND | mg/L | 0.06 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|--------------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199447LCS1 | | | | | | | | | | | |
| Total Phosphorous as P | 0.4 | | 0.425 | | mg/L | 106 | | | 80-120 | | |
| Total Phosphorous as PO4 | 1.23 | | 1.303 | | mg/L | 106 | | | 80-120 | | |

Matrix Spike/Matrix Spike Duplicate Summary

| Analyte | Sample Amount | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|---|---------------|--------------|-------|--------------|-------|-------|------------|-----|-----|--------|-----|-------|
| | | MS | MSD | MS | MSD | | MS | MSD | RPD | %Rec | RPD | |
| QC1199447MS1, QC1199447MSD1 Source: 410093-008 | | | | | | | | | | | | |
| Total Phosphorous as P | 0.237 | 1 | 1 | 1.175 | 1.165 | mg/L | 94 | 93 | 0.9 | 75-125 | 20 | |
| Total Phosphorous as PO4 | 0.727 | 3.066 | 3.066 | 3.60 | 3.57 | mg/L | 94 | 93 | 0.8 | 75-125 | 20 | |

| | | |
|-----------------------------|-----------------------------|---------------------------------|
| QCBatchID: QC1199452 | Analyst: trinh | Method: SM 4500-P-E |
| Matrix: Water | Analyzed: 12/18/2018 | Instrument: CHEM (group) |

Blank Summary

| Analyte | Blank Result | Units | RDL | Notes |
|------------------------|--------------|-------|------|-------|
| QC1199452MB1 | | | | |
| Orthophosphate, as P | ND | mg/L | 0.02 | |
| Orthophosphate, as PO4 | ND | mg/L | 0.06 | |

Lab Control Spike/ Lab Control Spike Duplicate Summary

| Analyte | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|------------------------|--------------|------|--------------|------|-------|------------|------|-----|--------|-----|-------|
| | LCS | LCSD | LCS | LCSD | | LCS | LCSD | RPD | %Rec | RPD | |
| QC1199452LCS1 | | | | | | | | | | | |
| Orthophosphate, as P | 0.4 | | 0.4090 | | mg/L | 102 | | | 80-120 | | |
| Orthophosphate, as PO4 | 1.2264 | | 1.25 | | mg/L | 102 | | | 80-120 | | |

Matrix Spike/Matrix Spike Duplicate Summary

| Analyte | Sample Amount | Spike Amount | | Spike Result | | Units | Recoveries | | | Limits | | Notes |
|------------------------------------|---------------|--------------|--------|--------------|--------|-------|------------|-----|-----|--------|-----|-------|
| | | MS | MSD | MS | MSD | | MS | MSD | RPD | %Rec | RPD | |
| QC1199452MS1, QC1199452MSD1 | | | | | | | | | | | | |
| Orthophosphate, as P | ND | 0.4 | 0.4 | 0.4150 | 0.4130 | mg/L | 104 | 103 | 0.5 | 75-125 | 20 | |
| Orthophosphate, as PO4 | ND | 1.2264 | 1.2264 | 1.27 | 1.27 | mg/L | 104 | 104 | 0.0 | 75-125 | 20 | |

Source: 410049-003

Data Qualifiers and Definitions

Qualifiers

| | |
|------------|--|
| A | See Report Comments. |
| B | Analyte was present in an associated method blank. |
| B1 | Analyte was present in a sample and associated method blank greater than MDL but less than RDL. |
| BQ1 | No valid test replicates. Sample Toxicity is possible. Best result was reported. |
| BQ2 | No valid test replicates. |
| BQ3 | No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater. |
| BQ4 | Minor Dissolved Oxygen loss was observed in the blank water check, however, the LCS was within criteria, validating the batch. |
| BQ5 | Minor Dissolved Oxygen loss was observed in the blank water check. |
| C | Possible laboratory contamination. |
| D | RPD was not within control limits. The sample data was reported without further clarification. |
| D1 | Lesser amount of sample was used due to insufficient amount of sample supplied. |
| D2 | Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit. |
| D3 | Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions. |
| DW | Sample result is calculated on a dry weigh basis. |
| E | Concentration is estimated because it exceeds the quantification limits of the method. |
| I | The sample was read outside of the method required incubation period. |
| IR | Inconclusive Result. Legionella is present, however, there is possible non-specific agglutination preventing specific identification. |
| J | Reported value is estimated |
| L | The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier. |
| L2 | LCS did not meet recovery criteria, however, the MS and/or MSD met LCS recovery criteria, validating the batch. |
| M | The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification. |
| M1 | The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference. |
| M2 | The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated. |
| N1 | Sample chromatography does not match the specified TPH standard pattern. |
| NC | The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply. |
| P | Sample was received without proper preservation according to EPA guidelines. |
| P1 | Temperature of sample storage refrigerator was out of acceptance limits. |
| P2 | The sample was preserved within 24 hours of collection in accordance with EPA 218.6. |
| P3 | Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low. |
| Q1 | Analyte Calibration Verification exceeds criteria. The result is estimated. |
| Q2 | Analyte calibration was not verified and the result was estimated. |
| Q3 | Analyte initial calibration was not available or exceeds criteria. The result was estimated. |
| S | The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification. |
| S1 | The associated surrogate recovery was out of control limits; result is estimated. |
| S2 | The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria. |
| S3 | Internal Standard did not meet recovery limits. Analyte concentration is estimated. |
| T | Sample was extracted/analyzed past the holding time. |
| T1 | Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only). |
| T2 | Sample was analyzed ASAP but received and analyzed past the 15 minute holding time. |
| T3 | Sample received and analyzed out of hold time per client's request. |
| T4 | Sample was analyzed out of hold time per client's request. |
| T5 | Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable. |
| T6 | Hold time is indeterminable due to unspecified sampling time. |
| T7 | Sample was analyzed past hold time due to insufficient time remaining at time of receipt. |

Definitions

| | |
|------------|---|
| DF | Dilution Factor |
| MDL | Method Detection Limit. Result is reported ND when it is less than or equal to MDL. |
| ND | Analyte was not detected or was less than the detection limit. |
| NR | Not Reported. See Report Comments. |
| RDL | Reporting Detection Limit |
| TIC | Tentatively Identified Compounds |



ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1
 Client: Chambers Project: Big Tajunga
 Date Received: 12/17/19 Sampler's Name Present: Yes No

Section 2
 Sample(s) received in a cooler? Yes, How many? 1 No (skip section 2) Sample Temp (°C) (No Cooler): _____
 Sample Temp (°C), One from each cooler: #1: 4.1 #2: _____ #3: _____ #4: _____
(Acceptance range is < 6°C but not frozen [for Microbiology samples, acceptance range is < 10°C but not frozen]. It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)
 Shipping Information: _____

Section 3
 Was the cooler packed with: Ice Ice Packs Bubble Wrap Styrofoam
 Paper None Other _____
 Cooler Temp (°C): #1: 0.0 #2: _____ #3: _____ #4: _____

| Section 4 | YES | NO | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| Was a COC received? | <input checked="" type="checkbox"/> | | |
| Are sample IDs present? | <input checked="" type="checkbox"/> | | |
| Are sampling dates & times present? | <input checked="" type="checkbox"/> | | |
| Is a relinquished signature present? | <input checked="" type="checkbox"/> | | |
| Are the tests required clearly indicated on the COC? | <input checked="" type="checkbox"/> | | |
| Are custody seals present? | | <input checked="" type="checkbox"/> | |
| If custody seals are present, were they intact? | | | <input checked="" type="checkbox"/> |
| Are all samples sealed in plastic bags? (Recommended for Microbiology samples) | | | <input checked="" type="checkbox"/> |
| Did all samples arrive intact? If no, indicate in Section 4 below. | <input checked="" type="checkbox"/> | | |
| Did all bottle labels agree with COC? (ID, dates and times) | <input checked="" type="checkbox"/> | | |
| Were the samples collected in the correct containers for the required tests? | <input checked="" type="checkbox"/> | | |
| Are the containers labeled with the correct preservatives? | <input checked="" type="checkbox"/> | | |
| Is there headspace in the VOA vials greater than 5-6 mm in diameter? | | | <input checked="" type="checkbox"/> |
| Was a sufficient amount of sample submitted for the requested tests? | <input checked="" type="checkbox"/> | | |

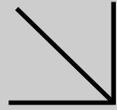
Section 5 Explanations/Comments

Section 6
 For discrepancies, how was the Project Manager notified? Verbal PM Initials: _____ Date/Time _____
 Email (email sent to/on): _____ / _____
 Project Manager's response:

Completed By: [Signature] Date: 12/17/19



Calscience



WORK ORDER NUMBER: 18-12-1642

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Enthalpy Analytical, Inc.

Client Project Name: 410049

Attention: Diane Galvan
931 W. Barkley Avenue
Orange, CA 92868-1208

Sheila Luu for

Approved for release on 01/03/2019 by:
Xuan Dang
Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience (Calscience) certifies that the test results provided in this report meet all NELAC Institute requirements for parameters for which accreditation is required or available. Any exceptions to NELAC Institute requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Contents

Client Project Name: 410049
Work Order Number: 18-12-1642

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| 3 | Client Sample Data. | 5 |
| | 3.1 EPA 8141A Organophosphorus Pesticides (Aqueous). | 5 |
| 4 | Quality Control Sample Data. | 9 |
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| 5 | Glossary of Terms and Qualifiers. | 10 |
| 6 | Chain-of-Custody/Sample Receipt Form. | 11 |

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 12/18/18. They were assigned to Work Order 18-12-1642.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of ≤ 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

DoD Projects:

The test results contained in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation ADE-1864.

Sample Summary

| | | |
|-----------------------------------|-----------------------|----------------|
| Client: Enthalpy Analytical, Inc. | Work Order: | 18-12-1642 |
| 931 W. Barkley Avenue | Project Name: | 410049 |
| Orange, CA 92868-1208 | PO Number: | 1028964 |
| | Date/Time Received: | 12/18/18 16:55 |
| | Number of Containers: | 3 |

Attn: Diane Galvan

| Sample Identification | Lab Number | Collection Date and Time | Number of Containers | Matrix |
|--------------------------------|--------------|--------------------------|----------------------|---------|
| Ponds Inlet (410049-001) | 18-12-1642-1 | 12/17/18 10:50 | 1 | Aqueous |
| Ponds Outlet (410049-002) | 18-12-1642-2 | 12/17/18 11:30 | 1 | Aqueous |
| Haines Creek Exit (410049-003) | 18-12-1642-3 | 12/17/18 12:30 | 1 | Aqueous |



Calscience

Analytical Report

Enthalpy Analytical, Inc.
931 W. Barkley Avenue
Orange, CA 92868-1208

Date Received: 12/18/18
Work Order: 18-12-1642
Preparation: EPA 3510C
Method: EPA 8141A
Units: mg/L

Project: 410049

Page 1 of 4

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|---------------------------------|-----------------------|---------------------------|----------------|--------------|-----------------|---------------------------|------------------|
| Ponds Inlet (410049-001) | 18-12-1642-1-A | 12/17/18 10:50 | Aqueous | GC 68 | 12/18/18 | 12/28/18 17:40 | 181218L01 |

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qualifiers</u> |
|------------------|---------------|-----------|-----------|-------------------|
| Azinphos Methyl | ND | 0.0051 | 1.00 | |
| Bolstar | ND | 0.0051 | 1.00 | |
| Chlorpyrifos | ND | 0.0051 | 1.00 | |
| Coumaphos | ND | 0.0051 | 1.00 | |
| Diazinon | ND | 0.0051 | 1.00 | |
| Dichlorvos | ND | 0.0051 | 1.00 | |
| Disulfoton | ND | 0.010 | 1.00 | |
| Ethoprop | ND | 0.0051 | 1.00 | |
| Fensulfothion | ND | 0.0051 | 1.00 | |
| Fenthion | ND | 0.0051 | 1.00 | |
| Merphos | ND | 0.0051 | 1.00 | |
| Methyl Parathion | ND | 0.0051 | 1.00 | |
| Mevinphos | ND | 0.0051 | 1.00 | |
| Naled | ND | 0.041 | 1.00 | |
| Phorate | ND | 0.0051 | 1.00 | |
| Ronnel | ND | 0.0051 | 1.00 | |
| Stirophos | ND | 0.020 | 1.00 | |
| Tokuthion | ND | 0.0051 | 1.00 | |
| Trichloronate | ND | 0.0051 | 1.00 | |
| Demeton-o/s | ND | 0.0051 | 1.00 | |

| <u>Surrogate</u> | <u>Rec. (%)</u> | <u>Control Limits</u> | <u>Qualifiers</u> |
|-------------------|-----------------|-----------------------|-------------------|
| Tributylphosphate | 59 | 30-130 | |

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Analytical Report

Enthalpy Analytical, Inc.
931 W. Barkley Avenue
Orange, CA 92868-1208

Date Received: 12/18/18
Work Order: 18-12-1642
Preparation: EPA 3510C
Method: EPA 8141A
Units: mg/L

Project: 410049

Page 2 of 4

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|----------------------------------|-----------------------|---------------------------|----------------|--------------|-----------------|---------------------------|------------------|
| Ponds Outlet (410049-002) | 18-12-1642-2-A | 12/17/18 11:30 | Aqueous | GC 68 | 12/18/18 | 12/28/18 18:28 | 181218L01 |

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qualifiers</u> |
|------------------|---------------|-----------|-----------|-------------------|
| Azinphos Methyl | ND | 0.0052 | 1.00 | |
| Bolstar | ND | 0.0052 | 1.00 | |
| Chlorpyrifos | ND | 0.0052 | 1.00 | |
| Coumaphos | ND | 0.0052 | 1.00 | |
| Diazinon | ND | 0.0052 | 1.00 | |
| Dichlorvos | ND | 0.0052 | 1.00 | |
| Disulfoton | ND | 0.010 | 1.00 | |
| Ethoprop | ND | 0.0052 | 1.00 | |
| Fensulfothion | ND | 0.0052 | 1.00 | |
| Fenthion | ND | 0.0052 | 1.00 | |
| Merphos | ND | 0.0052 | 1.00 | |
| Methyl Parathion | ND | 0.0052 | 1.00 | |
| Mevinphos | ND | 0.0052 | 1.00 | |
| Naled | ND | 0.042 | 1.00 | |
| Phorate | ND | 0.0052 | 1.00 | |
| Ronnel | ND | 0.0052 | 1.00 | |
| Stirophos | ND | 0.021 | 1.00 | |
| Tokuthion | ND | 0.0052 | 1.00 | |
| Trichloronate | ND | 0.0052 | 1.00 | |
| Demeton-o/s | ND | 0.0052 | 1.00 | |

| <u>Surrogate</u> | <u>Rec. (%)</u> | <u>Control Limits</u> | <u>Qualifiers</u> |
|-------------------|-----------------|-----------------------|-------------------|
| Tributylphosphate | 85 | 30-130 | |

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Analytical Report

Enthalpy Analytical, Inc.
931 W. Barkley Avenue
Orange, CA 92868-1208

Date Received: 12/18/18
Work Order: 18-12-1642
Preparation: EPA 3510C
Method: EPA 8141A
Units: mg/L

Project: 410049

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| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|--------------------------------|-------------------|---------------------|---------|------------|---------------|--------------------|-------------|
| Haines Creek Exit (410049-003) | 18-12-1642-3-A | 12/17/18 12:30 | Aqueous | GC 68 | 12/18/18 | 12/28/18 19:16 | 181218L01 |

| Parameter | Result | RL | DF | Qualifiers |
|------------------|--------|--------|------|------------|
| Azinphos Methyl | ND | 0.0050 | 1.00 | |
| Bolstar | ND | 0.0050 | 1.00 | |
| Chlorpyrifos | ND | 0.0050 | 1.00 | |
| Coumaphos | ND | 0.0050 | 1.00 | |
| Diazinon | ND | 0.0050 | 1.00 | |
| Dichlorvos | ND | 0.0050 | 1.00 | |
| Disulfoton | ND | 0.010 | 1.00 | |
| Ethoprop | ND | 0.0050 | 1.00 | |
| Fensulfothion | ND | 0.0050 | 1.00 | |
| Fenthion | ND | 0.0050 | 1.00 | |
| Merphos | ND | 0.0050 | 1.00 | |
| Methyl Parathion | ND | 0.0050 | 1.00 | |
| Mevinphos | ND | 0.0050 | 1.00 | |
| Naled | ND | 0.040 | 1.00 | |
| Phorate | ND | 0.0050 | 1.00 | |
| Ronnel | ND | 0.0050 | 1.00 | |
| Stirophos | ND | 0.020 | 1.00 | |
| Tokuthion | ND | 0.0050 | 1.00 | |
| Trichloronate | ND | 0.0050 | 1.00 | |
| Demeton-o/s | ND | 0.0050 | 1.00 | |

| Surrogate | Rec. (%) | Control Limits | Qualifiers |
|-------------------|----------|----------------|------------|
| Tributylphosphate | 98 | 30-130 | |

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Enthalpy Analytical, Inc.
 931 W. Barkley Avenue
 Orange, CA 92868-1208

Date Received: 12/18/18
 Work Order: 18-12-1642
 Preparation: EPA 3510C
 Method: EPA 8141A
 Units: mg/L

Project: 410049

Page 4 of 4

| Client Sample Number | Lab Sample Number | Date/Time Collected | Matrix | Instrument | Date Prepared | Date/Time Analyzed | QC Batch ID |
|----------------------|-----------------------|---------------------|----------------|--------------|-----------------|---------------------------|------------------|
| Method Blank | 099-15-963-272 | N/A | Aqueous | GC 68 | 12/18/18 | 12/28/18 16:05 | 181218L01 |

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qualifiers</u> |
|------------------|---------------|-----------|-----------|-------------------|
| Azinphos Methyl | ND | 0.0050 | 1.00 | |
| Bolstar | ND | 0.0050 | 1.00 | |
| Chlorpyrifos | ND | 0.0050 | 1.00 | |
| Coumaphos | ND | 0.0050 | 1.00 | |
| Diazinon | ND | 0.0050 | 1.00 | |
| Dichlorvos | ND | 0.0050 | 1.00 | |
| Disulfoton | ND | 0.010 | 1.00 | |
| Ethoprop | ND | 0.0050 | 1.00 | |
| Fensulfothion | ND | 0.0050 | 1.00 | |
| Fenthion | ND | 0.0050 | 1.00 | |
| Merphos | ND | 0.0050 | 1.00 | |
| Methyl Parathion | ND | 0.0050 | 1.00 | |
| Mevinphos | ND | 0.0050 | 1.00 | |
| Naled | ND | 0.040 | 1.00 | |
| Phorate | ND | 0.0050 | 1.00 | |
| Ronnel | ND | 0.0050 | 1.00 | |
| Stirophos | ND | 0.020 | 1.00 | |
| Tokuthion | ND | 0.0050 | 1.00 | |
| Trichloronate | ND | 0.0050 | 1.00 | |
| Demeton-o/s | ND | 0.0050 | 1.00 | |

| <u>Surrogate</u> | <u>Rec. (%)</u> | <u>Control Limits</u> | <u>Qualifiers</u> |
|-------------------|-----------------|-----------------------|-------------------|
| Tributylphosphate | 106 | 30-130 | |



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Quality Control - LCS/LCSD

Enthalpy Analytical, Inc.
931 W. Barkley Avenue
Orange, CA 92868-1208

Date Received: 12/18/18
Work Order: 18-12-1642
Preparation: EPA 3510C
Method: EPA 8141A

Project: 410049

Page 1 of 1

| Quality Control Sample ID | Type | Matrix | Instrument | Date Prepared | Date Analyzed | LCS/LCSD Batch Number | | | | |
|---------------------------|-------------|-----------|------------|---------------|----------------|-----------------------|--------|-----|--------|------------|
| 099-15-963-272 | LCS | Aqueous | GC 68 | 12/18/18 | 12/28/18 14:29 | 181218L01 | | | | |
| 099-15-963-272 | LCSD | Aqueous | GC 68 | 12/18/18 | 12/28/18 15:17 | 181218L01 | | | | |
| Parameter | Spike Added | LCS Conc. | LCS %Rec. | LCSD Conc. | LCSD %Rec. | %Rec. CL | ME CL | RPD | RPD CL | Qualifiers |
| Azinphos Methyl | 0.04000 | 0.04427 | 111 | 0.04508 | 113 | 30-130 | 13-147 | 2 | 0-30 | |
| Bolstar | 0.04000 | 0.04606 | 115 | 0.04781 | 120 | 30-130 | 13-147 | 4 | 0-30 | |
| Chlorpyrifos | 0.04000 | 0.04442 | 111 | 0.04524 | 113 | 30-130 | 13-147 | 2 | 0-30 | |
| Coumaphos | 0.04000 | 0.04007 | 100 | 0.04421 | 111 | 30-130 | 13-147 | 10 | 0-30 | |
| Diazinon | 0.04000 | 0.04388 | 110 | 0.04916 | 123 | 30-130 | 13-147 | 11 | 0-30 | |
| Disulfoton | 0.04000 | 0.04722 | 118 | 0.05009 | 125 | 30-130 | 13-147 | 6 | 0-30 | |
| Ethoprop | 0.04000 | 0.04585 | 115 | 0.04782 | 120 | 30-130 | 13-147 | 4 | 0-30 | |
| Fensulfothion | 0.04000 | 0.04801 | 120 | 0.05055 | 126 | 30-130 | 13-147 | 5 | 0-30 | |
| Fenthion | 0.04000 | 0.04630 | 116 | 0.04800 | 120 | 30-130 | 13-147 | 4 | 0-30 | |
| Merphos | 0.04000 | 0.03928 | 98 | 0.04127 | 103 | 30-130 | 13-147 | 5 | 0-30 | |
| Methyl Parathion | 0.04000 | 0.04640 | 116 | 0.04904 | 123 | 30-130 | 13-147 | 6 | 0-30 | |
| Phorate | 0.04000 | 0.04647 | 116 | 0.04902 | 123 | 30-130 | 13-147 | 5 | 0-30 | |
| Ronnel | 0.04000 | 0.04107 | 103 | 0.04263 | 107 | 30-130 | 13-147 | 4 | 0-30 | |
| Stirophos | 0.04000 | 0.04095 | 102 | 0.04293 | 107 | 30-130 | 13-147 | 5 | 0-30 | |
| Tokuthion | 0.04000 | 0.04210 | 105 | 0.04374 | 109 | 30-130 | 13-147 | 4 | 0-30 | |
| Trichloronate | 0.04000 | 0.04582 | 115 | 0.04392 | 110 | 30-130 | 13-147 | 4 | 0-30 | |

Total number of LCS compounds: 16

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

Glossary of Terms and Qualifiers

Work Order: 18-12-1642

Page 1 of 1

| <u>Qualifiers</u> | <u>Definition</u> |
|-------------------|---|
| * | See applicable analysis comment. |
| < | Less than the indicated value. |
| > | Greater than the indicated value. |
| 1 | Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification. |
| 2 | Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification. |
| 3 | Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control. |
| 4 | The MS/MSD RPD was out of control due to suspected matrix interference. |
| 5 | The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference. |
| 6 | Surrogate recovery below the acceptance limit. |
| 7 | Surrogate recovery above the acceptance limit. |
| B | Analyte was present in the associated method blank. |
| BU | Sample analyzed after holding time expired. |
| BV | Sample received after holding time expired. |
| CI | See case narrative. |
| E | Concentration exceeds the calibration range. |
| ET | Sample was extracted past end of recommended max. holding time. |
| HD | The chromatographic pattern was inconsistent with the profile of the reference fuel standard. |
| HDH | The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected). |
| HDL | The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected). |
| J | Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated. |
| JA | Analyte positively identified but quantitation is an estimate. |
| ME | LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean). |
| ND | Parameter not detected at the indicated reporting limit. |
| Q | Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater. |
| SG | The sample extract was subjected to Silica Gel treatment prior to analysis. |
| X | % Recovery and/or RPD out-of-range. |
| Z | Analyte presence was not confirmed by second column or GC/MS analysis. |
| | Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis. |
| | Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time. |
| | A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations. |



Enthalpy Analytical
 Formerly Associated Labs
 1 Park Plaza, Suite 1000
 Irvine, CA 92614
 Tel: 714.771.6900 Fax: 714.538.1209
 info-sc@enthalpy.com

18-12-1642



Subcontract Laboratory:

Eurofins CalScience - Sub
 7440 Lincoln Way
 Garden Grove, CA 92841

ATTN: Xuan Dang
 PO# 1028964

Project: 410049 Due:

PM: Diane Galvan

Email: diane.galvan@enthalpy.com

CC: incomingreports@enthalpy.com

Require: EDD EDF EDT

Report To: MDL

Note:

| Matrix | Sampled | Sample ID | Analysis | Comment |
|--------|----------------|--------------------------------|----------|-----------------------------|
| Water | 12/17/18 10:50 | Ponds Inlet (410049-001) | 8141_Out | Organophosphorus Pesticides |
| Water | 12/17/18 11:30 | Ponds Outlet (410049-002) | 8141_Out | Organophosphorus Pesticides |
| Water | 12/17/18 12:30 | Haines Creek Exit (410049-003) | 8141_Out | Organophosphorus Pesticides |

Note:

Standard TAT.

| Relinquished By: | Received By: |
|--------------------|-------------------------|
| | |
| Date/Time | Date/Time 12/18/18 1620 |
| | |
| Date/Time 12/18/18 | Date/Time 12/18/18 1655 |
| 1655 | |

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SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: Enthalpy

DATE: 12/18/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 °C; Blank Sample

Sample(s) outside temperature criteria (PM/APM contacted by: _____)

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: Air Filter

Checked by: UJ6P

CUSTODY SEAL:

Cooler Present and Intact Present but Not Intact Not Present N/A

Checked by: UJ6P

Sample(s) Present and Intact Present but Not Intact Not Present N/A

Checked by: 1163

SAMPLE CONDITION:

| | Yes | No | N/A |
|--|-------------------------------------|--------------------------|-------------------------------------|
| Chain-of-Custody (COC) document(s) received with samples | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| COC document(s) received complete | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Sampling date <input type="checkbox"/> Sampling time <input type="checkbox"/> Matrix <input type="checkbox"/> Number of containers | | | |
| <input type="checkbox"/> No analysis requested <input type="checkbox"/> Not relinquished <input type="checkbox"/> No relinquished date <input type="checkbox"/> No relinquished time | | | |
| Sampler's name indicated on COC | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Sample container label(s) consistent with COC | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sample container(s) intact and in good condition | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper containers for analyses requested | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sufficient volume/mass for analyses requested | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Samples received within holding time | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Aqueous samples for certain analyses received within 15-minute holding time | | | |
| <input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfide <input type="checkbox"/> Dissolved Oxygen | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Proper preservation chemical(s) noted on COC and/or sample container | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Unpreserved aqueous sample(s) received for certain analyses | | | |
| <input type="checkbox"/> Volatile Organics <input type="checkbox"/> Total Metals <input type="checkbox"/> Dissolved Metals | | | |
| Acid/base preserved samples - pH within acceptable range | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Container(s) for certain analysis free of headspace..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Volatile Organics <input type="checkbox"/> Dissolved Gases (RSK-175) <input type="checkbox"/> Dissolved Oxygen (SM 4500) | | | |
| <input type="checkbox"/> Carbon Dioxide (SM 4500) <input type="checkbox"/> Ferrous Iron (SM 3500) <input type="checkbox"/> Hydrogen Sulfide (Hach) | | | |
| Tedlar™ bag(s) free of condensation | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

CONTAINER TYPE:

(Trip Blank Lot Number: _____)

Aqueous: VOA VOA_h VOA_{na2} 100PJ 100PJ_{na2} 125AGB 125AGB_h 125AGB_p 125PB 125PB_{z_{na}} (pH__9)
 250AGB 250CGB 250CGBs (pH__2) 250PB 250PB_n (pH__2) 500AGB 500AGJ 500AGJs (pH__2) 500PB
 1AGB 1AGB_{na2} 1AGBs (pH__2) 1AGBs (O&G) 1PB 1PB_{na} (pH__12) _____ _____ _____

Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve (____) EnCores® (____) TerraCores® (____) _____ _____ _____

Air: Tedlar™ Canister Sorbent Tube PUF _____ **Other Matrix** (____): _____ _____ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO₃, **na** = NaOH, **na₂** = Na₂S₂O₃, **p** = H₃PO₄, Labeled/Checked by: 1163

s = H₂SO₄, **u** = ultra-pure, **x** = Na₂SO₃+NaHSO₄.H₂O, **z_{na}** = Zn (CH₃CO₂)₂ + NaOH Reviewed by: UJ6P

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

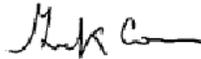
ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-162390-1
Client Project/Site: 410049

For:
Enthalpy Analytical, Inc
931 W. Barkley Ave
Orange, California 92868

Attn: Diane Galvan



Authorized for release by:
12/27/2018 2:06:11 PM
Keaton Conner, Project Manager I
(813)885-7427
keaton.conner@testamericainc.com

Designee for
Kathryn Smith, Manager of Project Management
(912)250-0275
kathy.smith@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

Sample Summary

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|--------------------------------|--------|----------------|----------------|
| 680-162390-1 | Ponds Inlet (410049-001) | Water | 12/17/18 10:50 | 12/19/18 10:11 |
| 680-162390-2 | Ponds Outlet (410049-002) | Water | 12/17/18 11:30 | 12/19/18 10:11 |
| 680-162390-3 | Haines Creek Exit (410049-003) | Water | 12/17/18 12:30 | 12/19/18 10:11 |

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Case Narrative

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Job ID: 680-162390-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Enthalpy Analytical, Inc

Project: 410049

Report Number: 680-162390-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

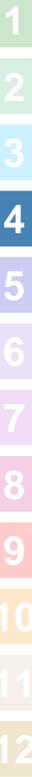
RECEIPT

The samples were received on 12/19/2018 10:11 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

GLYPHOSATE

Samples Ponds Inlet (410049-001) (680-162390-1), Ponds Outlet (410049-002) (680-162390-2) and Haines Creek Exit (410049-003) (680-162390-3) were analyzed for Glyphosate in accordance with EPA Method 547. The samples were analyzed on 12/21/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Client Sample ID: Ponds Inlet (410049-001)

Date Collected: 12/17/18 10:50

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-1

Matrix: Water

Method: 547 LL - Glyphosate (DAI HPLC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Glyphosate | ND | | 6.0 | | ug/L | | | 12/21/18 17:52 | 1 |

Client Sample ID: Ponds Outlet (410049-002)

Date Collected: 12/17/18 11:30

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-2

Matrix: Water

Method: 547 LL - Glyphosate (DAI HPLC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Glyphosate | ND | | 6.0 | | ug/L | | | 12/21/18 18:11 | 1 |

Client Sample ID: Haines Creek Exit (410049-003)

Date Collected: 12/17/18 12:30

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-3

Matrix: Water

Method: 547 LL - Glyphosate (DAI HPLC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Glyphosate | ND | | 6.0 | | ug/L | | | 12/21/18 18:31 | 1 |

QC Sample Results

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Method: 547 LL - Glyphosate (DAI HPLC)

Lab Sample ID: MB 680-552804/2
Matrix: Water
Analysis Batch: 552804

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|-----|-----|------|---|----------|----------------|---------|
| Glyphosate | ND | | 6.0 | | ug/L | | | 12/21/18 13:44 | 1 |

Lab Sample ID: LCS 680-552804/3
Matrix: Water
Analysis Batch: 552804

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------|-------------|------------|---------------|------|---|------|--------------|
| Glyphosate | 200 | 238 | | ug/L | | 119 | 80 - 120 |

Lab Sample ID: LCSD 680-552804/4
Matrix: Water
Analysis Batch: 552804

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Glyphosate | 200 | 238 | | ug/L | | 119 | 80 - 120 | 0 | 20 |

QC Association Summary

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

HPLC/IC

Analysis Batch: 552804

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------------------|-----------|--------|--------|------------|
| 680-162390-1 | Ponds Inlet (410049-001) | Total/NA | Water | 547 LL | |
| 680-162390-2 | Ponds Outlet (410049-002) | Total/NA | Water | 547 LL | |
| 680-162390-3 | Haines Creek Exit (410049-003) | Total/NA | Water | 547 LL | |
| MB 680-552804/2 | Method Blank | Total/NA | Water | 547 LL | |
| LCS 680-552804/3 | Lab Control Sample | Total/NA | Water | 547 LL | |
| LCSD 680-552804/4 | Lab Control Sample Dup | Total/NA | Water | 547 LL | |

Lab Chronicle

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Client Sample ID: Ponds Inlet (410049-001)

Date Collected: 12/17/18 10:50

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---------------------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Analysis | 547 LL | | 1 | 1 mL | 1 mL | 552804 | 12/21/18 17:52 | CJM | TAL SAV |
| Instrument ID: CLCR | | | | | | | | | | |

Client Sample ID: Ponds Outlet (410049-002)

Date Collected: 12/17/18 11:30

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---------------------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Analysis | 547 LL | | 1 | 1 mL | 1 mL | 552804 | 12/21/18 18:11 | CJM | TAL SAV |
| Instrument ID: CLCR | | | | | | | | | | |

Client Sample ID: Haines Creek Exit (410049-003)

Date Collected: 12/17/18 12:30

Date Received: 12/19/18 10:11

Lab Sample ID: 680-162390-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---------------------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Analysis | 547 LL | | 1 | 1 mL | 1 mL | 552804 | 12/21/18 18:31 | CJM | TAL SAV |
| Instrument ID: CLCR | | | | | | | | | | |

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

Laboratory: TestAmerica Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-------------------------|---------------|------------|-----------------------|-----------------|
| | AFCEE | | SAVLAB | |
| Alabama | State Program | 4 | 41450 | 06-30-19 |
| Alaska | State Program | 10 | | 06-30-19 |
| Alaska (UST) | State Program | 10 | UST-104 | 09-22-19 |
| ANAB | DoD ELAP | | L2463 | 09-22-19 |
| ANAB | ISO/IEC 17025 | | L2463.01 | 09-22-19 |
| Arkansas DEQ | State Program | 6 | 88-0692 | 02-01-19 |
| California | State Program | 9 | 2939 | 06-30-19 |
| Colorado | State Program | 8 | N/A | 12-31-18 * |
| Connecticut | State Program | 1 | PH-0161 | 03-31-19 |
| Florida | NELAP | 4 | E87052 | 06-30-19 |
| GA Dept. of Agriculture | State Program | 4 | N/A | 06-12-19 |
| Georgia | State Program | 4 | N/A | 06-30-19 |
| Georgia | State Program | 4 | 803 | 06-30-19 |
| Guam | State Program | 9 | 15-005r | 04-17-19 |
| Hawaii | State Program | 9 | N/A | 06-30-19 |
| Illinois | NELAP | 5 | 200022 | 11-30-18 * |
| Indiana | State Program | 5 | N/A | 06-30-19 |
| Iowa | State Program | 7 | 353 | 06-30-19 |
| Kentucky (DW) | State Program | 4 | 90084 | 12-31-18 * |
| Kentucky (UST) | State Program | 4 | 18 | 06-30-19 |
| Kentucky (WW) | State Program | 4 | 90084 | 12-31-18 * |
| Louisiana | NELAP | 6 | 30690 | 06-30-19 |
| Louisiana (DW) | NELAP | 6 | LA160019 | 12-31-18 * |
| Maine | State Program | 1 | GA00006 | 09-25-20 |
| Maryland | State Program | 3 | 250 | 12-31-19 |
| Massachusetts | State Program | 1 | M-GA006 | 06-30-19 |
| Michigan | State Program | 5 | 9925 | 03-05-19 |
| Mississippi | State Program | 4 | N/A | 06-30-19 |
| Nebraska | State Program | 7 | TestAmerica-Savannah | 06-30-19 |
| New Jersey | NELAP | 2 | GA769 | 06-30-19 |
| New Mexico | State Program | 6 | N/A | 06-30-19 |
| New York | NELAP | 2 | 10842 | 03-31-19 |
| North Carolina (DW) | State Program | 4 | 13701 | 07-31-19 |
| North Carolina (WW/SW) | State Program | 4 | 269 | 12-31-18 * |
| Oklahoma | State Program | 6 | 9984 | 08-31-19 |
| Pennsylvania | NELAP | 3 | 68-00474 | 06-30-19 |
| Puerto Rico | State Program | 2 | GA00006 | 12-31-18 * |
| South Carolina | State Program | 4 | 98001 | 06-30-18 * |
| Tennessee | State Program | 4 | TN02961 | 06-30-19 |
| Texas | NELAP | 6 | T104704185-16-9 | 11-30-18 * |
| Texas (DW) | State Program | 1 | T104704185 | 06-30-19 |
| US Fish & Wildlife | Federal | | LE058448-0 | 07-31-19 |
| Virginia | NELAP | 3 | 460161 | 06-14-19 |
| Washington | State Program | 10 | C805 | 06-10-19 |
| West Virginia (DW) | State Program | 3 | 9950C | 12-31-18 * |
| West Virginia DEP | State Program | 3 | 094 | 06-30-19 |
| Wisconsin | State Program | 5 | 999819810 | 08-31-19 |
| Wyoming | State Program | 8 | 8TMS-L | 06-30-16 * |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Savannah

Method Summary

Client: Enthalpy Analytical, Inc
Project/Site: 410049

TestAmerica Job ID: 680-162390-1

| Method | Method Description | Protocol | Laboratory |
|--------|-----------------------|----------|------------|
| 547 LL | Glyphosate (DAI HPLC) | EPA | TAL SAV |

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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Enthalpy Analytical
 Formerly Associated Labs
 1 Park Plaza, Suite 1000
 Irvine, CA 92614
 Tel: 714.771.6900 Fax: 714.538.1209
 info-sc@enthalpy.com



Subcontract Laboratory:

Test America - Savannah
 5102 LaRoche Avenue
 Savannah, GA 31404
 912-354-7858
 ATTN: Kathy Smith
 PO# 1028963

Project: 410049 **Due:**

PM: Diane Galvan

Email: diane.galvan@enthalpy.com

CC: incomingreports@enthalpy.com

Require: EDD EDF EDT

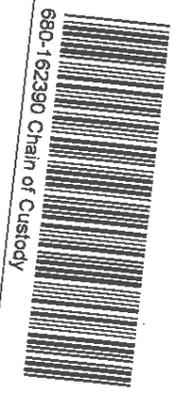
Report To: MDL

Note:

| Matrix | Sampled | Sample ID | Analysis | Comment |
|--------|----------------|--------------------------------|----------|------------|
| Water | 12/17/18 10:50 | Ponds Inlet (410049-001) | 547 Out | Glyphosate |
| Water | 12/17/18 11:30 | Ponds Outlet (410049-002) | 547 Out | Glyphosate |
| Water | 12/17/18 12:30 | Haines Creek Exit (410049-003) | 547 Out | Glyphosate |

Note:

| Relinquished By | Received By: |
|-------------------------|------------------------------------|
| <i>[Signature]</i> | <i>[Signature]</i> |
| Date/Time 12/18/18 1500 | Date/Time 12.19.18 1011 2.9/2.9 |
| Date/Time | Date/Time |



Login Sample Receipt Checklist

Client: Enthalpy Analytical, Inc

Job Number: 680-162390-1

Login Number: 162390

List Number: 1

Creator: Laughlin, Paul D

List Source: TestAmerica Savannah

| Question | Answer | Comment |
|---|--------|---------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | N/A | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

