Summary of findings from a detailed 500 page analysis

Report is available online at:

- Central Valley Regional Water Quality Control Board
- Cawelo Water District
Water Quality Study Team

* **Analytical Data:** Amec Foster Wheeler Environmental & Infrastructure, Inc., Weck Laboratories, Inc.

* **Evaluation:** Dr. Heriberto Robles, Enviro-Tox Services, Inc.
**Credentials**

* **Heriberto Robles, M.S., Ph.D., D.A.B.T.**
  * 35 years experience in environmental toxicology and human health and environmental risk assessment
  * Certified by the American Board of Toxicology
    * One of 3,125 in the world
  * Expertise:
    * Human and Occupational Toxicology
    * Environmental Toxicology
    * Human and Ecological Risk Assessment
    * Environmental Chemical Fate and Transport
Initial Indications Confirm that Cawelo’s Produced Water Supply is Safe

- Meets regulatory standards for agricultural use
- Organic compounds either at or below levels considered safe for drinking water
- Water is safe for irrigation of crops
Monitored by the Central Valley Regional Water Quality Control Board:

- Monthly sampling, testing and reporting
- Water tested for over 70 different constituents of concern (COCs)
Oil & Grease in Water

Legend:
- Maximum Allowable Concentration
- Oil and Grease Concentration (mg/L) in Water
* Data quality and quantity
* Evaluation of analytical methods
* Evaluation of sample quantitation limits
* Evaluation of qualified data
* Water quality data
* Crop analytical data
Water Quality Standards

* Water Quality Standards:
  * U.S. EPA regional screening levels for tap water
  * Cal/EPA Environmental screening levels
  * Drinking water standards ensure the highest and strictest (safest) water quality standards were applied for testing
**Petroleum Hydrocarbons**: nontoxic to plants
- Detected concentration = 80 parts per billion
- 750-times below safe concentration for drinking water

**Acetone**: a naturally occurring compound produced by humans, animals, plants and algae
- Detected concentration = 50 parts per billion
- 280-times below safe concentration for drinking water
Results Confirmed Crops Irrigated with Produced Water Safe for Public Consumption

- COCs in the water were not detected in the crops
- Crops irrigated with produced water have the same composition as crops grown with any other water supply
Crop Chemical Analysis Results

* **Organic Oils:** Naturally occurring in almonds and pistachios
  * Detected in both test and control samples
  * Not detected in grapes

* **Acetone:** Naturally occurring in plants, animals and humans
  * Detected in both test and control samples, all crops tested

* **Methylene Chloride:** Not known to be petroleum-derived chemical
  * Detected in one test almond sample and one pistachio control sample
  * Maximum detected concentration in the control sample
Produced Water: Constituent Levels Safe for Agricultural Use

* Organic compounds are either at or below levels considered safe for drinking water

* Additional crop test results and reports are expected in the coming months
Recommendations

Continue Pond Water Sampling and Analysis

* Total petroleum hydrocarbons using U.S. EPA Method 8015B
* Volatile organic compounds using U.S. EPA Method 8260B
* Polycyclic aromatic hydrocarbons using U.S. EPA Method 8270C-SIM