**THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS**
**ACTION AGENDA SUMMARY**

DEPT: ENVIRONMENTAL RESOURCES KMW

Urgent_____ Routine ✓

CEO Concurs with Recommendation YES ✓ NO____
(Information Attached)

BOARD AGENDA # B-15

AGENDA DATE February 27, 2001

4/5 Vote Required YES____ NO ✓

SUBJECT:

ACCEPTANCE OF THE UPDATE ON THE WESTLEY TIRE FIRE SITE

STAFF RECOMMEN-DATIONS:

ACCEPT THE UPDATE ON THE WESTLEY TIRE FIRE SITE

FISCAL IMPACT:

There is no fiscal impact.

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**BOARD ACTION** No. 2001-152

On motion of Supervisor Blom, **Seconded by Supervisor** Caruso,
and approved by the following vote,
Ayes: Supervisors: Mayfield, Blom, Simon, Caruso, and Chair Paul
Noes: Supervisors: None
Excused or Absent: Supervisors: None
Abstaining: Supervisor: None

1) ___X___ Approved as recommended
2) _____ Denied
3) _____ Approved as amended
Motion:

Christine Ferraro File No.

ATTEST: REAGAN M. HILSON, Clerk By Deputy

1010-08 L

DISCUSSION:

The Board requested staff to provide a monthly update on the status of the Westley Tire Fire Site (WTFS). Information for this update is based on conversations, meetings, and memoranda with staff from State Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB), California Integrated Waste Management Board (CIWMB), California Air Resources Board (CARB), San Joaquin Valley Air Pollution Control District (SJVAPCD), and site visits by the Department of Environmental Resources (DER) staff.

Lightning on September 22, 1999, ignited the Filbin Tire pile. The U. S. Environmental Protection Agency (USEPA) extinguished the fire in October of 1999. DTSC, CIWMB and the RWQCB form a multi-departmental team which has been working together to facilitate the site remediation and clean-up, including determining the extent of the contamination and proposed methods of clean up.

This report will be divided into seven segments. These seven segments are: Summary of California Air Resources Board Memorandum, Winterization, Spontaneous Combustion of Tires, General Groundwater Information, Modesto Energy Limited Partnership Facility, Remedial Investigation Activities, Legislative Update Related to California Tire Recycling Act (SB876), and Medical Review.

**Summary of Air Resource Board Report**

The following information is from a CARB memorandum on the Filbin (Westley) Tire Fire Emergency Response dated January 24, 2000. DER received a copy of this memorandum January 18, 2001. CARB reported that at approximately 8:00 a.m. on September 22, 1999, the CARB was requested to respond to the WTFS. CARB was requested to do emergency air monitoring at and near the Westley Tire Fire. The ARB Emergency Response Team (ERT) was immediately activated. CARB staff deployed and coordinated two-person crews with Miran 1B Real-time infrared portable analyzers monitoring for carbon monoxide and total hydrocarbons. The two-person teams were directed by Incident Command (IC) to observe the plume, conduct surveys of the general area around the fire and respond to reports of smoke in populated areas. The Miran 1B analyzer conducted around the clock monitoring in the area of the tire fire. Miran 1B was staffed 24 hours a day, by two-person teams working eight-hour shifts. These teams reported the results directly to the IC. In addition, during off-hours the teams checked the fire site at least once each hour. The air monitoring continued until October 27, 1999.

Monitoring Laboratory Division's (MLD) Air Quality Surveillance Branch initially deployed its "Rover" air monitoring station to the Grayson Elementary School in Westley. The Rover provided extensive monitoring capabilities, including criteria and toxic air pollutants. The following pollutants were monitored: Continuous Particulate Matter10, Continuous black carbon (soot), and continuous carbon monoxide. In addition, MLD performed 24-hour composite monitoring for Benzene, Polyaromatic hydrocarbons, PM 10 mass, Total metals, and Total Carbon.

On September 25, 1999, MLD deployed four PM10 saturation filter samplers at the I-5 & Howard Rd. exit, Vernalis, Grayson, and Newman. Additional sampling locations were added at Patterson High School and the truck stop at I-5. Canister samples of the smoke in the fire plume were also taken.

CARB reported the peak PM10 and Total Carbon concentrations monitored near the fire actually occurred from October 16-17, 1999, when the fire was 75-80% extinguished. At that time, several large forest fires in Colusa and Shasta counties sent heavy smoke into the San Joaquin Valley. This forest fire smoke was held low to the ground by a strong inversion layer. The smoke was so thick that cars in Sacramento were covered with ash (this was from the forest fires). The highest Total Carbon was monitored at the Westley site was on October 16, reflecting the sensitivity of Total Carbon to ambient smoke. The next highest PM10 concentration was monitored at the Livingston site, and may have been biased by the nearby construction and strong winds causing visible blowing dust as reported by the sampling site operator. The CARB believes the best indicator for the actual impact of smoke is Total Carbon rather than PM10.

**Winterization**

Staff from the CIWMB reports the winterization system installed at the site has performed as expected during the early February rains. They also reported they have not had to pump any water from the new pond designed to contain storm water runoff from Debris Pile #2.

**Spontaneous Combustion of Tires**

According to staff at the CIWMB and their consultant, they are not aware of any spontaneous combustion tire fires involving "whole tires". The only spontaneous combustion fires are associated with tire shreds. The conditions around these fires were deep piles of shreds, small size rubber

particles (4" by 2" shreds or less), exposed bead wire (steel belts), organic matter, and water. Terry Gray, CIWMB's consultant, provided the following information about the conditions at the WTFS. In conversation with Mr. Gray, he stated he had visited the WTFS. Mr. Gray also stated that in his opinion the conditions at the WTFS are not conducive to spontaneous combustion due to the mixture of dirt and tires. Staff from CIWMB agreed with Mr. Gray's opinion.

**General Groundwater Information**

DER reviewed our records and requested groundwater well information from the RWQCB for the area within two miles of the WTFS. This information revealed borings for both private and public water wells that were drilled to maximum depths of 322 to 590 feet. These ground water wells are for both domestic and commercial water wells.

**Modesto Energy Limited Partnership Facility (MELP):**

The MELP waste-tire-to-energy facility is currently non-operational. Should MELP decide to reopen they would need to follow the specific procedures for each agency regulating the facility. Listed below are the procedures, by regulatory agency, for the reopening of the waste-tire-to-energy facility.

According to staff at the CIWMB, MELP still has a valid Waste Tire Site permit. In order for the facility to operate they would have to submit a new Proposal for Operation, a current Fire Prevention Plan and a Vector Control Plan. The facility's new Proposal for Operation would have to meet the specific criteria established by the existing permit. This means that they would not be able to change such things as the location of the tire storage, number of tires stored on site, the number of trucks per day and all other conditions of the permit. If any of the conditions of the operation were to change, this would require a review by CIWMB and may lead to a review of the existing CEQA document.

The RWQCB has not issued the final closure on the two lined ponds, Class II surface impounds, at the MELP site. The RWQCB has not rescinded MELP's current Waste Discharge Requirements (WDR). Since the current WDR has not been rescinded it would be possible for the ponds to be rebuilt using the existing design. To rebuild the ponds MELP would be required to submit to the RWQCB for approval a formal schedule of work to be performed and MELP would need to follow the same construction quality assurance standards originally established in the existing design. In addition, in the future the RWQCB would probably require a water balance

study. If new ponds were to be constructed, then MELP would need to submit a design plan to RWQCB for approval.

According to the SJVAPCD, MELP has submitted an application for Emission Reduction Credits (ERCs) for the shut down of their facility. SJVAPCD deemed the ERC application to be complete on February 5, 2001. If MELP desires to operate their facility, MELP would need to cancel their ERC application and pay all permit fees any associated penalties before they could operate the tire incinerators.

**Remedial Investigation Activities:**

DTSC is in the process of finalizing the proposal for the next phase of work to be completed at the WTFS. This proposal should be available for public review during the second week of March. Implementation of this plan will take place shortly after the plan is approved.

The next community meeting is scheduled for March 21, at the Grayson Elementary School, 301 Howard Rd. Westley CA at 7:00 p.m. A Fact Sheet will be sent to all interested parties during the first week of March. DTSC will be establishing a repository of information on the WTFS at the Patterson Library.

Debris Pile 3:

The CIWMB has completed the assessment of Debris Pile #3. DTSC has reviewed the results of the samples and has determined that Debris Pile # 3 may be disposed of at Forward Landfill Inc. The estimated size of Debris Pile #3 was 13,000 tons. Transportation for disposal of this material began February 12, 2001. CIWMB is estimating the transportation and disposal of approximately 800 tons per day. This will be the main focus of the activity at the site over the next few weeks.

**Update related to California Tire Recycling Act (SB 876)**

The California Tire Recycling Act requires the CIWMB to adopt a 5-year plan and update that plan every 2 years, to establish goals and priorities for the waste tire program and each program element. CIWMB is required to submit this plan on or before July 1, 2001 and every two years thereafter, to the appropriate policy and fiscal committees of the Legislature.

On February 20-21, 2001, CIWMB will hold a public meeting on the second draft of the "California Tire Recycling Act SB 876 Five Year Plan". The CIWMB is expecting to act on the five year plan at the March CIWMB Board meeting. Staff has and will continue to attend these public meeting.

Under this five-year plan CIWMB will be awarding new contracts to carry out long-tern remediation of the Royster and Westley Tire Fire sites. The plan states: "Remediation of these sites will require more than just than removal of illegal waste tires. It will involve the remediation of contaminated debris, partially burned tire, as will as extensive site restoration. As part of the long-term remediation of these sites, it will be necessary to enter into interagency agreements to reimburse costs incurred by other public agencies involved in overseeing the remedial actions at these sites".

The proposed funding for Long-Term Remediation Projects is as follows: $6 million per year for FYs 01/02 and 02/03; $4 million for FY03/04; $2 million per year for FYs 04/05 and 05/06. The total proposed funding for these projects would be $20 million. The CIWMB is estimating the cost of the remediation project at the WTFS to be $10 million.

The Tire Recycling Act Five-Year Budget Projection is as follows: $28.9 million for FY 01/02; $31.2 million for FY02/03; $31.3 million for FY 03/04; $29 million for FY 04/05; $29.3 million for FY 05/06. Approximately $78.7 million of the approximate $149.7 million will be used to fund clean up and enforcement.

**Medical Review**

Dr. Walker will provide an overview of the medical review. A copy of the presentation is Attachment A.

POLICY ISSUE: This item is informational in nature. Its purpose is to keep the Board informed on an issue related to the Board's priority of a safe, healthy community.

STAFFING IMPACT: None.

# Public Health Response to the Westley Tire Fire

John Walker, MD
Public Health Officer
Stanislaus County
February 27, 2001

# Chronology of Public Health Interventions 1999

**9/22. Tire Fire begins.**

**9/23. Public Health representative assigned to the Emergency Operations Center (EOC).**

**9/29. Public Health nurses begin standardized telephone inquiry service.**

**10/1. Beginning of nine Public Health clinics in Patterson and Westley.**

**10/6. Fax ALERT to physicians sent by the Stanislaus County Medical Society.**

**10/27. Tire Fire extinguished.**

**10/29. Last call to the Public Health Nurse inquiry service.**

**11/29. Last Public Health clinic in Patterson.**

Stanislaus County HEALTH SERVICES AGENCY

# Table 2: Source of Calls to Public Health Nurses

| | Number | Percent |
|---|---|---|
| West County | 55 | 64.0% |
| Other | 31 | 36.0% |
| Total | 86 | |

Stanislaus County HEALTH SERVICES AGENCY

# Table 3: Symptoms Reported to Public Health Nurses

| | Number | Percent |
|---|---|---|
| Headache | 37 | 46.8% |
| Coughing | 30 | 38.0% |
| Difficulty Breathing | 22 | 27.8% |
| Burning Eyes | 18 | 23.8% |
| Sore Throat | 17 | 21.5% |
| Wheezing | 16 | 20.3% |
| Bloody Nose | 11 | 13.9% |
| Nausea | 11 | 13.9% |
| Vomiting | 4 | 5.1% |
| Runny Nose | 2 | 2.5% |

Stanislaus County HEALTH SERVICES AGENCY

# Table 4: Prior Medical Conditions of Callers to Public Health Nurses

| | Number | Percent |
|---|---|---|
| None | 42 | 49.0% |
| Asthma/Allergies/Respiratory | 35 | 41.0% |
| Other | 9 | 10.0% |

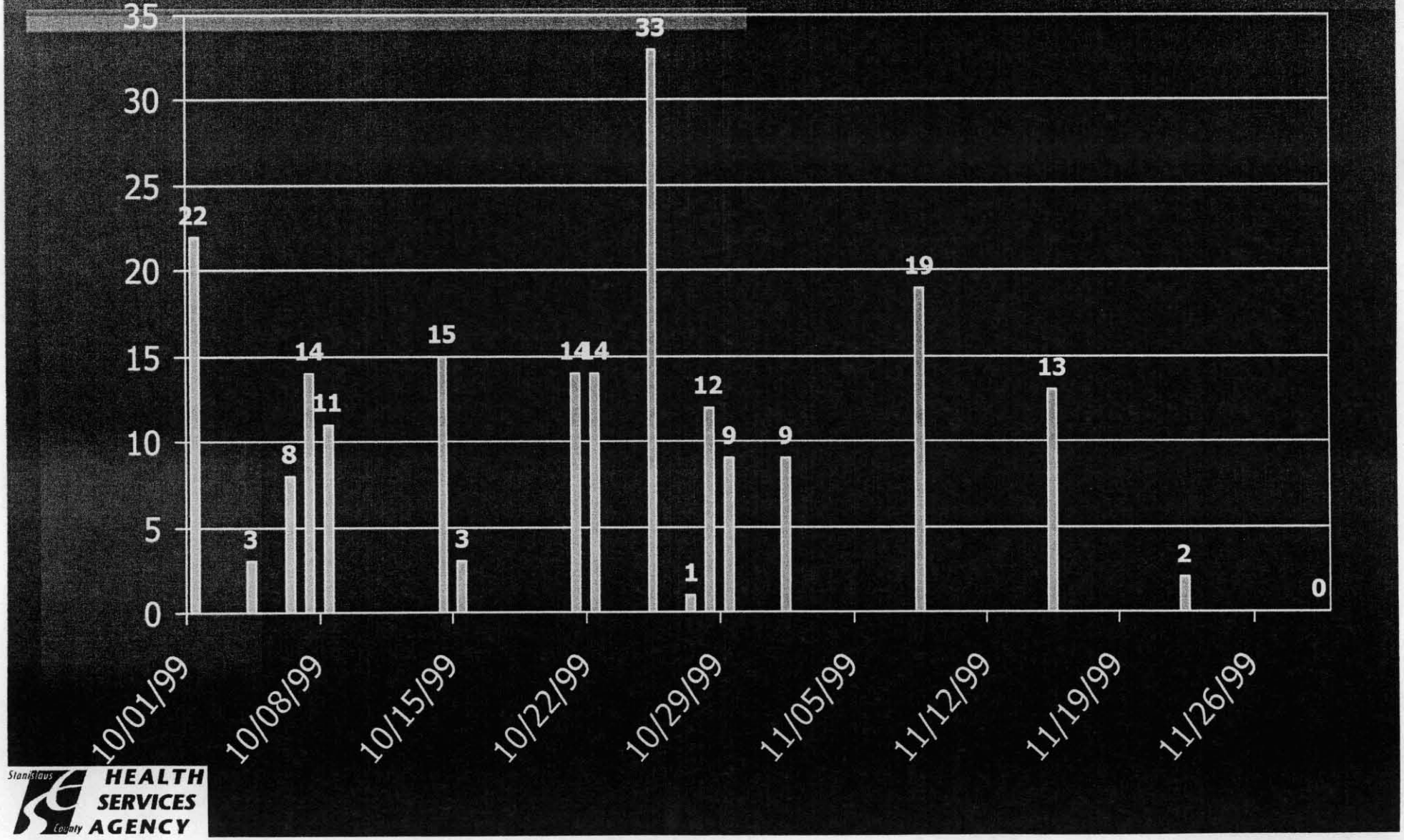
Stanislaus County HEALTH SERVICES AGENCY

# Table A: PUBLIC HEALTH EXAMINATIONS
## Patients' City of Residence

| | Number | Percent |
|---|---|---|
| Patterson | 124 | 61.4% |
| Grayson | 36 | 17.8% |
| Westley | 25 | 12.4% |
| Newman | 5 | 2.5% |
| Linden | 1 | 0.5% |
| Vernalis | 1 | 0.5% |
| Unknown | 10 | 5.0% |
| Total | 202 | |

Stanislaus County HEALTH SERVICES AGENCY

# Table B: Date Patients were seen at Public Health Clinics




Stanislaus County HEALTH SERVICES AGENCY

# Table C: Age Grouping

| | Number | Percent |
|---|---|---|
| 00-04 | 25 | 12.4% |
| 05-09 | 55 | 27.2% |
| 10-14 | 26 | 12.9% |
| 15-19 | 16 | 7.9% |
| 20-24 | 1 | 0.5% |
| 25-29 | 6 | 3.0% |
| 30-34 | 20 | 9.9% |
| 35-39 | 15 | 7.4% |
| 40-44 | 10 | 5.0% |
| 45-49 | 12 | 5.9% |
| 50-54 | 4 | 2.0% |
| 55-59 | 3 | 1.5% |
| 60+ | 8 | 4.0% |
| Total | 202 | |

Stanislaus County HEALTH SERVICES AGENCY

# Table D: Patients Chief Complaint

| | Number | Percent |
|---|---|---|
| Coughing | 110 | 54.5% |
| Sorethroat | 82 | 40.6% |
| Headache | 60 | 29.7% |
| Runny Nose | 51 | 25.2% |
| Eye Discomfort | 41 | 20.3% |
| Bloody Nose | 25 | 12.4% |
| Difficulty Breathing | 16 | 7.9% |
| Dizzy | 10 | 5.0% |
| Chest Tight | 8 | 4.0% |
| Congested | 8 | 4.0% |
| Fever | 8 | 4.0% |
| Nausea | 7 | 3.5% |
| Nose Discomfort | 7 | 3.5% |
| Ear Discomfort | 7 | 3.5% |
| Diarrhea | 7 | 3.5% |

| | | |
|---|---|---|
| Vomiting | 5 | 2.5% |
| Difficulty Sleeping | 5 | 2.5% |
| Fatigue | 5 | 2.5% |
| Fussy | 5 | 2.5% |
| Stomach Pain | 5 | 2.5% |
| Wheezing | 2 | 1.0% |
| Allergies | 2 | 1.0% |
| Asthma | 2 | 1.0% |
| Back Pain | 2 | 1.0% |
| Sneezing | 2 | 1.0% |
| Chest Pain | 1 | 0.5% |
| Cold | 1 | 0.5% |
| Cramps | 1 | 0.5% |
| Hair Falling Out | 1 | 0.5% |
| Rash | 1 | 0.5% |
| Total | 202 | |

Stanislaus County HEALTH SERVICES AGENCY

# Table E: Clinical Assessment

| | Number | Percent |
|---|---|---|
| Allergy | 89 | 44.1% |
| Upper Respiratory | 86 | 42.6% |
| Lower Respiratory | 40 | 22.8% |
| Other | 20 | 9.9% |
| Well Child | 17 | 8.4% |
| Total | 202 | |

Stanislaus County HEALTH SERVICES AGENCY

# Follow-Through Public Health Activities 2000-2001

**2/15/00. Letter by Reagan Wilson requesting longitudinal health studies by the Ca. Dept. of Health Services.**

**5/2/00. Response to Mr. Wilson from the Ca. Dept. of Health Services (DHS).**

**11/13/00. New Public Health Officer(PHO).**

**1/8/01. Tire Fire site visit by PHO.**

**2/2/01. Informal meetings in Sacramento.**

**2/21/01. Conference call with DHS and Ca. EPA .**

**2/22/01. Meeting with Public Health and Environmental officials in San Joaquin County.**

**3/21/01. Community meeting in Westley.**

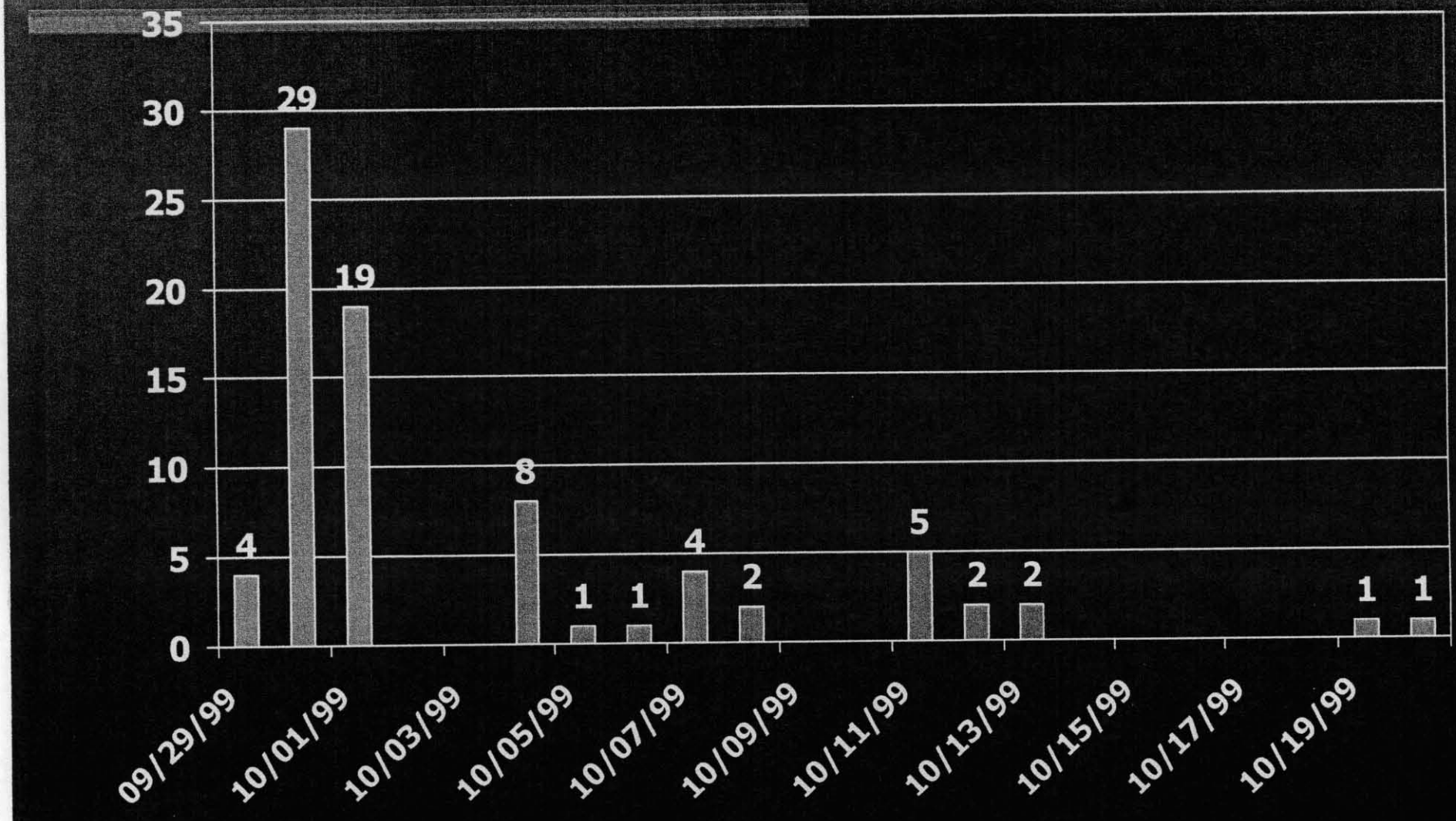
Stanislaus County HEALTH SERVICES AGENCY

# Excerpt from 5/2/00 DHS letter

**"After careful consideration, the EHIB (Environmental Health Investigations Branch) has concluded that such a study would be unlikely to detect long term health effects in the exposed population."**

Stanislaus County HEALTH SERVICES AGENCY

# Table 1: Calls to Public Health Nurses




Stanislaus County HEALTH SERVICES AGENCY

# Air Resources Board

**Alan C. Lloyd, Ph.D.**
**Chairman**
2020 L Street • P.O. Box 2815 • Sacramento, California 95812 • www.arb.ca.gov

**Winston H. Hickox**
*Agency Secretary*

**Gray Davis**
*Governor*


## MEMORANDUM

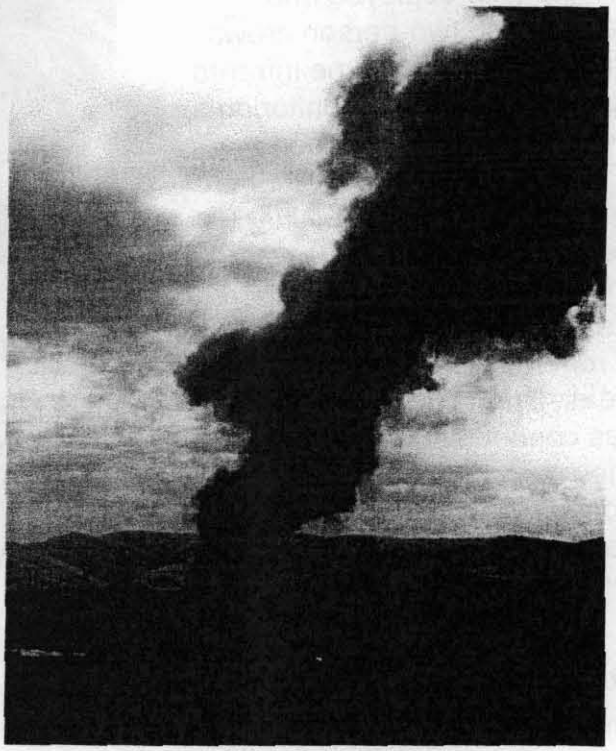
TO: Michael P. Kenny
Executive Officer

FROM: James J. Morgester, Chief
Compliance Division

DATE: January 24, 2000

SUBJECT: Filbin (Westley) Tire Fire Emergency Response


On September 22, 1999, at the request of the Stanislaus County Department of Environmental Health and the State Office of Emergency Services (OES), Air Resources Board staff responded to a tire fire located just west of the town of Westley in Stanislaus County. The Air Resources Board Compliance Division Emergency Response Team was requested to assist in this emergency by conducting onsite ambient air monitoring of pollutants in the smoke plume that could possibly impact nearby residents.



**Filbin (Westley) Tire Fire**

Owner/Operator

The Filbin (Westley) Tire Facility is located just south of the San Joaquin County line, 1/4 mile west of I-5 near Westley in Stanislaus County, 20 miles west of Modesto. Five million tires were reportedly involved in the fire at the facility. The facility, operated by the Oxford Tire Re-cycling Co., is on approximately 30 acres (the burning area was initially about 15 acres) owned by the Cal-Neva Ranch Company, LLC, and also known as the Filbin Land and Cattle Co. The facility supplies tires to fuel the Modesto Energy LP tire burning cogeneration plant located near the pile. Figure 2 shows a map of the fire area.

Background

The tire fire started as a result of lightning strikes during an early morning storm on September 22, 1999. The fire was initially reported at 3:59 a.m. from a call to 911 dispatch, with the West Stanislaus Fire Department responding to the remote scene by 4:12 a.m.


**Aerial View of Tire Pile Before and After**

I was contacted by the State Office of Emergency Services at approximately 8 a.m. on September 22 and asked to respond to a request from the Stanislaus County Environmental Health Department for emergency air monitoring at and near a fire involving a large used tire dump near Westley, California. The ARB Emergency Response Team (ERT) was immediately activated. Gary Zimmerman and John Marconi of the CD staff deployed and coordinated two-person crews with Miran 1B real-time infrared portable analyzers monitoring for CO and total hydrocarbons (THC). The two-person teams were directed by the Incident Command to observe the plume, conduct surveys of the general area around the fire and respond to reported smoke in populated areas. During the course of the response, Miran 1B monitoring in the area of the tire fire was conducted around the clock by these two-person teams working eight-hour shifts. They reported the monitoring results directly to the Incident Command (IC), and monitored around the fire area as directed by the IC. In addition, during off-hours the teams checked the fire site at least once each hour. The Compliance Division staff who participated in the field monitoring were:

| | | | |
|---|---|---|---|
| Hardip Ahluwalia | Basharat Iqbal | Simion Okoroike | Raak Veblen |
| Kerry Albert | Britt Floyd | Eric Patton | Sue Wyman |
| Trevor Anderson | Walter Gothberg | Terone Preston | |
| Pete Campos | Herman Lau | Fred Schmidt | |
| Nestor Castillo | Francis Mateo | Mark Tavianini | |

In addition, the Monitoring and Laboratory Division (MLD) was asked to set up fixed air monitoring equipment at several sites requested by the Incident Command. The MLD staff who participated in the emergency response effort were:

**MLD Division Office**
Michael Poore
Jane Park

**Engineering & Laboratory Branch**

**Organic Laboratory**
Hieu Le
Ben Chang
Dave Hartmann
Bruce Joab
Ferry Niyati

**Evaluation Section**
**Bob Okamoto**

**Inorganic Laboratory**
Russell Grace
Bill Davis
Lyman Dinkins
George Dunstan
Karen Fletcher
Jose Orozco
Samantha Scola
Dan Tackett

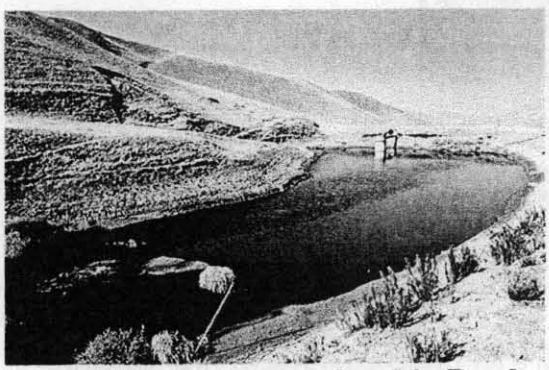
**Air Quality Surveillance Branch**
Bill Oslund
Marlene Ramatici

**Air Monitoring – North**
Larry Molek
Ken Breitwieser
Lowell Jarvis
John Lawson
Bob Caselton
John Crumpler
Joe Rohr
Johnny Foston

**Air Monitoring - Central**
Peter Ouchida
Diane Arnold
Ron Lewis
Steve Rider
Jack Romans

**Special Purpose Monitoring**
Ken Stroud
Reggie Smith
Ron Barros
James Frasche
Greg Frye
Harlan Quan
Klaus Scott
Mac McDougall
Pat Vaca
Chateau Vaughn

The fire was finally put out on October 27, 1999 by the unprecedented efforts of a U.S. EPA contractor. The fire was initially predicted to burn for months, but after a pool of pyrolitic oil distilled from the burning tires caught fire, the EPA called in an oil fire fighting specialist contractor from Texas. Using a new technique of smothering the fire with massive amounts of foam and carefully separating the individual tires with bulldozers, the EPA contractor quelled the fire in less than three weeks.



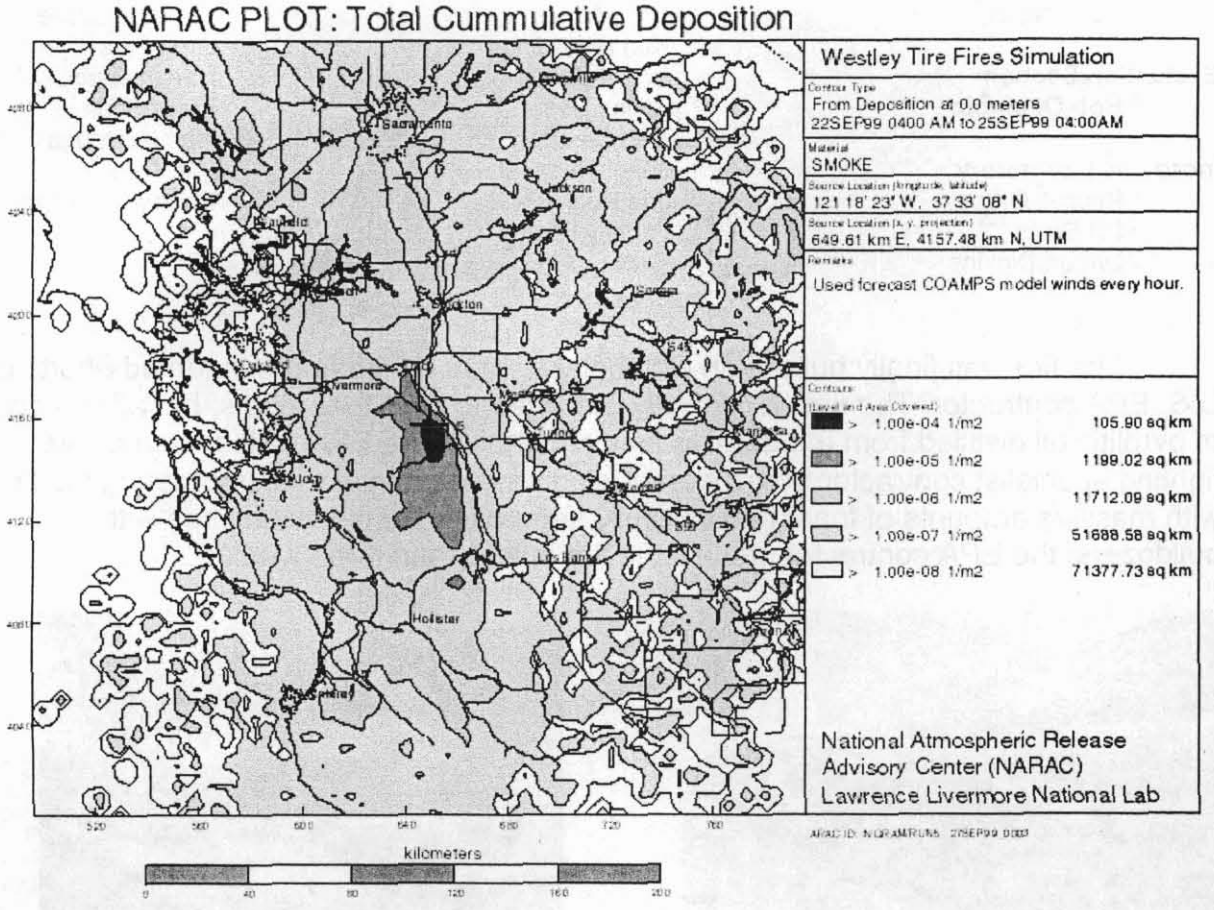
**Pyrolytic Oil Accumulated in Pond**

**Foamed Tires**

Lawrence Livermore National Lab NARAC Plume Modeling

At the request of the Stanislaus County Office of Emergency Services (OES), the National Atmospheric Release Advisory Center (NARAC) predicted the locations of smoke from the tire fire. NARAC predicted the winds and the dispersion of smoke from the fire, and provided the first set of plots to the Stanislaus OES at approximately 2:15 p.m. on 9/22. Additional requests for plots were fulfilled for the California Air Resources Board, the Bay Area Air Quality Management District, the Governor's Emergency Operations Center, and several media representatives. Later sets of plots extended the forecast period farther into the future. The final plot shown in Figure 1 indicates the calculation of smoke particles deposited on the ground over the entire initial 72-hour period of the fire.

**Figure 1**




NARAC meteorologists used the U.S. Navy's COAMPS model to predict high-resolution winds over the area of concern; then NARAC's own dispersion models were used to predict the areas covered by smoke. NARAC assumed that the smoke plume rose 2500 meters (about 7,500 feet) above the fire for the first 18 hours after ignition, and then lowered to 600 meters (about 1,800 feet) for the remainder of the simulation period. Because the exact quantity of material emitted by the fire into the atmosphere is

unknown, the plot is contoured in relative concentrations, with contour intervals specified in factors of ten (smoke within the innermost, darkest shaded contour is at least ten times more concentrated than smoke within the next surrounding contour). Therefore, these plots do not show health effects; rather they show the relative density of smoke near the ground.

ARB Ambient Air Monitoring Response

**MLD's Rover Monitoring Platform Near Grayson School (Westley-Livingston)**

Our 24-hr surveillance and air monitoring at the Westley tire fire continued until October 27, 1999 when the fire was declared to be extinguished. Ambient carbon monoxide and total hydrocarbon concentrations were essentially zero or at typical background levels at all locations surveyed with the Miran 1B. The field staff observed few incidents of the smoke plume laying down on the ground or fumigating. However, many local residents complained of adverse health effects from periodic ground-level impacts by the smoke. From September 22 until October 8 we had three, two-person teams at the fire working eight-hr shifts around the clock, and an on-call supervisory coordinator. From October 8 to October 27, field surveillance was reduced to one person working an eight-hour shift, but on-call for 24 hours.

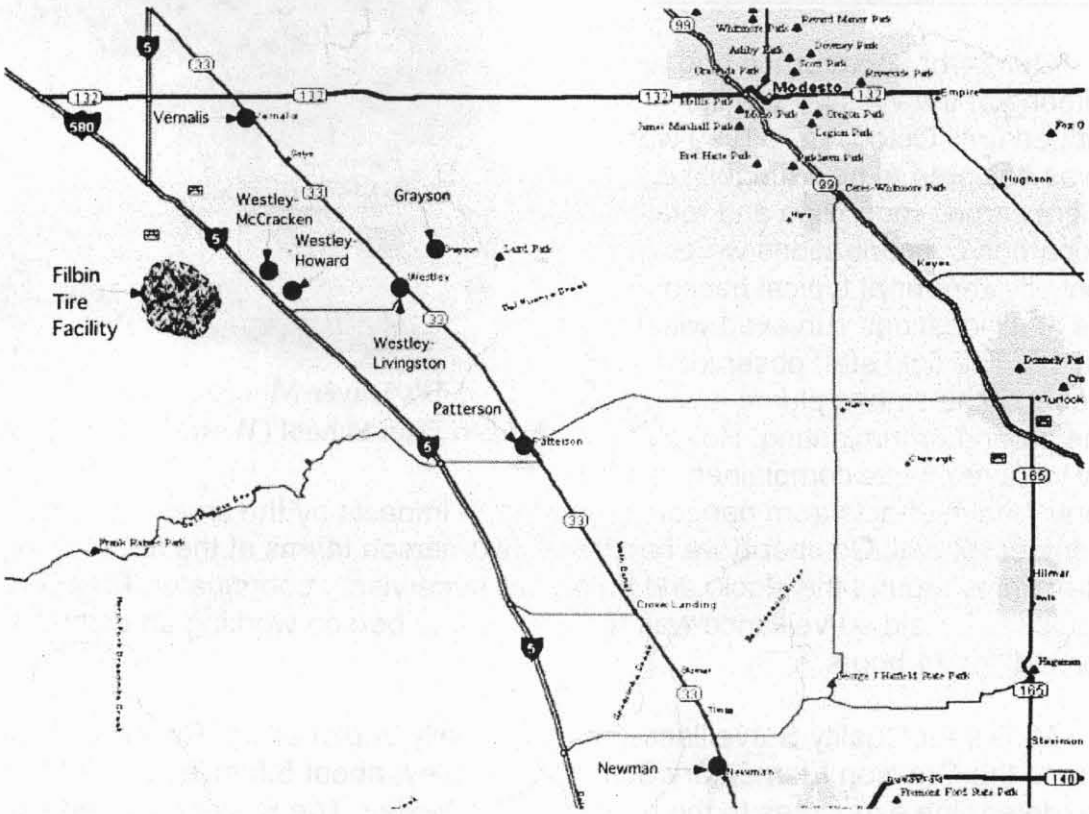
MLD's Air Quality Surveillance Branch initially deployed its "Rover" air monitoring station to the Grayson Elementary School in Westley, about 5.5 miles east of the fire site to determine exposures to the population in Wesley. The Rover provided extensive monitoring capabilities, including criteria and toxic air pollutants. The following pollutants were monitored:

Continuous $PM_{10}$ mass by TEOM (Taper Element Oscillating Microbalance)
Continuous black carbon (soot) concentration by Aethalometer
Continuous carbon monoxide
24-hour composite monitoring for:
Benzene
Polyaromatic Hydrocarbons (i.e., benzo(a)pyrene)
PM 10 mass
Total metals by XRF
Total Carbon

In response to a request from the Incident Command for additional monitoring stations around the fire, on September 25, MLD deployed four $PM_{10}$/saturation filter samplers at the I-5 & Howard Rd. exit, Vernalis, Grayson and Neuman. (During a teleconference with the responding agencies late afternoon Friday (9/24), DHS and OEHHA requested 5-6 additional Rover-type monitoring stations be deployed around

the fire. MLD staff verified that they had no more such monitoring resources available, but could probably field some additional $PM_{10}$ samplers. State OES representative Tracy Vardas stated that Stanislaus Co. Environmental Health staff wanted any additional samplers to be set up at the above priority sites.)

**Figure 2 - Area Map Showing Air Monitoring Sites (● = site)**



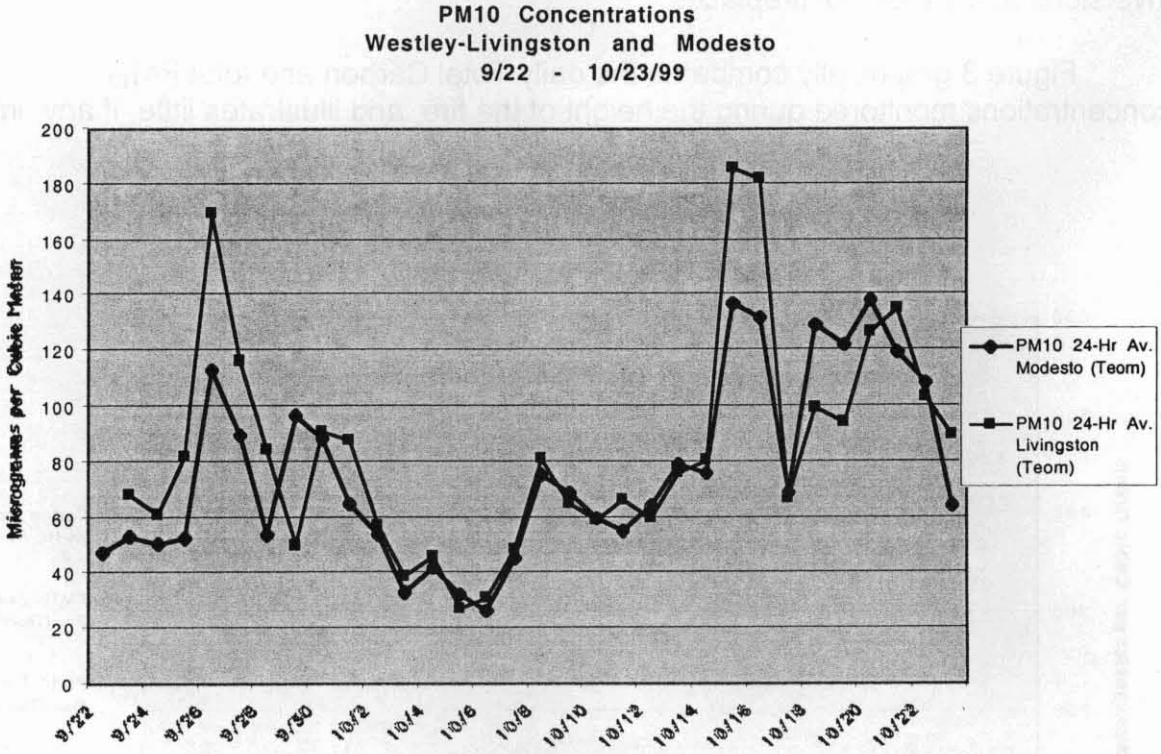

In response to public demands for more monitoring sites, MLD later set up additional sampler sites at Patterson High School and near a truck stop across I-5 from the fire site. The fixed monitoring sites are shown mapped out in Figure 2.

The final MLD monitoring results are shown in Appendix 1. Detailed descriptions of the monitoring sites follow in Appendix 2. An analysis of the pyrolitic oil headspace constituents is shown in Appendix 3.

In addition, a U. S. EPA contractor at ARB's request obtained canister samples of the smoke in the fire plume. Those samples showed 570 ppb and 338 ppb of butadiene, and 930 ppb and 557 ppb of benzene, respectively. For comparison, the OSHA Permissible Exposure Levels (8-hr. average) for butadiene and benzene are 1000 ppm and 1 ppm, respectively.

The air monitoring data shows slightly elevated $PM_{10}$ and toxic (benzene/butadiene) air contaminant concentrations occurred at the start of the fire. Overall, no extraordinarily high readings (for the area) occurred for any pollutants monitored. Typically, for the San Joaquin Valley air basin, 24-hour $PM_{10}$ concentrations monitored during most of the fire exceeded the State ambient air quality standard of 50 $\mu g/m^3$. As shown in Figure 3, during most of the same time period $PM_{10}$ readings near

**Figure 2**



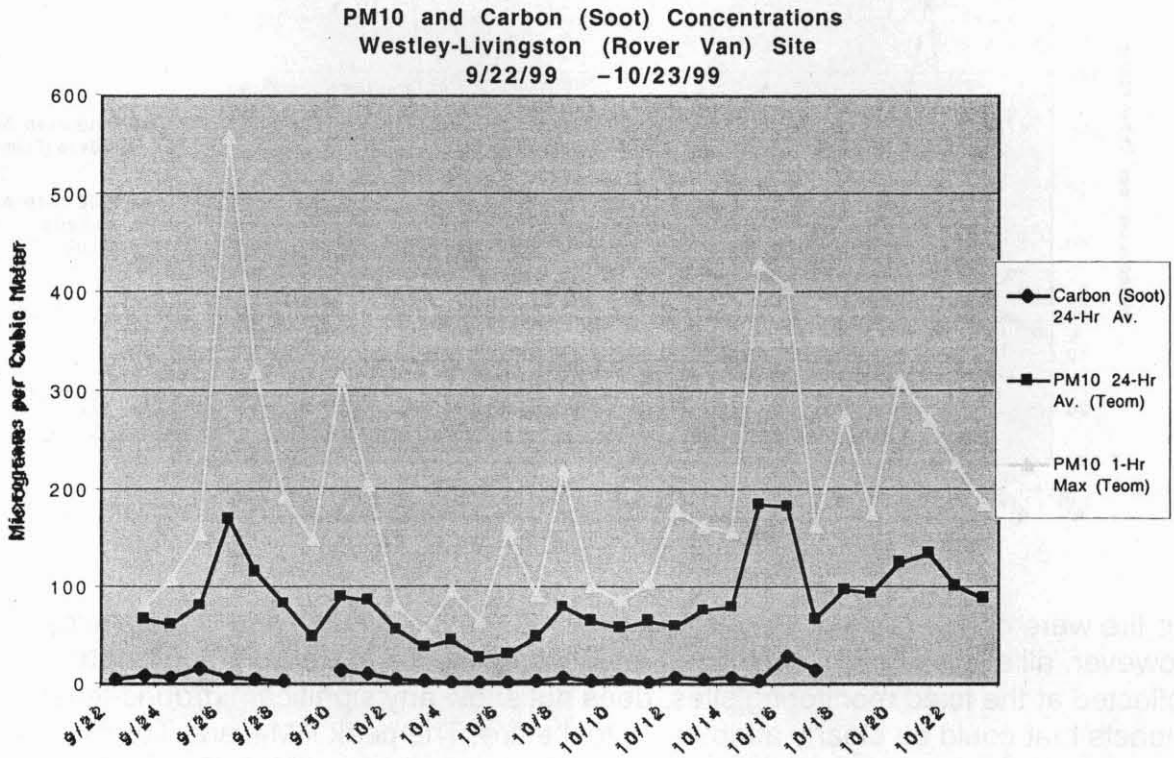

the fire were comparable at Modesto (as well as Fresno, Visalia and Bakersfield). However, all air monitoring conducted, particularly the Total Carbon (soot) data collected at the fixed monitoring sites, does not show any significant ground-level impacts that could be clearly attributable to the fire. The peak $PM_{10}$ and Total Carbon concentrations monitored near the fire actually occurred from 10/16-17 when the fire was 75-80% extinguished. At that time, several large forest fires in Colusa and Shasta Counties sent heavy smoke into the San Joaquin Valley, held low to the ground by a strong inversion layer. The smoke was so thick that cars in Sacramento were covered with ash. Total Carbon monitored at the Westley-Livingston site peaked at 29.5 $\mu g/m^3$ on 10/16, reflecting the sensitivity of Total Carbon sampling to ambient smoke. The next highest $PM_{10}$ concentration was monitored on 9/26 at the Livingston site, and may have been biased by nearby construction and strong winds causing visible blowing dust as reported by the sampling site operator.

From our experience in the Tracy tire fire last year, Total Carbon, rather than total or $PM_{10}$ particulate matter, is the best indicator of any fire's actual impact.

Atmospheric particulate matter, a complex mixture of chemicals, is partially made up of organic and elemental carbon. The elemental carbon (soot) is a product of combustion, and typical emissions sources are agricultural burning, wildfires, motor vehicles, wood stoves, fireplaces, charcoal broilers, etc. The Total Carbon (organic and elemental) contributions to total $PM_{10}$ concentrations in the northern San Joaquin Valley are generally between 5 - 10 $\mu g/m^3$ during the summertime, and 40 - 80 $\mu g/m^3$ during the wintertime. The higher wintertime concentrations are due to lower temperatures, inversions and the use of fireplaces.

Figure 3 graphically compares the daily Total Carbon and total $PM_{10}$ concentrations monitored during the height of the fire, and illustrates little, if any, impact

**Figure 3**




of the fire smoke on particulate matter levels at the sampling site. However, as can be seen in the 1-hr. maximum $PM_{10}$ readings, this does not mean that the tire fire smoke did not cause short-term impacts or impacts in other areas where we didn't have a monitoring site. Regardless of our monitoring results, many local residents scattered around the area reported adverse health effects from periodic ground-level impacts by the smoke that may not have shown up in our data.

ARB's Emergency Response Costs

The total estimated cost of ARB's response to this emergency is $145,000.

# APPENDIX 1

## AIR RESOURCES BOARD LABORATORY RESULTS

WESTLEY TIRE FIRE

Sample results include the following compounds:

| Compound | Abbreviation | Federal Standards | Annual Average Comparison |
|---|---|---|---|
| Carbon Monoxide | CO | 20 ppm (1Hr) | |
| Black Carbon | Black Carbon | | |
| High Volume SSI PM10 Mass | Hi-Vol SSI PM10 Mass | | |
| High Volume SSI PM10 Total Carbon | PM10 Total Carb | | |
| Mini Vol Saturation Sampler PM10 Mass | Mini-Vol PM10 Mass Sat | | |
| TEOM PM10 | PM10 Teom | 150 ug/m3 (24 Hr) | |
| | Ambient Toxic Volatile Organic Compounds | VOC | |
| Butadiene | Buta | | 1997 Modesto Max. 0.6/Avg. .155 |
| Benzene | Benz | | 1997 Modesto Max. 2.2/Avg. .462 |
| Polycyclic Aromatic Hydrocarbons | PAH | | |
| Benzo (b) fluoranthene | BbF | | 1997 Modesto Max. 3.3/Avg. .270 |
| Benzo (k) fluoranthene | BkF | | " " Modesto Max. 1.30/Avg. .115 |
| Benzo (a) pyrene | BaP | | " " Modesto Max. 2.20/Avg. 191 |
| Dibenz (a,h) anthracene | DahA | | " " Modesto Max. 0.25/Avg. .034 |
| Benzo (ghi) perylene | BghiP | | " " Modesto Max. 5.00/Avg. .543 |
| Indeno (1,2,3-cd) pyrene | IcdP | | " " Modesto Max. 3.10/Avg. .293 |
| | Resultant Wind Speed | RWS | |
| Resultant Wind Direction | RWD | | |

All PAH Results are reported in ng/m3
All VOC Results are reported in ppb

All Mini Volume PM10 Results are reported in ug/m3
All High Volume PM10 Results are reported in ug/m3
All TEOM PM10 Results are reported in ug/m3
All Carbon Monoxide Results are reported in ppm
All Black Carbon Results are reported in ug/m3
All Resultant Wind Speed Results are reported in knots
All Resultant Wind Direction Results are reported in degrees
All PAH's are 24-hour Average Results except for sampling date 9/22/99 results from approximately 4-hr average.

| | SAMPLING DATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 9/22 | 9/23 | 9/24 | 9/25 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 | 10/1 | 10/2 | 10/3 |
| | | | | | | | | | | | | |
| Westley-Livininingston | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | |
| 24-Hr Average | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3 | 1 | 1 |
| 1-Hr Maximum | NA | NA | NA | NA | NA | NA | NA | NA | NA | 8 | 3 | 3 |
| | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | |
| 24-Hr Average | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1 | 3 |
| 1-Hr Maximum | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 2 | 6 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| Carbon Monoxide | | | | | | | | | | | | |
| 24-Hr Average | 0.0 | 0.3 | 0.2 | 0.7 | 0.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.0 | 0.0 |
| 1-Hr Maximum | 0.0 | 0.4 | 0.4 | 0.4 | 0.5 | 0.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.1 | 0.1 |
| | | | | | | | | | | | | |
| METEOROLOGY | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | |
| 24-Hr Average | 2 | 4 | 4 | 4 | 11 | 15 | 9 | 4 | 4 | 5 | 4 | 3 |
| 1-Hr Maximum | 3 | 9 | 9 | 11 | 17 | 18 | 17 | 6 | 5 | 8 | 8 | 5 |
| | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | |
| 24-Hr Average | 146 | 282 | 272 | 235 | 294 | 301 | 279 | 251 | 253 | 258 | 259 | 251 |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/4 | 10/5 | 10/6 | 10/7 | 10/8 | 10/9 | 10/10 | 10/11 | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 |
| | | | | | | | | | | | | | | |
| Westley-Livininingston | | | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | | | |
| 24-Hr Average | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 |
| 1-Hr Maximum | 3 | 2 | 1 | 1 | 4 | 5 | 3 | 3 | 2 | 4 | 4 | 2 | 5 | 2 |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | | | |
| 24-Hr Average | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1-Hr Maximum | 4 | 5 | 11 | 4 | 8 | 7 | 4 | 4 | 8 | 6 | 10 | 4 | 8 | 4 |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| Carbon Monoxide | | | | | | | | | | | | | | |
| 24-Hr Average | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1-Hr Maximum | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 |
| | | | | | | | | | | | | | | |
| METEOROLOGY | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | | | |
| 24-Hr Average | 5 | 5 | 6 | 7 | 2 | 3 | 2 | 4 | 5 | 4 | 3 | 12 | 12 | 8 |
| 1-Hr Maximum | 10 | 12 | 17 | 14 | 4 | 6 | 4 | 5 | 10 | 9 | 9 | 18 | 17 | 13 |
| | | | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | | | |
| 24-Hr Average | 302 | 240 | 270 | 261 | 160 | 236 | 150 | 191 | 293 | 295 | 228 | 308 | 313 | 308 |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 | 10/24 | 10/25 | 10/26 | 10/27 | 10/28 | 10/29 | 10/30 | 10/31 |
| | | | | | | | | | | | | | | |
| Westley-Livininingston | | | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | | | |
| 24-Hr Average | 2 | 1 | 2 | 2 | 1 | 3 | 1 | | | | | | | |
| 1-Hr Maximum | 3 | 4 | 6 | 3 | 3 | 3 | 2 | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| Black Carbon | | | | | | | | | | | | | | |
| 24-Hr Average | 1 | 1 | 2 | 3 | 1 | 2 | 0 | | | | | | | |
| 1-Hr Maximum | 6 | 4 | 5 | 4 | 4 | 4 | 2 | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| Carbon Monoxide | | | | | | | | | | | | | | |
| 24-Hr Average | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | | | | | | | |
| 1-Hr Maximum | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | | | | | | | |
| | | | | | | | | | | | | | | |
| METEOROLOGY | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | | | |
| 24-Hr Average | 3 | 2 | 2 | 2 | 2 | 4 | 4 | | | | | | | |
| 1-Hr Maximum | 7 | 5 | 4 | 4 | 4 | 8 | 6 | | | | | | | |
| | | | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | | | |
| 24-Hr Average | 207 | 171 | 242 | 164 | 263 | 287 | 276 | | | | | | | |

| | SAMPLING DATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 9/22 | 9/23 | 9/24 | 9/25 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 | 10/1 | 10/2 | 10/3 |
| | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | |
| 24-Hr Average | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3 | 2 |
| 1-Hr Maximum | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 7 | 6 |
| | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | |
| 24-Hr Average | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 229 | 160 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| PAH | | | | | | | | | | | | |
| BbF | <.05 | <.05 | <.08 | <.38 | <.05 | <.05 | <.05 | NA | .59 | 0.85 | <.05 | <.05 |
| BkF | <.05 | <.05 | <.05 | <.12 | <.05 | <.05 | <.05 | NA | 0.07 | 0.15 | <.05 | <.05 |
| Bap | <.05 | <.05 | <.05 | <.24 | <.05 | <.05 | <.05 | NA | 0.15 | 0.12 | <.05 | <.05 |
| DahA | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | NA | <.05 | <.05 | <.05 | <.05 |
| BghiP | <.05 | <.05 | <.06 | <.36 | <.05 | <.05 | <.05 | NA | 0.32 | 0.41 | <.05 | <.05 |
| IcdP | <.05 | <.05 | <.08 | <.27 | <.05 | <.05 | <.05 | NA | 0.71 | 0.78 | <.05 | <.05 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| Hi-Vol SSI PM10 Mass | | | | | | | | | | | | |
| 24-Hr Average Except * 4-Hr Avg. | 95.8* | 78.1 | 81.1 | 180.5 | 180.4 | 95.2 | 135.9* | | | | | |
| | | | | | | | | | | | | |
| Patterson H.S. | | | | | | | | | | | | |
| Hi-Vol SSI PM10 Mass | | | | | | | | | | | | |
| 24-Hr Average Except * 4-Hr Avg. | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/4 | 10/5 | 10/6 | 10/7 | 10/8 | 10/9 | 10/10 | 10/11 | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | | | |
| 24-Hr Average | 4 | 4 | 6 | 12 | 4 | 6 | 4 | 4 | 6 | 6 | 5 | 16 | 15 | 10 |
| 1-Hr Maximum | 9 | 12 | 17 | 19 | 8 | 12 | 11 | 7 | 13 | 9 | 11 | 21 | 20 | 16 |
| | | | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | | | |
| 24-Hr Average | 234 | 192 | 202 | 283 | 139 | 210 | 169 | 232 | 267 | 271 | 201 | 315 | 310 | 305 |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PAH | | | | | | | | | | | | | | |
| BbF | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <1.5 | <1.5 | <1.5 |
| BkF | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <1.5 | <1.5 | <1.5 |
| Bap | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.1.5 | <1.5 | <1.5 |
| DahA | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <1.5 | <1.5 | <1.5 |
| BghiP | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <1.5 | <1.5 | <1.5 |
| IcdP | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <1.5 | <1.5 | <1.5 |
| | | | | | | | | | | | | | | |
| Patterson H.S. | | | | | | | | | | | | | | |
| PAH | | | | | | | | | | | | | | |
| Bbf | NA | NA | 0.56 | 0.13 | 0.34 | NA | NA | NA | NA | 0.32 | 0.33 | 0.70 | NA | NA |
| BkF | NA | NA | 0.16 | <.05 | 0.09 | NA | NA | NA | NA | 0.09 | 0.09 | 0.20 | NA | NA |
| Bap | NA | NA | 0.24 | 0.06 | 0.12 | NA | NA | NA | NA | 0.13 | 0.17 | 0.37 | NA | NA |
| DahA | NA | NA | <.05 | <.05 | <.05 | NA | NA | NA | NA | <.05 | <.05 | <.05 | NA | NA |
| BghiP | NA | NA | 0.34 | 0.10 | 0.22 | NA | NA | NA | NA | 0.23 | 0.27 | 0.43 | NA | NA |
| IcdP | NA | NA | 0.39 | 0.08 | 0.27 | NA | NA | NA | NA | 0.23 | 0.26 | 0.58 | NA | NA |
| | | | | | | | | | | | | | | |
| Hi-Vol SSI PM10 Mass | | | | | | | | | | | | | | |
| Patterson H.S. | | | | | | | | | | | | | | |
| 24-Hr Average Except * 4-Hr Avg. | NA | NA | 42.7 | 67.2 | 61.5 | NA | NA | NA | NA | NA | 179.6 | 135.7 | NA | NA |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 | 10/24 | 10/25 | 10/26 | 10/27 | 10/28 | 10/29 | 10/30 | 10/31 |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| RWS | | | | | | | | | | | | | | |
| 24-Hr Average | 4 | 4 | 5 | 4 | 4 | 3 | 4 | | | | | | | |
| 1-Hr Maximum | 8 | 9 | 10 | 10 | 8 | 7 | 10 | | | | | | | |
| | | | | | | | | | | | | | | |
| RWD | | | | | | | | | | | | | | |
| 24-Hr Average | 192 | 187 | 206 | 174 | 198 | 239 | 197 | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PAH | | | | | | | | | | | | | | |
| BbF | | | | | | | | | | | | | | |
| BkF | | | | | | | | | | | | | | |
| Bap | | | | | | | | | | | | | | |
| DahA | | | | | | | | | | | | | | |
| BghiP | | | | | | | | | | | | | | |
| IcdP | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Patterson H.S. | | | | | | | | | | | | | | |
| PAH | | | | | | | | | | | | | | |
| Bbf | 0.89 | 0.35 | 0.24 | | | | | | | | | | | |
| BkF | 0.23 | 0.08 | 0.05 | | | | | | | | | | | |
| Bap | 0.35 | 0.10 | 0.11 | | | | | | | | | | | |
| DahA | 0.09 | <.05 | <.05 | | | | | | | | | | | |
| BghiP | 0.58 | 0.27 | 0.24 | | | | | | | | | | | |
| IcdP | 0.61 | 0.23 | 0.18 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Hi Vol SSI PM10 Mass | | | | | | | | | | | | | | |
| Patterson H.S. | | | | | | | | | | | | | | |
| 24-Hr Average Except * 4-Hr Avg. | 110.6 | 118.8 | | | | | | | | | | | | |

| | SAMPLING DATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 9/22 | 9/23 | 9/24 | 9/25 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 | 10/1 | 10/2 | 10/3 |
| | | | | | | | | | | | | |
| Mini-Vol PM10 Mass Saturation | | | | | | | | | | | | |
| 24-Hr Average | | | | | | | | | | | | |
| Westley-Livingston | NA | NA | NA | NA | NA | NA | NA | NA | 82.9 | 59.7 | 52.4 | 53.3 |
| Westley-Grayson | NA | NA | NA | NA | 79.2 | 10.5 | 123.6 | 51.8 | 81.1 | 89.5 | 61.6 | 38.1 |
| Westley-I5/Howard | NA | NA | NA | NA | 57.3 | 98.7 | 6.6 | 73.1 | 65.8 | 58.7 | 59.8 | 57.2 |
| Westley-Newman | NA | NA | NA | NA | NA | 14.1 | 122.5 | 56.2 | 74.2 | 59.8 | 59.5 | 29.6 |
| Westley-Vernalis | NA | NA | NA | NA | 58.4 | 17.6 | 53.3 | 72.4 | 55.4 | 54.9 | 57.2 | 20.1 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| PM10 Total Carb | | | | | | | | | | | | |
| 24-Hr Average Except * 4-hr Avg, | 5.4* | 9.7 | 7.9 | 17.3 | 8.0 | 4.6 | 4.3* | NA | 14.9 | 10.4 | 5.1 | 3.9 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | |
| 24-Hr Average | NA | 68.2* | 61.3 | 81.6 | 169.4 | 116.3 | 84.2 | 50 | 90.7 | 87.4 | 57.3 | 38.8 |
| * 11-Hr Avg. | | | | | | | | | | | | |
| 1-Hr Maximum | NA | 82.0 | 110 | 155 | 557.4 | 319.9 | 191.7 | 150 | 314.1 | 205.7 | 82.9 | 55.4 |
| | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | |
| 24-Hr Average | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 24.6 | 28.7 |
| 1-Hr Maximum | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 40.1 | 79.2 |
| | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | |
| VOC | | | | | | | | | | | | |
| Butadiene | 0.48 | <.04 | <.04 | <.04 | <.04 | <.04 | <.04 | NA | 0.04 | <.04 | 0.04 | <.04 |
| | | | | | | | | | | | | |
| Benzene | 2.88 | 0.35 | 0.34 | 0.40 | <.2 | <.2 | 0.66 | NA | .70 | .64 | 0.36 | 0.31 |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/4 | 10/5 | 10/6 | 10/7 | 10/8 | 10/9 | 10/10 | 10/11 | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 |
| Mini-Vol PM10 Mass Saturation | | | | | | | | | | | | | | |
| 24-Hr Average | | | | | | | | | | | | | | |
| Westley-Livingston | 81.6 | 25.2 | 22.9 | 51.7 | 23.9 | 88.8 | 50.4 | 12.6 | Invalid | 51.8 | 23.5 | 43.1 | 82.9 | 54.7 |
| Westley-Grayson | 34.1 | 25.7 | 23.2 | 34.4 | 60.2 | 42.0 | 83.2 | 79.4 | 71.4 | 73.9 | 76.2 | 70.7 | 107.7 | 113.3 |
| Westley-I5/Howard | 39.0 | 23.3 | 45.6 | 62.5 | 48.1 | 33.9 | 9.6 | 23.8 | 109.3 | 76.9 | 106.5 | 47.4 | 105.4 | 49.6 |
| Westley-Newman | 38.3 | 24.2 | 25.9 | 51.7 | 34.0 | 28.9 | 46.7 | 49.6 | 181.4 | 77.6 | 18.9 | 57.7 | 150.8 | 65.4 |
| Westley-Vernalis | 27.1 | 15.6 | 18.5 | 16.3 | 13.2 | 56.0 | 56.5 | 51.8 | 35.6 | 52.2 | 64.5 | 74.2 | 118.0 | 52.0 |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PM10 Total Carb | | | | | | | | | | | | | | |
| 24-Hr Average Except * 4-hr Avg, | <1 | <1 | <1 | 2.8 | 8.2 | 3.8 | 6.0 | <1 | 7.2 | 5.7 | 8.2 | 2.8 | 29.5 | 14.9 |
| | | | | | | | | | | | | | | |
| Patterson H.S. | NA | NA | 3.8 | 6.3 | 8.7 | NA | NA | NA | NA | NA | 16.4 | 4.3 | | |
| PM10 Total Carb | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | | | |
| 24-Hr Average | 46.1 | 27.2 | 31.4 | 48.6 | 81.0 | 65.2 | 59.2 | 66.1 | 59.5 | 76.0 | 80.6 | 185.5 | 182.1 | 66.9 |
| 1-Hr Maximum | 97.3 | 65.2 | 158 | 94.2 | 219 | 102.8 | 87.6 | 106.3 | 179.3 | 162.7 | 157.3 | 430.5 | 406.0 | 162.4 |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | | | |
| 24-Hr Average | 37.1 | 22.1 | 51.5 | 145 | 93.1 | 73.5 | 63.0 | 91.8 | 98.9 | 108.3 | 107.2 | 312.7 | 212.3 | 62.9 |
| 1-Hr Maximum | 76 | 58.5 | 138 | 574 | 205 | 145 | 95.3 | 197.8 | 295.5 | 215.7 | 287.3 | 643.5 | 499.6 | 103.7 |
| Westley-Livingston | | | | | | | | | | | | | | |
| VOC | | | | | | | | | | | | | | |
| Butadiene | <.04 | <.04 | 0.007 | 0.056 | 0.030 | 0.043 | <.04 | <.04 | 0.05 | <.04 | <.04 | <.04 | 0.05 | 0.04 |
| | | | | | | | | | | | | | | |
| Benzene | <.2 | 0.20 | .111 | 0.32 | 0.68 | 0.56 | 0.66 | 0.29 | 0.70 | 0.46 | 0.48 | <.2 | 0.41 | 0.68 |

| | SAMPLING DATE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUNDS/ ELEMENTS | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 | 10/24 | 10/25 | 10/26 | 10/27 | 10/28 | 10/29 | 10/30 | 10/31 |
| | | | | | | | | | | | | | | |
| Mini-Vol PM10 Mass Saturation | | | | | | | | | | | | | | |
| 24-Hr Average | | | | | | | | | | | | | | |
| Westley-Livingston | 82.6 | 99.4 | 133.2 | 129.5 | 52.0 | 63.6 | | | | | | | | |
| Westley-Grayson | 102.4 | 287.1 | 169.4 | 145.4 | 103.6 | 67.1 | | | | | | | | |
| Westley-I5/Howard | 78.3 | 80.3 | 114.2 | 90.0 | 87.2 | 53.6 | | | | | | | | |
| Westley-Newman | 92.7 | 105.0 | 116.5 | 104.7 | 105.0 | 61.6 | | | | | | | | |
| Westley-Vernalis | 85.7 | 83.4 | 98.7 | 80.6 | NA | 46.1 | | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PM10 Total Carb | | | | | | | | | | | | | | |
| 24-Hr Average Except * 4-hr Avg, | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | | | |
| 24-Hr Average | 99.2 | 94.3 | 126.9 | 135.1 | 103.3 | 89.8 | 34.5 | | | | | | | |
| 1-Hr Maximum | 275.3 | 175.1 | 312.4 | 271.5 | 227.5 | 185.0 | 79.9 | | | | | | | |
| | | | | | | | | | | | | | | |
| Westley-McCracken | | | | | | | | | | | | | | |
| PM10 Teom | | | | | | | | | | | | | | |
| 24-Hr Average | 101.2 | 94.8 | 134.0 | 97.8 | 88.1 | 60.9 | 19.8 | | | | | | | |
| 1-Hr Maximum | 228.5 | 354.6 | 267.2 | 206.3 | 198.2 | 140.5 | 60.4 | | | | | | | |
| Westley-Livingston | | | | | | | | | | | | | | |
| VOC | | | | | | | | | | | | | | |
| Butadiene | 0.04 | 0.17 | 0.063 | 0.064 | <.04 | 0.050 | | | | | | | | |
| | | | | | | | | | | | | | | |
| Benzene | 0.80 | 0.98 | 1.11 | 0.81 | 0.83 | 0.54 | | | | | | | | |

## WESTLEY TIRE FIRE
## Total Metals
## September

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Westley-Livingston | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 9/22 | 9/23 | 9/24 | 9/25 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 |
| Aluminum | 2750 | 1237 | | | | | | | | | 4377 |
| Silicon | 7500 | 3313 | | | | | | | | | 10475 |
| Phosphorus | 100 | 58 | | | | | | | | | 148 |
| Sulfur | 523 | 1203 | | | | | | | | | 1100 |
| Chlorine | 439 | 1666 | | | | | | | | | 216 |
| Potassium | 875 | 514 | | | | | | | | | 1019 |
| Calcium | 1157 | 1141 | | | | | | | | | 1296 |
| Titanium | 175 | 108 | | | | | | | | | 184 |
| Vanadium | <10 | <10 | | | | | | | | | 17 |
| Chromium | 5 | 6 | | | | | | | | | 6 |
| Manganese | 38 | 21 | | | | | | | | | 43 |
| Iron | 1738 | 1316 | | | | | | | | | 1893 |
| Cobalt | <16 | <16 | | | | | | | | | <16 |
| Nickel | 3 | 5 | | | | | | | | | 4 |
| Copper | 28 | 34 | | | | | | | | | 8 |
| Zinc | 33 | 75 | 55 | 50 | 49 | 72 | 42 | 21 | | | 206 |
| Arsenic | <3 | <3 | | | | | | | | | 5 |
| Selenium | <2 | <2 | | | | | | | | | 4 |
| Bromine | 4 | 8 | | | | | | | | | 19 |
| Rubidium | 4 | 2 | | | | | | | | | 3 |
| Strontium | 17 | 16 | | | | | | | | | 12 |
| Yttrium | <2 | <2 | | | | | | | | | <2 |
| Zirconium | 4 | 5 | | | | | | | | | <2 |
| Molybdenum | <4 | <4 | | | | | | | | | <4 |
| Tin | <4 | 5 | | | | | | | | | 12 |
| Antimony | <5 | <5 | | | | | | | | | <5 |
| Barium | 45 | 62 | | | | | | | | | <25 |
| Mercury | <3 | <3 | | | | | | | | | <3 |
| Lead | 6 | 19 | | | | | | | | | 9 |
| Uranium | <2 | <2 | | | | | | | | | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## September

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Grayson | | | | | I-5/Howard | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 |
| Aluminum | 2750 | 1237 | 7471 | 1056 | 10837 | 4070 | 4194 | 4435 | 5342 | 5198 | 4686 | 3480 |
| Silicon | 7500 | 3313 | 18464 | 2554 | 25805 | 9735 | 10273 | 12762 | 15579 | 11996 | 12608 | 9576 |
| Phosphorus | 100 | 58 | 144 | 21 | 233 | 93 | 129 | 87 | 123 | 164 | 118 | 75 |
| Sulfur | 523 | 1203 | 263 | 48 | 535 | 369 | 963 | 171 | 471 | 509 | 666 | 861 |
| Chlorine | 439 | 1666 | 380 | 59 | 303 | 308 | 156 | 353 | 327 | 342 | 152 | 123 |
| Potassium | 875 | 514 | 1362 | 190 | 2039 | 812 | 927 | 1040 | 1058 | 1056 | 1013 | 796 |
| Calcium | 1157 | 1141 | 1340 | 182 | 1793 | 954 | 1046 | 1017 | 1267 | 1241 | 1283 | 1069 |
| Titanium | 175 | 108 | 310 | 45 | 413 | 182 | 157 | 180 | 188 | 213 | 173 | 129 |
| Vanadium | <10 | <10 | <10 | <10 | 19 | 28 | <10 | 11 | <10 | 11 | 12 | 10 |
| Chromium | 5 | 6 | 10 | <2 | 16 | 11 | 8 | 9 | 9 | 8 | 7 | 5 |
| Manganese | 38 | 21 | 89 | 15 | 121 | 53 | 43 | 56 | 70 | 57 | 59 | 45 |
| Iron | 1738 | 1316 | 3384 | 436 | 4519 | 1691 | 1818 | 2030 | 2465 | 2241 | 2087 | 1535 |
| Cobalt | <16 | <16 | <16 | <16 | 1 | <16 | <16 | <16 | <16 | 0 | <16 | <16 |
| Nickel | 3 | 5 | 10 | <2 | 11 | 10 | 5 | 6 | 6 | 7 | 4 | 3 |
| Copper | 28 | 34 | 4 | 4 | 18 | 28 | 10 | 5 | <2 | 9 | 6 | 8 |
| Zinc | 33 | 75 | 54 | 4 | 199 | 27 | 217 | 67 | 280 | 109 | 149 | 197 |
| Arsenic | <3 | <3 | <3 | <3 | 4 | <3 | 4 | 4 | <3 | 6 | <3 | 7 |
| Selenium | <2 | <2 | <2 | 2 | <2 | 7 | 3 | 4 | <2 | 2 | 2 | 3 |
| Bromine | 4 | 8 | 4 | <2 | 11 | <2 | 18 | 5 | 16 | 14 | 15 | 17 |
| Rubidium | 4 | 2 | 7 | <2 | 11 | <2 | 3 | 3 | 4 | 5 | 5 | 3 |
| Strontium | 17 | 16 | 13 | 3 | 23 | 12 | 9 | 8 | 11 | 16 | 10 | 9 |
| Yttrium | <2 | <2 | <2 | <2 | 3 | 3 | <2 | 2 | <2 | <2 | <2 | <2 |
| Zirconium | 4 | 5 | 10 | <2 | 9 | 5 | 2 | 4 | 4 | 5 | 6 | 4 |
| Molybdenum | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Tin | <4 | 5 | <4 | 6 | 7 | <4 | 5 | <4 | <4 | 6 | <4 | 13 |
| Antimony | <5 | <5 | <5 | <5 | 6 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Barium | 45 | 62 | 76 | <25 | 117 | <25 | 59 | <25 | 60 | 26 | 42 | 30 |
| Mercury | <3 | <3 | 4 | <3 | 4 | 11 | <3 | 8 | <3 | <3 | <3 | <3 |
| Lead | 6 | 19 | 6 | <4 | 8 | 25 | <4 | <4 | 6 | <4 | 6 | <4 |
| Uranium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## September

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Newman | | | | Vernalis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 9/27 | 9/28 | 9/29 | 9/30 | 9/26 | 9/27 | 9/28 | 9/29 | 9/30 |
| Aluminum | 2750 | 1237 | 956 | 3967 | 3614 | 4906 | 4130 | 1222 | 3447 | 5447 | 2593 |
| Silicon | 7500 | 3313 | 2460 | 10454 | 9012 | 11585 | 10468 | 3102 | 8148 | 13137 | 6529 |
| Phosphorus | 100 | 58 | 23 | 106 | 105 | 134 | 88 | 32 | 97 | 132 | 73 |
| Sulfur | 523 | 1203 | 100 | 527 | 566 | 833 | 223 | 136 | 440 | 683 | 874 |
| Chlorine | 439 | 1666 | 124 | 238 | 152 | 190 | 509 | 276 | 383 | 1020 | 235 |
| Potassium | 875 | 514 | 213 | 741 | 839 | 1159 | 828 | 272 | 671 | 963 | 618 |
| Calcium | 1157 | 1141 | 234 | 1020 | 1003 | 1202 | 839 | 285 | 983 | 1445 | 776 |
| Titanium | 175 | 108 | 42 | 152 | 145 | 196 | 188 | 46 | 145 | 162 | 99 |
| Vanadium | <10 | <10 | <10 | 12 | <10 | 11 | <10 | <10 | <10 | <10 | 12 |
| Chromium | 5 | 6 | <2 | 6 | 7 | 7 | 8 | <2 | 3 | 6 | 4 |
| Manganese | 38 | 21 | 13 | 51 | 43 | 49 | 48 | 14 | 46 | 52 | 26 |
| Iron | 1738 | 1316 | 417 | 1765 | 1604 | 2172 | 1996 | 489 | 1520 | 2196 | 1156 |
| Cobalt | <16 | <16 | <16 | 2 | <16 | <16 | <16 | <16 | 3 | <16 | <16 |
| Nickel | 3 | 5 | 2 | 5 | 3 | 6 | 7 | <2 | 3 | <2 | 3 |
| Copper | 28 | 34 | 4 | 7 | 5 | 9 | 4 | <2 | 6 | <2 | 8 |
| Zinc | 33 | 75 | 73 | 307 | 73 | 64 | 43 | 11 | 91 | 35 | 242 |
| Arsenic | <3 | <3 | <3 | <3 | 3 | <3 | <3 | <3 | 3 | 3 | 5 |
| Selenium | <2 | <2 | <2 | 3 | <2 | 3 | 2 | <2 | <2 | <2 | 4 |
| Bromine | 4 | 8 | 4 | 15 | 10 | 13 | 5 | <2 | 6 | <2 | 23 |
| Rubidium | 4 | 2 | <2 | 3 | 4 | 6 | 4 | 2 | 3 | 11 | <2 |
| Strontium | 17 | 16 | <2 | 9 | 9 | 14 | 9 | 3 | 9 | 15 | 8 |
| Yttrium | <2 | <2 | <2 | <2 | <2 | 3 | <2 | <2 | <2 | 11 | <2 |
| Zirconium | 4 | 5 | <2 | <2 | 5 | 6 | 4 | 2 | <2 | 10 | 2 |
| Molybdenum | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 11 | <4 |
| Tin | <4 | 5 | <4 | <4 | <4 | 5 | <4 | <4 | 5 | <4 | 10 |
| Antimony | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Barium | 45 | 62 | <25 | 38 | 34 | 35 | 25 | <25 | <25 | 101 | <25 |
| Mercury | <3 | <3 | 4 | 3 | <3 | <3 | <3 | <3 | <3 | 11 | <3 |
| Lead | 6 | 19 | <4 | 5 | <4 | 12 | <4 | <4 | <4 | <4 | 6 |
| Uranium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |

## WESTLEY TIRE FIRE

Total Metals

### October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Grayson | | | | | I-5/Howard | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/01 | 10/02 | 10/03 | 10/04 | 10/05 | 10/01 | 10/02 | 10/03 | 10/04 | 10/05 |
| Aluminum | 2750 | 1237 | 2690 | 1882 | 1315 | 1403 | 1395 | 2725 | 1710 | 1586 | 1921 | 1327 |
| Silicon | 7500 | 3313 | 7767 | 4694 | 3415 | 3390 | 3418 | 8170 | 4509 | 4705 | 5280 | 4142 |
| Phosphorus | 100 | 58 | 31 | 84 | 49 | 38 | 43 | 65 | 50 | 39 | 38 | 24 |
| Sulfur | 523 | 1203 | 883 | 1244 | 891 | 779 | 391 | 1018 | 1285 | 1422 | 857 | 288 |
| Chlorine | 439 | 1666 | 705 | 982 | 625 | 1636 | 600 | 266 | 968 | 693 | 1405 | 422 |
| Potassium | 875 | 514 | 690 | 548 | 392 | 371 | 315 | 663 | 503 | 464 | 481 | 282 |
| Calcium | 1157 | 1141 | 706 | 679 | 422 | 447 | 362 | 878 | 602 | 595 | 632 | 452 |
| Titanium | 175 | 108 | 32 | 76 | 57 | 52 | 59 | 103 | 80 | 65 | 71 | 34 |
| Vanadium | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Chromium | 5 | 6 | 23 | <2 | 3 | 3 | 3 | 3 | <2 | 2 | 3 | <2 |
| Manganese | 38 | 21 | 20 | 19 | 16 | 15 | 17 | 35 | 31 | 21 | 25 | 16 |
| Iron | 1738 | 1316 | 1356 | 870 | 647 | 644 | 648 | 1311 | 799 | 791 | 859 | 618 |
| Cobalt | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 |
| Nickel | 3 | 5 | <2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | <2 |
| Copper | 28 | 34 | 19 | 2 | <2 | 4 | 7 | 6 | <2 | 5 | 5 | 2 |
| Zinc | 33 | 75 | 43 | 34 | 22 | 46 | 11 | 258 | 190 | 173 | 125 | 24 |
| Arsenic | <3 | <3 | 24 | <3 | <3 | <3 | 4 | <3 | 6 | 5 | <3 | 4 |
| Selenium | <2 | <2 | 18 | <2 | <2 | 4 | 3 | 2 | <2 | 5 | 6 | 4 |
| Bromine | 4 | 8 | <2 | 10 | 5 | 8 | 4 | 16 | 15 | 18 | 13 | <2 |
| Rubidium | 4 | 2 | <2 | <2 | <2 | <2 | 3 | 2 | 2 | <2 | 3 | <2 |
| Strontium | 17 | 16 | 13 | 6 | 2 | 5 | 4 | 7 | 6 | 6 | 8 | 4 |
| Yttrium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 3 | <2 | <2 | <2 |
| Zirconium | 4 | 5 | <2 | <2 | <2 | <2 | <2 | 4 | 7 | 3 | 3 | 2 |
| Molybdenum | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Tin | <4 | 5 | 33 | <4 | <4 | <4 | 4 | <4 | <4 | <4 | 4 | <4 |
| Antimony | <5 | <5 | 101 | <5 | <5 | <5 | <5 | <5 | <5 | 6 | <5 | <5 |
| Barium | 45 | 62 | 395 | <25 | 29 | <25 | <25 | 34 | <25 | <25 | <25 | 40 |
| Mercury | <3 | <3 | 40 | <3 | <3 | <3 | 5 | <3 | <3 | <3 | 4 | 7 |
| Lead | 6 | 19 | <4 | <4 | <4 | <4 | <4 | 5 | <4 | <4 | 5 | <4 |
| Uranium | <2 | <2 | <2 | <2 | 2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Newman | | | | | Vernalis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/01 | 10/02 | 10/03 | 10/04 | 10/05 | 10/01 | 10/02 | 10/03 | 10/04 | 10/05 |
| Aluminum | 2750 | 1237 | 2855 | 2515 | 1017 | 1519 | 1371 | 2528 | 1489 | 529 | 1094 | 1036 |
| Silicon | 7500 | 3313 | 7385 | 5955 | 2429 | 3861 | 3295 | 6295 | 3572 | 1273 | 2725 | 2359 |
| Phosphorus | 100 | 58 | 117 | 95 | 40 | 57 | 48 | 58 | 45 | <15 | 29 | 22 |
| Sulfur | 523 | 1203 | 1017 | 1277 | 782 | 850 | 453 | 922 | 1167 | 589 | 789 | 291 |
| Chlorine | 439 | 1666 | 286 | 894 | 409 | 1288 | 672 | 330 | 716 | 330 | 1673 | 471 |
| Potassium | 875 | 514 | 703 | 679 | 302 | 468 | 351 | 633 | 411 | 173 | 306 | 237 |
| Calcium | 1157 | 1141 | 828 | 695 | 290 | 556 | 410 | 784 | 461 | 202 | 440 | 249 |
| Titanium | 175 | 108 | 136 | 93 | 39 | 66 | 65 | 99 | 55 | 21 | 35 | 32 |
| Vanadium | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 11 | <10 | <10 | <10 | <10 |
| Chromium | 5 | 6 | 8 | 4 | 4 | 3 | 4 | 2 | 3 | <2 | <2 | 4 |
| Manganese | 38 | 21 | 27 | 26 | 10 | 17 | 16 | 27 | 18 | 6 | 12 | 12 |
| Iron | 1738 | 1316 | 1234 | 1121 | 454 | 708 | 611 | 1204 | 688 | 232 | 519 | 473 |
| Cobalt | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 |
| Nickel | 3 | 5 | <2 | 4 | 3 | 2 | <2 | 5 | <2 | <2 | 2 | <2 |
| Copper | 28 | 34 | 24 | 3 | 3 | 4 | 4 | 5 | 3 | 2 | 3 | 4 |
| Zinc | 33 | 75 | 52 | 38 | 31 | 54 | 24 | 63 | 41 | 24 | 44 | 13 |
| Arsenic | <3 | <3 | <3 | 3 | <3 | <3 | 5 | <3 | <3 | <3 | <3 | <3 |
| Selenium | <2 | <2 | 7 | 3 | <2 | 2 | <2 | 3 | <2 | <2 | 7 | <2 |
| Bromine | 4 | 8 | 18 | 13 | 8 | 10 | 5 | 10 | 11 | 4 | 9 | 3 |
| Rubidium | 4 | 2 | <2 | <2 | <2 | 3 | <2 | 2 | <2 | <2 | <2 | <2 |
| Strontium | 17 | 16 | 5 | 7 | 5 | 7 | 4 | 7 | 4 | <2 | 5 | 5 |
| Yttrium | <2 | <2 | 10 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Zirconium | 4 | 5 | <2 | 3 | 3 | 3 | <2 | 3 | 5 | <2 | 3 | <2 |
| Molybdenum | <4 | <4 | 9 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Tin | <4 | 5 | 6 | 4 | <4 | <4 | 5 | 8 | <4 | 8 | <4 | 7 |
| Antimony | <5 | <5 | 11 | <5 | <5 | <5 | <5 | 5 | <5 | 9 | <5 | <5 |
| Barium | 45 | 62 | <25 | 57 | 25 | <25 | <25 | 30 | <25 | <25 | <25 | <25 |
| Mercury | <3 | <3 | <3 | <3 | <3 | <3 | 5 | <3 | <3 | <3 | <3 | <3 |
| Lead | 6 | 19 | 5 | <4 | <4 | <4 | <4 | 8 | 4 | <4 | <4 | <4 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Westley – Livingston | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/01 | 10/02 | 10/03 | 10/04 | 10/05 | 10/06 | 10/07 | 10/08 | 10/09 | 10/10 | 10/11 |
| Aluminum | 2750 | 1237 | 2763 | 1840 | 1674 | 2138 | 1249 | 1586 | 4465 | 3133 | 2740 | 2883 | 2001 |
| Silicon | 7500 | 3313 | 6819 | 4822 | 4091 | 5350 | 3151 | 3911 | 11181 | 7329 | 6564 | 6912 | 4883 |
| Phosphorus | 100 | 58 | 88 | 72 | 54 | 18 | 46 | 31 | 84 | 72 | 67 | 89 | 51 |
| Sulfur | 523 | 1203 | 1007 | 1228 | 1302 | 2052 | 386 | 327 | 199 | 612 | 647 | 859 | 807 |
| Chlorine | 439 | 1666 | 335 | 842 | 680 | 942 | 756 | 435 | 155 | 173 | 220 | 165 | 134 |
| Potassium | 875 | 514 | 646 | 514 | 454 | 588 | 311 | 374 | 883 | 663 | 561 | 619 | 434 |
| Calcium | 1157 | 1141 | 749 | 550 | 485 | 742 | 382 | 392 | 829 | 619 | 601 | 668 | 583 |
| Titanium | 175 | 108 | 99 | 89 | 71 | <10 | 55 | 74 | 185 | 131 | 101 | 117 | 79 |
| Vanadium | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Chromium | 5 | 6 | 4 | <2 | 2 | 10 | <2 | <2 | 9 | 7 | <2 | 2 | <2 |
| Manganese | 38 | 21 | 30 | 22 | 20 | 27 | 16 | 20 | 49 | 31 | 25 | 28 | 21 |
| Iron | 1738 | 1316 | 1221 | 896 | 782 | 994 | 595 | 707 | 2060 | 1305 | 1159 | 1255 | 939 |
| Cobalt | <16 | <16 | <16 | <16 | <16 | 17 | <16 | <16 | <16 | <16 | <16 | <16 | <16 |
| Nickel | 3 | 5 | 3 | 4 | 2 | 3 | 3 | <2 | 6 | 4 | 3 | 4 | 3 |
| Copper | 28 | 34 | 7 | 5 | 2 | 55 | 4 | 3 | 6 | 3 | 4 | 6 | 4 |
| Zinc | 33 | 75 | 214 | 51 | 50 | 473 | 9 | 8 | 70 | 301 | 141 | 159 | 31 |
| Arsenic | <3 | <3 | <3 | <3 | <3 | 34 | 4 | <3 | 7 | 4 | 6 | 3 | 4 |
| Selenium | <2 | <2 | 5 | 3 | <2 | 42 | 3 | <2 | <2 | 3 | <2 | 4 | 2 |
| Bromine | 4 | 8 | 18 | 12 | 11 | 43 | 4 | 4 | 5 | 13 | 11 | 15 | 7 |
| Rubidium | 4 | 2 | <2 | <2 | 2 | <2 | 2 | <2 | 4 | <2 | <2 | 3 | <2 |
| Strontium | 17 | 16 | 5 | 5 | 5 | <2 | 5 | 3 | 10 | 7 | 6 | 9 | 5 |
| Yttrium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Molybdenum | <4 | <4 | <4 | <4 | <4 | 16 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Antimony | <5 | <5 | <5 | <5 | 8 | 13 | 8 | <5 | <5 | <5 | <5 | <5 | 10 |
| Barium | 45 | 62 | 48 | <25 | <25 | 337 | <25 | <25 | 48 | <25 | 33 | <25 | 32 |
| Mercury | <3 | <3 | 6 | <3 | <3 | 50 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Lead | 6 | 19 | 9 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Uranium | <2 | <2 | <2 | <2 | <2 | 3 | <2 | <2 | <2 | <2 | 5 | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Grayson | | | | | | I-5/Howard | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/06 | 10/07 | 10/08 | 10/09 | 10/10 | 10/11 | 10/06 | 10/07 | 10/08 | 10/09 | 10/10 | 10/11 |
| Aluminum | 2750 | 1237 | 1718 | 2434 | 5590 | 3997 | 4334 | 3691 | 3397 | 4551 | 3441 | 2727 | 2953 | 2990 |
| Silicon | 7500 | 3313 | 4281 | 6010 | 13638 | 9778 | 10441 | 8941 | 10233 | 12506 | 9226 | 7113 | 7860 | 8513 |
| Phosphorus | 100 | 58 | 17 | 73 | 141 | 124 | 123 | 85 | 57 | 82 | 80 | 53 | 74 | 69 |
| Sulfur | 523 | 1203 | 374 | 167 | 800 | 818 | 1073 | 927 | 542 | 410 | 610 | 584 | 945 | 811 |
| Chlorine | 439 | 1666 | 811 | 168 | 335 | 328 | 293 | 205 | 758 | 284 | 186 | 112 | 152 | 163 |
| Potassium | 875 | 514 | 394 | 537 | 1168 | 890 | 911 | 780 | 640 | 931 | 715 | 529 | 631 | 605 |
| Calcium | 1157 | 1141 | 360 | 544 | 1160 | 914 | 1008 | 899 | 854 | 1006 | 796 | 705 | 820 | 888 |
| Titanium | 175 | 108 | 86 | 119 | 236 | 146 | 165 | 152 | 115 | 171 | 122 | 85 | 122 | 107 |
| Vanadium | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 11 | <10 | <10 | <10 | <10 |
| Chromium | 5 | 6 | 7 | 5 | 7 | 5 | 5 | 3 | 3 | 7 | 6 | 3 | 6 | 3 |
| Manganese | 38 | 21 | 22 | 26 | 61 | 39 | 48 | 40 | 43 | 54 | 42 | 27 | 33 | 34 |
| Iron | 1738 | 1316 | 800 | 1113 | 2543 | 1782 | 1908 | 1697 | 1481 | 2033 | 1568 | 1149 | 1262 | 1375 |
| Cobalt | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 |
| Nickel | 3 | 5 | 2 | <2 | 6 | 4 | 5 | 5 | 5 | 6 | 5 | 2 | 3 | <2 |
| Copper | 28 | 34 | <2 | 6 | 4 | 5 | 7 | <2 | 5 | 8 | 4 | <2 | 5 | <2 |
| Zinc | 33 | 75 | 12 | 18 | 252 | 134 | 221 | 32 | 746 | 392 | 379 | 111 | 252 | 171 |
| Arsenic | <3 | <3 | 3 | <3 | 4 | 4 | 8 | <3 | <3 | <3 | <3 | 3 | <3 | <3 |
| Selenium | <2 | <2 | 4 | <2 | 2 | 2 | 5 | <2 | <2 | <2 | 5 | <2 | 3 | 2 |
| Bromine | 4 | 8 | <2 | 4 | 15 | 12 | 20 | 9 | 28 | 16 | 16 | 9 | 17 | 13 |
| Rubidium | 4 | 2 | <2 | 2 | 5 | 5 | 4 | 3 | 2 | 4 | 2 | 3 | <2 | 3 |
| Strontium | 17 | 16 | 2 | 5 | 13 | 11 | 11 | 8 | 6 | 10 | 5 | 7 | 7 | 9 |
| Yttrium | <2 | <2 | 2 | <2 | <2 | 3 | <2 | <2 | <2 | <2 | <2 | 2 | 3 | <2 |
| Molybdenum | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 4 | <4 | <4 | <4 | <4 | <4 | <4 |
| Antimony | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 8 | <5 | <5 | <5 |
| Barium | 45 | 62 | <25 | <25 | 62 | 39 | 43 | 29 | 38 | 31 | 56 | 58 | <25 | 32 |
| Mercury | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Lead | 6 | 19 | <4 | 4 | <4 | <4 | <4 | <4 | 10 | 8 | 6 | <4 | 10 | <4 |
| Uranium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Newman | | | | | | Vernalis | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/06 | 10/07 | 10/08 | 10/09 | 10/10 | 10/11 | 10/06 | 10/07 | 10/08 | 10/09 | 10/10 | 10/11 |
| Aluminum | 2750 | 1237 | 2348 | 3629 | 3365 | 2494 | 2803 | 3695 | 1054 | 1439 | 3043 | 2734 | 3048 | 4027 |
| Silicon | 7500 | 3313 | 5469 | 9233 | 8065 | 6361 | 6716 | 8924 | 2824 | 3740 | 7579 | 6903 | 7132 | 9796 |
| Phosphorus | 100 | 58 | 60 | 122 | 122 | 306 | 118 | 101 | 29 | 37 | 75 | 67 | 91 | 105 |
| Sulfur | 523 | 1203 | 498 | 281 | 708 | 773 | 756 | 937 | 288 | 113 | 504 | 708 | 946 | 1017 |
| Chlorine | 439 | 1666 | 676 | 184 | 149 | 237 | 227 | 223 | 379 | 91 | 129 | 166 | 139 | 253 |
| Potassium | 875 | 514 | 547 | 946 | 911 | 684 | 720 | 864 | 282 | 368 | 694 | 572 | 697 | 827 |
| Calcium | 1157 | 1141 | 491 | 1034 | 832 | 701 | 868 | 965 | 296 | 297 | 662 | 674 | 725 | 1045 |
| Titanium | 175 | 108 | 88 | 147 | 116 | 100 | 122 | 162 | 35 | 51 | 131 | 114 | 110 | 142 |
| Vanadium | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 13 | <10 | <10 | 12 | <10 | <10 | 11 |
| Chromium | 5 | 6 | 4 | 7 | 5 | 6 | 3 | 4 | <2 | <2 | 7 | 8 | 4 | 6 |
| Manganese | 38 | 21 | 25 | 36 | 34 | 28 | 26 | 36 | 12 | 16 | 33 | 28 | 28 | 42 |
| Iron | 1738 | 1316 | 1005 | 1646 | 1479 | 1072 | 1154 | 1657 | 481 | 666 | 1365 | 1192 | 1333 | 1935 |
| Cobalt | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 | <16 |
| Nickel | 3 | 5 | 5 | 4 | 3 | 2 | 2 | 5 | <2 | <2 | 3 | 2 | 4 | 4 |
| Copper | 28 | 34 | 13 | 6 | 9 | <2 | <2 | 4 | <2 | 6 | 8 | 3 | 9 | 5 |
| Zinc | 33 | 75 | 43 | 22 | 56 | 78 | 41 | 33 | 12 | 57 | 146 | 87 | 162 | 94 |
| Arsenic | <3 | <3 | <3 | <3 | <3 | 4 | <3 | <3 | <3 | <3 | <3 | 5 | <3 | 4 |
| Selenium | <2 | <2 | <2 | 2 | 3 | <2 | <2 | <2 | 4 | <2 | 6 | <2 | 4 | <2 |
| Bromine | 4 | 8 | <2 | 5 | 8 | 10 | 11 | 11 | 3 | 5 | 10 | 8 | 16 | 15 |
| Rubidium | 4 | 2 | 5 | 5 | 4 | 4 | <2 | 3 | <2 | <2 | 3 | 4 | 5 | 5 |
| Strontium | 17 | 16 | 7 | 12 | 9 | 6 | 9 | 14 | 5 | 17 | 8 | 7 | 7 | 11 |
| Yttrium | <2 | <2 | <2 | <2 | <2 | 5 | 2 | 3 | <2 | <2 | <2 | <2 | <2 | <2 |
| Antimony | <5 | <5 | <5 | 8 | <5 | <5 | 12 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Barium | 45 | 62 | 58 | 44 | 47 | 34 | <25 | <25 | <25 | 33 | <25 | <25 | 35 | 49 |
| Mercury | <3 | <3 | 15 | <3 | <3 | <3 | <3 | <3 | <3 | 6 | 5 | <3 | 5 | <3 |
| Lead | 6 | 19 | 10 | <4 | <4 | <4 | 5 | <4 | <4 | 4 | 7 | <4 | 11 | <4 |
| Uranium | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 4 | <2 | <2 | <2 | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Westley – Livingston | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 |
| Aluminum | 2750 | 1237 | NA | 3522 | | | 4134 | 2547 | 4026 | 4794 | | | |
| Silicon | 7500 | 3313 | NA | 8361 | | | 9938 | 6087 | 9824 | 11548 | | | |
| Phosphorus | 100 | 58 | NA | 98 | | | 117 | 55 | 110 | 113 | | | |
| Sulfur | 523 | 1203 | NA | 738 | | | 395 | 374 | 788 | 926 | | | |
| Chlorine | 439 | 1666 | NA | 175 | | | 353 | 216 | 202 | 174 | | | |
| Potassium | 875 | 514 | NA | 717 | | | 1242 | 680 | 1040 | 1200 | | | |
| Calcium | 1157 | 1141 | NA | 856 | | | 1184 | 660 | 982 | 1127 | | | |
| Titanium | 175 | 108 | NA | 137 | | | 127 | 96 | 152 | 189 | | | |
| Vanadium | <10 | <10 | NA | 12 | | | <10 | <10 | 11 | 11 | | | |
| Chromium | 5 | 6 | NA | 4 | | | 5 | 5 | 5 | 6 | | | |
| Manganese | 38 | 21 | NA | 38 | | | 67 | 33 | 47 | 55 | | | |
| Iron | 1738 | 1316 | NA | 1493 | | | 1685 | 1056 | 1727 | 2099 | | | |
| Cobalt | <16 | <16 | NA | <16 | | | <16 | <16 | <16 | <16 | | | |
| Nickel | 3 | 5 | NA | 4 | | | 4 | 3 | 4 | 5 | | | |
| Copper | 28 | 34 | NA | 7 | | | <2 | 4 | 5 | 4 | | | |
| Zinc | 33 | 75 | NA | 80 | | | 105 | 95 | 118 | 107 | | | |
| Arsenic | <3 | <3 | NA | <3 | | | <3 | <3 | 4 | 6 | | | |
| Selenium | <2 | <2 | NA | 4 | | | <2 | 2 | 3 | 2 | | | |
| Bromine | 4 | 8 | NA | 8 | | | 8 | 9 | 13 | 12 | | | |
| Rubidium | 4 | 2 | NA | 2 | | | 3 | <2 | 2 | 4 | | | |
| Strontium | 17 | 16 | NA | 5 | | | <3 | 7 | 9 | 11 | | | |
| Yttrium | <2 | <2 | NA | <2 | | | <2 | 2 | <2 | <2 | | | |
| Molybdenum | <4 | <4 | NA | <4 | | | <4 | <4 | <4 | <4 | | | |
| Antimony | <5 | <5 | NA | <5 | | | 8 | <5 | <5 | <5 | | | |
| Barium | 45 | 62 | NA | <25 | | | 88 | 28 | <25 | 43 | | | |
| Mercury | <3 | <3 | NA | <3 | | | <3 | <3 | <3 | <3 | | | |
| Lead | 6 | 19 | NA | 4 | | | 13 | 8 | <4 | <4 | | | |
| Uranium | <2 | <2 | NA | <2 | | | <2 | <2 | <2 | <2 | | | |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Grayson | | | | | | I-5/Howard | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 |
| Aluminum | 2750 | 1237 | 5005 | 4059 | | | 5713 | 7413 | 4639 | 5222 | | | 3802 | 1680 |
| Silicon | 7500 | 3313 | 12370 | 10139 | | | 13622 | 17822 | 12880 | 15063 | | | 9066 | 4449 |
| Phosphorus | 100 | 58 | 116 | 126 | | | 166 | 139 | 87 | 98 | | | 133 | 65 |
| Sulfur | 523 | 1203 | 800 | 787 | | | 479 | 533 | 707 | 839 | | | 995 | 470 |
| Chlorine | 439 | 1666 | 230 | 185 | | | 481 | 337 | 134 | 108 | | | 851 | 158 |
| Potassium | 875 | 514 | 1013 | 938 | | | 1558 | 1573 | 912 | 1037 | | | 1382 | 590 |
| Calcium | 1157 | 1141 | 1188 | 1169 | | | 1482 | 1466 | 1170 | 1434 | | | 1380 | 648 |
| Titanium | 175 | 108 | 190 | 161 | | | 203 | 296 | 176 | 192 | | | 129 | 70 |
| Vanadium | <10 | <10 | <10 | 16 | | | <10 | 19 | <10 | 11 | | | <10 | <10 |
| Chromium | 5 | 6 | 7 | 3 | | | 9 | 6 | 7 | 10 | | | 6 | 3 |
| Manganese | 38 | 21 | 52 | 49 | | | 94 | 93 | 49 | 66 | | | 81 | 27 |
| [illegible]on | 1738 | 1316 | 2191 | 1793 | | | 2429 | 3279 | 2008 | 2410 | | | 1587 | 717 |
| Cobalt | <16 | <16 | <16 | <16 | | | <16 | <16 | <16 | <16 | | | <16 | <16 |
| Nickel | 3 | 5 | 6 | 5 | | | 5 | 8 | 5 | 6 | | | 8 | 3 |
| Copper | 28 | 34 | 4 | 6 | | | <2 | 10 | 4 | 9 | | | 9 | 7 |
| Zinc | 33 | 75 | 162 | 44 | | | 124 | 168 | 159 | 111 | | | 1063 | 96 |
| Arsenic | <3 | <3 | 4 | 4 | | | <3 | 5 | 4 | <3 | | | 4 | <3 |
| Selenium | <2 | <2 | <2 | 3 | | | <2 | 3 | <2 | 5 | | | 3 | 4 |
| Bromine | 4 | 8 | 12 | 10 | | | 10 | 15 | 12 | 12 | | | 44 | 9 |
| Rubidium | 4 | 2 | 5 | <2 | | | 4 | 9 | 4 | 4 | | | 3 | <2 |
| Strontium | 17 | 16 | 12 | 9 | | | 16 | 19 | 11 | 12 | | | 9 | 6 |
| Yttrium | <2 | <2 | <2 | <2 | | | <2 | <2 | <2 | 3 | | | <2 | <2 |
| Molybdenum | <4 | <4 | <4 | <4 | | | <4 | <4 | <4 | <4 | | | <4 | <4 |
| Antimony | <5 | <5 | <5 | <5 | | | <5 | <5 | <5 | <5 | | | <5 | <5 |
| Barium | 45 | 62 | 39 | <25 | | | 83 | 66 | 37 | 58 | | | 90 | <25 |
| Mercury | <3 | <3 | <3 | <3 | | | <3 | 5 | <3 | <3 | | | <3 | 6 |
| [illegible]ead | 6 | 19 | <4 | 8 | | | 16 | 5 | <4 | 5 | | | 29 | <4 |
| Uranium | <2 | <2 | <2 | <2 | | | <2 | <2 | <2 | <2 | | | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Newman | | | | | | Vernalis | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 | 10/12 | 10/13 | 10/14 | 10/15 | 10/16 | 10/17 |
| Aluminum | 2750 | 1237 | 4974 | 5636 | | | 8191 | 2938 | 3122 | 3436 | | | 6041 | 1845 |
| Silicon | 7500 | 3313 | 11665 | 13942 | | | 19833 | 6875 | 7963 | 8721 | | | 14560 | 4581 |
| Phosphorus | 100 | 58 | 146 | 169 | | | 247 | 93 | 65 | 80 | | | 171 | 76 |
| Sulfur | 523 | 1203 | 811 | 849 | | | 673 | 502 | 596 | 828 | | | 463 | 461 |
| Chlorine | 439 | 1666 | 382 | 319 | | | 599 | 392 | 88 | 87 | | | 440 | 124 |
| Potassium | 875 | 514 | 1072 | 1277 | | | 2207 | 895 | 646 | 721 | | | 1634 | 608 |
| Calcium | 1157 | 1141 | 1325 | 1422 | | | 2259 | 1033 | 733 | 858 | | | 1719 | 736 |
| Titanium | 175 | 108 | 186 | 227 | | | 343 | 109 | 134 | 138 | | | 240 | 60 |
| Vanadium | <10 | <10 | <10 | 17 | | | 17 | <10 | 14 | 16 | | | <10 | <10 |
| Chromium | 5 | 6 | 11 | 7 | | | 16 | 6 | 2 | 3 | | | 9 | 3 |
| anganese | 38 | 21 | 46 | 59 | | | 132 | 46 | 33 | 37 | | | 103 | 28 |
| Iron | 1738 | 1316 | 2150 | 2497 | | | 3729 | 1223 | 1354 | 1564 | | | 2645 | 787 |
| Cobalt | <16 | <16 | <16 | <16 | | | <16 | <16 | <16 | <16 | | | <16 | <16 |
| Nickel | 3 | 5 | 5 | 7 | | | 12 | 4 | 3 | 3 | | | 7 | <2 |
| Copper | 28 | 34 | 4 | 7 | | | 11 | 6 | <2 | 3 | | | 4 | 5 |
| Zinc | 33 | 75 | 61 | 45 | | | 118 | 71 | 22 | 37 | | | 129 | 65 |
| Arsenic | <3 | <3 | 5 | <3 | | | 5 | 4 | <3 | 3 | | | <3 | <3 |
| Selenium | <2 | <2 | 2 | <2 | | | 3 | 3 | 2 | <2 | | | <2 | <2 |
| Bromine | 4 | 8 | 17 | 11 | | | 14 | 13 | 8 | 6 | | | 10 | 10 |
| Rubidium | 4 | 2 | 5 | 5 | | | 9 | 3 | 4 | 3 | | | 6 | 2 |
| Strontium | 17 | 16 | 16 | 15 | | | 21 | 9 | 8 | 7 | | | 13 | 6 |
| Yttrium | <2 | <2 | 3 | <2 | | | <2 | <2 | <2 | <2 | | | <2 | <2 |
| Molybdenum | <4 | <4 | <4 | <4 | | | <4 | <4 | <4 | <4 | | | <4 | <4 |
| Barium | 45 | 62 | 56 | 42 | | | 82 | 39 | <25 | <25 | | | 85 | 33 |
| Mercury | <3 | <3 | <3 | <3 | | | <3 | 4 | <3 | <3 | | | <3 | <3 |
| ' ead | 6 | 19 | 6 | 6 | | | 9 | 4 | <4 | <4 | | | 14 | 6 |
| Uranium | <2 | <2 | 3 | <2 | | | <2 | <2 | <2 | <2 | | | <2 | <2 |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Grayson | | | | | | I-5/Howard | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 |
| Aluminum | 2750 | 1237 | 6190 | 20371 | | | | | 3900 | 3869 | | | | |
| Silicon | 7500 | 3313 | 15291 | 48446 | | | | | 11272 | 10154 | | | | |
| Phosphorus | 100 | 58 | 161 | 263 | | | | | 84 | 81 | | | | |
| Sulfur | 523 | 1203 | 853 | 991 | | | | | 739 | 940 | | | | |
| Chlorine | 439 | 1666 | 312 | 337 | | | | | 124 | 135 | | | | |
| Potassium | 875 | 514 | 1439 | 3960 | | | | | 1011 | 1025 | | | | |
| Calcium | 1157 | 1141 | 1342 | 2987 | | | | | 1208 | 1072 | | | | |
| Titanium | 175 | 108 | 232 | 913 | | | | | 134 | 132 | | | | |
| Vanadium | <10 | <10 | 13 | 41 | | | | | <10 | <10 | | | | |
| Chromium | 5 | 6 | 8 | 26 | | | | | 8 | 6 | | | | |
| Manganese | 38 | 21 | 76 | 259 | | | | | 56 | 49 | | | | |
| Iron | 1738 | 1316 | 2726 | 10089 | | | | | 1806 | 1658 | | | | |
| Cobalt | <16 | <16 | <16 | 18 | | | | | <16 | <16 | | | | |
| Nickel | 3 | 5 | 6 | 24 | | | | | 3 | 3 | | | | |
| Copper | 28 | 34 | 8 | 16 | | | | | 4 | 6 | | | | |
| Zinc | 33 | 75 | 160 | 273 | | | | | 99 | 135 | | | | |
| Arsenic | <3 | <3 | 4 | 7 | | | | | 4 | 8 | | | | |
| Selenium | <2 | <2 | 4 | 6 | | | | | 3 | 4 | | | | |
| Bromine | 4 | 8 | 18 | 25 | | | | | 9 | 16 | | | | |
| Rubidium | 4 | 2 | 6 | 21 | | | | | <2 | 2 | | | | |
| Strontium | 17 | 16 | 16 | 49 | | | | | 8 | 11 | | | | |
| Yttrium | <2 | <2 | <2 | 8 | | | | | <2 | 5 | | | | |
| Molybdenum | <4 | <4 | <4 | <4 | | | | | <4 | 5 | | | | |
| Antimony | <5 | <5 | <5 | <5 | | | | | <5 | <5 | | | | |
| Barium | 45 | 62 | 58 | 209 | | | | | 91 | 35 | | | | |
| Mercury | <3 | <3 | <3 | 6 | | | | | <3 | <3 | | | | |
| Lead | 6 | 19 | 4 | 12 | | | | | <4 | <4 | | | | |
| Uranium | <2 | <2 | <2 | <2 | | | | | <2 | <2 | | | | |

## WESTLEY TIRE FIRE
## Total Metals
## October

| Element | Modesto Sept. Avg '96-'98 | LA - N. Main Annual Avg | Newman | | | | | | Vernalis | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 | 10/18 | 10/19 | 10/20 | 10/21 | 10/22 | 10/23 |
| Aluminum | 2750 | 1237 | 4627 | 5593 | | | | | 4754 | 4555 | | | | |
| Silicon | 7500 | 3313 | 11239 | 12919 | | | | | 11651 | 10971 | | | | |
| Phosphorus | 100 | 58 | 146 | 142 | | | | | 135 | 88 | | | | |
| Sulfur | 523 | 1203 | 870 | 982 | | | | | 707 | 854 | | | | |
| Chlorine | 439 | 1666 | 428 | 302 | | | | | 116 | 113 | | | | |
| Potassium | 875 | 514 | 1416 | 1455 | | | | | 1212 | 1081 | | | | |
| Calcium | 1157 | 1141 | 1342 | 1368 | | | | | 1259 | 1042 | | | | |
| Titanium | 175 | 108 | 182 | 205 | | | | | 172 | 160 | | | | |
| Vanadium | <10 | <10 | <10 | 10 | | | | | 12 | <10 | | | | |
| Chromium | 5 | 6 | 7 | 9 | | | | | 5 | 5 | | | | |
| Manganese | 38 | 21 | 45 | 58 | | | | | 58 | 50 | | | | |
| ›n | 1738 | 1316 | 1978 | 2362 | | | | | 2066 | 2015 | | | | |
| Cobalt | <16 | <16 | <16 | <16 | | | | | <16 | <16 | | | | |
| Nickel | 3 | 5 | 5 | 5 | | | | | 4 | 4 | | | | |
| Copper | 28 | 34 | 9 | 8 | | | | | 3 | 7 | | | | |
| Zinc | 33 | 75 | 70 | 60 | | | | | 84 | 64 | | | | |
| Arsenic | <3 | <3 | <3 | <3 | | | | | 5 | 5 | | | | |
| Selenium | <2 | <2 | 4 | 4 | | | | | <2 | 5 | | | | |
| Bromine | 4 | 8 | 23 | 25 | | | | | 9 | 11 | | | | |
| Rubidium | 4 | 2 | 4 | 6 | | | | | 6 | 4 | | | | |
| Strontium | 17 | 16 | 12 | 16 | | | | | 12 | 12 | | | | |
| Yttrium | <2 | <2 | <2 | 3 | | | | | 2 | <2 | | | | |
| Molybdenum | <4 | <4 | <4 | <4 | | | | | <4 | <4 | | | | |
| Antimony | <5 | <5 | <5 | <5 | | | | | 7 | <5 | | | | |
| Barium | 45 | 62 | 27 | 63 | | | | | <25 | 63 | | | | |
| Mercury | <3 | <3 | <3 | <3 | | | | | <3 | <3 | | | | |
| Lead | 6 | 19 | 7 | 8 | | | | | <4 | <4 | | | | |
| ·anium | <2 | <2 | <2 | 2 | | | | | <2 | <2 | | | | |

## APPENDIX 2
## Westley Tire Fire Monitoring Activities

The following document describes ongoing monitoring efforts by the Air Resources Board Monitoring and Laboratory Division for the tire fire in Westley, California. Monitoring activities are described on a site by site basis and list instruments and analyses being performed and when sampling began at each monitoring location.

**Westley-Livingston:** This monitoring station is located adjacent to seasonal worker housing and a daycare center on Livingston Circle in Westley, CA. The site is approximately 4 to 5 miles due southeast of the tire fire. Currently the following instruments are operating at the site: Surface meteorology (wind speed/direction, outside temperature), an aethalometer for continuous black carbon analysis, a carbon monoxide (CO) analyzer, a Xontech 910A toxics sampler (collects 24 hour samples into 6L stainless steel canisters and are analyzed for benzene and 1,3-butadiene), a Tapered Element Oscillating Microbalance (TEOM) for continuous PM10 mass, and two portable battery operated MiniVol particulate samplers collecting 24 hour PM10 samples (one teflon filter for total PM10 mass and total metals (30 different elements analyzed); and one quartz filter for PAH and total carbon analyses). Sampling at this site began on September 22.

**Westley-McCracken:** This monitoring station is located at a Super 8 Motel on McCracken Road near the I-5 freeway in Westley, CA. The site is approximately _ to 1 mile due southeast of the tire fire. Currently the following instruments are operating at the Super 8 Motel: Surface meteorology (wind speed/direction, outside temperature), an aethalometer for continuous black carbon analysis, and a TEOM for continuous PM10 mass. Sampling at this site began on October 2.

**Westley-Howard Road:** This monitoring site is located near a McDonald's restaurant on Howard Road and the I-5 freeway in Westley, CA.. Currently operating at this location is one portable battery operated MiniVol particulate sampler collecting 24 hour PM10 samples (one teflon filter for total PM10 mass and total metals). The sampler is attached to a utility pole and is approximately 1 mile due southeast of the tire fire. Sampling at this site began on September 26.

**Vernalis:** This monitoring site is located in the parking lot of an unoccupied warehouse on Welty Road in Vernalis, CA. Currently operating at this location is one portable battery operated MiniVol particulate sampler collecting 24 hour PM10 samples (one teflon filter for total PM10 mass and total metals). The sampler is attached to a utility pole and is approximately 15 miles north/northeast of the tire fire. Sampling at this site began on September 26.

**Grayson:** This monitoring site is located at the intersection of Minnie and River Roads in Grayson, CA. Currently operating at this location is one portable battery operated MiniVol particulate sampler collecting 24 hour PM10 samples (one teflon filter for total PM10 mass and total metals). The sampler is attached to a utility pole and is approximately 7-10 miles east of the tire fire. Sampling at this site began on September 26.

**Newman:** This monitoring site is located at the Newman library on Kern street in Newman, CA. Currently operating at this location is one portable battery operated MiniVol particulate sampler collecting 24 hour PM10 samples (one teflon filter for total PM10 mass and total metals). The sampler is attached to a utility pole in the parking lot of the Newman library, and is approximately 30 miles south/southeast of the tire fire. Sampling at this site began on September 27.

**Patterson:** This monitoring site is located at the Patterson High School on 7$^{th}$ Avenue in Patterson, CA. Currently operating at this location is a High Volume Sampler with Size Selective Inlet collecting 24-hour PM10 samples for total PM10 mass, PAH, and total carbon analysis. The site is approximately 20 miles southeast of the tire fire. Sampling at this site began on October 6.

## APPENDIX 3

MLD Analysis of the Pyrolytic Oil Headspace

| | |
|---|---|
| Project: | WESTLEY TIRE |
| Sample ID: | 101499-01A |
| Sampling Date: | 10/25/99 |
| Analysis Date: | 10/25/99 |
| Report Date: | 10/29/99 |
| GC Number: | GC#4 |

| CAS Number | Compound | Concentration (ppbC) |
|---|---|---|
| - | - | - |
| 00074-98-6 | propane | 16 |
| 00075-28-5 | methylpropane | 22 |
| 00106-97-8 | butane | 19 |
| 00115-11-7 | 2-methylpropene | 93 |
| 00513-35-9 | 2-methyl-2-butene | 24 |
| 00109-66-0 | pentane | 20 |
| 00071-43-2 | benzene | 50 |
| 10574-36-4 | 3-methyl-cis-2-hexene | 16 |
| 00565-75-3 | 2,3,4-trimethylpentane | 16 |
| 00108-88-3 | toluene | 43 |
| 00100-41-4 | ethylbenzene | 17 |
| | Total | 336 |

## APPENDIX 3

MLD Analysis of the Pyrolytic Oil Headspace (cont.)

| | |
|---|---|
| Project: | WESTLEY TIRE |
| Sample ID: | 101499-01A |
| Sampling Date: | 10/25/99 |
| Analysis Date: | 10/25/99 |
| Report Date: | 10/29/99 |
| GC Number: | GC#4 |

| CAS Number | Hydrocarbon | Volume Percent |
|---|---|---|
| - | - | - |
| 00074-98-6 | propane | 7.78 |
| 00115-07-1 | propene | 0.00 |
| 00075-28-5 | methylpropane | 8.03 |
| 00106-97-8 | butane | 6.93 |
| 00115-11-7 | 2-methylpropene | 33.93 |
| 00513-35-9 | 2-methyl-2-butene | 7.01 |
| 00109-66-0 | pentane | 5.84 |
| 00071-43-2 | benzene | 12.16 |
| 10574-36-4 | 3-methyl-cis-2-hexene | 3.34 |
| 00565-75-3 | 2,3,4-trimethylpentane | 2.92 |
| 00108-88-3 | toluene | 8.97 |
| 00100-41-4 | ethylbenzene | 3.10 |
| Total | | 100 |

## APPENDIX 3

MLD Analysis of the Pyrolytic Oil Headspace (cont.)

| | |
|---|---|
| Project: | WESTLEY TIRE |
| Sample ID: | 101499-01A |
| Sampling Date: | 10/25/99 |
| Analysis Date: | 10/25/99 |
| Report Date: | 10/29/99 |
| GC Number: | GC#4 |

| CAS Number | Hydrocarbon | Mass Percent |
|---|---|---|
| - | - | - |
| 00074-98-6 | propane | 5.05 |
| 00075-28-5 | methylpropane | 6.87 |
| 00106-97-8 | butane | 5.93 |
| 00115-11-7 | 2-methylpropene | 28.02 |
| 00513-35-9 | 2-methyl-2-butene | 7.23 |
| 00109-66-0 | pentane | 6.20 |
| 00071-43-2 | benzene | 13.98 |
| 10574-36-4 | 3-methyl-cis-2-hexene | 4.82 |
| 00565-75-3 | 2,3,4-trimethylpentane | 4.91 |
| 00108-88-3 | toluene | 12.16 |
| 00100-41-4 | ethylbenzene | 4.85 |
| | Total | 100.00 |