Occupational Exposure Assessment Report: Airborne Asbestos Fibers

Above-Ceiling Cable Installation
Stevenson Hall
Sonoma State University
1801 E. Cotati Avenue
Rohnert Park CA 94928

Prepared for:

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Prepared By:

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FACS Project #PJ30259
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Executive Summary

Personal air monitoring for airborne fibers was conducted during above-ceiling cable installation work in support of the P2 Classroom Electric and Technical Upgrade project in Stevenson Hall on the Sonoma State University campus. The project was limited to the installation of ethernet cable in the above-ceiling plenum at various locations in the building. Air samples collected by Forensic Analytical Consulting Services Inc. (FACS) indicated worker exposures to airborne fibers were well below the Cal/OSHA PEL during the task monitored. A more complete discussion of findings, conclusions and recommendations are provided below.

In addition, excursion samples were collected while employees drilled holes in plaster that was presumed to contain asbestos. Lab analysis later identified that asbestos was not present in the plaster.

Introduction

Forensic Analytical Consulting Services, Inc. was retained by Sonoma State University to perform personal air monitoring for airborne fibers during the P2 Classroom Electric and Technical Upgrade project within Stevenson Hall on the Sonoma State University campus located at 1801 E. Cotati Avenue in Rohnert Park, California. The task assessed was limited to the installation of cable in the above-ceiling plenum space at various locations in the Stevenson Hall building. In addition, excursion samples were collected during drilling holes in plaster walls (that were later determined not to contain asbestos).

The purpose of the assessment was to evaluate employee exposure to airborne asbestos fibers in dust that may be disturbed during maintenance and construction activities performed within the above-ceiling plenum space in the building. The assessment was performed by David Brinkerhoff, Certified Industrial Hygienist (CIH), on June 13, 2016. This report contains the findings of this industrial hygiene evaluation.

Scope of Work

The exposure assessment was conducted in accordance with California Division of Occupational Safety and Health (Cal/OSHA) requirements. In the course of this project, FACS conducted the following scope of work:

1. Collection of full-task personal air samples for airborne fibers. Samples were collected during installation of ethernet cable in the above ceiling plenum space that would typically be done during maintenance or construction activities.

2. Collection of full-task area air samples for airborne fibers. Samples were collected in corridors adjacent to area where cable installation activities were being performed.

3. Collection of excursion personal air samples for airborne fibers. Samples were collected while employees drilled holes in a plaster wall that was presumed to contain asbestos. Laboratory analysis later determined that the plaster did not contain asbestos.

The data collected in the course of the investigation is presented in this report as follows:

- Appendix A: Data Collection Methodologies
- Appendix B: Sampling Results (summary tables, laboratory reports, and chain of custody forms)
- Appendix C: Photographs
Background

Cal/OSHA requires each employer with a workplace or work operation under Title 8 CCR Section 1529 Asbestos, to ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace.

An exposure assessment consists of observation and documentation of the tasks performed, measuring airborne fibers in the breathing zone of the employees performing the tasks, and recording the data. When the personal sample results are below the asbestos permissible exposure limit (PEL), a Negative Exposure Assessment (NEA) is established. Once an NEA is established, it can be used on similar future projects when certain conditions are met.

Site Characterization and Observations

Exposure monitoring was conducted during P2 Classroom Electrical and Technical Upgrade Project activities in Stevenson Hall. Locations and activities conducted during the exposure assessment are summarized below.

<table>
<thead>
<tr>
<th>Observed Tasks, June 13, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2 Classroom Electrical and Technical Upgrade Project</td>
</tr>
<tr>
<td>Stevenson Hall, Sonoma State University – 1801 E. Cotati Avenue, Rohnert Park, CA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>TWA samples are calibrated and set up in the breathing zone of Jose Baca and Rodrigo Martinez (CPM Environmental). Area samples are set up in the first and second corridors along the route the cable will be installed above ceiling.</td>
</tr>
<tr>
<td>09:05</td>
<td>Cable installation started in corridor adjacent to classroom 1002 and proceeded west to electrical room 1012A. A guide rope was used to pull the cable through the existing cable tray. Ceiling tiles were removed, as necessary, to access above-ceiling space for exploration and cable pulling.</td>
</tr>
<tr>
<td>09:55</td>
<td>Cable was fed to telecom room 2026 above and cable continued to be pulled to telecom room 2033.</td>
</tr>
<tr>
<td>11:50</td>
<td>Cable pulling task is complete. TWA and area samples are stopped.</td>
</tr>
<tr>
<td>15:10</td>
<td>Excursion sample # 19480218 is started and attached to employee. Employee begins drilling through plaster/skim coat and metal lath using a 1 1/2 inch hole saw attached to a drill. Two holes are drilled, one on each side of the corridor. Approximate duration is 5 minutes per hole. Employee begins drilling holes through plaster and lath wall in telecom room. Four holes are drilled, each 1/2 inch.</td>
</tr>
<tr>
<td>15:40</td>
<td>Excursion sample is stopped.</td>
</tr>
<tr>
<td>--</td>
<td>Pumps were calibrated before and after sampling to determine average flow rate for each sample collected. Pumps were calibrated with a primary standard, Dry-Cal, #99001.</td>
</tr>
</tbody>
</table>

No sampling of the suspect plaster material was performed prior to the exposure assessment, thus the plaster was presumed to contain asbestos. At the time of the exposure assessment, FACS collected representative bulk samples of the presumed asbestos-containing plaster. The samples were analyzed by Forensic Analytical Laboratories, Inc. in Hayward, CA and were reported as non-detected for asbestos.

Representative photographs are presented in Appendix C.

Findings and Results

Time Weighted Average Exposure Calculation
Occupational exposures are generally represented as a time weighted average (TWA), which is the average exposure concentration across the time period evaluated. Occupational exposure limits are typically given as an 8-hour TWA, which represents the maximum average concentration a worker may be exposed to over an 8-hour work day. In addition, some compounds have a short-term exposure limit (STEL) or excursion limit (EL).

Full-task sampling (~3 hours) rather than full-shift (~8 hours) sampling was performed during this assessment to determine exposures specifically during the installation of cable in the above-ceiling plenum. The TWA concentration for a full shift was calculated assuming similar exposures during the part of the shift that was not monitored. Short term sampling (over a 30 minute time-frame) was performed during a second task that involved drilling of holes in plaster that was presumed to contain asbestos. The plaster was later determined by laboratory analysis not to contain asbestos and thus, the results obtained may not be relied upon to evaluate potential employee exposure.

**Direct Comparison to Cal/OSHA PELs**

Personal air samples for airborne fibers were collected from two workers performing the installation of cable in the above-ceiling plenum space. Area air samples for airborne fibers were collected in corridors adjacent to the work area during the exposure assessment.

Results of exposure monitoring (see Appendix B, Table 1) indicate that during the installation of cable in the above-ceiling plenum space, employee exposure did not exceed the Cal/OSHA asbestos PEL of 0.1 f/cc as an 8-hour TWA.

The 8-hour TWA exposures were calculated with the assumption that there was similar exposure during the portions of the 8 hour shift not monitored. Assuming no exposure during periods not monitored would result in lower TWA exposures.

All samples were analyzed first by phase contrast microscopy (PCM). One sample (#19480220, full task TWA) was reanalyzed by transmission electron microscopy (TEM). TEM analysis counts only asbestos fibers (as opposed to PCM which counts all fibers) and therefore is a more accurate method for determining airborne asbestos fiber concentrations. No asbestos fibers were detected in the sample reanalyzed by TEM.

Area samples collected adjacent to the work area (see Appendix B, Table 1) were below the Asbestos Hazard Emergency Response Act (AHERA) clearance level of 0.01 f/cc for asbestos fibers. Although only applicable to K-12 schools, 0.01 f/cc is commonly used as clearance criteria following abatement activities.

**Conclusions and Recommendations**

The following recommendations are made based on this investigation:

1. All personal air sample results were below the Cal/OSHA PEL for airborne fibers. When reanalyzed by TEM, no asbestos was detected in the full shift TWA sample.
2. All area air sample results were below the limit of detection for the method used, which for reference, was below the AHERA clearance level for K-12 schools.
3. Employees represented by this exposure assessment are not required to wear respirators during the task monitored.
4. Exposure monitoring should be repeated whenever significant changes to processes and/or procedures occur, or a significant increase in work duration occurs.

5. Notify all affected employees of the monitoring results within 15 days of receiving this report either individually in writing or by posting the results in an appropriate location that is accessible to employees. Records should be maintained and be made accessible as detailed in Title 8 CCR Section 5220.

Limitations

This investigation is limited to the conditions and practices observed and information made available to FACS. The methods, conclusions, and recommendations provided are based on FACS' judgment, experience and the standard of practice for professional service. They are subject to the limitations and variability inherent in the methodology employed. As with all environmental investigations, this investigation is limited to the defined scope and does not purport to set forth all hazards, nor indicate that other hazards do not exist.

Please do not hesitate to contact our office at 916-726-1303 if you have any additional questions or concerns. Thank you for the opportunity to assist Sonoma State University Inc. in promoting a more healthful environment.

Respectfully, 
FORENSIC ANALYTICAL

[Signature]
Diana Lutsik
Project Manager, Sacramento

Reviewed by: 
FORENSIC ANALYTICAL

[Signature]
David Brinkerhoff, CIH, CIEC
Director, Sacramento
Appendix A

FACS Data Collection Methods

Air Monitoring

Air monitoring was conducted by assembling a sampling train consisting of a portable, battery-operated vacuum pump, a length of Tygon® tubing, and a 25-millimeter, open-face, air sampling cassette fitted with a 0.8 micron pore-size, mixed cellulose ester (MCE) particulate filter. Samples were collected by using the vacuum pump to draw air across the filter, thereby trapping airborne particulate.

Sample flow rates were calibrated at the start and again at the end of each sampling period. The mean average of these measurements was used as the flow rate submitted to the laboratory to calculate the air volume sampled. Calibration was completed utilizing a DryCal Defender, which is a primary standard.

Time Weighted Average (TWA) and 30 minute samples were collected and results compared to the Cal/OSHA 8-hour TWA PEL and Excursion Limit for asbestos fibers.

All samples were analyzed by phase contrast microscopy (PCM) utilizing National Institute of Safety and Health (NIOSH) analytical Method 7400, at Forensic Analytical Laboratories, Inc. (FALI) in Hayward, California. PCM analysis reports total airborne fiber concentrations in units of fibers per cubic centimeter of air (f/cc), and does not distinguish between airborne asbestos fibers and other airborne non-asbestos fibers. Therefore, if the PEL for total airborne fibers is less than the asbestos PEL, a NEA can be established. If the results are above the asbestos PEL, further analysis may be required to differentiate between total airborne fibers and asbestos airborne fibers.

Samples may be reanalyzed by transmission electron microscopy (TEM) utilizing NIOSH analytical Method 7402. TEM analysis counts only asbestos fibers (as opposed to PCM which counts all fibers) and therefore is a more accurate method for determining airborne fiber concentrations.

The laboratory reports are attached in Appendix B of this report.

The eight-hour time weighted average (TWA) is calculated using the formula below.

\[
8 \text{ Hour TWA} = \frac{(C_1 \times T_1) + (C_2 \times T_2) + \ldots + (C_n \times T_n)}{480 \text{ minutes}}
\]

where:

- \( C_1 \) = Concentration for the first sampling period
- \( T_1 \) = Duration for the first sampling period
- \( C_n \) = Concentration for each additional sampling period
- \( T_n \) = Duration for each additional sampling period

Exposure during the time that was not monitored was assumed to be similar to monitored periods.

Asbestos Bulk Sample Collection and Analysis

Representative bulk samples of suspect asbestos-containing materials were collected. Samples were collected of each separate homogeneous area. A homogeneous area is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in use, color and texture.
The suspect ACBMs were sampled using a knife or other similar coring device suitable to the type of material sampled to cut through its entire thickness and to ensure that a cross-section of the material was obtained. The material was then placed in an appropriately labeled container that was sealed and submitted to Forensic Analytical Laboratories, Inc. for analysis.

All of the samples were analyzed using Polarized Light Microscopy with Dispersion Staining (PLM/DS) techniques in accordance with the methodology approved by the U.S. Environmental Protection Agency (EPA). The percentage of asbestos present in the samples was determined on the basis of a visual area estimation. As set forth in the Code of Federal Regulations, 40 CFR Part 763, the lower limit of reliable quantification for asbestos using the PLM method is approximately one percent (1%) by volume, but regulations in California (CAL/OSHA Title 8 CCR 1529) define asbestos-containing materials as those materials having an asbestos content of greater than one tenth of one percent (> 0.1%). Therefore, for the purpose of this survey, any amount of asbestos detected will be considered positive. In addition to the percentages, the types of asbestos minerals are also reported. The PLM method is the standard method used to analyze asbestos bulk samples.

When "None Detected" (ND) appears in the laboratory results, it should be interpreted as meaning no asbestos was observed in the sample material.
## Appendix B

Sample Results Summary and Laboratory Reports

### Table 1: Air Sample Results for Airborne Fibers During P2 Classroom Electrical and Technical Upgrade Project

**Stevenson Hall, Sonoma State University – 1801 E. Cotati Avenue, Rohnert Park, CA**

**June 13, 2016**

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Work Task / Employee Name</th>
<th>Sample Duration (min.)</th>
<th>Excursion (fibers/cc)</th>
<th>8-Hour TWA(^1) (fibers/cc)</th>
<th>TEM Results (asbestos fibers/cc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19480220</td>
<td>Pulling of cable in above-ceiling plenum space / Jose Baca</td>
<td>169</td>
<td>N/A</td>
<td>0.006</td>
<td>&lt;0.002(^2)</td>
</tr>
<tr>
<td>19480014</td>
<td>Pulling of cable in above-ceiling plenum space / Rodrigo Martinez</td>
<td>166</td>
<td>N/A</td>
<td>&lt;0.005</td>
<td>N/A</td>
</tr>
<tr>
<td>19480218</td>
<td>Drilling a hole in plaster walls</td>
<td>30</td>
<td>≤0.027(^3)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>19479903</td>
<td>Corridor at SH1012 F / Area Sample</td>
<td>154</td>
<td>N/A</td>
<td>&lt;0.002</td>
<td>N/A</td>
</tr>
<tr>
<td>19479848</td>
<td>Corridor at 2014 / Area Sample</td>
<td>154</td>
<td>N/A</td>
<td>&lt;0.002</td>
<td>N/A</td>
</tr>
<tr>
<td>19479866</td>
<td>Field Blanks</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

| Cal/OSHA PEL / EL | 1.0 | 0.1 |

### Notes:

1. Exposure assuming the same exposure to the agent during the sampled and non-sampled portions of the day. The symbol “<” means “less than” and the value following indicates the laboratory reporting limit for the analytical method and sample volume.
2. Samples reanalyzed by TEM. Asbestos present below the limit of detection for the method (i.e. no asbestos fibers were detected).
3. Plaster walls were presumed to contain asbestos at the time of the excursion monitoring. Laboratory analysis later determined that the plaster did not contain asbestos. These results may not be used to evaluate employee exposure to asbestos during the task described. N/A – Not Applicable
# Airborne Fiber Analysis

**NIOSH 7400 Method, Issue 2, 15 August 1994, counting rules ‘A’**

## Forensic Analytical Consulting Svcs
David Justin Brinkerhoff
7625 Sunrise Blvd.
Suite 104
Citrus Heights, CA 95610

## Final Report

### Client ID: SAC02
### Report Number: A208512
### Date Received: 06/14/16
### Date Analyzed: 06/14/16
### Date Printed: 06/14/16
### First Reported: 06/14/16

### Job ID/Site: PJ29642; Sonoma State University, 1801 E. Cotati Avenue, Rohnert Park CA 94928
### FALI Job ID: SAC02
### Total Samples Submitted: 7
### Total Samples Analyzed: 7

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<th>Sample ID</th>
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<th>Volume (L)</th>
<th>Fibers</th>
<th>Fields</th>
<th>Fibers/mm²</th>
<th>LOD F/cc</th>
<th>Fibers/cc</th>
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<tbody>
<tr>
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<td>11774896</td>
<td>06/13/16</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td><strong>Comments:</strong></td>
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</tr>
<tr>
<td>This result was used to blank correct the other samples on this report. Blank filters are reported only as number of fibers and fields counted.</td>
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<tr>
<td>19480175</td>
<td>11774897</td>
<td>06/13/16</td>
<td>0.0</td>
<td>0.0</td>
<td>100</td>
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<tr>
<td>19480220</td>
<td>11774898</td>
<td>06/13/16</td>
<td>491.8</td>
<td>6.5</td>
<td>100</td>
<td>8.2</td>
<td>0.005</td>
<td>0.006</td>
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<tr>
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<td>496.3</td>
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<td>&lt;0.005</td>
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<tr>
<td>19479903</td>
<td>11774900</td>
<td>06/13/16</td>
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<td>19479848</td>
<td>11774901</td>
<td>06/13/16</td>
<td>1278.2</td>
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<td>&lt;7.0</td>
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<tr>
<td>19480218</td>
<td>11774902</td>
<td>06/13/16</td>
<td>101.4</td>
<td>0.5</td>
<td>100</td>
<td>&lt;7.0</td>
<td>0.027</td>
<td>&lt;0.027</td>
</tr>
</tbody>
</table>
## Airborne Fiber Analysis
NIOSH 7400 Method, Issue 2, 15 August 1994, counting rules ‘A’

Forensic Analytical Consulting Svcs
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<table>
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<tr>
<th>Sample ID</th>
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<th>Date Collected</th>
<th>Volume (L)</th>
<th>Fibers</th>
<th>Fields</th>
<th>Fibers/mm²</th>
<th>LOD F/cc</th>
<th>Fibers/cc</th>
</tr>
</thead>
</table>

Intralaboratory Relative Standard Deviation (Sr) per 100 graticule fields: 5 to 20 fibers: 0.470; >20 to 50 fibers: 0.387; >50 to 100 fibers: 0.405

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Tad Thrower, Laboratory Supervisor, Hayward Laboratory

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Location</th>
<th>Type</th>
<th>Pump ID</th>
<th>LPM</th>
<th>Fiber / Field</th>
<th>Fiber / CC</th>
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<tr>
<td>19480220</td>
<td>Jose Baca - TWA</td>
<td>B</td>
<td>R</td>
<td>C</td>
<td>2.99</td>
<td>491.8</td>
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<tr>
<td>19480014</td>
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<td>corridor 2014 - Area</td>
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<td>19480218</td>
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<td>R</td>
<td>C</td>
<td>3.42</td>
<td>101.4</td>
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**Analysis:** PCM / TEM: AHERA / Yamate II / NIOSH 7402 / Metals: Pb / Others

**Client:** SAC02 FACS Sacramento State University
**Client No.:** C17451
**ESD No.:** P529642
**Contact:** David Bunkerhoff Phone: 916 726-1303
**Site:** Stevenson Hall 1801 E Cota St Ave
**Special Instructions:** sue@acratech.com
**PM:** David Bunkerhoff
**Date:** 6/13/16
**Turnaround Time:** ASAP by Noon
**Code F:** Analyzed by: Date:
**Calibration:** Rotometer / Bubble Burette / Dry Cell No.

**Condition Acceptable:** Yes No

**Received by:** Date & Time:

**Relinquished by:** Date & Time: 6/13/16 1730

**Condition:** Acceptable

**Condition:** Acceptable

**Condition:** Acceptable

**Condition:** Acceptable
ANALYSIS REPORT: ASBESTOS IN AIR
Transmission Electron Microscopy
NIOSH 7402 Method*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Street: 7625 Sunrise Blvd, Suite 104
City/state/zip: Citrus Heights CA  95610

Site: Sonoma State University
Location: Stevenson Hall, Personal
Job ID: PJ29642
Date collected: 6/13/16
Filter type: 25mm MCE
Pore size: μm 0.8

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<th>ANALYTICAL RESULTS</th>
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<td>Lab Sample Number</td>
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<td>Sample Volume, liters</td>
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<td>Filter area, mm²</td>
</tr>
<tr>
<td>Grid Opening Area, mm²</td>
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<td>Number of GO's analyzed</td>
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<tr>
<td>Total Fibers Counted</td>
</tr>
<tr>
<td>Asbestos Fibers Counted</td>
</tr>
<tr>
<td>% Asbestos fibers of Total</td>
</tr>
<tr>
<td>Analytical sensitivity, f/cc</td>
</tr>
<tr>
<td>Total Fibers &gt;5μm/cc</td>
</tr>
<tr>
<td>Asbestos Fibers &gt;5μm/cc</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
</tr>
</tbody>
</table>

* NOTE: In the NIOSH 7402 method, only fibers >5 microns in length and >0.25 microns in diameter are counted.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

Mark S. Floyd, Analytical Microscopy Supervisor

Samples were received in acceptable condition unless otherwise noted.

Analytical results relate only to the sample(s) tested and are not blank- or background-corrected unless otherwise noted.

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<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Location</th>
<th>Type</th>
<th>Pump ID</th>
<th>LPM</th>
<th>Total Volume</th>
<th>Fiber / Field</th>
<th>Fiber / CC</th>
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<tbody>
<tr>
<td></td>
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<td></td>
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<td>Blank</td>
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</tr>
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<td>19479866</td>
<td>Blank (field)</td>
<td>C</td>
<td>B</td>
<td>2.99</td>
<td>1149</td>
<td>491.8</td>
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<tr>
<td>19480175</td>
<td>Blank (field)</td>
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<td>B</td>
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<td>1150</td>
<td>446.3</td>
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<tr>
<td>19480220</td>
<td>Jose Baca - TWA</td>
<td>C</td>
<td>B</td>
<td>8.3</td>
<td>1153</td>
<td>1278.2</td>
<td></td>
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<td>19480014</td>
<td>Rodrigo Martinez - TWA</td>
<td>C</td>
<td>B</td>
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<td>B</td>
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</tr>
</tbody>
</table>

Relinquished by: David Brinkerhoff
Date & Time: 6/13/16 1730

Received by: 
Date & Time: 

Condition Acceptable: Yes No
B = Background  R = Removal  C = Clearance
### Bulk Asbestos Analysis
(EPA Method 600/R-93-116, Visual Area Estimation)

**Client ID:** SAC02  
**Report Number:** B223010  
**Date Received:** 06/14/16  
**Date Analyzed:** 06/14/16  
**Date Printed:** 06/14/16  
**First Reported:**

**Job ID/Site:** PJ29642; Sonoma State University, 1801 E. Cotati Avenue, Rohnert Park CA 94928  
**Date(s) Collected:** 06/13/2016

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Lab Number</th>
<th>Asbestos Type</th>
<th>Percent in Layer</th>
<th>Asbestos Type</th>
<th>Percent in Layer</th>
<th>Asbestos Type</th>
<th>Percent in Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-01</td>
<td>11774923</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layer: White Plaster</td>
<td></td>
<td>11774923</td>
<td>ND</td>
<td></td>
<td></td>
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<td>Layer: White Skimcoat</td>
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<td></td>
<td>ND</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Total Composite Values of Fibrous Components:** Asbestos (ND)  
**Cellulose (Trace)**

---

Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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<table>
<thead>
<tr>
<th>Quantity</th>
<th>Sample Location</th>
<th>Material Description</th>
<th>Sample Number</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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</table>

**Bulk Sample Request Form**

<table>
<thead>
<tr>
<th>Client No: C17151</th>
<th>ESD No: P29462</th>
</tr>
</thead>
</table>

| Time: 4:30 PM | ESI-MS | Ref: 1234 |

**Special Instructions:**

- Client: [Client Name]
- Phone: [Client Phone Number]
- Date: [Date]
- PM: [PM]
- Location: [Location]
Appendix C

Photographs

Photo #1: Cable pulling

Photo #2: Cable pulling

Photo #3: Cable pulling

Photo #4: Drilling holes in plaster
| Photo #5: Drilling holes in plaster | Photo #6: Drilling holes in plaster |