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Limited Asbestos Survey Report

PG&E Kern Power Plant 2401 Coffee Road Bakersfield, California

RGA Project No: PGE35613

June 5, 2014

Prepared for:

Redacted

Pacific Gas & Electric 2401 Coffee Road Bakersfield, CA 93308

Prepared by:

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

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Report prepared b				
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Report reviewed by	y:			
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Limited Asbestos Survey Report

Kern Power Plant 2401 Coffee Road Bakersfield, California

1. Executive Summary

The following is a report of the limited asbestos survey performed at the former Kern Power Plant located at 2401 Coffee Road in Bakersfield, California. The survey was performed by Mr. Redacted Certified Asbestos Consultant (CAC) and Mr. Redacted Redacted Certified Site Surveillance Technician (CSST) with RGA Environmental, Inc. (RGA) on May 28 and 29, 2014. The scope of the survey requested by Pacific Gas & Electric (PG&E) was limited to accessible suspect asbestos containing boiler refractory materials associated with four remaining boilers at the captioned site.

The subject property consists of a former power plant and electrical switchyard. The above grade structures of the former power plant have been demolished with exception of four boilers. The boilers and supporting structures were reportedly previously abated of friable asbestos containing materials (ACMs). The supporting structures for the four boilers were imploded in August of 2013. The implosion caused the two structures with paired boilers to fall onto the backside of the boiler structure. Currently the front walls of the boilers are facing up with the bottom and side walls partially accessible.

The interior of the boilers and the majority of the areas on the front, north and south facing boiler walls are deemed inaccessible because of hazardous conditions related to the current structural component integrity and/or the potential for loose or falling debris. The top, backside, and inward facing sidewalls¹ of the boilers were completely inaccessible. In addition the interior and exterior surfaces of the penthouses, mud, and steam drums were inaccessible. Differing refractory materials may exist on or in these inaccessible areas of the boilers. The former bottoms of the boilers and bases of the sidewalls were most accessible. RGA collected the majority of the sampled materials and current site locations.

During the limited survey, twenty-five (25) suspect ACMs were identified and sampled. Eleven (11) of the suspect materials were reported with asbestos content. Table I summarizes the materials identified as ACMs during the survey. Table II summarizes the materials that were reported as negative for asbestos content.

RGA Environmental, Inc. 510.547.7771

¹ Eastern faces of boilers #1 and #2 and the western faces of boilers #3 and #4

All of the refractory materials sampled were reported by the laboratory as negative for asbestos content. A layer with asbestos content was reported in twenty-three (23) of the eighty-three (83) samples of refractory material submitted for analysis. The majority of the samples with an asbestos containing layer were reported with a concentration of asbestos that is typical of insulating materials. The insulating materials associated with Boilers #1, 2, 3 & 4 and identified by others during pre-demolition testing indicated the asbestos containing insulating materials were friable. The association of these asbestos containing layers with the refractory materials identified by the laboratory therefore suggests the boiler refractory materials are contaminated with friable asbestos containing material. RGA could not visually identify additional layers of material associated with the refractory material during sample collection.

2. Scope of Work

The scope of the survey was as follows:

- □ Inspect the boiler towers (referenced as Boilers #1, 2, 3 and 4) for the presence of suspect ACMs associated with accessible refractory materials as requested by PG&E.
- □ Collect samples of accessible suspect asbestos containing refractory materials to meet the National Emissions Standard for Hazardous Air Pollutants (NESHAPs) protocol. Analyze asbestos bulk samples using polarized light microscopy (PLM) in accordance with EPA's July 1993 method for the determination of asbestos in bulk building materials - EPA 600/R-93/116.
- □ Submit written report including analytical results, regulatory requirements, conclusions and recommendations.

3. Methods and Sampling Strategy

Visual Inspection

Accessible refractory materials were visually inspected using the methods presented in the federal Asbestos Hazard Emergency Response Act (AHERA) regulations (40 CFR, Part 763) as a guideline. AHERA was originally only applicable to schools, however state and federal Occupational Safety and Health Administration (OSHA) and Asbestos School Hazard Abatement and Reauthorization Act (ASHARA) have adopted the AHERA sampling methodology for all buildings and structures subject to renovation or demolition.

Bulk Sampling of Asbestos

Bulk samples of suspect ACM homogeneous materials were collected. A homogeneous material is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in color, texture and age of construction. Examples of homogeneous materials include:

- Pipe insulation produced by the same manufacturer and installed during the same time period;
- Manufactured materials such as brick similar in size, texture, and application of use;
- Troweled on surfacing materials located in contiguous areas.

RGA visually inspected the accessible portions of the four boilers for the presence of suspect refractory materials. As materials were identified, bulk samples were obtained with the aid of a hand tool and placed into individual sampling bags. Each sample was given a discrete identification number, recorded on field notes as well as chain-of-custody forms, and marked on photographs of the boilers. Sample locations indicated on the figures attached in Appendix 2. Photographs of each suspect material sample were also collected. A photograph summary of the materials reported with asbestos content is included in Appendix 3. Refer to accompanying tables and appendices for details on material sample locations and results. Bulk samples were transported to Micro Analytical Laboratory, Inc. (MAL) in Emeryville, California.

Bulk Sample Analysis - Asbestos

MAL is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) for determination of asbestos fibers in bulk materials.

All samples were analyzed using polarized light microscopy (PLM) techniques in accordance with methodology approved by the U.S. Environmental Protection Agency (EPA). As set forth in the Code of Federal Regulations, 40 CFR Part 763, Appendix A to Subpart F, Section 1.2 and 1.7.2.4, the lower limit of reliability detection for asbestos using the PLM method is approximately one percent (1%) by volume. Cal-OSHA defines asbestos containing construction materials (ACCM) as those materials having asbestos content of greater than one tenth of one percent (>0.1%).

When None Detected (ND) appears in this report, it should be interpreted as meaning no asbestos was observed in the sample material above the reliable limit of detection for the PLM method.

Note: Under EPA assessment criteria, if a single sample of a homogeneous material tests positive for asbestos, all areas of that homogeneous material within that building are considered to be asbestos containing.

510 547 7771

4. Asbestos Results

A total of twenty-five (25) homogeneous suspect ACMs were identified. A layer or layers of material in eleven (11) of the suspect materials sampled tested positive for asbestos-content. The materials reported with asbestos content are listed in Table I below.

HM# - Material Description	Material Location	Waste Category	Asbestos Type
3 – Grout Associated with 4"x10" Boiler Tile	Boiler 4 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% CH
5 – Grout Associated with 12"x12" Boiler Tile	Boiler 4 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% AM 20% - 60% CH
7 – Boiler Refractory	Boiler 4 - South Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 20% AM 40% CH
8 – Boiler Curb Tile Mortar	Boiler 2 - Former Bottom at Transition from Bottom to Front and Side Walls	RACM	Mortar: ND Fibrous Debris: <1% AM, Point Count Pending
9 – Boiler Tile, 4"x10"	Boiler 2 - Former Bottom	RACM	Tile: ND Fibrous Debris: <1% - 5% AM 30% CH
10 – Grout Associated with 4"x10" Boiler Tile	Boiler 2 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% CH
11 – Boiler Tile, 12"x12"	Boiler 2 - Former Bottom	RACM	Tile: ND Fibrous Debris: 15% CH, <1% AM
13 – Boiler Refractory	Boiler 2 - South Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 5% CH <1% - 6% AM
20 – Boiler Refractory	Boiler 3 - North Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 50% AM 30% CH
22 – Boiler Tile, 4"x10"	Boiler 1 - Former Bottom	RACM	Tile: ND Fibrous Debris: 20% AM 60% CH
26 – Boiler Refractory	Boiler 1 - North Side Wall	RACM	Refractory: ND Fibrous Debris: 20% - 40% CH 30% AM

TABLE I ASBESTOS-CONTAINING MATERIALS

CH = Chrysotile, AM = Amosite, ND = None Detected, RACM = Regulated asbestos containing material (friable), Cat. I = Nonfriable (note ACM must be reclassified as a RACM if rendered friable during removal), Cat. II = Category II Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal) During the survey the following suspect ACMs listed in Table II were reported negative for asbestos content.

Material Description	Material Sample Location
1 – Boiler Tile Curb Mortar	Boiler 4 - Former Bottom at Transition from Bottom to Front and Side Walls
2 – Boiler Tile, 4" x 10"	Boiler 4 - Former Bottom
4 – Boiler Tile, 12" x 12"	Boiler 4 - Former Bottom
12 – Boiler Tile, 12" x 12"	Boiler 2 - Former Bottom
14 – Boiler Tile Curb Mortar	Boiler 3 - Former Bottom at Transition from Bottom to Front and Side Walls
15 – Boiler Tile, 4" x 10"	Boiler 3 - Former Bottom
16 – Grout Associated with 4" x 10" Boiler Tile	Boiler 3 - Former Bottom
17 – Light Gray Boiler Tile Mortar ¹	Boiler 3 - Former Bottom at Middle Elevation
18 – Boiler Tile, 12" x 12"	Boiler 3 - Former Bottom
19 – Grout Associated with 12" x 12" Boiler Tile	Boiler 3 - Former Bottom
21 – Boiler Tile Curb Mortar	Boiler 1 - Former Bottom at Transition from Bottom to Front and Side Walls
23 – Grout Associated with 4" x 10" Boiler Tile	Boiler 1 - Former Bottom
24 – Boiler Tile, 12" x 12"	Boiler 1 - Former Bottom
25 – Grout Associated with 12" x 12" Boiler Tile Boiler 1 - Former Bottom	

 TABLE II

 NON-ASBESTOS-CONTAINING MATERIALS

¹Note: Material was only observed on Boiler #3 in an area where the boiler tile/brick had been displaced by the implosion or felling of the boilers. RGA could not confirm the presence or absence of a similar (in appearance) material is present on boilers #1, 2 and 4.

5. Discussion and Conclusions

All of the refractory materials sampled were reported negative for asbestos content. ACMs were identified on the surface of majority of the refractory materials associated with boilers #1 - 4. The concentration and type of asbestos reported indicates that the likely sources of the reported asbestos content are former insulating materials. The residue asbestos reported on the surfaces of the refractory materials were not visually identifiable and therefore were not separated during sample collection.

RGA has experienced similar phenomenon with boiler insulations and refractory. The high heat produced during boiler firing can cause asbestos containing insulating materials to fuse to contact surfaces of refractory materials. Complete separation of asbestos containing insulating materials from refractory materials may at times require aggressive eroding of the refractory material during abatement.

Based upon RGA's visual assessment of the boilers, the laboratory data associated with the assessment, and limited access to the refractory materials RGA recommends management of all of the refractory materials associated with Boiler #1 - 4 as contaminated with friable ACM. If additional suspect materials that have not been characterized as ACM or non-ACM in this report are discovered during final dismantlement of the boilers, work should cease until additional testing can confirm or refute potential asbestos content.

Impacting materials containing greater than 0.1% asbestos either through repair, maintenance, or demolition activities triggers numerous regulations enforced by such agencies as OSHA (worker protection) and EPA (environmental exposure, transportation and disposal).

Listed below are the regulations that apply if the materials are removed:

- □ If more than 100 square feet of materials that contain greater than 0.1% asbestos will be removed, the material must be abated by a Cal-OSHA registered asbestos contractor. Regulation: Cal-OSHA 8 CCR 1529 (R).
- □ ACMs that are classified by OSHA as thermal system insulation materials are present in residual amounts. Removal of these materials is considered a Class I activity according to Cal-OSHA regulations. Work practices and engineering controls for Class I work are specified in Cal-OSHA 8 CCR 1529 (g) (4-6).
- □ Friable ACMs greater than 1% asbestos must be manifested, transported, and disposed of as hazardous waste in accordance with the Department of Toxic and Substances Control (DTSC), a division of Cal-EPA. DTSC regulates disposal of asbestos waste. DTSC issues U.S. EPA hazardous waste generator identification numbers.
- □ If more than 160 square feet, 260 linear feet, or 35 cubic feet of friable ACM will be removed, the abatement contractor must notify the San Joaquin Valley Air Pollution Control District (SJVAPCD) ten (10) days prior to removing the material. Regulation: 40 CFR Part 61 Subpart M Section 61.145 (a)(1)(i)(ii).

6. Limitations

RGA Environmental Inc. (RGA) warrants that the findings contained herein have been prepared in general accordance with accepted professional practices as applied by similar professionals in the community at the time of its preparation. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The field and laboratory results reported herein are limited to the materials observed and sampled. Survey report is not an abatement specification. This document is not appropriate for competitive bidding or for use as an asbestos abatement specification.

All areas of the former boiler structures were not accessible at the time of this investigation. RGA cannot confirm the presence or absence of additional or similar suspect materials that may exist in internal areas of the boilers and/or areas specifically excluded by the nature of this assessment.



Appendix 1

Laboratory Results and Chain of Custody Forms - Asbestos

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05/30/2014

05/30/2014

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023
Redacted

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

FROJECT.
FORMER BOILER STRUCTURES KERN POWER PLANT PROJECT NO. PGE 35613
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20E REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

DDO ICOT.

Micro Log In	194220
Total Samples	83
Date Sampled	05/28/2014

Date Received

Date Analyzed

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	1A			
Micro #:	194220-01	Analyst: SC	NONE DETECTED	
BOILER	- BOILER CURB MORTAF #4 - UPPER ELEVATION WEST CORNER	R (WHITE) - WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	18			
Micro #:	194220-02	Analyst: SC	NONE DETECTED	
HM #01 - BOILER	- BOILER CURB MORTAF #4 - UPPER ELEVATION	R (WHITE) - WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	10			
Micro #: *	194220-03	Analyst: SC	NONE DETECTED	
HM #01 - BOILER CENTER	- BOILER CURB MORTAR #4 - UPPER ELEVATION	(WHITE) WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS, Type:
Client #:	2A			
Micro #: 1	194220-04	Analyst: SC		
BOILER	MISC TILE 4" X 10" #4 - UPPER ELEVATION - VEST CORNER	WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS, Type:
Client #:	28			
Micro #: 1	94220-05	Analyst: SC	NONE DETECTED	
HM #02 - BOILER # CENTER	MISC TILE 4" X 10" #4 - UPPER ELEVATION -	WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:

	Redacted	7
		1.73449-14-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
Technical Supervisor		6/2/2014
2		Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by the dibrated by PLM. Asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be detection of small asbestos fibers, and some compact tiles detection limit (reporting limit) of PLM estimation is 1%. The estimation of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are notation ND (or "NONE DETECTED") in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos received in factor of by two sets of analysis are recording to rindividal for fide file were denoted by two sets of analysis are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint composite asbestos is detected, percentages are reported for individual layers. Laboratory descriptions may differ from those given by customers. Quality constructions and description of bulk materials is based on find forms. Labor

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

RGA Environmental, Inc 1466 66th Street Emeryville, CA 94608

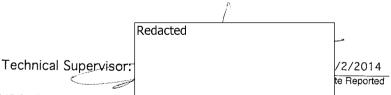
SAMPLE IDENTIFICATION

	PROJECT:	Micro Log In	194220
mental, Inc.	FORMER BOILER STRUCTURES KERN POWER PLANT	Total Samples	83
eet A 94608	PROJECT NO. PGE 35613 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B	Date Sampled	05/28/2014
	REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received	05/30/2014
	· · · · · · · · · · · · · · · · · · ·	Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #	: 2C			
Micro #:	194220-06	Analyst: SC	NONE DETECTED	
BOILER	2 - MISC TILE 4" X 10" R #4 - UPPER ELEVATION - ' WEST CORNER	WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #	3A			
Micro #:	194220-07	Analyst: SC	NONE DETECTED	
BOILEF	MISC. TILE 4" X 10" GROU # 4 - UPPER ELEVATION - 1 WEST CORNER	T WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	3B			
Micro #:	194220-08	Analyst: SC GR	GROUT: NONE DETECTED	
HM #3 - BOILER CENTEI	MISC. TILE 4" X 10" GROUT #4 - UPPER ELEVATION - v R	r VEST FACE	SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	3C			
Micro #:	194220-09 A	nalyst: SC	NONE DETECTED	
BOILER	MISC. TILE 4" X 10" GROUT #4 - UPPER ELEVATION - V WEST CORNER	VEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	4A			
Micro #:	194220-10 A	nalyst: SC	NONE DETECTED	
BOILER	- 12" TILE #4 - UPPER ELEVATION - W VEST CORNER	EST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:



NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use rotanzeu Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014), Basic techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos fraces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by the detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and amphiboles "inchente and winchile), and should be confirmed by TEM. The lower quantitied by calmonate this level cannot be determined by PLM setting and should be confirmed by Tem Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM flom some similar, non-regulated CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be detection of small analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / percentages are reported for individual layers. Interlayer contamination is possible of abeetsos endpecies and percent detection of suble composite asbestos is detected, percentages are reported for individual layers. Interlayer ontamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / percentages are reported for individual layers. Interlayer dotamination is possible among any layers in a sample. Composite a

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DOMINANT

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

ASBESTOS INFORMATION

1023 Redacted

HGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

PROJECT:
FORMER BOILER STRUCTURES KERN POWER PLANT
PROJECT NO. PGE 35613
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

SA ST
回編号

194220

05/28/2014

DOMINANT

Date Received 05/30/2014 Date Analyzed 05/30/2014

OTHER MATERIALS

83

Micro Log In

Total Samples

Date Sampled

SAMPLE IDENTIFICATION

4B		
194220-11 Analyst: SC	NONE DETECTED	
- 12" TILE #4 - MID ELEVATION - WEST FACE R		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
4C		
194220-12 Analyst: SC	NONE DETECTED	
- 12" TILE #4 - LOWER ELEVATION - WEST FACE }		Matrix BINDER, OTHER, MISCELLANEOUS, Type:
5A		
194220-13 Analyst: SC	GROUT: NONE DETECTED	
- 12" TILE GROUT #4 - UPPER ELEVATION - WEST FACE VEST CORNER	SURFACE FIBROUS DEBRIS: 60% AMOSITE SURFACE FIBROUS DEBRIS (CONT.): 20% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS, Type:
58		
194220-14 Analyst: SC	NONE DETECTED	
12" TILE GROUT #4 - MID ELEVATION - WEST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
5C		
94220-15 Analyst: SC	GROUT: NONE DETECTED	
12" TILE GROUT #4 - LOWER ELEVATION - WEST FACE AST CORNER	SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS, Type:
	194220-11 Analyst: SC 12" TILE #4 - MID ELEVATION - WEST FACE 194220-12 Analyst: SC 12" TILE #4 - LOWER ELEVATION - WEST FACE 5A 94220-13 Analyst: SC 12" TILE GROUT #4 - UPPER ELEVATION - WEST FACE 5B 94220-14 Analyst: SC 12" TILE GROUT #4 - MID ELEVATION - WEST FACE 5C 94220-15 Analyst: SC 12" TILE GROUT 44 - LOWER ELEVATION - WEST FACE	Image: Section of the section of th

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	Redacted		<u>_</u>
Technical Supervisor:			5/2/2014 ate Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos winch less than 1%) may not be reliable or actinotic asbestos may be indistinguishable by PLM form some similar, non-regulated should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinotite - asbestos may be indistinguishable by PLM form some similar, non-regulated Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by IEM. More on absetistical interferences may prevent detection of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Sample: notalized analyzed segnately when feasible; if asbestos is detected, percentages are reported for individual layers. Interfaver contamination is possible anong any layers in a sample. The percentages from multiple layers are applicable only to wilboard / joint compound systems; compositing is based on customers descriptions of material as "joint composite asbestos fibers, are denoted by two sets of analysis. This report resonance (action of be within acceptance limits for in acceptance more descriptions of material as "joint composite asbestos containing construction of description of bulk materials are indicated by listing wore than one distinguishand super sort applicable only to wallboard / joint compound systems; compositing is based on customers descriptions of material as "joint composite asbestos is detected, percentages from multiple layers are applicable condition of palyses. This report mus

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SB GT&S 0765877

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

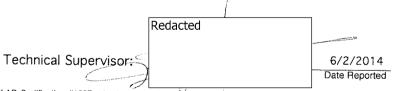
SAMPLE IDENTIFICATION

PROJECT:	Micro Log In	194220
FORMER BOILER STRUCTURES KERN POWER PLANT	Total Samples	83
PROJECT NO, PGE 35613	Date Sampled	05/28/2014
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received	05/30/2014
	Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

				UTHEN MATERIALS
Client #:	7A			
HM #07	194220-16 - REFRACTORY #4 - UPPER ELEVATION FACE	Analyst: SC		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	7B			
Micro #:	194220-17	Analyst: SC	NONE DETECTED	
HM #07 BOILER SOUTH	- REFRACTORY #4 - MIDDLE ELEVATION FACE			Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	70			
Micro #:	194220-18	Analyst: SC	REFRACTORY: NONE DETECTED	
HM #07 BOILER SOUTH	- REFRACTORY #4 - MIDDLE ELEVATION FACE		SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
			Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	
Client #:	7D			
		Analyst: SC	NONE DETECTED	
HM #07 BOILER SOUTH I	REFRACTORY #4 - LOWER ELEVATION FACE			Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	7E	·····		
HM #07 -	REFRACTORY #4 - LOWER ELEVATION	Analyst: SC GR	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 20% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix BINDER, OTHER, MISCELLANEOUS. Type:



NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polariżed Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques foliow the EPA interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection imit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be doted by PLM setting in the report Layers are estimation. PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The calculated by listing more than one distinct layer or material on the report Layers are notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous ample. Composite asbestos recepted on field forms. Laboratory descriptions may descriptions of analyter framiles and escention of forms captered to report tayes are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Control (CC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analy

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DOMINANT OTHER MATERIALS

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023

Redact RGA 1466 Eme

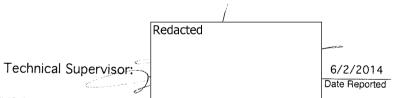
SAMPLE IDENTIFICATION

red	PROJECT:	Micro Log In	194220
Environmental, Inc.	KERN POWER PLANT	Total Samples	83
66th Street ryville, CA 94608		Date Sampled	05/28/2014
•	REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received	05/30/2014
	· · · · · · · · · · · · · · · · · · ·	Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #: 88 Micro #: 194220-21 **REFRACTORY: NONE DETECTED** Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS Matrix BINDER, OTHER, MISCELLANEOUS Type Sample contains heat-altered asbestos; some optical properties may be outside normal limits Client #: 8B Micro #: 194220-22 NONE DETECTED Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER Matrix BINDER, OTHER, MISCELLANEOUS, Type: Client #: 8C Micro #: 194220-23 NONE DETECTED Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER Matrix BINDER, OTHER, MISCELLANEOUS Туре Client #: 9A Micro #: 194220-24 TILE: NONE DETECTED Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE NORTHEAST CORNER SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS Matrix BINDER, OTHER, MISCELLANEOUS Type Sample contains heat-altered asbestos; some optical properties may be outside normal limits Client #: 9B Micro #: 194220-25 TILE: NONE DETECTED Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE SOUTHEAST CORNER SURFACE FIBROUS DEBRIS: 30% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 5% AMOSITE ASBESTOS Matrix BINDER, OTHER, MISCELLANEOUS Туре Sample contains heat-altered asbestos; some optical properties may be outside normal limits



NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polanzed Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 method covers all types of bulk materials and is based on the 1982 method covers all types of bulk materials and is based on the 1982 method covers all types of bulk materials and is based on the 1982 material dependent. Detection of asbestos traces (much less than 1%) may not be reproducible by PLM. Weight % cannot be determined by PLM. Asbestos wilh diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be detection of small analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to "NOASESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos do nealows may descriptions of material as "joint compound systems; compositing is based on customers' descriptions of analysis. Usitomer, all bayes do nealows may descriptions may differ from those given by customers. Quality descriptions for alleries of analysis and ecceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analysis are recommended only dominant non-asbestos materials are indicated. Interferences may prevent detection of small analyzed separately when feasible; if asbestos i

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023

Redacted RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

PROJECT:	Micro Log In	194220
FORMER BOILER STRUCTURES KERN POWER PLANT	Total Samples	83
PROJECT NO. PGE 35613 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B	Date Sampled	05/28/2014
REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received	05/30/2014
	Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #: 9C NONE DETECTED Micro #: 194220-26 Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE SOUTHEAST CORNER Matrix Type: BINDER, OTHER, MISCELLANEOUS. Client #: 10A NONE DETECTED Micro #: 194220-27 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER Matrix BINDER, OTHER, MISCELLANEOUS. Туре Client #: 10B NONE DETECTED Micro #: 194220-28 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER Matrix Type: BINDER, OTHER, MISCELLANEOUS. Client #: 100 GROUT: NONE DETECTED Micro #: 194220-29 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS Matrix BINDER, OTHER, MISCELLANEOUS. Type Client #: 11A TILE: NONE DETECTED Micro #: 194220-30 Analyst: SC GR HM #11 - 12" TILE BOILER #2 - UPPER ELEVATION - EAST FACE SURFACE FIBROUS DEBRIS: 15% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS CENTER Matrix BINDER, OTHER, MISCELLANEOUS. Type: Sample contains heat-altered asbestos; some optical properties may be outside normal limits

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		and a second
Technical Supervisor:		6/2/2014
Construction		Date Reported
AP Certification #1037 Analyses		

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses follow the EPA Interim Method for Buik Insulation Samples (1982), and EPA-600/R93116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM form some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchile), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be detection of by PLM some similar, non-regulated cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM asbestos is detected, percentages are reported for individual layers. Interfayer contamination is possible among any layers in a sample. The analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interfayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of analyzed sample. Composite asbestos for the acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst interfails. Unless agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, laboratories, laboratory descriptions and ylicer from those given by customers. Quality control (QC): all results have been determined to be within acceptable condit

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DOMINANT

OTHER MATERIALS

4

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023

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SAMPLE IDENTIFICATION

PROJECT:
FORMER BOILER STRUCTURES KERN POWER PLANT
PROJECT NO. PGF 35613
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In	194220
Total Samples	83
Date Sampled	05/28/2014
Date Received	05/30/2014

Date Analyzed 05/30/2014

DOMINANT OTHER MATERIALS

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	11B			
Micro #:	194220-31 - 12" TILE	Analyst: AR	NONE DETECTED	
BOILER	#2 - MID ELEVATION - E	AST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	110			
1	194220-32 - 12" TILE	Analyst: AR MO	NONE DETECTED	
BOILER	#2			Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	12A			
Micro #:	194220-33	Analyst: AR	NONE DETECTED	3 % CELLULOSE
HM #12 BOILER CENTER	12" TILE GROUT #2 - UPPER ELEVATION	- EAST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	12B			
Micro #: 1	194220-34	Analyst: AR	NONE DETECTED	3 % CELLULOSE
HM #12 - BOILER NORTH \$	12" TILE GROUT #2 - MID ELEVATION - EA SIDE	AST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	12C			
Micro #: 1	94220-35	Analyst: AR	NONE DETECTED	3 % CELLULOSE
HM #12 - BOILER CENTER	12" TILE GROUT #2 - LOWER ELEVATION	- EAST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER

Redacted Technical Supervisor: 6/2/2014 Date Reported 1

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014), Basic techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM. Asbestos with diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; indust, debris, and soweyer, reliable determination of asbestos-percent at this level cannot be deterding or TEM weight percent analysis are recommended. Only dominant non-asbestos may be indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneous sample, or in all layers of a heterogeneous sample. Configured to NO Cor NONE DETECTED[®] in a homogeneous sample, or in all layers of a heterogeneous ample. Composite asbestos routes are escipted on feed forms. Laboratory descriptions is addition and encorption of built acterial as "joint compound systems; compositing is based on customers' descriptions of analers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of analyte asbestos is detected percenting as "joint compound systems; compositing is based on customers' descriptions of analyte asbestos is detected, percentages are reported for individual layers. Interfaver contamination is possible among any layers in a sample. The abore the report tessestor descriptions of a heterogeneous sample. Original contested as "joint compound". Control (CC): a

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DOMINANT OTHER MATERIALS

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redac

RGA 1466 Eme

SAMPLE IDENTIFICATION

ted	PROJECT:	Micro Log In	194220
Environme 66th Street ryville, CA 9		RES Total Samples	83
	PROJECT NO PCE 35612		05/28/2014
	REANALYZED AND Layer Description REVISE CUSTOMER REQUEST. Replaces report of 05/3	D PER Data Received	05/30/2014
		Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	13A			
HM #13	194220-36 An - REFRACTORY #2 - UPPER ELEVATION - NO	alyst: AR GR	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 5% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 6% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS, Type:
HM #13	13B 194220-37 An - REFRACTORY #2 - UPPER ELEVATION - NO	alyst: AR MO /	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 2% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
HM #13 -	13C 194220-38 And REFRACTORY #2 - MIDDLE ELEVATION - NC	alyst: AR GR DRTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 2% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 6% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
HM #13 -	13D 194220-39 Ana REFRACTORY #2 - LOWER ELEVATION - NO	alyst: AR MO / PRTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
HM #13 -	13E 194220-40 Ana REFRACTORY #2 - LOWER ELEVATION - NO	alyst: AR MO /	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Redacted Technical Supervisor: 6/2/2014 Date Reported

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

PROJECT:	
FORMER BOILER STRUCTURES	
KERN POWER PLANT	
PROJECT NO. PGE 35613	
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	

194220

Total Samples 83 Date Sampled 05/28/2014 Date Received 05/30/2014 Date Analyzed 05/30/2014

DOMINANT OTHER MATERIALS

Micro Log In

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #: 14A		T
Micro #: 194220-41 Analyst: AR	NONE DETECTED	5 % CELLULOSE
HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER SECTION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 14B		
Micro #: 194220-42 Analyst: AR	NONE DETECTED	5 % CELLULOSE
HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE CENTER SECTION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 14C		
Micro #: 194220-43 Analyst: AR	NONE DETECTED	5 % CELLULOSE
HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER SECTION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 15A		
Micro #: 194220-44 Analyst: AR MO	NONE DETECTED	5 % CELLULOSE
HM #15 - MISC BRICK BOILER #3 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER SECTION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 15B		
Micro #: 194220-45 Analyst: AR	NONE DETECTED	5 % CELLULOSE
HM #15 - MISC BRICK BOILER #3 - UPPER ELEVATION - WEST FACE CENTER SECTION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER

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Technical Supervisor:		6/2/2014
C-J		Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037 Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation is 1%. The estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detected, prevent detected,

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Page 10 of 17

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

> RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

> > SAMPLE IDENTIFICATION

PROJECT:
FORMER BOILER STRUCTURES KERN POWER PLANT
PROJECT NO. PGE 35613 (Report amended 6/2/2014, SAMPLE IDs. 13A - 13E & 20B
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

_1VI)	
Micro Log In	194220

Total Samples83Date Sampled05/28/2014Date Received05/30/2014Date Analyzed05/30/2014

DOMINANT OTHER MATERIALS

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	15C			5 % CELLULOSE
Micro #:	194220-46	Analyst: AR	NONE DETECTED	5 % CELLOLOSE
BOILER	- MISC BRICK #3 - UPPER ELEVATION WEST CORNER SECTION	- WEST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	16A			
Micro #:	194220-47	Analyst: AR	NONE DETECTED	5 % CELLULOSE
BOILER	- MISC. BRICK GROUT #3 - UPPER ELEVATION WEST CORNER SECTION	WEST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	16B			5 % CELLULOSE
Micro #:	194220-48	Analyst: AR MO	NONE DETECTED	
BOILER	- MISC. BRICK GROUT #3 - UPPER ELEVATION - I SECTION	WEST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	16C			
Micro #: -	194220-49	Analyst: AR	NONE DETECTED	5 % CELLULOSE
BOILER	MISC. BRICK GROUT #3 - UPPER ELEVATION - VEST CORNER SECTION	WEST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	17A	· · · · · · · · · · · · · · · · · · ·		
Micro #: 1	94220-50	Analyst: AR	NONE DETECTED	5 % CELLULOSE
HM #17 - BOILER (BOILER MORTAR - LIGH #3 - MIDDLE ELEVATION	T GRAY		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER

Technical Supervisor: Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polanzed Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguistable by PLM form some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by Transmission Electron material is 0.1% asbestos; however, reliable determination of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos: Customers are solet price from those and be there in all aspers of analytical techniques don layers. Or analytical techniques don fall forms. Laboratory descriptions may player in a sample. Customers are solet presonsible or individual layers. Interlayer contamination of some optical properties. Sample heterogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The portentage

5900 HOLLIS STREET, SUITE M - EMERYVILLE, CA 94608 - (510) 653-0824

194220

05/28/2014

05/30/2014

05/30/2014

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023	
Redacted	

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

PROJECT:	Micro Log In
FORMER BOILER STRUCTURES KERN POWER PLANT	Total Samples
PROJECT NO. PGE 35613	Date Sampled
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received
	Date Analyzed

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Oliont #			
Client #:		4	5 % CELLULOSE
	194220-51 Analyst: AR	NONE DETECTED	
HM #17 BOILER	- BOILER MORTAR - LIGHT GRAY #3 - MIDDLE ELEVATION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	17C		5 % CELLULOSE
Micro #:	194220-52 Analyst: AR	NONE DETECTED	5 % CELECLOSE
HM #17	BOILER MORTAR - LIGHT GRAY		
DUILER	#3 - MIDDLE ELEVATION		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	18A		5 % CELLULOSE
Micro #:	194220-53 Analyst: AR	NONE DETECTED	5 % UELLULUSE
BOILER	- 12" TILE #3 - UPPER ELEVATION - WEST FACE VEST CORNER		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	18B		5 % CELLULOSE
Micro #: ·	194220-54 Analyst: AR MO	NONE DETECTED	
	12" TILE #3 - MID ELEVATION - WEST FACE		Malrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	18C		5 % CELLULOSE
Micro #: *	194220-55 Analyst: AR	NONE DETECTED	5 % OFFEOLOSE
BOILER	12" TILE #3 - LOWER ELEVATION - WEST FACE /EST CORNER		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER

 Technical Supervisor:
 6/2/2014

 ELAP Certification #1037. Analyses u
 Analytical SOP PLA

 Definition Bulk Insulation Samples (1982) and EPA-BULKERS, 115 (1983). The 1983 method context all where definition for the second second

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses u follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is qualified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchile), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation. PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / jo

DOMINANT OTHER MATERIALS

83

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

> RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

> > SAMPLE IDENTIFICATION

PROJECT
FORMER BOILER STRUCTURES
KERN POWER PLANT
DRO JECT NO DOE 25612

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

194220

Total Samples	83
Date Sampled	05/28/2014
Date Received	05/30/2014
Date Analyzed	05/30/2014

DOMINANT OTHER MATERIALS

Micro Log In

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

<u></u>				
Client #:				5 % CELLULOSE
	194220-56	Analyst: AR	NONE DETECTED	
HM #19 BOILER WEST F	- 12" TILE GROUT #3 - UPPER ELEVATION ACE			Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	19B	<u></u>		5 % CELLULOSE
Micro #:	194220-57	Analyst: AR	NONE DETECTED	S A SELECEOUL
	- 12" TILE GROUT #3 - MIDDLE ELEVATION ACE			Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	19C			5 % CELLULOSE
Micro #:	194220-58	Analyst: AR	NONE DETECTED	
	- 12" TILE GROUT #3 - LOWER ELEVATION ACE			Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	20A			5 % CELLULOSE
Micro #: *	194220-59	Analyst: AR	NONE DETECTED	
	REFRACTORY #3 - UPPER - NORTH FAC	E		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	20B			
Micro #: *	194220-60	Analyst: AR MO /	REFRACTORY: NONE DETECTED	
	REFRACTORY #3 - MIDDLE - NORTH FAC		SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

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Technical Supervisor;		6/2/2014
1 million and the		Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestoe sin dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM form some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchtie), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneous sample, or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos is detected herewined to no descriptions of material as "joint compound". Customers are

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DOMINANT OTHER MATERIALS

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

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> > SAMPLE IDENTIFICATION

cted	PROJECT:	Micro Log In	194220
A Environmental, Inc.	FORMER BOILER STRUCTURES KERN POWER PLANT	Total Samples	83
6 66th Street eryville, CA 94608	PROJECT NO. PGE 35613	Date Sampled	05/28/2014
	(Report amended 6/2/2014, SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Date Received	05/30/2014
		Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #	200			· · · · · · · · · · · · · · · · · · ·
1	200			
Micro #:	194220-61	Analyst: SC	REFRACTORY: NONE DETECTED	
HM #20 BOILEF	- REFRACTORY 3 #3 - MIDDLE - NORTH F#	ACE	SURFACE FIBROUS DEBRIS: 30% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 50% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	20D			
Micro #:	194220-62	Analyst: SC	NONE DETECTED	
HM #20	- REFRACTORY			
BOILEH	1 #3 - LOWER - NORTH FA	CE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	20E			
Micro #:	194220-63	Analyst: SC	NONE DETECTED	
	- REFRACTORY #3 - LOWER - NORTH FA	CE		Matrix BINDER, OTHER, MISCELLANEOUS, Type:
Client #:	21A			
Micro #:	194220-64	Analyst: SC	NONE DETECTED	
BOILER	- BOILER CURB MORTAR #1 - UPPER ELEVATION - EAST CORNER	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	21B			
Micro #:	194220-65	Analyst: SC	NONE DETECTED	
HM #21 BOILER CENTER	- BOILER CURB MORTAR #1 - UPPER ELEVATION -	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS, Type:

Redacted Technical Supervisor: 6/2/2014 Date Reported

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

THOJEGT.
FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

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Γ:	Micro Log In	194220
RUCTURES	Total Samples	83
GE 35613	Date Sampled	05/28/2014
E IDs. 13A - 13E & 20B ption REVISED PER report of 05/31/2014.}	Date Received	05/30/2014
	Date Analyzed	05/30/2014

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	21C			· · · · · · · · · · · · · · · · · · ·
Micro #:	194220-66	Analyst: SC	NONE DETECTED	
BOILER	- BOILER CURB MORTAR #1 - UPPER ELEVATION EAST CORNER	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	22A			
Micro #:	194220-67	Analyst: SC	NONE DETECTED	
BOILER	- MISC. BRICK 4" X 10" #1 - UPPER ELEVATION EAST CORNER	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	22B			
Micro #:	194220-68	Analyst: SC GR	BRICK: NONE DETECTED	
HM #22 BOILER CENTER	- MISC. BRICK 4" X 10" #1 - UPPER ELEVATION - }	EAST FACE	SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 20% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	22C			
Micro #:	194220-69	Analyst: SC	NONE DETECTED	
	- MISC. BRICK 4" X 10" #1 - UPPER ELEVATION -	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	23A			
Micro #: 1	194220-70	Analyst: SC		
HM #23 - BOILER SOUTHW	MISC. BRICK GROUT #1 - UPPER ELEVATION - VEST	EAST FACE		Matrix BINDER, OTHER, MISCELLANEOUS. Type:

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

ASBESTOS INFORMATION

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RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

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FORMER BOILER STRUCTURES KERN POWER PLANT
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

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Total Samples83Date Sampled05/28/2014Date Received05/30/2014Date Analyzed05/30/2014

Micro Log Ir

SAMPLE IDENTIFICATION

Client #:	23B			3 % CELLULOSE
Micro #:	194220-71	Analyst: WC	NONE DETECTED	
HM #23 BOILER CENTER	- MISC. BRICK GROUT #1 - UPPER ELEVATION R	- EAST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	23C			3 % CELLULOSE
Micro #:	194220-72	Analyst: WC	NONE DETECTED	
	- MISC. BRICK GROUT #1 - UPPER ELEVATION	- EAST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	24A			3 % CELLULOSE
Micro #:	194220-73	Analyst: WC	TILE: NONE DETECTED	2 % FIBROUS GLASS
	- 12" TILE #1 - UPPER ELEVATION	- EAST FACE	COMPOUND: NONE DETECTED	Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	24B			3 % CELLULOSE
Micro #:	194220-74	Analyst: WC	NONE DETECTED	3 % CELECIOSE
	- 12" TILE #1 - MID ELEVATION - E	AST FACE		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	24C			3 % CELLULOSE
	194220-75	Analyst: WC		
HM #24 - BOILER	12" TILE #1 - LOWER ELEVATION	- EAST FACE	COMPOUND: NONE DETECTED	Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER

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Technical Supervisor		6/2/2014
· C		Date Reported

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Page 16 of 17

05/30/2014

05/30/2014

MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted

RGA Environmental, Inc. 1466 66th Street Emeryville, CA 94608

SAMPLE IDENTIFICATION

FRUJEUI,
FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 200 REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)

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Micro Log In	194220
Total Samples	83
Date Sampled	05/28/2014

Date Received

Date Analyzed

ASBESTOS INFORMATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

Client #:	25A			3 % CELLULOSE
Micro #: 194220-76 Analyst: WC HM #25 - 12" TILE GROUT		Analyst: WC	NONE DETECTED	3 % CELLOLOSE
BOILER	#1 - UPPER - EAST FACE	<u>.</u>		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	25B			3 % CELLULOSE
	194220-77	Analyst: WC	NONE DETECTED	U NOLLOLOOL
HM #25 - BOILER #	12" TILE GROUT #1 - MIDDLE - EAST FAC	E		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	25C			3 % CELLULOSE
Micro #: 1	94220-78	Analyst: WC	NONE DETECTED	
HM #25 - BOILER #	12" TILE GROUT ¥1 - LOWER - EAST FACI	E		Matrix ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #:	26A			
Micro #: 1	94220-79	Analyst: WC GR	REFRACTORY: NONE DETECTED	
HM #26 - I BOILER #	REFRACTORY #1 - UPPER ELEVATION -	EAST FACE	SURFACE FIBROUS DEBRIS: 20% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #:	26B			
	94220-80	Analyst: WC	REFRACTORY: NONE DETECTED	
HM #26 - I BOILER #	REFRACTORY 11 - UPPER ELEVATION -	EAST FACE	SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

	Redacted	
Technical Supervisor:		6/2/2014
Construction of the second		Date Reported

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MICRO ANALYTICAL LABORATORIES, INC. BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)

1023 Redacted RGA Environme 1466 66th Street Emeryville, CA 9	PROJECT: FORMER BOILER STRUCTURES KERN POWER PLANT PROJECT NO. PGE 35613 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B REANALYZED AND Layer Description REVISED PER CUSTOMER REQUEST. Replaces report of 05/31/2014.)	Micro Log In Total Samples Date Sampled Date Received Date Analyzed	194220 83 05/28/2014 05/30/2014 05/30/2014
		Date Analyzed	05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT OTHER MATERIALS

Client #: 26C		
Micro #: 194220-81 Analyst: WC HM #26 - REFRACTORY BOILER #1 - MIDDLE ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 26D		
Micro #: 194220-82 Analyst: WC HM #26 - REFRACTORY BOILER #1 - MIDDLE ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 26E Micro #: 194220-83 Analyst: WC GR HM #26 - REFRACTORY BOILER #1 - LOWER ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Redacted	
- - -	6/2/2014 Date Reported
	Redacted

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarizéd Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is below ~1 µm may not be detected by PLM. Asbestos in dust, debris, and some compact materials, including floor tiles, cannot be determined by PLM. Asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite- asbestos may be indistinguishable by PLM from some similar, non-regulated CaI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; indust, debris, and sowever, reliable determination of asbestos-bercent at this level cannot be done by PLM from some similar, non-regulated caI-OSHA definition of asbestos-containing construction material is 0.1% asbestos; indust, debrity is indicated by IEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The estimation, PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asalyzes from multiple layers are applicable only to %DBESTOS DETECTED^T in a homogeneous sample, or in all layers of a heterogeneous ample. Composite asbestos from multiple layers are applicable on of bulk materials in for on shared on field forms. Laboratory descriptions of analyzed in advestory to report analysis. This report multiple layers are applicable to determined to be by PLM estimation is possible anong any layers in a sample. The percentages from multiple layers are applicable only to %DBESTOS DETECTED^T in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos or individual layers. This report shall not be reproduced except in full without the approval of Micro

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1466 66th Street Emeryville, CA 94608 ACM BULK SAMPLE DATA SHEET ENVIRONMENTA (510) 547 7771 Redacted PLM Analysis (Analyze all samples) Stop Analysis at First Positive PAGE OF Point Count Analysis (400-point) 94220 110 ject Wame/Address/Building No. : Former Boller Structures, Kern Piner RGA Project #: PGE 3413 Pla ___ Sampled By: Redacted Sample(s) Sent To: ____RGA' K_MAL ___ Other:___ Sampling Date: 5-28-14 ***<u>E-MAIL REPORT TO</u>: SEE ABOVE PROJECT MANAGER (PM) *** _____K24Hrs __48Hrs __3-5 Days Material Description BOILER CURB MORTAR (WHITE) HM# 01 Sample ID Sample Location & Material Location 1 Quantity: IA BOILER H - UPPER ELEVATION - WEST FACE - SW COLNER 2 18 BOILER HH - UPPER ELEVATION - WEST FACE 3. ic BOILER #4 - UPPER ELEVATION - WEST FACE - CENTER HM# OZ Material Description: MISC TILE ٠. 4" × 10" Sample ID Sample Location & Material Location Ц. BOILER HY - UPPER ELEVATION - WEST FREE - SW CORNER -Quantity: ZA. 9. BOILER # 4 - UPPER ELEVATION - WEST FACE - CENTER '2 b 6 BOMER HU- UPPER ELEVATION - WEST FACE - P NW 20 HM# CORNER 03 Material Description: MISC. TILE 4" X10" GROUT Sample ID Sample Location & Material Location BONER #4-UPPER ELEVATION - WEST FACE - SW CORNER Quantity: 71 3A 8, BOILER #4 - UPPER ELEVATION - WEST FACE - CENTER :3D 9: 30 BOILER HH-UPPER ELEVATION-WEST FACE - NW CORNER HM# Material Description: 12" TILE 04 Sample ID Sample Location & Material Location 10, Quantity: 44 BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER Ц, HB BOILER HH - MAPER ELENATION - WEST FACE - CENTER 12, BOILER #4 - LOWER ELEVATION - WEST FACE - CENTER 46 HM# Material Description: 12" TILE 05 GROUT Sample ID Sample Location & Material Location 13-Quantity: BOILER #4-UPPER ELEWATION - WEST FACE - SW CORNER 5A 14. BOILER #4 - OVER ELEVATION - WEST FACE - CENTER 58 15, 50 BOILER . HT LOWER ELEVATION - WEST FACE - JE CORNER Relinquished By: Redacted Redacted Signature: Received By: Date/Time: 5-30-14 Signature: Relinquished By: Date/Time: S/30/14 松灯 Signature: Received By: Date/Time: Signature: Date/Time:

ENVIRONM	IA ENTAL	1466 66 ⁶¹ Street Emeryville, CA 94608 . (510) 547-7771	ACM BULK SAMPLE DATA SHEET
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			Stop Analysis at First Positive PAGE ZOF
			Point Count Analysis (400-point) 9422-0
LIOJECT NAME	Address/Building No.	Former Brilling al	tures, Kern Boikr Plant
RGA Project#	-PGE 35613.	Sampled By: Redact	tores, Kern Boiker Plant
ountrefal pette	IC: KGA MA	L. Others	
*** <u>E-MAIL RE</u>	PORT TO: SEE ABO	VE PROJECT MANAGER (PM)	TAT: TAT: Y24Hrs48Hrs 3-5 Days
HM#	Material Descript		
Sample ID	Sample Location	& Material Location	
director and			Quantity:
		Sand Conce Store	
·			
11112			
HM# 07	Material Descript	ion: Refractory	
Sample ID	Sample Location	& Material Location	Quantity:
	Bouch #4	UPPER ELEVATION _	South Face
<u>78</u>	BOILER#4 - m	DOLE ELEVATION - > So	hubble Thank
ic	BOILER #4-1	MIDDLE ELEVATION - "	
HM# 07	Material Descripti	ON! CONTINUE	- 11
Sample ID	Sample Location	& Material Location	
70	BOILER #4 -	LOWER ELEVADON -	Quantity:
· 7E	BOILER #4 -	LAUER ELEMENTARY	
		MOCK EDEMENTARY	li tr
HM# 08	Material David I		
Sample ID	Material Descriptie	Material Location	URTAR
8A	Boursia Ho	Material Location	Quantity:
- 8B	Buss #2 -	UPPER ELEVATION - EX	Quantity:
80	+2 -	<u> </u>	
-11174	BOILER #2 -		
HM# DQ Sample ID	Material Descriptio	m: MISC TILE "XI	(o ¹¹
<u>9</u> A	POILER #2 -	UPPER ELEVATION -	W W FACE- NE COENER W
<u>98</u>		UPPER HENOTION -	Eren Carlo A
90	BOILER #2-	UPPER ELEVERT	- BAST FACE - SE CORNER
•	*		W THEE - SE CORNER
	······································		
			·····
Relinquished By:	Redacted	Red	lacted
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DV.		Signature:	~aut I IIIe;

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â	BR	A	1466 66 th Street	
<u> </u>	VIRONM	ENTAL	Emeryville, CA 94608 . (510) 547-7771	ACM BULK SAMPLE DATA SHEET
Reda	acted			PLM Analysis (Analyze all samples)
				Stop Analysis at First Positive PAGEOF
				Point Count Analysis (400-point) 10127()
Proj	eçt Name/	Address/Building No.	FORMER BOILER STO	UTURES - KERAL POWER PLANT
			Sampled Dr. Incuacic	
ठवाप्	pre(s) Sent	10: $\underline{RGA} \times \underline{MA}$	L Other	Damping Date: /26//
	MALLRE	CORT TO: SEE ABO	VE PROJECT MANAGER (PM)	TAT:Rush 224Hrs48Hrs3-5 Days
.HM	# 10 nple ID	Material Descript	ion MISC TILE 4"	XIO! GODIE
Jan		Statement of the local division of the local division of the	w material LOCation	0
8	103	Bar CA AL	- UPPER ELEVATION	- EAST FACE - NE CORNER
9	<u>_</u>		с. <u>И</u>	- " "- SE CORVER
'	100	XL		- " " - SE LORNER .
1	≠ // 1ple ID .	Material Descripti	ion: 12" TILE	
	-14A	Barce # 2	& Material Location	Quantity:
	118	Bouce #2	- CELER RUEVATION	Quantity:
2	110	BOILER #2	- MID ELEVAN	L II II - CENTER
HM#	ŧ 12	Material Description		-
	ple ID	Sample Location	on: 12" TILE Caro & Material Location	· · · · · · · · · · · · · · · · · · ·
<u>"</u>	120	BOILER #2	-UPPER ELENATION	Quantity: EAST FACE - CENTER
·	12.B	BOLER #2	-MID RLEVATION - 1	ATT FACE - CENTER
7	126	BOILER #2	- LOWER ELEVATION - 5	EAST FACE - CENTER
HM#		material Descriptio	D. RETERMENT	The Frace - CENTER
sam a	ple ID	Sample Location &	Material Location	Quantity:
1	13A	BOILER # 2	- UPPER ELENATION -	BOOTH FACE
 	13B	BOILER #2	- " UPPER ELECTRON -	ii N .
HM#	136	BOILER #2.	- MIDDLE ELEVATION -	// 1/
	13 Die ID	Material Descriptio	n: Continuen	
	Contraction of the local division of the loc	Sample Location &	Material Location	Quantity:
<u> </u>	132	BONKO H-	LOWER ELEVATION	N - NORTH FACE
		· ····································	- LOWER ELENATIO	
· .				
			· · · · · · · · · · · · · · · · · · ·	3
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	ushed By:	-	Signature:	Date/Time:Date/Time:Date/Time:

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ENVIRONM		1466 66 th Street Emeryville, CA 94608 . (510) 547-7771	ACM BULK SAMPLE DATA SHEET
Redacted			PLM Analysis (Analyze all samples)
			PAGE 4 OF 4 Point Count Analysis (400-point)
Project Normal			
	Endress/Building No. : PGE 35613	FORMER BOILER BT	RUCTURE - KERN BUDGE PLANT
MUMIIUjett#	To:	Sampled By:	Sampling Date: 5/29/14
***E-MAIL RE	$\frac{100}{20} = \frac{100}{100} 1$	Other:	
LING# 1.1			
HM# 14 Sample ID	Material Descripti	on Marce Boiler CUR	B MORTAR
	Cample Locauoli	or material Location	
	P	MARK ELEVATION - (W) &	ACE - SW LORNER SECTION
	Luicen of		"- CENTRE SECTION
Sector and the sector of the s	BOILER #3 -		11 - NW LORNER SECTION
HM# 15 Sample ID	Material Descriptio	on: MISC BRICK	
ISA	Ban co + C	Anterial Location	Quantity:
158	2	PPER-ELENATION-	(W) FACE - SW LORNER SECTION
. <u></u>	00115k #3 -	UPPER ELEVATION	(W) 54 (8
190	POILER #3-	UTTER ELEMATION JU) FACE - NW CORDER COMPANY
Sample ID	The second secon	4 INSC 60.0V /	ROUT
16A		Material Location	· Our d'
	2	UPPER ELENATION (W)	FACE - SW CORNER SEEDEN
	14100 JA3 - 1	THER ELEVATION (W)F	VE-IEATTED SEMMA)
16C	DUILER #3.	-UPPER ELENATION (U)FACE-/NW) LORNER SEAT
HM# เว Sample ID	material Descriptio	$\mathbf{R} = \mathbf{h} \mathbf{h} \mathbf{h} \mathbf{h} \mathbf{h} \mathbf{h} \mathbf{h} \mathbf{h}$	- Lutte Gray.
17A	Comple Locauon e	material Location	Quantity:
178	Bower #3 -	MIDDLE ELEVATION	
17Ė	BOILER # 3 -		
		4 4	
HM#_18 Sample ID	Material Description Sample Location &	n: 12" TILE	
18A	Cromera Boul		Quantity:
188	Bauen -	MID - OPPER ELE	WATTON - (W) FACE - (NW) CORNER
186		prod allanous	W FACE
	- 14K #3.	- LOWER ELEVATIO	U- (W) FACE - (SAN) CORNER.
	· · · · · · · · · · · · · · · · · · ·		
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		·	0
Relinquished By:	Redacted	Signature:Red	acted Date/Time: 5-30-14
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Dy:		Signature:	Date/Time:

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			1466 66 th Street Emeryville, CA 94608 . (510) 547-7771	ACM BULK SAMPLE DATA SHEET
	Redacted			PLM Analysis (Analyze all samples)
				Point Count Analysis (400-point) 94220
	Project Name/A	Address/Building No.	: FORMER BOILER STRUCT	WEES - KERN POWER PLANT
	rour roject n		Sampled By: Reddcied	² Sampling Date: <u>5-27-14</u>
1	***E-MAIL REI	To:RGA'MA	AL Other: OVE PROJECT MANAGER (PM) **	
	HM# 19	CALL TO. BEE AB	DVE PROJECT MANAGER (PM) **	
	Sample ID	Material Descrip	tion 12" TILE LAROU	
S	6 19A	Locadol	i or material Location	Quantity:
. 5	6777	Bouce #3	- UPPER ELEMATION	- (W) FACE
	6 190	BOILER E	3 - I misole Elevan	
		DUILLER #	3 - LOWER ELEVATION	·
	HM# 20 Sample ID	Material Descript	tion: <u>REFRACTOR</u>	
G		Brin Bo th 3		Quantity:
ĥ	' H	Boy CR 11 3	- UPPER (N) FACE	
6		Bar an the	- MIDDLE - W ; I	
·		POILER #3		
	Sample ID	Sample Location	tion: CONTINUE & Material Location	
6	2 200	BOILER #3-		Quantity:
Б	3 202	BONER #2	- LOWER - (N) FACE	
			(N) FACE	1
	HM# ZI	Material Decoriet	iont 2	
	Sample ID	Sample Location	ion: BOILER CURB MOR-TH & Material Location	
bh	214	BOILER #1 -	- UPPER ELEVATION - (E) FA	Quantity:
69	21B	BOILER #1 -	4 11-(E) FA	CE - SE CORNER
होव	21C	BONER # 1-		CE - CENTER
	HM# 22		on: MISC. BRICK 4"	LE - NE CORNER
	Sample ID	Sample Location	& Material Location	
67.		BOILER #1 -	UPPER ELEVATION - (E) 9	Quantity:
69		BOILER #1-	4 N + 18	FACE- CENTER
69	220	BONER #1 -	· · · · · · · · · · · · · · · · · · ·	PACE CENTER PACE - LOWER.
•	· .	÷	(<u>L</u>)	PROX - COWER.
		·		
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×	Relinquished By:	Redacted		
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	Relinquished By:		Signature: Signature:	Date/Time:
	Received By:		Signature:	Date/Time:
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ARG	A	1466 66 th Street Emeryville, CA 94608 . (510) 547-7771	ACM BULK SAMPLE DATA SHEET
Redacted		. (310) 341-7771	PLM Analysis (Analyze all samples)
			Stop Analysis at First Positive PAGE
			Point Count Analysis (400-point) [94220
'roject Name/A	ddress/Building No.	FORMER BOILER SOR	ICTURE KERN POWER PLANT
RGA Project #:_	PGE 3561	3Sampled By: Redacte	Sampling Date: 5-29-14
ample(s) Sent T	o:RGA'MA	LOther:	TAT: Rush V24Hrs 48Hrs 3-5 Dave
* <u>E-MAIL REP</u>	ORT TO: SEE ABO	VE PROJECT MANAGER (PM)	***
HM# 23	Material Descrip	tion misc. BRICK	SROUT!
Sample ID	Sample Location	& Material Location	Quantity:
23A	BOILER # 1 -	UPPER ELENATION -	
23B	Bonee #1-		E) FACE (GENTER)
230	BYLER #1	u u	E Stack -
HM# 24	Material Descrip	tion: 12" TUTE	
Sample ID		& Material Location	Quantity:
24A		- UPPER ELEVATIO	
243	BOILER #	1 - DEER ELEVATIO	i - I GI RMA
WC		1 - LOWER ELENAN	
HM# 25	Material Descript		
Sample ID		tion: 12" TILE GR & Material Location	Quantity:
Z5A	BOILER #	1 - UPPER - (E) 1	
25B		(- MIODUE - (E)	
250	BOILER 4		
HM# 26	Material Descript		
Sample ID		& Material Location	Quantity:
24A	BOILER #1	- NPPER ELEVAN	ON - (E) FACE
2408	BOLLER #	- UPPER ELEURT	ION FILL IL
210	BOILER # 3	- MIDDLE ELEVE	APION-11 11
HM# 26	Material Descript		
Sample ID		& Material Location	Quantity:
260	BOILER #1	- MIDDLE ELEV	ATION - (E) FACE
20 E	BOILER # 1	- LOWER ELEV	ATION - 11 IL
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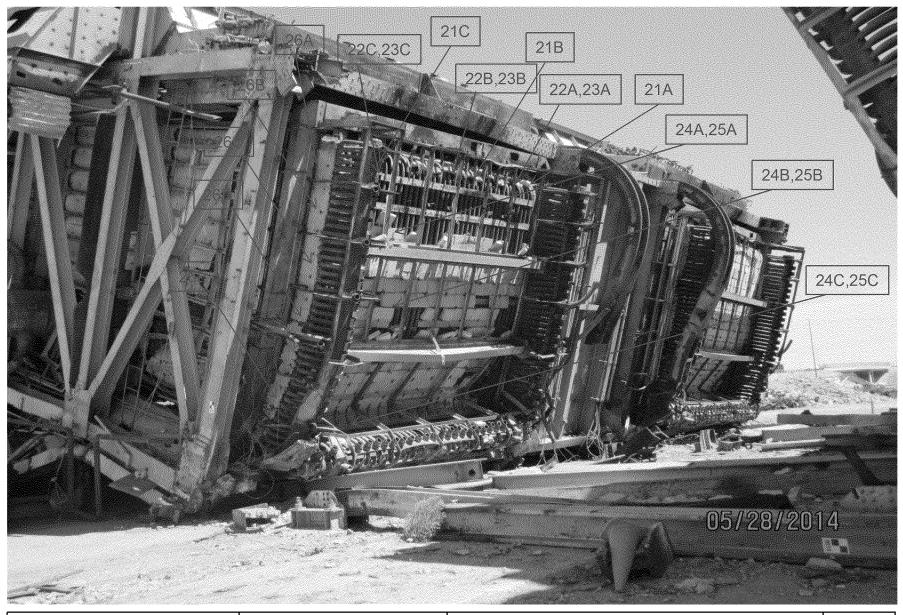
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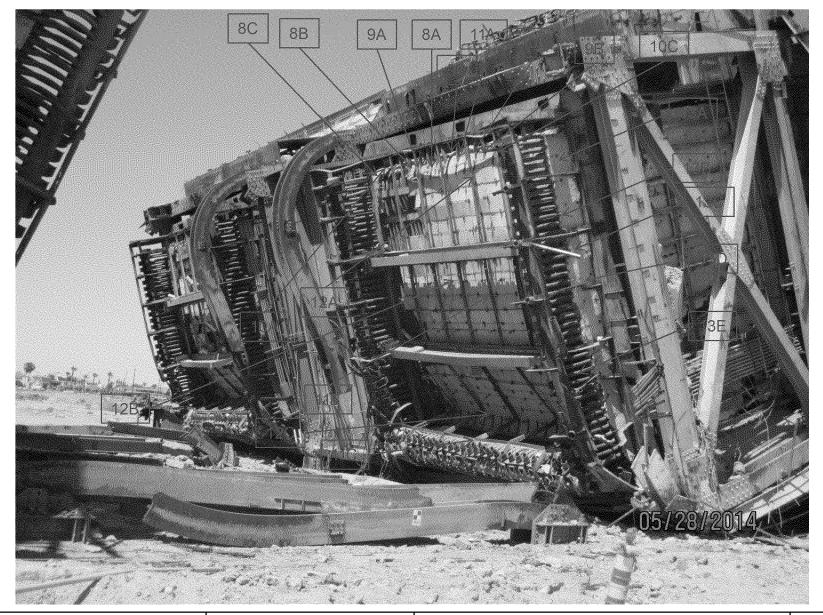
Appendix 2

Sample Location Figures

www.rgaenv.com



≜ RGA	Sample Location Figure	Kern Power Plant – Boiler 1 Bakersfield, California		
ENVIRONMENTAL	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 1



ENVIRONMENTAL	Sample Location Figure	Kern Power Plant – Boiler 2 Bakersfield, California			
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 2	



≜ RGA	Sample Location Figure	Kern Power Plant – Boiler 3 Bakersfield, California			
ENVIRONMENTAL	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 3	



	Sample Location Figure	Kern Power Plant – Boiler 4 Bakersfield, California		
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 4



Appendix 3

Positive Asbestos Sample Photos

www.rgaenv.com



Sample 10C Misc. Tile Grout - Boiler 2



Sample 11A12 Inch Tile - Boiler 2



Sample 13A Refractory - Boiler 2



Sample 13B Refractory - Boiler 2



Sample 13C Refractory - Boiler 2



Sample 13D Refractory - Boiler 2



Sample 13E Refractory - Boiler 2



Sample 20B Refractory - Boiler 3



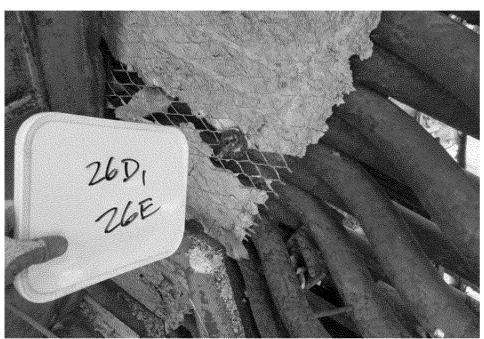
Sample 26A Refractory - Boiler 1



Sample 26B Refractory - Boiler 1



Sample 26C Refractory - Boiler 1



Sample 26D & 26E Refractory - Boiler 1



Sample 3B Misc. Tile Grout - Boiler 4



Sample 5A 12 Inch Tile Grout - Boiler 4



Sample 5C 12 Inch Tile Grout - Boiler 4



Sample 7E Refractory - Boiler 4



Sample 8A Boiler Mortar - Boiler 2



Sample 9A Misc. Tile - Boiler 2



Sample 9B Misc. Tile - Boiler 2



Appendix 4

Site Inspector Certificates

www.rgaenv.com

Redacted

Redacted