

IN THE CIRCUIT COURT OF ST. LOUIS COUNTY, MISSOURI

STATE OF MISSOURI ex rel.	)	
Attorney General Chris Koster and	)	
Missouri Department of	)	
Natural Resources,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No. 13SL-CC01088
	)	
REPUBLIC SERVICES, INC.,	)	
	)	
ALLIED SERVICES, LLC, d/b/a	)	
Republic Services of Bridgeton, and	)	
	)	
BRIDGETON LANDFILL, LLC,	)	
	)	
Defendants.	)	

**AFFIDAVIT OF TODD THALHAMER, P.E.**

Todd Thalhamer, P.E., being duly sworn, states that he has personal knowledge of the facts set forth herein.

1. I, Todd Thalhamer, am over 18 years of age and a resident of the County of El Dorado, State of California.

2. I am currently employed by the State of California as a Senior Waste Management Engineer. In this capacity I perform environmental engineering duties for the State of California in regard to waste removal and emergency projects. Such waste removal and emergency projects include oversight and management of landfill fires, and debris produced by other

emergencies such as fires and earthquakes. I also am an active firefighter, and a lieutenant in the El Dorado Hills Fire District.

3. I have a B.S. in Environmental Resources Engineering . I am a licensed professional engineer. A copy of my C.V. is attached as Exhibit 1 to this affidavit.

4. I am both a national and international expert in landfill fires. I have consulted on over thirty landfill fires in both the United States and abroad. A description of these engagements is set forth on pages 3-6 of my C.V. These landfill experiences include data review, emergency management and consultation, and active fire-fighting.

5. I have authored, co-authored and provided technical review for numerous articles on landfill fire management, including a FEMA publication and peer reviewed articles. These publications are listed on page two of my C.V. I routinely give presentations and workshops on landfill fire control and mitigation throughout the United States and Canada. These presentations are listed on page two of my C.V.

6. In April of 2012, I was retained by the Missouri Department of Natural Resources in regard to the Bridgeton Sanitary Landfill in Bridgeton, Missouri. Since this time, I have provided data review, analysis and expertise in regard to the subsurface fire at the Bridgeton Sanitary Landfill.

I also help the local first responders prepare for emergency situations associated with the subsurface fire at the Bridgeton Sanitary Landfill.

7. As a consultant for the Department part of my duties include reviewing weekly and monthly data packages from data collected by the landfill. This includes temperature and gas data collected from the landfill's infrastructure. I use this data to analyze and advise the Department on the location, scope, and effects of the subsurface fire at the Bridgeton Sanitary Landfill.

8. The Bridgeton Sanitary Landfill is a former rock quarry with waste depths that have varied from 80 to 320 feet. The landfill itself is contained within a Superfund site that contains illegally deposited nuclear waste, the origins of which lie with the Manhattan Project. Much of the radiologically impacted material, or RIM, is deposited in the Westlake Landfill which sits immediately to the north of the Bridgeton Sanitary Landfill. RIM has also been located in the northern half of the Bridgeton Sanitary Landfill which is also known as the "North Quarry." The area where the known RIM is located has been designated "OU-1" by the Environmental Protection Agency.

9. The Bridgeton Sanitary Landfill is also experiencing a subsurface fire. This fire has consumed a significant portion of the southern half or "South Quarry" of the Bridgeton Sanitary Landfill.

10. One of the concerns from a public health and safety standpoint is what would happen if the subsurface fire reached the RIM located in the North Quarry, or if the fire surfaced and carried into Westlake Landfill which is covered with heavy vegetation. If the fire reaches the RIM, this could lead to the off-site migration of RIM into the community. Contact between the fire and the RIM could also increase the generation of radon gas which poses a public health risk.

11. In addition to the subsurface fire migrating from the South Quarry into the RIM impacted areas of the North Quarry, another risk to the community is an independent subsurface fire starting in the North Quarry in or near areas impacted by RIM.

12. Due to the public health risk posed by the RIM, landfill gas data and temperature readings from the North Quarry are closely monitored.

13. There are multiple elements that are essential to tracking the movement or development of a subsurface fire. A decrease in methane production, and increase in temperature and carbon monoxide can be evidence of a subsurface fire, or a precursor or warning sign that a subsurface fire is about to occur. Increases in nitrogen and oxygen are also indicative of air intrusion into the landfill. Intrusion of oxygen into the waste mass of a landfill can contribute to or cause a subsurface fire.

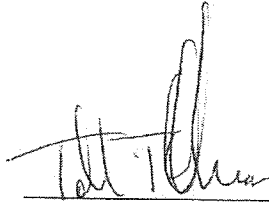
14. In December 2014, data submitted to the Department by the Defendants showed changes in the gas composition and temperature data in the far northeast section of the North Quarry near Operable Unit 1 Area 1. This included a significant decrease in methane, and an increase in nitrogen for the following wells: Gas Extraction Wells ("GEWs") 3, 4, 5, 6, 44R, 45R, 47R, and 49. In addition, the presence of CO was detected in five wells in the North Quarry.

15. Due to the presence of RIM, and in order to track the progression of the subsurface fire or the presence of a new fire in the North Quarry, it is essential from an engineering standpoint to know exactly what conditions are occurring, on a frequent basis, in the North Quarry. The best method to accomplish this is by installing two additional Temperature Monitoring Probes or "TMPs" in the North Quarry, and equipping them with real-time data transmittal technology, in addition to obtaining weekly down-hole temperature readings from North Quarry gas extraction wells GEW-2, -3,-4, -5,-42R, -45R,-46R,-47R,-48,-49 and monthly CO data from GEW -2,-3,-4,-5, -8,-42R,-45R,-46R,-47R,-48,-49,-53, and -55 until such a time that the landfill gasses and temperatures return to a steady state condition.

16. This data, and the installation of the two TMPs is necessary to confirm both the progression of the subsurface fire, and to detect whether a new subsurface fire occurs in the North Quarry, especially in relation to the

location of the RIM. Without this data, the Department will lack the information necessary to timely inform the community whether a fire may impact the RIM, and curtail the ability to plan and/or mitigate the possibility of off-site migration of RIM. As shown by the subsurface fires in the South Quarry, subsurface fires in landfills also produce a significant settlement, toxic gases, landfill odors, increased leachate production and water pollution. The ability to track the location of a subsurface fire through the gas well and TMP data requested by the Department is essential to mitigating its harmful effects on the community and environment. Without sufficient and timely data concerning the location of the subsurface fire, the Department's ability to plan and prepare for a North Quarry Landfill fire is significantly hampered.

FURTHER AFFIANT SAYETH NOT.



Todd Thalhamer, P.E.

STATE OF CALIFORNIA )

COUNTY OF El Dorado ) ss

Subscribe to and sworn before me, a notary public in and for said County and State this 07 day of January, 2015.

\_\_\_\_\_  
Notary Public

My commission expires: 11-16-18.

SEE ATTACHED  
NOTARY CERTIFICATE

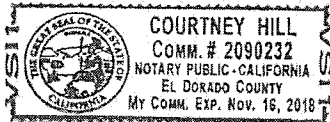
A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of El Dorado

Subscribed and sworn to (or affirmed) before me on this 07  
day of January, 2015, by Todd Laurence  
Thalhamer

proved to me on the basis of satisfactory evidence to be the  
person(s) who appeared before me.



(Seal)

Signature

A handwritten signature in cursive script, appearing to read "Crill", written over a horizontal line.

**Todd Thalhamer, P.E.**  
Waste Management Engineer  
August 2014

**Contact Information Hammer Consulting Services**

Cell Number 530.391.2230

e-mail:ltfire88@gmail.com

**Department of Resources Recycling and Recovery (CalRecycle), 1001 I Street, Sacramento, CA, 95682**  
Office number 916.341.6356 e-mail:todd.thalhamer@calrecycle.ca.gov

**Current Positions****CalRecycle, Waste Management Engineer****1992 to Present**

Performing environmental engineering duties for state removal and emergency projects. Note: The California Integrated Waste Management Board (CIWMB) became CalRecycle in 2010.

**Hammer Consulting Services, President****2006 to Present**

Providing practical solutions and training to landfill and tire fires outside California. Privately consulted on waste fires in Austria, Mexico, Panama, and the United States. See project list for details.

**El Dorado Hills Fire District, Lieutenant****1998 to Present**

Acting as a fire officer for the El Dorado Hills Fire Department. Supervising fire crews during response.

**US Environmental Protection Agency, Region IX, Interagency Personnel Assignment****2008 to 2012**

Providing technical assessment and analysis for landfill fires and gas control systems in Region IX.

**Key Waste Fire Experience**

Responded to significant (level 4) landfill fire in Panama City, Panama at the request for the US Embassy and Presidential Office of Panama. Developed a suppression plan that successfully extinguished the landfill fire and reduce smoke emission impacting the City of Panama.

Established California's first multi-agency disaster incident management team. May 2011.

Performed duties as the Operations Chief at the San Bruno Pipeline Explosion, San Bruno California. Coordinated the removal of 35 residential structures and other debris; directly supervised a debris incident command team that consisted of multiple state and county agencies, contractors, waste haulers, environmental consultants, and health and safety consultants. September 2010.

Performed duties as the Operations Chief at the first Cal/EPA coordinated residential structure removal project from a major wildland fire in South Lake Tahoe, CA. Developed a multi-agency debris incident management team and project specifications and scope of work for the removal of 256 structure burned by a wildfire. July 2007.

Acted as the project engineer for the CIWMB's Special Waste Division at the Tracy Tire Fire Remediation Project. Supervised and directed the remediation of the 7 million burned tires. 1999 to 2006.

Acted as the Heavy Equipment Branch Leader for both private firefighting and heavy equipment resources at the Fresno Debris Fire Incident, January-February 2003. Directly supervised two construction/removal companies and a private industrial firefighting company. January 2003.

Perform duties as the Incident Commander for the Tracy Tire Fire Suppression Project. Directed a team of firefighters, equipment operators, and safety professionals in extinguishing the longest burning tire fire in the United States, December 2000

Assist US Environmental Protection Agency's Emergency Response Team in Guam during a tire fire of 1,000,000 tires. Provided suppression guidance and remedial options to the government of Guam, January 1999.

**Education****Humboldt State University****1986-1992**

B.S. Environmental Resources Engineering with a concentration in Hazardous Waste Management.

Licenses	Registered Professional Civil Engineer for the State of California, No. C055197	1996 to Present
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**Publications**

1. *Aluminum Waste Reaction Indicators in MSW Landfill*, ASCE Journal of Geotechnical and Geoenvironmental Engineering, March 2012, Contributing Author
2. *Detection of Aluminum Waste Reactions and Waste Fires*, ASCE Journal of Hazardous, Toxic and Radioactive Waste, October 2011, Contributing Author
3. *Guidance for Conducting Emergency Debris, Waste and Hazardous Material Removal Actions Pursuant to a State or Local Emergency Proclamation*, California Environmental Protection Agency, October 2011, Contributing Author
4. *A New Way to Manage Structural Fire Debris from a Catastrophic Wildfire ("The Angora Protocols")*, 11<sup>th</sup> International Fire and Material Conference, San Francisco, USA, 2009, Author
5. *Landfill Fires: Their Magnitude, Characteristics, and Mitigation*, US Fire Administration May 2002, Technical Advisor
6. *Tracy Tire Fire Site Assessment of Tire-Derived Pyrolytic Oil-Affected Soil and Groundwater*, White Paper, California Integrated Waste Management Board, June 2007, Co-Author
7. *Landfill Fire Guidance Document*, White Paper, California Integrated Waste Management Board, April 2001, Author
8. *Burning Rings of Fire I and II*, California State Fire Marshal Office, 1999 and 2004 Technical committee

**Presentations**     **Detection, Evaluation, and Suppression of Waste Fires**, Stark Consultants, Inc.  
Multiple courses offered nationwide (Pennsylvania, Illinois, Indiana, Missouri) from 2008-present: *Advanced short course exploring the engineering, health, and environmental impacts of waste fires.*

**Other Presentation**

2014 Landfill Fire Control Workshop and Training Burn, Comox Valley Regional District and Fire Authorities  
 2014 Landfill Fire Control Workshop, Solid Waste Association of North America, British Columbia.  
 2012 Landfill Fires: Detection, Evaluation, and Suppression, Missouri Dept. of Natural Resources  
 2012 Solid Waste Association of North America Northern Lights Chapter Conference: The Cleanup: Disasters and the Aftermath of Waste, Keynote Address, "Taking Command in a Disaster,"  
 2012 US EPA OSC Conference, Waste Fires, Investigation, Evaluation and Response  
 2011 Rubber Manufacturers Association Conference on Waste Tire Fires, Colorado  
 2011 US EPA OSC Conference, Waste Fires, Investigation, Evaluation and Response  
 2010 Continuing Challenge Hazmat Workshop Waste Fire, Investigation, Evaluation and Response  
 2010 US EPA OSC Conference, Waste Fires, Investigation, Evaluation and Response  
 2008 International Tire Conference, Tire pile fires and regulations  
 2008 Landfill Fire Workshop, British Columbia, Canada  
 2006 Landfill Fire Trainings, Ohio EPA  
 2002-05 Radiation Emergencies for 1st Responders, Awareness Course, Various Fire Departments  
 2002 US EPA Emergency On-Scene Coordinator Conference Speaker: "Tire Fire Lessons, History and Case Study"  
 2001 Continuing Challenge Hazmat Workshop Speaker and Instructor: "Heavy Equipment Operations And Associated Safety Issues"  
 2000 California Environmental Health Association Symposium Speaker: "Waste Tire Fire in Guam and California"  
 1999 US EPA Emergency On-Scene Coordinator Conference Speaker: "Nightmare on 38<sup>th</sup> Street, Site History and Perspective of the Discovered Radioactive Source"  
 1999 Continuing Challenge Hazmat Workshop Speaker and Instructor: "Everything You Wanted to Know about Radiation"  
 1998 Landfill Gas Assessment Symposium Speaker: "LF Gas Monitoring and Subsurface Fires"  
 1997 CAL EPA Enforcement Symposium Speaker: "Environmental Crimes Case Study"

**Certifications**     Cal/OSHA Hazardous Materials Incident Response Operations  
 Supervisors of Hazardous Waste Workers  
 Various Radiation Safety Courses  
 US EPA Introduction to Hazard Categorization and Field Screen Training  
 Basic Forest Firefighter Training Course 1988, Basic Fire Engine Operations  
 Completed the 40-Hour Hazardous Material Incident Response Course {29 CFR 1910.120} at the California Specialized Training Institute  
 Cal OSHA Confined Space Rescue "Awareness" (Cal OSHA Title 8, Section 5156 thru 5158)  
 First Responder EDH Fire Department, CPR, and American Red Cross First Aid  
 California Fire Service Training and Education System (CFSTES) Fire Command 1A, 1C

Various Firefighter certificates  
 FEMA National Incident Management System 100, 200, 300, 400 and 700  
 Williams Hazard Industrial Firefighting Course

<b>Productions</b>	<b>MythBusters</b> - Provided environmental compliance, safety, and fire consulting for two 2013 episodes.
<b>Regulations</b>	Working knowledge of solid waste and hazardous waste regulation through the Resource Conservation and Recovery Act (RCRA), Clean Air Act (CAA) and the Clean Water Act (CWA). Working knowledge of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) on how to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Working knowledge of California and Federal Occupational Safety and Health Administration (OSHA) regulations for work safety for both the construction and fire industries.
<b>Standards</b>	Working knowledge and expertise in EPA's new source performance standards (NSPS) as it relates to landfill gas and subsurface landfill fires. Working knowledge of American Society of Testing and Materials (ASTM) for soil, waste, tire, and air. Also familiar with industrial hygiene, environmental, and occupational health and safety guidelines, methodologies, protocols, and best management through the American Conference of Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH).
<b>Awards</b>	2014 Continuing Challenge Hazardous Materials Emergency Response Workshop –Responder of the Year Award 2014 United States Coast Guard Public Service Commendation Award – Oakland Estuary Cleanup Project 2007 Sierra Business Council 2020 Vision Award – Leadership in Protecting the Environment 2008, 2005, and 2003, 2002- El Dorado Hills Fire Volunteer of the Year 2003 California Legislature Assembly Resolution, Members Resolution No. 126, Recognized and thanked for his outstanding efforts in containing the Archie Crippen Debris Fire in Fresno County 2002 City of Sonoma Proclamation for exceptional project engineering
<b>Civil Cases</b>	<b>John Michael Abicht, et al., Plaintiffs vs. Republic Services of Ohio, Defendants.</b> Waste fire expert for the Plaintiffs, Weitz and Luxenberg . <b>State of Texas vs. Zumwalt,</b> Helotes Debris Fire. Waste fire expert for the State of Texas, Office of the Attorney General of Texas and the Department of Environmental Quality <b>State of California vs. Crippen,</b> GOH Debris Fire. Waste fire expert for the State of California, Office of the Attorney General and CalRecycle <b>State of Idaho, Dept. of Environmental Quality Enforcement Case.</b> Waste fire expert for the State of Idaho, Office of the Attorney General
<b>US EPA Cases</b>	<b>USEPA and DOJ vs. Republic, Forward Landfill,</b> Waste fire expert for the US EPA and Department of Justice, Sacramento Office <b>USEPA and DOJ vs. Waste Management, Waimanalo Gulch Landfill,</b> Waste fire expert for the US EPA and Department of Justice, San Francisco Office <b>USEPA and DOJ vs. County of Maui, Central Maui Landfill,</b> Waste fire expert for the US EPA and Department of Justice, San Francisco Office

#### Waste Disaster Projects

- 2012 - Keynote Address "Taking Command in a Disaster," at the Solid Waste Association of North America Northern Lights Chapter Conference: The Cleanup: Disasters and the Aftermath of Waste
- 2010 - San Bruno Pipeline Disaster: Client: Cal/EPA, CalRecycle. Lead the recovery team at the San Bruno Pipeline Disaster. Performed duties as the Operations Chief and coordinated the removal of residential structure debris, hazardous waste, and asbestos. Developed project specifications and scope of work for the removal of 34 structures and other debris destroyed by 30 inch natural gas pipeline.
- 2007 - Angora Structural Fire Debris Removal. Client: Cal/EPA, CIWMB. Performed duties as the Operations Chief at the first Cal/EPA coordinated residential structure removal project from a major wildland fire in South Lake Tahoe, CA. Developed project specifications and scope of work for the removal of 256 structures burned by a wildfire.

## Waste Fire Projects (Evaluations, Investigations, Publications, Presentation)

- 2014 Lake County Wood Debris Fire, Emergency Response to implement an fire suppression plan and fire break, Lake County Solid Waste District
- 2014 Iqaluit Dump Fire, Iqaluit, Canada. Provide initial consultation on suppression options, foam usage, health and safety issues and air emission related to smoldering solid waste and associated dioxin release.
- 2014 Pasco Sanitary Landfill, Washington. Provide initial consultation to both the responsible party and the State of Washington on the impacts and issues with fire suppression at landfills.
- 2014 George Town Landfill Fire, Cayman Islands. Press inquiry (Cayman Free Press=) on the toxicity and hazards of a landfill fires.
- 2014 Harrelson Materials Management, Louisiana. Press ([www.shreveporttimes.com](http://www.shreveporttimes.com)) inquiry on subsurface smoldering events and impacts to the community.
- 2014 to 2012 –Bridgeton Landfill Smoldering/Oxidation Event, St Louis Area, Missouri. Client: Missouri Department of Natural Resources. Provided an evaluation and review of a reported subsurface oxidation event. [Hammer Consulting Services]
- 2013-Cerro Patacon Landfill Fire, Panama. Client: Government of Panama. Provided emergency response services, technical oversight, and firefighting services for the Panamanian Waste Officials during landfill fire.
- 2012 - Contributing Author *Aluminum Waste Reaction Indicators in MSW Landfill*, ASCE Journal of Geotechnical and Geoenvironmental Engineering
- 2012 to 2009 - Forward Landfill Fire and Gas Issue. Client: US EPA, Region IX. Provided technical review, comments, and legal support for the landfill fire and gas control issue.
- 2012 to 2007 - Waimanalo Gulch Landfill Heating Event, Hawaii. Client: US EPA, Region IX. Provided technical review and comment to the heating event along the liner.
- 2012 to 2007- Central Maui Landfill Fire and Heating Event, Hawaii. Client: US EPA, Region IX. Provided technical review and comment to the fire and heating event.
- 2012 to 2010 - Azusa Tire Monofill Fire, California. Client: CalRecycle. Provided a review of the fire and evaluation of future expansion plans.
- 2010 - Instructor for Waste Fires, Investigation, Evaluation and Response, US EPA, Florida
- 2010 - Instructor for the Continuing Challenge Hazmat Workshop - Waste Fires, Sac, California
- 2010 - Contributing Author of "Aluminum Waste Reaction Indicators in MSW Landfill" ASCE Journal of Geotechnical and Geoenvironmental Engineering, October 2010
- 2009 - Philippines Landfill Fire Discussions, Technical Assistance, World Bank
- 2009 - Instructor for Waste Fires, Investigation, Evaluation and Response, US EPA, Florida
- 2009 - Instructor for Waste Fire Course, Short Course on Detection, Evaluation, and Suppression, Client: Paid Training, Indianapolis, Indiana
- 2009 - Instructor for Waste Fire Course, Short Course on Detection, Evaluation, and Suppression, Client: Paid Training, Chicago, Illinois
- 2009 to 2007 - Kailua-Kona Landfill Fire Suppression Project, Hawaii. Client US EPA, Region IX. Provided technical review and comment to the suppression plan.
- 2008 - Instructor for Waste Fire Course, Short Course on Detection, Evaluation, and Suppression, Client: Paid Training, Hershey, PA
- 2008 - Instructor for Landfill Fire Seminars, B.C., Canada
- 2008 - Instructor for International Tire Conference, San Diego California 2008 - Instructor/Presenter
- 2008 - Instructor/Presenter for International Tire Conference. Client: Cal/EPA, CIWMB. Presented information on tire storage, tire regulations, and tire fire response.
- 2008 to 2007 - Lawson Illegal Disposal Site Subsurface Debris Fire, Torres Martinez Reservation, California. Client: Cal/EPA, CIWMB and US EPA, Region IX. Provided technical review and comment to the operation and site investigation.
- 2008 to 2006 - Countywide Landfill Fire Issue, Ohio. Client: Ohio EPA. Discussions concerning landfill fire issues, review of infrared surveys, landfill operations including gas tuning logs, data trend analysis, and site recommendation.
- 2007 - City of Kingston Landfill Fire, Jamaica. Client: Solid Waste Authority for Jamaica. Provided technical assistance to a landfill fire.
- 2007 - Helotes Debris Fire, San Antonio, Texas. Client: City of Helotes and Bexar County Commissioners Court. Provided technical review of the incident. Also provided a presentation of a previous debris fire and discussed site issues and risk associated fire suppression.
- 2006 - Landfill Fires Guidance Document Final, CIWMB

- 2006 - Candlestick Point Subsurface Fire, San Francisco, California. Client: Cal-EPA, CIWMB. Performed duties as the incident commander for the suppression project. Project included representatives from San Francisco Fire Department, US EPA, Region IX, California Department of Parks and Rec, and San Francisco Health Department
- 2006 - Minimize Landfill Fire and Losses, Audio Conference, Client: Solid Waste Report, Speaker, Washington D.C.
- 2003 to 2006 - Tracy Tire Fire Remediation Project, San Joaquin County, California. Client: Cal-EPA, CIWMB. Supervised and directed the remediation of a tire fire site, in which 7.5 million tires burned. The project included the excavation and transportation of 387,000 tons of hazardous waste and contaminated soils.
- 2006 - Landfill fire, Australia, Pollution Response Agency. Client: Australia Pollution Response Agency and US EPA Region IX. Provided technical assistance with the landfill fire.
- 2004 - Chalan Pago Kajiya Hardfill Facility Fire, Guam. Client: Guam EPA. Provided technical and suppression guidance on the debris fire.
- 2003 - Yulupa Elementary Playground Tire Chip Fire Removal, Santa Rosa, California. Client: Cal-EPA, CIWMB and Bennett Valley Union School District. Supervised and directed the removal of burnt tire chips from a playground. Also collected samples and coordinated responsible agencies for the district.
- 2003 - Crippen (GOH - Fresno Debris) Debris Fire, Fresno, California. Client: Cal-EPA, CIWMB. Acted as Heavy Equipment Branch Leader for the suppression project. Supervised both municipal and private fire fighters during the suppression efforts. Also acted as a technical lead to the City of Fresno, County of Fresno, and US EPA, Region IX.
- 2003 - Woodlake Sanitary Landfill, Loretto, Minnesota. Client: Foth & Van Dyke and Assoc., Inc. and the State of Minnesota. Provide an evaluation of a rapid oxidation subsurface event at the landfill. [Hammer Consulting Services]
- 2003 - Idaho Tire Recovery Pile Evaluation, Lincoln County, Idaho. Client: State of Idaho, Office of the Attorney General. Provided an assessment of a number of tire piles and evaluated the fire hazards and environmental impact from a potential tire fire. Prepared an assessment report as a technical expert for tire fires.
- 2002 - Cogen Dump Los Angeles County Subsurface Fire, Closed Facility, California. Client: US EPA Region IX - Richard Martyn, OSC. Provide a review of LFG data and provided technical support to determine if a subsurface fire was present.
- 2002 - Greenhill Road Illegal Landfill/Debris Fire, Johnston, Rhode Island. Client: US EPA, Region I. Consulted and analyzed site data from the subsurface fire. Provided recommendation for monitoring probes, suppression techniques, and health and safety procedures and protocols. [Hammer Consulting, private venture]
- 2002 - Superior Greentree Landfill Fire, Kersey, Pennsylvania. Client: Superior Greentree Landfill, LLC. Consulted and analyzed site data concerning a rapid oxidation subsurface event. [Hammer Consulting Services]
- 2002 - Instructor/Presenter for Tire Fire Response, US EPA On-Scene Coordinator (OSC) Readiness Conference, Tampa, Florida. Client: US EPA.
- 2002 - Naco Landfill Fire, Naco, Mexico. Client: US EPA, Region IX, Emergency Response. Provided technical guidance on the suppression project to US EPA.
- 2001 - Developed a Response to Landfill Fire Guidance Document, Internal Document. Client: Cal-EPA, CIWMB.
- 2001 - Hunter's Point Landfill, US Navy, San Francisco, California. Client: Cal-EPA, CIWMB and US EPA, Region IX. Provided technical review of a suppression plan for the subsurface fire and provided site recommendations.
- 2001 - Shredded Tire Facility in Ohlsdorf, Austria. Client: Strauss Investor Services, Inc. and Austria Environmental Protection. Provided observations and recommendation on the smoldering rubber waste pile. [Hammer Consulting Services]
- 2000 - Tracy Tire Fire Suppression Project, San Joaquin County, California. Client: Cal-EPA, CIWMB. Acted as Incident Commander for the suppression project. Supervised and directed the suppression of the longest burning tire fire in United States history.
- 2000 - Instructor/Presenter for Environmental Suppression Workshop, Sacramento County, California. Client: Various Fire Departments and Regulatory Agencies.
- 2000 - Andersen Air Force Base Landfill Cap Evaluation, Guam, USA. Client: US Air Force. Performed a site investigation and evaluation of a suspected landfill fire. [Hammer Consulting, private venture]
- 1999 - Illegal Green Waste Pile, Guam USA. Client: Guam, EPA and state fire department. Consulted and recommend suppression options for the fire.
- 1999 - Cajon Illegal Landfill Fire, San Bernardino County, California. Client: San Bernardino County Fire (State funded project through CIWMB). Provided consultant oversight for air monitoring and sampling. Also recommended a suppression/remediation plan for the site.
- 1998-1999 - Hawaiian Island Landfill Fires, Hawaii. Client: State of Hawaii Public Works. Provided general training via the Internet on subsurface fires and suppression options.
- 1998 - Ordot Tire and Landfill Fire, Guam, USA. Client: US EPA Region IX, Emergency Response. Performed site investigation and evaluation on the concurrent tire and landfill fire. Provided suppression options and recommendations to the incident commander. Confirmed the present of a subsurface fire and developed a suppression plan.

- 1998 - Tracy Tire Fire, San Joaquin County, California. Client Cal-EPA, CIWMB. Acted as a state responder to the tire fire and provided suppression options and recommendations to the incident commander.
- 1997 - Westley Tire Fire, Stanislaus County, California. Client Cal-EPA, CIWMB. Acted as a state responder to the tire fire and provided suppression options and recommendations to the unified command.
- 1997 - Lone Pine Landfill Fire, Inyo County, California. Client: County of Inyo, Department of Environmental Health Services (State funded project through CIWMB). Performed a site investigation and evaluation of a subsurface fire. Consulted and recommended suppression options for the fire.
- 1996 - Panoche Tire Fire, Fresno County, California. Client: Cal-EPA, CIWMB. Acted as site responder and engineer and to the tire fire and subsequent remediation project. Also assisted US EPA Region IX, Emergency Response in recommending fire suppression options.
- 1996 - Simi Valley Landfill Subsurface Oxidation Event, Ventura County, California. Client: Cal-EPA, CIWMB. Reviewed and commented on the actions the facility was taking to reduce the oxidation event.
- 1995 - San Marcos Landfill, Underground Landfill Fire, San Diego, California Client: Cal-EPA, CIWMB. Conducted a joint preliminary investigation to determine if an underground fire was present.
- 1995 - Calexico Landfill Fire, Imperial County, California. Client: Cal-EPA, CIWMB. Reviewed and concurred with a consultant's report concerning the successful suppression of a landfill fire. Determination was made based on carbon monoxide results.
- 1995 - Kepco Pinedale Landfill Fire, Fresno County, California. Client: Cal-EPA, CIWMB. Provided comments to the Remedial Action Plan for the landfill fire investigation.
- 1995 - Chateau Fresno Sanitary Landfill Fire, Fresno County California. Client Cal-EPA, CIWMB. Reviewed and commented on a work plan for the phase I of a landfill fire investigation
- 1994 - Gillespie Landfill Fire, San Diego County, California. Client: County of San Diego Public Work Department. Provided regulatory oversight for the suppression and air monitoring plan.
- 1993 - City of Sunnyvale Landfill Fire, Santa Clara County, California. Cal-EPA, CIWMB. Performed a site visit and provide technical oversight.
- 1992 - Coyote Canyon Landfill, Orange County California. Client: Cal-EPA, CIWMB. Reviewed the "Evaluation of Mitigation Methods for Elevated Subsurface Temperatures and Fires" report and observed injection of liquid nitrogen to control the multiple landfill fires.
- 1992 - Berry Street Mall Landfill Fire, Sacramento County, California. Client: Cal-EPA, CIWMB. Acted as site engineer and provided oversight for the subsurface landfill fire and suppression project.