APPENDIX F:
EMERGENCY PLANS

CALPINE GEYSERS

EMERGENCY PREPAREDNESS AND RESPONSE PLAN No. 9.7

RESPONSE TO CHEMICAL RELEASES

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1.0 PURPOSE

1.1 This procedure provides direction for trained personnel to respond to chemical releases (solid, liquid or gas) within the Calpine Geysers facility.

1.2 Off lease responses must be coordinated with applicable agencies, but the initial response may be similar to that of releases within the Geysers, based on location and/or chemical released.

1.3 To establish notification and reporting requirements for unplanned releases of materials and wastes within the Geysers.

2.0 DISCUSSION AND APPLICATION

2.1 Calpine uses and disposes of a variety of potentially hazardous materials and wastes in the Geysers.

2.2 These materials and wastes may be commercial products, naturally occurring, or a by-product of the geothermal process. and may be potentially hazardous to people, the environment or property based on chemical and physical characteristics.

2.3 Response to hazardous materials / waste releases may be conducted only by personnel from within the facility appropriately trained in hazard communication and Emergency Response.

2.4 Unidentified chemicals must be handled as extremely hazardous until their identity is known.

2.5 A hazardous materials or waste release may be classified as an emergency response event requiring a greater level of training and protective equipment if it poses an immediate health threat to responding personnel and/or exceeds threshold quantities.

2.6 Small hazardous material or waste releases that can safely and readily be cleaned up by trained personnel at hand are regarded as incidental.

2.7 Non-hazardous material spills (e.g., steam condensate) that may pose a threat to the environment will be handled by Emergency Responders in accordance with these procedures and other applicable Health and Safety Programs and Procedures.

3.0 PROCEDURE

3.1 Upon discovering a hazardous materials or waste release, the first responder shall notify Control 1 (6911) immediately and give as much of the following information to Control one as possible to determine further actions:

3.1.1 Source of the spill

3.1.2 Material being released

3.1.3 Approximate rate of release

3.1.4 Location of the release

3.1.5 Terrain

3.1.6 Access to release point

3.1.7 Distance from the nearest culvert / drainage ditch / surface water

3.1.8 Safe access to surface water for sampling

3.1.9 Area hazards

3.1.10 Personnel threatened or injured

3.1.11 Personnel and equipment immediately available to contain & control the release

3.1.12 Actions reccommended / taken

3.2 Upon receiving the report of a possible release of hazardous materials or waste, Control 1 shall:

3.2.1 Obtain the information required on the Operator on Duty Checklist: Chemical Response.

3.2.2 If people have been injured or the public is immediately threatened call 911 to advise them of the situation with as much relevant information as possible following the steps in the Operator on Duty Checklist.

3.2.3 Initiate other responses (e.g., medical) in accordance with the appropriate Emergency Response Procedures and checklists.

3.2.4 Immediately notify the on call EH&S representative if the release is a liquid and is running into or is in proximity of a drainage ditch or culvert and is being released in a quantity that makes it probable that the material will reach a surface water.

3.2.5 Dispatch spill sampling kit and support personnel and equipment as needed.

3.2.5.1 As appropriate, dispatch an employee to connect the GERT Vehicle to the Spill Response Trailer and proceed to the spill scene.

3.2.6 Call for additional outside resources as is deemed necessary (e.g. vacuum trucks or spill response companies).

3.2.7 Dispatch personnel to appropriate guard gates to guide any outside response personnel to the site of the chemical release.

3.2.8 Provide map with highlighted surface water locations and access roads to the responders if needed.

3.2.9

Page !GPP Emergency to notify response and management personnel in accordance with notification guidelines.

<u>INSTRUCTIONS TOTHE INCIDENT COMMANDER</u>

2.1 The first trained emergency responder **ON SCENE**, will act as interim IC until released by a designated IC. Initial responsibilities in order of **PRIORITY** are:

2.1.1 If outside responders have been requested, provide an assessment of release location through Control 1. Include: injuries, potential for fire, location, terrain, amount released, rate of spread, watercourses threatened, weather, and other exposures.

2.1.2 Conduct a hazard analysis of the situation to determine safety of Calpine or outside responders. See Chemical Information Sheets for information on each Chemical:

RELEASE OFFENSIVE VS DEFENSIVE ACTIONS Offensive Response actions can be initiated provided ALL of the following criteria are met:	
1. PERSONNEL TRAINING	Four Hazardous Material Technicians are available to respond using the buddy system with back-up.
2. MATERIAL IDENTIFIED	Unidentified materials must be regarded as extremely hazardous and require thorough planning in conjunction with a trained Safety Officer.
3. FLAMMABILITY LOW	Personnel cannot enter flammable atmospheres (> 10% LEL).
4. PPE	PPE specific to the released material is on site.
5. DECONTAMINATION	Suitable decontamination equipment must be set up before entry.
6. OUTCOME	Plan established for offensive response must have a high probability of stopping continued release.
7. ESCAPE ROUTE	All personnel have a planned, accessible escape route and safety zone at all times.

If any of these criteria cannot be met, then only take defensive response actions. Defensive actions well back from the spill may include building berms to prevent spread or direct materials away from sensitive exposures. PPE will be worn.

2.1.3 In the absence of the Health and Safety Supervisor, the IC shall upon arrival appoint a designated SAFETY OFFICER for the incident.

2.1.4 The IC shall communicate to incoming responders any changes in release status, and the location and assignment of all emergency responders.

2.1.5 It is the IC's and the Safety Officer's responsibility to insure that all responders at the incident are using the required and appropriate safety equipment. Responders without proper protective equipment shall not be allowed to participate in spill response activities.

3.0 <u>CHANGES IN INCIDENT COMMAND</u>

3.1 Upon arrival of the outside agency(s), the acting IC shall inform the responders that it is Calpine Policy to form a Unified Command comprised of the outside agency Commander and the Calpine IC.

3.2 After the arrival of the outside agency(s), Calpine responders may continue to assist provided:

3.2.1 The Geysers IC shall have primary jurisdiction over any Calpine personnel assignments to be sure they do not exceed their level of training.

3.2.2 The requested response activities are within the training and capabilities of the Calpine responders.

3.2.3 The continued use of Calpine personnel does not jeopardize facility operations/load.

4.0 POST INITIAL RESPONSE OPERATIONS

4.1 Calpine shall continue to provide an on-site liaison throughout the duration of any outside response.

4.2 Calpine shall continue to provide resources, including personnel, for the duration of the event or until released by the agency IC.

4.3 Calpine non-motorized equipment can be left on scene for use by outside agencies at their request, if, the outside agency commander signs an inventory detailing what equipment is being left under their supervision.

4.4 Upon termination Calpine personnel participation in the incident, it is the responsibility of the IC to:

4.4.1 Ensure that all equipment is returned to service. Vehicles and equipment should be decontaminated, all tools and protective equipment stored properly, any hose cleaned and placed to dry. Spare hose should be used to replace any out of service hose.

4.4.2 Any mechanical defects to vehicles should be noted and reported to the garage so repairs can be made.

4.4.3 Any lost, missing, or damaged response equipment should be reported to the Calpine IC.

4.4.4 Notify Control 1 of incident termination, and report any out of service emergency response vehicles.

4.4.5 Assist outside agencies with decontamination of their equipment, if needed.

RESPONSE STANDARD OPERATING PROCEDURES

1. IDENTIFICATION OF THE MATERIALS INVOLVED

Identification of materials involved in an incident is critical to a safe, effective response. Look at labels or placards, using binoculars if not safe to approach. If possible ask personnel working at the incident scene for material identities. Members of the EHS Department and crew supervisors can provide assistance. Material Data Sheets (MSDS) are available from the 3E Company for all products used by Calpine at The Geysers. These are a valuable resource for identification as well as hazard, protective equipment and response information.

In the case of vehicle accidents, it is possible that materials may be involved which are not intended for The Geysers. The following steps should be used to determine identity:

Do not approach a damaged tank or truck without proper training and controls if you do not know the identity of the material or if you know that it is hazardous. Some materials capable of extreme health and safety hazards are carried in trucks or tank trailers.

Check the shipping papers (manifest) located in the cab of the vehicle to help identify the spill. Department of Transportation (DOT) regulations require that hazardous substances be described on the shipping paper. The shipping papers must be carried within immediate reach of the driver and be readily available to persons entering the driver's compartment. Do not overlook this means of spill identification if the truck causing the spill is still at the scene or can be tracked down.

Trucks hauling qualifying amounts of hazardous materials are required to be marked by a prominent diamond shaped placard carrying a 4 digit ID Number. Identify the contents of a load by looking up this number in the DOT publication Emergency Response Guidebook. If a placard and this number are clearly visible, note them before evacuating the area. Be prepared for hazardous materials even if a placard is not present.

The following information will help to identify materials in common use at The Geysers.

1.1 WET CHEMICALS

Nearly all of the wet chemicals transported and stored at The Geysers are used for hydrogen sulfide abatement or chloride corrosion mitigation. Power plant abatement chemicals include Stretford solution, hydrogen peroxide, caustic soda (sodium hydroxide), iron compounds and polymers.

Because many chemical substances have health and safety dangers, emergency response to wet chemical spills at The Geysers shall be handled only by personnel trained and certified in accordance with 29 CFR 1910.120. Incidental spills may be cleaned up by personnel trained in the hazards of the chemicals and the use of the proper protective clothing.

Liquid chemicals used at The Geysers present health and safety concerns generally associated with direct skin or eye contact, or inhalation of vapors. Refer to the Chemical Information Sheets for more specific information about health and safety measures. In all cases, some form of protective clothing is required when working in direct contact with wet chemicals. Understand the MSDS before working with any chemical. Chemical Information Sheets also describe locations and amounts of chemicals present.

Smaller quantities of hazardous wet chemicals are used in Calpine laboratories.

1.2 DRY CHEMICALS

Dry chemicals are packaged, transported and stored in smaller quantities than wet chemicals. Only trained personnel should approach and contain the spilled material.

Many construction materials and drilling mud additives are manufactured and sold as dry, powder-like substances. Some are hazardous materials while others are of little concern. Dry chemicals used in abatement processes at power plants all have certain health hazards. Because of the complexities involved in trying to identify spilled chemical substances, it is good practice to treat all chemical spills as potential health and safety hazards until proper identification is made. Container labels, if safely approached, can provide identity.

Stay upwind of dry chemical spills and avoid breathing any dust or powder. Isolate the road at the next intersection and do not allow vehicles to enter to minimize blowing and spreading of the substance. Emergency Response to dry chemical spills at The Geysers which may present a danger to personnel or property or

the environment will be handled only by personnel trained and certified in accordance with 29 CFR 1910.120 Emergency Response Procedures. Incidental dry chemical spills may be cleaned up by personnel trained in the hazards of the material and the use of appropriate personal protective equipment.

1.3 PETROLEUM PRODUCTS

Petroleum products used at The Geysers include fuel, such as gasoline, diesel and LPG, solvents and oils for lubrication or heat transfer, corrosion inhibitors, dispersants, used oil, and road oil. These substances pose various safety hazards and if released into the environment, may cause long term damage to plant and animal life. LPG is discussed further under GASES.

Hydrocarbons consist of various volatile components or fractions. At ambient temperatures some of these fractions will evaporate, leaving behind heavier, less volatile components. This ability to vaporize is directly related to how easily an oil or fuel can burn or explode. Gasoline is especially flammable. On cool, damp days fuel is less likely to vaporize and burn than on hot, dry days. This is an important consideration when containment and clean up are in progress.

Evacuate the area around gasoline releases because of high explosion potential. A calibrated flammable gas monitor should be use to approach any petroleum release. Entry is not allowed if 10% of the Lower Explosive Limit is exceeded. Call the fire department to apply foam to reduce the airborne concentration. Conduct containment operations to prevent spread of fuel at a safe distance. If a gasoline tank truck is involved, the 2000 North American Emergency Response Guidebook recommends evacuating the area for a ½ mile radius.

Use non-sparking tools for clean up and keep all ignition sources away. Wear PPE to prevent skin contact and inhalation of vapors. See Chemical Information Sheets for additional information.

1.4 GASES

Gases present at The Geysers may be naturally produced in the steam, or by chemical reactions with those non-condensable gases or commercially produced compressed gases.

Commercial compressed gases are divided into two major groups: nonliquified and liquefied. Nonliquified gases do not liquefy at ordinary temperatures under pressures up to 2000 to 2500 psig. They have boiling points below –150° F. When these gases are

cooled below their boiling points, they do become liquids and are referred to as cryogenic liquids. Oxygen, helium and nitrogen are widely used as nonliquified gases or cryogenic liquids. Cryogenic nitrogen may be used to gas cap geothermal wells at The Geysers. Liquefied gases become liquids at ordinary temperatures and pressures from 25 to 2500 psig. These solidify at cryogenic temperatures; for instance, carbon dioxide becomes dry ice. A third group is dissolved gas that includes acetylene. Acetylene gas is dissolved in acetone in a porous tank filling. This is necessary because acetylene is unstable at pressures above 15 psig and explosive conditions can result.

Gases are divided into major families:
Atmospheric gases: nitrogen, oxygen, argon, helium, neon, krypton, xenon and radon as well as hydrogen and carbon dioxide.
Fuel gases: hydrocarbon gases; LPG, natural gas, methane, hydrogen and acetylene.
Refrigerant gases: halogenated hydrocarbons which are inert.

Gas uses can cross family lines.

Gases such as hydrogen sulfide, sulfur dioxide and carbon monoxide are also classified as poison gases.

All compressed gases get cold when pressure is released and present a frost bite hazard. All except oxygen present an asphyxiation hazard by displacing air. Use proper connections, regulators and containers to avoid accidents.

Geothermal noncondensible gases can be toxic, flammable, or displace oxygen, presenting the same hazards as commercial gases.

1.4 WASTES

Geysers wastes may be contained in vacuum trucks, roll-off bins or drums. The majority of the wastes are associated with hydrogen sulfide abatement processes or facility maintenance activities. All of these wastes should be assumed to contain heavy metals, such as arsenic, mercury and vanadium. They should also be assumed to contain sufficient sulfur or sulfur compounds to be flammable or capable of producing toxic sulfur dioxide gas. Personal Protective Equipment is required to prevent skin contact or inhalation.

Flammable wastes from paint, fuel or solvents may also be present. These are generally packaged in drums, but may be in 5 gallon pails. These wastes may be toxic by contact or inhalation.

Septic wastes are present in pipelines, vacuum trucks and portable toilets. Protection against biohazards is a primary concern with these materials.

2. HAZARD AND RISK ANALYSIS

Once the identity of a released material is known, the hazards must be identified, and the risk of harm to responders established. Material Safety Data Sheets on all products used at The Geysers are available through 3E Company. Reference books on hazardous materials are available from the EHS Group personnel. Information is available through internet sources. Summarized hazard and risk analysis as well as chemical and physical properties, recommendations on protective clothing, medical treatment and toxicology information is available through the Chemical Information sheets in this document.

Based on the material hazards and the release size and location, areas of control must be established around the incident. The following guidelines should be used to establish these control zones:

The hot zone is the area immediately around the incident where containment and clean-up will take place. The warm zone is the area surrounding the hot zone where decontamination takes place.

The Hot Zone/Warm Zone line will be delineated by the following parameters:

- Combustibles = 0% Lower Explosive Limit (LEL)
- Oxygen content = 20.9%
- Air contaminants = 1/2 Permissible Exposure Level

Respiratory protection must be worn in the Hot Zone. The Safety Officer will establish appropriate respiratory protection for the Warm Zone.
Accumulation of hydrocarbon vapors, gases and smoke can have an adverse effect on personnel. Symptoms of exposure may include the following: olfactory fatigue, headaches, irritation of the eyes, suffocation, paralysis, and death. For this reason, the Hot Zone/Warm Zone must be established and the appropriate personal protective equipment must be used.

An entry team may proceed into the Hot Zone when the combustible gases exceed 0% LEL, however, when the combustibles reach greater than 10% LEL the entry team must leave the Hot Zone and proceed to the Warm Zone. Control measures must be taken to reduce the combustible gases below 10% of the Lower Explosive Limit prior to reentering the Hot Zone.

Oxygen content may be less than 19.5% at the work area; however, all personnel must wear a supplied air or self contained breathing apparatus with a 10 minute reserve or enough to get back to the Warm Zone, whichever is greater.

Air contaminants may exceed the Permissible Exposure Limits in the immediate work area (Hot Zone). However, personnel must wear self contained or supplied air breathing apparatus.

If the release is known to be corrosive to skin or to be absorbed into the skin, appropriate controls must be used to prevent worker injury.

The Incident Commander, Operations Chief and Safety Officer must determine the specific engineering and administrative controls and PPE required for each situation.

Support activities and the staging area are located in the cold zone. PPE is not required.

The Warm Zone/Cold Zone shall be delineated by the following parameters:

- Combustibles = 0% LEL
- Oxygen content = 20.9%
- Air contaminants less than 1/4 Permissible Exposure Limit

HOT ZONE	Line Delineation	**WARM ZONE**	Line Delineation	**COLD ZONE**
WORK AREA 1. Combustibles= 0% up to 10%	0		0	
2. Oxygen % up to 23.5%	20.9%		20.9%	
3. Air Toxics-may exceed I.D.H.L.	1/2 P.E.L.		< 1/4 P.E.L.	

2.1 THREAT OF FIRE OR EXPLOSION: FACTORS TO CONSIDER

In the initial evaluation of a fuel or solvent spill, flammable gas or waste release incident, the Incident Commander shall assess the threat of fire and explosion.

Because hydrocarbons are combustible, there always is the threat that fire or explosion may occur during control and/or response operations. Volatile components in the spilled material will evaporate giving rise to a hydrocarbon/air mixture. Because these hydrocarbon vapors are more dense than air, they will accumulate, particularly in confined or poorly ventilated areas. The risk of fire and explosion is greatest just after the release when the evaporation rate is at a maximum, and will normally diminish rapidly with time.

Ignition may be caused not only by the more obvious sources, such as a fire, but also by an electrical system, the hot exhaust of an internal combustion engine, by sparks from electrical equipment, mechanical or friction sources, hot flying particles from burning embers, welding and cutting equipment, and the discharge of static electricity. Great care must be taken to eliminate **all** possible sources of ignition.

Although heavier petroleum products become more and more difficult to ignite with time, oil impregnated floating debris may act as a wick increasing the flammability hazard of heavy products, especially when layers are thin. Care must be taken, therefore, to ensure that the spilled oil is not ignited.

Equipment used in a flammable atmosphere must be explosion proof or intrinsically safe.

Hot work must be strictly controlled to prevent ignition. Hot work means cutting, welding, or other ignition source causing work.

Hot Work Parameters:

- Combustibles = 0% LEL
- Oxygen content greater than 19.5% and less than 23.5%.
- Airborne contaminants less than the Permissible Exposure Limits.

2.2 H_2S THREAT: FACTORS TO CONSIDER

Be familiar with the Calpine, HYDROGEN SULFIDE SAFE WORK PROCEDURE. In case of an emergency involving H_2S, these procedures apply.

a. OSHA allows exposure to H_2S concentrations up to 15 ppm for 15 minutes. Exposures to higher concentrations are allowed for shorter times, however Calpine policy requires supplied air equipment for extended work in concentrations above 10 ppm. Contact your supervisor before proceeding if PAM alarms.

b. If H_2S is being emitted in high concentrations with condensate or non-condensable gas from a source, personnel are not to enter the Hot Zone area without SCBA or air supplied system.

c. Monitoring is to be done with a reliable measuring device, such as a direct reading H_2S meter, Drager tube or personal H_2S monitor (PAM). For personal safety, the concentration of H_2S must be monitored by instrument and not judged by the degree of odor, as the ability to smell H_2S is lost after short term exposure to high concentrations.

d. Measurements will be taken to delineate the Hot Zone/Warm Zone line, following procedures outlined in Section 2, Hazard and Risk Analysis. In an emergency situation, H_2S measurement should always involve two people, one taking the measurements and the other positioned for safety watch.

e. Portable breathing air is to be worn by each person involved in the monitoring.

f. The concentration of H_2S or other noncondensable gases will be highest if the wind is low. The greater the agitation from the wind the quicker the dispersion of these gases.

g. When the H_2S concentration is determined by instrument to be below the Permissible Exposure Limit (10 ppm) personnel may enter area for clean-up activities without SCBA or air line. A PAM should continue to be used.

h. Although the cleanup team exposure to H_2S should be below the Permissible Exposure Limit, air packs should be available for each member.

i. Continued ambient concentrations above 1/2 the Permissible Exposure Level (5ppm for H_2S) is considered the action level. The Incident Commander, Operations Chief and Safety Officer will establish engineering and administrative controls or personal protective equipment to reduce worker exposure.

j. A designated safe area will be established in the Cold Zone. This area will be at least 100 feet up wind from the gas source or leak.

3. ENVIRONMENTAL ANALYSIS

Chemical releases may pose risks to the environment. In fixed locations, berms provide protection against runoff into watercourses. Transportation accidents, which may occur anywhere within or off the lease cannot be tightly preplanned. Certain assumptions can be made about the behavior of releases, and pre-planned actions recommended. The oil spill containment areas described in Section 7.3.1, 3), b. are an example of such preplanning. These access points to the creek may also afford an opportunity to mitigate other types of releases, as well as points to assess impact.

Creek water extraction facilities, BSC 1, 2, and 3 may also provide the opportunity to remove both water and a spilled substance if this is safe, in order to prevent downstream damage. EHS should be consulted before beginning injection.

Animals living in the vicinity of spills or creeks receiving spills must be prevented from entering the spilled material, or if contaminated must be captured and cared for appropriately. Contact California Department of Fish and Game and then the Sonoma County Wildlife Rescue, P.O. Box 9360, Santa Rosa, CA 95405,707-526-9453 (WILD) to request skilled assistance in animal care.

4. EVALUATION OF PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

Emergency Response at The Geysers could involve exposure to fire, high temperature steam, or chemicals. A thorough evaluation of the specific hazards, amount and type of air-borne hazards, breakthrough time of any particular PPE and scope of tasks for an emergency response must be considered in order to select the appropriate PPE. See the Calpine HSP 170 PPE for more information. Section 9.11 Chemical Information Sheets also contains PPE guidelines. The following general guidelines will be followed.

- Only trained personnel will select PPE appropriate to hazards.
- Only trained personnel will respond to hazmat incidents wearing PPE.
- All equipment will be inspected prior to donning for emergency response.

- All contaminated equipment will be properly cleaned before being returned to service.
- Any damaged equipment or equipment which cannot be cleaned will be disposed of properly and replaced.
- Fire: Fire response shall be only to incipient stage fires. By definition, PPE is not required for response to incipient stage fires. If you feel you need PPE to respond to a fire, **do not respond**. Obtain assistance from professional fire fighters. An *exception* is wearing an SCBA to put out sulfur fires within the scope of your training.
- High temperature steam: Calpine does not maintain or train on PPE for entering high temperature steam environments. Obtain assistance from professional fire fighters for this type of response.
- Chemical:
  When selecting respiratory protection for a specific response, the following should always be considered:

  Self Contained Breathing Apparatus should be utilized for atmospheres above the level designated as "Immediately Dangerous to Life and Health (IDLH), unknown airborne hazard contaminant, oxygen deficient atmospheres or levels above the air purifying cartridge limit.

  MSA Full face (FF APR) are available for use in atmospheres up to the IDLH or 100 times the PEL for a specific chemical.

  In addition, four levels of protection are stocked and available in the Emergency Spill Response Trailer and in the East Administration warehouse. The IC should consider the following criteria when determining the level of PPE for a particular response:

  a. ***Level* "A"** - Level A protection includes a totally encapsulating suit, SCBA, chemical resistant inner and outer gloves, chemical resistant boots and hard hat (under suit). This PPE should be selected when the greatest level of skin, respiratory, and eye protection is required. The following points should be considered:

     - The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and respiratory system and has the measured or potential for high concentration of atmospheric vapors, gases, or particulates.
     - Substances with a high degree of hazard to the skin are known or suspected to be present and skin contact is possible.
     - Operations are being conducted in confined or poorly ventilated areas and the existence of conditions requiring *Level* "A" protection has not been ruled out yet.
     - Response to unknown substances.

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b. ***Level* "B"** - Level "B" protection includes hooded chemical resistant clothing, SCBA, chemical resistant inner, and outer gloves, chemical resistant boots, and hard hat with splash shield. This PPE should be selected when the highest level respiratory protection is required but a lesser level of skin protection is needed. The following points should be considered:

- The type and atmospheric concentration of substances have been identified.
  The atmosphere currently has or may have the potential to contain less than 19.5% oxygen.
  The presence of incompletely identified vapors or gases is indicated by a direct reading instrument but the vapors or gases are not suspected to be harmful to the skin or skin absorptive.
- Equipment compatibility to hazardous material must be assured before entry.

c. ***Level* "C"** - Level C protection includes full face or half-mask air purifying respirators, hooded chemical resistant clothing, chemical resistant inner and outer gloves, chemical resistant boots or covers, and hard hat with splash shield. This PPE should be selected when the concentration and type of airborne contamination is known and the criteria for using air purifying respirators are met. The following should be considered:

- The atmospheric contaminants, liquid splashes or other direct contact will not adversely affect or be absorbed through exposed skin.
- The types of air contaminants have been identified, concentrations measured and an air-purifying respirator is available that can remove the contaminants.
- All criteria for use of an air purifying respirator are met.
- Periodic air monitoring must be performed.

d. ***Level* "D"** - Level D is a work uniform affording minimal protection and is used for nuisance contamination only. The following point should be considered:

- The atmosphere contains no known hazard and work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

5. INFORMATION AND RESOURCE COORDINATION

Efficient, safe response to spills depends on accurate, timely information transfer from those who collect it to command staff and responders. The following guidelines describe this process briefly.

(1) Preparedness begins with planning before an emergency occurs, which is one purpose of these Emergency Preparedness and Response Programs. In the event of an emergency, these documents should be utilized for background information, identification, and Standard Operating Procedures (SOP's).

(2) Command Staff should identify the following HazMat Factors and communicate these to Operations. The Operator on Duty Checklist: Chemical Response, Section, should be used.

a. Chemical Hazard
    1) Identity
    2) Quantity
    3) Container type / condition
    4) Physical properties
    5) Chemical properties
    6) Health considerations
    7) PPE
    8) Control measures
    9) Decontamination procedures

b. Occupancy
    1) Number of persons involved
        a) Calpine Personnel
        b) Contractors
        c) Landowners / visitors

c. Structure
    1) Calpine
    2) Other

d. Life Hazard

e. Resources
    1) Manpower / equipment on scene
    2) Manpower / equipment responding
    3) Response times
    4) Condition of responders / equipment
        a) Perform and record medical data prior and after entry.
    5) Capability of personnel
    6) Capability of commanders

f. Special Circumstances
    1) Time of day
    2) Day of week
    3) Season
    4) Special hazards

5) Weather

6. RELEASE CONTROL, CONFINEMENT AND CONTAINMENT

All emergencies and potential emergencies will be reported to Control 1. The Incident Commander (IC) will institute the desired course of action in a spill as listed in descending order of importance below. Judgment must be exercised by personnel involved as to proper implementation of the plan.

- Assure Personnel Safety - The safety of people is of primary importance. No action should be taken which will place people at risk.

- Secure Help - Call Control 1 to secure help as soon as possible, depending on the nature and magnitude of spill. This will trigger implementation of the Emergency Response Plan.

- Identify Material
  a. Use Chemical Information Sheets, placards, labels, shipping papers, etc.
  b. Use identity for hazard analysis.
  c. Use identity to determine proper PPE for any response.

- Control at Source of Spill - Simply stated, if a spill is occurring, stop it by any safe means available. This might include closing a valve, shutting off a pump, or plugging a leaking tank or tank fittings with a rag, wooden bung, sack, gel or other makeshift devices normally found around a production or drilling operation.
  a. Wear proper PPE for any response.
  b. Perform proper medical monitoring for environmental conditions and PPE selected.

- Collect Required Samples - The IC will assign a trained person to collect spill samples in accordance with the sampling procedure. Samples of the spilled substance should not be collected for hazardous materials. Creek samples must be taken as soon as possible in accordance with the Spill Stream Sampling Plan.

- Containment of Spill - Isolate and contain the spilled product. Most spills are small and can be easily contained with hand tools which are carried on all company trucks or are available from the tool room. Supplies are stored in the Spill Response Trailer at the GAC. Palletized sand bags are stored at the West Geysers Field Office Warehouse to aid in containment. If the spill cannot be

contained with hand tools or if secondary containment facilities are in danger of failing, larger equipment will be called in as appropriate. This equipment may include backhoes, front loaders, graders or bulldozers.

- Spill Cleanup - Cleanup operations should begin as soon as containment has been put into effect using only trained personnel. Cleanup will depend on the nature of the spill, and may range from absorbing spilled product with dirt and properly disposing of dirt, to picking up product with small portable pumps and empty drums, or utilizing vacuum trucks. Oil that has entered a watercourse may be picked up with oil absorbant pads stored in the Spill Response Trailer or the West Geysers Field Office Warehouse. The Geysers Waste Coordinator shall be consulted before disposal of any solid or liquid material.

- Repair of Damage and Return to Normal Operations - Upon completion of cleanup, the reason for the spill will be determined and remedial action will be taken to prevent future occurrences.

- A Critique of the Response Operation - A critique will be conducted and necessary changes to plans and/or training to improve the response will be made.

7. RELEASE SPECIFIC RESPONSE PROCEDURES:

7.1 CONDENSATE

a. Pipelines and Ponds

1) Initial Response
STOP THE DISCHARGE, IF POSSIBLE, BY ANY SAFE AVAILABLE MEANS.

2) Special Considerations
If a catastrophic failure of the condensate system occurs, stop or reduce the inflow to the system. There are four ways to accomplish this:

a) Divert pond inflow into a bypass line.
b) Reduce or stop flow from the condensate vent system.
c) Reduce or stop discharge from the cooling towers to the pond. Cooling towers have enough excess capacity to allow the power plant to operate for a considerable length of time with no discharge to a condensate pond.

d) Curtail the power plant or, in extreme cases, force the unit out.

3) Containment
Shut off the source of a condensate spill and contain the spilled fluids to prevent them from reaching a stream or other watercourse. Spill containment steps are varied and depend upon the magnitude of the spill, local topography and proximity to a stream. Procedures can range from the use of pick and shovel in blocking a ditch, culvert or dry watercourse, to the use of heavy equipment. The Incident Commander will determine the exact method and means of executing a containment operation.

4) Cleanup
Cleanup decisions will be a joint effort between the Incident Commander and the Operations Chief, and will depend on site, weather and time of day.

b. Trucks and Tanks

1) Initial Response
STOP THE DISCHARGE, IF POSSIBLE, BY ANY SAFE, AVAILABLE MEANS.

2) Special Considerations
If the truck is disabled or the tank is unable to hold liquid, call another vacuum truck to the scene and transfer the remaining condensate to it.

3) Containment
A condensate spill from a vacuum truck would involve no more than 4,200 gallons. Contain spilled liquid by building a temporary berm, stacking sandbags, or blocking a ditch. Prevent condensate from reaching a stream. The Incident Commander best determines the method and means of containment.

4) Clean Up
Clean up decisions will be a joint effort between the Incident Commander and the Operations Chief and will depend on site, weather and time of day.

7.2 DRILLING MUD

a. Initial Response
   1) IF POSSIBLE, STOP OR RESTRICT THE DISCHARGE OF SUMP LIQUIDS WITH DIRT, GEL SACKS, SANDBAGS OR OTHER MATERIALS ON HAND.
   2) NOTIFY DRILLING DEPARTMENT SUPERVISOR AND CONTROL 1 TO INITIATE INCIDENT COMMAND SYSTEM.

b. Special Considerations
   If hazardous materials are or potentially may be involved in the response action, follow instructions for WET CHEMICAL response.

   If necessary to reduce fluid level in the sump to achieve containment, do the following:

   1) Use vacuum trucks to haul excess drilling mud to another open sump, the Waste Management Unit or a baker tank.

   2) Use drill rig pumping equipment to transfer clean sump fluids to a condensate pond through the rig water line. Control 1 must be notified.

c. Containment
   Small spills can be contained using hand tools. Large spills will require personnel and equipment available from the Production Department.

d. Cleanup
   Cleanup decisions will be made by the Incident Commander, Operations Chief, and the Drilling Supervisor. The best course of action will depend on site, weather and time of day.

   Spill cleanup will include the following procedures:

   1) For Drill Water: Contain spillage with dikes when possible and haul to disposal sump or to a power plant pond with vacuum trucks.
   2) For Drilling Mud: Repair sump or contain with dikes. Haul liquid to an approved disposal site. Dry and solidified material should be compacted as solids and buried at approved sites.
   3) If spill does not reach a stream, mud can be hosed off vegetation, the wash water collected in ditches and hauled to a sump. Soil containing drilling sump fluids may be shoveled by hand or with heavy equipment, and disposed of in a

drilling sump or at the Geyser Rock Waste Management Unit.

7.3 HYDROCARBONS

Response to hydrocarbon releases is divided into two major parts, for regulatory compliance:

a. Visible product leakage
b. Leak Alert audible or visual alarm activated: Go to Section 9-12, Underground Storage Tank Leaks.

CAUTION: Gasoline or solvent fumes and propane gas can travel some distance from their origin and collect in low areas of terrain and buildings. For this reason restrict all motor vehicles, smoking materials and other ignition sources from the vicinity of these releases.

7.3.1 VISIBLE PRODUCT LEAKAGE

1) Initial Response
   STOP OTHERS FROM ENTERING THE SPILL AREA. Gasoline, solvents and diesel fuel are highly flammable. Breathing will be impaired in poorly ventilated areas. Isolate far back from the spill. Used oil and other lubricants are combustible. Take precautions to prevent ignition.

2) Special considerations
   a) For large spills, confirm fire department has been called.
   b) Deactivate fueling system or other potential ignition sources, if applicable.
   c) Obtain Combustible Gas Meter from Chemical Group to measure %LEL and establish Hot, Warm, and Cold Zones before commencing any product confinement or containment activities.
   d) Determine potential impacts to:
      i) Personnel
      ii) Water
      iii) Property
   e) Decide whether fluid flow can be safely stopped, or whether confinement structures can be safely built to keep flow from sensitive areas.
   f) Utilize only intrinsically safe or explosion proof equipment to recover spilled product. Observe proper grounding to prevent ignition.

g) Methyl Ethyl Ketone (MEK) solvent will float on water and also mix with it.

3) Containment

a) <u>If Safe:</u> Use dirt, sandbags, and absorbant pads to confine spill on land.

b) <u>If Safe:</u> For oil or fuel in or threatening a stream, oil containment booms will be deployed at one or more of the following designated stations or at other suitable locations.

These creeks are in very steep canyons. During rain storms, the streams peak and return to stable flow very quickly. During periods of peak or high flow, there is high turbulence with no pools where spill containment is possible. Therefore, containment and cleanup at specific watercourse locations is addressed to low or intermediate flow conditions. Personal safety should not be jeopardized to install spill containment equipment.

When an oil spill has occurred or is likely, and the Incident Commander determines that oil could possibly enter a watercourse, a containment device will be deployed at the first containment station downstream of the spill.

It may be possible to install more than one containment device at some of the containment stations. If, in the opinion of the IC, all of the oil cannot be contained at the first station, additional devices will be deployed at downstream stations as required. Initial efforts should utilize the oil boom - absorbant pads, and be followed with the chain link fence - absorbant pad containment device.

Install the containment device at as steep an angle as possible across the flow of the creek, in the calmest water available. If the boom is straight across the creek, oil will collect at the center and then wash out underneath. Angle the boom to direct oil to the side of the creek with vacuum truck access to facilitate pick-up.

Evaluate the actual placement of the containment devices, both within containment stations and along

the creeks because the creek and creek bed conditions continually change.

Station 1 - Lies below the concrete bridge southeast of Guard Post One on Big Sulphur Creek. In low and intermediate flows a pond exists below the bridge. Install the vinyl oil boom across the pond. Remove oil with sorbent pads and a skimming device as required. Drive pipe stakes on both sides of Big Sulphur Creek to anchor the oil boom (ATTACHMENT 1).

Station 1a - Lies 0.2 mile downstream from Station 1. Access to Station 1a is a road that junctions 0.1 mile west of Guard Gate 1. A locked bright yellow Calpine Gate (keys for the lock are available at Guard Gate 1) controls access to the road. The road winds through several switchbacks down to the creek. At low flows, utilize heavy equipment to construct a dam equipped with underflow pipes to contain the oil. During higher flows install an oil boom between the fresh water pipeline running up the hill to GDC 53-13 and the access point to move the oil toward vacuum truck access. Tie-off for the oil boom will be established by personnel walking down from GDC 53-13 (ATTACHMENT 1).

Station 2 - At the Olin Whitescarver metal bridge on upper Squaw Creek. Lower wooden boom into place between two upstream vertical bridge supports with installed hand operated winch located under the bridge . Sandbags or local soil may be used as necessary to seal the wooden dam to establish a pond. Three valved plastic pipes installed in the wooden dam can be used to control flow in order to maintain the level appropriately to contain the oil for recovery (ATTACHMENT 1).

Station 3 - On Squaw Creek upstream of its confluence with Big Sulphur Creek. Access is from the Cloverdale Road and a wooden bridge crossing Big Sulphur Creek. In low and intermediate flow, install boom in the pond at this location. Remove oil with sorbent pads or obtain a skimming device as required. Drive pipe stakes on both sides of Squaw Creek to anchor the oil boom (ATTACHMENT 1).

Station 4 - Downstream of the Cloverdale Road bridge crossing on Big Sulphur Creek. In low and intermediate flow, this section of Big Sulphur Creek meanders in gravel and sand banks. Place a containment device across the stream to form a barrier to floating oil. Excavate lagoons upstream of the containment to collect the diverted floating oil for pick-up and removal. Remove oil with sorbent pads and skimming devices (ATTACHMENT 1).

Station 5 - On Big Sulphur Creek upstream of its confluence with Frasier Creek. At this location the watercourse broadens and slows upstream of a ford crossing. Install containment device using pipe stakes driven on both sides of Big Sulphur Creek as anchors. Remove oil with sorbent pads or skimming devices (ATTACHMENT 1).

4) Cleanup
   Cleanup of petroleum products requires attention to ignition prevention. Non-sparking tools and proper grounding of pumps and containers are required. Contact The Geysers Waste Coordinator for assistance in characterization of the waste and to arrange for disposal. For small spills oil absorbant pads will be used for cleanup. Calpine will utilize contractors for large spills.

7.3.2 LEAK ALERT AUDIBLE OR VISUAL ALARM ACTIVATED

If the Leak Alert system visual or audible alarm on any underground storage tank is activated, regulations specify strict procedures that **must** be followed. Timing is critical, so it is important that the situation be assessed as soon as possible, the findings recorded and if necessary, regulatory notifications made.

1) Personnel should immediately notify Control 1 if the Leak Alert visual or audible alarm is activated.
2) Control 1 will notify the Manager – Environmental, Health and Safety during normal work hours or evenings. On holidays and weekends notify the on-call EHS personnel.
3) Refer to EPRP Section 9.12 for procedures to be followed.

4) Take precautions to prevent ignition of vapors from a leak. Keep all ignition sources away from the alarmed tank until the situation is investigated and controlled.

7.4 WET CHEMICALS

a. SODIUM HYDROXIDE Ria 03c.

1) Initial Response
STOP OTHERS FROM ENTERING THE SPILL AREA.

2) Special Considerations
Contact with liquid or mist is very dangerous. Do not enter without protective equipment.

For Distribution Emergencies, the caustic supplier's procedure should be followed to obtain direct assistance from them. See bill of lading, or contact point of sale if bill of lading is not available. Also notify:
CHEMTREC 1-800-424-9300

3) Containment
Build berms, plug culverts or dam dry creeks to prevent spreading of caustic. Repeat damming downhill to provide multiple containments to prevent caustic from reaching creeks. Use PPE to prevent skin contact.

4) Neutralizing
Trained personnel only, may neutralize caustic soda solution spills by applying boric acid powder directly on the spill, resulting in the following reaction:

Boric Acid + Caustic = "Borax" + Water
$H_3BO_3 + 3\ NaOH = Na_3BO_3 + 3\ H_2O$

On a weight basis, 61.8 pounds of H_3BO_3 neutralizes 120.0 pounds of caustic, so 1 pound of boric acid is needed to neutralize 2 pounds of caustic. Utilize the Caustic Soda Handbook to determine the total pounds of caustic spilled, based on the concentration and the amount. Pour the boric acid powder or crystals directly on the spill and allow time for the boric acid to react with the caustic. A little excess boric acid does not pose any serious hazard. Measure pH to assure proper neutralization.

5) Clean Up

Clean up of neutralized caustic salts is not required. Any soils having pH 12 or higher should be neutralized in place or moved to an acceptable location for neutralization or properly disposed of as hazardous waste.

b. LABORATORY CHEMICALS

1) Initial Response
RESTRICT NON-ESSENTIAL VEHICLES AND PERSONNEL FROM ENTERING THE SPILL AREA.
   a) ON ROADS: BLOCK TRAFFIC
   b) IN BUILDINGS: EVACUATION OF OFFICES BELOW OR ADJACENT TO LAB MAY BE REQUIRED. CLOSE DOORS, TURN OFF VENTILATION SYSTEM TO PREVENT FUME SPREAD THROUGHOUT BUILDING.

2) Special Considerations
In general, avoid breathing mist or vapors, eye contact and prolonged skin contact with any chemical.

3) Containment
Outdoors: build berms, plug culverts and dam dry watercourses to prevent liquid chemicals from reaching streams.

Indoors: use floor sweep or chemical absorbants to prevent spread of liquids and to minimize evaporation. Spill cleanup kits are located in the lab. Obtain additional floor sweep from the auto shop and warehouse.

4) Clean Up
Clean up of laboratory chemicals may involve neutralization or absorption and placing in a compatible container for off-site disposal. The Geysers Waste Coordinator should be involved in this decision. Damaged building materials may require removal, disposal and replacement.

c. HYDROGEN PEROXIDE RIA 10q.

1) Initial Response
STOP OTHERS FROM ENTERING THE SPILL AREA.

2) Special Considerations
<u>Contact with liquid or mist will cause severe irritation</u>. DO NOT ENTER WITHOUT PROTECTIVE EQUIPMENT. For contact: Wash with large amounts of water.

Control 1 should summon a water truck to the scene. If personnel are injured dispatch fire truck to spray water fog on rescuers. Do not use foam additive.

3) Containment
Incidental spills on road can be washed off with water truck; Spills that are flowing and may enter a watercourse must be initially contained and diluted. Do not pick up hydrogen peroxide with steel vacuum trucks.

Construct berms, block drainage ditches and culverts, dam stream channels to prevent flow of undiluted chemical into creeks.

4) Cleanup
Hydrogen Peroxide deteriorates to water and oxygen. Cleanup will not typically be required unless other materials are involved. The area must be isolated for a sufficient period of time to allow the solution to deteriorate to prevent injury to people or animals.

d. ETHYLENE GLYCOL

1) Initial Response
STOP OTHERS FROM ENTERING THE SPILL AREA.

2) Special Considerations
In general, avoid breathing mist or vapors, eye contact and prolonged skin contact with any chemical. OSHA ceiling limit is 50 ppm for mists or vapors. Ethylene glycol is poisonous to animals. Spills should be promptly absorbed. Remove ignition sources from spill area.

3) Containment
Construct berms, block drainage ditches and culverts, dam stream channels to prevent flow of undiluted chemical into creeks. Use dirt or floor sweep as absorbant. Oil absorbant pads are not effective.

4) Cleanup
Shovel absorbed material into drums for transport to hazardous waste bin at LF 13.

e. **See Chemical Information Sheets for specific liquid chemical response information.**

7.5 DRY CHEMICALS

Dry drilling rig chemicals are used in large volumes. A large variety of laboratory chemicals is used, but volumes are generally small. Dry chemicals are used in power plant abatement processes. Basic containment techniques are the same for all dry chemical releases. Water will generally complicate dry chemical spill response, so its use should be carefully evaluated.

a. Initial Response
   STOP OTHERS FROM ENTERING THE SPILL AREA. Isolate the area at a safe distance to prevent spreading by vehicles.

b. Special Considerations
   Avoid contact with unidentified chemicals. Be aware of wind direction and stay upwind to avoid contact with airborne material.

c. Identify
   Use product labels, manifests, or descriptions in RIAs, Section 9-11.

d. Containment
   1) Wear appropriate protective equipment for the chemical while cleaning up the spill. Avoid creating dust, but do not wet the material. Wetting makes cleanup more difficult.

   2) Dry chemicals should be protected from wind to avoid further spreading. Cover the material with a tarp, sheets of plywood, etc. Most dry chemicals are packaged in sacks or canisters and unlikely to cause large spills. If a rainstorm causes the chemicals to dissolve and flow, then the standard methods of liquid spill containment can be employed; build a berm, plug a culvert, and dam a watercourse to prevent the contaminated water from reaching a stream.

e. Cleanup
   Clean up will depend on chemical, site, weather and time of day. Sweeping and collection for reuse or waste disposal will be evaluated. HEPA vacuum cleaners may be appropriate for asbestos, arsenic or vanadium containing materials.

7.6 GASES

a. FLAMMABLE GASES

1) PROPANE
   a) STOP OTHERS FROM ENTERING THE SPILL AREA. Propane is heavier than air and will travel downhill and down wind. It will accumulate in low areas. Isolate far back from the release.
   b) Ignition sources must be kept away. If a fire has started, only extinguish it by closing the valve at the source. This will prevent the build-up of an explosive atmosphere.
   c) Propane sources at The Geysers are small. Unless the leak can be safely stopped by shutting a valve, the best course of action is probably to allow the propane to dissipate. Keep all ignition sources away.
   d) Use combustible gas meter for any activities.
   e) Explosion may occur if ignited. Stay well clear of ends of tanks.

2) HYDROGEN
   Hydrogen gas is used in power plants. Precautions for hydrogen are similar to propane. Hydrogen, however is lighter than air and if contained will concentrate in high places.

b. POISON GASES

1) Hydrogen Sulfide (H_2S)
   a) STOP OTHERS FROM ENTERING THE RELAEASE AREA. H_2S is heavier than air and will travel downhill and down wind. It will accumulate in low areas. Isolate far back from the release.
   b) High concentrations of H_2S are combustible. Ignition sources must be kept away.
   c) Tanks of H_2S at The Geysers are small. Unless the leak can be safely stopped by shutting a valve, the best course of action is probably to allow the gas to dissipate.
   d) H_2S from injection wells and lines may require repair of equipment to stop the leak.
   e) Use a personal alarm monitor for any activities.
   f) The buddy system is required for H_2S concentrations requiring supplied air equipment. See the Respiratory Protection Program HSP 100 and Hydrogen Sulfide HSP 30 and HSP For Employee Orientation for additional information.

c. NON-FLAMMABLE GASES

1) AIR, ARGON, NITROGEN, HELIUM, CARBON DIOXIDE
   a) All of these gases are present in small quantity cylinders. Evacuate area of leak and allow gas to bleed off.
   b) Wear supplied air if rescue is required as these gases present a suffocation hazard.

7.7 WASTES

a. PRODUCTION FACILITY WASTE
(pipelines, separators, water knockouts, rock catchers, turbines etc.)

1) Initial Response
   a) STOP THE DISCHARGE IF POSSIBLE BY ANY SAFE AVAILABLE MEANS.
   b) RESTRICT VEHICULAR TRAFFIC IN ORDER TO PREVENT SPREAD OF THE MATERIAL.

2) Identify
Trained personnel will use the 4-gas monitor available from the Chemical Group, to determine whether hazardous levels of SO_2, a toxic gas, are present.

Because of the chemical content of sludge, protective clothing should be worn during containment and clean-up operations. Avoid eye and prolonged skin contact. Avoid breathing mists, sprayed liquids or dust. SO_2 gas may be generated. See Respiratory Protection Plan, EHP 100, for additional details on selecting proper respiratory protection.

3) Containment
Contain by building berms, plugging culverts and damming watercourses receiving the spilled materials. Prevent the wastes from entering a watercourse. Stay upwind of dry materials. Cover to prevent spreading by wind.

4) Clean Up
Clean up by shoveling and sweeping into barrels or bin as indicated by waste profile. Utilize vacuum truck to pick up liquids.

b. CONDENSATE POND AND COOLING TOWER SLUDGE

1) Initial Response
   a) STOP THE DISCHARGE IF POSSIBLE BY ANY SAFE AVAILABLE MEANS.

b) RESTRICT VEHICULAR TRAFFIC IN ORDER TO PREVENT SPREAD OF THE MATERIAL.

2) Identify
Identify the hazards. Sludges consist of sediments removed from the bottom of condensate ponds and cooling towers. They contain inorganic arsenic and can also contain abatement chemicals. Some pond sludges may contain high levels of sulfide. These may react with atmospheric oxygen releasing hazardous levels of SO_2, a toxic gas.

3) Special Considerations
Wear appropriate PPE. Avoid eye and prolonged skin contact. Avoid breathing mists, sprayed liquids, gases or dusts.

4) Containment
Contain by building berms, plugging culverts and damming watercourses receiving the spilled liquids. Prevent the liquids from entering a watercourse.

5) Cleanup
Trained personnel will cleanup by shoveling and sweeping into containers. Wear respiratory protection if dust may be created or SO_2 is present.

c. SEPTIC AND OTHER WASTES

1) Initial Response
BLOCK TRAFFIC AND RESTRICT NON-ESSENTIAL VEHICLES AND PERSONNEL FROM THE SPILL AREA.

2) Special Considerations
Septic and other wastes may contain materials which are hazardous and should only be handled by properly equipped and trained personnel.

In general, avoid breathing mist or vapors, eye contact and skin contact with any chemical.

3) Containment
Containment will be accomplished by trained and properly equipped emergency response personnel once material and hazards are identified.

4) Cleanup

Cleanup will depend on material. In most cases a qualified contractor will perform cleanup of septic or other wastes.

d. POWER PLANT ABATEMENT WASTES

1) Initial Response
STOP OTHERS FROM ENTERING THE SPILL AREA.

2) Special Considerations
In addition to the presence of heavy metals, power plant wastes contains sulfur that is easily ignited.

Power Plant Wastes include:

a) Sulfur: Collected and transported in dumpsters from Stretford Units. Material is combustible.
b) Cooling Tower Sludge: From all Units, transported by vacuum truck. Hazards include arsenic, mercury, nickel and vanadium.

3) If necessary to enter contaminated area, use PPE to avoid skin and eye contact. If dust is present use a respirator. An air supplied respirator is required for fumes or smoke from combustion.

4) Containment
Contain by building berms, plugging culverts and damming watercourses receiving the spilled liquids. Prevent the liquids from entering a watercourse.

5) Cleanup
Trained personnel will cleanup by shoveling and sweeping into containers. Wear respiratory protection if dust may be created or SO_2 is present.

DEFINITIONS

CHEMICAL:

Chemical means any manufactured chemical or product, petroleum products, geothermal solids or condensate, drilling fluids or other products used or produced at The Geysers which may be released to the environment as a liquid, solid or gas.

EMERGENCY RESPONSE:

A coordinated response effort by employees from outside the immediate work release area or by outside responders (e.g., mutual aid groups, local fire departments, contractors, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance and which poses an immediate threat to people, the environment, or property.

HAZARDOUS:

Any substance listed as hazardous by various California or Federal regulations, or to which exposure may result in adverse affects on the health or safety of employees. MSDS lists indicate whether a chemical is hazardous.

IDLH:

Immediately dangerous to life and health.

INCIDENTAL RELEASES:

Any hazardous material release within the work area that can be safely contained and cleaned up by the employees stationed there, utilizing PPE and other equipment readily available at the site. Response to an incidental release that can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area is not considered to be emergency response within the scope of 29 CFR 1910.120. Response to a hazardous substance release where the concentration of substances is below the established permissible exposure limits is not considered to be an emergency response. A steam condensate spill, because it does not involve a hazardous material is defined as an incidental release.

LOWER EXPLOSIVE LIMIT (LEL):

The minimum concentration of a flammable substance in air below which spread of flame does not occur.

MAJOR SPILL:

* Significant media event, i.e. radio or television coverage, or non-local newspapers.
* Clean up and remediation cost or potential fines exceeding $500,000.

MINOR SPILL:

Any reportable spill that does not fit in serious or major category. For condensate, this means an amount greater than 250 gallons, or any amount that has or could enter a watercourse, or any size that causes a present or potential hazard to health, safety or the environment.

NON-HAZARDOUS:

Non-hazardous substances, such as steam condensate, are not immediately dangerous to employees. These substances may cause environmental damage.

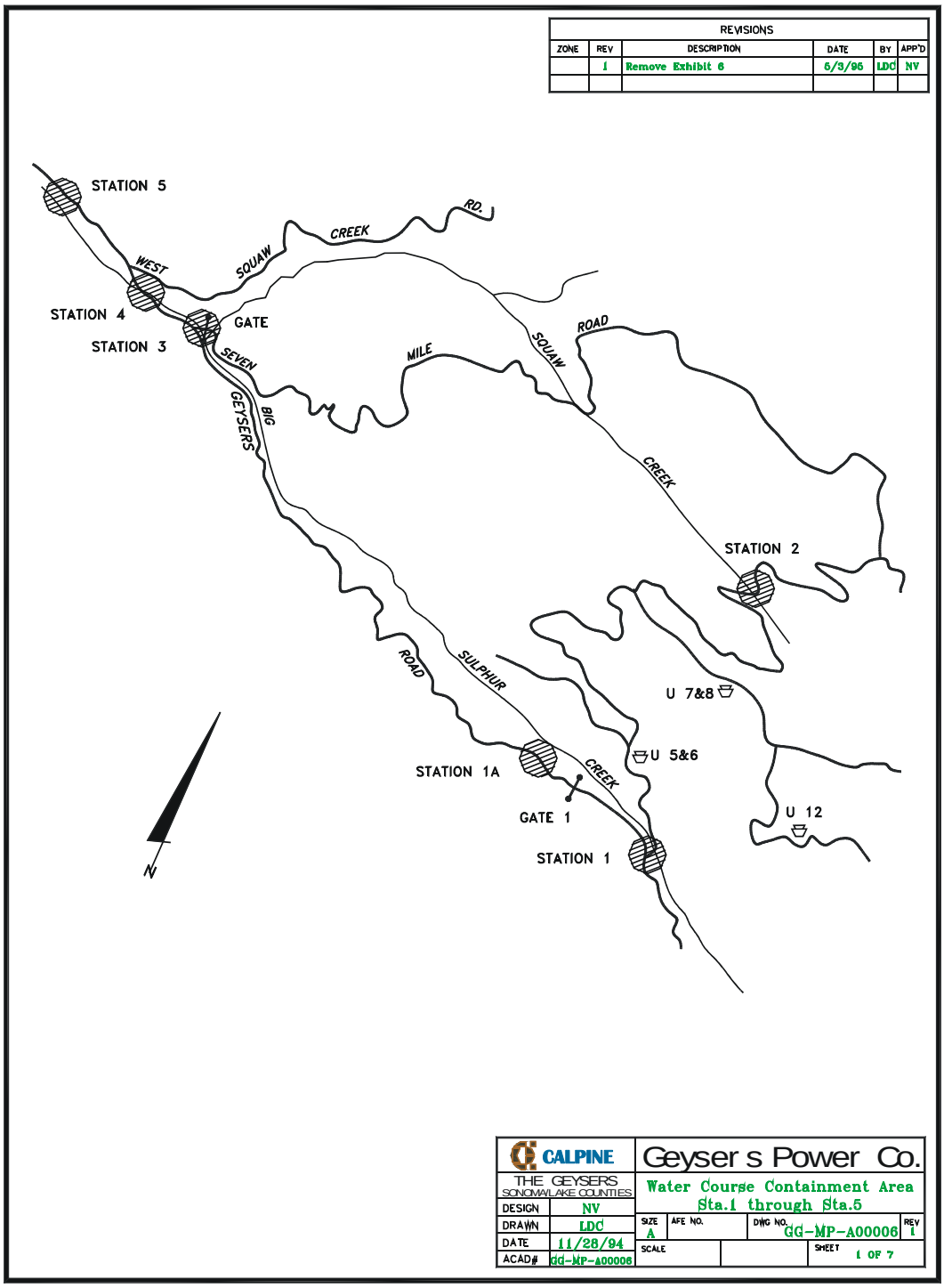
SERIOUS SPILL:

* Local media coverage only.
* Clean up and remediation cost or potential fines exceeding $25,000.

WATERCOURSE:

A watercourse is flowing or standing water, or any seasonally dry channel or bed where there could reasonably be flow during rainfall. A drilling sump is <u>not</u> a watercourse.

ATTACHEMENT 1: STREAM SPILL CONTAINMENT AREAS



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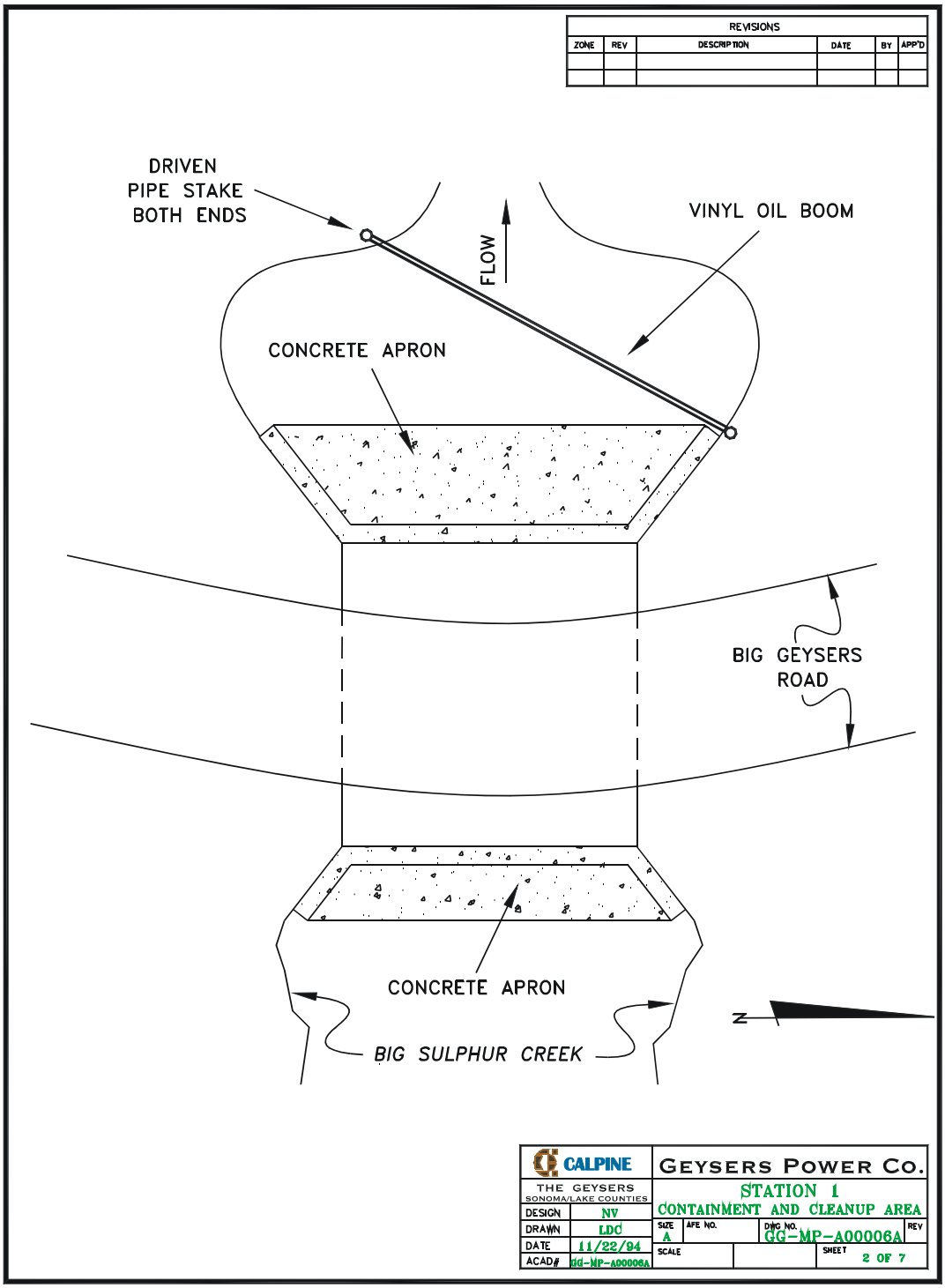
REVISIONS
ZONE
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DESCRIPTION
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DRIVEN PIPE STAKE BOTH ENDS
FLOW
VINYL OIL BOOM
CONCRETE APRON
BIG GEYSERS ROAD
CONCRETE APRON
BIG SULPHUR CREEK
N
CALPINE
GEYSERS POWER CO.
THE GEYSERS
SONOMA/LAKE COUNTIES
STATION 1
CONTAINMENT AND CLEANUP AREA
DESIGN NV
DRAWN LDC
DATE 11/22/94
ACAD# GG-MP-A00006A
SIZE A
AFE NO.
DWG NO. GG-MP-A00006A
REV
SCALE
SHEET 2 OF 7

nv;12/27/01

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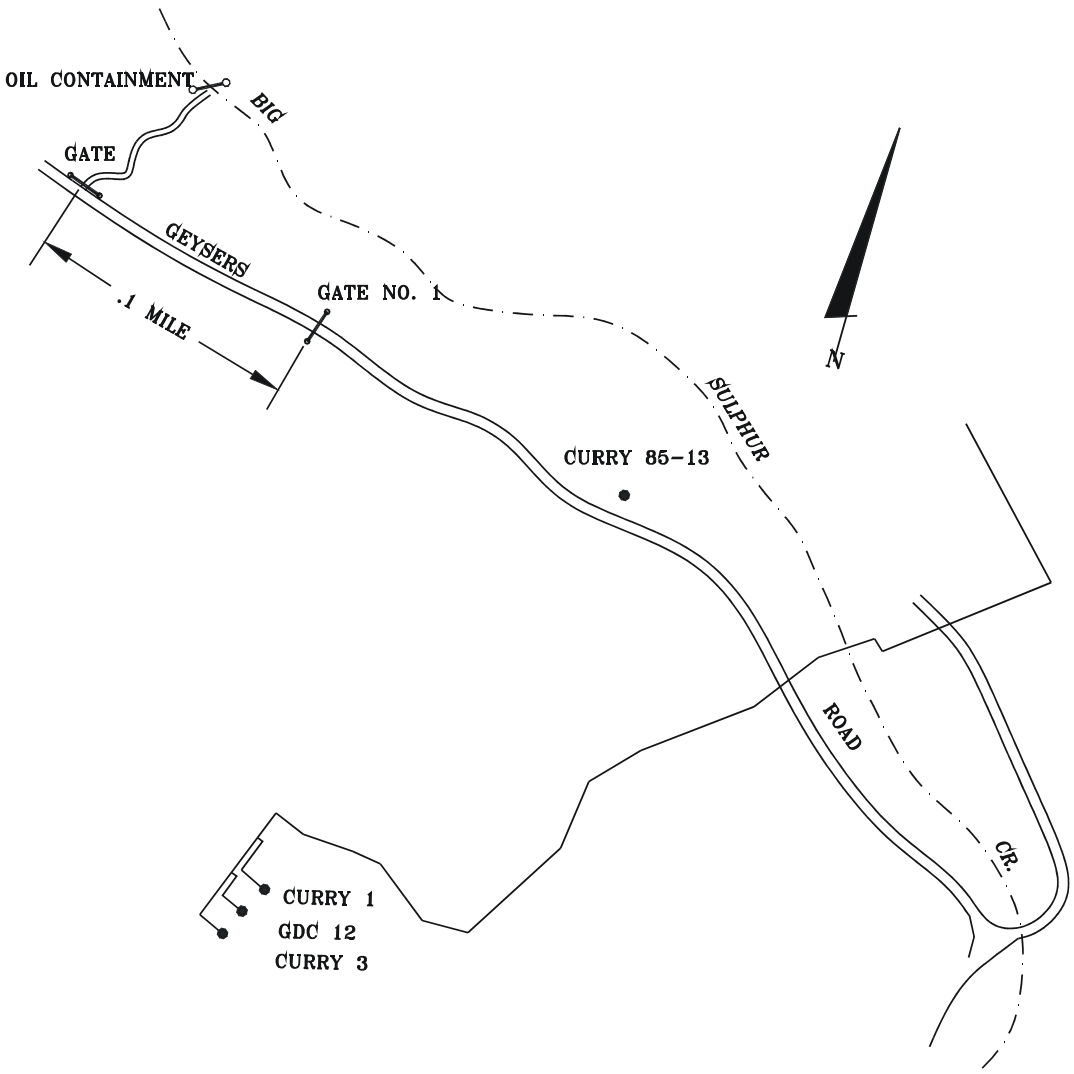

CALPINE	GEYSERS POWER CO.			
THE GEYSERS SONOMA/LAKE COUNTIES	STATION 1A			
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DATE 11/17/94				
ACAD# GG-MP-A00006B				

nv;12/27/01

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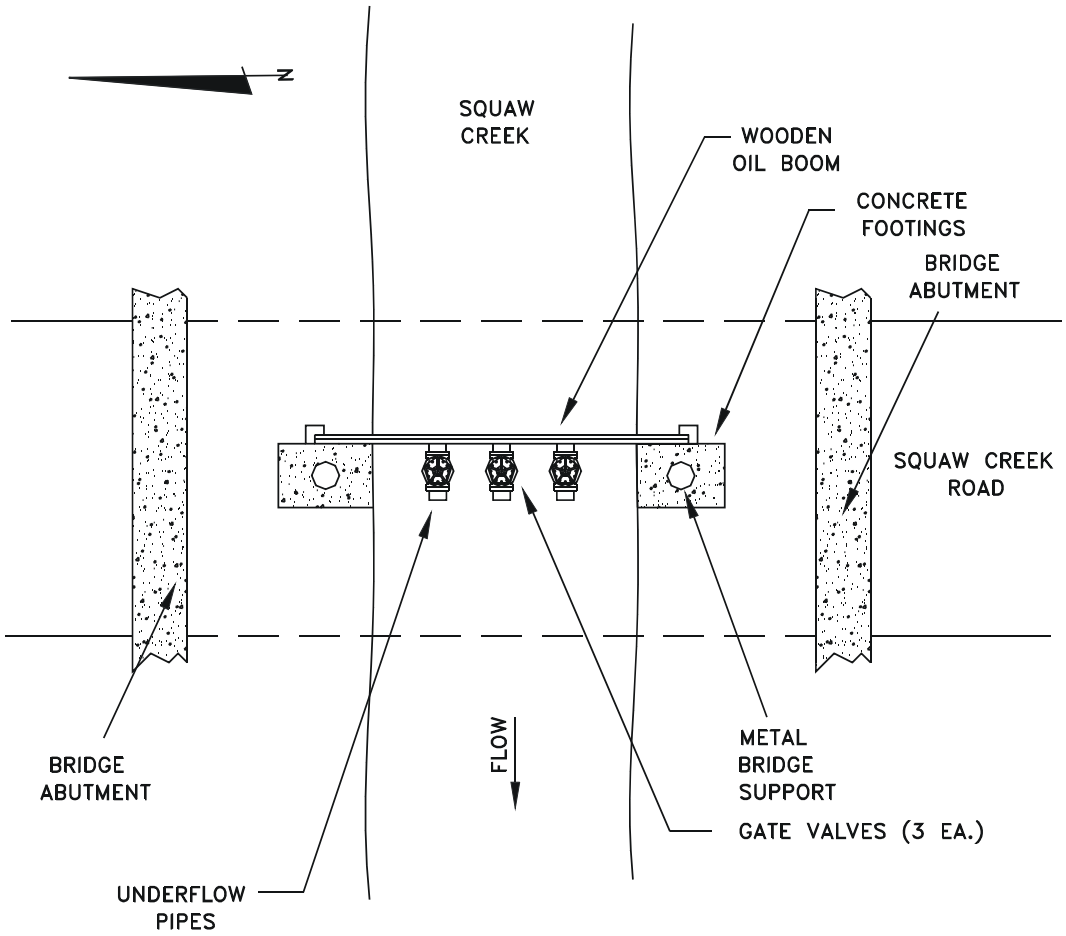

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THE GEYSERS SONOMA/LAKE COUNTIES	STATION 2 CONTAINMENT AND CLEANUP AREA			
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ACAD#: gg-MP-A00006C				

nv;12/27/01

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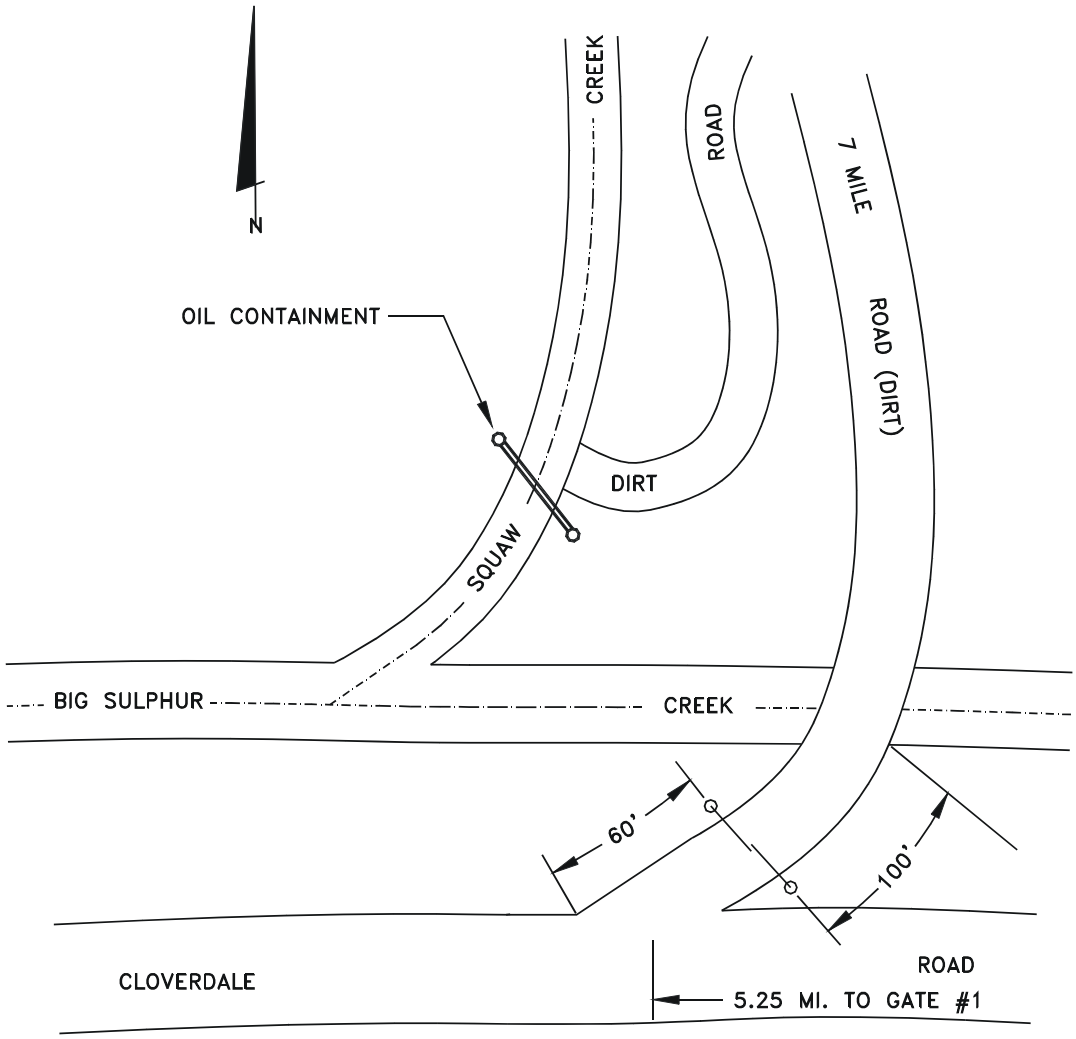

CALPINE	GEYSERS POWER CO.			
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DATE 11/17/94				
ACAD# GG-MP-A00006D				

nv;12/27/01

REVISIONS					
ZONE	REV	DESCRIPTION	DATE	BY	APP'D
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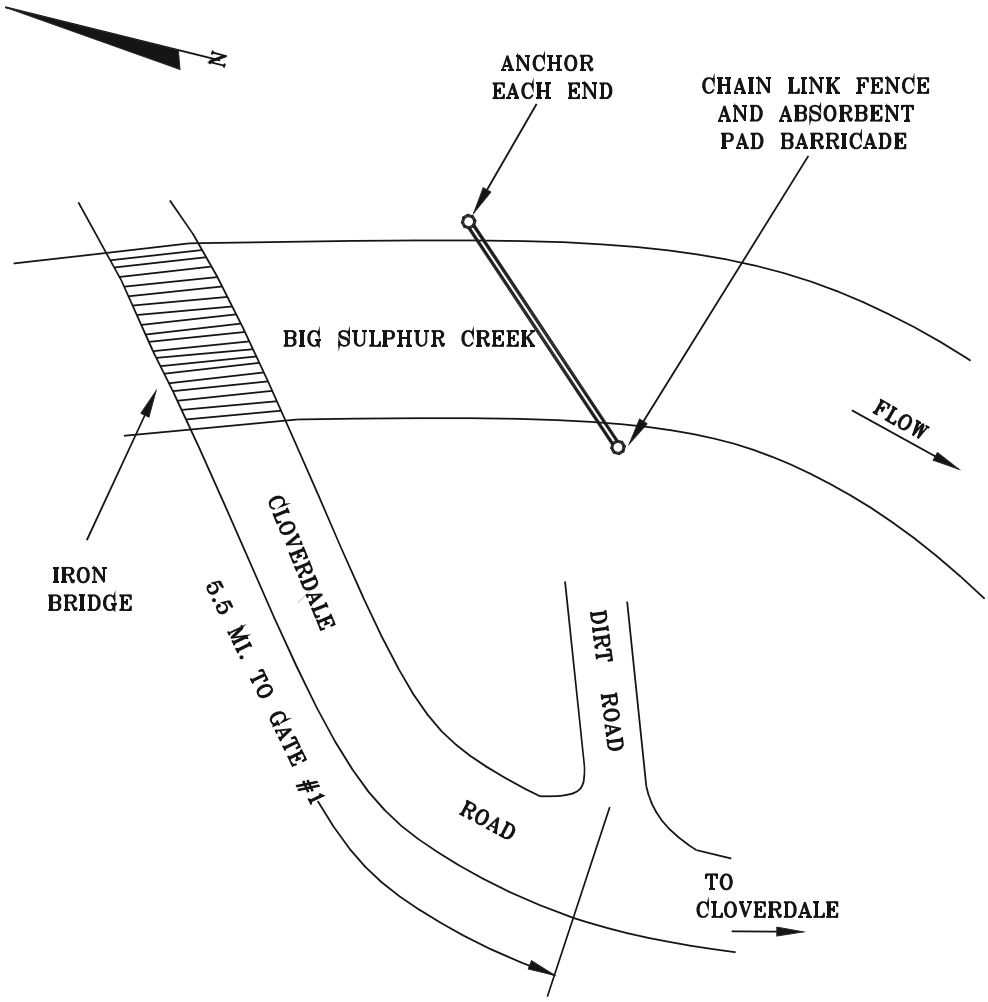
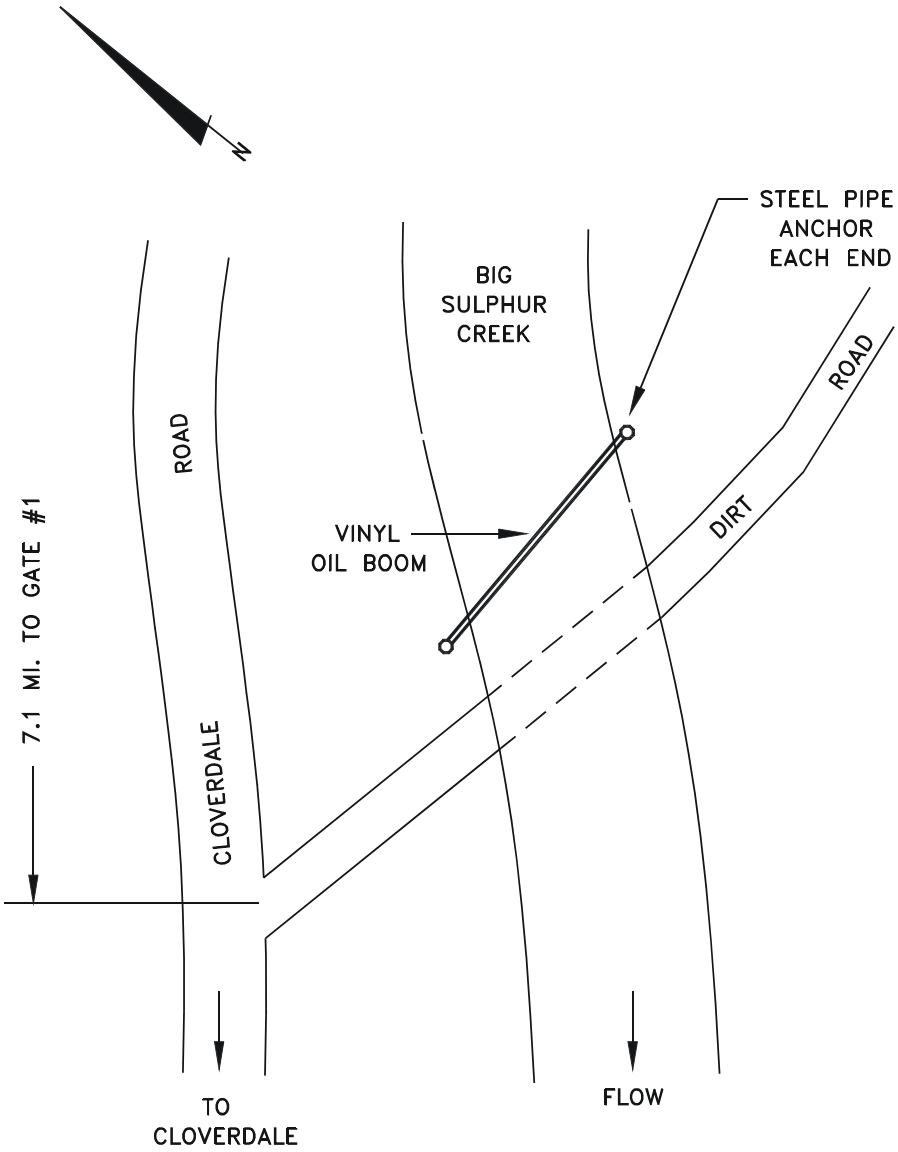


CALPINE	GEYSERS POWER CO.			
THE GEYSERS SONOMA/LAKE COUNTIES	STATION 4 CONTAINMENT AND CLEANUP AREA			
DESIGN: NV	SIZE: A	AFE NO.	DWG NO.: GG-MP-A00006E	REV: 1
DRAWN: LDC	SCALE		SHEET: 6 OF 7	
DATE: 11/18/94				
ACAD#: GG-MP-A00006E				

nv;12/27/01

REVISIONS					
ZONE	REV	DESCRIPTION	DATE	BY	APP'D
	1	Removed Exhibit 12	5/1/95	LDC	NV



CALPINE	GEYSERS POWER CO.			
THE GEYSERS SONOMA/LAKE COUNTIES	STATION 5			
	SPILL PREVENTION AND CONTINGENCY PLAN			
DESIGN NV	SIZE A	AFE NO.	DWG NO. GG-MP-A00006F	REV 1
DRAWN LDC				
DATE 11/17/94	SCALE		SHEET 7 OF 7	
ACAD# gg-MP-A00006F				

nv;12/27/01

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CP-GY-TSV-HSP-ERP-9.8
EMERGENCY PREPAREDNESS AND RESPONSE PLAN

SPILL STREAM SAMPLING PLAN

1.0 DOCUMENT HISTORY

Revision	Date	Author	Description
1	12/27/01		
2	8/27/02	CMD	Revision
3	1/16/03	CMD	Revision
4	2/18/09	Allen Sonneville Jody Spooner	Revision

2.0 PURPOSE

2.1 This plan will be used as a guideline for collecting samples when liquids (e.g. condensate, chemicals or hydrocarbons) are released and enter or may enter any watercourse.

3.0 SCOPE / APPLICATION

3.1 Collection of samples of any release of liquid materials is required by regulatory permits issued by the North Coast Regional Water Quality Control Board (NCRWQCB) on the Sonoma County side of The Geysers and by Central Valley Regional Water Quality Control Board (CVRWQCB) on the Lake County side. Analysis of the samples collected in accordance with this plan help to evaluate the impact of a release on affected watercourse. Proper sample collection, handling and analysis are all important to obtain valid information.

3.2 Personal safety during collection of samples must be considered. During inclement weather and darkness a buddy system should be used. If conditions are too hazardous at some sample points, personnel safety takes priority over sample collection. Log conditions that preclude sampling for reporting to the agencies.

4.0 PROCEDURE

4.1 Sampling Information

4.1.1 Samples of released material shall be collected when a release of any size enters or threatens to enter a watercourse. The samples will be collected by a person designated by the Operations Shift Manager / Incident Commander (IC) as soon as possible after the incident occurs. A Hazardous Material Technician will collect source samples in a hazardous material spill (when the hazards exceed the training and experience of available operations personnel). The IC or designee will advise the Control Operator of

all relevant information to document on the Operator on Duty Checklist: Chemical Response form, including sampling, weather, spill data and will complete the appropriate Release to Surface Water Data Sheet. Copies of the completed forms will be provided to the EHS contact / Liaison Officer.

Type of Samples - The types of samples taken are grab samples, which means that the fluid collected at a particular time and place can represent only the composition of the source at that time and place.

Sample Containers - The sample kits are located at area hubs: Aidlin, Bear Canyon and Geysers Administration Center (GAC) Control Room. Extra sample containers are at the GAC warehouse. The labels on the bottles and the Spill Data Sheet for the appropriate county should be filled out at the time of sampling. Required information is provided in the spill kit instructions.

Sample Bottles are: Plastic cubetainers; 5 Gallon capacity and 2 ½ Gallon capacity. In addition, Lake County contains 100 ml sterile bottles for coliform analysis.

4.2 Sampling Procedure

In the event of a spill of any liquid waste to land impacting surface water or that poses an imminent threat to surface water, samples must be collected at the following three separate locations. Each of these samples will require its own spill kit.

1. Source of the spill representative of the material spilled. It shall be sampled as soon after the spill as possible (Spill kit designated as SP001);
2. Affected surface water upstream from the area influenced by the spill. It shall be sampled once as soon after the spill as possible (Spill kit designated as SP002);
3. Affected surface stream within the affected zone influenced by the spill and shall be relocated as the influenced zone proceeds downstream (Spill kit designated as SP003).

Fill all bottles in each spill kit as full as possible!

Source of the Spill

1. If the spill material consists of steam condensate, liquid from drilling mud, or other non-hazardous liquid, fill all bottles in the kit with the source liquid as soon after the spill as possible. Fill all sample containers as full as possible and label.
2. If the spilled material consists of chemicals, fuels, liquid from abatement sludge, or other potentially hazardous materials, DO NOT attempt to collect a sample unless you have been appropriately trained in hazardous materials and waste handling.

Notify a Hazardous Material Technician or Specialist (listed in Notifications, Section 6.1.1 of this manual).

3. If the spilled material cannot be readily identified, DO NOT attempt to collect a sample. Notify one of Hazardous Material Technicians.

If the spill can be traced, additional samples are required in the affected zone as the spill progresses downstream. Collect a full kit every 5 hours as long as the spill can be traced, up to a maximum of 4 additional downstream samples.

Bring the samples to the GAC Lab for transport or storage as soon as possible after collection. Samples must be chilled as soon as possible after collection.

On weekends or other off-days, contact the EHS representative on call for assistance in sample preparation and transport.

The GAC Lab will transport the kits to one of the labs listed, for analysis:

Brelje and Race Analytical Labs	Alpha Analytical Laboratory
425 South E Street	208 Mason Street
Santa Rosa, CA 95404	Ukiah, CA 95482
(707) 544-8807	(707) 468-0401

The laboratory will perform chemical and biological analyses of the samples and return copies of the results to the Geysers Chemistry Senior Chemist.

The Geysers Senior Chemist will forward copies of the spill sample analysis and bioassays to the EHS Manager.

5.0 ENCLOSURES / LINKS

5.1 Attachment 1 – Suggested Sample Points

Attachment 1 -Suggested Sampling Points

Note: the following sample points have been safely used in the past and may used as applicable.

Designator Key:							
So	Sonoma County		BeC	Bear Creek		KC	Kelsey Creek
BSC	Big Sulphur Creek		HoSC	Hot Springs Creek		HVC	High Valley Creek
CoC	Cobb Creek		GuC	Gunning Creek		SWC	Sweetwater Creek
La	Lake County		AlC	Alder Creek			
AnC	Anderson Creek		LeC	Lee Creek			

Designator	Name	Description
SONOMA COUNTY		
BIG SULFUR CREEK DRAINAGE		
SoBSC01		NW Corner Section 11, R 10W, T11N trail crosses creek, may provide access
SoBSC02		SW Corner Section 6, R 9W, T11N trail crosses creek, may provide access
SoBSC03	Iron Bridge	Big Sulphur Creek at Cloverdale Road Iron Bridge.
SoBSC04	Sulphur Creek Gate	Just outside Post #1 enter through gate for creek access.
SoBSC05	Unit 14 bridge	Big Sulphur Creek at Big Sulphur Creek Road, access at extraction facility.
SoBSC06	Pine Flat Bridge	Big Sulphur Creek at Pine Flat Road.
SoBSC06		500 feet down Big Sulfur Creek from the Pine Flat Road and Big Sulfur Creek Crossing
SoBSC07	(1862-A pad area)	At point where unnamed tributary and Big Geysers Road intersect. Approximately ½ mile NW from turn off to 1862-A pad along Big Geysers Road.
SoBSC08	(1862-B pad area)	Collecting pond/concrete skirt located approximately ¼ mile east off access road below Calpine well pad, 63A-B-C (approximately 1 mile east of 1862-A pad).
SoBSC09	Solid Waste Management Unit (SWMU)	500 feet below drainage culvert on west side of Ridge Road adjacent to monitor well #2 location
SoCoC01	(1862-3 and C pads area)	500 feet up Cobb Creek from John Kincade Road (Old Burmah Road) crossing and Cobb Creek.
SoSQC01		Squaw Creek at Squaw Creek Road, Olin Whitescarver Bridge.
SoSQC02		Squaw Creek at entrance to DX-23 well location.

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CACHE CREEK DRAINAGE (Clearlake)

LaAlC01		Sawmill Road mile post 1.34. Bridge over Alder Creek.
LaAlC02		14747 Bottle Rock Road. Entrance road bridge over Alder Creek.
LaHVC01		High Valley Creek immediately west of Guard Post #4. During the summer this section of High Valley Creek may be dry, in which case LaHVC02 is an alternate.
LaHVC02		1.5 miles downstream of the Binkley Ranch sign located at the 'Y' just north of Guard Post #4.
LaHVC03		Sampling Point #15 is the bridge over High Valley Creek at the Howard Higgins Ranch.
LaKC01		Bottle Rock Road at Glenbrook. Bridge over Kelsey Creek.
LaKC02		Immediately downstream of the confluence of High Valley Creek and Kelsey Creek. Access from LaKC03 by driving along the east side of Kelsey Creek, or from LaHVC03 by driving north of Higgins' greenhouse.
LaKC03		At the Higgins Ranch bridge over Kelsey Creek just north of the confluence with High Valley Creek.
LaKC04		At the confluence of Kelsey Creek and Rabbit Valley Creek. It may be accessible by going to LaKC03, Higgins's bridge over Kelsey Creek and following the road on the east side of the creek north to the gate. Rabbit Valley Creek comes into Kelsey Creek across from the gate and slightly downstream.
LaKC05		At the confluence of Sweetwater and Kelsey Creeks. At this point the Sweetwater Ranch has a horizontal well in the creek bed for domestic water.
LaKC06		Sweetwater Ranch bridge over Kelsey Creek. From Hwy. 29, turn south on Kelsey Creek Drive. The ranch drive is 5.35 miles south. The bridge is 0.2 miles south of Kelsey Creek Drive.
LaLeC01		Sawmill Road mile post 1.94. Bridge over Lee Creek.
LaSWC01	delete if no area drilling	4-wheel drive Required. In bad weather it may not be accessible. Located on Sweetwater Creek at a dam that provides domestic water to the Sweetwater Ranch. Permission necessary to enter.

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Geysers Document/Procedure Library
Approval & Routing

Procedure Number: **CP-GY-TSV-HSP-ERP-9.8**

Procedure Name: Spill Stream Sampling Plan

Written By: _____ Date: _____

Revised By: Jody Spooner Date: 02/18/2009

Approved by:

Charlotte M. Dorrity, CSP Health and Safety Manager		Date:	02/25/2009
Larry Sessions, General Manager, Area 1		Date:	2/25/2009
Terry Mahoney, General Manager, Area 2		Date:	02/25/09
Dave Jackson, General Manager, Area 3		Date:	2/25/2009
Kevin Petersen, Manager Central Operations		Date:	2/25/2009
Frank Obertance, General Manager, Central Maintenance		Date:	2/25/09
Karl Urbank, VP Technical Services		Date:	2/25/09
Mike Rogers, Sr. Vice President Geothermal Region		Date:	2/25/2009

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Geysers Document/Procedure Library
Approval & Routing

Procedure Number:
Procedure Name:

Entered into Doclib:

Name: Lee Stacy Date: 3/3/09

Distributed to Document Custodians:

Name: Lee Stacy Date: 3/3/09

Routing Information: (For Document Librarian Use Only)

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X	**Geysers**								
X	**Management**	X	**Technical Services**	X	**Business Services**	X	**SH&E, Legislative & Community Relations**	X	**Generation**
X	HR		Performance Engineering		Accounting		Health & Safety	X	**Central Operations**
	Support		Development		Legal		Environmental	X	**Central Maintenance**
			Drilling		Commercial		Legislative Affairs & Community Relations		**Area 1**
			Plant Improvement		Sales & Marketing				Aidlin
			Overhauls		Land				Sulphur Springs
			Planning & Engineering Support						McCabe
			Technology						Ridge Line
			Resource					X	**Area 2**
									Eagle Rock
								X	Cobb Creek
									Lake View
									Grant
									Socrates
									Fumerole
								X	**Area 3**
									Bear Canyon
									West Ford Flat
									Calistoga
									Sonoma
									Big Geysers
									Quicksilver

CALPINE GEYSERS
EPRP 9.9

EARTHQUAKE PREPAREDNESS AND RESPONSE PLAN

1.0 PURPOSE

1.1 To define measures to prevent or minimize damage or injuries in the event of earthquakes.

1.2 To identify facilities and equipment with a higher potential to suffer damage, cause chemically induced environmental damage, and ignite or fuel fires.

1.3 To introduce general preventive measures to take to protect facilities and equipment, and the environment.

1.4 To identify immediate responses to be taken in the event of a serious earthquake.

1.5 To identify post-emergency actions for inspection and resolution of earthquake damage.

2.0 BACKGROUND AND APPLICATION

2.1 The Geysers is located in a seismically active portion of the Mayacamas Mountains. Ground motion from earthquake activity is frequent but predominantly registers between 0 – 4 on the Richter scale.

2.1.1 Earthquakes at The Geysers have not historically and are not anticipated to create significant damage to either the generating units or their associated facilities or equipment because buildings, piping and tanks at The Geysers are designed to withstand expected events.

2.1.2 Pre-planning and inspections can reduce damage that occurs during an earthquake.

2.2 Because the possibility exists for earthquake related ground motion to cause fire, injury from displaced items, or adversely affect those areas where hazardous materials are located, this Plan has been developed to offer a general overview of pre- and post-earthquake actions and shall apply to all facilities and personnel at the Geysers; it is supplemented by the other E.P.R.P. sections.

3.0 PROCEDURE

3.1 Planning.

3.1.1 General: Employees must be familiar with the evacuation plans for facilities where they work.

3.1.2 Damage to equipment and materials within buildings can be reduced by properly securing them.

3.1.3 Routine inspections will be conducted to verify that emergency lights, fire systems, fire doors, and alarms are all in working order.

3.1.4 Hazardous material storage areas are inspected with the intent to ensure potentially incompatible materials are stored separately.

3.1.5 Additional efforts should be taken periodically at each facility to verify the general readiness of the site. Specifically:

3.1.5.1 All Areas:

- Areas outside exit doors should be cleared of snow/debris.
- Walkways will remain clear allowing access and egress.
- Fire lanes will remain clear for emergency vehicles.
- Doors not part of the fire door protection system will be latched open when it is not necessary they be closed.
- Sensitive electronic equipment should be protected by a surge suppressor.
- Heavy and/or glass items should be stored on low shelves.
- Chemicals must be stored properly and incompatible chemicals should be segregated and separated.
- Materials should not be stored, even temporarily, on top of cabinets.
- Shelving and racks should be secured to walls and/or flooring to minimize movement.
- Roll up doors must be secured when opened.
- Cylinders not in use will always be stored securely with the caps on.
- Hazardous materials will be kept in appropriate lockers when not in direct use.
- Heavy machinery such as upright equipment like drill presses will be secured to the floor.

3.1.5.2 Powerplants:

- Hazardous materials stored in quantities which could cause harm to personnel or the environment if impacted by significant earthquake related ground motion are identified by type and location in the chemical inventory section of the Hazardous Materials Management Plan (HMMP). The inventories are reviewed annually to verify the accuracy of contents of the plan.

Procedures for plant-specific actions to take in an emergency are included in the HMMP.

- Materials storage areas, including maintenance buildings and turbine bays will be inspected to comply with the requirements of Section 3.1.5.1 above.
- A set of grounds and hot sticks must always be kept in the plant, inspected and ready for use in the event of downed lines.

3.1.5.3 Administrative Centers:

- File cabinets should be against walls or secured to the floor and should never be close enough to a desk that they can fall onto the occupant.
- Bookcases 6' tall and higher and shelves should be attached to the wall.
- Heavy or potentially dangerous items should not be placed on top of file cabinets and shelves.

3.1.5.4 Fueling Facilities

- Emergency shut off switches must be clearly identified.
- Emergency lighting should be in place.
- Manual operation instructions should be available.

3.1.5.5 Corrosion Mitigation Facilities:

- Deliveries of Hazardous Materials will be coordinated through Control One.
- Observers will always be prepared (PPE) to respond to caustic spills.

3.2 During an Earthquake:

3.2.1 In the event of a large earthquake, immediately duck beneath a strong surface like a desk or table to avoid falling items such as ceiling tiles and light fixtures.

3.2.2 Do not take shelter in doorways with unsecured doors as doors may close violently during earthquakes. Move away from windows.

3.2.3 If inside, remain inside until shaking has stopped as glass may be falling outside. If outside, move out from under power lines or other structures where debris may fall.

3.3 After an Earthquake:

3.3.1 General:

3.3.1.1 Be prepared for aftershocks. After a severe earthquake, move to the area's pre-designated Staging Area.

3.3.1.2 Follow the local Evacuation Response Plan to account for all personnel. Roadways may be impassable in places.

3.3.1.3 Wait for clearance to leave The Geysers to avoid obstructing access for emergency and maintenance vehicles.

- Employees shall not leave The Geysers after an earthquake without personally notifying their supervisor.

- Supervisors shall receive authorization to release employees from the Incident Commander or their designee.

- Visitors and contractors shall account for their staff and shall notify their Calpine Sponsor before releasing employees or leaving.

3.3.1.4 Persons observing in-progress deliveries of hazardous materials at the time of the earthquake should check in with Control One and report the status.

3.3.2 Identification of subsequent emergency situations

3.3.2.1 Due to the remote location of The Geysers, a major earthquake that results in widespread damage may prevent outside responders from accessing The Geysers in a timely manner and/or with adequate resources.

3.3.2.2 Widespread natural disasters may result in a critical need for reliable sources of electrical energy to help and protect the public; Plants will be kept on line after a major earthquake to the extent that it is safe for personnel, property, and the environment to keep them functioning.

3.3.2.3 In accordance with other Emergency Preparedness and Response Plans, all medical, fire, and hazardous materials release emergencies requiring assistance shall be called in to **6911** or (by radio) to **Control One**.

3.3.2.4 Based on the information available, an Incident Command Post shall be established in the GAC or other suitable location and the Incident Commander and other Central Control staff shall prioritize emergency responses:

- The safety of the responders shall always be the first priority
- Preventing additional injuries and rendering emergency medical aid shall be the next priority
- Controlling hazardous materials releases and fires shall be prioritized in accordance with the level of risk that they present to people, the environment, and property

3.3.3 Notification of Emergency Situation and Response

3.3.3.1 Scene assessment, response, and follow-up actions to be followed are outlined in the appropriate Operator on Duty Checklists and Plant Operating Procedures.

3.3.3.2 Once an assessment of need has been made, notifications for outside assistance, as well as to internal personnel and external regulatory agencies shall be made following the appropriate Incident Response Checklist for the emergencies caused by the earthquake.

3.3.3.3 Based on the extent of the post-earthquake emergency, Control One may request that personnel on the !GPP Emergency Page call **6002** or **6005** to receive assignments from the Incident Commander.

- To facilitate emergency reporting and communications, Responders shall not call down to the Control Room on 6911.
- Control room phones shall be used for emergency communications only and will not be a contact point for families.

3.3.3.4 The Incident Commander may designate a Public Information Officer who shall:

- Record general information and status on the Road Information Number (**6019**).
- Contact the designated Geysers' Public Relations Manager in San Jose.
- As needed, make a media notification for families, referencing the 431-6019 information line.

3.3.4 Post Incident Inspection Procedures

3.3.4.1 Once the situation is stabilized and emergencies that may present hazards to people, environment, or property are controlled, post-earthquake inspections may be made as appropriate to the magnitude of the earthquake and the impact that it may have had on structures and facilities within the Geysers. They shall be conducted in a manner to determine if:

- Equipment has been damaged in a way that has resulted or could result in injuries or additional damage due to structural failure or collapse;
- Equipment has been damaged in a way that has resulted or could result in personnel or environmental exposure to hazardous materials such as non-condensable gases, strong bases or acids, or other materials;
- Compressed gases in bottles have fallen or otherwise been damaged;
- Hazardous materials have been spilled or released.
    - Sites to be inspected for hazardous materials releases include, but are not limited to:
        - chemical abatement facilities;
        - oil storage sites;
        - fueling facilities;
        - warehouses;

        - hazardous waste storage areas;
        - liquefied petroleum gas storage areas); and
        - laboratories.
    - An effort shall then be made to determine the integrity of steam lines, water lines (well water, SEGEP and SR1) and secure any disruptions.
- Other damage has occurred that has resulted or could result in, damage to people, the environment, or property.

4.0 Training

4.1 All Geysers personnel shall be trained in this procedure as well as in the evacuation procedures for their work area.

4.2 Personnel who may respond to any emergency situation within the Geysers shall be trained to a level appropriate to their anticipated response duties prior to responding to such events; this training shall include, but not be limited to:

4.2.1 Emergency Preparedness and Response Procedures;

4.2.2 Hazardous Materials and Waste Management and Emergency Response;

4.2.3 Hazard Communication;

4.2.4 Task specific safety information;

4.2.5 Fire Control safety;

4.2.6 Incident Command System.

5.0 REFERENCES

5.1 Calpine-Geysers' Emergency Preparedness and Response Plans

5.2 Calpine-Geysers Health & Safety Procedures

5.3 FEMA website: http://www.fema.gov/library/prepandprev.shtm#earthquakes

5.4 California Seismic Safety Committee Website: http://www.seismic.ca.gov/ssclink.htm