



Geyserville Unified School District

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Emergency Operations Plan for Geyserville Unified School District

Promulgation Document

The personal safety and health of students, staff and the public, and the protection of district property and assets are primary concerns of the Superintendent of the Geyserville Unified School District. The Superintendent of the Geyserville Unified School District will designate an employee to develop and implement the Emergency Operations Plan for each school site and the District Office.

The designated employee will prepare school site specific instructions for implementing the plan, revise the plan as needed, and plan trainings to sufficiently prepare staff for school site emergencies.

Approval and Implementation

During an emergency, the Board recognizes that the District's educational goals may be temporarily superseded by the need to protect the safety and health of students, staff and the public. School District staff may be asked to assist in the safeguarding and release of students, or in other emergency functions. This Emergency Operations Plan addresses the planned response to emergency situations associated with disasters affecting the Geyserville Unified School District. This Plan supersedes all previous plans.

This Plan accomplishes the following:

- Establishes the emergency management organization necessary for response to an emergency or disaster affecting Geyserville Unified School District.
- Establishes the operational concepts associated with the management of emergencies.
- Provides a flexible platform for planning and response to all hazards and emergencies that are likely to impact Geyserville Unified School District. The Plan is adaptable for disasters such as earthquakes, fires, floods, landslides, Public Health emergencies, and other situations outlined in the Threat Summary and Assessments.

This document serves as the legal and conceptual framework for emergency management in the Geyserville Unified School District. There are a number of separately published documents that support this plan. These references contain checklists and other resource material designed to provide users with the basic considerations and actions necessary for effective emergency response for the specific hazard or function. These reference documents may be modified as necessary without the Geyserville Unified School District Board's approval.

Date of Approval and Adoption: February 9, 2022

Board Members:

Cherie Marckx

Michael Johnson

Sara Lopez

Linda Colliver

Chelsea Rickard

Record of Changes

The Emergency Management Agency (EMA) ensures that necessary changes and revisions to the plan are prepared, coordinated, published, and distributed.

The plan will undergo revision whenever:

- Any other condition occurs that causes conditions to change.
- It fails during an emergency.
- Exercises, drills reveal deficiencies or “shortfall(s).”
- School District situations change.
- State requirements change.

EMA will maintain a list of individuals and organizations which have controlled copies of the plan. Only those with controlled copies will automatically be provided updates and revisions. Plan holders are expected to post and record these changes. Revised copies will be dated and marked to show where changes have been made.

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Record of Distribution

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Plan Development and Maintenance

This Model Emergency Operations Plan has been developed for school sites and district offices as a basic template to be modified for each site or office. This EOP should be modified by a School Emergency Team of administrators and staff, working with first responders in the local jurisdiction. During an emergency, the EOP will be initiated by the principal or designee when conditions exist which warrant its execution. The EOP will be implemented by all staff, who will remain at school in the capacity of “Disaster Service Workers” and perform those duties as assigned until released by the principal or designee.

This EOP will be reviewed annually:

- Functions should be pre-assigned, preferably before the beginning of the school year
- Staff contact information should be updated
- New personnel should be assigned positions
- Procedures will be revised as needed
- Planning for training and drills will be established
- Updates will be recorded

The elements of emergency planning, preparedness and management are:

- **Leadership:** Leadership ensures that emergency preparedness will be a priority and that adequate resources will be allocated to create and implement district and school-based plans. At the district level leadership should come directly from the superintendent, at the school level, from the principal.
- **Incident Command System (ICS):** ICS is a standardized organizational structure that is the basis of SEMS and NIMS, designed to handle: Management, Operations, Logistics, Planning, and Administration & Finance (see Annex A). ICS allows for appropriate utilization of facilities, equipment, personnel, procedures, and communications. At a school site, the Incident Commander is the highest-ranking official in charge of the emergency response operations. The Emergency Operations Center (EOC) Director is the highest-ranking official in charge of response coordination at the district office.
- **Emergency Operations Plan (EOP):** A modified version of this model plan should be tailored and fine-tuned to meet the unique needs and resources of each individual school and district office. The site- or office-based plan includes team assignments, emergency numbers, and protocols. See Annex D for some helpful questions and things to consider when adapting this plan to your school site or district
- **School Emergency Team:** A group of individuals at each school site and the district office that works to develop the Emergency Operations Plan to meet individual school or district office needs and implement the plan in the event of an emergency. Local responding agencies, such as fire or law, may be invited to provide their expertise during the planning process. Other on-site entities, such as preschools, special education classrooms, and day care should also be included in the School Emergency Team meetings. It is important that the school site coordinates with these entities to ensure that plans are compatible or to develop joint plans, if appropriate.

- **Communications:** Plans should have established lines of internal communication (within the school) and external communication (with the district office and community). Plans should include provisions for after-hours communication and alternate means if telephone lines are disabled.
- **Emergency Response Actions:** Emergency response actions are the step-by-step procedures for schools to implement in the event of an emergency. These can be found in Annex B.
- **Staff Responsibilities:** School personnel have a moral and legal responsibility to all students in their care. Just as school staff members will rely on first responders, public agencies and others to open blocked roads, repair utilities, perform rescue work, etc., those members of the community will rely on schools to provide care for their children in an emergency.

CA Government Code 3100 declares that public employees are “Disaster Service Workers,” subject to activities as may be assigned to them by their superiors or by law. This law applies to public school employees in the following cases: 1) when a local emergency has been proclaimed, 2) when a state emergency has been proclaimed, or 3) when a federal disaster declaration has been made. The law has two ramifications:

- Public school employees may be pressed into service as Disaster Service Workers and may be asked to do jobs other than their usual duties for periods of time exceeding their normal working hours. Teachers and staff members may be required to remain at school and serve as Disaster Services Workers until they are released by the principal or superintendent.
- In those cases, their Workers’ Compensation Coverage becomes the responsibility of the state government. Their overtime compensation, however, is paid by the school. These circumstances apply only when a local or state emergency has been declared.

Ideally, the plan should include a rough prioritization of which teacher and staff members might be released first, such as those with small children or elderly dependent adults. Staff members who live a long distance from school should be encouraged to make special preparations for remaining at school a longer time, such as arranging with a neighbor to check on their home and keeping extra supplies at school.

Staff members should develop personal and family emergency response plans. Each family should anticipate that a staff member may be required to remain at school following a catastrophic event. Knowing that the family is prepared and can handle the situation will enable school staff to do their job more effectively.

- **Training:** The following minimum trainings will be offered to all staff:
 - Federally required ICS 100, IS 200, IS 700 training (provided by RESIG)
 - General awareness training for all staff, including access and functional needs considerations
 - First Aid and CPR training
 - Team training to address specific emergency response or recovery activities, such as student release, and search and rescue.
- **Practice:** Practicing the plan consists of orientation, tabletops, drills, functional exercises, etc. It is recommended that schools start with basic orientation and tabletop exercises prior to

engaging in full-scale simulations or drills. It is important that training and exercises include access and functional needs discussions or scenarios. Training resources and some sample tabletops and exercises are provided in Annex C. RESIG is also able to provide training expertise through its Emergency Services Program.

Objectives/Goals

The EOP is consistent with the federally mandated National Incident Management System (NIMS) and the state mandated Standardized Emergency Management System (SEMS). The EOP assigns responsibilities to ensure the effective management of emergency operations in the Geyserville Unified School District. It establishes the emergency management structure and outlines how the emergency response is activated. Several annexes including job aids, procedures and protocols accompany the EOP:

- Annex A includes position descriptions and forms
- Annex B includes emergency response actions and recovery guidelines
- Annex C includes training information and resources
- Annex D is designated for site specific information

The EOP and its associated annexes and appendices are intended to allow school sites to respond to emergencies in an efficient manner in order to accomplish the following:

- Protect the safety and welfare of students, staff and visitors
- Provide a safe and coordinated response to emergencies
- Protect the district's facilities and properties
- Enable the district to restore normal conditions in the shortest time possible
- Provide for the interface and coordination between the schools, district office, Sonoma County Office of Education, and local Emergency Operations Centers

Scope

This plan applies to emergencies that occur on school district property. Sites and districts are highly encouraged to coordinate planning with entities located on school district property, including, but not limited to the following: alternative, adult, and special education classrooms, pre-school, and after school day care organizations.

This plan addresses 14 hazards that may affect a school site or district office. Such incidents include earthquakes, hazardous materials incidents, flooding, landslides, and wildfires. These 14 hazards are addressed in the situation overview.

Planning Assumptions

In the event of a large-scale emergency, available government and county resources will be overtaxed and may be unable to respond to all requests for assistance. The plan assumes that schools must be self-sufficient for a time and may be required to make crucial decisions to keep students and staff safe. While compiling the plan, the following assumptions were made:

- All school site emergencies are reported to the district office
- Each site may implement their respective EOP independent of the District EOP
- Depending on the severity and scope of the emergency, the site EOP and its Incident Command System may or may not be activated

- The school site administrator or district administrator will determine if it is necessary to partially or full staff the site teams based on the nature of the emergency
- When a local emergency is proclaimed, the district's policies and procedures outlined in this plan become effective
- School district employees are familiar with the EOP and will execute their assigned responsibilities

Concept of Operations

Emergency management activities are often associated with the following four phases, although not every disaster necessarily includes all the phases.

Mitigation Phase

The mitigation phase involves taking actions to strengthen facilities, abate hazards, and reduce the potential damage to structures or their contents. While it is not possible to totally eliminate a potential disaster, taking steps to minimize the effects of an incident may create safer environments and lower response costs and casualties. Mitigation, while arguably the most important and cost effective phase of emergency management, is often the least used.

Preparedness Phase

During the preparedness phase, actions such as training and drills, are taken in advance of an emergency. These activities develop operational capabilities and responses to a disaster. All employees must be prepared, through such trainings, to respond promptly and effectively to any foreseeable emergency. Personnel should be acquainted with their position description(s) and any job aids or procedures developed for their position(s).

Response Phase

Some emergencies will be preceded by a build-up or warning period, providing sufficient time to warn the population and implement mitigation measures designated to reduce loss of life and property damage. Other emergencies occur with little or no advance warning, thus requiring immediate activation of the emergency operations plan and commitment of resources. The degree, extent and type of the incident will impact the depth of the response on the school site and beyond. For example, a rabid dog on campus will provoke an emergency response, however, this event can be managed by only one or two people. A major earthquake, on the other hand, may require the activation of all school employees and additional personnel from other agencies. The table below can be used to help school employees understand how an incident may change the response.

Response Level	Example	Site Response	District Response	Emergency Responders
Readiness	Rabid dog	Day-to-day response	Day-to-day response	No response
Local Emergency	Building on fire	Site EOP and ICP activated, IC communicates with local emergency responders and district Supt. or EOC, depending on activation status	EOC is activated, EOC may communicate with SCOE	Appropriate responders activated through 9-1-1 call

Local Disaster	Local flood	Site EOP and ICP activated, IC communicates with district EOC	EOC is fully operational and in communication with each school site and SCOE	Response actions directed by local EOC
Major Disaster	Major earth-quake	Site EOP and ICP activated, IC communicates with district EOC	EOC is fully operational and in communication with each school site and SCOE	Response actions directed by local or county EOC

The decision to activate the Incident Command Post (ICP) or Emergency Operations Center (EOC) will be made as the situation unfolds by the person-in-charge at the scene (i.e., vice principal, coach, teacher, etc). In general, the ICP/EOC should be activated when the response is beyond the capabilities of the group directed by the person-in-charge (if not available at the start of the incident, the individual designated as IC may take over the response upon arrival). The ICP/EOC should be deactivated after it has been determined that no further response actions are necessary.

Recovery Phase

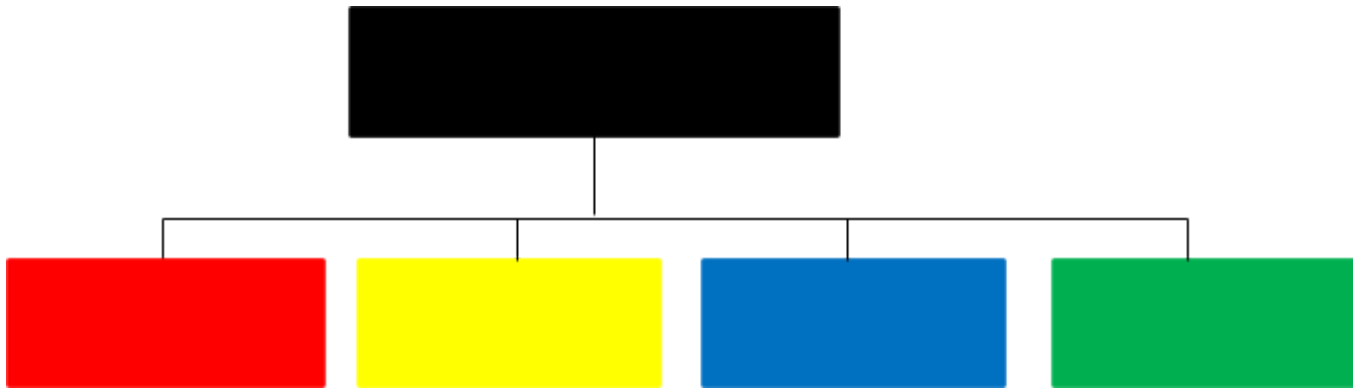
During recovery, actions are taken to restore the site to pre-event conditions and normal operations as quickly as possible. There is no clear time separation between response and recovery, and planning for recovery should be a part of the response. Recovery activities may be both short-term and long-term, ranging from restoration of essential utilities such as water and power, to mitigation measures designed to prevent future occurrences of a specific threat. Recovery, thus, leads back to the mitigation phase.

Organization and Assignment of Responsibilities

Each school is responsible for protecting the life of the students, staff, and visitors, the property of the school district, and environment around the school. It is the responsibility of the school administrators to ensure that the school staff are trained and well prepared, and that the school has a functional EOP.

The district office is responsible for protecting the life of students, staff, and visitors at the district office, and for protecting the district office and the surrounding environment. The district office must also be prepared to provide off-site support, such as leadership and assistance with response and recovery, when the incident happens at school sites within the district. It is the responsibility of the Superintendent to ensure that both the district office and school site employees are trained and well prepared, and that every site (including the district office) has a functional EOP.

Part of a functional EOP is having a response system in place that establishes the division of labor and lines of communication. The system that will be used, as required by federal and state governments, is the Incident Command System (ICS). ICS accomplishes the division of labor by establishing five sections with specific roles and responsibilities. The five sections are Management/Command, Operations, Logistics, Planning/Intelligence, and Administration/Finance.



The Management/Command Section is responsible for policymaking with respect to disaster planning and preparedness and for the overall coordination of emergency response and recovery activities. The Management Section Staff is also responsible for interacting with each other, the Incident Commander, and others to ensure the effective function of the organization.

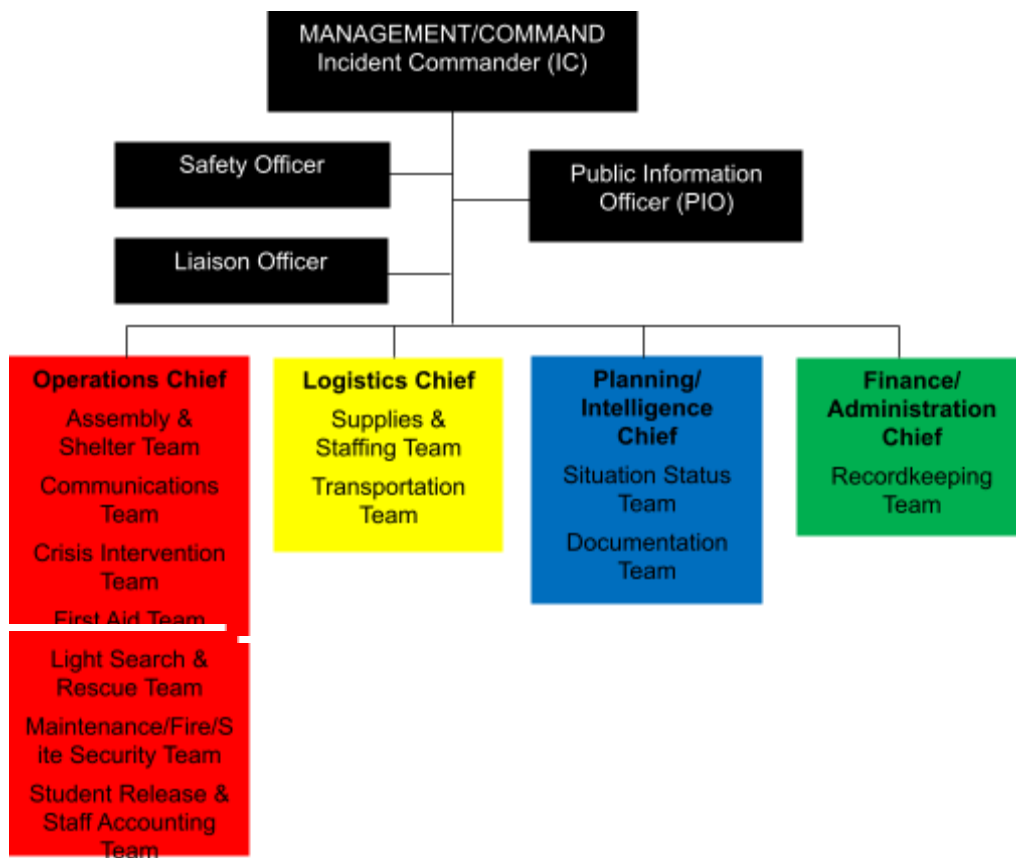
The Operations Section is responsible for implementing action plans and coordinating direct response activities, such as search and rescue, sheltering, first aid, security, student release, communications, staff and visitor accounting.

The Logistics Section is, prior to a disaster, in charge of ensuring that there are adequate supplies of food, water, and equipment for crisis response. During an emergency, this section provides services, personnel, equipment, materials, and facilities as needed.

The Planning/Intelligence Section is responsible for collecting, analyzing, disseminating, and recording information critical to the functioning of the Management Section. This Section works closely with the Incident Commander to create action plans for implementation by the Operations Section.

The Finance/Administration Section creates policies and procedures in order to document the costs associated with emergency response. During a disaster, the section activates contracts with vendors, keeps time records, tracks receipts, and accounts for expenditures. Their efforts make it possible for schools to reclaim costs associated with response and recovery efforts from the state. They also gather all paperwork and documentation at the end of the incident for inclusion in the After Action Report.

Each section in turn has a team or teams tasked with implementing very specific components of the district's emergency response plan. These teams are listed in the chart below, and a blank organizational chart has been included in Annex A.



During an emergency, the district office will establish an Emergency Operations Center (EOC) to assist in the coordination of information and resources to support the school site's incident management activities. The EOC Director will remain at the EOC, away from the incident site(s) to make decisions regarding resource coordination. An EOC may be a temporary facility or may be located in a more central or permanently established facility.

During an emergency, the Management Section on the school site will set-up an Incident Command Post (ICP). The Incident Commander and Section Chiefs remain at the ICP and will make decisions to direct the response activities based upon information coming in from each of the sections.

One of the benefits to using the ICS is that it is designed to be flexible and scalable to the size of the event. Only positions that are required for an adequate response should be filled, and ICS sections are kept as small as possible to accomplish incident objectives and monitor progress. Each particular incident will dictate how and when the organization develops, and in many instances only a couple sections need to be activated. Only in the largest and most complex operations would the full ICS organization be staffed.

Agency Coordination

The control of and response to campus emergencies is the sole responsibility of the school site teams *until* first responders such as medical, fire, and/or law enforcement arrive. Once professional responders are on campus, incident management transitions to Unified Command. Unified Command is an application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command (often the senior person from agencies and/or disciplines participating in the response) to establish a common set of objectives and strategies and a single Incident Action Plan. This transition to Unified Command is immediately facilitated by an on-site briefing, the school's Incident Commander will begin to work closely with representatives of each response agency to plan and carry out response activities. Ideally, this means that in the Incident Command Post (ICP), first responder representatives will essentially be running response activities in consultation with the school's Management Staff and Section Chiefs. On the school site, Team Leaders and Team Members will work alongside first response teams, *unless* the Incident Commander has deemed it too dangerous or unsafe.

There are a number of agencies that may respond to your campus or could be helpful as you develop this EOP. Contacts for some of these agencies are listed below.

AGENCY	NUMBER
American Red Cross (<i>Sonoma County Chapter</i>)	(707) 577-7600
Animal Care and Control (<i>Sonoma County</i>)	(707) 565-7100
CalTrans (<i>highway conditions</i>)	1-800-427-7623
Highway Patrol Information Line (<i>Sonoma County</i>)	(707) 588-1400
Pacific Gas & Electric Company (<i>outage reporting</i>)	1-800-743-5002
Redwood Empire Schools' Insurance Group	(707) 836-0779
School and College Legal Services	(707) 524-2690
Sonoma County Fire and Emergency Services Department	(707) 565-1152
Sonoma County Emergency Operations Center (EOC) Public Information Hotline (<i>available during declared emergencies</i>)	(707) 565-3856
Sonoma County Office of Education	(707) 524-2600
Sonoma County Sheriff's Department (<i>business office</i>)	(707) 565-2511
Sonoma County Department of Health Services (<i>public health information</i>)	(707) 565-4400
Sonoma County Health Services Communicable Disease Reporting	(707) 565-4567
Sonoma County 2-1-1	211

The Sonoma County School Crisis Response *System of Support* was created in 2005 to make assistance readily available to both large and small schools in Sonoma County. Visit the Resources page on www.scoe.org/safeschools to learn more about the System of Support.

SYSTEM OF SUPPORT AGENCY	CONTACT	NUMBER
Hospice of Petaluma	Yolande Adams	(707) 778-6242
Memorial Hospice & North County Hospice	Lorraine Blue	(707) 568-1094
Law Enforcement Chaplaincy Service in Sonoma County	Rose Baker Heidi Fortkamp	(707) 338-0119 (707) 546-1529
Sutter Hospice	Valerie Waidler Margo Requarth Quenby Kemler	(707) 535-5700
Paws As Loving Support (PALS) Assistance Dogs	Nancy Pierson Bea Melville	(707) 481-4649 (707) 529-6548
WillMar Center for Bereaved Children	Barbara Cullen	(707) 935-1946 (707) 236-0708

Based on the size of an incident, resources may be requested to assist from beyond the local area, such as other fire agencies within or outside the county. Resources are distributed throughout the response area based on need by the Multi-Agency Coordination System (MACS) in place at Sonoma County's EOC. Multi-agency coordination is important to establish priorities for response, allocating resources, developing strategies for handling multi-agency response problems, sharing information and facilitating communications. Sonoma County's EOC will be staffed by representatives from local, state, and federal agencies, including Sonoma County's public schools. A representative from SCOE at the county's EOC allows Sonoma County schools to request resources through MACS. School facilities, equipment, and personnel may also be deployed, via MACS, to other incidents. For example, school buses may be requested to provide transportation out of an affected area, or teachers may be requested to staff shelters.

Communications

Establishing reliable communication networks is critical for dealing effectively with an emergency or crisis. Timely contact with law enforcement and other public agencies is necessary for effective response. School staff members, students, and other onsite agencies must be told what is happening and what to do. Parents and families of staff members must be informed about the situation, including the status of their child or family member. School Board members must be kept informed and updated. Information must be transmitted to the District Superintendent and to other affected schools. Rumors must be quelled, and the media must be informed and kept updated. The communication responsibilities of the school site and district office are outlined below.

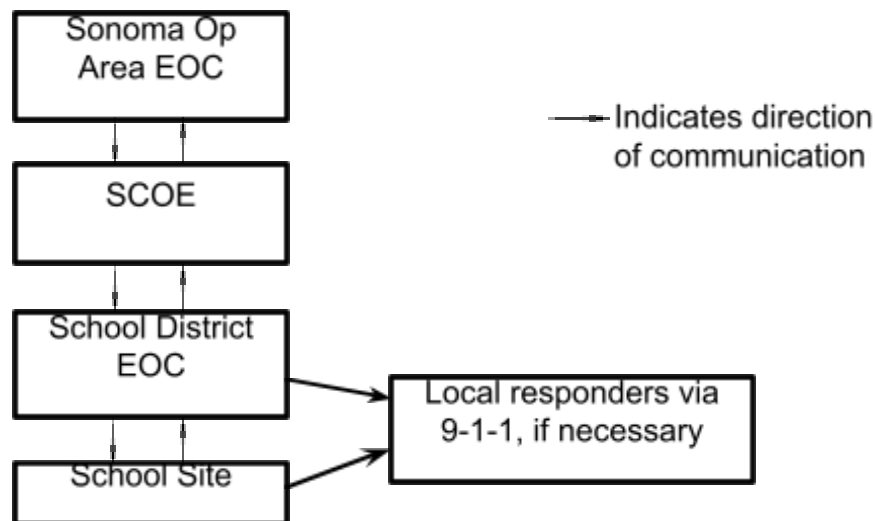
While some of these communications may occur before an emergency, each school site should have a designated Public Information Officer that deals with media inquiries during an emergency. As a part of the regular school year, each school site should discuss emergency procedures and collect emergency information from parents. RESIG has developed a Parent Resource Guide that can be modified to suit each school's needs. This resource is available in English and Spanish on the RESIG Loss Prevention Department webpage (www.resig.org/loss-prevention). During an emergency, the Incident Commander is responsible for ensuring that communications occur with:

- All site employees
- Other on site facilities such as pre-schools, special education classrooms, day care programs
- The district office
- Parents
- Emergency responders, via 9-1-1, if necessary (such as when there are life-threatening injuries)

During an emergency the district office's EOC Director is responsible for ensuring that communications occur with:

- All district office employees
- All district school sites
- SCOE
- Emergency responders, via 9-1-1, if needed at the district office (such as when there are life-threatening injuries)
- The local EOC, *if* an agreement to do so was reached prior to the incident

To ensure that information is not duplicated, it is crucial that information flows as outlined below:



Process:

- Incident occurs at a school site
- School communicates with their District Office
- School site or District Office may contact local responders via 9-1-1 if necessary (such as when there are life-threatening injuries)
- District Office communicates with SCOE (contact information is included in Annex A, Emergency Contact Numbers) to provide information regarding the situation and to report school closures, damage, injuries or deaths
- SCOE will communicate with the Schools' Representative in the Sonoma County Operational Area Emergency Operations Center (EOC)
- Schools' Representative in the Operational Area EOC will coordinate the information and maintain communication with SCOE
- SCOE will maintain an up-to-date report on the incident status around the county
- The Operational Area EOC will coordinate overall response activities and will provide information to the public via the media

Situation Overview

Sonoma County Schools

Sonoma County is divided into 40 school districts that serve nearly 71,000 students in kindergarten through twelfth grades. There are 31 elementary, 3 high school, and 6 unified districts. The districts range in size from 10 students at Kashia, which is located in a rural area, to 11,500 students in the largest district, Santa Rosa City High. Fifteen districts enroll less than 500 students, while only four serve more than 5,000.

There are 177 public schools in Sonoma County. There are 101 elementary, 23 middle/junior high, and 19 high schools, as well as 27 alternative schools and 7 independent study schools. Of these schools, 39 are charter schools.

While enrollment in Sonoma County schools has been dropping, diversity has been increasing. Currently, 39% of students are Latino, 24% are English language learners, and 40% receive free or reduced-price meals (an indicator of poverty). Approximately 12% of students receive special education services.

Geographical Features

The broad flat Santa Rosa Plain, which lies between the Sonoma Mountains on the east and low coastal hills on the west, dominates the center of Sonoma County. To the north are the Mendocino Highlands from which the Russian River flows south and west. A tributary, Dry Creek, forms Lake Sonoma at the Warm Springs Dam. The western margin of the County along the Pacific Coast includes redwood and mixed conifer forests. The Maacama Range forms the eastern boundary of the county. Along with the Sonoma Mountain Range, it encloses the Sonoma Valley. To the south, the Petaluma River runs southeast and drains into the San Pablo Bay.

Transportation

The primary travel corridor is US 101, running north and south, along which 70% of the population lives. This is the main economic and transportation corridor for the county and the entire North Bay, as well as the main tourist route through Northern California. The main east/west travel route is Highway 12, connecting Sebastopol in the west with the City of Sonoma in the east, continuing to Interstate 80 in Solano County. Highway 116 links the City of Sonoma to Petaluma, Rohnert Park/Cotati, Sebastopol, and the Russian River area. Highway 37 runs east/west through the southern portion of the county with a large amount of commercial and passenger traffic. Highway 128 runs east/west in the northern portion of the county, connecting Geyserville and Calistoga. Highway 1, the Pacific Coast Highway, runs the entire length of the Sonoma County Pacific Coast connecting Marin and Mendocino counties. All other roadways in the county are two lane rural roads or surface streets.

Hazards to Sonoma County Schools

This Emergency Operations Plan discusses 13 hazards known to affect Sonoma County School Districts:

- Civil Unrest/Law Enforcement Activity
- Dam Failure
- Explosion/Bomb Threat
- Flood
- Hazardous Materials Incident
- Landslide
- Major Earthquake
- Pandemic Influenza
- Radiological Incident
- Terrorism
- Transportation Accident
- Tsunami
- Wildland/Urban Interface Fire
- Winter Storm

Civil Unrest/Law Enforcement Activity

The spontaneous disruption of normal, orderly conduct and activities in urban areas, or outbreak of rioting or violence that is of a large nature is referred to as civil unrest. Civil unrest can be spurred by specific events, such as large sporting events or criminal trials, or can be the result of long-term disfavor with authority. Civil unrest is usually noted when normal on-duty police and safety forces cannot adequately deal with the situation until additional resources can be deployed. During the response phase to such an event, security for command and control locations such as ICPs and EOCs must also be provided.

Local political issues may generate protests that strain local resources. Criminal trials, environmental issues, and labor strife could result in serious situations. Additionally, we may be affected by civil unrest originating or occurring in other parts of the Bay Area. Regional events may start or encourage civil unrest in the Sonoma Op Area. Response to such an event is the primary responsibility of law enforcement.

Dam Failure

Dam inundation is defined as the flooding which occurs as a result of structural failure of a dam. The most common cause of dam failure is overtopping where the water behind the dam flows over the face of the dam and erodes the structure. Structural failure may be caused by seismic activity. Seismic activity may produce inundation by generating a seismically induced wave that overtops the dam without also causing dam failure. This action is referred to as a seiche. Landslides flowing into a reservoir are also a source of potential dam failure or overtopping.

Many areas of the Sonoma Op Area are subject to inundation due to dam failure. Though there have been no recent events, the possibility of dam failure exists since there are 44 dams within County boundaries that are large enough to be either state or federally regulated.

The two major dams that would have the most significant impact in the event of dam failure are Warm Springs in the north/central portion of the County, northwest of Healdsburg, and Coyote Valley, located in Mendocino County, northeast of Ukiah. Failure of either of these two dams is considered very unlikely, even in a severe earthquake. The method of construction used for these dams, their stringent federal standards for maintenance and the stewardship of the United States Army Corps of Engineers (USACE), provide an expectation that failure will not occur.

However, the other smaller dams may pose a significant threat to specific and limited areas within Sonoma County. Most of these dams are agricultural with some used for storing drinking or storm water.

For purposes of emergency preparedness, potential dam failure inundation areas are mapped as part of the specific Dam Inundation Contingency Plan prepared for each of the dams. School districts can determine whether they are located in an inundation area by viewing these maps at the Sonoma County Permit and Resource Management Department (PRMD).

Explosion/Bomb Threat

A major explosion has the potential to cause numerous injuries and fatalities, extensive property damage and other ensuing hazards and disruptions. The time of day, season of the year and weather conditions could all have a profound effect especially if fire accompanies the major explosion. A major explosion could possibly exceed the immediate response capability of the local jurisdiction. In a school setting, a bomb threat may lead to an explosion. Information regarding bomb threats is included in Annexes B and C.

Mass evacuation operations could be required to move affected populations. Many families could be separated, particularly if the incident should occur during working and school hours. Extensive search and rescue operations could be required to assist trapped and injured persons. Injured and displaced persons would require emergency medical care, food and temporary shelter. Identification of the dead and public health would be major concerns. The disruption of public utilities and services, as well as the effect on transportation routes within and peripheral to the major explosion could seriously hamper emergency operations.

Local government assistance to the private sector could be required and continue for an extended period. Assistance would be required for damage assessment, removal of debris and clearance of roadways, demolition of unsafe structures, assistance in

reestablishing public services and utilities, and provision of continuing care and welfare for the affected population, including temporary housing for displaced persons.

Sonoma County is considered to be a combined suburban and rural area, removed from the multiple risks of explosive materials emergencies normally associated with a more urbanized environment. With the exception of the facilities of several large manufacturers in the County, the central portion of the County along the U.S. 101 corridor contains the majority of facilities associated with explosive materials. These facilities are generally limited to small industrial parks within or near the incorporated cities. The eastern and western portions of the County are primarily rural and most of this area is forested or agricultural. There are little or no explosive materials associated with the agricultural activities of these areas.

Sonoma County's highway network includes approximately 320 miles of federal and state highways, 1,500 miles of county maintained roads, and 600 miles of city maintained streets and roads. U.S. 101 is the major freeway and runs north to south through the center of the County. It is the most heavily traveled in terms of truck traffic and is the most frequent location of those accidents involving explosive materials that occur on major roads. Highways 12, 37, 116, 121, 128 and Highway 1, the Pacific Coast Highway, also traverse the County. These routes handle a smaller volume of truck traffic, but historically have been prone to vehicle accidents consistent with heavy traffic on two lane roadways.

The Sonoma County Airport is located several miles northwest of downtown Santa Rosa. Air transportation of explosive materials involves the smallest quantity estimates but still poses a potential hazard.

The County's accident history shows that most incidents occur in the transportation corridors. Although there have been very few incidents involving explosive materials, the potential for an extreme threat to life, the environment, and property is high.

Flood

Floods are generally classed as either slowrise or flash floods. Slow Rise floods may be preceded by a warning time lasting from hours, to days, or possibly weeks. Evacuation and sandbagging for a slow rise flood may lessen flood related damage. Conversely, flash floods are the most difficult to prepare for, due to the extremely short warning time, if any is given at all. Flash flood warnings usually require immediate evacuation within the hour.

The National Weather Service issues flash flood watches and warnings. A flash flood WATCH is issued when flash flooding is possible within the designated watch area and close to the watch area, but the occurrence location, and/or timing is still uncertain; all persons should be alert. A flash flood WARNING is issued when a flash flood has been reported, in progress, imminent, or highly likely all persons should take necessary precautions.

No area is immune to flash floods. On small streams, especially near the headwaters of river basins, water levels may rise quickly in heavy rainstorms, and flash floods can begin before the rain stops falling. There is little time between the detection of flood conditions and the arrival of the flood crest. Swift action is essential to protect life and property.

Flash floods also occur in or near mountainous areas where torrential rains can quickly change a dry watercourse or small brook into raging treacherous torrents of water.

All low lying areas, both coastal and inland, are subject to flood conditions. Urban development in flood plain areas is often subject to seasonal inundation. The floodplain is a natural extension of any waterway, although infrequently used. Storm water runoff exceeding the capabilities of the physical characteristics of stream and drainage channels results in the natural flooding of a localized area.

Sonoma County has the highest repetitive flood damage rate west of the Rocky Mountains. A large percentage of the County may be subject to flooding due to flash flooding, urban flooding (storm drain failure/infrastructure breakdown), river channel overflow, downstream flooding, etc. The County has historically been vulnerable to storm surge inundation associated with hurricanes and tropical storms.

The majority of areas subject to flooding in Sonoma County are adjacent to the Russian River in that portion of the western county bordered by Mirabel Park on the east and Duncans Mills on the west. The Petaluma River has also caused significant flood problems historically, causing damage within the City of Petaluma, particularly in the Payran Ranch area. Other areas that flood periodically are low lying lands near the San Antonio, Sonoma, Santa Rosa, Mark West and Lichau Creeks, and the Laguna de Santa Rosa. Coyote and Warm Springs Dams afford an appreciable level of flood protection from Russian River overflows during the winter and spring months.

State and federal weather/river forecasters monitor the Russian River through a series of stations located along the river and its tributaries. The system affords a degree of advance flood warning for emergency responders. Flooding has occurred along the lower and middle reaches of the Russian River on a regular basis throughout the last one hundred years of recorded river history. Serious floods occurred in 1937, 1940, 1955, 1964, 1982, 1986, 1993, 1995 and 2006.

Emergency Readiness Stages

The evolution of a flood related emergency could begin with a minor problem, such as one or two days of heavy rainfall, and culminate in a catastrophic event, such as several weeks of excessive rainfall and emergency dam releases. Emergency preparedness

measures will be based on four stages of response actions. These response actions are keyed to Russian River elevations measured at the Hopland, Healdsburg and Guerneville Bridges. These river elevations are intended to be guides for declaring the response stages. The Sonoma County Department of Emergency Services will declare response stages based on a variety of circumstances, including weather forecasts and dam releases.

- **Stage I** (Flood Watch Stage): Pre-emergency river level is at 25 feet at the Guerneville Bridge and is forecasted to continue rising.
- **Stage II** (Flood Monitoring Stage): Moderate to heavy rain expected for next four (4) to six (6) hours. River level is 18 feet at the Hopland Bridge, 15 feet at the Healdsburg Bridge, and/or 29 feet at the Guerneville Bridge and is forecasted to continue rising.
- **Stage III** (Flood Stage): Continuation of heavy rain over next six (6) to twelve (12) hours. Identified risk areas should be closed to traffic. Public information to be distributed to residents and businesses in affected areas. River level is 21 feet at the Hopland Bridge, 19 feet at the Healdsburg Bridge, and/or 32 feet at the Guerneville Bridge and is forecasted to continue rising. The Russian River flows over the banks of the main channel at this elevation and several low-lying areas are flooded.
- **Stage IV** (Significant Flood Stage): Safety/Health threat to private property and persons. Areas subject to flooding should be evacuated. River level is at 36 feet at the Guerneville Bridge and forecasted to continue rising.

Hazardous Materials Incident

The release of hazardous materials has the potential for adverse impacts on human health, the environment and property, depending upon the type, location, and quantity of material released. Although hazardous material incidents can happen almost anywhere, certain areas of the County are at higher risk. Schools near roadways that are frequently used for transporting hazardous materials or near industrial facilities that use, store, or dispose of such materials, have increased potential for major mishaps.

Sonoma County is considered to be a combined suburban and rural area, removed from the multiple risks of hazardous materials emergencies normally associated with a more urbanized environment. With the exception of the Geysers geothermal fields in the northeast corner of the County, the central portion of the County along the U.S. 101 corridor contains the majority of facilities closely associated with hazardous materials. These facilities are generally limited to industrial parks within or near the incorporated cities.

The eastern and western portions of the County are primarily rural and most of this area is forested or agricultural. There are moderate concentrations of fertilizers, pesticides, and other related substances in these areas consistent with the agricultural activities of these areas.

Spill history in the County shows most problems occurring in the transportation corridors. Although most of these incidents have been easily handled, the potential still exists for an extreme threat to life, the environment, and property.

Illegal disposal of hazardous waste into sewer systems, at landfill or transfer sites, and directly into streams, or dumping along roadways is a problem and accounts for a substantial portion of hazardous materials emergency response in the County. Illicit drug manufacturing operations have been uncovered in the County and they do not legally dispose of drug laboratory residue and wastes. Several incidents involving residue and byproducts from these illegal drug laboratories have been dumped on roadsides.

Industry generally is aware of hazardous materials regulations and appropriate disposal procedures and has acted responsibly. To assist small quantity waste generators, there is a County program sponsored by the Sonoma County Waste Management Agency to provide a means for proper disposal, recycling, or reduction in waste generation. In addition, for household waste and Small Quantity Generators, a Household Toxics Waste Facility is available to residents and local businesses at the Central Disposal Site for disposal of toxic material.

Federal, State, regional and local agencies have identified contaminated waste sites in Sonoma County that potentially pose a threat to public health. The majority involve disposal prior to the enactment of regulatory controls and from leaking underground storage tanks. The Environmental Health Division of the Sonoma County Department of Health Services maintains a monthly updated list of contaminated underground storage tank sites undergoing clean up and provides it to the Department of Emergency Services, Hazardous Materials Division.

Landslide

The rolling hills, coastal ranges, and steep canyons that characterize Sonoma County's landscape contribute to a widespread landslide hazard. Landslides are described as downward movement of a slope and materials under the force of gravity. In addition to gravity, extended periods of intense rainfall during the winter months is the primary cause of landslides in the County. Landslides can also be triggered by seismic activity. Landslides are a significant secondary hazard to wildland fire, where periods of heavy rainfall on denuded slopes cause landslides and mudslides.

The main types of landslide activity that can impact Sonoma County include:

- **Slides:** Mass movements, where there is a distinct zone of weakness that separates the slide material from more stable underlying material.
- **Falls:** Abrupt movements of masses of geologic materials, including rocks and boulders, that become detached from steep slopes or cliffs.

- **Debris Flows:** Rapid mass movement of a combination of loose soil, rock, organic matter, air, and water that mobilize as a slurry flowing down slope. These are most often caused by heavy precipitation and intense surface water runoff in steep gullies.
- **Mudflows:** Earth flow consisting of material that is wet enough to flow rapidly and contains at least 50 percent sand, silt, and clay sized particles. Mudflows can travel at speeds of 35 mph or greater.
- **Creep:** Imperceptibly slow, steady, downward movement of slope-forming soil or rock.

The occurrence of landslides is determined by both natural and human factors. Natural factors include the cohesive strength and shrinkwell characteristics of the affected minerals, the orientation of joints and planes of weakness between slide material and bedrock, the steepness of slopes, the degree of saturation of ground materials (highly affected by rainfall), and the density of vegetation. Human factors include the oversteepening and overloading of slopes, the removal of natural vegetation, and the addition of water to the soil by watering lawns and septic system drain fields, and onsite ponding of storm runoff.

In Sonoma County, the hillside areas in both the incorporated and unincorporated areas pose a significant landslide risk to property and infrastructure. This makes much of the land area of the County, with the exception of valley areas, highly susceptible to landslide hazards. The hazard is highest in slopes of thirty percent or greater, but can occur on slopes of fifteen percent or less depending on geologic deposits, vegetation, and building patterns, among other issues. Landslides are also likely along coastal cliffs. Historic landslides are perhaps the best indicator of where landslides will occur again, unless the conditions that contributed to the prior landslide have been mitigated.

Current County codes protect against placing new structures on known landslide areas. However, existing development on or near steep slopes, much of it constructed to previous codes, is at risk. Communities such as Monte Rio and Rio Nido with histories of damaging landslides remain at risk from future events.

Major Earthquake

Sonoma County is cross-cut by and in the vicinity of several known active and potentially active earthquake faults including the San Andreas and Healdsburg/Rodgers Creek. See Earthquake Fault Lines Map. New faults within the region are continuously being discovered.

A major earthquake occurring in or near this jurisdiction may cause many deaths and casualties, extensive property damage, fires, hazardous material spills and other ensuing hazards. The Rodgers Creek fault is considered the greatest earthquake threat to Sonoma County because of the high probability of rupture and its proximity to the County's greatest concentration of population, governmental services and infrastructure. The effects could be aggravated by aftershocks and by the secondary effects of fire,

hazardous material/chemical accidents and possible failure of waterways and dams. The time of day and season of the year would have a profound effect on the number of dead and injured. Such an earthquake would be catastrophic in its effect upon the population and could exceed the response capabilities of the individual cities, Sonoma County/Op Area and the Governor's Office of Emergency Services and other state agencies. Damage control and disaster relief support would be required from other local governmental and private organizations, and from the state and federal governments.

Extensive search and rescue operations may be required to assist trapped or injured persons. Injured or displaced persons could require emergency medical care, food and temporary shelter. Identification and burial of many dead persons would pose difficult problems; public health would be a major concern. Mass evacuation may be essential to save lives, particularly in areas downwind from hazardous material releases. Many families would be separated particularly if the earthquake should occur during working hours, and a personal inquiry or locator system could be essential to maintain morale. Emergency operations could be seriously hampered by the loss of communications and damage to transportation routes within, and to and from, the disaster area and by the disruption of public utilities and services.

The economic impact on Sonoma County from a major earthquake would be considerable in terms of loss of employment and loss of tax base. Also, a major earthquake could cause serious damage and/or outage of computer facilities. The loss of such facilities could curtail or seriously disrupt the operations of banks, insurance companies and other elements of the financial community. In turn, this could affect the ability of local government, business and the population to make payments and purchases.

The potential hazards that the Sonoma Op Area may face in an earthquake include the following:

- Ground Shaking
- Liquefaction
- Damage to Vital Public Services, Systems and Facilities
 - Bed Loss in Hospitals
 - Building Survivability
 - Communications
 - Dam and Flood Control Channels
 - Electrical Power
 - Fire Operations
 - Roads, Highways and Bridges
 - Natural Gas
 - Hazardous Materials
 - Sanitation Systems
 - Water Supply

Ground Shaking

The most significant earthquake action in terms of potential structural damage and loss of life is ground shaking. Ground shaking is the movement of the earth's surface in response to a seismic event. The magnitude of the earthquake, distance from the epicenter, and characteristics of surface geology determine the intensity of the ground shaking and the resultant damages. This hazard is the primary cause of the collapse of buildings and other structures.

Liquefaction

Many areas may have buildings destroyed or unusable due to the phenomenon of liquefaction. Liquefaction is the loss of shear strength of a soil. The shear strength loss results from the increase of water pressure caused by the rearrangement of soil particles induced by shaking or vibration. Liquefaction has been observed in many earthquakes, usually in soft, poorly graded granular materials (i.e., loose sands), with high water tables. Liquefaction usually occurs in the soil during or shortly after a large earthquake. The affected soil strata behave as a heavy fluid. Buried tanks may float to the surface and objects above the affected soil may sink. Pipelines passing through liquefacted materials typically sustain a relatively large number of breaks in an earthquake.

Damage to Vital Public Services, Systems and Facilities

- **Bed Loss in Hospitals:** Sonoma County has 8 major medical facilities, and several of the acute care hospitals may be lost due to structural damage. In addition, even the most modern hospitals can be incapacitated by non-structural damage. Earthquake shaking can damage sensitive equipment, topple storage units, and dislodge ceilings or light fixtures. Damage to water pipes could flood portions of buildings. Damages can be serious, and it can cause major areas within hospitals to be nonfunctional during the critical hours immediately following a major quake. This will decrease the number of beds available and create the need for alternate treatment facilities or field hospitals. Although a percentage of the remaining beds could be made available by discharging or transferring non-emergency patients, it will probably be necessary to receive an immediate influx of emergency medical aid and/or export some of the seriously injured to out-of-county facilities.

- **Building Survivability:** An earthquake could shake all parts of Sonoma County. Every building in the County is exposed to high risk of damage in earthquakes by virtue of being located in a seismically active part of the country. Some of these structures face an elevated risk because they are located in high hazard zones, such as near the fault, on liquefiable soils, or on slopes subject to landslides. Other structures face high risk because their construction quality is inadequate to withstand strong shaking, primarily because they were built decades ago before modern building codes were enacted.
- **Communications:** System failure, overloads, loss of electrical power and possible failure of some alternate power systems will affect telephone and cellular systems. Numerous failures can be expected to occur, and the systems will be overloaded beyond capacity. The anticipated damage could disable up to 80% of the telephone system for one day. In light of this, emergency planners should not expect the use of telephone or cellular systems for the first few days after the event.
- **Dam and Flood Control Channels:** Based upon current design parameters, construction practices and ongoing programs of review and modification, catastrophic dam failure is considered unlikely. The Warm Springs Dam at Lake Sonoma is of modern construction and is closely monitored by an array of seismic sensors. However, many flood control channels are expected to suffer minor damage. Pumping stations in coastal communities are expected to fail due to liquefaction.
- **Electrical Power:** Major power plants are expected to sustain some damage due to liquefaction and the intensity of the earthquake. Up to 60% of the system load may be interrupted immediately following the initial shock. According to representatives of PG&E, electrical power may not be rerouted, resulting in widespread outages for an undefined period of time. A great deal of the imported power is expected to be lost. In areas of greatest shaking, it should be anticipated that some distribution lines, both underground and surface, would be damaged. Much of the affected area may have service restored in days; areas that suffer extensive damage or have underground distribution may require a longer time.
- **Fire Operations:** Although total collapse of fire stations is not expected, possible disruption of utilities, twisted doors and loss of power can create major problems. Numerous fires due to disruption of power and natural gas networks can be expected. Many connections to major water sources may be damaged and storage facilities would have to be relied on; water pressure and supply could be inadequate to non-existent. First response from fire personnel is expected to be damage assessment and determining resources needed for response and recovery needs. Response could be further complicated and delayed by the disruption of transportation routes. Secondary responses by the fire service will focus on search and rescue of trapped persons.

- **Roads, Highways and Bridges:** Many roads in the county traverse areas subject to liquefaction and landslides. Roadways that experience liquefaction can develop very large cracks that prevent their use, and can develop smaller cracks and sinkholes that impede traffic. Landslides triggered by earthquakes can both block and rip out sections of roads. Numerous roads will be subject to delays and detours. Damage to freeway systems is expected to be major, despite seismic upgrades. Portions of surface streets in the vicinity of freeways may be blocked due to collapsed overpasses. Many surface streets in the older central business districts will be blocked by debris from buildings, falling electrical wires and pavement damage. Local bridges that have not been seismically retrofitted may experience a high percentage of failure.
- **Natural Gas:** Particularly in the areas of intense ground shaking, damage to natural gas distribution networks will consist of; (a) isolated breaks in major transmission lines, and (b) numerous breaks in mains and individual service connections within the distribution systems. Numerous leaks in the distribution system will affect a major portion of the urban areas, resulting in a loss of service for extended periods. Fires should be expected at a small percentage of rupture sites both in the transmission lines and the distribution system. Transmission pipelines serving the Santa Rosa plain are most vulnerable to damage caused by liquefaction.
- **Hazardous Materials:** The County has many sites containing hazardous materials. These sites include drycleaners, gas and service stations, agricultural sites, industrial sites, and high-tech facilities. The majority of the sites of most concern are clustered along U.S. 101 or associated with the Geysers geothermal field. Earthquake shaking can release hazardous materials. There is the potential that trucks or train cars carrying dangerous materials could be tipped over by an earthquake and materials dangerous to health or the environment could be released. Some of these sources may contain gases or liquids that are potentially harmful to human health. Leaking products present a serious fire hazard.
- **Sanitation Systems:** Many of the wastewater treatment facilities could be disrupted up to 6 months, depending on the severity and intensity of the earthquake and damage caused by liquefaction. There is a limited amount of storage available in the wastewater treatment plants; if the treatment train cannot be restored before the storage is exceeded, wastewater will require discharge with emergency chlorination to reduce health hazards. Overflow of sewage through manholes and from ponds can be expected due to breaks in sewer mains and loss of power. As a result, there may be danger of excessive collection of explosive gas in sewer mains, and flow of untreated sewage in some street gutters. Many house sewer connections will break and plug.

- **Water Supply:** Several ruptures are anticipated along the water pipelines in the County. A majority of water wells are expected to be disabled by loss of electricity and the lack of backup power sources. In addition, shear forces could render about a third of the wells inoperative for an indefinite period. Water availability and distribution for needed life support, to treat the sick and injured and for fire suppression activities is of major concern to each community.

Pandemic Influenza

The worst natural disaster in modern times was the infamous “Spanish flu” of 1918-1919, which caused 20 million deaths worldwide and over 500,000 deaths in the U.S. Although the Asian influenza pandemic of 1957 and the Hong Kong influenza pandemic of 1968 were not as deadly as the Spanish influenza pandemic, both were associated with high rates of illness and social disruption.

Influenza is a highly contagious viral disease. Pandemics occur because of the ability of the influenza virus to change into new types, or strains. People may be immune to some strains of the disease either because they have had that strain of influenza in the past or because they have recently received influenza vaccine. However, depending on how much the virus has changed, people may have little or no immunity to the new strain. Small changes can result in localized epidemics, however, if a novel and highly contagious strain of the influenza virus emerges, an influenza pandemic can occur and affect populations around the world.

California, with its West Coast location and several major ports of entry for flights and shipping from Asia (a likely location for the development of a novel virus), would likely be among the first U.S. locations for an influenza pandemic to establish a foothold. The California Department of Health Services (CDHS) estimates that the impact of an influenza pandemic on California’s population of 35 million would include:

- 8.8 million persons ill with influenza (estimated range: 5.3 million to 12.3 million)
- 4.7 million outpatient visits (estimated range: 2.8 million to 6.6 million)
- 97,200 persons hospitalized (estimated range: 58,300 to 136,000)
- 21,500 deaths (estimated range: 12,900 to 30,200).

An influenza pandemic is unlike any other public health emergency or community disaster. Many experts consider influenza pandemics to be inevitable, yet no one knows when the next one will occur, and there may be very little warning. Most experts believe that we will have between one and six months between the time that a novel influenza strain is identified and the time that outbreaks begin to occur in the U.S. Outbreaks are expected to occur simultaneously throughout much of the U.S., preventing sharing of human and material resources that normally occur with other natural disasters. The effect of influenza on individual communities will be relatively prolonged -- weeks to months -- when compared to minutes-to-hours observed in most other natural disasters.

Because of the substantial lead times required for vaccine production once a novel strain has been identified, it is likely that vaccine shortages will exist, especially during the early phases of the pandemic. Effective preventive and therapeutic measures -- including antiviral agents -- will likely be in short supply, as may some antibiotics to treat secondary infections. When a vaccine becomes available, it is expected that individuals will need an initial priming dose followed by a second dose approximately 30 days later to achieve optimal antibody responses and clinical protection. Health-care workers and other first responders will likely be at even higher risk of exposure and illness than the general population, further impeding the care of victims. Widespread illness in the community will also increase the likelihood of sudden and potentially significant shortages of personnel in sectors who provide critical community services: health-care workers, military personnel, police, firefighters, utility workers, and transportation workers are vulnerable.

Based on estimates from the Centers for Disease Control and County Public Health, a future pandemic could produce the following results:

Result	United States	Sonoma County
Severe Illness	40 - 120 million	122,000
Hospitalized	314,000 – 734,000	1,400
Death	89,000 – 207,000	330
Economic Losses	\$71 billion - \$166 billion	\$1 billion - \$3 billion

Because Sonoma County cannot be isolated, its residents are subject to contracting and spreading the illness. The population is centered along the U.S. 101 transportation corridor which could speed the transmission of the influenza as well as impact response efforts. Depending on the perceived risk, large numbers of the public may leave the urban centers of the Bay Area. Under California law and Sonoma County Code, the County Health Officer has the primary responsibility for responding to a public health emergency such as influenza pandemic.

Radiological Incident

The release of nuclear (radiological) materials has the potential for adverse impacts on human health, the environment and property, depending upon the type, location, and quantity of material released. Although accidental radiological material release incidents can happen almost anywhere, certain areas of the county are at higher risk. Jurisdictions that are near roadways that are frequently used for transporting nuclear materials and jurisdictions with industrial facilities that use or store such materials, have increased potential for major mishaps.

Releases of radioactive materials have caused fatalities and injuries, necessitated large scale evacuation, and made large amounts of property uninhabitable. Radioactivity in gaseous form has caused injuries and fatalities among emergency response teams and others in proximity to the event. Serious health effects have also resulted from radioactive materials entering surface or groundwater supplies.

As Sonoma County is considered to be a combined suburban and rural area, it is removed from the risks of radiological materials emergencies normally associated with a more urbanized environment. The central portion of the County along the U.S. 101 corridor contains the majority of facilities closely associated with radioactive materials. These facilities are generally limited to small industrial parks, medical facilities, and hospitals within or near the incorporated cities. The eastern and western portions of the County are primarily rural with mostly forested or agricultural areas.

The County and its nine cities do not have the large industrial complexes normally associated with a high incidence of radioactive material emergencies. However, should a radioactive material emergency occur, resources that some urban communities draw upon may not be immediately available to Sonoma County. Consequently, it is estimated that significant out of county assistance may be unavailable for a period of two to five hours or longer if the incident were to occur at a peak traffic time.

Terrorism

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Terrorists often use threats to create fear among the public, to try to convince citizens that their government is powerless to prevent terrorism, and to get immediate publicity for their causes. Acts of terrorism include threats, assassinations, kidnappings, hijackings, bombings, cyber-attacks, and chemical, biological and nuclear weapons. In a school setting, terrorism is most likely going to occur as a shooter on campus situation.

Terrorist activities are an increasing threat to our society, and those attacks have occurred against both the public and private sectors. Attacks have been directed against government and corporate leaders, private individuals, governing bodies and related agencies, police and other public service personnel and their facilities, public utility facilities, financial institutions, communication facilities, etc. Government can, to some extent, prepare for these types of attacks with plans to deter or react to a given scenario. Homeland Security grant funding has provided Sonoma Op Area agencies with many additional first responder capabilities that would be used in such an attack. Working relationships with first responders and specialized response teams have been enhanced and expanded.

Since terrorism could occur anywhere in Sonoma County, response plans and/or concepts have been developed for use and adaptability throughout the county. A terrorist activity emergency has its own unique characteristics and must be dealt with in accordance to its magnitude and with an appropriate level of response. The incident might be handled in a relatively short time period or it might go on for days. Response to such an event is the primary responsibility of law enforcement.

Chemical/Biological

Intentional release of such weapons would cause considerable damage. If an incident were to occur in a densely populated area, large numbers of casualties could be expected. Still, there are several factors that would determine the scope of such an event. The amount and effectiveness of the selected agent or chemical, method of dispersal, weather conditions, vicinity to population centers, time of day and the expertise of the responding agencies to recognize such an attack would dramatically affect the outcome. Similar to emerging infectious diseases, early detection and control of biological or chemical attacks is vital to the success in limiting the scope of damage.

Chemical terrorism acts are likely to be identified by police, fire and EMS because of their immediate and obvious symptoms. Conversely, attacks with biological agents are liable to be covert, and therefore much more difficult to recognize. Biological agents will not have an immediate impact because of the delay between exposure and the onset of illness (the incubation period), thus compounding the difficulty of early detection. Moreover, the first casualties will probably be identified by physicians or other primary healthcare providers, and most likely be exhibiting signs of an ordinary viral infection. Recognizing that the symptoms are a result of a biological agent will be extremely difficult without prior experience or training, and an awareness of a preceding event.

Only a short window of time exists between the identification of the first cases and before a second, larger wave of the populace becomes ill. During this phase, emergency officials will need to determine that an attack has occurred, identify the organism, and enact prevention and prophylactic strategies. Responding to large-scale outbreaks caused by bacterial pathogens will require the speedy mobilization of public health workers, emergency responders, and private health care providers. They will also require rapid procurement and distribution of large quantities of drugs and vaccines, which must be available quickly to prevent successive waves of transmission.

Nuclear

A nuclear weapon detonation would have distinct and unique characteristics. Some of the expected dangers from such a detonation would be blast and overpressure, intense heat and light, nuclear radiation (fission and fusion), electromagnetic pulse (EMP), and radioactive fallout. The damage caused by a nuclear explosion is related to the yield of the weapon, type of burst, proximity to the blast, geography, weather, the vicinity to population centers, time of day and the types of construction used on the impacted buildings. Unquestionably, any explosion of a nuclear device no matter the yield, would severely strain, and perhaps cripple the local emergency response infrastructure. The multiple, large-scale hazards resulting from such a blast would, at minimum, delay response. Damage and casualties near the blast would be horrific and massive. The out-lying areas would also have numerous fires, collapsed and damaged buildings, significant casualties and be within the radioactive fallout zone. Great numbers of people would be killed, injured, displaced, and the need for medical, morgue and shelter services would be tremendous.

Radiological Dispersal Device/"Dirty Bomb"

A Radiological Dispersal Device (RDD) or "Dirty Bomb" is a Weapon of Mass Disruption, as opposed to a Weapon of Mass Destruction. A dirty bomb combines a conventional explosive, such as dynamite, with radioactive material. Generally, the conventional explosive would have more immediate lethality than the radioactive material. The most probable sources of radiation in a dirty bomb would not emit enough radiation to kill or cause severe illness in humans.

The extent of local contamination would depend on a number of factors, including the size of the explosive, the amount and type of radioactive material used, and weather conditions. Prompt identification of the kind of radioactive material employed would greatly assist local authorities in advising the community on protective measures, such as quickly leaving the immediate area, or going inside until being further advised. Subsequent decontamination of the affected area could involve considerable time and expense. For example, certain radioactive materials, dispersed in the air, could contaminate up to several city blocks, creating fear and possibly panic and requiring potentially costly cleanup. Prompt and accurate public information should be distributed to prevent the panic sought by terrorists.

A second type of RDD might involve a powerful radioactive source hidden in a public place, such as a trash receptacle in a busy bus or transit station, where people passing close to the source might get a significant dose of radiation.

Recovery, following a disturbance, will not be instantaneous. The restoration will require a continued effort by all involved departments and agencies and elements of the private sector. Community interaction will include restoration of the area to its former condition by terminating emergency regulations and restrictions, removal of barricades, cleanup of debris, and the restoration of services, utilities, transportation routes, and traffic movement and patterns.

Transportation Accident

A major incident involving automobile, truck, bus, airplane, helicopter or any combination of vehicles could result in a large number of casualties and significantly impact regional transportation systems. The ability of emergency responders to minimize suffering, disability, death and transport victims to hospitals will be directly affected by the time of day and traffic congestion. A major incident on any of the primary routes will produce road closures of at least four or more hours. Extensive search and rescue operations may be required to assist trapped and injured persons. Emergency medical care and temporary shelter would be required for injured or displaced persons. Identification, movement and temporary storage of any significant number of dead will be difficult. Families may be separated, particularly if the incident should occur during working hours. In some instances the loss of communications and disruption of other essential services may hamper emergency operations. Under

certain circumstances, government effort will be required to remove debris and clear roadways, demolish unsafe structures, and assist in reestablishing public services. It may be necessary to provide continuing care and welfare for the affected population, including temporary housing for displaced persons and psychological support to emergency response workers.

A transportation accident may lead to other threats, such as a hazardous materials incident, fire, severe damage to nearby buildings or vehicles, loss of life in either adjacent buildings or vehicles and pedestrians.

Air Crash

Though an air crash into the urban environment is always a possibility, the probability of one occurring in Sonoma County appears low. A major air crash that occurs in a heavily populated residential area can result in considerable loss of life and property. The impact of a disabled aircraft as it strikes the ground creates the potential for multiple explosions, resulting in intense fires. Regardless of where the crash occurs, it may cause injuries, fatalities and the destruction of property at and adjacent to the impact area. The time of the crash can also affect the number of dead and injured. Damage assessment and disaster relief efforts associated with an air crash incident will require support from local governments, private organizations and in certain instances, the state and federal governments.

There are six airports in Sonoma County open for public use. Two are privately owned (Sonoma Skypark and Sonoma Valley), three are owned by cities (Cloverdale, Healdsburg and Petaluma airports) and one is owned by the County of Sonoma (Sonoma County Airport). These airports all have general aviation activity consisting of single engine and twin engine piston powered aircraft. Twin engine turboprop and jet powered aircraft utilize the Sonoma County Airport and, to a lesser extent, the Petaluma Airport. The Sonoma County Airport is the largest airport in the County. The airport is located approximately four miles northwest of the Santa Rosa city limits on Airport Boulevard west of U.S. 101. The County Airport is the only service point for commuter airlines and scheduled airlines.

Trucking Incident

A major truck incident that occurs in a heavily populated industrial area or residential area can result in considerable loss of life and property. Potential hazards include overturned tank trailers, direct impact either into a residence or industrial building, or entering into the normal flow of traffic.

The main transportation arteries through Sonoma County are U.S. 101 and Highways 1, 12, 37, 116, 121 and 128. U.S. 101 and Highway 37 are heavily used most hours of the day. Control of vehicular traffic around the affected area of a multi-casualty or hazardous materials incident will be a problem at any time. During commute hours, the problem will be severely compounded. Expediting the flow of emergency response

vehicles through the area and diverting nonessential traffic will be problematic. In cases where emergency traffic movement requirements exceed available road space, traffic must be rerouted with alternate routes and closure points.

Tsunami

A tsunami is a series of traveling ocean waves, generated by disturbances below or near the ocean. As the tsunami crosses the deep ocean, its length from crest to crest may be a hundred miles or more, its height from trough to crest only a few feet. It cannot be felt aboard ships in deep water and cannot be seen from the air, but in deep water, tsunami waves may travel at speeds exceeding 600 miles per hour. As the waves enter shallow waters near coastlines, its velocity decreases and wave height increases. Waves can crest to heights of more than 100 feet and strike the coast with devastating force. Tsunamis can come in a series that may impact the coastline for several hours, and the danger is not over until the entire wave series has passed. All tsunamis are potentially dangerous, though they may not damage every coastline they strike. At this time, the amplitude or size of tsunamis in specific locations cannot be predicted. A small tsunami at one beach can be a giant one a few miles away.

In order to generate a giant tsunami, an earthquake must have certain characteristics:

- o The earthquake must occur near the tectonic plate boundary. An earthquake in the middle of a tectonic plate will not cause a tsunami.
- o The earthquake must be large enough ($> 9.0M$) to cause the seafloor to move vertically over a large area. This propulsive force displaces water in large enough amounts to cause waves.
- o The focus of the earthquake must be shallow (< 43 miles) enough to rupture the surface.

Local or near source tsunamis, caused by offshore faults or coastal or submarine landslides, have the potential to cause greater wave heights locally, than distant origin tsunamis. The largest historic local-source tsunami on the west coast was caused by the 1927 Point Arguello, California, earthquake that produced waves of about 7 feet in the nearby coastal area.

Damaging tsunamis are rare but potentially catastrophic events that present a danger to the people of California. Over 80 tsunamis have been observed or recorded along the coast of California in the past 150 years. 9 have caused minor damage to ports and harbors and 2 have caused major damage. Tsunamis that damaged California's coast have originated throughout the Pacific basin, including South America and Alaska. Four events have caused deaths; the worst occurred in 1964 when 12 people died in California from the tsunami generated by the Great Alaska earthquake.

Tsunamis can crush buildings, smash vehicles and boats, uproot trees, disrupt vital public services, systems and facilities. The outflow of water back to the sea between waves can cause more damage than the original incoming wave fronts. Their effects may be aggravated by the secondary effects of fire. Efforts may be required to remove

debris and clear roadways, reestablish public services and utilities and provide temporary housing for displaced persons.

It is essential to evacuate persons in low lying coastal areas and around the rims of bays and harbors, for these areas consistently sustain the greatest damage by tsunamis. Potential danger exists for all areas within one mile of the coast and less than 50 feet above sea level for tsunamis of distant origin, and for all areas within one mile of the coast and less than 100 feet above sea level for tsunamis of local origin.

Local earthquakes can produce damaging tsunamis with very little warning time, however, there are natural warning signs of tsunamis. Ground shaking felt from a local earthquake and a rapid decrease in sea level are natural warning signs of approaching tsunami waves. People in low lying coastal areas should heed these warnings as a sign to move to higher ground.

Sonoma County has a long coastline, and the highest impact from a tsunami will be felt in communities such as Sea Ranch, Jenner, and Bodega Bay, and the Sonoma Coast beaches. Areas within San Pablo Bay are not expected to receive large wave impacts, but may sustain damage.

Wildland/Urban Interface Fire

The combination of highly flammable fuel, long dry summers and steep slopes creates a significant natural hazard of large wildland fires in many areas of Sonoma County. A wildland fire is a fire in which the primary fuel is natural vegetation. Wildland fires can consume thousands of acres of vegetation, timber and agricultural lands. Fires ignited in wildland areas can quickly spread, if unabated, to areas where residential or commercial structures are intermingled with wildland vegetation. Similarly, fires that start in urbanized areas can grow into wildland fires. Wildland/urban interface fire hazards are especially pronounced in areas of high structure densities adjacent to undeveloped areas with dense vegetation. Wildland/urban interface fires can result in death, injury, economic loss.

Wildfire behavior is based on three primary factors: weather, topography and fuel. Wildland fire season in Sonoma County starts in the weeks after the last spring rains and lasts until the first fall or winter rains. The months of August, September and October have the greatest potential for wildland fires as vegetation dries out, humidity levels fall, and offshore winds blow.

Wildland/urban fire hazards are especially pronounced in areas of high structure densities, narrow roads and high vegetative fuel loading. At risk are residential communities such as: Fitch Mountain, The Sea Ranch, Trinity Road/Cavedale, Montecito Heights, and other areas contiguous to the city limits of many incorporated cities within Sonoma County. In these areas old (pre-building code) and new structures are situated on narrow roads with very poor access/egress. Many of these buildings were designed as summer homes, but are now being occupied year round. This

creates problems with inadequate parking and hinders access by fire apparatus and other emergency vehicles.

While the Sonoma County Fire Safe Code addresses new building construction in the unincorporated area, including a residential water supply and fire sprinkler requirement, there are no ordinances that address older buildings and their construction. Thus, older residential areas are more likely to have a large and damaging wildland/urban interface fire.

The population of tan oak vegetation in various areas of the County has particular risk due to the rise of Sudden Oak Death Syndrome. In specific areas, tan oak proliferation and the rapid encroachment of the disease has created an environment of increased vulnerability to wildland fire.

Wildfires can be caused by natural events, such as lightning or high winds. However, most wildland fires are human caused. Campfires, careless smokers, electrical sparks, and arson cause most wildland and wildland/urban interface fires. In Sonoma County, electrical equipment, such as power lines and transformers, has caused numerous fires. An emerging cause for concern is fires started by mowing, use of power equipment and other work around very dry vegetation. The September 2004 Geysers Fire was started by arcing in an electrical circuit box as the result of a faulty splice and consumed 12,525 acres. Trees growing into power lines have also caused large and damaging fires within the county.

Winter Storm

In recent years, winter storms in California have become more intense and longer lasting. Flash floods, mudslides, high coastal surf, coastal erosion, stream and creek flooding, snowstorms, and avalanches have all occurred in the state.

Storm systems typically blow into the North Bay from the west. Topography and altitude affect how much rain and wind a winter storm will bring. Storms hit the coastal hills, forcing the air upward and cooling it, causing condensation and dumping the heaviest rain on windward slopes and ridge tops. This phenomenon gives Cazadero and other west county areas up to 100 inches of rain, typically twice as much as Santa Rosa. Moving inland, the air descends and warms, drying out and producing a "rain shadow" of lighter precipitation on leeward slopes and across the valleys. This pattern is repeated as the air rises and falls, like a roller coaster, over inland hills and valleys. This weather phenomenon ensures that Cotati, Healdsburg, Santa Rosa, Rohnert Park and Windsor get less rain than their westerly neighbors in the hills. Southern areas around Petaluma and Sonoma typically get less rain than northern areas such as Cloverdale.

Authorities and References

The Field Act (Garrison Act and Riley Act)

Sets building code standards for construction and remodeling of public schools and assigns the responsibility for assuring building code compliance to the Division of the State Architect.

CA Education Code Section 560

Requires that school boards adopt written policy for use by schools in formulating individual civil defense and disaster preparedness plans.

The Comprehensive Safe Schools Plan (CA Education Code Section 32280-32289)

Requires schools to establish an earthquake emergency system:

- Develop a disaster plan
- Conduct periodic drop and cover drills, evacuation procedures and emergency response actions- once each quarter in elementary schools and once each semester in secondary schools
- Provide training to students and staff in emergency response procedures
- Be prepared to have your school serve as a possible public shelter
- Take mitigation measures to ensure the safety of students and staff, such as securing equipment and furniture

Post Disaster Shelters

Schools are required by both federal statute and state regulation to be available for shelters following a disaster.

- The American Red Cross has access to schools to set up shelters
- Local governments have access to schools to set up shelters
- Plan and make arrangements in advance to assure that you are prepared

Consult *Schools as Shelters: Planning and Management Guidelines for Districts & Sites*. Ordering information is available from the CA Emergency Management Agency (510) 286-0895.

Disaster Service Workers (CA Government Code Section 3100)

All school employees are considered disaster service workers, and may be subject to disaster service activities when an emergency has been proclaimed on the local or state level, or when a disaster declaration is made on the federal level. As such, all employees are required to take and subscribe to the oath of affirmation in Section 3 of Article XX of the Constitution of California. If the employee does not take and subscribe to the oath, public agencies will not reimburse or compensate the employee for any expenses incurred.

The Petris Bill (CA Government Code Section 8607)

Requires schools to respond to disasters using the Standardized Emergency Management System (SEMS).

- Incident Command System (ICS) – organizes response efforts into five basic functions: Management/Command, Operations, Logistics, Planning/Intelligence, and Finance/Administration
- Emergency Operations Center (EOC) – establishes a central area of control using the same basic functions as ICS
- Coordination of all efforts with the operation area (county) EOC, city EOC, and county office of education EOC
- Incorporate SEMS into all school plans, training and drills
- Document the use of SEMS during an emergency

Homeland Security Presidential Directive 5

On February 28, 2003, President George W. Bush issued Homeland Security Presidential Directive 5 which directed the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). The Directive requires federal departments and agencies to make the adoption of NIMS, by state and local organizations, a condition of federal preparedness assistance (grants, contracts and other activities. Minimum training requirements for all school employees (as designated Disaster Service Workers) are IS-100, IS-200, and IS-700.

The Language of Emergency Management

Common Acronyms

ARC	American Red Cross
ACS	Auxiliary Communications Service
Cal EMA	California Emergency Management Agency
CERT	Community Emergency Response Team
DAC	Disaster Assistance Center
DES	Department of Emergency Services
DHS	Department of Homeland Security
DO	District Office
DPH	Department of Public Health
DSW	Disaster Service Worker
EAS	Emergency Alert System
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FRS	Family Radio System
HAZMAT	Hazardous Materials

IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
JIC	Joint Information Center
JIS	Joint Information System
MOU	Memorandum of Understanding
NIMS	National Incident Management System
OASIS	Operational Area Satellite Information System
Op Area	Operational Area
OPS	Operations Section
PA	Public Address
PIO	Public Information Officer
RACES	Radio Amateur Civil Emergency Services
S&R	Search & Rescue Team
SCOPE	School Communities Organized to Prepare for Emergencies
SEMS	Standardized Emergency Management System
SOP	Standard Operating Procedure
SIT STAT	Situation Status Team
USAR	Urban Search and Rescue
VOAD	Voluntary Organization Active in Disasters
VRC	Volunteer Reception Center

Common Terminology

activate (v) to implement a response section team or plan

damage assessment (n) process used to determine the amount and severity of damage caused by a disaster or emergency

Disaster Assistance Center (DAC) (n) location established in a disaster area that houses all federal, state, and local agencies that deal directly with the needs of individual victims. DACs are established only after a Presidential Declaration

Disaster Service Worker (n) all public employees in California are subject to such emergency or disaster activities as may be assigned by their supervisors or by law

Emergency Alert System (EAS) (n) program of the Federal Communications Commission (FCC) to coordinate the dissemination of emergency information via commercial broadcasters

Emergency Operations Center (EOC) (n) the location from which centralized management is performed during emergency response

Emergency Operations Center Director (n) title within the Incident Command System given to the individual responsible for overall coordination of response and resources for the school district

Emergency Operations Plan (EOP) (n) the plan that each district/school has for responding to disasters and school crises

Incident Action Plan (IAP) (n) plan prepared on-site by the Incident Commander and Planning/Intelligence Chief to guide the emergency response

Incident Commander (IC) (n) title within the Incident Command System given to the individual responsible for the overall management of an emergency response at a school site

exercise (n) a simulated emergency situation designed to evaluate an organization or agency's level of preparedness and Emergency Operations Plan

Federal Disaster Assistance (n) federal government's in-kind and financial assistance provided to disaster victims, the state, or local government agencies through the Federal Disaster Relief Act

first responder (n) personnel that are often the first to arrive on scene, e.g., law enforcement, fire fighters, emergency medical services, public works, public health

hazard (n) a source of danger or element of risk to people, property, or the environment

hazard mitigation (n) measures taken to eliminate or reduce the potential damage or injury from a disaster

Incident Command System (ICS) (n) a field-based emergency management system developed to respond efficiently to an incident

Level I Emergency (n) minor to moderate emergency, such as major outage, bomb threat, isolated fire, or minor earthquake (no injuries or significant damage)

Level II Emergency (n) moderate to severe emergency, such as a major fire, moderate earthquake, bomb explosion (with injuries and/or structural damage)

Level III Emergency (n) major emergency or disaster, such as a major earthquake or nuclear explosion

management by objectives (n) a method of management whereby the Incident Commander establishes overarching goals and develops specific tasks and assignments in support of those goals

mass care facility (n) location where food, lodging, clothing, first aid, welfare inquiry and social services are available for disaster victims

mass prophylaxis (n) distribution and administration of medicines, vaccinations or inoculations to the public on a mass scale in response to a public health threat

Memorandum of Understanding (MOU) (n) pre-disaster agreement between agencies to render support (personnel, equipment, facilities) during times of emergency

Operational Area (Op Area) (n) intermediate level of the state emergency, consisting of a county and all of the political subdivisions and special districts within its boundaries

pandemic (n) global outbreak of a novel disease that affects a large portion of the human population for which there is little or no immunity

preparedness (n) phase of emergency management for employee in-service training in emergency responsibilities, such as prevention of injuries and property damage, first aid and other response and rescue operations, and acquisition of adequate supplies and equipment required to respond to an emergency

recovery (n) phase of emergency management for the initiation of short range and long range recovery plans at each affected site to return to normal operations following an emergency

response (n) phase of emergency management for in which all employees take appropriate steps in an emergency situation to put the emergency plan into action

section (n) organizational level in the Incident Command System responsible for a functional area of incident response, e.g., Logistics

Section Chief (n) title within the Incident Command System given to individuals responsible for the command of a functional section

triage (v) process of rapidly classifying patients on the basis of urgency of treatment

Unified Command (n) structure that brings together the Incident Commanders of all major organizations involved in the incident in order to coordinate an effective response while also carrying out their own jurisdictional responsibilities.