

# TOWN OF YUCCA VALLEY

## COMPREHENSIVE GENERAL PLAN

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### CHAPTER V

#### ENVIRONMENTAL HAZARDS

This chapter of the General Plan addresses those man-made and natural environmental hazards which occur in the Town of Yucca Valley and surrounding areas. General Plan elements discussed under this chapter include Seismic Safety, Slopes, Sediment Control and Soil Conservation, Flooding and Hydrology, Noise, Hazardous and Toxic Materials Elements. The assessment of and planning for these hazards or constraints is the primary purpose of this chapter of the General Plan.



# SEISMIC SAFETY ELEMENT

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## PURPOSE

The purpose of the Seismic Safety Element is to provide information, as well as goals, policies and programs to protect the general health, safety and welfare of the Town from seismic related geologic hazards, and to educate the community and its residents about seismic and related geologic hazards. The Element is also meant to satisfy the requirements of state law, including the Alquist-Priolo Earthquake Fault Zoning Act (amended). The Element and its supporting documentation are also intended to provide a regularly updated information database on geotechnical hazards affecting the region, which will serve as the basis for on-going land use policies and decisions.

## Background

Elements that are directly or indirectly related to the Seismic Safety Element include Open Space, Mineral Energy and Conservation; Park & Recreation; Land Use; Housing; Public Buildings, Facilities and Utilities; Economic Development and Emergency Preparedness & Health Services. The Emergency Preparedness Element of the General Plan is one most directly related to seismic safety. Many of the procedures, plans, programs and policies in that element are logical extensions of the Seismic Safety Element. In this regard, the Flooding and Hydrology; Slopes, Sediment Control & Soil Conservation and Fire and Police Protection Elements are also closely related to seismic safety.

The Town of Yucca Valley and the General Plan study areas are located within area of high seismic activity. The region is also a transitional geological zone that forms the boundary between the Transverse Range, which includes the San Bernardino and Little San Bernardino Mountains, and the Mojave Desert Geomorphic Provinces (geologic regions). The Town and study area are characterized by an east-west trending valley bounded by the Little San Bernardino Mountains on the south and the Sawtooth Mountains on the north.

Seismic safety influences the distribution of land uses throughout the community, with four major faults that must be accommodated. The availability of alternative traffic routes is also affected, and is particularly important given the occurrence of the Pinto Mountain Fault trending along the Highway 62 corridor and the Johnson Valley fault along the Highway 247.

## Applicable Legislation

Requirements for the development of a Seismic Safety, or the more general Safety Element, are found in both the California Government Code and Public Resources Code. Government Code Section 65302 (g) requires that the General Plan address the need to protect the community from unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, seiching, dam failure, subsidence and other known geologic hazards. In accordance with Government Code Section 65303, the Town General Plan may also address other subjects related to the physical development of the community, as provided through Flooding and Hydrology, Emergency Preparedness and Health Services, Slopes, Sediment Control and Soil Conservation and other Elements of this Plan.

The most important piece of legislation related to this Element is the Alquist-Priolo Earthquake Fault Zoning Act, which is found in Public resources Code Sections 2621 et. seq. The location of these earthquake fault zones must be disclosed to the general public through the use of maps and other appropriate materials (Title 14, California Administrative Code Section 3603 (b)). The significance of the Alquist-Priolo Act and the earthquake fault zones are described in the California Division of Mines and Geology's Special Publication 42, *Fault-Rupture Hazard Zones in California* and its free pamphlet, *Alquist-Priolo Earthquake Fault Zoning Act*, both are available from the Division's San Francisco Regional Office.

Finally, Government Code section 8876 establishes a program by which the Town and all other jurisdictions located within seismic zone 4, as set forth in Chapter 2-23 of Part 2 of Title 24 of the Administrative Code, shall identify all potentially hazardous or substandard buildings and shall establish a program for the mitigation of these buildings.

## Landers Earthquake

On June 28, 1992, the Town of Yucca Valley and the surrounding area were rocked by the strongest earthquake to occur in California in the last 40 years. The epicenter of the 7.6 magnitude quake, known as the Landers Earthquake, was on the Johnson Valley Fault, north of the Town limits, with associated ground rupture extending about 1.25 miles into the Town limits. This earthquake actually consisted of two subevents that occurred about 19 miles apart, and were

distributed along a series of generally north-south trending faults, including two previously unknown faults (Burnt Mountain and Eureka Peak Faults) which are located in the southern portion of the General Plan study area<sup>1</sup>.

### Hazards Associated With The Landers Quake

Many of the hazards typically associated with major earthquakes were evidenced by the Landers earthquake. Fifty-three miles of surface fault rupture made this the largest fault rupture event since the 1906 San Francisco earthquake, along the San Andreas Fault. Other consequences of this earthquake included a maximum horizontal and vertical ground displacement of 21 feet and 3 feet, respectively, high ground acceleration, rockfall, and settling of soils<sup>2</sup>.

Regionally the Landers quake resulted in one death, 25 serious and 372 less serious injuries. As many as 77 homes were destroyed and another 4,369 were damaged, and numerous commercial buildings were damaged or destroyed. The quake also caused extensive damage to facilities of the Hi-Desert Water District, including about 40% of the subsurface distribution lines. In total, more than \$100 million in property damage was sustained from the Landers Earthquake.

State Highway 247 was also damaged by the quake and emphasized the need to develop possible alternative routes for evacuations and delivery of emergency services and supplies. Linkage of Town roads with those in the Joshua Tree National Park could provide one alternative in the event main routes to the east are damaged (Also see the Circulation and Emergency Preparedness and Health Services Elements).

### Geological Conditions in the Yucca Valley Area

The Town of Yucca Valley is located within a fault controlled basin that extends westward through Morongo Valley, and eastward beyond Twentynine Palms. The vicinity is one of the most active geological regions in the world, where two major tectonic plates, the Pacific and North American, collide and slip past one another. These faults are part of the Eastern California Shear Zone (ECSZ), a broad belt of faults in the Mojave Desert, which transfers motion from the San Andreas Fault Zone to the Basin and Range Province. Approximately 15 to 20 percent of the motion between these two plates is being accommodated by the ECSZ, with almost all the remaining motion occurring along the San Andreas and related faults located to the southwest and west.

### Geologic Units, Basement Rocks Alluvium and Fanglomerates

In addition to the tectonic forces acting on the Yucca Valley area, geologic hazards and geotechnical constraints are also affected by the engineering characteristics of the rocks and sediments that underlie the area. These are comprised of Quaternary surficial sediments (deposited within the last 1.6 million years) that rest on a thick layer of Tertiary to Precambrian (more than 1.6 to 570 million years old) rocks. Basement rocks are found beneath the surficial sediments discussed above, and range in age from 1.6 to 570 million years (Quaternary to Precambrian). These include basalt, Old Woman Sandstone, granitic rocks and Precambrian gneissic rock. More recent alluvium occurs along the bottoms of canyons draining toward the central east-west axis of the Town from the surrounding mountains.

Older alluvium and fanglomerates (coarser materials), including cobbles, pebbles and coarse sands, are found to the north and northeast. These materials are derived from surrounding mountains, may be more than 500 feet in thickness, and have been uplifted above the presently active floodplain. These fanglomerates can also be found on Burnt Mountain, which has been subject to uplift, and are approximately 300 feet in depth.

### Measurements of the Seismic Hazards in Yucca Valley

As discussed below, earthquakes are classified by their magnitude and by their intensity. The intensity of seismic ground shaking is a function of several factors, including the magnitude of the quake, distance from the epicenter, and the local geologic and topographic conditions. Analysis of the Landers Earthquake indicates that in a comparable seismic event the Town of Yucca Valley generally lies within intensity zone VIII, as defined in the Modified Mercalli Intensity Scale (see below). This intensity affects steering of motor cars, results in partial collapse of typical, unreinforced masonry buildings, causes the twisting and falling of chimneys, factory stacks, monuments and towers, the shifting of buildings not anchored to foundations, and other damage.

<sup>1</sup> Technical Background report for the Safety Element of the Town of Yucca Valley General Plan, Prepared by Leighton and Associates, Inc., December 1993.

<sup>2</sup> Hart, E. W., Bryant, W. A., Treiman, J. A.; Surface Faulting associated with the June 1992 Landers Earthquake, California Division of Mines & Geology, Department of Conservation. Jan/Feb. 1993

The largest or maximum credible earthquake a fault is capable of generating, is used for community planning purpose. Maximum seismic design parameter values, including peak ground or bedrock acceleration, duration of strong ground shaking, and period of ground motion (frequency), are derived from maximum credible earthquakes to establish safety margins.

### Major Fault Hazards in the Yucca Valley Area

#### Richter Scale

Faulting and ground rupture, or the breakage of bedrock and overlying sediments, along tectonic plate boundaries, and associated ground acceleration or motion, are the most significant potential geological hazards affecting the General Plan study area. Earthquakes are typically defined by their magnitude as measured on the Richter Scale. Each whole number step in magnitude on the scale represents a ten-fold increase in the amplitude of the waves on a seismogram and about a 31-fold increase in energy released. As an example, the 7.5 Richter magnitude Landers Earthquake was 31 times more powerful than a 6.5 magnitude (Richter) quake.

#### Seismic Intensity and the Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale (MMIS) is a more useful measure of the damage potential of earthquakes, and is based upon people's reactions to a quake, and observed damage to structures and other physical effects. There are twelve levels of intensity in this scale, ranging from I - Tremor not felt to XII - Damage is nearly total. The effects of a quake on masonry buildings are an important part of characterizing the intensity using this scale. The intensity of the Landers Earthquake was gauged at about VIII at Yucca Valley.

#### Major Active Faults in the Yucca Valley Area

The June, 1992 Landers Earthquake provided valuable information regarding the geological features within the General Plan study area. Specifically, this quake revealed the existence of two previously unknown faults in the area, and provided important information on the seismic hazards in the region. Study area faults of concern include the Johnson Valley Fault, Pinto Mountain Fault, Burnt Mountain Fault, and the Eureka Peak Fault. An earthquake along the Coachella Valley segment of the San Andreas Fault could also be expected to have significant impacts on the General Plan

study area. Each fault and its potential to cause damage is briefly discussed below.

Detailed reports on the locations and description of fault ruptures that occurred during the Landers earthquake are contained in the California Division of Mines and Geology's Fault Evaluation Reports FER-230 and FER-234.

#### Johnson Valley Fault

The Landers Earthquake occurred on the Johnson Valley Fault, which is a northwest trending fault that extends from just south of Pipes Canyon Wash (along Old Woman Springs Road), to Soggy Lake near the Fry Mountains. About 3.5 miles of this fault have been mapped within the General Plan study area. During the Landers quake this fault ruptured, including that portion in the study area, generating a horizontal displacement of six to nine feet, with displacement in the study area limited to about two feet of off-set at the Town's northern limits. Analysis and "computer" modeling of the lower segment of this fault, and the limited displacement that occurred here, suggests that a future large quake may occur along this segment. Within the study area, the Johnson Valley Fault is capable of generating a maximum credible earthquake of 7.3 and could generate a peak horizontal ground acceleration of 0.60 g (1g equals the acceleration of gravity), with ground shaking lasting up to 26 seconds. Modified Mercalli seismic intensity values of IX to X could be experienced in the area as a result of a quake this size.

#### Pinto Mountain Fault

The Pinto Mountain Fault is one of the major east-west trending faults, known to be associated with the San Andreas Fault to the southwest. The fault has also displayed significant uplift, as evidenced by the presence of the Sawtooth and San Bernardino Mountains to the north. This fault extends through the center of Yucca Valley from the base of the Sawtooth Mountains, eastward along Highway 62. While there is no evidence of recent faulting, the fault is active and did experience minor sympathetic ground ruptures due to the Landers Earthquake. The Pinto Mountain Fault is estimated to be capable of producing a maximum credible earthquake of 7.4, and could generate a peak horizontal ground acceleration of 0.60 g, with ground shaking lasting up to 31 seconds. Modified Mercalli seismic intensity values of IX to X could be experienced in the area.

### **Burnt Mountain Fault**

The Burnt Mt. Fault is one of two newly discovered faults as a consequence of the Landers Earthquake. It is approximately four miles long, as defined by ground rupture evidenced during the 1992 quake. Maximum surface displacement at that time was two inches of horizontal slip. The fault trends southward from just south of Highway 62, along the east side of Burnt Mt., into the Joshua Tree National Park. Analysis and modeling of seismicity along this fault indicates that it is a segment of a fault linking, in the subsurface, the Johnson Valley Fault with the East Wide Canyon Fault to the south. This implies that, in the subsurface, the Johnson Valley Fault extends almost to the Coachella Valley in the Desert Hot Springs area. In the event that the Burnt Mt. Fault breaks independently of the Johnson Valley Fault, it is estimated to be capable of generating a maximum credible earthquake of 6.4 and could generate a peak horizontal ground acceleration of 0.55g, with ground shaking lasting up to 16 seconds. Modified Mercalli seismic intensity values of VIII to X could be experienced in the area.

### **Eureka Peak Fault**

The Eureka Peak Fault occurs within the Town limits and trends southeastward from near State Hwy 62 into the Joshua Tree National Park. This fault ruptured sympathetically with the Landers Earthquake and experienced a maximum right-slip of 9 inches. There was over 2 inches of afterslip on this fault, with about half of that occurring during the first two weeks after the quake. Geological investigations along this fault indicate that the last pre-Landers earthquake occurred more than 11,000 years ago. The Eureka Peak Fault is estimated to be capable of producing a maximum credible earthquake of 6.7, and could generate a peak horizontal ground acceleration of 0.57 g, with ground shaking lasting up to 18 seconds. Modified Mercalli seismic intensity values of VIII to X could be experienced in the area.

### **San Andreas Fault**

Yucca Valley is located about 9 miles northeast of the Coachella Valley segment of the San Andreas Fault. The potential for a major earthquake along this segment of the San Andreas has been well documented and after shocks from the Landers and Big Bear Earthquakes, which occurred the same day, may have increased the strain on this segment of the San Andreas. The occurrence of the much anticipated 8.0+ earthquake along this fault could cause mean peak horizontal ground accelerations of about 0.43 in Yucca Valley, with strong ground shaking lasting up to 50 seconds. Modified

Mercalli seismic intensity values of VII to IX could be experienced in the area.

### **Alquist-Priolo Earthquake Fault Zones**

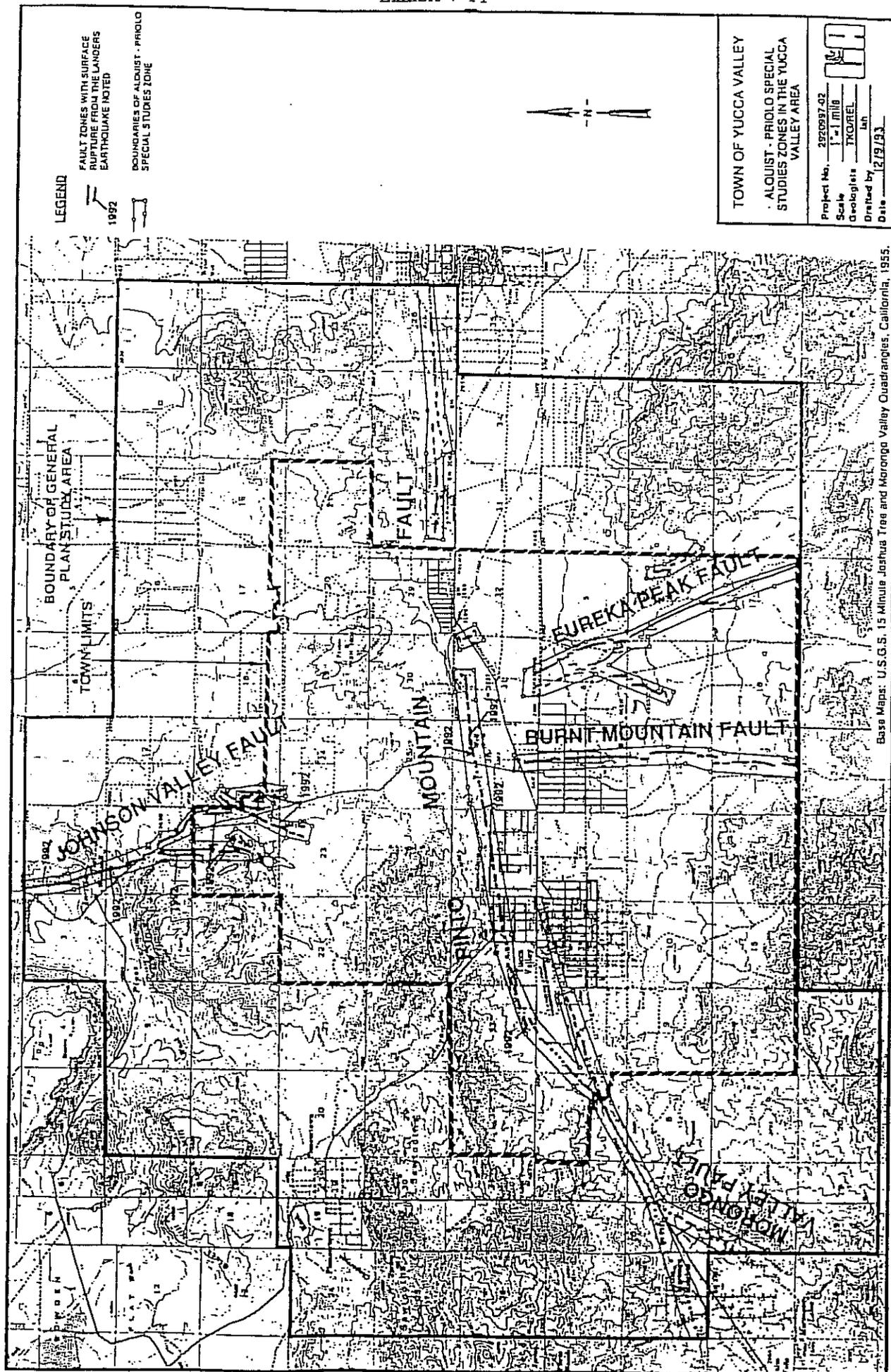
In 1972, the State of California adopted the Alquist - Priolo Special Studies Zones Act, renamed the Alquist-Priolo Earthquake Fault Zoning Act in 1994, which requires the State Geologist to prepare maps showing regulatory zones around active faults within which local jurisdictions must require the preparation and submittal of geological reports for proposed development projects. In January 1993, Preliminary Review Maps of the new and revised Alquist-Priolo Earthquake Fault Zones for the Yucca Valley area became available, and were adopted in July 1993. These maps delineate known and postulated fault traces and the surface rupture zones within which special geological studies must be prepared. Evidence of fault- displaced sediments that are less than 11,000 years old is used as a yardstick to gauge the surface rupture potential of faults (see Exhibit V-1). Structure for human occupancy cannot be constructed on traces of active faults. Developers and other interested parties are also referred to the California Division of Mines and Geology Fault Evaluation Reports and Earthquake Fault Zone maps on file with the Town's Community Development Department.

### **Other Seismically Induced Geologic Hazards**

In addition to direct effects such as ground rupture and ground acceleration, there are other seismically induced hazards that can injure people and damage structures. These hazards include liquefaction, dynamic settlement, ground fracturing or fissuring, lateral spreads, slumps, landslides and earth or rock falls. Each of these is briefly discussed below.

#### **Liquefaction**

Liquefaction may occur when loose, unconsolidated, saturated, sandy soils are subjected to ground vibrations during a seismic event. This occurs in areas where the ground water table is within 50 feet of the ground surface and in areas subject to Modified Mercalli Intensity values of VII or greater. Significant ground shaking can suddenly increase water pressure in the pores between soil particles and cause soils to lose cohesion and to "liquefy". Effects include a loss of bearing strength, ground oscillations, lateral spread and slumping. This hazard is considered low in the Yucca Valley area, principally because of the approximate depth of 200 feet to ground water.



## Secondary Ground Failure

Other types of secondary ground failure that can occur during an earthquake include dynamic settlement, which is the result of differential soil compaction/densification caused by ground motion and vertical displacement of the ground surface. Ground fissuring and lateral spread are also secondary effects of liquefaction that can occur in flat areas. Slumps, landslides and earth and rock falls can occur along road embankments, manufactured slopes or mountain sides as a result of seismically induced ground motion. Examples of these secondary effects were in evidence during the Landers Earthquake within Joshua Tree National Park and on both sides of Morongo Valley, and their potential clearly exists within the General Plan study area, (Please see Rockfall/Landslide Susceptibility Map in the Slopes, Sediment Control and Soil Conservation Element).

## Seismically Induced Inundation

Failure of water tanks, reservoirs, retention basins, recharge basins and other water storage structures can be caused by seismic events, especially in areas susceptible to ground failure. Two water tanks in the Landers area were destroyed by seiching or the sloshing of stored water. There are several above ground water storage tanks in the Town of Yucca Valley that could be subject to damage in an earthquake. Damage to these tanks, whether a result of surface rupture or strong ground motion, could significantly hinder efforts to suppress fires and could greatly limit supply and availability of potable water after a major earthquake.

There currently exist only limited opportunities for seismically induced inundation down grade of stormwater retention basins in the Town. The infrequency of stormwater retention, the limited likelihood of stormwater storage, and the occurrence of a major earthquake, substantially reduces, but does not eliminate, this potential hazard. However, plans are being developed (1995) by the Hi-Desert Water District to construct ground water recharge basins, with particularly favorable locations coinciding with the general location of faults (see Alquist-Priolo Earthquake Fault Zones Map). Design engineering will need to focus on the seismic hazards of the area when planning for and constructing these facilities.

## FUTURE DIRECTIONS

The Town will need to rely on several mechanisms to address hazards identified in the Seismic Safety Element. These include the regulations and guidelines set forth in the Alquist-Priolo Earthquake Fault Zoning Act, the State CEQA

Statutes and Guidelines, the Zoning Ordinance, Hillside Development Ordinance, the Uniform Building Code, and the Subdivision Ordinance. The development review process of the Town Community Development Department must assure that development proposals are thoroughly evaluated with regard to seismic safety, that all necessary special studies are conducted and reviewed, and that comprehensive mitigation measures are developed and implemented.

The Town should also work with State, Regional, and County agencies to establish and maintain an up-to-date information database and reference materials on geological and seismic conditions in the region, legislation affecting the Town's regulatory responsibilities, and changing technical assessments which refine or recharacterize the geological hazards affecting the region.

## SEISMIC SAFETY

### GOAL, POLICIES AND PROGRAMS

#### GOAL

Minimized vulnerability to, and maximized protection of, the general health safety and welfare of the community from the effects of seismic hazards that may impact lives, property and economic well-being of the community.

#### Policy 1

Establish and maintain a reference collection of maps and other materials illustrating the location of seismic hazards occurring within the Town boundaries.

#### Program 1.A

Periodically contact the California Division of Mines and Geology to develop and maintain updated Alquist-Priolo Earthquake Fault Zoning maps and other information on seismic and other geological hazards affecting the community.

**Responsible Agency:** Community Development Department; State Division of Mines and Geology

**Schedule:** Continuous.

#### Program 1.B

Consult and cooperate with San Bernardino County, surrounding unincorporated communities and applicable State and Federal agencies, in an on-going program to improve and update the database and other information on regional geologic/seismic conditions.

**Responsible Agency:** Community Development Department; applicable State and Federal agencies

**Schedule:** 1995-1996, Continuous.

## Policy 2

In accordance with State law, development proposals within designated Alquist-Priolo Earthquake Fault Zones shall be accompanied by appropriate geological analysis.

### Program 2.A

Prepare an informational handout, which specifies the format and contents of geological and fault investigations to be carried out within Alquist-Priolo Earthquake Fault Zones.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediately.

### Program 2.B

Establish a cooperative arrangement with the County Geologist, the State Geologist, or a contract geological engineer to review and determine the adequacy of geological fault hazard studies prepared within the Town.

(Fault Zones shown on Exhibit V-1 are approximate, refer to the Official EFZ Maps for specific information.)

**Responsible Agency:** Community Development Department  
**Schedule:** Immediately.

### Program 2.C

Distribute handout prepared by the California Division of Mines and Geology informing developers, prospective buyers, and others about the Alquist-Priolo Earthquake Fault Zoning Program.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediately.

## Policy 3

Identify and initiate a program to encourage the rehabilitation of unreinforced masonry buildings and other major structures, which pose a threat or hazard, due to inadequate seismic design, engineering or construction.

### Program 3.A

Prepare and/or distribute handouts and provide information on possible sources of funding to facilitate the rehabilitation of unreinforced masonry buildings and other major structures which are inadequately constructed to withstand major seismic impacts.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996.

## Policy 4

Cooperate and coordinate with public and quasi-public agencies to assure the continued functionality of major utility services in the event of a major earthquake.

### Program 4.A

Contact and establish working relationships and strategies with the Public Utilities Commission, Southern California Edison, Southern California Gas, Hi-Desert Water District and other appropriate agencies to strengthen, relocate and take other appropriate measures to safeguard water, electricity, natural gas, crude oil and other transmission and distribution systems.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996

### Program 4.B

Take a pro-active position to encourage and cooperate with CalTrans to promote the expeditious strengthening of bridges, elevated roadways and other structures along state highways which may be subject to failure during major seismic events, thereby isolating the community from outside emergency aid and assistance.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediate, Continuous.

### Program 4.C

Pro-actively confer and coordinate with management staff at the Joshua Tree National Park to explore, and, if feasible, establish an interconnection between Town roads and those of the Park to provide everyday access and to serve as an alternative easterly access in the event of Highway 62 and other easterly roadway closure from earthquake or other emergency.

**Responsible Agency:** Community Development Department; U.S. Department of the Interior  
**Schedule:** 1995-1996, Continuous.

### Program 4.D

Coordinate with the Yucca Valley Airport District and the local airport owners/operators to enhance the survivability of essential airport operations in the event of a major earthquake.

**Responsible Agency:** Community Development Department; Airport District

**Schedule:** 1995-1996; Continuous.

## Policy 5

Play an active role in the development and/or distribution of earthquake preparedness information and materials to Town residents and local businesses.

### Program 5.A

Information shall be collected from a wide variety of sources, including public agencies and utility companies, providing

instruction on earthquake preparedness. Said materials shall be made available to residents and businesses throughout the Town.

**Responsible Agency:** Community Development Department; State and County Offices of Emergency Preparedness; Public Utilities

**Schedule:** Immediate; Continuous.

**Program 5.B**

Shall confer and cooperate with local utility companies, Hi-Desert Water District, Morongo Unified School District, police and fire departments, and others to coordinate education of the general public regarding appropriate action before, during and after earthquakes and other disasters.

**Responsible Agency:** Community Development Department; Town Engineer

**Schedule:** 1995-1996, Continuous.

**Policy 6**

Encourage and promote the development of ground water recharge basins in areas where the resulting increased potential for liquefaction will have a minimal effect on existing and planned development.

**Program 6.A**

Coordinate and cooperate with the Hi-Desert Water District in the planned siting and development of ground water recharge basins, and shall take appropriate action to see that potential hazards associated with liquefaction are minimized.

**Responsible Agency:** Town Council and Community Development Department; Hi-Desert Water District

**Schedule:** Immediate; through facilities planning period.

**Policy 7**

In areas of high seismicity, the Town shall encourage the location of septic tank leach fields, seepage pits and heavily irrigated areas away from foundations and other structural supports to minimize the creation of a localized liquefaction hazards.

**Program 7.A**

Development applications shall include plans indicating the location of leach fields and seepage pits to be reviewed by Town staff to identify potential for ground saturation and may require their location away from foundation and other structural supports.

**Responsible Agency:** Community Development Department

**Schedule:** Immediate; On application basis.

**Policy 8**

Development in areas identified as being subject to a rockfall or landslide hazard shall be avoided.

**Program 8.A**

Make available copies of the Rockfall/Landslide Susceptibility maps and shall discourage development within areas so designated, or require detailed geological analysis and require mitigation measures that reduce associated hazards to insignificant levels (Please see the Slopes, Sediments Control and Soil Conservation Element).

**Responsible Agency:** Community Development Department; Town Engineer/Consulting Geologist

**Schedule:** Immediate; Continuous.

# SLOPES, SEDIMENT CONTROL AND SOIL CONSERVATION ELEMENT

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## PURPOSE

The purpose of the Slopes, Sediment Control and Soil Conservation Element is to describe the relevant physical and regulatory environment, and to set forth goals, policies and programs which address issues of public safety and protection of property and life. This Element is also intended to minimize governmental costs associated with erosion and debris removal, to preserve and enhance the long-term economic health of the community, and to protect and enhance the scenic/aesthetic and environmental qualities and assets of the area. Conservation of desert soil and downstream habitat is critical to the Town of Yucca Valley.

## BACKGROUND

The Slopes, Sediment Control and Soil Conservation Element has a direct relationship to several other General Plan Elements, including the geological and geotechnical conditions as described in the Seismic Safety Element, the potential for scouring and deposition of sand and gravel as described in the Flooding and Hydrology Element, and the appropriateness of preserving these areas as discussed in the Open Space, Mineral, Energy and Conservation Element. This Element is also directly related to the Land Use and Emergency Preparedness and Health Services Elements. In addition, the protection of important viewsheds as discussed in the Scenic Highways Element, and the complementary nature of using native vegetation to stabilize slopes as set forth in the Biological Resources, are also related to the Slopes, Sediment Control and Soil Conservation Element.

The Town of Yucca Valley and the General Plan study area include extensive areas of steep and rocky terrain, with unstable slopes, potential rockfall hazard areas and soils subject to excessive erosion. Development on steep slopes has increased the risk to life and property, particularly in association the significant and ongoing seismic hazards occurring in the Town and vicinity (also see Seismic Safety Element). Continued development on hillsides has also led to unsightly scarring and the creation of manufactured slopes from cut and fill operations that will remain visible for decades.

The Town and the planning area are also subject to significant erosion, principally associated with storm runoff from existing washes and along major streets. In addition to threatening property and improvements, serious erosion also reduces the control of stormwater runoff and contributes to costs associated with removal of silts and sand deposited in culverts and public roadways. The deposition of these sands and silts poses the additional threat of changing the pattern of drainage in unpredictable ways.

Biological resources can also benefit from slope and erosion control methods, which result in a reduced amount of unnecessary grading and site disturbance, and allow more of the natural habitat to remain intact. The unsightliness of excessive and uncontrolled grading can be reduced, and impacts to the substantial visual resources, that make the region attractive to residents and visitors, can be limited. Areas subject to excessive erosion are also candidates for consideration as open space or very low density development, consistent with their low carrying capacity.

Under California Government Code Section 65302(g), General Plans are required to provide for the protection of the community from unreasonable risks associated with, among other things, the effects of slope instability, erosion and other geologic hazards. Identification of these hazards is required in accordance with Government Code Section 8875 et seq. The abatement or control of these hazards is authorized by Public Resources Code Section 26500 et seq. Areas of the Town that require special management, including steep and/or erosive slopes and soils, are important open space considerations as set forth in California Government Code Section 65560(e). Also relevant is Government Code Section 65561, which addresses the need for the maintenance of the scenic beauty of an area and the preservation of economic resources.

## Hillside Development

The Town of Yucca Valley has experienced hillside development, some of which is particularly susceptible to damage from slope failure, rockfalls and strong ground acceleration associated with seismic activity. The geotechnical study prepared for the General Plan identifies approximately five square miles within the Town limits and an additional

11.5 square miles in the study area which is hilly terrain subject to rockfalls and slope instability. These areas occur primarily in the southern and western portions of the Town and the study area, and are principally associated with the Little San Bernardino and Sawtooth Mountains.

Development in hillside areas, as designated on the Rockfall/Landslide Susceptibility Map (Exhibit V-2), and elsewhere in the community, can be designed to follow or flow with natural contours of the site. It is important that development planning on sloping terrain be based upon the best available topographic information, and that development is controlled to minimize adverse visual impacts.

### Hillside Development and Erosion Control

General and specific engineering and design principles are applicable to the regulation of hillside development. Carefully planned and developed roads and access drives will minimize the creation of unstable slopes and cuts. It will also allow for more easily managed drainage and minimized erosion.

### Grading Standards

Grading on sites with substantial slope should be limited to that necessary to provide stable development areas for structural foundations, public and private streets, access drives, parking areas and other intended and appropriate land uses.

### Wash Areas and Stormwater Runoff

Several areas within the Town and General Plan study area are subject to sheetflow and channelized drainage. Occasionally, intense thunderstorms can generate high volumes of runoff which can erode channel banks and transport large volumes of sand and gravel onto roads and properties. These conditions can be aggravated by excessive or improper grading and a lack of surface stabilization. Structures built too close to channel banks can also be undermined by high stormwater flows, threatening lives as well as property.

Erosion control is discussed above within the context of steep slopes. In areas where major development is proposed, or where even single family residences are to be developed on larger lots, there is ample opportunity to limit grading and to stabilize those areas which must be disturbed in order to develop the site. As discussed in other Elements of the Plan, the community greatly values the natural biological and

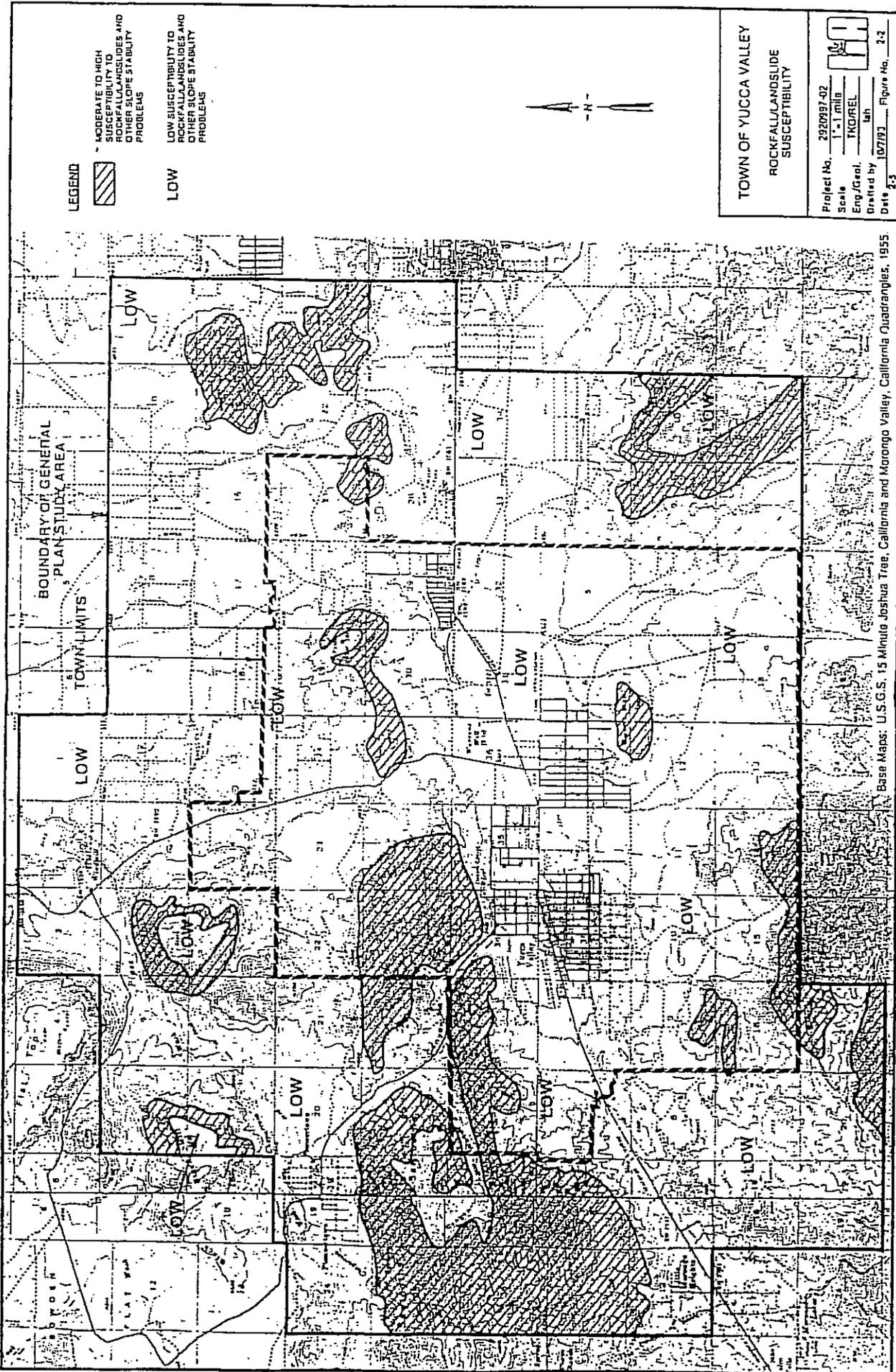
scenic resources within and surrounding the Town, and, therefore, attention to the potential impacts of grading, including soil erosion, is essential.

Natural vegetation should be left in place to the greatest extent practical, to limit the area to be disturbed and subject to surface erosion, and also to enhance the biological and general open space character of the community. Disturbed areas where no construction will occur shall be immediately revegetated with an appropriate mix of native and other permitted and appropriate drought resistant planting materials. Additional methods of soil stabilization may also be appropriate, including the use of woven erosion control mats, blown straw and other erosion control materials applied in conjunction with seed and plant applications.

In summary, where stormwater runoff threatens to cause erosion on graded lands and within natural and improved channels, the thoughtful use of revegetation and other slope stabilization methods shall be required. The goal of these efforts shall be the limitation of threats to public safety and improvements, as well as the avoidance of adverse visual impacts caused by the "cut & slash" methods that have been employed in some communities. Additionally, control and mitigation can result in a reduction in governmental costs associated with sand and gravel removal from street and drainage channels.

### FUTURE DIRECTIONS

As development continues, the Town will be faced with the responsibility of regulating grading and construction activities to protect lives and property, controlling costs of maintenance and cleanup, and preserving the scenic and biological resources of the community. To effectively accomplish this task, the Town will rely on the Development Code and Subdivision Ordinance, and their associated development standards. The Town shall also prepare a Slope Preservation/Erosion Mitigation Grading Ordinance that more specifically addresses issues of grading and development on slopes and other areas subject to erosion. The Town's implementation of the State CEQA Guidelines provides yet another mechanism by which potentially adverse impacts can be mitigated, both in terms of hillside and water course development activities.



## SLOPES, SEDIMENT CONTROL AND SOIL CONSERVATION

### GOALS, POLICIES AND PROGRAMS

#### GOAL 1

Protection of public health, safety and welfare from hazards associated with steep or unstable slopes and areas subject to erosion and associated hazards.

#### GOAL 2

Conservation of soil, protection of hillsides and mountains as valuable scenic resources, and limitation of erosion debris on streets and in drainage channels and in habitats.

##### Policy 1

Establish and maintain maps and other information indicating the location of areas of steep and unstable slopes and soils located within the Town boundaries.

##### Program 1.A

Periodically confer with the California Division of Mines and Geology and develop and maintain updated susceptibility maps and other information on potentially unstable slopes and soils occurring within the Town boundaries.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996 Fiscal year, updated (minimum) every five years.

##### Policy 2

Development proposals within areas identified by the Town as having steep slopes and/or subject to rockfalls, landslides or excessive erosion shall be accompanied by appropriate geotechnical analysis.

##### Program 2.A

A geotechnical analysis of sufficient detail to address the identified hazard shall accompany development proposals on lands subject to rockfalls, landslides or excessive erosion, and shall include mitigation measures which reduce the hazard to an insignificant level.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediate; Continuous

##### Program 2.B

Establish a cooperative arrangement with the County Geologist or shall contract with a licensed geological engineer to review and determine the adequacy of geotechnical reports addressing slope stability and erosion potential associated with specific development plans. Applicants shall be responsible for any costs incurred by the Town in reviewing and determining the adequacy of these reports.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediate; Continuous

##### Policy 3

Develop and adopt a detailed hillside grading ordinance which more fully implements this Element.

##### Program 3.A

Develop and adopt a hillside-specific or sufficiently comprehensive generic grading ordinance consistent with consideration of seismic hazards, erosion and runoff, unsightly site disturbance, wildlife and habitat preservation, and preservation of viewsheds (or viewscapes) and habitat.

**Responsible Agency:** Town Council, Planning Commission; Community Development Department  
**Schedule:** 1995-1996; Update minimum every five years

##### Policy 4

Carefully review and assess potential impacts from development proposals on steep slopes, and assure adequacy of information and analysis.

##### Program 4.A

In conformance with and in addition to grading ordinance, staff may request additional technical information such as visual impact analysis, that clearly and accurately shows all structures and grading and impacts on critical viewsheds.

**Responsible Agency:** Community Development Department  
**Schedule:** Immediately, Continuous

##### Policy 5

In order to control soil disturbance and erosion, grading associated with all development plans shall be kept to the minimum necessary to provide for planned improvements, while maintaining maximum natural and undisturbed vegetation.

**Program 5.A**

Grading plans associated with development proposals shall clearly indicate those areas which are to be left undisturbed. Those areas which must be disturbed to facilitate development, but which are to remain undeveloped, shall be immediately revegetated, including earth regeneration, in accordance with an approved regeneration and revegetation plan to be concurrently submitted with and to be an integral part of the grading plan. Revegetation plans shall include but shall not be limited to an appropriate mix of fast growing annuals and perennial native to the area.

**Responsible Agency:** Community Development Department

**Schedule:** Immediately, Continuous

# FLOODING AND HYDROLOGY ELEMENT

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## PURPOSE

The purpose of the Flooding and Hydrology Element is to set forth the goals, policies and programs that have and are to be developed by the Town to assure protection from the potential drainage and flooding hazards within the community. The intent of this element is also to protect the general health, safety and welfare of the community from potential flood hazards. It references and coordinates with other Elements of the General Plan which also address threats to the lives and property of the community's residents. The potential and extent of the 100-year and 500-year flooding threat is assessed, the 100-year storm being the highest magnitude storm expected to occur, on average, every 100 years.

It is the intention of the community to plan for the phased development of flood control facilities, both project-specific and Town-wide. The integration of open space and multiple use wildlife, pedestrian and equestrian corridors within major drainage is also planned.

Therefore, perhaps it is acceptable, due to our desert and rural configurations, that all-weather crossings are not always feasible or desired throughout the community.

## BACKGROUND

Elements directly related to Flooding & Hydrology include the Emergency Preparedness and Health Services Element, which addresses the Town's most significant environmental threats. Also related, to a lesser extent, is the Seismic Safety Element, and Slopes, Sediment Control and Soil Conservation Element, which address associated liquefaction, erosion threats to water storage dikes and dams. The Hazardous and Toxic Wastes Element is also related by the accompanying potential of transporting hazardous and toxic materials stored on the surface and underground. Other related Elements include the Land Use Element, which affects essential relationships of use to location specific threats, and the Circulation Element, which defines the availability of and need for secure access and evacuation routes in the event of a major threat in the community.

State policies and regulations require that the General Plan of a community identify and offer mitigation measures for existing and potential flooding hazards in the area. Specifically, Chapter 73 of the Statutes of California, 1939,

mandates that the San Bernardino County Transportation/Flood Control Department direct the joint planning of area-wide drainage plans affecting local jurisdictions. Mapping areas subject to inundation in the event of dam failures is required pursuant to California Government Code Section 8589.5. Government Code Section 8401 (c) requires that local governments plan, adopt, and enforce land use regulations for flood plain management. Known as the Cobey-Alquist Flood Plain Management Act, this legislation also sets forth requirements for receiving state financial assistance for flood control.

The Town of Yucca Valley and the Morongo Basin have a subtropical, high desert climate. Mean annual rainfall is very low, averaging less than 10 inches. Most of the rainfall occurs during the cooler months of November through March, but occasional high-intensity thunderstorms and tropical storms occur in late summer and early fall. Although the ground may be generally dry at the beginning of a storm, sufficient amounts and intensities of rainfall can saturate the sandy surface, thereby eliminating percolation and increasing runoff. Development also increases runoff by creating large areas of impervious surfaces. Increased runoff upstream can be a significant contributor to damage downstream.

Capital projects such as dikes, levees, channels, and debris and detention basins are being planned for the community. The financing and construction of these facilities offers significant challenges and opportunities. The approach to flood control and its cost must be weighed against the economic impacts likely to result from major flooding. Flood control improvements are frequently necessitated by development itself, which creates a runoff problem.

The Federal Emergency Management Act established the Federal Emergency Management Agency (FEMA), which has in turn prepared the Flood Insurance Rate Maps for the Town. Individual development projects, as well as the implementation plans for the Master Drainage Plan must demonstrate the protection of identified flood hazard areas to the satisfaction of FEMA in order to remove areas from federally designated flood hazard zones.

## San Bernardino County Transportation/Flood Control Department

The San Bernardino County Transportation/Flood Control Department is responsible for the management of regional drainage, including rivers and major streams and their tributaries. The Department is empowered with broad management functions, including flood control planning and construction of drainage improvements for regional flood control facilities, as well as watershed and watercourse protection related to those facilities.

To carry out its mandate, the Department and its Flood Control Districts also have powers of taxation, bonded indebtedness, land and water rights acquisition, and cooperative partnerships with local, state and federal agencies. The County Board of Supervisors act as the ex-officio Board of the San Bernardino County Flood Control District. It is anticipated that the construction of major regional flood control facilities as identified in the Master Plan of Drainage will be funded through and managed by the County Transportation/Flood Control Department.

### Yucca Valley Regulation of Local Drainage

While the County has the primary responsibility, in close cooperation and coordination with the Town, for managing regional drainage in and around the community, the management of local drainage remains the sole responsibility of the Town. The effectiveness with which the Town manages drainage issues will have a direct effect on the scale and complexity of future flood control facilities. The cost-effectiveness of prevention is actively being integrated into the community's land use plan, which recognizes the importance of and constraints under which many areas of Town exist. The preservation of lands constrained by topography or drainage, including steep slopes, areas rich in vegetation and cover, and alluvial plains and drainage channels can greatly reduce runoff and preserve the capacity of downstream facilities.

Furthermore, the planned integration of on-site stormwater detention facilities, where possible and appropriate, has the potential to significantly reduce the needed size of downstream facilities, while creating opportunities out of a constraint that results in enhanced open space and recreation areas. The construction of homes and other structures on elevated pads will also reduce the potential of flood damage in susceptible areas.

## FEMA and the Federal Flood Insurance Rate Maps

Many of the areas of the United States subject to flooding from 100 year storms have been mapped by the Federal Emergency Management Agency. The resulting documents are the FEMA Flood Insurance Rate Maps (FIRMs), which serve as the basis for determining the availability of federal flood insurance. Exhibit V-3 is a compilation of the data presented in corresponding FIRM Community Panels dated June 1981, and September 1990. The FEMA maps for the Town of Yucca Valley designate a substantial portion of the commercial corridor within the 100-year flood plain (Zone A), which extends west of and includes Water Canyon, industrial and residential lands east of the Blue Skies golf course, the airport and surrounding lands, and the Highway 62 commercial area, east of Vons shopping center.

### Yucca Valley Master Drainage Plan

The San Bernardino County Transportation/Flood Control Department is currently (1995) managing the preparation of a Master Drainage Plan for the Town of Yucca Valley. This master plan addresses the regional flooding potential and drainage problems within and tributary to the Town. Major washes and drainage addressed in the Master Drainage Plan include Water Canyon, Yucca Creek, Old Woman Springs Wash, Covington Wash, Joshua Wash and Quail Wash.

The Master Drainage Plan includes a review of the magnitude of 100-year storms, the characteristics of the major drainage, and how both establish the need and determine the most cost-effective methods of flood control are also included in the master plan. The Plan may also recommend methods of financing necessary improvements, which may include area drainage fees.

### Backbone Drainage System

The natural and planned backbone drainage for the Town is Yucca Creek Wash, extending from and including the Water Canyon drainage. The Town's focus of development has occurred along State Highway 62, which is the flattest portion of the basin and also the focus of area-wide drainage. Yucca Creek receives runoff from all of the major drainage passing through the Town. Yucca Creek and the mouth of its tributaries generally define the limits of that area of Town mapped by FEMA.

## Major Flood Control System Components

The preparation of the Master Plan, as well as local drainage control plans and improvements, can be either structural, non-structural, or a combination of both. Structural improvements include levees, dams and storage basins. Non-structural methods of control include the preservation of natural channels, washes and alluvial plains. There can also be regulatory controls that reduce densities in highly susceptible areas, lot clearance limitation on larger lots, flood proofing requirements, and watershed preservation.

### Levees, Detention and Recharge Basins

Detention basins, which are typically engineered to contain sand, gravel and other debris, can be a cost-effective means of lowering the expense and size of downstream facilities. They can also enhance opportunities for multiple use of drainage channels and their potential to provide enhanced wildlife habitat.

Groundwater recharge basins, which are designed to enhance percolation of water into the groundwater basin, are currently being considered by the Hi-Desert Water District (HDWD) as a means of placing imported water in storage for later withdrawal from wells. These facilities may be built away from or directly integrated into stormwater channels. In the event that groundwater recharge basins are incorporated into stormwater facilities, it may be necessary for these basins to be sufficiently engineered to meet the potential challenges of a 100-year storm.

Levees are one of the most basic means of controlling or directing flood flows, primarily shallower sheet flows crossing alluvial fans or cones. Typically, earthen or armored embankments placed roughly perpendicular to the sheet flow either act as a dam to hold back stormwater or as a diversion structure to "train" flows into planned and improved drainage. Examples of diversion levees currently exist within the community, and can be seen in the Covington Wash drainage in the southeastern portion of Town.

Substantial costs are associated with engineering and designing these various flood control facilities and purchasing lands needed for construction. There will also be substantial ongoing maintenance required to remove accumulated debris, and to preserve the functional capacity of basins and channels. Some of these costs may be shared with the County, while others will be the sole responsibility of the Town.

## Land Use Planning as a Flood Control Strategy

One of the most effective and direct methods of controlling flooding and limiting threats to lives and property is proper land use planning. Consistent with other primary goals of the community, land use planning can call for the preservation of natural vegetation in the foothills and mountains, which function as natural water sheds for local drainage, and can affect the volume of stormwater and debris that reach downstream facilities.

Land use planning can also limit the exposure of people and improvements to storm hazards and damage. Restrictions on the type and location of structures in the vicinity of major drainage within the community can greatly reduce potential losses. Within the limits of improved and unimproved 100-year floodplain, development should be severely limited and regulated, with the prohibition of the construction of structures for human habitation. Within flood zones subject to sheet flooding, development approvals shall be conditioned to assure protection of improvements from flood damage. Protection measures may include raising the finished floor level above the flood depth projected for the surrounding area and providing protection against scouring. Until such time as flood protection is provided, which removes areas from severe threats of flooding, development in these areas should be carefully regulated.

### Flood Control and Wildlife Habitat and Recreation Enhancement

Consistent with the goals and policies, as set forth in the General Plan, the controlling of stormwater flows should also be viewed as an opportunity for multiple uses, including recreation and wildlife enhancement. Washes, detention basins and channels should be designed with this multi-use function in mind. In addition to the opportunity to integrate hiking and equestrian trails into these facilities, these areas are commonly frequented by numerous birds and small and large mammals. They are important as a source of forage and cover, and as relief from the more urban environments of the area, offering opportunities for the continued integration of the natural desert habitat into the built environment.

## FUTURE DIRECTIONS

The Flooding and Hydrology Element will be implemented through the direct expression of policies and programs of the Element and through the implementation of other General

Plan Elements, including the Water Resources, Open Space, Mineral, Energy and Conservation, Land Use, Biological Resources and Slopes, Sediment Control and Soil Conservation Elements.

However, the principle and most direct implementation of this Element should be through the enforcement and implementation of the Town Master Drainage Plan. The Master Plan and its improvements can help control and confine the area-wide drainage pattern to more discrete and focused routes where this is appropriate. It may also point to facilities that complement land use patterns, provide cost-effective flood control, and maximize opportunities for multiple uses, including groundwater recharge. The current Town Floodplain Management Ordinance also provides drainage control while assuring protection of lives and improvements.

The Master Drainage Plan will also set critical parameters for future development along areas subject to area-wide flooding. The Element will also be implemented through the development guidelines and regulations of the Yucca Valley Development Code, Grading Ordinance and Subdivision Ordinance.

## FLOODING AND HYDROLOGY GOALS POLICIES AND PROGRAMS

### GOAL

Identification of flooding and other hydrologic hazards in the Town of Yucca Valley and provision for the protection of lives, property and essential facilities within the community.

#### Policy 1

Assure that an updated and effective Master Drainage Plan is implemented for the near and long-term protection of the community and its residents.

#### Program 1.A

Proactively participate with the County Transportation/Flood Control Department in the development and updating of the Yucca Valley Master Drainage Plan, providing land use and other relevant information and insisting upon the use of the most current data and analysis. Planned and existing flood control facilities, including detention and debris basins, washes and channels shall be identified as "open space" on the Land Use Map of the General Plan.

**Responsible Agency:** Community Development Department;

San Bernardino County Transportation/Flood Control Department; Hi-Desert Water District  
**Schedule:** Immediate; Continuous

#### Policy 2

Provide for the implementation of drainage controls and improvements that enhance local conditions and are consistent with and complement the Master Drainage Plan.

#### Program 2.A

Local regulations and guidelines shall be established which direct the management of runoff, and provide for local drainage facilities that tie into and maximize the effective use of regional drainage facilities.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996; Continuous

#### Program 2.B

Adopt local drainage policies and development standards that reduce the rate of runoff from developed lands and residential subdivisions, to the greatest extent practical.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996, Update every 5 years

#### Policy 3

Proactively pursue the securing of a Conditional Letter of Map Amendment (CLOMA) and final map amendment recognizing the redesignation of the 100-year flood plain within the Town boundaries.

#### Program 3.A

Working with the San Bernardino County Transportation/Flood Control Department and its consultant, the Town shall coordinate and cooperate in the filing of appropriate FEMA application materials to incrementally secure amendments to the Flood Insurance Rate Maps for the Town, consistent with existing and proposed improvements.

**Responsible Agencies:** County Flood Control; Community Development Department; FEMA  
**Schedule:** 1995-1996, Continuous

#### Policy 4

The mandates set forth in the Emergency Preparedness and Health Services Element shall be implemented through the Flooding and Hydrology Element and the Master Drainage Plan.

#### Program 4.A

Confer and consult with the County Transportation/Flood

**FLOODING HAZARDS**

ZONE A - AREAS OF 100-YEAR FLOOD. REFER TO FLOOD INSURANCE RATE MAPS FOR BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS WHERE DETERMINED.

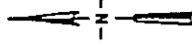
ZONE B - AREAS BETWEEN LIMITS OF THE 100-YEAR FLOOD AND 500-YEAR FLOOD. OF AREAS SUBJECT TO 100-YEAR FLOODING WITH AVERAGE DEPTHS LESS THAN 1 FOOT.

ZONE C - AREAS OF MINIMAL FLOODING.

ZONE D - AREAS OF UNDETERMINED, BUT POSSIBLE, FLOOD HAZARDS.

**SOURCES:**

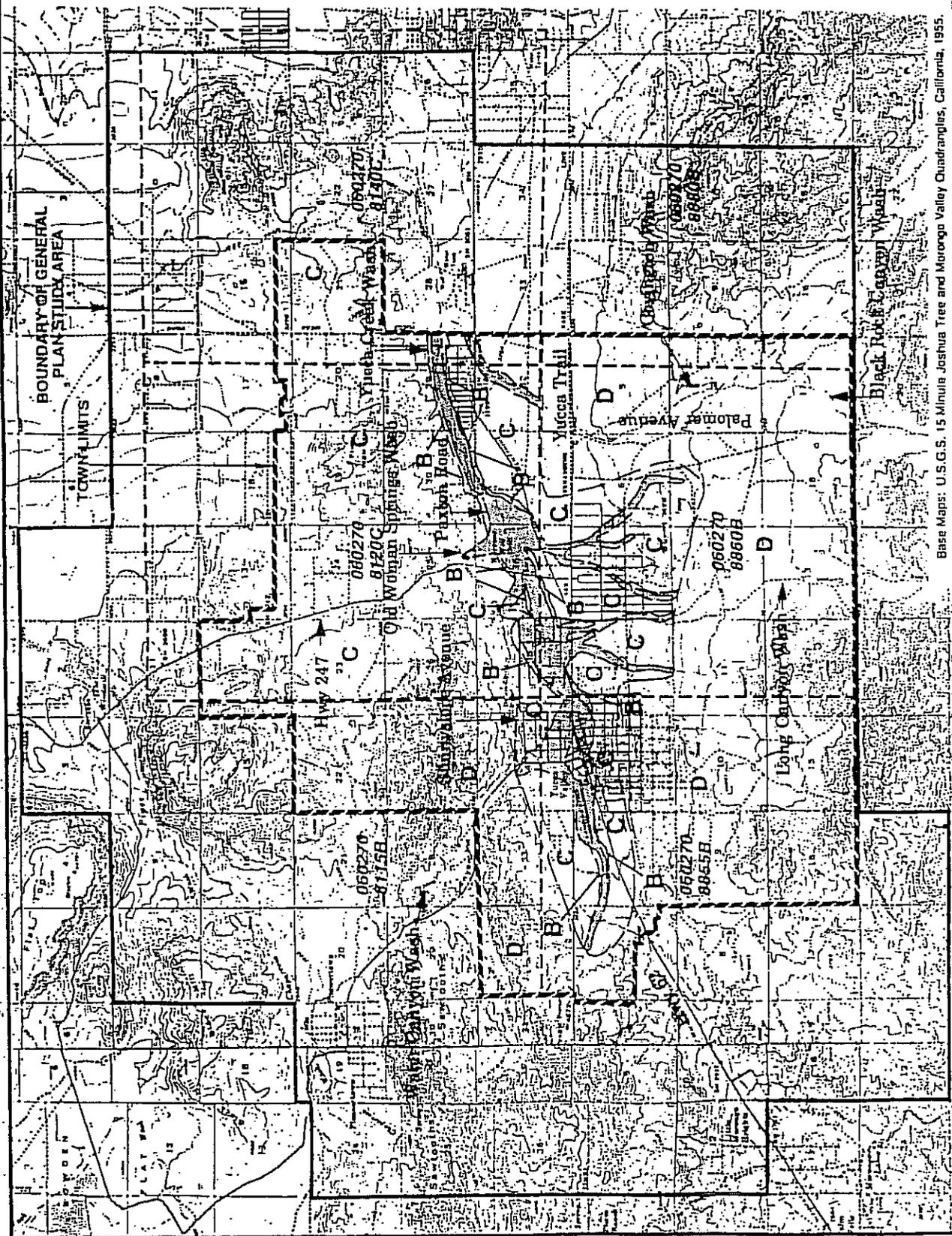
Federal Emergency Management Agency, Flood Insurance Rate Maps, Community Panels 060270 8120C and 060270 8140C (dated 9/28/1990), and 060270 8115B, 060270 8855B and 060270 8860B (dated 6/23/81).



**TOWN OF YUCCA VALLEY**

**FLOODING HAZARDS**

Project No.	2920987-02
Scale	1" = 1 mile
Geologists	TKGUREL
Drawn by	lah
Date	12/9/93



Base Maps: U.S.G.S. 15 Minute Joshua Tree and Morongo Valley Quadrangles, California, 1955.

Control Department and its consultants, as well as Caltrans, to encourage the eventual provisions for all-weather crossings at major roadways, especially those serving as emergency evacuation/access routes.

**Responsible Agencies:** Community Development Department; County Flood Control; Caltrans  
**Schedule:** Immediate, Continuous

#### **Policy 5**

Major drainage facilities, including debris basins and flood control washes and channels, shall be designed to maximize their enhancement as wildlife habitat, consistent with the functional requirements of these facilities.

#### **Program 5.A**

The services of a professional wildlife biologist shall be included in the design phase of major drainage facilities, including debris and detention basins, levees and channels, to assure that design opportunities for enhanced wildlife habitat are fully enhanced when designing and constructing these facilities.

**Responsible Agencies:** Community Development Department; Community Services Department; County Flood Control District.

**Schedule:** Immediate, Continuous

#### **Policy 6**

Major drainage facilities, including debris basins and flood control washes and channels, shall be designed to maximize their enhancement as community open space amenities such as hiking and equestrian trails, consistent with the functional requirements of these facilities.

#### **Program 6.A**

Work closely with County and local flood plain management consultants to assure that design opportunities for enhanced open space and recreation amenities, including hiking and equestrian trails, are fully enhanced when designing and constructing channels, debris and detention basins, and other drainage facilities.

**Responsible Agencies:** Community Development Department; Community Services Department; County Flood Control District

**Schedule:** Immediate, Continuous

#### **Policy 7**

Pursue all credible sources of funding for local and area-wide drainage improvements needed to provide flood control protection, and to achieve related General Plan goals and policies.

#### **Program 7.A**

County funding, State funding under the Cobey-Alquist Flood Plain Management Act and other state programs, and Federal funding available under the Federal Emergency Management Act and other federal sources shall be pursued for area-wide as well as local flood control projects.

**Responsible Agencies:** Community Development Department; San Bernardino County Flood Control District  
**Schedule:** Immediate, Annually

#### **Program 7.B**

Consider the establishment of Area Drainage Plans or Benefit Assessment Districts for purposes of funding needed drainage improvements benefiting geographically discreet portions of the Town of Yucca Valley.

**Responsible Agencies:** Community Development Department; County Flood Control.

**Schedule:** Immediate, Continuous

# NOISE ELEMENT

## PURPOSE

The purpose of the Noise Element is to coordinate the community's various land uses with the existing and future noise environment, and to ensure that any negative effects of noise are minimized or avoided completely. Lack of noise is a basic characteristic of a rural environment. As development occurs, the Town shall carefully review proposals to ensure that land uses incompatible with the noise environment are avoided or are properly mitigated. It is the intention of this Element to identify current noise conditions within the Town and determine future noise impacts resulting from continued growth. Through the implementation of the policies and programs of this Element, any current and future adverse noise impacts can be greatly reduced or avoided entirely, to protect the general health, safety and welfare of the community from noise impacts.

## BACKGROUND

The Noise Element is directly related to the Land Use and Circulation Elements. The location of sensitive land uses including housing, schools and medical facilities, are also affected by issues addressed in the Noise Element.

Low noise levels are a basic element of the rural environment. Generally, the Town enjoys a quiet noise environment typical of rural communities. The noise environment of the Town is dominated by State Routes 62 and 247 as well as local traffic. In general, the residential neighborhoods of the community are quiet, with average noise levels typical of quiet rural areas. Occasional intrusive noise from general aviation and military aircraft have a very limited impact on the communities noise environment. The issues addressed in the Noise Element include those set forth in Subsection (f) of the California Government Code Section 65302, which requires that the Noise Element identify and analyze noise problems in the community.

The implementation of the California Environmental Quality Act (CEQA), Section 21083.1, mandates adherence to the State Guidelines and empowers communities to determine whether or not a proposed project may have a "significant effect on the environment". These significant impacts may range from excessive traffic noise in a residential neighborhood, to industrial manufacturing noise impacting a hospital or convalescent home.

The California Department of Health Services has prepared

a Model Community Noise Control Ordinance, which was developed in accordance with Section 46062 of the Health and Safety Code to assist local agencies in the development of model ordinances to control and abate noise. State guidelines require that a community noise control ordinance be adopted which sets forth control policies and programs that "minimize the exposure of community residents to excessive noise."

Concern regarding the potential psychological and physiological impacts of noise has increased significantly in recent years. Excessive noise levels are not only a potential annoyance, but can constitute a significant health threat resulting in Temporary or permanent hearing loss, and mental distress.

## Definitions

Noise is defined as unwanted or undesired sound. Airborne sound is the result of a very rapid change in air pressure from the surrounding "normal" atmospheric pressure. The combination of noise from all sources near and far is the Ambient Noise Level<sup>1</sup>. For purposes of this discussion, the ambient noise level at a given location is termed "environmental noise".

Understanding environmental noise requires some familiarity with the physical description of noise. The important physical characteristics of sound include its frequency range, intensity/loudness and temporal/time-varying aspect. The decibel (dBA), A-weighted level, and Community Noise Equivalency Level (CNEL) are all units of measurement used to describe and numerically weight noise.

The decibel is a unit of measurement describing the amplitude or strength of sound. The Community Noise Equivalent Level (CNEL) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m., and the addition of 10 decibels to sound levels at night between 10 p.m. and 7 a.m. These additions are made to the sound levels at these time periods, because during the evening and night hours, with the decrease in overall amount and loudness of noise generated, when compared to daytime hours, there is an increased sensitivity

1. Model Noise Community Noise Control Ordinance, Office of Noise Control, California Department of Health. Adopted April 1977.

to sounds. For this reason the sound seems louder and it is weighted accordingly.

### Range of Noise

The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud engine noises equate to 110 dBA, which can cause serious discomfort. Due to the logarithmic nature of the sound measuring (decibel) scale, doubling the sound energy of a noise source only increases the decibel rating by 3 dBA. However, due to the internal mechanism of the human ear and how it receives and processes noise, a sound must be nearly 10 dBA higher than another sound to be judged twice as loud. Physical health, psychological well-being, social cohesion, property values and economic productivity can all be affected by excessive amounts of noise.

### Noise Impacts

The effects of noise on people can be grouped into three general categories: subjective effects, such as annoyance and nuisance, interference with activities, such as conversation and sleep, and physiological effects, for example, a startle or hearing loss.

In community noise assessments, changes in noise levels greater than 3 dBA are often identified as significant, while changes less than 1 dBA will not be discernible to the human ear. In the range of 1 dBA to 3 dBA people who are very sensitive to noise may perceive a slight change in noise level. No scientific evidence is available to support the use of 3 dBA as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dBA. However, in a community situation the noise exposure is extended over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA appears to be appropriate for most people.

Negative reactions to noise generally increase with the inflation of the difference between background or ambient noise and the noise generated from a particularly intrusive source such as a barking dog, traffic, or industrial operations. In most situations, noise control measures need to reduce noise by 5 to 10 dBA in order to effectively lower the perceived sound. Therefore, loud, short duration noises from barking dogs and low-flying aircraft generally have little

impact upon the CNEL levels of an area, due to the averaging techniques utilized to define CNEL.

### Existing Community Noise Levels

In the Town of Yucca Valley, the primary source of noise, as in many desert communities, is related to vehicular traffic. To a lesser degree aircraft overflight also contributes an intrusive element to the noise environment. Most transportation noise is highly predictable if specific data concerning operating characteristics are available. Computer models and simulations are used to compute the noise environment along transportation routes based upon the vehicles operating characteristics and the number of vehicles utilizing that particular transportation route. These predictions, provided by existing quantitative models, have been verified by sound measurements at strategic and sensitive receptor locations in the Town of Yucca Valley. The Noise Monitoring section identifies the noise monitoring site locations.

### Noise Monitoring

The noise model verification measurements, which were the actual noise surveys conducted in the Town of Yucca Valley, were done over a period from October, 1993 to January, 1994, and were administered by the acoustical engineering professionals, Walker & Celano.

Noise monitoring was executed at a total of nine sites selected to be representative of existing noise sensitive uses or generators. The locations and estimated CNEL values are listed below, and are identified by number in Table V-1. Exhibit V-4 illustrates the approximate location of the nine noise monitoring sites.

TABLE V-1

NOISE MONITORING<sup>2</sup>  
LOCATIONS AND CNEL VALUES

SITE	LOCATION	CNEL
1	Hwy. 62 at Fortuna Ave.	69.0
2	Hwy. 247 at Farrelo Rd.	68.9
3	Joshua Ln. at Hardesty Dr.	65.2
4	Palomar Ave. at Lisbon Dr.	50.4
5	8543 Palomar Ave. at water pumping station	*70.9
6	Benecia Tr. at Inca Tr.	52.0
7	Yucca Tr. at Emerson Ave.	67.9
8	Onaga Tr. at Yucca Valley High School	65.2
9	Buena Vista Dr. at Terry Ln.	63.0

\*When pumping station is in operation

NOTE: A detailed description of each monitoring site and monitoring conditions are set forth in the General Plan Program EIR. In addition, the Noise Study in the technical appendix of the General Plan Program EIR includes the Summary of Measured Noise Levels Table which offers more detailed measurements.

Aircraft Traffic Noise

Aircraft noises impacting the community emanate from two sources, general aviation operations at the Yucca Valley Airport and military aircraft overflights originating from and destined for the Twentynine Palms Air Ground Combat Center.

The Yucca Valley Airport is a privately owned airstrip which has been leased on a long term basis to the Yucca Valley Airport District. The site is a public use airport classified in the National Plan of Integrated Airport Systems as a general aviation, basic utility facility. In 1994, the airfield was home to 52 single engine aircraft. From mid 1990 to mid 1991, the airport supported 12,500 operations. Approximately 3,000 operations were generated by the airport based aircraft, while the remaining 9,500 operations were from transient airport. Any potential expansion of this airport is restricted by surrounding development and terrain.<sup>3</sup> The general aviation activity at this airport is not a significant noise problem.

Exhibit V-7 depicts the 60 CNEL contour for the Yucca Valley Airport that was estimated by evaluating noise impact studies which were prepared for the Chino Airport, Ontario International, Rialto Municipal and Cable airports and the Air Installation Compatible Use Zone studies for George and Norton AFBs.<sup>4</sup>

In addition to the noise generated by vehicular traffic and aircraft, there are other noise generators within the Town which could create significant noise related conflicts. Industrial operations related to such activities as rock crushing, construction and automotive repair can create substantial noise problems. Even mechanical equipment, including chillers, refrigerator units and heating/air conditioner equipment associated with commercial centers can significantly impact the noise environment.

Various animals and recreational vehicles (dirt bikes, quads, etc.) are generally termed nuisance noise. Although the annoyance factor of these types of noise sources can be significant, the Town Development Code and other Ordinances are better suited to address these noise issues.

Vehicular Noise

The principle noise source measured (1994) within the community is vehicular traffic, including automobiles, trucks, buses, and motorcycles. The level of noise generated by vehicular traffic generally varies according to the volume of traffic, the percentage of trucks, and traffic speed. Based upon a version of the FHWA Noise Prediction Model noise contours (CNEL = 60, 65 and 70 dBA) have been calculated. Tables V-2 and V-3 in this element show the noise impacts of traffic at several locations in the community on local noise environment.

The distances to the CNEL contours are shown in feet and measured from the centerline of the road. Exhibits V-5 and V-6 identify the projected 60, 65 and 70 dBA CNEL noise contour boundaries for existing and General Plan buildout traffic volumes.

2. Noise monitoring and CNEL estimates by Walker & Celano

3. Airport Comprehensive Land Use Plan, Yucca Valley Airport, San Bernardino County Planning Department, February 1992

4. Ibid

Conflicts arise when these noise generators are located in close proximity to noise sensitive land uses, such as churches, hospitals, schools, libraries and residential neighborhoods and are not sufficiently screened.

### Future Noise Levels

Future noise impacts to the community are expected to be primarily generated by increasing traffic volumes. From the Circulation Element, we can extract the future volumes projected on major roadways. In order to make the projected traffic noise data more accurate, the average posted speed limits and a percentage mix of light and heavy truck traffic along the roadways were included in the modeling data. Computer modeling was also used to estimate noise impacts due to the increased traffic volumes. It is important to note that special attention to site design may substantially reduce noise impacts below those projected, and therefore, these estimates are considered to be conservative and unmitigated. Tables V-2 and V-3 lists the 1994 and projected General Plan buildout noise contours generated by the Town's major roadways.

### Noise and Land Use

The compatibility of different land uses is directly related to the user's sensitivity to noise and the potential for impacts to be mitigated. Particularly sensitive land uses include residences, schools, libraries, churches, hospitals, and nursing homes. In addition, parks, golf courses and other outdoor activity areas can be sensitive to noise disturbances. Less sensitive land uses include commercial and industrial uses, hotels and motels, playgrounds and neighborhood ball parks, and other outdoor spectator sport arenas. Least sensitive to noise are heavy commercial and industrial uses, transportation, communication and utility land uses. Exhibit V-8 illustrates the ranges of allowable exterior noise levels for various land uses.

### FUTURE DIRECTIONS

Generally, the Town of Yucca Valley enjoys a quiet noise environment typical of rural communities. The Town is, however, most notably impacted by highway and major roadway noise sources. Future efforts in this regard must focus on the preservation of the rural, and in many parts of the community near wilderness, quiet, atmosphere which the community now enjoys.

Existing and future noise abatement and mitigation will have varying levels of effectiveness depending upon the noise type and its source, site conditions, geography and land uses.

Noise issues have been carefully considered in the development of the Land Use Element and land use distributions. Zoning designations provide another level of land use control, which assures appropriate uses near significant noise sources and development standards and guidelines which will reduce impacts are enhance compatibility. The Circulation Element has also been designed, where possible, to protect the Town's residential areas from excessive traffic noise and to assure compatible noise levels.

In areas subject to significant or potentially significant noise impacts, site planning and design standards are geared to provide adequate noise impact mitigation. Those mitigation measures include the use of buffer zones, walls, landscaping between residences and roadways, and earthen berms. In addition, site planning and building orientation can provide shielding of outdoor living spaces and orient openable windows away from roadways. Effective acoustical materials can also be incorporated into building windows and walls which adequately reduce outdoor noise.

### NOISE GOAL, POLICIES AND PROGRAMS

#### Goal

To maintain noise levels that complement and are consistent with the Town's low density residential character and the preservation of the rural desert environment.

#### Policy 1

Prepare and adopt a Noise Ordinance which establishes noise exposure thresholds that will trigger the need for project-specific noise impact studies in the community. The Ordinance shall also provide development standards and project design guidelines, which include a wide range of mitigation measures which can be applied to meet Town standards.

#### Program 1.A

Develop acceptable noise standards for various land uses with noise contour limits between noise generators and sensitive land uses. This noise limit will be determined depending upon proposed and surrounding land uses. If exceedance of the acceptable noise limit is proposed, a noise study will be required and mitigation measures will be developed to bring the development into compliance, or the project will be denied as proposed.

**Responsible Agency:** Community Development Department; Town Council

**Schedule:** 1995-1996; Update every five years

**Program 1.B**

Provide an outline of minimal requirements for noise studies for future projects. Studies shall analyze project impacts and the effectiveness of proposed mitigation measures.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996; Continuous

**Policy 2**

Protect noise sensitive land uses, including residences, schools, hospitals, libraries, churches and convalescent homes from high noise levels from both existing and future noise sources.

**Program 2.A**

Establish and periodically update an inventory of existing significant noise sources and incompatibility areas, and shall develop procedures to reduce the noise effects on these areas where economically and aesthetically feasible.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996; Continuous

**Program 2.B**

Prepare noise studies in conjunction with individual developments-(tentative tract maps and building permits) in order to determine precise noise barrier heights and locations and building structure noise mitigation (i.e., upgraded windows, mechanical ventilation, etc.) required in conjunction with specific development projects.

**Responsible Agency:** Community Development Department  
**Schedule:** Continuous

**Program 2.C**

Require the installation of soundwalls, earthen berms, wall and window noise insulation and other, mitigation measures in areas exceeding the Town's noise limit standards and corresponding acoustical analysis.

**Responsible Agency:** Community Development Department  
**Schedule:** 1995-1996; Continuous

**Program 2.D**

Verify projected noise levels through noise monitoring at locations adjacent to residential and other noise sensitive areas where traffic volumes have increased by more than 30%.

**Responsible Agency:** Community Development Department  
**Schedule:** After the appropriate traffic volume increase has occurred

**Policy 3**

Project designs will be required to include measures which assure that interior noise levels for residential development not to exceed 45 CNEL as required by Title 25 (California

Noise Insulation Standards).

**Program 3.A**

In areas subject to potentially significant noise impacts, the Town shall require developers to monitor and document compliance with all applicable noise level limits.

**Responsible Agency:** Community Development Department  
**Schedule:** As development occurs

**Policy 4**

Land uses that are compatible with higher noise levels shall be located adjacent to the Town's designated arterial roads, or the Yucca Valley Airport, in order to maximize noise related land use compatibility.

**Program 4.A**

Periodically review land use patterns and the community noise environment, and shall amend the Land Use map as appropriate to assure reasonable land use/noise compatibility.

**Responsible Agency:** Community Development Department; Town Council

**Schedule:** Review every five years

**Policy 5**

Develop and maintain a circulation plan that is consistent with the residential character of the Town, avoids impacts to existing and planned sensitive receptors/uses, and which provides fixed routes for existing and future truck traffic.

**Program 5.A**

Designate primary truck routes and clearly mark these routes through the Town. Construction traffic, delivery traffic, and through truck traffic shall be limited to these routes.

**Responsible Agency:** Community Development Department; Community Services Department; Caltrans

**Schedule:** 1995-1996; Update every five years

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Rev. 10

TABLE V-2

## EXISTING NOISE CONTOURS

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
SR-62	W/O Kickapoo	70.5	106	229	493
	E/O Acoma Tr.	69.1	86	185	399
	W/O SR-247	69.1	86	185	399
	W/O Yucca Mesa	71.6	126	271	584
SR-247	S/O Buena Vista	65.8	51	111	239
	N/O SR-62	65.7	51	110	236
Yucca Tr.	E/O Joshua Ln.	59.7	21	44	96
	W/O Palomar Ave.	61.4	27	57	123
	W/O La Contenta	59.9	21	46	99
Onaga Tr.	W/O Avalon Ave.	49.5	4	9	20
	W/O Joshua Ln.	56.6	13	27	59
	E/O Acoma Tr.	57.7	15	32	70
	E/O Deer Tr.	55.7	11	24	51
Pioneertown	N/O SR-62	47.1	3	6	14
Sage Ave.	N/O Onaga Tr.	52.8	7	15	33
Acoma Tr.	S/O Onaga Tr.	51.8	6	13	28
	S/O SR-62	58.3	16	36	77
Joshua Ln.	N/O Joshua Dr.	56.7	13	28	60
	S/O SR-62	57.6	15	31	68
Avalon Ave.	N/O Yucca Tr.	58.8	18	38	83
Palomar Ave.	N/O Onaga Tr.	55.9	11	25	53
Yucca Mesa	N/O SR-62	58.6	17	37	80
La Contenta	S/O SR-62	52.8	7	15	33
Skvline Ranch	W/O SR-247	54.0	9	19	40
Buena Vista	E/O SR-247	56.7	13	28	60
Kickapoo Tr.	S/O SR-62	53.3	8	16	36
Santa Fe Tr.	E/O Kickapoo	51.1	5	12	26

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Deer Tr.	N/O Onaga Tr.	52.7	7	15	32
Palm Ave.	S/O SR-62	49.7	4	9	20
Balsa Ave.	S/O SR-62	52.4	7	15	31
	N/O SR-62	56.4	12	27	58
Paxton Rd.	W/O Avalon Dr.	47.4	3	7	15
Sunnyslope Dr.	W/O Palm Ave.	51.3	6	12	26
	E/O Sage Ave.	51.3	6	12	26
	E/O Hwy 247	--	--	--	--
	W/O Indio Ave.	--	--	--	--
Joshua Dr.	E/O Acoma Tr.	--	--	--	--
	E/O Sage Ave.	55.3	10	22	48
Camino Del Cielo	N/O SR-62	50.6	5	11	23
	S/O SR-62	--	--	--	--

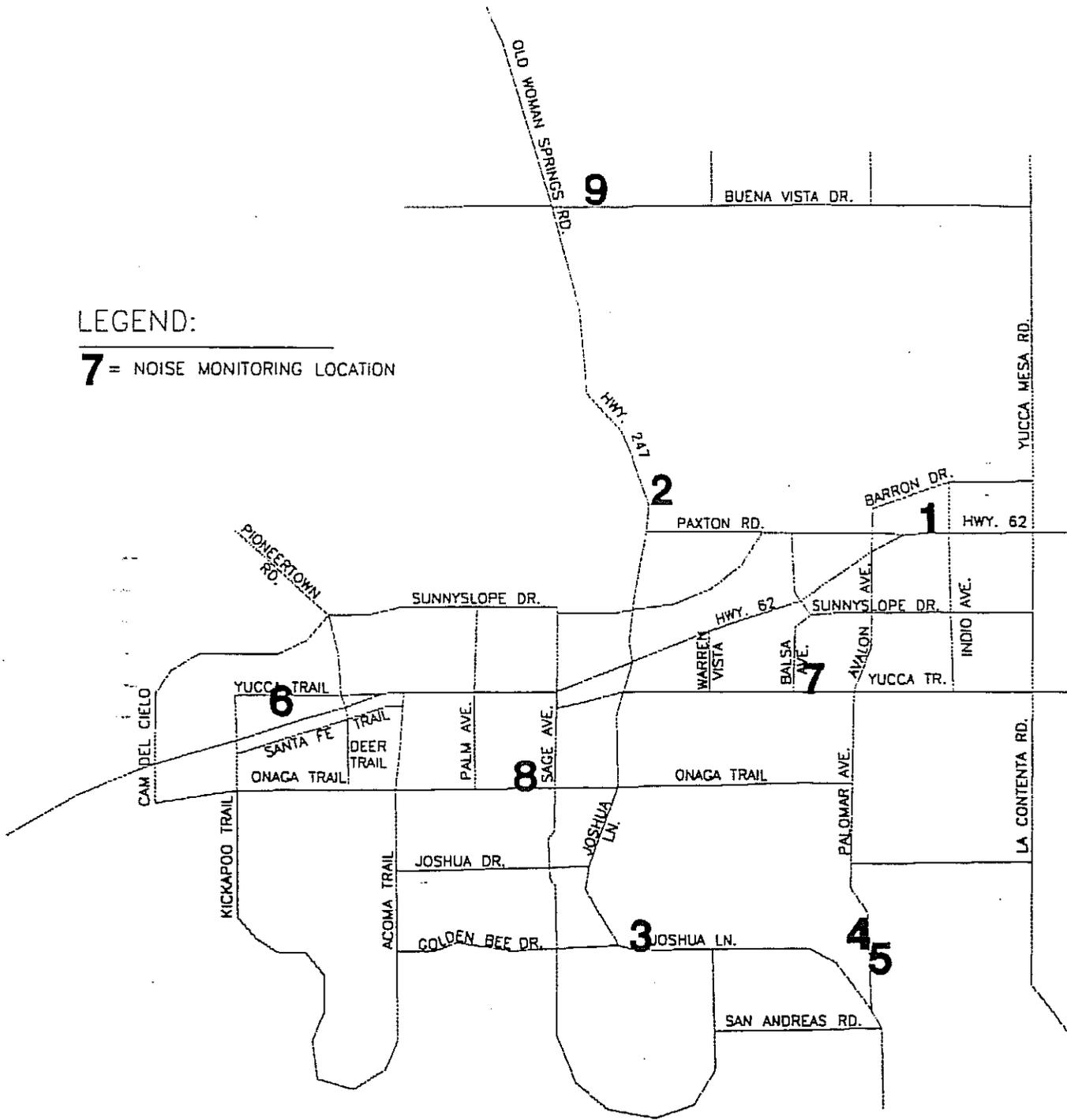
**TABLE V-3  
GENERAL PLAN BUILDOUT NOISE CONTOURS**

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
SR-62	W/O Kickapoo	72.8	143	308	664
	E/O Acoma Tr.	71.4	115	247	532
	W/O SR-247	71	108	233	502
	W/O Yucca Mesa	74.3	180	387	834
SR-247	S/O Buena Vista	72.5	136	293	632
	N/O SR-62	70.4	98	212	456
Yucca Tr.	E/O Joshua Ln.	64.5	41	89	192
	W/O Palomar Ave.	66.6	57	124	267
	W/O La Contenta	65	45	98	210
Onaga Tr.	W/O Avalon Ave.	60.2	22	47	101
	W/O Joshua Ln.	63	33	71	153
	E/O Acoma Tr.	63.6	36	77	167
	E/O Deer Tr.	64.3	40	86	186
Pioneertown	N/O SR-62	57.8	15	32	69
Sage Ave.	N/O Onaga Tr.	62	28	61	132
Acoma Tr.	S/O Onaga Tr.	62.7	32	68	146
	S/O SR-62	63.5	36	77	166
Joshua Ln.	N/O Joshua Dr.	61.6	27	58	125
	S/O SR-62	62.7	31	67	145
Avalon Ave.	N/O Yucca Tr.	66.3	55	119	256
Palomar Ave.	N/O Onaga Tr.	63.6	36	78	168
Yucca Mesa	N/O SR-62	62	29	61	132
La Contenta	S/O SR-62	59.7	20	43	92
Skyline Ranch	W/O SR-247	61.5	26	57	122
Buena Vista	E/O SR-247	64.1	40	85	183
Kickapoo Tr.	S/O SR-62	59.8	20	44	95
Santa Fe Tr.	E/O Kickapoo	57.6	15	31	67
Deer Tr.	N/O Onaga Tr.	59.4	19	41	88
Palm Ave.	S/O SR-62	57.5	15	31	67
Balsa Ave.	S/O SR-62	59.4	19	41	88
	N/O SR-62	65	45	97	209
Paxton Rd.	W/O Avalon Dr.	63.4	36	77	165
Sunnyslope Dr.	W/O Palm Ave.	63.2	34	74	160
	E/O Sage Ave.	63.9	38	82	177
	E/O SR-247	61.5	26	57	122
	W/O Indio Ave.	64.5	42	90	193
Joshua Dr.	E/O Acoma Tr.	62.4	30	66	141
	E/O Sage Ave.	63.6	36	78	168
Camino Del Cielo	N/O SR-62	62.3	30	65	139
	S/O SR-62	62.7	32	68	146

# NOISE MONITORING LOCATIONS

LEGEND:

**7** = NOISE MONITORING LOCATION



## TOWN OF YUCCA VALLEY GENERAL PLAN NOISE ELEMENT

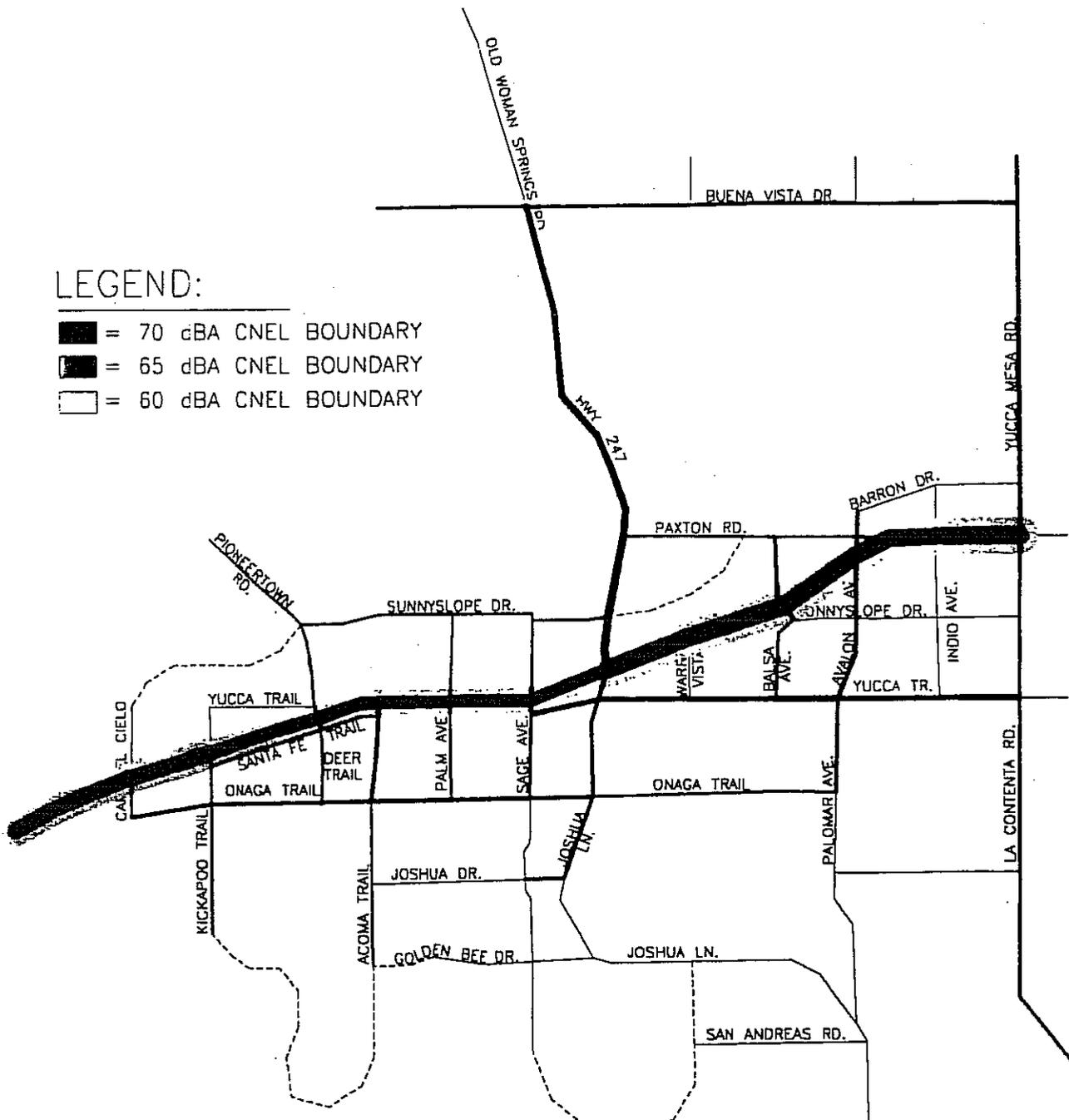
EXHIBIT V-4

**Robert Kahn, John Kain  
& Associates, Inc.**

# TOWN OF YUCCA VALLEY EXISTING ROADWAY NOISE CONTOURS

## LEGEND:

-  = 70 dBA CNEL BOUNDARY
-  = 65 dBA CNEL BOUNDARY
-  = 60 dBA CNEL BOUNDARY



636-94-002:11



## TOWN OF YUCCA VALLEY GENERAL PLAN NOISE ELEMENT

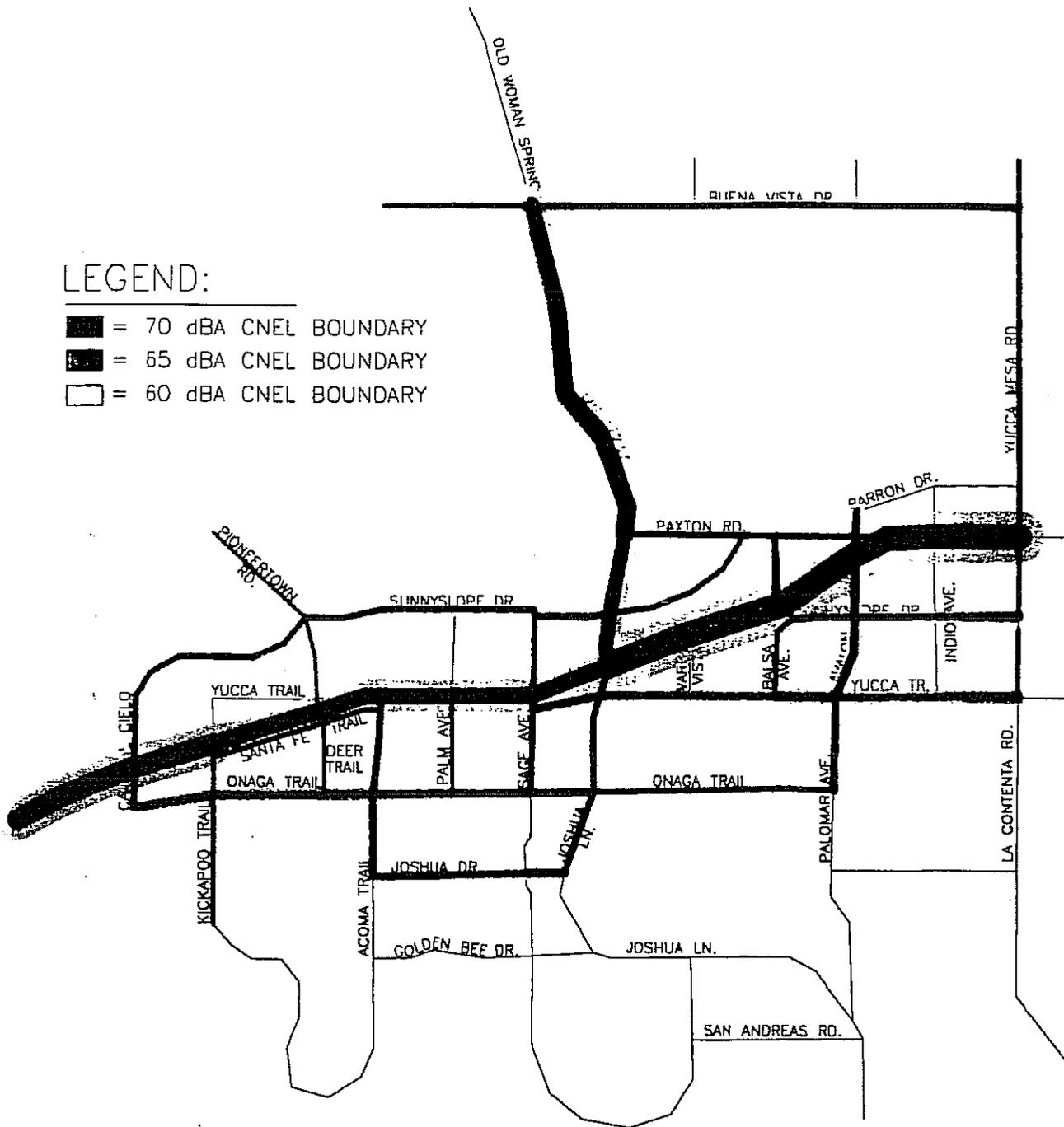
EXHIBIT V-5

**Robert Kahn, John Kain  
& Associates, Inc.**

# TOWN OF YUCCA VALLEY BUILDOUT ROADWAY NOISE CONTOURS

## LEGEND:

-  = 70 dBA CNEL BOUNDARY
-  = 65 dBA CNEL BOUNDARY
-  = 60 dBA CNEL BOUNDARY

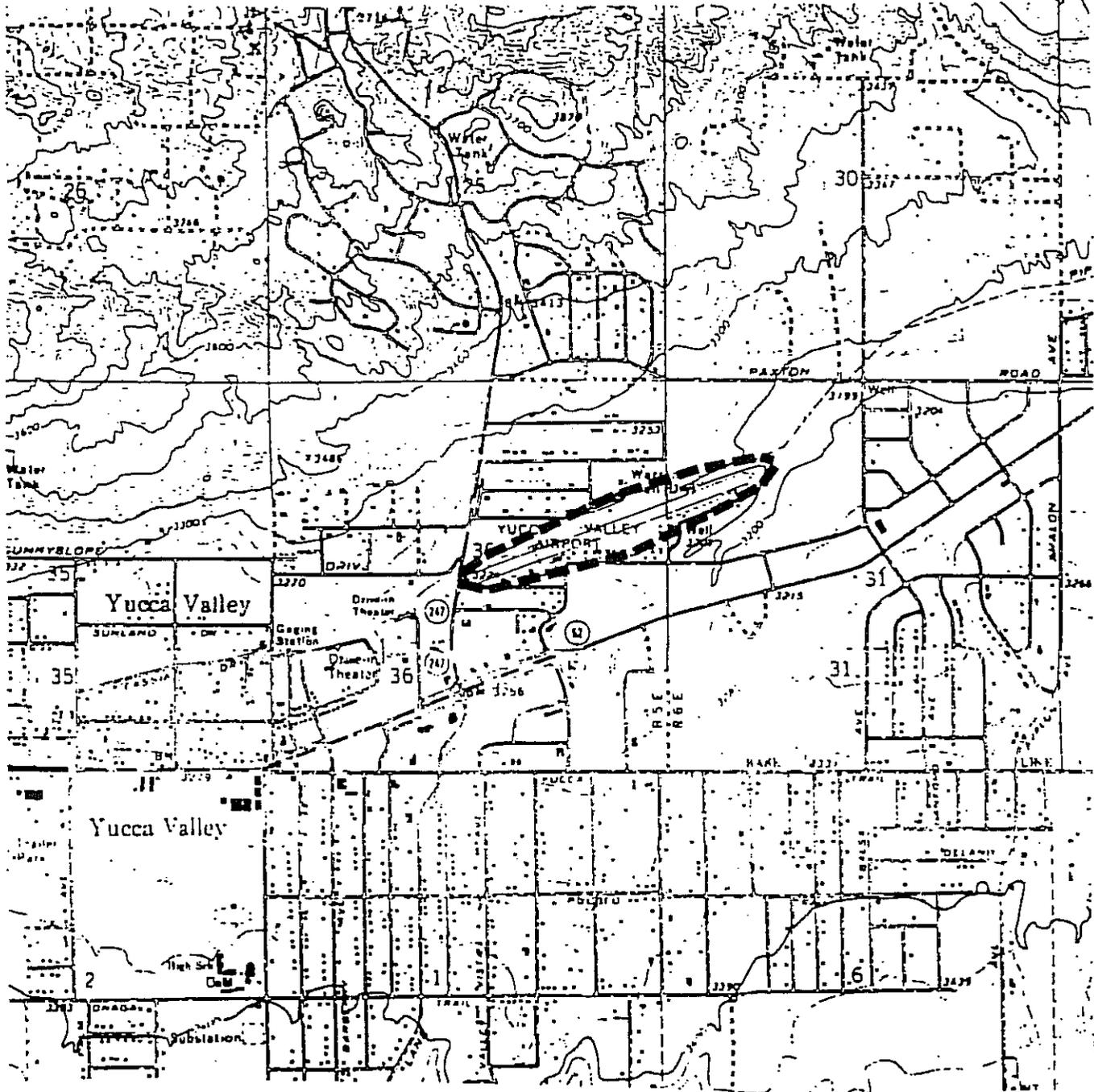


## TOWN OF YUCCA VALLEY GENERAL PLAN NOISE ELEMENT

EXHIBIT V-6

**Robert Kahn, John Kain**  
& Associates, Inc.

# YUCCA VALLEY AIRPORT 60 CNEL CONTOUR



## LEGEND

 60 CNEL  
 Contour



## TOWN OF YUCCA VALLEY GENERAL PLAN NOISE ELEMENT

EXHIBIT V-7

Robert Kahn, John Kain  
& Associates, Inc.

638-94-002:10

# NOISE/LAND USE COMPATIBILITY MATRIX

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE Ldn or CNEL, dB						
	55	60	65	70	75	80	85
RESIDENTIAL - LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
RESIDENTIAL - MULTIPLE FAMILY	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
TRANSIENT LODGING - MOTELS, HOTELS	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
AUDITORIUMS, CONCERT HALLS, AMPHITHEATERS	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
PLAYGROUNDS, NEIGHBORHOOD PARKS	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
OFFICE BUILDINGS, BUSINESS, COMMERCIAL AND PROFESSIONAL	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)
INDUSTRIAL, MANUFACTURING, UTILITIES, AGRICULTURE	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)	Diagonal (TL-BR)



**NORMALLY ACCEPTABLE**

SPECIFIED LAND USE IS SATISFACTORY, BASED UPON THE ASSUMPTION THAT ANY BUILDINGS INVOLVED ARE OF NORMAL CONVENTIONAL CONSTRUCTION, WITHOUT ANY SPECIAL NOISE INSULATION REQUIREMENTS.



**CONDITIONALLY ACCEPTABLE**

NEW CONSTRUCTION OR DEVELOPMENT SHOULD BE UNDERTAKEN ONLY AFTER A DETAILED ANALYSIS OF THE NOISE REDUCTION REQUIREMENTS IS MADE AND NEEDED NOISE INSULATION FEATURES INCLUDED IN THE DESIGN. CONVENTIONAL BUT WITH CLOSED WINDOWS AND FRESH AIR SUPPLY SYSTEMS OR AIR CONDITIONING WILL NORMALLY SUFFICE.



**NORMALLY UNACCEPTABLE**

NEW CONSTRUCTION OR DEVELOPMENT SHOULD GENERALLY BE DISCOURAGED. IF NEW CONSTRUCTION DEVELOPMENT DOES PROCEED, A DETAILED ANALYSIS OF THE NOISE REDUCTION REQUIREMENTS MUST BE MADE AND NEEDED NOISE INSULATION FEATURES INCLUDED IN THE DESIGN.



**CLEARLY UNACCEPTABLE**

NEW CONSTRUCTION OR DEVELOPMENT SHOULD GENERALLY NOT BE UNDERTAKEN.

SOURCE: COTTON/BELAND/ASSOCIATES MODIFIED FROM U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND STATE OF CALIFORNIA GUIDELINES.

## TOWN OF YUCCA VALLEY GENERAL PLAN NOISE ELEMENT

EXHIBIT v-8

**Robert Kahn, John Kain  
& Associates, Inc.**

# HAZARDOUS AND TOXIC MATERIALS ELEMENT

## PURPOSE

The purpose of the Hazardous and Toxic Materials Element is to identify existing hazardous and toxic material locations in the community, and to offer prescriptive methodologies to safely manage these materials. The intention of the Hazardous and Toxic Materials Element is to reinforce the concern for the protection of all Yucca Valley residents and visitors from adverse health and other impacts due to the presence of these hazardous and toxic materials. The Element sets forth a goal, policies and programs that will assure an effective response to the use, storage, or transport of hazardous and toxic materials in the Town of Yucca Valley and to ensure the general health, safety and welfare of the community from possible impacts associated with hazardous and toxic materials.

## BACKGROUND

The Hazardous and Toxic Materials Element is directly related to the Air Quality, Water Resources, Elements, as policies implemented for hazardous and toxic waste management will have an effect on preservation of clean air and protection against water resource contamination. It is also related to the Land Use Element with the potential of hazardous or toxic materials use, storage or disposal undermining land use compatibility. The Biological Resources Element may also be affected by the improper management of these materials. The Fire and Police Protection, and the Emergency Preparedness and Health Services Elements also have an affect on this element.

California Government Code Section 65302(g) mandates that the General Plan of a community address safety issues, including but not limited to hazardous materials. Additional applicable code sections are discussed below.

The United States, and Southern California in particular, have taken part in the rapid and innovative development of new technologies and technological and chemical processes. One crucial result of these developments has been the purification and synthesis of chemical elements and compounds which have proven highly toxic. Hazardous materials, including injurious substances such as: pesticides, herbicides, toxic metals and chemicals, liquefied natural gas, explosives, volatile chemicals, and nuclear fuels and waste products, have become prevalent in both industrial and commercial activities.

## Hazardous Waste Management Plans

AB 2948 (Chapter 1504, Statutes of 1986), commonly known as the Tanner Bill, authorized counties to prepare Hazardous Waste Management Plans (HWMP) in response to the need for safe management of hazardous materials and waste products. The San Bernardino County HWMP was adopted by the Board of Supervisors and approved by the California Department of Health Services in February 1990. The County HWMP identifies the types and amounts of wastes generated in the County and establishes programs for managing these wastes<sup>1</sup>.

San Bernardino County's HWMP, in order to comply with Health and Safety Code Section 25135, assures that adequate treatment and disposal capacity is available to manage the hazardous wastes generated within the jurisdiction, and to address issues related to manufacture and use. This plan was developed jointly by the County, cities within the County, the State, the public and industry, in order to address the disposal, handling, processing, storage and treatment of local hazardous materials and waste products.

The actual preparation of the HWMP included extensive public participation. Its policies call for the coordination with State and federal agencies in the identification and establishment of programs for managing these wastes. As an integral part of the County HWMP, the Town of Yucca Valley hazardous waste management policies for the General Plan are essentially extensions of the County Plan. Currently (1994), there are several sources of information concerning hazardous waste sites in the Town of Yucca Valley. The California Regional Water Quality Control Board (CRWQCB), as well as the Hi-Desert Water District, maintain information concerning contaminated wells and groundwater. The State and federal Environmental Protection Agencies (EPA), and the State Department of Health also supply information concerning specific hazardous waste sites and their locations.

<sup>1</sup> The San Bernardino County General Plan, The Environmental Management Group; Section II Planning Issues "Hazardous Waste/Materials." Adopted July 1989, Revised August 1991, p. II-B3-1

### Hazardous Material Production

San Bernardino County generates about 65,000 tons of hazardous waste per year. The County's waste generation represents about five percent of the total wastes manufactured in the Southern California region. The major categories of waste produced in the County include metal-containing liquids, waste oil, oily sludge, gasoline and other distilled petroleum products, and to capture particulate emissions. These wastes come from a variety of industries ranging from small businesses, such as automotive services and plating companies, to large industries, such as mining and steel manufacturing<sup>2</sup>.

### Toxic/Hazardous Wastes

In the Town of Yucca Valley, there are numerous types of commercial, service industrial and industrial processes which have a high potential for dumping, spillage or the inappropriate handling of hazardous and toxic materials. The use and management of these materials by service stations, petroleum product and equipment suppliers, pesticide vendors, automotive dealers and other service and industrial uses pose a significant potential threat to the environment due to improper management practices.

### Hazardous Materials Response

As hazardous and toxic waste sites are determined critical by the County Department of Health, the County or local agency can require the property owner to test, temporarily close and/or remove all hazardous liquids, solids or sludge. Underground storage tanks must be removed by contractors which have Hazardous Waste Certification and a General Engineering license. Between cessation of storage and actual closure, monitoring shall be continued as required by the operating permit.

In addition, if soil contamination is detected, the clean up procedure to be followed, the degree of cleanliness required, and the method of treatment (if allowed), will be directed by the Hazardous Materials Division and/or the Regional Water Quality Control Board.

### Hazardous Waste Sites

Currently, there are four federally listed hazardous waste sites in the Town of Yucca Valley and General Plan study area<sup>3</sup>. The first of the four sites is the Thrifty Oil Station, located at 54868 Twentynine Palms Highway. The second, and most severe of the four, is located at the old Circle K at 6940 Old Woman Springs Road. The hazardous waste at both of these

sites is a direct result of abandoned and leaking underground gasoline storage tanks. The remaining sites are a Caltrans Operations Site at 66960 La Contenta, and the CDF Fire Station, located at 7105 Airway, both of which are also the result of abandoned underground fuel tanks<sup>4</sup>.

All four of these sites are the result of failing underground storage tanks, which have remained in the ground long after the termination of their use. They are all considered to be detrimental to the environment, with one site listed as a "leaking tank", posing a potentially significant threat to the existing groundwater supply<sup>5</sup>.

According to the 1992 Annual Water Quality Report, the quality of the groundwater in the Yucca Valley area is relatively good. There are, however, several potential sources of groundwater contamination, including failing septic tank systems, specifically leaching fields, and underground gasoline and oil storage tanks.

The most widespread threat to groundwater in the Yucca Valley area is the utilization of septic tanks. Septic tanks are not classified as hazardous nor toxic but these tanks have a history of failure and overflow, and can release pollutants into the soil, which then filter into the existing groundwater.

### FUTURE DIRECTIONS

The Town of Yucca Valley has the responsibility to coordinate with the appropriate agencies in the identification of hazardous material sites, and the active regulation of their timely cleanup. This Element can most efficiently be implemented by maintaining and updating information on hazardous material sites, monitoring facilities which utilize or produce hazardous materials within the Town, monitoring and regulating underground storage tanks and septic systems, and regulating the transport of hazardous materials through the community.

A carefully coordinated program of oversight and management between responsible agencies will be essential. Processes for determining appropriate levels of local, County and State personnel and facilities will also be critical. The goal, policies and programs of this Element help to direct the planning and development of appropriate strategies to address hazardous and toxic materials in the community.

<sup>2</sup> Ibid

<sup>3</sup> The State of California Hazardous Waste and Substances sites List, July 1992.

<sup>4</sup> Steve Guarino, Water Resource Control Engineer, California Regional Water Quality Control Board personal telecommunication June 24, 1993.

<sup>5</sup> The State of California Hazardous Waste and Substances Sites List, July 1992.

**HAZARDOUS AND TOXIC MATERIALS  
GOAL, POLICIES AND PROGRAMS**

**GOAL**

Assure the safety of the residents of the Town of Yucca Valley by regulating the manufacture, transport, use and disposal of toxic and hazardous materials.

**Policy 1**

Compile and maintain an inventory of all hazardous waste sites, and regulate, to the extent empowered, the delivery, use and storage of hazardous materials within the Town limits and General Plan study area.

**Program 1.A**

Confer with the appropriate agencies to determine the need for, and the appropriateness of, developing a permitting process for the establishment of facilities for the manufacture, storage, use or disposal of hazardous and toxic materials within the community or adjacent areas.

**Responsible Agency:** Community Development Department; County and State Health Departments

**Schedule:** Immediate; Continuous

**Program 1.B**

Consistent with protecting the health and safety of the Town of Yucca Valley and its residents, and in support of nearby national defense activities, the Town shall coordinate with the Marine Corps Air Ground Combat Center (MCAGCC) to monitor and, where appropriate facilitate the safe transport of hazardous waste materials through the Town of Yucca Valley.

**Responsible Agency:** Community Development Department; MCAGCC; San Bernardino County Sheriff's Department

**Schedule:** Immediate; Continuous

**Policy 2**

Pro-actively encourage and facilitate the safe and immediate clean up of all hazardous waste sites currently within the Town of Yucca Valley and General Plan study area.

**Program 2.A**

Coordinate with the appropriate state and federal agencies to activate procedures for the immediate clean up of hazardous and toxic waste sites within the Town limits.

**Responsible Agency:** Community Development Department; State and Federal EPA; County Health Department

**Schedule:** Immediate; Continuous

**Policy 3**

Require that disposal of all hazardous and/or toxic wastes is in compliance with existing Federal, State and County regulations.

**Responsible Agency:** Community Development Department; State and Federal EPA; County Health Department

**Schedule:** Immediate; Continuous

**Program 3.A**

Whenever possible, encourage the development and utilization of innovative and safe chemical compounds, technologies and facilities

**Responsible Agency:** Community Development Department

**Schedule:** Immediate; Continuous

**Policy 3.B**

Prepare and disseminate information and instructive education program materials for residents, including direction on the identification and proper management of household hazardous waste.

**Responsible Agency:** Community Development Department, County Health Department

**Schedule:** 1994-1995; Continuous

**Program 3.C**

To the extent empowered, prohibit the disposal of automotive and household hazardous and toxic materials in landfills.

**Responsible Agency:** Community Development Department

**Schedule:** Immediate; Continuous

**Program 3.D**

Coordinate with Hi-Desert Disposal and other appropriate agencies to sponsor and develop a drop-off location for hazardous or toxic household products for all Yucca Valley residents.

**Responsible Agency:** Community Development Department; Hi-Desert Disposal; other appropriate agencies

**Schedule:** Immediate; Continuous

**Policy 4**

Coordinate with the Fire and Police Departments to develop a system for roadway management and for alerting emergency and medical facilities to the impending transport of hazardous an toxic materials.

**Program 4.A**

Coordinate with appropriate departments and agencies to establish transportation management and contingency emergency procedures and training programs for police, fire, medical and other organizations that would be involved in an airborne release or ground spill of hazardous and toxic materials or waste.

**Responsible Agency:** Community Development Department; San Bernardino County Fire Department; Sheriff's Department; MCAGCC

**Schedule:** Immediate; Continuous

**Policy 5**

Confer, cooperate and coordinate with the Regional Water Quality Control Board and the Hi-Desert Water District to monitor and regulate the use and removal of sewage disposal systems threatening the Town's groundwater basin.

**Program 5.A**

Cooperate to help assure that all sewage disposal systems, upon completion of their use are properly removed from service, in accordance with the requirements of the California Regional Water Quality Control Board and other regulating agencies.

**Responsible Agency:** Community Development Department; HDWD; Regional Water Quality Control Board

**Schedule:** Immediate; Continuous

**Policy 6**

Identify the location and monitor the use of all underground storage tanks located within the Town limits with the potential to release hazardous or toxic materials into the environment.

**Program 6.A**

Coordinate with appropriate agencies in the enforcement of state and federal regulations for the testing, monitoring and remediation of underground storage tanks for leakage.

**Responsible Agency:** Community Development Department; County Health Department; State EPA

**Schedule:** Immediate; Continuous

**Policy 7**

Coordinate with appropriate agencies to establish a hazardous and toxic waste dump/landfill in this region that will not adversely affect the quality of life in the community. Actively oppose any plan or attempt to establish a hazardous and toxic waste dump/landfill in adjacent open space land or any areas, with the potential to adversely affect the quality of life in the community.

**Program 7.A**

Actively oppose any County, State, Federal or private entity effort to build and operate a hazardous or toxic waste dump/landfill which could adversely affect the quality of life in the Town of Yucca Valley.

**Responsible Agency:** Community Development Department; Planning Commission; Town Council

**Schedule:** Immediate; Continuous

**Program 7.B**

The Town of Yucca Valley will cooperate with State, Regional, and County to help locate disposal facilities and to facilitate collection at the local level and making sure they get to the facilities whether they are in this region or 150 miles from here.

