

4.0 PUBLIC SAFETY



4.1 FIRE HAZARDS

According to the 1981 Lake County General Plan, with the exception of the Callayomi, Guenoc, Coyote and Long Valleys, the remainder of the Middletown Planning Area is classified as a very high fire hazard area due to its dryness, vegetation, and rough terrain. The area's declared fire season generally occurs from July 1 through October 15 following normal rainfall years. Historically, the Middletown Planning Area has been subject to major fires, such as two fires in the 1960's, one of which burned 52,000 acres between Mt. St. Helena and Santa Rosa, and the Middletown dump fire which burned 15,000 acres. More recently, in 1985, the Hidden Valley Lake fire left many residents of that subdivision homeless. This fire occurred during a period when much of the California Department of Forestry's fire fighting apparatus was out of the county on other fires.

Fire protection agencies serving the area include the California Department of Forestry (CDF) which covers the entire planning area, (a state responsibility area) from its Middletown Ranger District Station on Lake Street in Middletown and the South Lake County Fire District (SLCFD) which includes 200 square miles (some in the Cobb Mountain Planning Area). The main SLCFD station is located on Calistoga Street in Middletown, but this station is proposed to be moved to Main Street (Hwy. 175) approximately 1/2 mile west of Calistoga Street. The SLCFD responds to calls in Jerusalem Valley (through mutual aid agreements). The District intends to annex approximately 17 square miles in Jerusalem Valley it is presently serving. The SLCFD is responsible for structural fire protection, with CDF assuming the primary wildland fire fighting responsibilities during the annual fire season. The CDF operates seasonal facilities that serve the area from its Middletown fire station, with assistance from the other CDF station in Kelseyville. The SLCFD works out of four stations. The only manned main station is located in Middletown and the remaining three substations, which are operated by volunteers only, are located in Hidden Valley, Loch Lomond, and Cobb.

Fire insurance ratings for the communities of Middletown and Hidden Valley Lake are 6 and 9 for the remaining rural areas. The "ISO" fire insurance rating consists of an evaluation of equipment, access, structures and available water supply for a fire district. The ISO rating scale ranges from 1 to 9 and is used as a basis for fire insurance rates.

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Fire emergency response times vary greatly throughout the planning area. Structural fire responses from the SLCFD within the community of Middletown are five minutes or less and in Hidden Valley Lake slightly longer (7 to 10 minutes). Response times by CDF in the more remote portions of the Middletown Planning Area, can take as much as 30 minutes to 2 hours by truck depending upon an area's remoteness. Response times can be reduced when CDF's air tankers are available. The availability of air tankers to assist in fire suppression efforts is limited to declared fire seasons only. Response times for air tankers is approximately fifteen minutes. Air tankers responding to this portion of Lake County are located at the Sonoma County Airport in Santa Rosa. CDF response times to the community of Anderson Springs is about 5 minutes, to Hidden Valley Lake about 7 minutes, and to upper Butts Canyon about 10 minutes.

According to the South Lake County Fire District, structural fires have been on the decline in recent years while emergency services have been increasing. The decline in structural fires can be attributed to public awareness and stricter building codes. Brush fires in wildland areas are a constant threat in the rural areas. As additional people move into the Middletown Planning Area, more emergency and fire protection services are needed. The SLCFD provides emergency medical and ambulance service throughout the entire planning area.

Planning for more effective fire protection in communities and wildland areas involves integrating local circulation patterns, vegetation management, buildings code requirements and water storage. The communities of Middletown, Hidden Valley Lake and Anderson Springs have adequate water for domestic and structural fire protection. In these developed areas, water availability for fire protection purposes requires additional storage, flow and pipeline pressure than needed for domestic uses. Access from the Anderson Springs Subdivision to Highway 175 is a concern since there is essentially one roadway in and out of the subdivision. The location of water mains, fire hydrant spacing, and

development of looped circulation systems all contribute to increasing the level of fire safety in developed areas.

In rural areas, adequate road access as well as bridges, vegetation management, basic code requirements and water storage are very important in reducing destruction caused by fire. Emergency access can be improved by constructing looped road systems and bridges with adequate structural strength to support fire fighting equipment. Vegetation management techniques are intended to reduce fire loading and include maintenance of firebreaks. On-site water storage can include ponds, lakes, tanks or wells where water is reserved for fire protection. Enforcement of the Uniform Building and Fire Codes on new and existing structures will also reduce potential fire hazard. Many of these suggestions are listed in the Fire Safe Guides (California Division of Forestry and U.S. Forest Service, 1980) which were adopted by the South Lake County Fire Protection District.

Because of the severe fire hazard, comprehensive fire protection planning should be applied throughout the area. The SLCFD and CDF should provide recommendations on all lot splits and subdivisions, as well as other development projects, based on the "Fire Safe Guides" published by CDF and the United States Forest Service. Each development project should be designed to include adequate road access of fire equipment as well as adequate water supply, building construction, vegetation clearance, fuel breaks, and greenbelts for cost-effective fire prevention and protection.

4.2 FLOOD HAZARDS



Potential flooding is an important concern in the community of Middletown along St. Helena, Putah, and Dry Creeks. Much of the community development area is subject to "100-year" flood levels (see Figure 7). Flood potential in the remaining portions of the Middletown Planning Area occur along creeks such as Anderson, Putah and St. Helena Creeks. Areas of localized flooding occur throughout the planning area, for example, in portions of Long and Coyote Valleys.

Policies of the Lake County General Plan call for restrictions on development within designated floodway and floodway fringe areas and recommend the following guidelines:

1. Critical facilities (those facilities which should be open and accessible during emergencies) should not be permitted.
2. Passive recreational activities (those requiring intensive development,

such as hiking, horseback riding, and picnicking) are permissible.

3. Commercial, industrial and residential uses should generally not be permitted, and only unless all standards regarding elevation, anchoring, and floodproofing have been satisfied.

The 100-year floodplain maps were prepared by the U.S. Army Corps of Engineers in the early 1970's as part of the Federal Insurance Administration's Flood Insurance Study for Lake County. The purpose of this study was to designate areas located in floodways and floodway fringe subject to inundation during a flood event which can be expected to occur once every 100 years.

In the Middletown Planning Area, substantial development has been permitted to encroach into the designated 100-year floodway fringe area, particularly in the vicinity of the community of Middletown. While additional commercial, industrial, and residential uses should be discouraged in most flood-prone areas, all development along designated floodways should be protected through the application of floodway and floodway fringe zoning. Also, in light of increased development, areas with localized flooding problems should be considered for floodway or floodway fringe zoning.

4.3 GEOLOGIC AND SEISMIC HAZARDS



Geologic and seismic hazards in the Middletown Planning Area include unstable slopes and soils, ground failure, soil liquefaction, expansive clay soils, volcanism and ground shaking resulting from seismic activity. The southeastern, southern, and western portions of the planning area exhibit the greatest degree of slope and soil instability. Evidence of landslides is found throughout the planning area, particularly in the southern and western portions, which are characterized by steep slopes. Soil and slope instability is the major contributor to the highly erosive nature of the soils in the area. Figure 3 indicates the degree of slope and soil instability and landslide hazards found in the planning area.

The potential for ground failure in the Middletown Planning Area is not well documented, but the presence of landslides in sloping areas suggests that such events could have occurred during seismic events or during wet seasons. Known active faults in the region capable of generating groundshaking which could affect development within the Middletown Planning Area are the San Andreas, Healdsburg-Rodgers Creek, Konocti Bay, Porter Creek, Mt. Jackson, Big Sulphur Creek, Mercuryville, Geysers Peak and Maacama Faults. Potentially active faults located in the planning area which could possibly produce groundshaking are the Callayomi and Childers Peak Faults (see Figure 8).

The western third of the planning area (the Mayacamas Mountains) is located in the Franciscan Formation, which is characterized by metamorphosed graywacke sandstone, shale, altered submarining volcanic rocks (greenstone) containing pillow lavas, tuffs and breccias, chert beds, ultramafic rocks and serpentinite. The central and eastern portions of the planning area contain alluvial valleys, such as the Callayomi and Coyote Valleys, lying between upland areas of undifferentiated rocks of the Great Valley Sequence. This area is characterized by sandstones and interbedded shales. Generally, the eastern portion of the planning area is located in the Cache Formation. This consists of highly erodible sedimentary rocks such as silts and gravels; however, tuffs and limestone are found near the surface.

Geologically, Mount Saint Helena is composed primarily of Sonoma Volcanics, which date to the Pliocene, with some serpentine exposures. The Volcanics are predominantly andesitic with some rhyolitic tuffs, tuff-breccia and welded tuffs. The mountain, though composed of volcanics from unknown eruptive sources, is not a volcano.

Figure 8 also shows the approximate locations of known earthquake faults and geologic overview of the planning area. The easternmost portion of the area is fragmented by a considerable number of faults, most of which are considered potentially active. Although not intense, less than 3 magnitude, the westernmost portion of the area is characterized by a considerable amount of seismic activity. The potential for a major earthquake in the Middletown Planning Area, as in the remainder of California, is moderate to high.

Geologic studies are often required in areas of high landslide potential or geologic instability since development in these areas could result in a threat to health and safety. The use of building envelopes in future subdivision activity also helps to assure proper siting of future development in a subdivision.

Evidence now indicates a relationship between microseismic activity and geothermal production in the Geysers. However, these studies indicate only an increase in microearthquakes of 4.0 or less on the Richter scale, which does not result in dangerous groundshaking. The subject of induced seismicity is addressed in the Geothermal Resource and Transmission Element (Induced Seismicity in the Geysers Geothermal Area, California, Donna Elberhart-Phillips and David H. Oppenheimer, Journal of Geophysical Research, Feb. 10, 1984, abstract).

4.4 AIR QUALITY

The Lake County Air Basin lies entirely within the Coast Range Mountains,



and constitutes one of the major depressions of the region. Lake County is considered an air attainment area. Air quality in the Lake County Air Basin is considered good in comparison with more urban counties. However, as growth occurs in the Middletown Planning Area, a corresponding degradation of air quality may result. The Air Quality Management District (AQMD) applies air pollution rules and regulations to all major stationary sources located in its district.

The Middletown Planning Area contains a unique mixture of industrial, commercial, agricultural, residential and recreational land uses. This diverse mixture requires careful management of air resources by regulating air emissions from various sources to acceptable levels. Combined with the natural drainage effects of the surrounding hills and mountains, the Callayomi Valley, including the community of Middletown, is subject to localized poor dispersion during portions of the year. Inversions trap the pollutants carried into the Callayomi Valley from remote industrial sources as well as stagnating the locally generated pollutants. This is of major concern as the area continues to grow.

Geothermal development, located in the "Geysers" to the west of the Middletown area in both Lake and Sonoma Counties, is the primary industry. The prevailing weather and drainage patterns cause air emissions to be carried easterly into the residential-recreational areas of Anderson Springs and the Callayomi Valley and have been the source of community complaints and concern.

Emissions associated with geothermal development include hydrogen sulfides, (a toxic gas known for its characteristic "rotten egg" odor), hydrocarbons, carbon dioxide, radon and varying amounts of light and heavy metals found in the geothermal steam. Emissions associated with development and production include oxides of nitrogen, carbon monoxide, hydrocarbons and particulates less than 10 micrometers in diameter (PM-10), from large stationary engines, truck and auto traffic unpaved roads, residential space heating, agricultural burning and disposal of household trash by incineration.

In Anderson Springs, seasonally poor meteorological conditions which occur during the late summer/fall months have contributed to cause exceeds of the Ambient Air Quality Standard (AAQS) for hydrogen sulfide. The standard (0.03 ppm) is based on a determination of an odor nuisance to a large portion of the population. Complaint records indicate 0.008 ppm will result in citizen concern. The PM-10 standard has been exceeded during limited monitoring. Contributing sources of PM-10 are residential wood smoke, engine exhaust, unpaved roads and construction areas and well drilling construction. Other air contaminant concentrations are to be monitored and located as area development

continues. The significant unknown is the uncertainty of accidental releases and changes in steam quality over a period of time.

Through implementation of existing and developing technology, the number of hydrogen sulfide exceeds have been reduced as operations are required to meet more stringent emissions levels. Compliance can be maintained by innovative field management, improved abatement technology, and the reduction of untreated steam releases. Occasional exceeds in air quality standards are expected to continue as a result of equipment breakdown and accidental venting of air contaminants. Technological change in abatement systems may shift emphasis away from hydrogen sulfide to other compounds of possible concern, i.e. sulfur dioxide, arsenic and other toxics which are associated with alternate processes.

Since the geothermal resource area is largely well defined, additional growth may be directed to those areas where potential air quality conflicts are minimized. Other types of industrial development are also closely evaluated if located in proximity to residential areas.

The Middletown area is located geographically in the center of the recreational activities found at Clear Lake, Lake Berryessa and the Napa Valley. Residential, commercial, agricultural and industrial development are expected to continue to increase in the future. The healthful effects of the additional air quality burden is a major concern. Higher concentrations of particulate (PM-10), carbon monoxide, hydrocarbons, oxides, and ozone are expected to result from localized development.

4.5 WATER QUALITY



Water quality varies greatly throughout the Middletown Planning Area. Water availability (discussed in Subsection 3.3 above) and quality are critical factors in determining the type and location of future development. Poor water quality can adversely affect public health as well as agricultural and livestock production. Generally, water in the western and central portions of the Middletown Planning Area are variable with fair to good quality, with the exception of portions of the Callayomi, Long and Coyote Valleys. Water quality in the eastern portions of the planning area is good to poor depending upon specific location and geology.

Domestic water quality for Anderson Springs and Hidden Valley Lake and those portions of Middletown served by the Callayomi County Water District is generally good. A voluntary moratorium on further water hook-ups has been imposed in the Callayomi County Water District since existing pumping facilities do not allow for further district increases (see discussion under Section

5.3 Public Services).

According to a report called "Callayomi Valley Groundwater Study" (Charpier, Martin, and Associates, 1987), many shallow private wells in the more densely populated portions of the Middletown community area were found to contain fecal coliform contamination. Fecal contamination in the groundwater was found in all seasons of the year, and therefore seasonality was not a factor in groundwater contamination. Furthermore, groundwater in the Middletown community area was free of high concentrations of nitrates and MBAS (Methylene Blue Active Substances such as solvents). Based on this study it is apparent that, due to the high water table, water quality will continue to degrade in the aquifer below the community of Middletown unless some measures are undertaken. Constructing deeper wells or connecting outlying areas to the Callayomi County Water District will not solve the groundwater problem. Groundwater contamination may move into a deeper aquifer in the future and the pollution problem will continue to jeopardize water quality. The construction of a wastewater collection system is the recommended alternative that would eventually lead to the elimination of the groundwater contamination problem in the Middletown area (Charpier Martin, and Associates, 1987).

As of September 1988, the Middletown community area was currently under a septic moratorium while awaiting 1988 Environmental Protection Agency Clean Water Grant funding for a sewer project. The establishment of a moratorium and its support by the Board of Supervisors and the public is necessary for a wastewater treatment project to be placed on the priority list for grant funds. If a sewer is not constructed, Middletown can expect a very slow growth rate in the future since the water quality problem will persist, and the development of alternative septic systems is very expensive. It is anticipated that sewers will be developed in Middletown in 1990.

Concerns over the adequacy of existing on-site wastewater systems led the Lake County Sanitation District to sponsor a groundwater pollution study ("Pollution Study-Hidden Valley Lake" by Winzler and Kelly, 1986) for the Hidden Valley Lake subdivision located approximately 4 miles north of the community of Middletown. The pollution study showed that the Hidden Valley Lake area surrounding the golf course contains regions of poor soils and high groundwater that are resulting in septic system malfunctions. Furthermore, small lot sizes prevent repair or replacement of the systems. The study recommended that a public sewage project be implemented to correct existing and any additional pollution problems which might result from anticipated future development.

Anderson Springs has had numerous septic failures in recent years which have for the most part been a result of inadequate and/or aging septic



systems. Environmental Health Division requirements such as the 100-foot setback from a creek precludes development of new septic systems in Anderson Springs, which in effect, makes new development impossible within most of the subdivision.

Water quality impacts from geothermal development in the Geysers has long been a local concern. Water quality data collected throughout the upper portions of Putah Creek and its major tributaries during 1981-83 by the Geysers-Calistoga KGRA Aquatic Resources Monitoring program indicated substantial variations in water quality (McMillan, 1985). Dissolved oxygen levels were usually good (McMillan 1985). Concentrations of most metals were highest during high streamflows with the associated high turbidity and high levels of suspended solids. The upper portion of Putah Creek and its tributaries has undergone extensive geothermal development, and chemical constituents potentially associated with geothermal development were detectable in streams in much of the basin. However, there are many natural sources of these constituents within the basin (McMillan, 1985), including natural geothermal activity which constitutes many of the substances associated with geothermal development.

Water quality concerns in the Middletown area are most often associated with naturally occurring serpentine found locally throughout the region. A major concern with serpentine is the occurrence of asbestos. Mercury mines in the western portion of the area produce the most significant water quality concern in the area. Water running through abandoned mercury mines contains heavy metals, salts, sulfides, and chlorides. Other sources of water quality degradation are from spills and mishaps associated with geothermal activities, and soil erosion which is a result of construction activities. Localized groundwater degradation from elevated levels of sulphur and boron has occurred in the Long Valley area as a result of pond leakage from geothermal wastes. However, extensive water quality monitoring and clean up activities are occurring in this area. Water quality concerns associated with mining activities is more prevalent in the western portions of the planning area. An inactive geothermal waste dump is located on Butts Canyon Road. This site was used to dump hydrogen sulfide abatement byproducts from the geothermal industry until its closure in 1987. It was established that this dump rendered the groundwater in the surrounding area unpotable.

Groundwater quality in Lake County is generally good, but many groundwater sources suffer from high turbidity, total dissolved solids, boron, barium, iron or manganese (Ott, 1987). The general quality of groundwaters in the Upper Putah Creek basin is believed to be satisfactory for all uses, although high levels of iron, manganese, turbidity and lead may exist in specific locations.

4.6 NOISE

The Middletown Planning Area encompasses a diverse range of land uses including noise sensitive resort, recreational and residential uses. Noise impacts are expected in many locations throughout the planning area from stationary or vehicular sources often associated with geothermal development.

Noise can be simply defined as any unwanted sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans. Since the perception of noise is subjective, the setting in which the sound is generated is a critical factor. Because the planning area is sparsely populated, sound from other than natural sources may be considered as intrusive noise by much of the population.

The county's Noise Control Officer is charged with managing noise abatement programs. Towards that end, geothermal development and other noise sources are required to meet a county residential noise standard of 55 dB Ldn averaged over 24 hours with a 10 dB reduction applicable between the hours of 10:00 PM and 7:00 AM. This is a minimum performance standard which can be modified by permit conditions for projects near identified sensitive resource areas. Best Available Control Technology (BACT) is normally applied to manage geothermal-related noise generation.

Since much of the planning area is mountainous, undeveloped and sparsely populated, sound levels under calm conditions can be extremely low. Measurements indicate the background decibel levels range between the high 20's to low 30's. Geothermal-related noise sources such as well drilling, construction and heavy truck traffic are primary noise sources. Thus the difference between background and permitted noise levels may be very noticeable and in many cases result in complaints while well within the legal limits.

Techniques for reducing noise include installation of high efficiency "hospital or residential grade" mufflers on stationary engines, acoustic barriers, limits to operating schedules, containment of equipment within acoustically treated structures, use of natural barriers for equipment placement, specially designed steam muffler devices and overall operating procedures to minimize noise. Under certain conditions, all control of objectionable noise is not practical due to conflicting requirements primarily related to safety.

The 1981 Lake County General Plan describes standards for ambient noise throughout Lake County. Standards for ambient noise in Lake County and policies for noise abatement and land use compatibility are included in the plan (Lake County General Plan pg. V-124-126).

The 1981 General Plan identifies schools, hospitals and rest homes as sensitive receptors. It further states that retreats and residential areas are also considered noise-sensitive. In the rural portions of the Middletown Planning Area there are a number of private residences which may be considered noise-sensitive. Noise-sensitive areas generally include the communities of Middletown, Anderson Springs and Hidden Valley Lake. Resorts and religious retreats are also considered noise-sensitive.

4.7 PUBLIC SAFETY POLICIES

The following objectives and policies may be applicable county-wide and as specifically set forth in the Middletown Planning Area to protect and enhance public health and safety. These policies shall be applied in coordination with applicable policies found in Sections 3.10 and 5.6 of this plan and those of the General Plan.



Scenic Resources:

Objective 4.1:

To apply reasonable and cost-effective measures and programs that reduce the threat to lives and property from structural and wildland fires in the Middletown Planning Area. In outlying areas classified as high or extreme fire hazard areas by the California Department of Forestry, residential development should be typically limited to rural densities.

Policies:

- 4.11: Implementation of the recommendations of the Fire Safe Guidelines shall be considered by the California Department of Forestry (CDF) and the South Lake County Fire District when evaluating development proposals in the Middletown Planning Area.
- 4.12: The most recent fire hazards map of CDF shall be utilized for general plan and zoning purposes in the Middletown Planning Area.
- 4.13: Rural residential development in high and extreme fire hazard areas shall meet the following fire protection standards unless adequate fire suppression facilities are already available:
 - a. Adequate fuel breaks and fuel reduction shall be maintained.

- b. Dwellings shall have sufficient water storage for fire emergencies. Storage may include swimming pools, ponds and tanks;
- c. Water storage shall be available to fire equipment. Qualifying tanks and water wells shall include a stand pipe equipped with 2.5 inch National Hose threads accessible to fire trucks;
- d. Access to dwellings shall have adequate turn around area for fire trucks; and
- e. Residential access roads and driveways shall not exceed slopes which allow safe passing by fully loaded fire equipment.

- 4.14: Access bridges to both urban and rural residential developments located in high and extreme fire hazard areas shall have adequate load capabilities and be wide enough to safely accommodate fully loaded fire safety equipment.
- 4.15: The utilization of controlled burning programs should be supported in high and extreme fire hazard areas as a component of fuel modification and wildlife habitat enhancement, as well as water conservation.
- 4.16: Proposed subdivisions shall include provisions for adequate looped and double access road systems as escape routes for wildland fire emergencies. This policy is applicable in areas with high or extreme fire hazards, as defined by the most recent state and/or local fire hazard maps.

Flood Hazards:



Objective 4.2:

To take reasonable and necessary efforts to reduce potential flood hazards, particularly in and around the communities of Middletown, Hidden Valley Lake and Anderson Springs.

Policies:

- 4.21: The necessary federal flood insurance maps in the Middletown community should be updated.
- 4.22: Floodplain management practices shall be applied in all designated 100-

year floodplains.

- 4.23: Typically, the disposal, storage, or impoundment of hazardous materials shall be prohibited in designated 100-year floodplains.
- 4.24: Floodway and floodway fringe zoning shall be applied in known floodways and floodway fringes in the Middletown Planning Area.
- 4.25: Practices which contribute to flood hazards in St. Helena, Dry Creek and Putah Creek shall be prohibited.



Geologic and Seismic Hazards:

Objective 4.3:

To lessen risks to life and property from earthquakes and other geologic hazards that may affect the Middletown area.

Policies:

- 4.31: Development should be strongly discouraged in areas of high landslide risk (areas over 30% slopes) as designated in Figure 3. Geologic reports shall be required in areas of high landslide risk as well as known landslide areas when a potential threat to health and safety exists.
- 4.32: Geologic reports shall be required for development on fill areas.
- 4.33: Updated mapping on an ongoing basis of geological hazards in the Middletown Planning Area should be encouraged.
- 4.34: A collection of all studies of geologic hazards which are prepared by public agencies or private concerns that involve the Middletown area should be maintained by the Planning or Public Works departments.
- 4.35: Special regulations should be considered in accordance with the Tanner Bill requirements for containing hazardous or toxic materials in structures and areas prone to earthquakes.
- 4.36: The use of building envelopes for subdivisions in areas of moderate to high landslide risk should be encouraged.
- 4.37: Revegetation for slope stabilization shall be required as a condition to development projects when found necessary.

Air Quality:



Objective 4.4:

To protect residents of the Middletown Planning Area from poor or diminished air quality. It is also the County's objective to maintain air quality for the area's unique natural features and viewsheds.

Policies:

- 4.41: Industrial and commercial activities that have the potential to emit toxic, hazardous or nuisance air contaminants shall be located at safe distances from residential areas, schools, health care facilities, parks and other sensitive receptors. These activities shall be located in areas which are most conducive to avoiding limited dispersion and direct transport of emitted materials. Such sources shall be required to use best available control technology (BACT) to control emissions. Toxic or hazardous air contaminants include any chemical constituent regulated by state or federal air quality standards or any chemical constituent listed for review and study by the U.S. EPA or California Air Resources Board.

New development shall comply with established energy standards. Alternatives and improvements to combustion of wastes should be encouraged. Air monitoring to determine existing air quality baselines should be conducted prior to major sources locating in the area.
- 4.42: The land use and traffic circulation plans shall be coordinated to minimize vehicle related air pollution in the community of Middletown.
- 4.43: Particulate control measures should be encouraged by promoting the use of heat pumps and energy-efficient designed facilities, propane gas, or other alternative clean heating to limit the generation of additional air pollution.
- 4.44: Alternatives to unsupervised open burning and existing disposal methods shall be pursued.



Water Quality:

Objective 4.5:

To protect water quality in the Middletown Planning Area for the long-term benefit of area residents.

Policies:

- 4.51: Local surface and groundwater supplies in areas where there is a high concentration of on-site wastewater disposal systems should be periodically monitored. Such areas include, but are not limited to the Callayomi Valley and Anderson Springs.
- 4.52: A comprehensive study program should be developed to determine the role abandoned mining operations in deteriorated water quality.



Noise:

Objective 4.6:

To protect the general population from unnecessary and harmful noise levels and provide extra protection for noise sensitive receptors.

Policies:

- 4.61: Noise-generating uses adjacent to schools, cemeteries, nursing homes, resorts and religious or educational retreats shall comply with Lake County's noise compatibility criteria for sensitive receptors, as shown in Figure IV-20 of the General Plan.
- 4.62: New multi-family residential development within the 55 dBA contour on State Routes 29 and 175 should be subject to acoustical analysis and construction techniques in order to meet General Plan noise standards.
- 4.63: Best available control technology (BACT) shall be applied to geothermal or other noise generating projects occurring close to noise sensitive receptors.
- 4.64: Specific noise abatement criteria and standards shall be set and enforced for geothermal development and related on-going operation in the Geothermal Resource and Transmission Element.