

Clark County

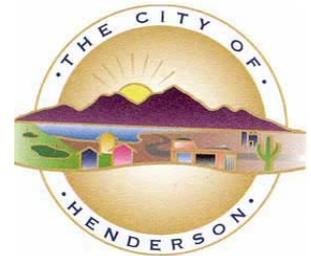
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN



City of Las Vegas
400 Stewart Avenue
Las Vegas, Nevada 89101



**Clark County
Unincorporated Area**
500 S. Grand Central Parkway
Las Vegas, Nevada 89106



City of Henderson
240 Water Street
Henderson, Nevada 89015



City of North Las Vegas
2200 Civic Center Drive
North Las Vegas, Nevada 89030



City of Boulder City
401 California Avenue
Boulder City, Nevada 89005



City of Mesquite
10 East Mesquite Boulevard
Mesquite, Nevada 89027

Executive Summary

The Clark County Multi-Jurisdictional Hazard Mitigation Plan has been developed in coordination with Clark County (County) the unincorporated area along with the five incorporated jurisdictions within Clark County: City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas, and City of Mesquite (Cities). This plan establishes a strategy to implement improvements and programs to reduce community impacts in the event of a natural disaster. Prepared pursuant to the federal Disaster Mitigation Act of 2000, the Hazard Mitigation Plan identifies, by jurisdiction, the potential hazards, the extent of the risks posed by the hazards, the vulnerabilities of each jurisdiction to these hazards, and actions that are currently in place or will be initiated, by jurisdiction, to mitigate or reduce the potential impact of the hazards.

While the frequency of disaster occurrence is low, Clark County is susceptible to major natural hazards with potential for catastrophic consequences. The greater Las Vegas Valley (Valley) has the appearance of one large, growing and emerging city. In actuality, it is six separate growing and developing jurisdictions comprised of: Clark County Unincorporated area, Boulder City, Henderson, Las Vegas, North Las Vegas, and Mesquite. However, the City of Mesquite is located in the upper northeast corner of the County. In some cases Mesquite is close enough to share the same effects of a hazard that the greater Valley does and in other cases is far enough away to be impacted in a completely different manner than the greater Valley area. Because the separate jurisdictions are so closely connected, yet isolated from any other metropolitan area, response, recovery, preparedness, and mitigation activities are generally accomplished regionally, addressing the Valley as one planning area in respect to most hazards. This plan has been developed with a focus on the planning area. All are affected, to one degree or another, by the ensuing devastation that could tremendously disrupt daily activities, commerce, and economic development, as well as the functions of the County, all five Cities, and other public agencies.

The Hazard Mitigation Plan builds upon preparedness and hazard reduction programs currently employed by the County and Cities. There are, however, a variety of hazards with potential for considerable community impacts that require commitment of additional government resources. By partnering with emergency response providers and community members in the implementation of the actions outlined in this document, the County and Cities can achieve a greater level of resiliency and will avoid major disruptions and upheaval associated with a disaster.

To prepare the Hazard Mitigation Plan, the Clark County Office of Emergency Management took the lead to coordinate with all five incorporated jurisdictions within the county as well as appropriate associated agencies, universities, private, non-profit, local, county, state, and federal governments. A multi-step planning process incorporating research, analysis, and participation by stakeholders and community members was utilized. The research steps were:

- Risk Assessment
- Critical Facilities Analysis
- Societal Analysis
- Mitigation Opportunities Analysis

The end result of this process is a plan that demonstrates current mitigation activities and identifies potential future opportunities. Much of the gathered data is represented graphically via the immense resources built up and located within the Clark County Geographic Information Systems program.

Introduction

Purpose Of The Hazard Mitigation Plan

Clark County jurisdictions realize the economic and societal importance of identifying effective ways to reduce vulnerability to disasters. The Hazard Mitigation Plan will assist the County and Cities in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the region. The Hazard Mitigation Plan establishes a set of action items to reduce risk of natural hazards through education and outreach programs and to foster the development of partnerships, improvements to maximize emergency service response capabilities, and implementation of preventative activities such as land use programs that restrict and control development in areas subject to damage from natural hazards. In response to the Disaster Mitigation Act of 2000 (DMA 2000), the County has taken the following actions:

- Conducted an assessment of the natural hazards that pose a threat to the planning area;
- Determined the potential financial impact of these hazards;
- Created a plan to mitigate these hazards; and
- Implemented the plan to reduce the impacts of natural disasters.

Organization Of The Plan

Executive Summary	Page 1	Executive Summary
Introduction	Page 2	Purpose of the plan and its organization; Planning Team; County Profile.
Community Profiles	Page 8	Provides basic background information on the jurisdiction to include location, land ownership, population, economy, development patterns, and planning information.
Risk Assessment Hazard Identification and Hazard Analysis	Page 28	Identify and define the characteristics of natural hazards and describe the impacts of these hazards. Maps included in this section: County flood control, Las Vegas Valley flood control, wild land fire and faults.
Vulnerability Assessment	Page 56	A description of each jurisdiction’s vulnerability to the hazards described in the Hazard identification and Hazard Analysis.
Mitigation Goals and Objectives	87	Steps each jurisdiction is taking to mitigate the impact of the most likely disaster occurrences.
Appendix	Page 106	List of references, tables, and maps found in this plan.
Adoption Resolutions	Pages 113-119	Copy of adoption resolution from each participating jurisdiction.

Clark County Plans And Documents

This plan is a synthesis of existing plans, laws, and ordinances that support hazard mitigation planning. The appendix includes a comprehensive listing of plans referenced throughout. Some of the plans referenced include the Clark County General Plan, Boulder City Comprehensive Plan, City of Henderson Comprehensive Plan, City of Las Vegas Master Plan, City of North Las Vegas Comprehensive Plan, and City of Mesquite Master Plan (includes land use, circulation, economic development, urban design, historic and natural resources, open spaces, noise, public safety), the Clark County Emergency Operations Plan, the Hazardous Materials Response Plan, the Mass Casualty

Incident Plan, The Terrorism Incident Response Plan, the Clark County Regional Flood Control District Master Plan, and various County Codes and Nevada Revised Statutes.

Hazard Mitigation Planning Team

In order to assure that the plan is all encompassing, all jurisdictions, unincorporated communities located in Clark County and representatives from state- and federally-managed land located within the boundaries of the County, as well as private and non-profit agency stakeholders were invited to participate and provide input.

The County hired URS to assist with the development of this Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) as they approached development of the Mitigation Strategy. The first step in their planning process was to establish a Planning Team composed of existing County agencies and the Emergency Manager and City GIS representative from each of the five cities. Carolyn Levering of the Clark County Office of Emergency Management serves as the primary point of contact for the County, the Cities, and the public. Additionally, each jurisdiction was requested to formulate their own planning team from their city departments to minimally include: Flood Control (Public Works), Planning and Development, Fire and Police. Fortunately, existing partners and resources at the regional, state, and federal levels were in place, which supported the efforts of the Planning Team. Numerous State agencies have a role in natural hazards and natural hazard mitigation. A complete participant roster is contained within the Appendix.

Special Districts

There are four Special Districts participating in this planning process with the Planning Team. The districts are Moapa Valley Water District, Clark County Health District, Clark County Regional Flood Control District (CCRFC), and the Regional Transportation Commission of Southern Nevada (RTC). All of these districts began to participate in the planning process in August 2005 and were added as active members in October 2005. As separate political entities, they are eligible to apply for federal mitigation grants. Additionally, as active members and participants of this HMP they will then meet the DMA 2000 requirement for a FEMA approved HMP. Each district accepts the responsibility of meeting all local ordinances and established procedures associated with any mitigation project they undertake by virtue of their participation in this planning process.

Moapa Valley Water District

Brad Huza, General Manager
Moapa Valley Water District
PO Box 257
Logandale, NV 89021
702-397-6893 - Office
702-397-6894 - Fax
e-mail: susan@moapawater.com

The Moapa Valley Water District was formed under NRS Chapter 447 in 1983 stating, “AN ACT to create the Moapa Valley Water District in Clark County, Nevada; providing for the storage, conservation, distribution and sale of water within the District; authorizing the District to purchase, acquire and construct the facilities necessary to serve water to consumers within the District; authorizing the issuance of general obligation and revenue bonds; and providing other matters properly relating thereto.” This law brought together the existing Overton Water District and the Moapa Valley Water Company to form the Moapa Valley Water District. This water district provides water from

local wells and springs to approximately 8,000 residential and 50 commercial customers within the unincorporated communities of Moapa, Glendale, Logandale, and Overton. Note that the unincorporated communities of Logandale and Overton were formally merged in 1981 to form Moapa Valley; however, the residents of these communities continue to identify with the previous community names. Mitigation projects, planning, and activities the District would participate in would focus on the protection of their water distribution lines which run along washes or the Muddy River. It is important to note should all of their distribution lines become inoperable at the same time there are no alternate sources of water for their 8,000 residential customers.

Clark County Health District

Donald Kwalick, M.D., M.P.H.
Chief Health Officer
Clark County Health District
P.O. Box 3902
Las Vegas, NV 89127
702-383 - Office
702-383 - Fax
e-mail: kwalick@cchd.org

The Clark County Health District was created pursuant to NRS 439.370 under Ordinance No. 163 on June 5, 1962 and is governed by a thirteen member policy making board, which represents a unique consolidation of the public health needs of Boulder City, Las Vegas, North Las Vegas, Henderson, Mesquite, and Clark County, Nevada into one regulating body and has jurisdiction over all public health matters in Clark County. Based on current census and state demographic projections, the county's population has exceeded 1.65 million and is expected to grow 3.3% to 3.8% annually in the next few years. An average of 5,250 new residents are expected to move in the County each month, many of whom seek services from the District as much of the growth consists of low skilled workers in service jobs without medical insurance and of senior citizens requiring a greater level of healthcare services. Mitigation projects, planning, and activities the District would participate in would focus on the protection and promotion of the health, the environment, and the well being of Clark County residents and visitors.

Clark County Regional Flood Control District

Gale Wm. Fraser, II, P.E.
General Manager / Chief Engineer
600 s. Grand Central Parkway, Suite 300
Las Vegas, Nevada 89106
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702-455-3870 - Fax
e-mail: gfraser@ccrfcd.org

The Nevada Legislature authorized the creation of the Clark County Regional Flood Control District in 1985. The CCRFCD is governed by a Board of Directors comprised of two representatives from both Clark County and the City of Las Vegas, and one representative from the cities of Boulder City, Henderson, Mesquite, and North Las Vegas. The scope of responsibility for the CCRFCD is to develop a coordinated and comprehensive Master Plan to solve flooding problems, to regulate land use in flood hazard areas, to fund and coordinate the construction of flood control facilities, and to develop and contribute to the funding of a maintenance program for Master Plan flood control facilities. The

CCRFCFD also provides public education regarding flood dangers and monitors rainfall and flow data during storms, disseminating information to appropriate public works and safety crews. Mitigation projects, planning, and activities the CCRFCFD would probably participate in would concentrate on drainage standards, drainage plans and studies, floodplain mapping, land development reviews, and continued participation and maintenance of the Community Rating System activities for all participating jurisdictions.

Regional Transportation Commission of Southern Nevada

Fidel Calixto, P.E.
Manager, Engineering
600 S. Grand Central Parkway, Suite 350
Las Vegas, Nevada 89106
702-676-1611 – Office
702-676-1518 – Fax
e-mail: calixtof@rtcnsnv.com

The Regional Transportation Commission of Southern Nevada (RTC) is a regional government agency which performs many transportation activities within the Southern Nevada community. The RTC was created in 1965 by State statute. In 1981, the RTC was named the Metropolitan Planning Organization (MPO) for the Las Vegas Urban Area. In 1983, the state legislation enabled the RTC to own and operate a public mass transit system, known today as Citizens Area Transit (CAT). The RTC is responsible to oversee the federally mandated transportation planning process for the Southern Nevada Region, ensure transportation plans and programs conform to approved air quality standards, provide public mass transportation, and direct the expenditure of funds for regional street and highway construction and transportation. Mitigation projects, planning, and activities the RTC would probably participate in would focus on maintaining and continuing to develop transportation systems that improve air quality in Southern Nevada, while securing funds for expansion, operation and maintenance of transportation systems and routes.

Plan Development Process

Once the Planning Team was formed, the following five-step planning process took place.

- **Organize resources (June - July 2002):** The Planning Team identified resources, including County and City staff, agencies, local university and local community members, which could provide technical expertise and historical information needed in the development of the MJHMP.
- **Assess risks (July – August 2002):** The Planning Team identified the hazards specific to the overall county, determining that there are six hazards that affect the entire planning area, although at varying degrees. A subsequent Hazard Analysis and Risk Assessment, and Vulnerability Assessment were developed.
- **Develop a mitigation strategy (February 2003, July –September 2005):** After reviewing the risks posed by each hazard, the Planning Team worked with URS to develop a comprehensive range of potential mitigation goals, objectives, and actions for each jurisdiction. Subsequently, the Planning Teams identified and prioritized the actions to be implemented at the jurisdictional level.
- **Monitor progress (August 2005):** The Planning Team developed an implementation process to ensure the success of an ongoing program to minimize hazard impacts to each community.

Public Involvement

Clark County involved the public directly in the continual review and updates of the Hazard Mitigation Plan. Public input was requested at public meetings and by posting the draft of the plan on the County's website. All citizens, local businesses, and others have been given the opportunity to be

involved. This site contains an e-mail address and phone number for public comment. A listing of agencies providing disaster-specific material for this plan is located in the Appendix.

Hazard Mitigation Planning Team Meetings

The membership of this team expanded and contracted to meet the needs of the planning process. Rosters of participants are located in the Appendix.

During the period of July 2002 to August 2004, the City of Las Vegas lead a collaborative effort within the City between citizens, public agencies, non-profit organizations, and the private sector in parallel to the efforts of the Clark County Hazard Mitigation Planning Team. The City of Las Vegas has always been an active participant in the Clark County planning process while pursuing active participation by the residents, agencies, and businesses of the City of Las Vegas. Public participation played a key role in the development of goals and action items for the City. The Steering Committee was composed entirely of citizens of the City of Las Vegas and nonprofit organization representatives, and was supported by professionals from the City of Las Vegas, Department of Fire and Rescue, Office of Emergency Management. “Experts” within each Hazard Field were utilized to guide the committee members in the understanding of the specific Hazards and Consequences and in the understanding of current mitigation plans as well as the development of strategies.

Members of the Steering Committee were involved in an extensive hazard education program in the beginning of the planning process. Using a City of Las Vegas provided bus members of the committee were taken on tours to observe specific hazard locations, or in the case of faults, a tour of the each of the fault lines in the Las Vegas Valley. Upon completion of the site visit, subject matter “experts” made presentations to committee members regarding the hazard, Las Vegas vulnerabilities, and consequences.

Specific site visits by the City of Las Vegas Steering Committee included: Southern Nevada Water Authority, Lake Mead Water Treatment Plant; City of Las Vegas, Hydrogen Production Facility; Clark County Regional Flood Control Facilities, Gowen North and South Detention Basins; Frenchman Mountain Fault; Whitney Mesa Scarp; Decatur/Flamingo Fault; National Weather Service Facility; and others. Presentations were provided on flood hazards and flood control facilities, weather-related hazards such as flood and wind, earthquakes, hazardous materials, utilities (Electric, Natural Gas, and Pipelines), and biological and chemical events. In July 2005 the City of Las Vegas agreed to merge their planning efforts with those of the Clark County Hazard Mitigation Planning Team to produce one multi-jurisdictional HMP.

July 15th, 2002

An introductory and brainstorming session defined vulnerability (susceptible to physical or emotional injury) and created a comprehensive list of threats to and vulnerabilities within Clark County. The result of the meeting was a list that identified natural and man-made hazards. Recognizing that the meeting did not include complete representation, a follow-up memo was sent to “partners in public safety” soliciting further input and providing information on the process.

August 12th, 2002

Hazards were prioritized and weighed in order to decide which hazards posed the greatest threat and should be focused on as a part of the mitigation plan.

February 11th, 2003

Criteria were developed to score each hazard independently, rather than attempting to rank hazards using identical criteria. The FEMA threshold, which states that a disaster must incur a cost of \$2.50 per person in an impacted area in order to justify federal assistance, was utilized as a scoring tool. The scoring results were used in evaluating costs based on assessments and assessing damage by the cost incurred to respond and repair.

Beginning in July 2005 additional feedback, clarification, review, and comments were requested of the Planning Team when the Clark County Office of Emergency Management hired consultant URS Corporation to assist with the restructure and development of the Goals, Objectives, and Actions section for each jurisdiction as well as the development of Community Profiles by jurisdiction, a Risk Assessment for the planning area, and Vulnerability Assessment by jurisdiction. URS was also requested to merge the planning information gathered separately by the City of Las Vegas into the HMP. As appropriate, each emergency manager was requested to increase their local planning team to include representatives from Police, Fire, Public Works/Flood Control, Planning and Development, and others as determined by the emergency manager.

All six jurisdictions reactivated their existing teams they had been working with since beginning this project in 2002. The City of Boulder City, located in the lower southeastern corner of Clark County bordering the State of Arizona, reactivated their team to include members from the Fire Department, Police Department, Public Works/Flood Control, and Parks and Recreation. Formally, the Boulder City team met July 25, 2005 to review the Risk Assessment and Vulnerability Assessment for Boulder City. They met again on August 29, 2005 to finalize their Goals, Objectives and Actions for Boulder City before submitting them to URS Corporation; after which time, they conferred informally via email, telephone, and face-to-face interaction to complete their Mitigation Action Plan as well as the remainder of the development of the City of Boulder City HMP.

Clark County Vulnerability Assessment Symposium

On August 26, 2004 UNLV hosted the Clark County Vulnerability Assessment Symposium that was coordinated by the Clark County Office of Emergency Management and the UNLV Department of Environmental Studies. The symposium was composed of subject matter experts from UNLV and Clark County to discuss hazards and ways to mitigate risk associated with the hazards.

Symposium Goals:

To provide a forum in which UNLV faculty can provide expertise to the Clark County Hazard Mitigation Project.

To provide an opportunity for UNLV faculty to begin collaborations on integrated vulnerability and hazard mitigation research.

Symposium Presentations:

How the impoverished segment of Clark County's population is affected by hazards.

Mitigation Activities that Clark County needs to be explored to assist the poverty-stricken segment of the County.

Vulnerability Analysis of Water and Wastewater Systems in the Las Vegas Valley.

Earthquakes in Southern Nevada: Uncovering Hazards and Mitigating Risks.

Transportation research findings: Uncovering Hazards and Mitigating Risks.

Plan Adoption And Implementation

Clark County Board of Commissioners adopted this plan September 2006.

The City Council of Boulder City adopted this plan on January 23, 2007 (Resolution 4927).

The City Council of the City of Henderson adopted this plan on January 16, 2007 (Resolution NB-084).

The City Council of the City of Las Vegas adopted this plan on November 13, 2006.

The City Council of the City of North Las Vegas adopted this plan on December 20, 2006.

The City Council of the City of Mesquite adopted this plan on October 24, 2006 (Resolution # 468).

On February 6, 2007, the Federal Emergency Management Agency (FEMA) approved the adopted plan, thereby ensuring continued availability of non-emergency Stafford Act funding, including Pre-Disaster Mitigation planning/project grants; Hazard Mitigation Grant Program planning/project grants; Fire Management Assistance Grant(s); and Public Assistance categories (C-G). Copies of each resolution are provided in the Appendix.

The responsibility for implementation of individual components of this Plan lies with the jurisdictions, districts, and agencies identified herein. Progress reviews and Plan revisions will be updated informally annually with a formal revision every five years.

Community Profiles

Clark County – Unincorporated Area

History

Clark County was annexed in 1867 from the Arizona Territory to the State of Nevada as part of Lincoln County. Formed in 1909, the County is named after William Andrews Clark (1839-1925), who established the railroad that linked Los Angeles with Salt Lake City. Las Vegas was founded in 1905 after Clark's railroad, which made stops here, purchased land for a town site and sold lots by auction, creating downtown Las Vegas. Established at a population of 3,321, growth in Clark County remained slow until the Great Depression, when government projects such as construction of Hoover Dam drew laborers to Southern Nevada. After World War II, legalized gaming and the warm, dry climate continued to draw new residents to Southern Nevada. The number of visitors, as well as the population, continues to increase - making Clark County the fastest growing region in the Nation.

More people live in unincorporated Clark County than in any of southern Nevada's cities, including the city of Las Vegas. Geographically, the unincorporated county includes the world-famous Las Vegas Strip, McCarran International Airport, the Las Vegas Convention Center, the University of Nevada, Las Vegas and, of course, the neighborhoods where our residents live, work and play.

Clark County government boasts an annual expenditure of approximately \$1.8 billion, employs more than 6,000, and ranks second only to the state government in level of activity and sphere of responsibility statewide.

Services

The County also provides regional services for more than 1.6 million residents and 35 million tourists a year (2002) and occupies an area of 8,012 square miles, larger than the entire state of New Jersey. Clark County government takes a leadership role in protecting the quality of our air through its Air Quality Management Department and water through the Las Vegas Valley Water District, whose board is comprised of the seven members of Clark County Commission. The county also operates McCarran and other airports, Southern Nevada's only public hospital (University Medical Center), social services, community planning, and the court system. Further, the county plays a key role in promoting tourism, transportation, public health, and flood control. Among county governments nationwide,

Clark County has one of the most complex and unique configurations. As a major “city” government, Clark County provides municipal services to over 675,000 residents in the unincorporated neighborhoods. The services provided to this vast metropolitan area include public works, wastewater treatment, comprehensive planning, development and building permitting, business licensing, fire protection, animal control, street sweeping, parks and recreation, etc. Police protection is provided by a consolidated police force jointly funded by Clark County and the City of Las Vegas – the Las Vegas Metropolitan Police Department.

As a “rural town” government, Clark County also is responsible for the municipal services of thirteen unincorporated townships. These towns, ranging in population from around 100 to over 9,000 residents, are scattered across the County and include such communities as the resort destination of Laughlin on the Colorado River 95 miles south of Las Vegas, the town of Mt. Charleston located in the mountains to the west of Las Vegas, and the ranching and farming communities of Moapa Valley and Bunkerville approximately 80 miles northeast of the metropolitan valley.

Growth

Clark County is the fastest-growing region in the country, with more than 5,000 people moving here each month. Economic opportunities continue to be the number one draw to Clark County, as 21.5% of newcomers say they came here for a job transfer or to find a job. Another 16.6% came to Clark County “for a better lifestyle,” and another 12.6% came for retirement. A whopping 39.8% moved here from California.⁶ See the Population Growth Trend Map attached to the end of this section.

The majority of the growth is located in the Las Vegas Valley, with the area being made up of unincorporated Clark County, City of Las Vegas, City of North Las Vegas, and City of Henderson. The City of Boulder City and the City of Mesquite are municipalities outside the valley. Clark County’s towns range from the small Arizona border community of Laughlin, 95 miles south of Las Vegas, to the ranching and farming communities of the Virgin and Muddy River Valleys, 80 miles to the north.

Population and Demographics

In 1970, the County had a net population of 273,288. In 2003, the valley’s population was over 1.6 million and, with current growth trends continuing, estimates project Clark County will exceed 2 million residents by 2015.⁷

The following tables provide a statistical snapshot of the County, both unincorporated and the incorporated cities within.

⁶ *Las Vegas Perspective 2004*

⁷ U.S Census Bureau

Ethnic Composition

Table 1. Race and Ethnic Composition of Clark County 2005 Projection

Race and Ethnicity	Total in Category
White Not of Hispanic Origin	1,005,753
Black Not of Hispanic Origin	158,350
American Indian, Eskimo, or Aleut	14,923
Asian or Pacific Islander Not of Hispanic Origin	125,675
Hispanic Origin of Any Race	446,907

Nevada Small Business Development Center, State of Nevada Demographer. Clark County ASRHO Estimates & Projection 1990 to 2024 (2005 Projection)

Median Age and Gender

Median age in Clark County: 47.8 years

Females: 889,794

Males: 861,814

Table 2 Ages in Clark County

Age Categories	Percentage of Adult Population
5 Years of Age	24,912
6 to 18 Years of Age	316,157
19 to 64 Years of Age	1,089,051
65 Years of Age and Over	191,203

Nevada Small Business Development Center, State of Nevada Demographer. Clark County ASRHO Estimates & Projection 1990 to 2024 (2005 Projection)

Education

The breakdown of the County residents’ educational attainment level is described in the table below:

Table 3 Education Levels in Clark County 2003

Educational Attainment	Percentage of Population
Less than High School	20.5
High School Only	29.9
Some College	32.3
College Degree	17.3

Source: Economic Research Services USDA, County-level Education Data for Nevada 2000

Employment and Industry

The civilian labor market projected in 2004 for the Las Vegas Metropolitan Statistical Area (MSA) includes 834,111 employees. Accommodation and Food Services is the leading employer in the region.

Table 4 Las Vegas MSA Industrial Employment and Projections, 2002-2012, (partial 2004 projections for employment categories employing of over 50,000)

Industry	No. Employed
Total Employment	834,111
Construction	74,984
Retail Trade	90,002
Administrative & Support and Waste Management & Remediation Services	51,465
Health Care & Social Assistance	55,474
Accommodation & Food Services	220,639

Source: Nevada Dept of Employment, Training and Rehabilitation

Household Incomes

Median household income: \$45,605

Table 5 Income & Benefits (in 2003 Inflation-Adjusted Dollars)

Annual Income Categories	Amount
Total households	584,344
Less than \$10,000	40,440
10,000 to 14,999	32,890
15,000 to 24,999	70,992
25,000 to 34,999	78,688
35,000 to 49,999	95,189
50,000 to 74,999	119,465
75,000 to 99,999	67,965
100,000 to 149,999	56,268
150,000 to 199,999	11,715
200,000 or more	10,732

Source: U.S. Census, 2003 Projection

Climate

Clark County is located in the high desert which means summer daytime temperatures typically soar over 100° F. Temperatures in the Las Vegas Valley hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are often accompanied by humidity in the 18-43% range. The concern is a potential for a heat wave that can cause serious health problems for tourists and residents.

During these hot summer months, moist unstable air from the Gulf of Mexico is rapidly forced upward by hot air currents. The dynamics of this process often result in spectacular displays of lightning in the desert sky. They also sometimes cause severe thunderstorms with intense rainfall. Falling on steep mountain slopes and armored desert surfaces, the rainwater runs off rapidly and concentrates in the urbanized areas at lower elevations, a cause of flash flooding.

Geographical Setting

Clark County is on the southernmost tip of the State of Nevada and shares borders with Nye County and Lincoln County in Nevada. Interstate neighbors are California and Arizona. See the State and Counties map attached at the end of this section for a visual representation of this relationship. Two additional maps attached to this section represent Clark County’s topography, demonstrating that the bulk of the metropolitan area is located in the valley, surrounded by several mountain ranges.

Land Use

The Las Vegas Valley is a highly urbanized region with a rich history that is reflected in its current development pattern and diverse mix of land uses, building types and styles, and neighborhoods.

Table 6 Summary of Major Land Uses*

Land Status	Acres	Square Miles
Vacant ⁸	4,753,550	7,427
Single Family	96,737	151
Multi-Family	9,972	16
Industrial	13,088	20
Commercial	35,740	56
Public Facilities	32,343	51
Agriculture & Ranching	6,518	10
Transportation/Communications/Util	22,374	35
Right of Way	72,580	113
Water	113,500	177
Total	5,156,402	8,057

* For all areas of Clark County as of July 1, 2003

Source: Clark County Comprehensive Planning

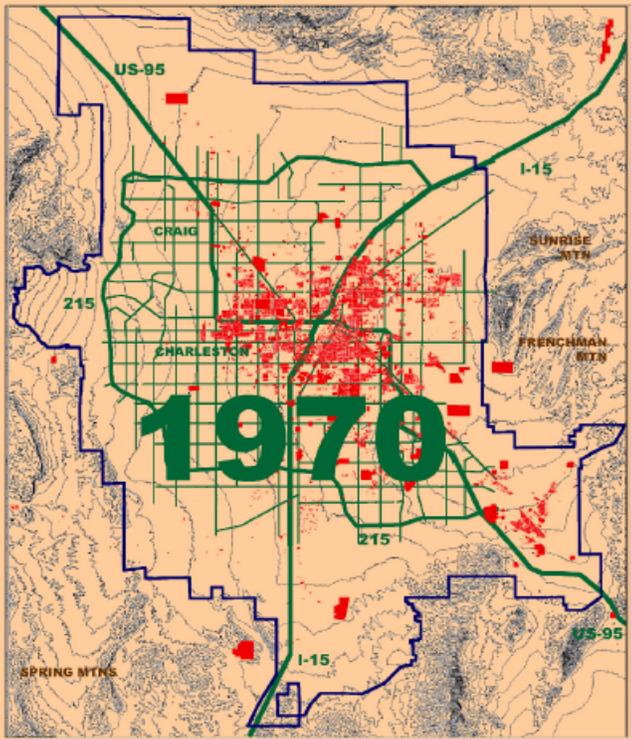
As shown in the Population Growth Trend map, growth in the Las Vegas Valley continues to expand outward from the core metropolitan area. The highest levels of current land use growth are occurring along the Las Vegas Beltway from I-15 to the west, along the western beltway between Warm Springs Road and Centennial Parkway, and along the northern beltway between Hualapai Way and Camino al Norte. Master planned communities such as Rhodes Ranch, Southern Highlands, Sun City Anthem, and Aliante also continue to grow at a steady rate.

The Southern Nevada Public Land Management Act was enacted to provide for the orderly disposal of certain federal lands in Clark County and to provide for the acquisition of environmentally sensitive lands in Nevada.⁹ The disposal of Federal lands will play a major role in the availability of developable land within the Las Vegas Valley.

In addition to growth expanding to outer-lying communities, the County is experiencing a great deal of in-fill building, which is increasing the population density and creating greater service loads on the existing infrastructure, including roads, water supply, sewer services, and storm drains.

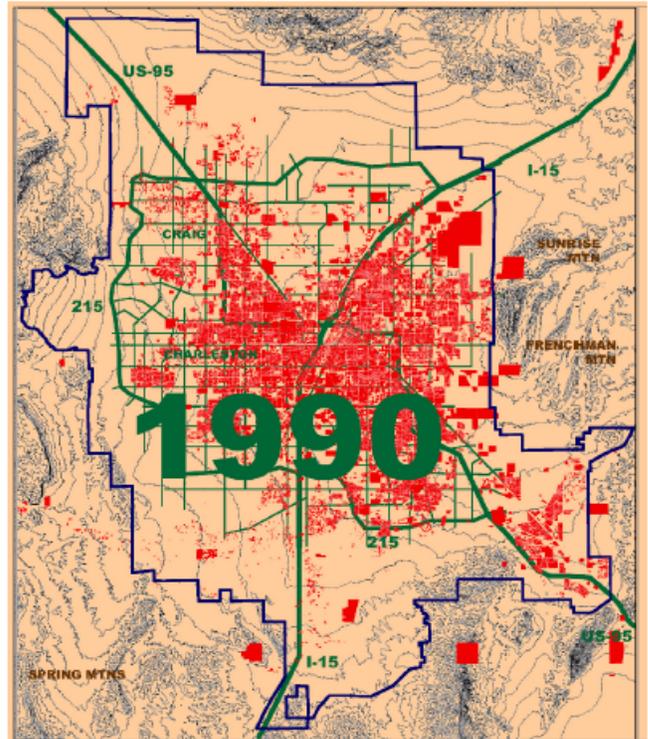
⁸ The Bureau of Land Management owns approximately 68 % of the vacant land in the State of Nevada.

⁹ The process is described on the Bureau of Land Management (BLM) page at www.nv.blm.gov/snplma/Law/overview.asp.



Population: 273,288

■ Developed Areas
— BLM Disposal Boundary



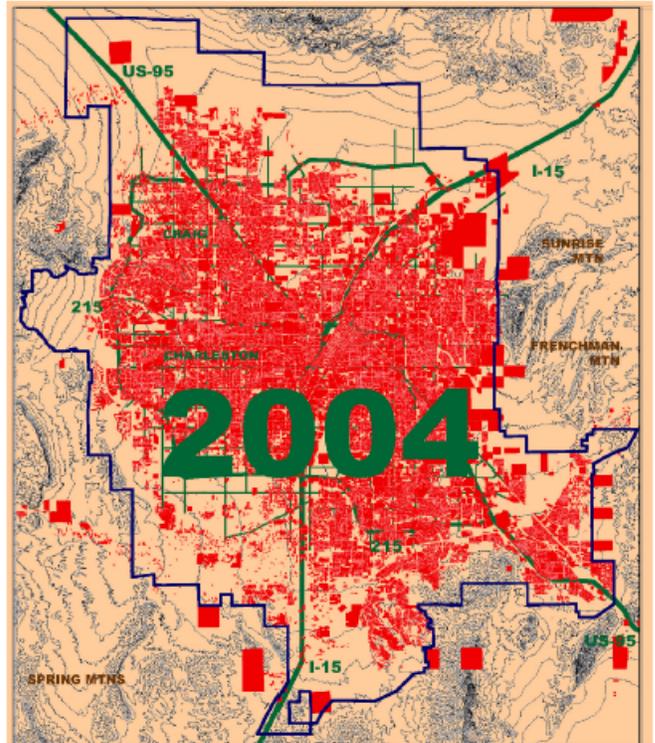
Population: 741,459

■ Developed Areas
— BLM Disposal Boundary

Population Data as Mapped by Clark County Comprehensive Planning Department

Date: October 1, 2004

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.



Population: 1,641,529

■ Developed Areas
— BLM Disposal Boundary



1 inch equals 350,000 feet

Date: October 1, 2004



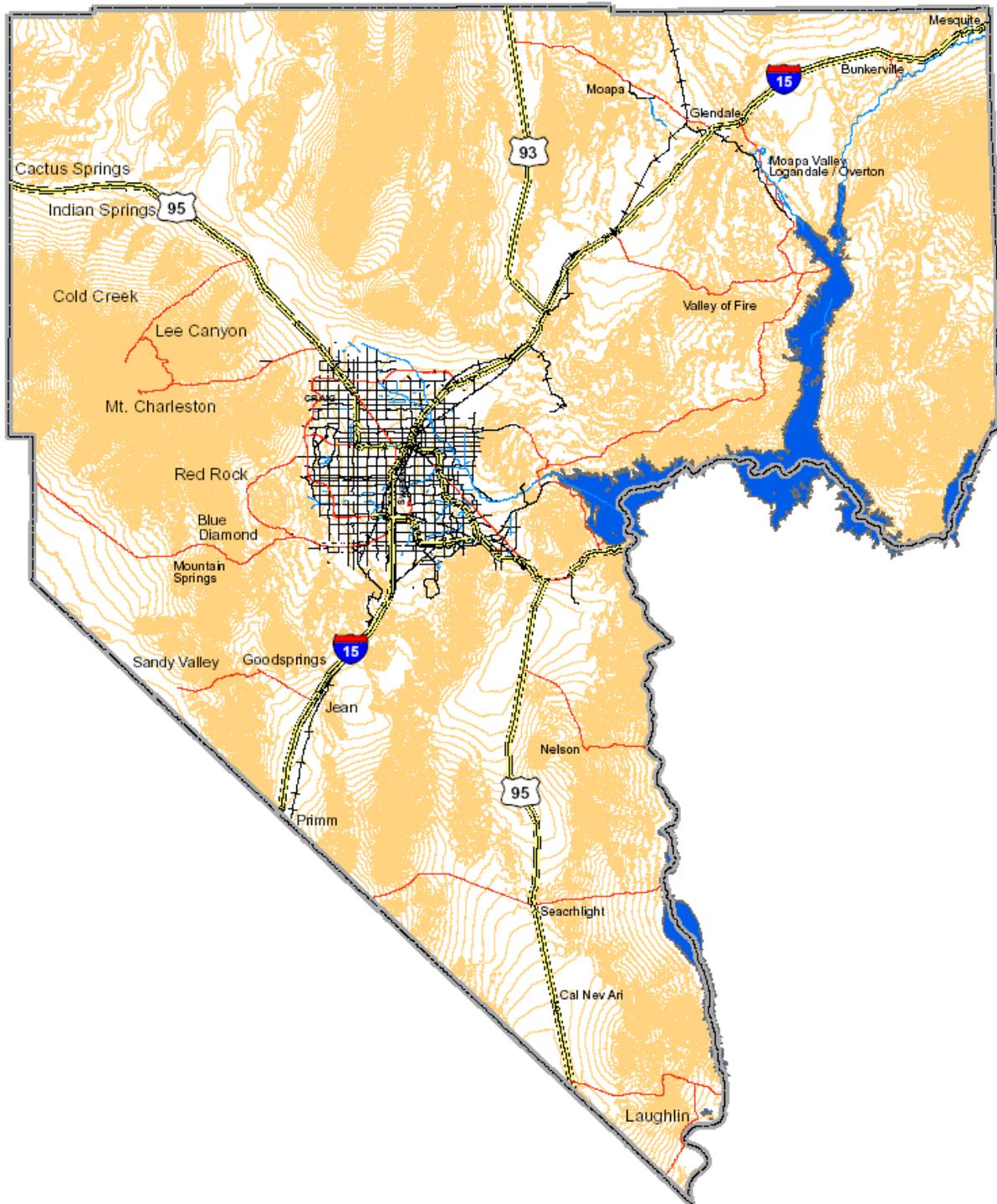
State of Nevada County Layout

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

Clark County, Nevada



Vicinity Map - No Scale



1 inch equals 85,000 feet

Date: October 1, 2004



Clark County Fifty (50) Meter Contours

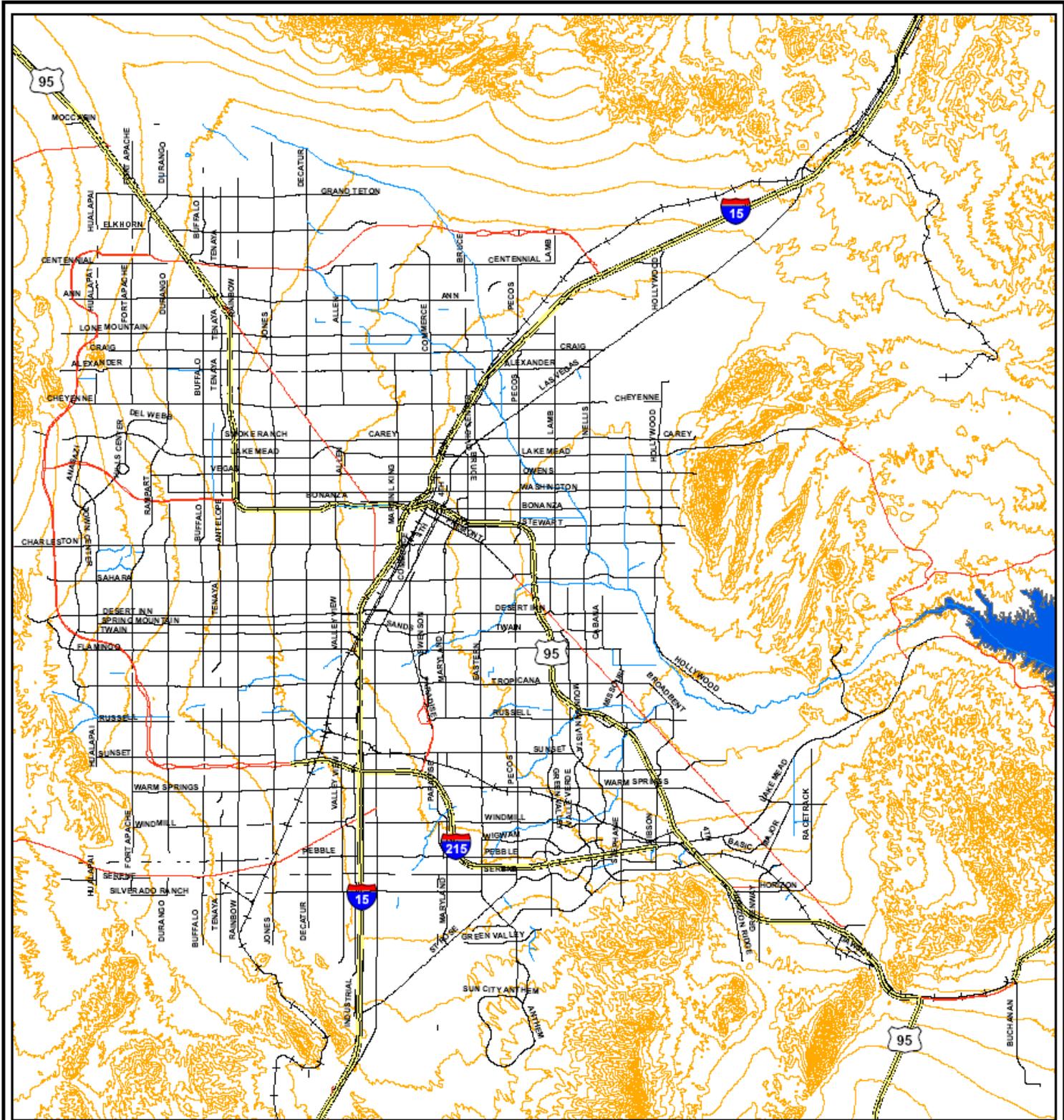


This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

Clark County, Nevada



Vicinity Map - No Scale



1 inch equals 20,000 feet

Date: October 1, 2004



Las Vegas Valley Fifty (50) Meter Contours



This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

Clark County, Nevada

Vicinity Map - No Scale

BOULDER CITY PROFILE

History

Created for the construction of Hoover Dam, the community of Boulder housed more than 4,000 workers during the dam's construction between 1931 and 1935. In that timeframe, more than 1,500 buildings were constructed to accommodate the workers and their families. Upon completion of the dam, the community was converted to house federal operations that managed the operation and maintenance of the dam and related activities, such as electrical production and distribution. As the community grew, land ownership and management remained in the purview of the federal government. Through the 1940s, the community flourished, and additional federal agencies established operations in Boulder City, as did the contractor utilities responsible for the production and distribution of electricity and water from Hoover Dam.

The Boulder City Act (P.L. 85-900), passed in 1958, established the independent municipal government of Boulder City. Under the Act, the federal government transferred title to the existing town site, approximately 33 square miles of land, and the utility system (consisting of municipal-level electric and water/sewer services only) to the city.

The residents of Boulder City have sought, through referendum, to keep their town's small-town, civic-minded atmosphere. The City's Charter made gambling illegal, and Boulder City remains the only such community in Nevada with this provision. The 1995 purchase of an additional 167 square miles adjoining the original town site made Boulder City the geographically largest city in Nevada, but to temper growth, the citizens of Boulder City instituted a controlled growth ordinance in 1979, to limit the number of annually approved construction permits for residential and hotel/motel developments. Since its approval, the ordinance has limited the community's annual growth to less than three percent. Boulder City's population in 2000 was 14,966, and is estimated to have reached 15,364 in 2002.

To further control development, the city retains ownership of 200 square miles within the city's boundaries. This unique position, as an owner/landlord, promotes close adherence to the city's recently adopted land management planning process and Strategic Plan.

Various elements combine to enhance the charm and aesthetic quality of Boulder City. The numerous park areas throughout the city are ideal venues for the numerous cultural festivals that promote the arts, music, and culinary crafts. Boulder City's historic district, including the Boulder Dam Hotel, is listed in the National Register of Historic Places. Finally, the municipally maintained areas, including the City Hall, Police Station, Fire Station, Golf Course, and Municipal Airport, are landscaped to promote an impeccably manicured environment for the enjoyment of residents and visitors alike.

Government Information

Boulder City's government is a special charter municipality with a council/manager governing system. The City Council consists of the Mayor and four Council members. All Council Members and the Mayor are elected for terms of 4 years, in staggered elections. Council Members are not elected by district; they are elected at large on a non-partisan basis such that each Council Member represents Boulder City as a whole.

The City Council is vested with the legislative powers of Boulder City and the determination of all legislative matters of policy. These legislative powers are exercised through ordinance, resolution, and other legal actions. The City Council appoints a City Manager, who is responsible for administering the policies enacted by the City Council.

Services

The City provides municipal services for its residents and visitors. In several areas, these services overlap or supersede those provided by the County. These include public works, planning, development and building permitting, business licensing, fire protection, animal control, street sweeping, parks and recreation, etc. Boulder City divides responsibilities for the provision of these services into several key departments, including: City Attorney, City Clerk, City Manager, Court, Development, Finance, Fire, Human Resource, Park and Recreation, Police, Public Works, and Public Information.

The Boulder City Fire Department operates out of one station, Battalion 12, which houses the Administrative Offices, Apparatus, and Response Personnel. The City's Police Department has one station where all police activities are coordinated to include Investigations, Communications, Crime Prevention, Patrol, Reserves, Animal Control, and Problem Solving Unit.

Socio-Economic Considerations

The U.S. Census Bureau placed Boulder City's population in 2000 at 14,966. Since the 1979 passage of its controlled growth ordinance, Boulder City's average growth has remained at a steady rate of 2.7% per year.

Median household income for Boulder City residents is \$50,523 and per capita income is \$29,770. Approximately 6.7% of individuals and 4.7% of families in Boulder City live below the poverty line. In the population 25 and over, 88.7% are high school graduates or higher and 22.0% have a bachelor's degree or higher.

Maps

A map of the City is available for printout on the City of Boulder City's website (need 11x17 color printing capabilities) at: <http://www.bcnv.org/images/CITY%20Jan%202004.pdf>

CITY OF LAS VEGAS PROFILE

History

Founded with a land auction on May 15, 1905, the community of Las Vegas originally consisted of 110 acres. Originally developed to support the railroad industry, early businesses in Las Vegas consisted largely of saloons, boarding houses, and stores to service railroad workers. By March 16, 1909, the date of its incorporation as a city, Las Vegas had grown to a population of 800 residents and covered an area of 19.18 square miles.

Within one month of the 1911 legalization of gambling in Nevada, Las Vegas issued its first six gambling licenses. In that same year, Nevada relaxed the requirements for divorces, allowing an expedited divorce after a short, six-week residency. The new divorce laws and legalized gambling spurred the development of the “dude ranch” industry in Las Vegas. These dude ranches were the forerunners of the hotel-casino and resort industries that would gain in popularity and dominance after 1945.

From the mid 1940s to present day, much of Las Vegas’ history has revolved around its tourism. During the 1950s and 60s, celebrity headliners and sporting events dominated local entertainment venues, giving Las Vegas a reputation as a glamorous destination. Nuclear testing exercises, conducted approximately 65 miles north of Las Vegas, also attracted tourists. In the 1970s, McCarran Airport opened to international flights, inviting an influx of overseas guests. The City began a redevelopment effort in Las Vegas’ downtown area (particularly Fremont Street) in the 1990s. The Las Vegas economy continues to depend heavily on gaming, entertainment, hotel, convention, and other tourism-related industries.

Today, Las Vegas has an estimated population of over 535,000, covering 113 square miles, making it the most populous city in Nevada. Las Vegas’ city limits include the Las Vegas High School Historic District, the Mormon Fort, the Las Vegas Springs Preserve, the Fremont Street Experience and Neonopolis, master planned communities, associated amenities, and other neighborhood developments.

In 2001, the Las Vegas Convention and Visitors’ Authority estimated Las Vegas (including the unincorporated areas of Clark County) had over 35 million visitors. In 2004, more than 37 million people are estimated to have visited Las Vegas. This large annual influx of visitors is the source of Las Vegas’ transient population, and supports the City’s position as one of the top tourism destinations in the world.

Government

Las Vegas’ Charter, adopted by the Nevada State Legislature on January 1, 1944, established a Council-Manager form of Government. The City Council consists of seven members, six elected council members (representing the six wards of Las Vegas) and an elected Mayor. All seven members of the City Council serve terms of four years, staggered every two years. The Mayor serves as the Council’s Chairman, and as the official representative of the City in all matters. The City Council elects one of its members to serve as Mayor Pro Tem in the Mayor’s absence.

Legislative authority for the city is vested in the City Council. As such, the Council is charged with protection of the public health, regulation/maintenance of a fire department, and enactment/enforcement of building codes, among other duties. The Council fulfills these obligations through the enactment of ordinances, resolutions, orders and other policies. The City Manager

(appointed by the City Council) is the person primarily responsible for the execution of the Council's actions, through the coordination of various City Departments.

Services

Several of the municipal services provided by the City of Las Vegas overlap, supersede, or are provided in cooperation with those provided by Clark County. Responsibility for the services provided by the City is divided among a number of departments, including: Administrative Services, Building and Safety, Business Development, City Attorney, City Auditor, City Clerk, Communications, Detention and Enforcement, Field Operations, Finance and Business Services, Fire and Rescue, Human Resources, Information Development, and Public Works. Police protection (an area of overlap with County-provided services) is provided by Deputy City Marshals (who hold local jurisdiction) and the Las Vegas Metropolitan Police Department (LVMPD). The LVMPD is jointly funded by Clark County and the City of Las Vegas, representing a consolidated police force for the area. The City of Las Vegas also maintains an Office of Emergency Management, falling under the administration of the Department of Fire and Rescue.

Socio-Economic Considerations

From 1990 to 1999, Las Vegas' population grew from 268,330 to 465,050. This represented a 73.3% increase, enough to make Las Vegas the 5th fastest growing large city (population over 100,000) by percent. Las Vegas' boundaries are fairly well defined, and federally managed property within the city is limited, but allows for expansion to the west. The recent trend in Las Vegas' housing development has been toward high-rises and high-density single-family units. Following its population and housing development trends, the population of Las Vegas is projected to exceed 800,000 by 2020.

The City of Las Vegas is irregular in shape, and has unincorporated parcels within its boundaries. The city is bordered to the northwest by the Las Vegas Paiute Indian Reservation, Clark County, and the City of North Las Vegas. Clark County surrounds the city to the south, east, and west.

Like any tourism-based economy, Las Vegas' economy is vulnerable to economic downturns and security concerns. The recession, which began in March of 2001 and the terrorist attacks of 9/11 combined to bring Las Vegas economy to a near halt for several months. Las Vegas was particularly vulnerable to the heightened fear of air travel, as much of its visitor traffic comes from the approximately 3 million passengers who come through McCarran Airport on a monthly basis.

Despite the severe impacts of terrorism concerns and the economic downturn, Las Vegas' economy recovered relatively quickly. Las Vegas was among the first markets to regain its economic momentum. Regional visitors driving to Las Vegas helped speed the recovery, and the gradual increase in air travel brought the Las Vegas economy back to its pre-September 11 levels in approximately six months.

While tourism and gaming have been the mainstays of Las Vegas' economy, in recent years, the local economy has become increasingly diverse. Las Vegas has encouraged expansion of its existing light industrial, banking, legal, and medical enterprises. Nevada's pro-business climate has helped the growth of non-gaming industries in Las Vegas.

Median household income for city residents is \$44,078, and per capita income is \$21,341. The U.S. Census Bureau estimates that, of the population 25 years and over, 78.7% are high school graduates or higher and 18.9% hold a bachelor's degree or higher. Among Las Vegas' families, 9.8% live below the poverty line, while 12.5% of individuals live below the poverty line.

In fiscal year 2005 the City of Las Vegas' Budget is projected at \$1,860,338,749. In fiscal year 2004, 59.3% of the General Fund was allocated to Public Safety. Public Safety funding supports the operation and maintenance of 15 fire stations and one fire training center. Additionally, the City supplements Clark County funds to support seven area command (county-wide) police stations.

The City of Las Vegas major transportation routes are Interstate 15 (north/south) Interstate 515 (east/west) State Highways 93/95 (east/west) and under construction, partially open is the beltway, to be known as Interstate 215 (north/south). Interstate 15 and State Highway 93/95 both pass within a short distance of the City of Las Vegas, City Hall and the Department of Fire and Rescue Administration Building where the consolidated Emergency Communications Center, serving the North Las Vegas, Las Vegas, and Clark County Fire Departments (911) is housed.

Maps

A map of the City¹⁰ and a land use map¹¹ are available for printout on the City of Las Vegas website (need 11x17 color printing capabilities).

¹⁰ <http://www.lasvegasnevada.gov/files/metro3630.pdf>

¹¹ <http://www.lasvegasnevada.gov/files/clv-fluJun05/pdf>

CITY OF NORTH LAS VEGAS PROFILE

History

The community that was to become North Las Vegas originally began as a 160-acre ranch settled by Conrad Kiel in 1884. Approximately 7 acres of this former ranch site has been considered for preservation within the city limits as an historic park.

The City of North Las Vegas was incorporated on May 1, 1946. At the time of its incorporation, North Las Vegas consisted of 2.5 square miles with a population of 2,875. As the city grew, it promoted economic diversification by permitting development projects to support not only gaming and tourism, but also light manufacturing, regional distribution, retail sales, and the high tech industry. As of January 2004, North Las Vegas covered 78.25 square miles and had a population of 180,000.

The city has a transportation network that integrates highway, railroad, and airport facilities. Interstate 15 and U.S. Highway 93 have been designated as part of the trade corridor associated with the North American Free Trade Agreement, facilitating continuous highway transportation between Mexico, the United States, and Canada. On-site rail service is provided to the Golden Triangle and Nellis Industrial Parks through rail spurs, facilitating inter-modal freight shipping. Finally, the North Las Vegas Air Terminal provides general aviation services and relieves some of the light aircraft traffic from McCarran Airport. These transportation assets have made North Las Vegas a hub for distribution to more than 65 million people in a 1,000-mile radius.

North Las Vegas has the most comprehensive fiber-optic conduit network in Southern Nevada, as well as Dense Wave Division Multiplexing scales of economy. This connectivity to the internet, particularly along the Cheyenne Technology Corridor (CTC), promotes high-tech research and development projects.

Geographically, North Las Vegas is bounded by the City of Las Vegas to the west and south, by Nellis Air Force Base to the east, and Clark County to the south, east and north. The city is irregular in shape, and has some unincorporated parcels within its boundaries.

The city's proximity to Nellis Air Force Base has nurtured an economic environment favorable to the needs of military and support personnel and their families. The U.S. Air Force Air Warfare Center at Nellis, specializing in advanced combat training for U.S. and allied aircrews, employs 10,000 people and is the largest employer in the Las Vegas Valley.

Government

The City of North Las Vegas operates under a Council-Manager form of government. The Mayor and four Council members are elected on an at-large, non-partisan basis to serve a four-year term. Terms of office are staggered so that citywide elections are held every two years for two or three of the five offices. Effective January 1, 2000, North Las Vegas created four council wards. With the exception of the Mayor, each council member represents the ward in which they reside.

The five-member City Council is the legislative, or policy-making body of the City. By a majority vote, the Council may enact, enforce ordinances and orders, and pass resolutions necessary for the operation of municipal government and management of City affairs. The City Council appoints the City Manager who serves as the Chief Executive officer to oversee daily municipal operations. Council members also actively serve in leadership positions for numerous intergovernmental agencies and associations to further the interest of the City of North Las Vegas.

Services

North Las Vegas provides its residents a number of municipal services that overlap or supersede those provided by Clark County. Responsibilities for these services is divided into a number of departments, including: Animal Control, Building Safety, Business License, City Attorney, City Clerk, Code Enforcement, Communications Office, Detention/Corrections, Economic Development, Engineering, Finance, Fire Department, Human Resources, Municipal Court, Parks and Recreation, Permitting, Planning & Development, Police Department, Public Works, Redevelopment, Strategic Planning, Traffic, and Utilities.

Social-Economic Considerations

From 1990 to 2000, North Las Vegas' population went from 47,707 to 115,488. North Las Vegas is the second fastest growing large city (population over 100,000, measured by percent increase). With current city land that has not yet been built out and the land to be released by the BLM, North Las Vegas is expected to maintain a high growth rate. The city's population is projected to exceed 250,000 by 2010 and 500,000 by 2030.

Median household income in North Las Vegas is \$46,057 and per capita income is \$16,023. According to the 2000 U.S. Census, 14.8% of individuals and 11.8% of families in the city live below the poverty line. Among the population 25 and over, 66.5% are high school graduates or higher, and 10.2% hold a bachelor's degree or higher.

North Las Vegas' projected budget for fiscal year 2005 is \$386,625,400. Of this, the percentage expected for allocation to Public Safety is 37.5 percent. Public Safety funding supports the six Fire Department stations and five Police Department Area Commands in North Las Vegas.

Maps

Zoning¹² and land use¹³ maps are available for printout on the City of North Las Vegas website (need 11x17 color printing capabilities).

¹² <http://www.ci.north-las-vegas.nv.us/Departments/PlanningAndDevelopment/PDFs/PlanningAndZoning/ZoningMap.pdf>

¹³ <http://www.ci.north-las-vegas.nv.us/Departments/PlanningAndDevelopment/PDFs/PlanningAndZoning/LandUseMasterPlanMap.pdf>

CITY OF HENDERSON PROFILE

History

The Henderson community was established in World War II with the building of the Basic Magnesium Industries (BMI) plants, and the sudden influx of 14,000 new jobs. However, in 1947, shortly after the war's end, magnesium production was no longer necessary for the war effort, and most of the employees moved away.

On March 27, 1947, the Nevada Legislature unanimously approved a bill giving the Colorado River Commission of Nevada the authority to purchase the industrial plants. With the help of local industry, the City of Henderson, Nevada, was officially incorporated on April 16, 1953, and comprised approximately 13 square miles and 7,410 residents. Although incorporated in 1953, the City of Henderson did not receive its charter from the Nevada State Legislature until 1965.

The City of Henderson currently comprises more than 94.5 square miles and is the third largest city in Nevada. The City maintains the largest recreational facility in Nevada (the Multigenerational Facility at Liberty Pointe), and is home to the State's only scenic Bird Preserve. The City supports a variety of other cultural events as well, many of which are held at its outdoor amphitheater, the largest of its kind in Nevada.

Henderson is also located just a few miles from McCarran international Airport. The Henderson Executive Airport, recently acquired by Clark County, is planned for major renovation and development to relieve commuter airline congestion at McCarran. With the recent completion of I-215 into Henderson, the City is more accessible than ever.

The City of Henderson has an irregular shape and includes unincorporated areas of Clark County within its city limits. The City is bordered to the southeast by Boulder City, and on all other sides by Clark County. Henderson maintains islands of industrial development under the jurisdiction of Clark County, that host several chemical production companies at the Basic Management Incorporated (BMI) complex. Pioneer America, Inc., Titanium Metals Corporation of America, Chemical Line, Saguaro Power Company and Kerr-McGee maintain plants in these areas, producing various chemicals.

Government Information

The City Charter establishes a Council/Manager form of government, in which the Mayor and four City Council Members are elected at large on a nonpartisan basis, although no two councilmen can be from the same ward of the city's four wards. The Mayor serves as a member of the City council and presides over its meetings. The Mayor is the recognized head of the city government for ceremonial purposes, and performs any emergency duties as may be necessary for the general health, welfare and safety of the city. The Major Pro Tempore is elected by members of the City Council and performs the duties of the Mayor during the Mayor's absence.

The City Council is vested with the legislative power of the city, and appoints a City Manager, City Attorney and City Clerk who are directly responsible to the Council. The Mayor and City Council decide, by majority vote, on all land use issues, business licenses, city ordinances and expenditures of city funds.

All city department heads, including the Police Chief and the Fire Chief, are hired by the City Manager. The City Manager is responsible for executive duties and administration of the city.

Services

The City provides municipal services for its residents and visitors. In several areas, these services overlap or supersede those provided by the County. These services include public works, planning, development and building permitting, business licensing, fire protection, animal control, street sweeping, parks and recreation, etc. Henderson divides responsibilities for the provision of these services into several key departments, including: Animal Control, Building & Fire Safety, Business License, City Attorney, City Clerk, City Manager's Office, Community Development, Convention Center/Visitor's Bureau, Development Services, Economic Development, Information Technology, Finance, Fire, Human Resources, Municipal Court, Neighborhood Services, Parks & Recreation, Police, Property Management & Redevelopment, Public Works, and Utility Services.

Socio-Economic Considerations

From 1990 to 2000, Henderson's population grew from 64,942 to 175,381, representing an increase of 170%. Henderson is expected to continue its rapid expansion, and has prepared a Future Development Plan to promote strategic, sustainable development within the jurisdiction's boundaries. Proposed development plans are depicted on the City's zoning map that may be obtained on-line, see footnote 14.

Henderson has a median household income of \$55,949, with a per capita income of \$26,815. In 2000, 9.2% of families and 12.4% of individuals in Henderson lived below the poverty level. Of the population over the age of 25, 88.5% are high school graduates or higher, and 23.7% hold a bachelor's degree or higher.

Henderson's estimated budget for fiscal year 2005 is \$358.1 million. In FY 2004, 50% of the General Fund was allocated to Public Safety. Public Safety supports the Police Department's two area commands and the Fire Department's nine stations. The Office of Emergency Management is a division of the Fire Department and is charged with coordinating emergency responses involving fire, police, homeland defense, and any other agencies responding to major emergencies/disasters.

Maps

Zoning map¹⁴, future develop plan¹⁵, and city map¹⁶ are available for printout at the City of Henderson's website.

¹⁴ <http://www.cityofhenderson.com/planning/Maps/zoning.pdf>

¹⁵ <http://www.cityofhenderson.com/planning/Maps/landuse.pdf>

¹⁶ <http://www.cityofhenderson.com/planning/Maps/base.pdf>

CITY OF MESQUITE PROFILE

History

Mesquite was first founded in 1880 by a small group of Mormon pioneers. The group attempted to irrigate and settle what was then known as the Mesquite Flats, but flash flooding and damage to the irrigation network drove these settlers away. In 1894, subsequent settlers were finally successful in founding a permanent town at the site. As the town grew, its name was shortened to Mesquite.

For much of its early history, Mesquite was primarily an agricultural town (dairies were particularly dominant for much of the late 1900s). Raisins, milk, and eggs were among the agricultural products exported from Mesquite. As automobiles became more popular and more widely used, Mesquite began to develop a tourism industry as well, opening campgrounds and hotels.

Mesquite became much more accessible in the 1970s, with the completion of Interstate 15. Existing hotels were sold, remodeled and expanded through the 1980s, and new hotel-casinos began to open. Mesquite became an incorporated city in 1984, and its new City Council began to promote growth. During the 1990s, Mesquite's economy and infrastructure expanded with an infusion of new hotel-casinos, master-planned communities, and manufacturing operations.

Mesquite has grown rapidly since its incorporation. Encompassing a land area of 32 square miles, Mesquite's population has grown from approximately 1,270 constituents in 1985 to 9,389 in 2000. The U.S. Census bureau estimates Mesquite's population in 2004 was 12,631. Projections for future growth predict Mesquite's population will exceed 20,000 by 2008.

Mesquite has preserved many of its historic buildings. The Historic District includes the Virgin Valley Heritage Museum (c. 1940), the Mormon Women's Auxiliary Relief Society Building (c. 1929), the original Public Square, (c. 1897), and the First Chapel School Building (c. 1899), along with a number of additional historic structures, all dating from before the town's incorporation.

Government Information

Mesquite has a Council-Manager form of government. The City Council consists of five elected members and an elected Mayor, and is the legislative authority for the City of Mesquite. The City Council is responsible for making policy, including making and approving an annual budget. The Council members and Mayor are elected at-large to four-year terms. The terms are staggered, with elections occurring every two years. The council appoints a City Manager who has primary responsibility for coordinating among the various City Departments to enact the Council's policies.

Services

The City of Mesquite provides for a number of municipal services, in some areas superseding or overlapping those provided by Clark County. Responsibilities for services and administration are divided among the following departments: City Attorney; City Clerk; City Manager; Finance; Human Resources; Building and Capital Projects; Business Licensing; City Engineer; Economic Development; Fire and Rescue; Municipal Court; Planning and Redevelopment; Police; Recreation; Sanitation; Senior Services; and Streets and Drainage.

Socio-Economic Considerations

From 1990 to 2000, Mesquite's population grew from 1,871 to 9,389. This increase of over 400% made Mesquite the fastest growing small city (population under 50,000) in the country. The City of Mesquite contains, and is generally surrounded by undeveloped land. Thus the potential for continued

growth is significant.

Median household income in Mesquite is \$40,392, while per capita income is \$20,191. In Mesquite, 10.2% of individuals and 6.2% of families live below the poverty line. Among the population age 25 and over, 77.3% are high school graduates, and 14.6% have a bachelor's degree or higher.

Mesquite's budget projection for fiscal year 2005 is \$18,178,506. The 2005 approved budget for Mesquite indicates that 29% of the general fund is to be spent on Public Safety. Public Safety funding helps support Mesquite's 38-member City Fire and Rescue Department (including a paramedic training program which Mesquite operates in cooperation with the regional hospital) and its 33 member City Police Department.

Maps

FEMA Flood map¹⁷, Land use map¹⁸, City map¹⁹ available for printout (color printing large scale capabilities needed).

¹⁷ <http://www.mesquitenv.com/emplibrary/FEMAFloodMap.pdf>

¹⁸ <http://www.mesquitenv.com/emplibrary/LandUse36x48.pdf>

¹⁹ <http://www.mesquitenv.com/emplibrary/UDCZoning11x17.pdf>

RISK ASSESSMENT

The risk assessment process is the identification and screening of hazards. The following hazards, identified in the Clark County Emergency Operations Plan as well as the FEMA How-To-Guide #2, Understanding Your Risks, Worksheet #1, were rated by the Hazard Mitigation Planning Team for potential inclusion in this MJHMP: Aircraft incident, civil disturbance, dam failure, drought, earthquake, epidemic (human, plant, animal), extreme heat, large venue fire, wild land fire, flood and flash flood, hazardous materials spills, landslide/avalanche, pipeline emergency, power outage, radiological incident, severe storms, subsidence & fissures, terrorism, tornado, volcanic fallout, water system failure and wind. The Planning Team determined that six hazards pose the greatest threat to Clark County: Drought, Earthquake, Epidemic, Flood, Flash Flood, and Wildfire (Table 8A). As reflected in the State of Nevada Standard Multi-Hazard Mitigation Plan, the hazards identified above affect the entire planning area within Clark County, although at varying degrees. The Vulnerability Assessment section describes the impact of each hazard on the planning area as well a description by jurisdiction where the impact varies from the planning area. The hazards identified above are regional in scope. As such, the risk assessment conducted for Clark County is applicable for the entire planning area and any additional information, by jurisdiction, would only repeat what is stated in the Clark County risk assessment. The remaining hazards excluded through the screening process were considered to pose a lower threat to life and property throughout the planning area due to the low likelihood of occurrence, the low probability that life and property would be significantly affected or that a state or federal agency were already committed to the development of all preparedness, planning, response and mitigation efforts separately from this plan.

Assigning Vulnerability Ratings

Numerous potential hazards were prioritized by their total impact in the community. A formula took into account the historical occurrence of each respective hazard, the potential area of impact when the disaster does occur, and the magnitude. Frequency was assigned a score in terms of time, area of impact categorized as either the entire county, a township/range block, census tract, block group, or site (x,y coordinate), and magnitude ranged from federal disaster to a specific, insured loss. Below is the applied formula and scoring rubric.

$$(\text{Frequency} + \text{Area of Impact}) \times \text{Magnitude} = \text{Total Score}$$

It is important to note that hazards of the same magnitude and the same frequency can occur in similar sized areas; however, the overall impact to the areas was different because of population densities and property values in the areas impacted.

Table 7 Vulnerability Ratings Rubric

		Frequency	Area Impact	Magnitude
Lowest	1	10+ years	Site (x.v)	Insured Loss
	2	6-9 years	Block Group	Local
	3	1-5 years	Census Tract	State
	4	2-12 months	Township, Range	Federal Emergency
Highest	5	0-30 days	County	Federal Disaster

Hazard Analysis

The Hazard Mitigation Planning Team was composed of emergency managers with a breadth of experience and local history agreed on a score assignment for each hazard in each category. The team referenced Office of Emergency Management historical records to determine frequency and magnitude

scores based on historical frequencies and / or projected probabilities of the hazards identified. For the purposes of this plan, only the top six natural hazards were included for further mitigation opportunities.

Table 8A presents a summary of the hazard identification results for Clark County. The decision to profile hazards in detail was based on a number of factors, including prior knowledge of the relative risk presented by the hazards, information from the hazard event database, the ability to mitigate the hazard via the *DMA 2000* process, the known or expected availability of information on the hazard, and the existence of current mitigation programs for that particular hazard.

Table 8A: Summary of Hazard Identification Results

Hazard	Historical Records	Risk Priority	Further Evaluation
Aircraft Incident	The impact of this hazard is high; great effort towards the preparedness, planning, response and mitigation of any aircraft incident is coordinated, maintained and exercised by local area airports, specifically McCarran International Airport along with area Fire Departments.	High Risk	No
Civil Disturbance	No historical record of a Local, State, or Federal declaration of emergency for this type of hazard in the County. However, in 1992 there was one incident requiring the activation of EOCs in multiple jurisdictions. All preparedness, planning, response and mitigation efforts pertaining to Civil Disturbance are jointly coordinated by area Law Enforcement agencies.	Moderate Risk	No
Dam Failure	There are no high hazard dams within Clark County per the Nevada Division of Water Resources.	Low Risk	No
Drought	The USDA issued statewide drought declarations in 2002 and 2004.	High Risk	Yes
Earthquake	Nevada is third in the nation for the occurrence of earthquakes. Several active fault zones pass through Clark County.	High Risk	Yes
Epidemic (human, plant, animal)	The Nevada Department of Agriculture requested the Nevada State Hazard Mitigation Hazard Mitigation Planning Team to consider the agricultural risks to the state. In turn, Clark County will also take agriculture risks in to consideration within the Disease section.	Special Risk - High	Yes
Extreme Heat	Strategies for heat wave are not addressed in this plan and would be referred to the Clark County Health District and/or the State of Nevada Health Department.	Moderate Risk	No
Flood and Flash Floods	Flash floods and other flood events occur regularly throughout Nevada as well as within Clark County and have caused extensive property damage throughout the Las Vegas Valley.	High Risk	Yes

Hazard	Historical Records	Risk Priority	Further Evaluation
HAZMAT Event	Clark County has several facilities that handle or process hazardous materials as well as those that are transported through the County. All preparedness, planning, response and mitigation efforts are coordinated through the countywide Local Emergency Planning Committee (LEPC). Clark County, to include the unincorporated area and the five incorporated communities, made the administrative decision not to duplicate the efforts of the LEPC.	High Risk	No
Landslide/Avalanche	Prior to the Winter of 2005 Mt. Charleston Avalanche, incurring one fatality, no historical record of this hazard existed in the County.	Low Risk	No
Large Venue Fires	The impact of this hazard is high; however the probability is lower. Great effort towards the preparedness, planning, response and mitigation of any large venue fire is coordinated, maintained and exercised by local area Fire Departments.	High Risk	No
Radiological Incidences	The Clark County Hazard Mitigation Planning Team chose not to address nuclear or radiological incidence in this plan. All preparedness, planning, response and mitigation efforts pertaining to the Yucca Mountain, NV project are supported and funded separately from this plan through DOE.	No Risk Assigned	No
Severe Storms: Tornado and Wind	Hazards associated with severe storms occur regularly within Clark County where most damaging severe weather hazard is flood. Damages, injuries, deaths and cost associated with Tornado in low in Clark County as well as the State as a whole. Damaging winds do occur in Clark County and are usually associated with severe storms (flooding).	See Flood	No
Subsidence and Fissures	Although subsidence and fissuring are of concern in parts of Nevada, there is no declared record of this hazard in Clark County. However, the north and northwest sections of the unincorporated portion of Clark County has had minor occurrence of fissures as a result of past groundwater discharge.	Moderate Risk	No
Transportation, Pipelines, Power Outage, and Water System Failure	The Clark County Hazard Mitigation Planning Team, in conjunction with the State of Nevada Standard Hazard Mitigation Plan - Risk Assessment, chose not to address energy issues in this plan. But rather, will refer any mitigation actions identified in this planning process that are hazardous materials in nature to the Clark County Local Emergency Planning Committee (LEPC).	Low Priority	No
Volcano / Ash Fall	No historical record of this hazard in the County.	Low Risk	No
Wildfire	Clark County experiences wildfires on a regular basis.	High Risk	Yes
WMD/Terrorism	Clark County, to include the unincorporated area and the five incorporated communities, made the administrative decision not to duplicate the efforts of the Nevada Homeland Security Commission, which has been appointed by the Governor to address all WMD/Terrorism issues.	No Risk Assigned	No

Upon obtaining total scores for each hazard, the team utilized the scores to analyze and prioritize the disasters to focus upon during the vulnerability assessment and mitigation planning. Table 8B is a summary of the hazards scoring results that were evaluated during the identification process.

Table 8B Hazards Rating

	(Frequency +	Area Impact)	x Magnitude =	Total
Epidemic	5	3	5	40
Flash Flood	4	4	4	32
Wildfire	4	4	4	32
Drought	2	5	4	28
Earthquake	1	4	5	25
Flood	1	4	5	25

Mapping Hazards

Mapping the hazards was done in relation to historical occurrences and the area effected by each event or predicted event. The Hazard Mitigation Planning team agreed that mapping of hazards should not result in jurisdictionally or politically artificial “ownership” of disasters. Thus, five non-political regions were created to divide the county. This process was completed using GIS, resulting in a shape file displaying five regions dividing Clark County. In support of this concept, the following Hazard Profiles were developed for the entire planning area and are relevant to each of the jurisdictions, in varying degrees.

Hazard Profiles

A hazard profile is a description of the physical characteristics of a hazard. The hazards selected for profiling were examined in a methodical manner based on the following five factors, with each factor considered in detail for the hazards profiled.

- **Nature:** This topic provides basic information about the hazard that is sufficient to enable a user of the plan to comprehend its nature and distinguish it from other hazards. It also provides a basis for leaders to understand the subsequent vulnerability assessment and loss estimates. The information for this section is drawn mainly from FEMA and other national agencies.
- **History:** Background information about previous occurrences of the hazard is provided. The focus is on disasters and other events that have occurred in Clark County or other major occurrence Nevada or the United States when local information is lacking.
- **Probability and Magnitude:** The focus of this topic is the probability or frequency of the hazard in Clark County as well as its magnitude. The information in this section is drawn from a combination of FEMA, other national sources, and local records.
- **Location:** Describes the proximity of the possible hazard to established communities. The information for this section is drawn primarily from the Clark County Emergency Operations Plan.
- **Warning Time:** This topic provides information on the amount of time available for preparation prior to the occurrence of the specific event. The information in this section is drawn from a combination of sources including FEMA, other national sources, and local information.

Although hazards profiled are presented in alphabetical order, this order does not signify level of importance. The Dam Failure profile information, included at the end of the hazard profiles, was simply included to promote additional consideration of this hazard in the future and to facilitate future updates to this document.

Drought

Nature

Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. It differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions.

Drought can be defined using both conceptual and operational definitions. Conceptual definitions of drought are often utilized to assist in the widespread understanding of drought. Many conceptual definitions portray drought as a protracted period of deficient precipitation resulting in extensive damage to agricultural crops and the consequential economic losses occurring. Operational definitions define the beginning, end, and degree of severity of drought. These definitions are often used to analyze drought frequency, severity, and duration for given periods of time. Such definitions often require extensive weather data on hourly, daily, monthly, or other time scales and are utilized to provide a greater understanding of drought from a regional perspective. Four common definitions for drought are provided as follows:

- Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be referred to as a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

The effects of drought increase with duration as more moisture-related activities are impacted. Non-irrigated croplands are most susceptible to precipitation shortages. Rangeland and irrigated agricultural crops may not respond to moisture shortage as rapidly, but yields during periods of drought can be substantially affected. During periods of severe drought, lower moisture in plant and forest fuels create an increased potential for devastating wildfires. In addition, lakes, reservoirs, and rivers can be subject to water shortages that impact recreational opportunities, irrigated crops, availability of water supplies for activities such as fire suppression and human consumption, and natural habitats of animals. Insect infestation can also be a particularly damaging impact from severe drought conditions.

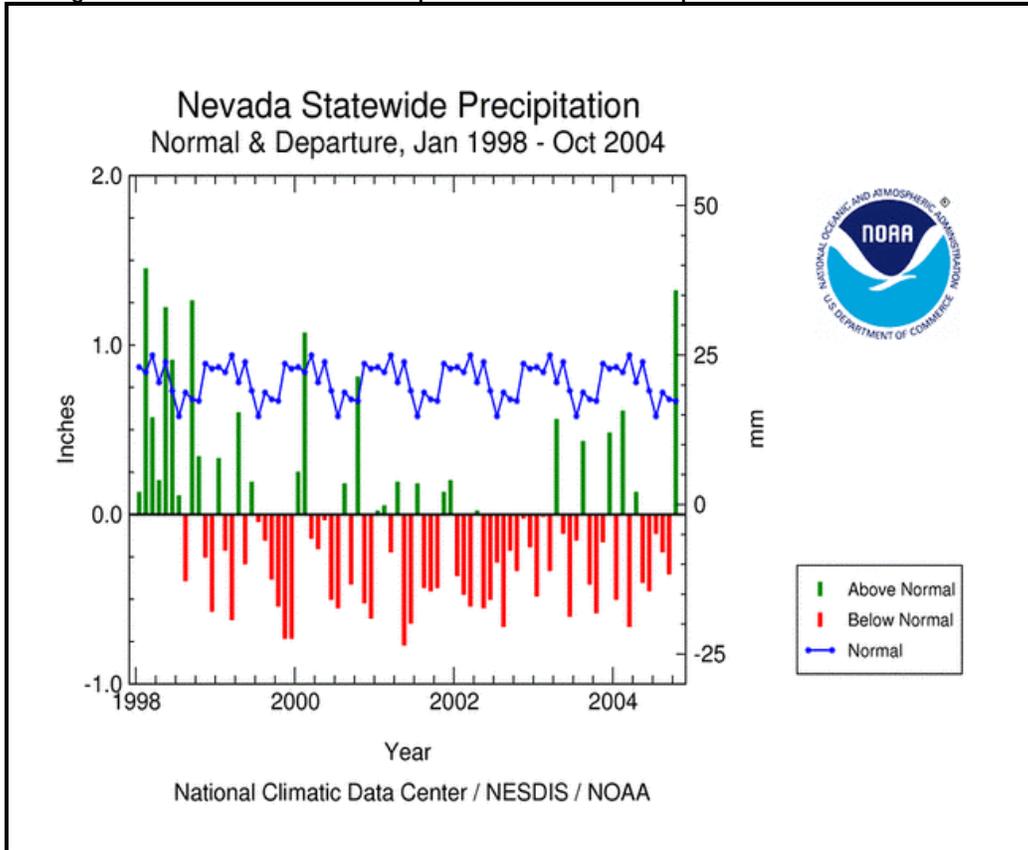
Southern Nevada's water rights to the Colorado River were mandated in the early 1900's, and Nevada shares its water rights from this source with seven other states. Southern Nevada is allocated 300,000 acre-feet of water per year from the river; however, average water usage for a typical family is 326,000 gallons or 1- acre-foot per year. In consideration of the needs for a service population of 1.6 million people, the Southern Nevada Water Authority (the area's water purveyor) closely monitors the effects of drought on existing water supply resources.

History

Nine notable droughts occurred in the United States during the 20th century. Although damage estimates are not available for many of these events, estimates suggest that direct losses exceed \$49-54 billion in damages (FEMA 1997). The 1930s "Dust Bowl" drought was the United States' most severe, sustained, and wide-spread event in the past 300 years.

Nevada has experienced two statewide drought declarations since 2002. Nevada, and much of the southwest, is in its fifth year of prolonged drought. Implications from this drought include increased risk of wildfires and water shortages as reservoirs drop to their lowest recorded levels. Furthermore, insect infestations from the drought included an unusual bark beetle, called piñon ips, that killed more than 3.1 million piñon pines in Nevada in 2002 and 2003. This infestation further increased the fire hazard on 355,700 acres and reduced pine nut production. Data collected by the National Climatic Data Center, as shown in Figure 1 demonstrates the severity of the recent drought conditions across the state. Of the 82 months profiled, 53 (65%) experienced a below normal amount of precipitation.

Figure 1: Nevada Statewide Precipitation, Normal and Departure, Jan 1998 – Oct 2004



Source: National Climatic Data Center, 2004.

Probability and Magnitude

Drought severity is commonly measured utilizing the Palmer Drought Severity Index (PDSI) developed in 1965. The PDSI measures the departure of moisture from normal conditions by calculating estimated soil moisture from observed temperature and precipitation values. Based on Nevada’s history with drought between 1895 and 2005, Clark County can expect severe or extreme drought at least 10 percent of the time.

In Clark County, population growth and water shortages have combined to interact with the natural environment to inhibit both the replenishment of water supplies and the ability of the regional purveyor (the Southern Nevada Water Authority) to deliver water to county residents. Since 1991 the population served by the Southern Nevada Water Authority has almost doubled to approximately 1.6 million people. In addition, rainfall has been far below average in the Western States resulting in lower than normal flow in the lower Colorado River.

The Southern Nevada Water Authority obtains 90 percent of its water needs from the Colorado River, and an additional 10 percent from groundwater wells located within Clark County to supply its service population. With such a heavy reliance on Colorado River water supplies, a drought affecting the river’s source water directly impacts the lives and economic welfare of Southern Nevadans.

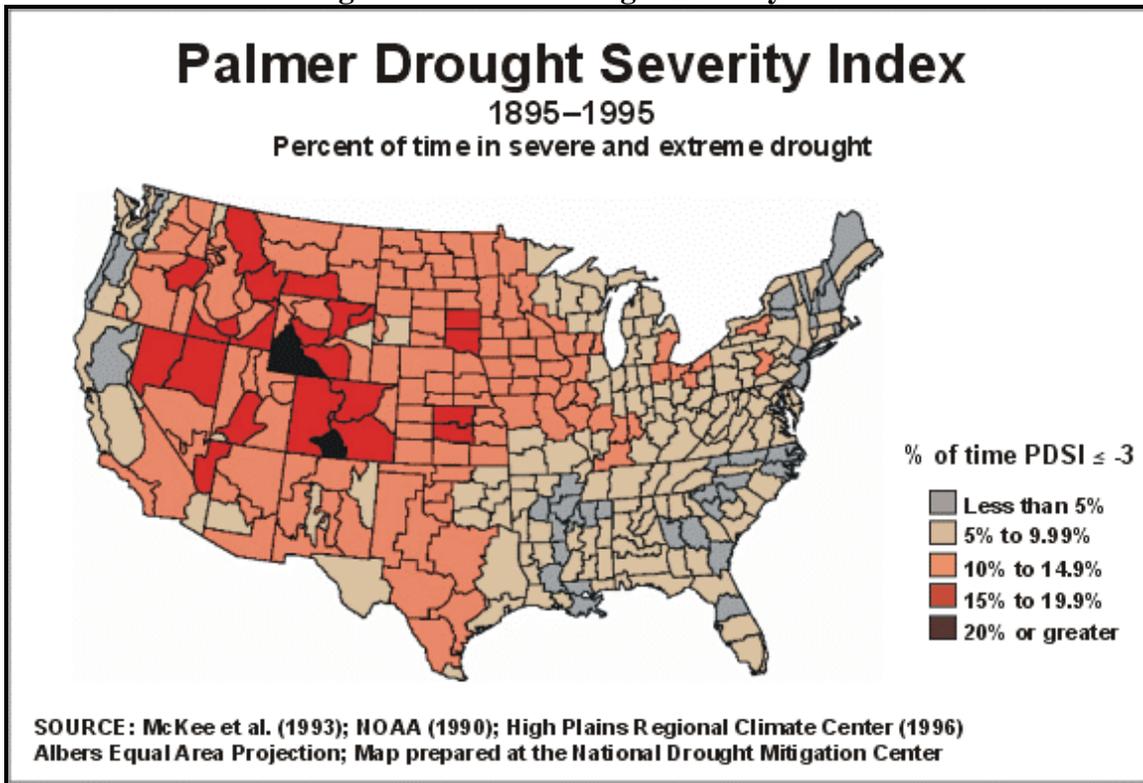
Since 1999, the elevation of Lake Mead has declined by more than 75 feet, or approximately three water years of allocation for the state of California. Lake Powell is also at historic low levels, with only 40 percent of its water storage available.

The Upper Colorado River Basin (UCRB), which extends through five states (Colorado, Wyoming, Utah, Arizona, and New Mexico), encompasses approximately 17,800 square miles and is the primary water producer for the Colorado River due to runoff from snowmelt. Using historical stream flow

records, drought indices, and tree ring data from the UCRB, a team of researchers from University of Nevada, Las Vegas, and Scripps Institute of Oceanography concluded that the worst drought in this region's history occurred at the end of the 16th century and was two and a half to four times worse than current conditions. Prior to the study, the current drought was considered to be the worst in the past 500 years.

The research team also concluded that the consequences of the current drought have been greatly exacerbated by increased water demand due to unprecedented population growth in the southwest United States. Conservation measures in the County have been enacted to limit the impacts of drought.

Figure 2: Palmer Drought Severity Index 1895-1995



Source: National Climate Prediction Center, 2004.

Location

The occurrence of drought is regional in nature and scope, which holds true for the Clark County planning area. In January of 2005, the Southern Nevada Water Authority published a Drought Plan to review water demands, conservation goals, water supply and resources, and drought response measures. SNWA identified four drought conditions: No Drought, Drought Watch, Drought Alert, and Drought Critical. The SNWA did not affiliate declaration of a drought condition to any single factor, but indicated that they would consider Lake Mead water levels, the community's conservation response, projected water demands, and other pertinent issues. Recommendations regarding drought level declarations would be formulated in partnership with the SNWA member agencies.

A component the Southern Nevada Water Authority Drought Plan is a Response Matrix that was developed to inform Southern Nevada residents of the Drought Alert restrictions employed in response to the level of drought stage achieved. A copy of this plan is available at:

http://www.snwa.com/assets/pdf/drought_plan05.pdf

Warning Time

Predicting drought depends on the ability to forecast two fundamental climatic variables, precipitation and temperature. As climate is inherently variable, predicting drought a month or more in advance is often inaccurate. In addition, anomalies in precipitation and temperature may last for several months to several decades, further emphasizing the imprecise nature of drought predication (National Drought Mitigation Center, 2003).

Several forecasts exist to assist in identifying drought conditions. The U.S. Drought Outlook forecasts the drought outlook for the United States for the remaining portion of the current month and the next three subsequent months. This report is prepared monthly by the National Weather Service's Climate Prediction Center. The Drought Monitor is a product of the US Departments of Agriculture and Commerce in partnership with the National Drought Mitigation Center. Produced weekly, the Drought Monitor summarizes information from several different measurement systems to provide a current summary of drought conditions across the United States. Data incorporated into the Drought Monitor include climate outlooks, seasonal U.S. drought outlook, stream flow forecast, forecast Palmer Drought Severity Index, and soil moisture forecasts.

EARTHQUAKE

Nature

Because the state of Nevada ranks third in the nation in terms of seismic activity, there is a need to understand the actual risks. Geologic and geophysical characterization of the Las Vegas Valley is necessary to fully understand the potential for future earthquakes and to understand the extent of damage that can occur as a result of such an event.

Liquefaction is a new hazard for the Las Vegas Valley. Human activities in the valley have created a shallow groundwater table. Loose sands that were once dry are now saturated and have the potential to destabilize in an earthquake. The probability of liquefaction occurring during one of these episodes is high where the valley water table is 50 feet or less. Earthquake shaking often triggers an increase in water pressure. When liquefaction occurs, the soil strength decreases thus reducing the ability of soil deposit to support the foundations of buildings and bridges.

History

Historically, liquefaction and related phenomena have been responsible for a tremendous amount of damage from earthquakes around the world. A neighboring system to Clark County, known as the Central Death Valley Fault, is capable of a magnitude 7.2 earthquake. Such strong earthquakes occur in Death Valley every 500 to 1,000 years and could cause liquefaction in the Las Vegas Valley.

According to the National Bureau of Mines and Geology, the Las Vegas Valley has at least seven fissures, or fault zones. Geologists estimate that earthquake activity along the known fault zones last occurred 1,000 to 15,000 years ago.

Table 9: History and Occurrence of Earthquakes

Date	Damage
June 2002	A M 4.4 quake near Yucca Mountain, 75 miles northwest of Las Vegas. The quake was centered about 3 miles below the surface, causing concern over the proposed high-level nuclear waste repository currently under construction at this site.
October 1999	A M 4.2 quake in Utah just 15 miles southwest of Beaver, AZ. The trembler was felt in a Clark County Fire Department station. No damages reported.
October 1999	A M 7.1 quake occurred along the Hector Mine fault in the Mohave Desert, just northwest of Twenty-nine Palms, CA. Tall buildings swayed in Las Vegas, and three pre-cast parking garage structures in Laughlin sustained structural damages, requiring repair.
August 1999	A M 5.6 quake near the Nevada/California border struck, followed by a M 5.2 quake only 21 minutes later. Both quakes were centered 130 miles northwest of the Las Vegas Valley.

Probability and Magnitude

Geological, geophysical, geotechnical, and historical data and analyses show that the earthquake hazards in southern Nevada are significant. Nevada is ranked 5th nationally in estimated losses (\$55 million) on an annualized basis due to earthquakes. The Las Vegas Valley ranked 29th among metropolitan areas at an annualized loss of \$28 million.²⁰ The Nevada Earthquake Risk Mitigation report emphasizes the need to evaluate system vulnerability for lifeline utilities and bridges, to inventory potentially seismically dangerous buildings, and to develop an integrated approach to seismic design for new construction.²¹

Location

Experts continue to identify Furnace Creek as the highest most likely seismic threat to Clark County. Should a magnitude 7.4 earthquake erupt along the Furnace Creek Fault in Death Valley, 90 miles northwest of Las Vegas, a seismic hazard to the Las Vegas Valley could occur with strong enough ground shaking to cause significant damage within the Las Vegas Valley.

Several small seismic events have been noted in the area, such as an M3.8 event in March 2001 just west of Las Vegas near Red Rock Canyon National Recreation Area. This tremor was felt throughout the valley. Several earthquakes of about a M5 are known to have occurred in the mid-1900s in the Boulder City area.²²

There is also a risk of ground shaking in the Las Vegas basin due to distant earthquakes in western and northern Nevada, southern California, or western Utah. Earthquakes in western and northern Nevada and western Utah ranging from M5-6 were widely felt throughout the basin in 1902, 1916, and 1966. Most recently, the 1992 Landers earthquake (M7.3) and the 1999 Hector mine earthquake (M7.1), which occurred more than 200 km away, were felt strongly throughout the valley.²³

For detailed maps of identified faults in Clark County and the Las Vegas Valley, see the maps titled, "Las Vegas Valley Fifty (50) Meter contours and Faults."

²⁰ HAZUS 99 Estimated Annualized Earthquake Losses for the United States

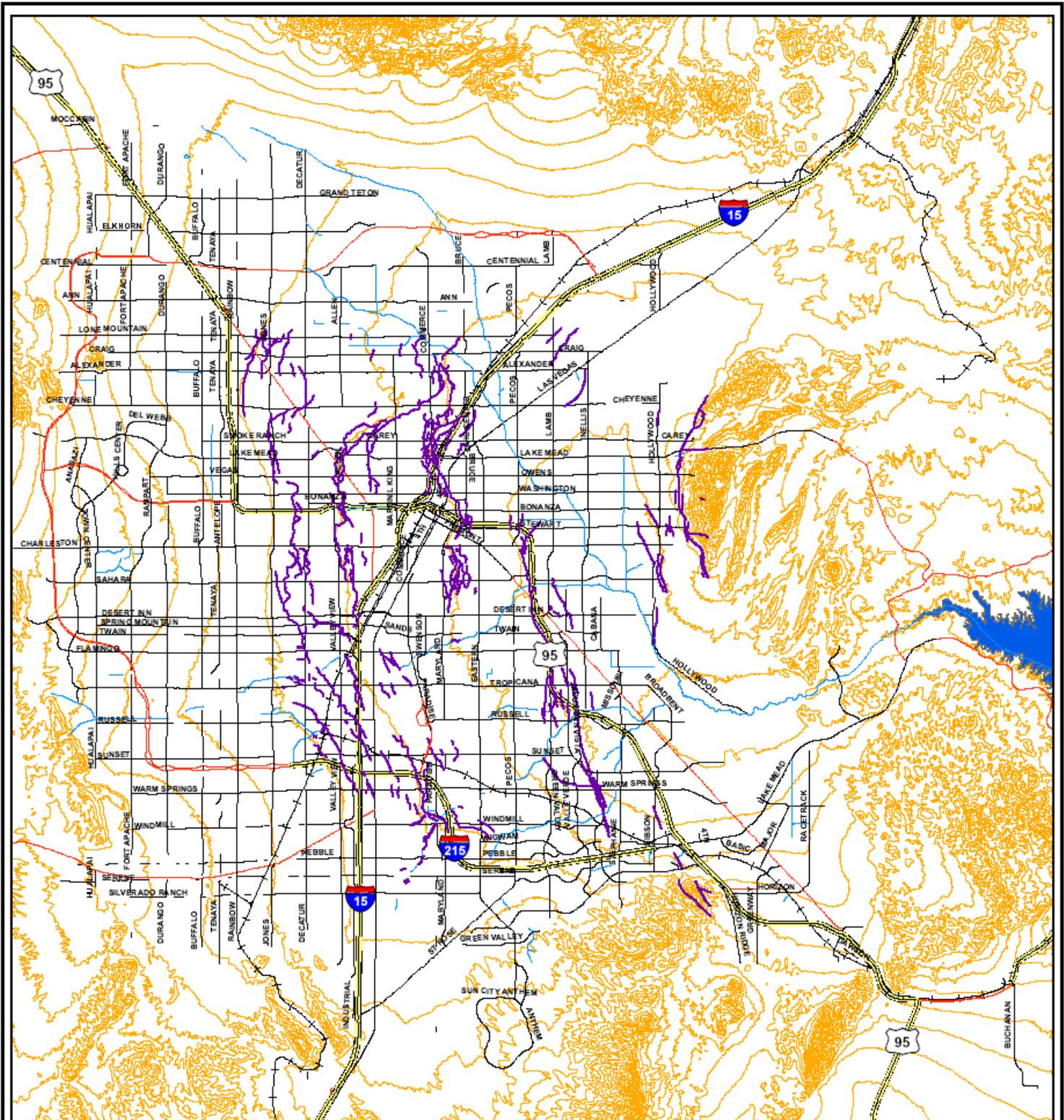
²¹ Nevada Earthquake Safety Council, 2001

²² Slemmons, et al., 2001

²³ Slemmons, et al., 2001

Warning Time

In the past there has not been a scientific method to determine imminent earthquake activity. Currently, there are numerous researchers, such as Lawrence Livermore National Laboratory and California Institute of Technology working to develop a viable earthquake warning system.



1 inch equals 20,000 feet

Date: October 1, 2004



Las Vegas Valley Fifty (50) Meter Contours & Faults

Clark County, Nevada

Legend

- Faults
- 50 Meter Contours



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated herein.

EPIDEMIC

Nature

A disease is a pathological (unhealthy or ill) condition of a living organism or part of the organism that is characterized by an identifiable group of symptoms or signs. Disease can affect any living organism, including people, animals, and plants. Disease can both directly (via infection) and indirectly (via secondary impacts) harm these living things. Some infections can cause disease in both people and animals. The major concern here is an epidemic, a disease that affects an unexpected number of people or sentinel animals at one time. (Note: an epidemic can result from even one case of illness if that illness is unheard of in the affected population, i.e., smallpox)

Of great concern for human health are infectious diseases caused by the entry and growth of microorganisms in man. Most, but not all, infectious diseases are communicable. They can be spread by coming into direct contact with someone infected with the disease, someone in a carrier state who is not sick at the time, or another living organism that carries the pathogen. Disease-producing organisms can also be spread by indirect contact with something a contagious person or other carrier has touched and contaminated, like a tissue or doorknob, or another medium (e.g., water, air).

According to the Centers for Disease Control and Prevention (CDC), during the first half of the twentieth century, optimism grew as steady progress was made against infectious diseases in humans via improved water quality and sanitation, antibiotics, and inoculations (October 1998). The incidences and severity of infectious diseases such as tuberculosis, typhoid fever, smallpox, polio, whooping cough, and diphtheria were all significantly reduced during this period. This optimism proved premature, however, for a variety of reasons, including the following: antibiotics began to lose their effectiveness against infectious disease (e.g., *Staphylococcus aureus*); new strains of influenza emerged in China and spread rapidly around the globe; sexually transmitted diseases resurged; new diseases were identified in the U.S. and elsewhere (e.g., Legionnaires' disease, Lyme disease, toxic shock syndrome, and Ebola hemorrhagic fever); acquired immunodeficiency syndrome (AIDS) appeared; and tuberculosis (including multidrug-resistant strains) reemerged (CDC, October 1998).

In a 1992 report titled *Emerging Infections: Microbial Threats to Health in the United States*, the Institute of Medicine (IOM) identified the growing links between U.S. and international health, and concluded that emerging infections are a major and growing threat to U.S. health. An emerging infectious disease is one that has newly appeared in a population or that has been known for some time, but is rapidly increasing in incidence or geographical range. Emerging infectious diseases are a product of modern demographic and environmental conditions, such as global travel, globalization and centralized processing of the food supply, population growth and increased urbanization.

In response to the threat of emerging infectious diseases, the CDC launched a national effort to protect the U.S. public in a plan titled *Addressing Emerging Infectious Disease Threats*. Based on the CDC's plan, major improvements to the U.S. health system have been implemented, including improvements in surveillance, applied research, public health infrastructure, and prevention of emerging infectious diseases (CDC, October 1998).

Despite these improvements, infectious diseases are the leading cause of death in humans worldwide and the third leading cause of death in humans in the U.S. (American Society for Microbiology, June 21, 1999). A recent follow-up report from the IOM, titled *Microbial Threats to Health: Emergence, Detection, and Response*, notes that the impact of infectious diseases on the U.S. has only grown in the last ten years and that public health and medical communities remain inadequately prepared. Further

improvements are necessary to prevent, detect, and control emerging, as well as resurging, microbial threats to health. The dangers posed by infectious diseases are compounded by other important trends: the continuing increase in antimicrobial resistance; the diminished capacity of the U.S. to recognize and respond to microbial threats; and the intentional use of biological agents to do harm (IOM, 2003).

The State of Nevada has established a list of over 60 reportable diseases (NRS 441A). A reportable disease is one that, by law, must be reported by health providers to report to federal, state or local public health officials. Reportable diseases are those of public interest by reason of their communicability, severity, or frequency. The long list includes such diseases as the following: AIDS; anthrax; botulism; cholera; diphtheria; encephalitis; gonorrhea; Hantavirus pulmonary syndrome; hepatitis (A, B, C); HIV (pediatric); Legionellosis; Lyme disease; malaria; measles; mumps; plague; polio (paralytic); rabies (animal and human); Rocky Mountain spotted fever; rubella (also congenital); salmonellosis; Severe Acute Respiratory Syndrome (SARS); syphilis (also congenital); tetanus; toxic-shock syndrome; trichinosis, tuberculosis, and typhoid fever .

Many other hazards, such as floods, earthquakes or droughts, may create conditions that significantly increase the frequency and severity of diseases. These hazards can affect basic services (e.g., water supply and quality, wastewater disposal, electricity), the availability and quality of food, and the public and agricultural health system capacities. As a result, concentrated areas of diseases may result and, if not mitigated right away, increase, potentially leading to large losses of life and damage to the economic value of the area's goods and services.

History

The influenza pandemic of 1918 and 1919, known as the Spanish flu or swine flu, had the highest mortality rate in recent history for an infectious disease. More than 20 million persons were killed worldwide, some 500,000 of which were in the U.S. alone (CDC, October 1998). More recent incidences of major infectious diseases affecting people in the U.S. include the following:

- West Nile virus (WNV), a seasonal infection transmitted by mosquitoes, caused an epidemic which grew from an initial U.S. outbreak of 62 disease cases in 1999 to 4,156 reported cases, including 284 deaths, in 2002 (Centers for Disease Control and Prevention, July 8, 2003).
- SARS, which is estimated to have killed 916 and infected 8,422 worldwide by mid-August 2003 (World Health Organization, August 15, 2003). In the U.S., there were 175 suspect cases and 36 probable cases, although no reported deaths (CDC, July 17, 2003).
- Although most cases go unrecognized, norovirus is believed to affect over 20 million persons in the U.S. each year. norovirus accounts for 96 percent of all non-bacterial outbreaks of gastroenteritis (Arizona Department of Health Services, March/April 2003).

Table 10 provides an example of epidemics or outbreaks with potential severe consequences that have been recorded in Clark County since 1992.

Table 10: Historic Occurrences of Epidemics Registered in Clark County

Date	Details
September 2005	A single foodhandler incident occurred where an infectious person, with Hepatitis A who had not yet developed symptoms, was serving food to the public during a large convention. Quick prophylactic actions were taken by Clark County Health District wherein a potential epidemic was prevented.
October 2004	Norovirus confirmed at a major public accommodation facility on the Strip. Details regarding the spread of this disease and the exact number affected are still under investigation and pending at time of print of this plan.
Spring 2000	Five cases of the measles confirmed. Outbreak identified and confirmed. CCHD Office of Epidemiology (OOE) worked with the Immunization Clinic and the media to alert the community about the prevention of the spread of the disease.
February 1992	Cholera outbreak confirmed. At least 26 passengers from Aerolineas Argentinas Flight 386 that brought a cholera outbreak to Los Angeles traveled on to Las Vegas, where 10 showed symptoms of the disease. Cholera or cholera-like symptoms developed in 67 passengers of Flight 386.

Probability and Magnitude

The probability and magnitude of disease occurrence, particularly an epidemic, is difficult to evaluate due to the wide variation in disease characteristics, such as rate of spread, morbidity and mortality, detection and response time, and the availability of vaccines and other forms of prevention. A review of the historical record (see above) indicates that disease related disasters do occur in humans with some regularity and varying degrees of severity. There is growing concern, however, about emerging infectious diseases.

Epidemics constitute a significant risk to the population of Clark County, particularly along the Strip and in various entertainment venues. Clark County has ten of the largest hotels in the world, showrooms and arenas that can accommodate from a few hundred to more than 17,000 people, a motor speedway that seats over 130,000 race fans, and thousands of food establishments (Las Vegas Convention and Visitor's Authority, 2005). The transient nature of the population, coupled with dense population gatherings increase the potential for an epidemic.

Location

An epidemic in Clark County would affect a regional response requiring coordination among local, county, state and federal agencies within the planning area. Segments of the population at highest risk for contracting an illness from a pathogen are the very young, the elderly, or individuals who currently experience respiratory or immune deficiencies. These segments of the population are present throughout the planning area.

Warning Time

Due to the wide variation in disease characteristics, the warning time for a disease disaster can vary from no time to months, depending upon the nature of the disease. No warning time may be available due to an extremely contagious disease with a short incubation period. However, numerous agencies are in place that have capabilities to prevent, detect, and respond to these types of diseases, such as the CDC, Nevada State Health Division (NSHD), and the CCHD. This provides positive, balancing influence to the overall outcome of a disease disaster event.

The CCHD OOE, conducts surveillance of communicable disease occurrences in Clark County. They

also implement control measures and report to the NSHD as mandated by Nevada Revised Statutes (NRS). Another important function of the OOE is to receive and investigate complaints from the public regarding possible food borne illness. Complaints are referred to the CCHD Environmental Health Division (EHD) for follow-up regarding the food establishment named in the complaint.

FLOOD AND FLASH FLOODING

Nature

Floods occur when excess water from snowmelt, rainfall, or storm surges accumulates and overflows onto adjacent floodplains. Floodplains are lowlands adjacent to rivers, lakes, and oceans that are subject to recurring floods. As a natural event, floods are considered hazards only when people or property is affected. Nationwide, hundreds of floods occur each year, making it one of the most common hazards across the nation (FEMA, 1997). The *State of Nevada Standard Multi-Hazard Mitigation Plan* identified common flood types occurring in Nevada. These categories are described as follows:

- Channel flooding is characterized by lateral channel migration during major flows, which results in abrupt changes in the horizontal alignment or location of the channel. Other characteristics include localized channel bed and bank-scour in addition to the potential for over-bank flow inundation.
- Sheet flooding is characterized by channel having minimal capacity, water flowing across broad areas at relatively shallow depths, and gently sloping terrain. Damage from these events include localized scour and deposition of extensive amounts of sediments and debris typically associated with sheet flow. If the depth of the water is high enough, water may encroach into low-lying structures within the floodplain.
- Alluvial fan flooding refers to flooding occurring on the surface of an alluvial fan or similar landform characterized by high-velocity flows, active erosion processes, sediment transportation and deposition, and unpredictable flowpaths. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour and the deposition of debris. Alluvial flooding is potentially more dangerous than riverine flooding due to its unpredictable nature resulting in difficulties associated with threat identification.
- Another type of flooding is caused by heavy rainfall in the mountain areas resulting in the massive melting of the snow pack leading to heavy run off, widespread damage to roads and other transportation facilities, and bank erosion.

Factors determining the severity of floods include rainfall intensity and duration. Excessive rainfall within the state is often associated with frontal systems out of the northern Pacific Ocean and the remnants of tropical storms from the south.

Most residents and visitors are unaware of the flood potential or never see flooding occur until it is too late. In addition to the tremendous property damage and deaths related to flooding, Clark County residents experience inconvenience when roads become difficult to navigate, or are completely impassable. Support services such as police, fire, and ambulance are sometimes delayed in responding to victims of life-threatening incidents. Flood and flash flood events can also adversely impact the local economy through loss of business at commercial establishments due to decreased access.

Furthermore, flooding in the Las Vegas Valley can become national news and deter tourists from visiting the area.

History

Typically underestimated due to the arid climate, few perennial streams, and low precipitation, flooding is the most common hazard occurring in the state of Nevada, (Nevada Division of Water Resources, 2004 – website <http://water.nv.gov/Flood/page5.htm>).

Recorded floods in Clark County date back almost one hundred years. Over 180 separately documented flooding events have resulted in damages to private property and public facilities. Since 1960, the area has experienced nine million dollars in damage from floods. In that same period, 26 lives were lost in 13 separate flash flood events. While floods can, and have occurred in almost every month of the year, the most damaging storms typically occur between July and September (History of Flooding, Clark County, Nevada 1905-1975, the U.S. Soil Conservation Service). Table 10 lists examples of floods that have occurred in Clark County since 1974.

Table 11: Examples of Historic Floods in Clark County

Date	Damage
January 2005	A storm-related emergency January 11 was proclaimed for flooding conditions in the northeastern part of the county and for avalanche conditions on Mount Charleston. Affected by the storms were 133 homes where two houses were destroyed, 37 suffered major damage, and 45 had minor damage. An estimated \$3.8 million in direct damage to public infrastructure roads, bridges, sewers, and storm-related expenses to local governments. State agencies reported another \$2 million in expenses to the Nevada Division of Wildlife resources, including nature preserves in the Moapa Valley area. Damage in Clark County exceeded \$5 million, which includes 52 ranches and farms affected.
August 2003	There were no reports of deaths or life-threatening injuries from the storm, which began around 4 p.m. and quickly overwhelmed flood control facilities. Authorities made nearly 60 rescues. Including police officers dangling from helicopter cables to save motorists, and in one case, firefighters, who were trapped atop their flooded fire engine. Mayor Oscar Goodman declared a local state of emergency, placing public safety officials on call and laying the groundwork for the city to seek federal aid. Approximately 3,000 homes in the northwest part of the valley lost power because of the storm. Service was restored by 7:30 p.m. Rain fell at such a rate near Gowan Road and U.S. Highway 95 that it overwhelmed the intakes to flood control basins in the area. Basins remained unfilled even as water cascaded through nearby streets. Small Business Administration loans were made to those who qualified.
July 1999	The storm killed two, sweeping away mobile homes and flooding businesses. The National Weather Service typically alerts the city in the morning if any intense storms or flooding are expected that day. No such warning was issued this day. Unlike storms in the past where motorists got caught trying to navigate through flood waters, this flood occurred so quickly that it trapped drivers who minutes before were on dry land.

Date	Damage
September 1998	Severe weather moved through the Las Vegas Valley and northeast Clark County causing widespread drainage problems and other damages. The rainfall was accompanied by hail throughout much of the Las Vegas Valley as well as a tornado in the Henderson area. Flows in the Muddy River overtopped the SR-168 bridge in Glendale and washed out the low level crossing at Gubler Avenue in Logandale (Moapa Valley area). According to the damage assessment prepared by the American Red Cross, thirteen homes in the Overton area suffered major damages and flooding destroyed two mobile homes in the Glendale/Moapa area and 5 homes in Bunkerville suffered major flood damages. Clark County Public Works Department has estimated that the area suffered approximately \$400,000 in damages to roadways.
July 1975	A flash flood swept through the Las Vegas area causing widespread damage and killing two men. Several hundred cars were damaged as flows in the Flamingo Wash roared through the parking lot of Caesar's Palace. Sewage plants were inundated and deactivated by mud and water. It was estimated that direct damage totaled \$4 to \$5 million. Additionally, local hotel industry reported large-scale room cancellations and a significant decrease in revenues when tourists decided that safety was not something they wanted to take a gamble on.
September 1974	A severe thunderstorm dumped upwards of 3" of rain over the Eldorado Canyon area, 40 miles southeast of Las Vegas. This flash flood claimed nine lives, destroyed a restaurant, completely destroyed five mobile homes, 38 vehicles, 23 boats, half of the boat dock, and gas dock. Damages exceeded \$1 million.

Probability and Magnitude

A Flood Insurance Rate Map (FIRM), effective on all construction built after January 1, 1975 is the official map of a community on which the Federal Emergency Management Agency (FEMA) delineates flood-prone areas. A variety of data, including the following, are depicted on FIRM maps:

- Physical features, such as major highways, secondary roads, lakes, railroads, streams, and other waterways
- Special Flood Hazard Areas
- Base (1 % annual chance) flood elevations or depths
- Flood insurance risk zones
- Areas subject to inundation by the 0.2 % annual chance flood
- Areas designated as regulatory floodways

Development in or near floodplains increased the likelihood of flood damage by adding additional structures and people in flood areas and altering surface water flows by diverting water to new courses or increases in the amount of water that runs off impervious pavement and roof surfaces.

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year.

The most widely adopted design and regulatory standard for floods in the United States is the 1% annual chance flood and this is the standard formally adopted by FEMA. The 1% annual flood, also known as the base flood, has a 1 % chance of occurring in any particular year. It is also often referred

to as the “100-year flood” since its probability of occurrence suggests it should only reoccur once every 100 years (although this is not the case in practice). Experiencing a 100-year flood does not mean a similar flood cannot happen for the next 99 years; rather it reflects the probability that over a long period of time, a flood of that magnitude should only occur in 1 % of all years.

Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a “10-year” flood has a greater likelihood of occurring than a “100-year” flood. Table 12 shows a range of flood recurrence intervals and their probabilities of occurrence.

Table 12: Flood Probability Terms

Flood Recurrence Intervals	Percent Chance of Occurrence Annually
10 year	10.0%
50 year	2.0%
100 year	1.0%
500 year	0.2%

Source: FEMA, August 2001.

Location

In the north-central and north-eastern portions of Clark County, many of the flood-prone areas are associated with the tributaries leading into Lake Mead, such as the Muddy River that flows through the communities of Overton and Logandale, and the Virgin River that runs along the southern boundary of the City of Mesquite. (Note: In 1981 the communities of Overton and Logandale were officially merged into the unincorporated town of Moapa Valley; however, local residents still identify themselves with the previous community names and locale.) In the desert basins of central and southern Clark County, natural runoff channels, or washes, focus the sheet flow across desert pavement. Because of these topographic phenomena the probability of floods occurring in Clark County communities is relatively high. Contributing to this dispersion type is an urbanization and sprawl pattern that has spread development onto the washes and sediment piedmonts. In addition, runoff from monsoon thunderstorms can quickly overtop a wash, thereby flooding adjacent areas.

Warning Time

Flood warning times vary based on flood type, storm location, direction, intensity, duration, topography and size of the drainage area. Warning times for flash floods or dam breaks can be as short as a couple of minutes, while flooding resulting from periods of prolonged rain can extend from hours to days.

The National Weather Service (NWS) is responsible for issuing severe weather watches and warnings to inform the public and cooperating agencies of current or developing weather conditions and potential weather dangers. Forecasters often begin issuing weather statements, advisories, or bulletins for hazards such as winter storms or severe weather days in advance. However, conditions leading to flooding are often not known in advance and alerts are often issued hours to a day in advance. Watches and warnings issued for flood conditions are described below:

- **Flood Watch** – High flow or overflow of water from a river is possible in the given time period. It can also apply to heavy runoff or drainage of water into low-lying areas. These watches are generally issued for flooding that is expected to occur at least 6 hours after heavy rains have ended.

- **Flood Warning** – Flooding conditions are actually occurring or are imminent in the warning area.
- **Flash Flood Watch** – Flash flooding is possible in or close to the watch area. Flash Flood Watches are generally issued for flooding that is expected to occur within 6 hours after heavy rains have ended.
- **Flash Flood Warning** – Flash flooding is actually occurring or imminent in the warning area. It can be issued as a result of torrential rains, a dam failure, or ice jam.

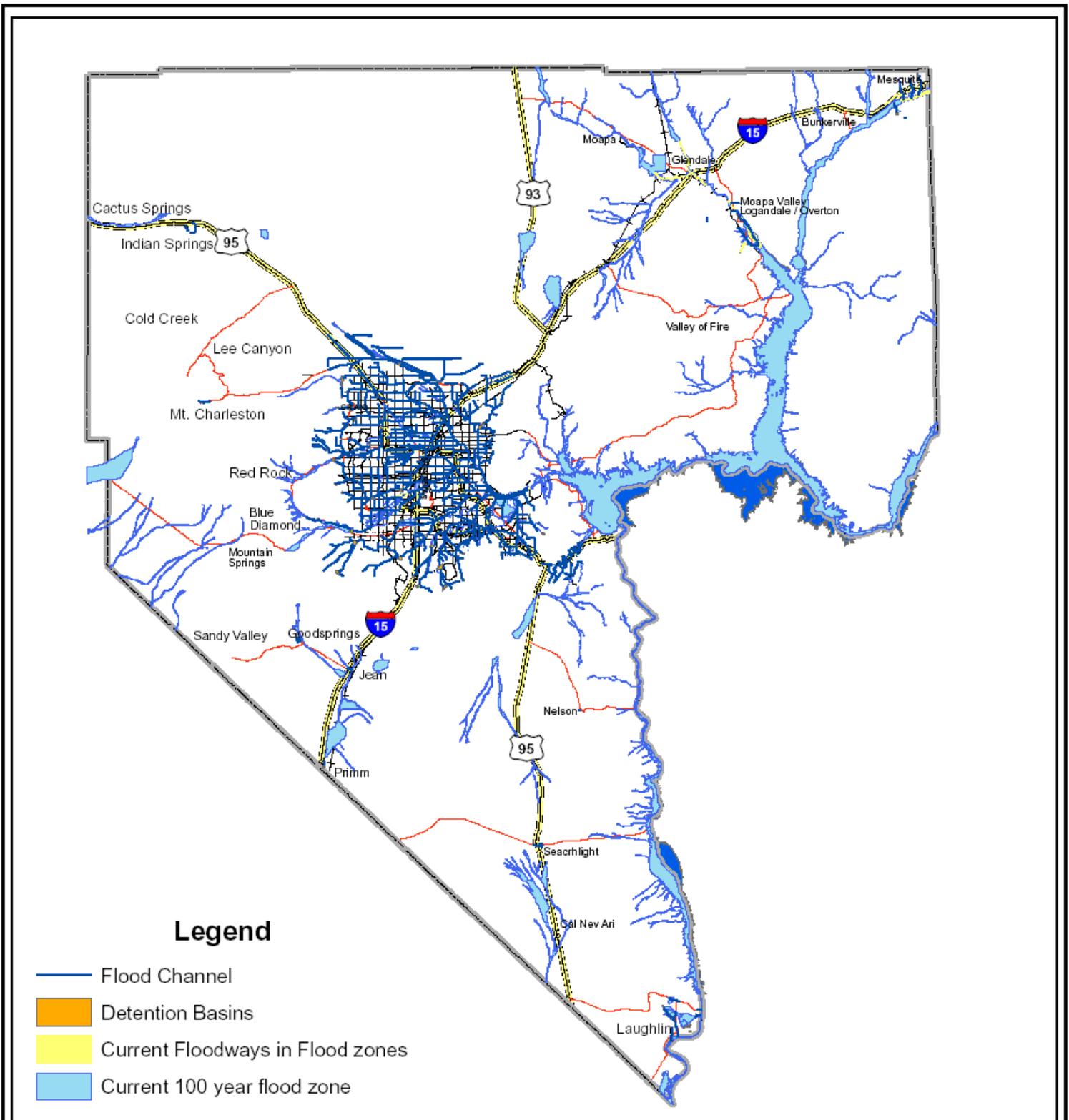
Information contained within these advisories include the counties or geographical area impacted, the effective time of the advisory, the extent of hazardous condition expected (i.e. localized or widespread), and the severity of the hazardous conditions. Updated information is issued through the use of flood statements with advisories re-issued as conditions change.

The California Nevada River Forecast Center provides a Significant River Flood Outlook intended to provide a general outlook for significant river flooding within its area of responsibility. Small-scale events, such as localized flooding and/or flash flooding, are not captured in this outlook. In addition, information will not be depicted for minor flooding on significant rivers, which cause minimal to no property damage and only minor public inconvenience. The flood events depicted in the Significant River Flood Outlook include the following:

- **Possible** – Hydrometeorological conditions indicate that significant flooding could occur, but is neither certain nor imminent.
- **Likely** – Hydrometeorological conditions indicate that significant flooding can be expected during the outlook period.
- **Occurring/Imminent** – Significant flooding is already occurring or is forecasted to occur during the outlook period.

The Clark County Regional Flood Control District, created in 1985, develops and coordinates Master Plans to solve flooding problems, regulate land use in flood-prone areas, fund and coordinate construction of flood control facilities, and provide public education regarding the dangers associated with flooding. The District has, in cooperation with the public works-related entities that monitor flood control issues within the six incorporated municipalities of Clark County, created public information programs, promoted maintenance activities, sponsored re-mapping efforts, implemented a Flood Threat Recognition System, and developed regulatory guidelines for flood control and protection.

The key guidance and regulatory standards that govern flood mitigation efforts within the County are the Clark County Regional Flood Control District's Master Plan, the Hydrologic Criteria and Drainage Design Manual, and the Uniform Regulations for the Control of Drainage. Although each incorporated entity within the County is required to perform internal reviews of drainage plans and studies within their jurisdiction, these entities must submit development proposals to the District for review if the proposed project area is within Special Flood Hazard Areas, or otherwise impacts implementation of the County's Master Plan. The District performs additional review of referred plans to either approve, or provide comments for project modifications.



Legend

-  Flood Channel
-  Detention Basins
-  Current Floodways in Flood zones
-  Current 100 year flood zone

1 inch equals 85,000 feet
Date: October 1, 2004



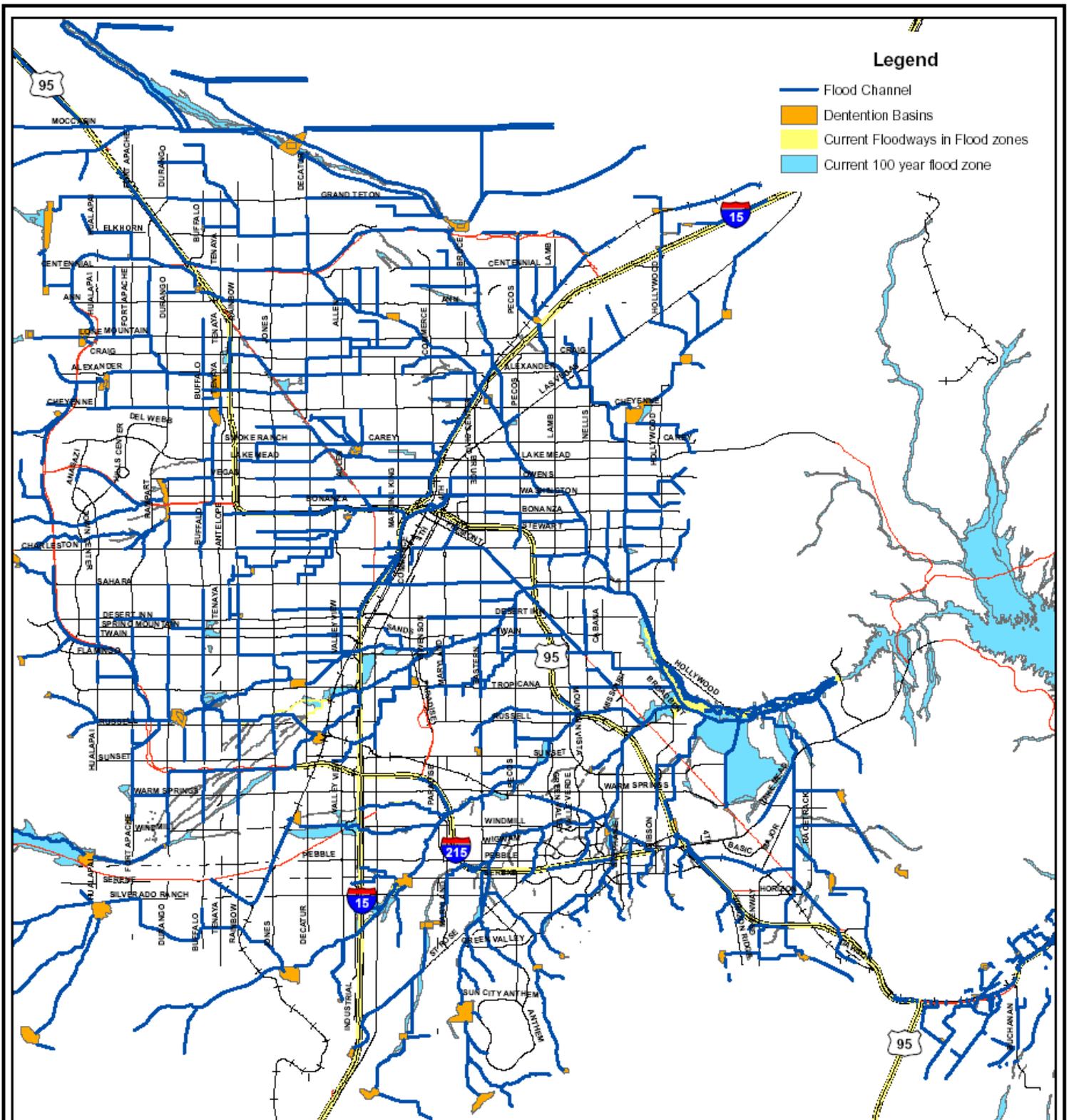
**Clark County
Flood Control
Features**

Clark County, Nevada



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.



1 inch equals 20,000 feet

Date: October 1, 2004



Las Vegas Valley Flood Control Features

Clark County, Nevada



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

WILDFIRE

Nature

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly. Wildfires can be human-caused through acts such as arson, campfires, or the improper burning of debris, or can be caused by natural events such as lightning. Wildfires can be categorized into four types:

- **Wildland fires** occur mainly in areas under federal control, such as national forests and parks, and are fueled primarily by natural vegetation. Generally, development in these areas is nonexistent, except for roads, railroads, power lines, and similar features.
- **Interface or intermix fires** occur in areas where both vegetation and structures provide fuel. These are also referred to as Wildland/Urban Interface (WUI) fires.
- **Firestorms** occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.
- **Prescribed fires and prescribed natural fires** are intentionally set or natural fires that are allowed to burn for beneficial purposes.

The following three factors contribute significantly to wildfire behavior and, as detailed more fully later, they can be used to identify wildfire hazard areas:

- **Topography:** Although it generally remains unchanged, unlike fuel or weather, topography can either aid or hinder wildfire progression. The most important topographical factor is slope.
- **Fuel:** Wildfires spread based on the type and quantity of available flammable material, referred to as the fuel load. The basic characteristics of fuel include size and shape, arrangement and moisture content.
- **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are temperature, humidity, wind, and lightning. Weather events ranging in scale from localized thunderstorms to large fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and higher humidity often signals reduced wildfire occurrence and easier containment. Wind has probably the largest impact on a wildfire's behavior, and is also the most unpredictable. Winds supply the fire with additional oxygen, further dry potential fuel, and push fire across the land at a quicker pace.

The frequency and severity of wildfires is also dependent upon other hazards, such as lightning, drought, and infestations (e.g., Pine Bark Beetle). In Nevada, these hazards combine with the three other wildfire contributors noted above (topography, fuel, weather) to present an on-going and significant hazard across much of Nevada.

If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties. It is also important to note that in addition to affecting people, wildfires may severely affect livestock and pets. Such events may require the emergency watering/feeding, shelter, evacuation, and even burying of animals.

The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils

erode quickly and enhance siltation of rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

History

Nevada averages 1,153 wildfires per year that consume over 242,056 acres (State of Nevada Standard Multi-Hazard Mitigation Plan). Over the last 10 years, there have been more than 1,800 wildfires on federal lands within Clark County. The Spring Mountain Range, with the highest frequency of wild land fire incidents, is home to the communities of Cold Creek, Lee Canyon, Kyle Canyon and Mt. Charleston.

Table 13 provides examples of some of the major fires in Clark County within the past five years.

Table 13: Major Wildfires in Clark County

Date	Damage
July 2004	Robber’s Fire lasted 5 days and burned 290 acres. The cause was a semi-truck accident on the downhill curve of State Route 1578 which ignited dry brush in the area. Fire fighters were able to prevent the spread of the fire to occupied residences. A temporary evacuation of the Spring Mountain Youth Camp Detention Center and several recreational camps was a precautionary measure.
July 2002	Lost Cabin Fire took over a week to contain. The fire, possibly sparked by lightning, ravaged over 4,300 acres before rain gave firefighters an advantage over it. It is estimated that \$900,000 in damages were sustained and containment costs were approximately \$1.4 million.
August 2000	Almost 3,000 acres of wild lands had burned since June. Twice that summer lightning had sparked major wildfires in the Spring Mountains west of Las Vegas, around Buck Springs and Trout Canyon. Governor Kenny Guinn asked the federal government to declare the State a disaster area so residents adversely affected by wild land fires can qualify for assistance.

The Nevada Division of Forestry publishes annual reports on the budgetary status and physical capabilities of the Division, particularly with regard to fire suppression, communications, fuels reduction, training, and education/public outreach. The Division’s 2004 Annual Report’s Fire Suppression section states that the Large Fire Seasonal Outlook for the Southern Region 3 has a below normal large fire potential. This report further states that the region reported 54 wildland fire incidents and 206 “all risk” incidents (non-wildland fires that have the potential to become wildland fire incidents), for a total of 260 incidents.

Probability and Magnitude

The Nevada Division of Forestry works on a cooperative basis with the Bureau of Land Management, the United States Forest Service, the U.S. Fish and Wildlife Service, and the National Parks Service, as well as local fire departments to coordinate fire prevention and suppression efforts, and to obtain fire-related data, maps, and other information. The Division divides the state into three regions: Western Region 1, Northern Region 2, and Southern Region 3. Clark County is located within Southern Region 3, a region that also encompasses large portions of Lincoln and Nye Counties. In Clark County, the Division of Forestry works extensively with the Clark County Fire Department and the Las Vegas Interagency Fire Dispatch Center (the intra-regional communications center that coordinates federal, state, and local fire suppression efforts).

Although the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) have mature GIS modeling programs to develop fire models for fire prediction, mitigation, and suppression applications, the Nevada Division of Forestry has limited GIS capabilities. GIS software capability within the Division is relatively new. At present, the Division has the capability to do limited mapping and modeling, but the system is not yet compatible with those of the BLM or USFS.

The State of Nevada's Standard Multi-Hazard Mitigation Plan (October, 2004) further defines Wildland/Urban Interface into four distinct conditions for the purposes of planning and the application of strategies for wild land fire hazard mitigation:

- *Interface Condition* – is a situation where structures abut wild land fuels. There is a clear line of demarcation between the structures and the wild land fuels along roads or back fences. Wild land fuels do not continue into the developed area. The development density for an interface condition is usually 3+ structures per acre.
- *Intermix Condition* – is a condition where structures are scattered throughout a wild land area. There is no clear line of demarcation; the wild land fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres.
- *Occluded Condition* – is a situation normally within a city, where structures abut an island of wild land fuels (park or open space). There is a clear line of demarcation between the structures and the wild land fuels along roads or back fences. The development density for an occluded condition is usually similar to those found in the interface condition and the occluded area is usually less than 1,000 acres in size.
- *Rural Condition* – is a situation where scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wild land fuels. There may be miles between these clusters.

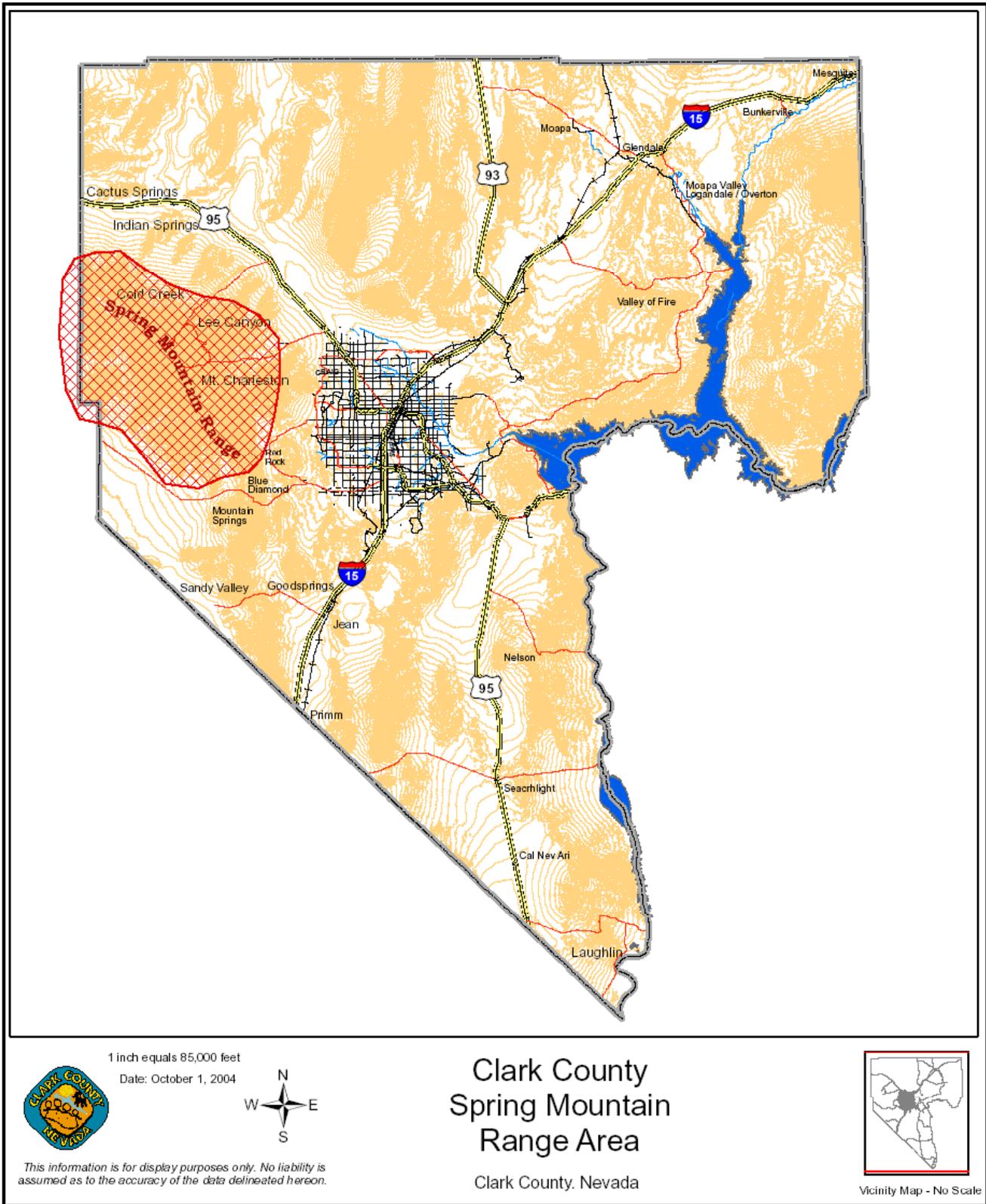
As stated in the State of Nevada Standard Multi-hazard Mitigation Plan, in Clark County, 31 communities demonstrate one or more of the above conditions: 8 communities exhibit an Interface Condition; 18 communities exhibit an Intermix Condition; and 5 exhibit an Occluded Condition.

Location

The extreme hazard communities in Clark County are all located at higher elevations within or adjacent to the Spring Mountains. The communities with the most hazardous conditions include Kyle Canyon, Lee Canyon, Mt. Springs, and Trout Canyon.

Warning Time

Wildfire warning times are provided in the extremes, from no warning at all to the identified “fire season” and “red flag” days. Fire season, typically, is March through July. However, it is not unusual to have relatively intense fire activity prior to and beyond these dates. The current years’ fire season cannot be determined until weeks prior to its onset as recent weather conditions, future weather events, and current drought conditions are the necessary primary predictor components. A “red flag” warning is a term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern. The pattern is a dangerous combination of temperature, relative humidity, and/or wind. When linked with dry fuel or drought conditions, the area is right for new fires as well as the rapid spread of any existing fires.



Dam Failure

Nature

Dam failures involve unintended releases or surges of impounded water resulting in downstream

flooding. The high velocity, debris-laden wall of water released from dam failures results in the potential for human casualties, economic loss, lifeline disruption, and environmental damage. Although they may involve the total collapse of a dam, that is not always the case as damaged spillways, overtopping from prolonged rainfall, or other problems, including the unintended consequences from normal operations, may result in a hazardous situation being created. Due to the lack of advance warning, failures from natural events, such as earthquakes, or landslides, may be particularly severe.

Dam failures may be caused by a variety of natural events, human-caused events, or a combination thereof. Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion through the dam foundation occurs (also known as piping). Structural deficiencies from poor initial design or construction, lack of maintenance or repair, or the gradual weakening of the dam through the normal aging process are factors contributing to dam failure events.

History

Throughout the past century, catastrophic dam failures are becoming more frequent. Between 1918 and 1958, 33 major U.S. dam failures caused 1,680 deaths. Some of the largest disasters in the U.S. resulted from dam failures. In 1889, 2,209 people died when the South Fork Dam failed from overtopping due to excessive rainfall above Johnstown, Pennsylvania.

In Nevada, there have been no incidents resulting in dam failure declarations, however the following incidents are on record:

- In 1984, the concrete liner of the Bishop Creek Dam in Elko County failed resulting in a 25 cubic feet per second seep. The seep eventually removed approximately 800 cubic yards of material from the toe of the dam (Association of State Dam Safety Officials, 2002).
- In 1985, a mine tailings dam owned by the Olinghouse Mining Company failed from an embankment collapse from saturation in Wadsworth, Nevada. Tailings were reported 1.5 km downstream.

Furthermore, many dams in Nevada suffer from poor design or encroachment of development into the potential floodplain below the dam. As a result, many dams fail to pass an Inflow Design Flood (IDF) inspection commensurate with their hazard potential and size (Association of State Dam Officials, 2002).

Probability and Magnitude

The team referenced Clark County Office of Emergency Management historical records to determine frequency and magnitude scores based on historical frequencies and / or projected probabilities of the hazards identified (See Tables 7 & 8). For the purposes of this plan, only the top 5 natural hazards were included for further mitigation opportunities. Following the above criteria, the inclusion of this hazard was not warranted. For future reference, the generally accepted safety standard for the design of dams is the Inflow Design Flood (IDF) which is "... the flood flow above which the incremental increase in water surface elevation downstream due to failure of a dam or other water retaining structure is no longer considered to present an unacceptable additional downstream threat" (Interagency Committee on Dam Safety, October 1998).

The Nevada Division of Water Resources lists 64 dams in Clark County. Of these 18 are considered "low hazard," 11 are considered "significant hazard," and 35 are considered "high hazard." A high hazard designation is assigned to a dam if there is reasonable potential for loss of life and/or excessive economic loss. A significant designation is given when there is no reasonable potential for loss of life,

but there is potential for appreciable economic loss. Lastly, a low hazard designation is assigned when there is no reasonable potential for loss of life and the economic loss is minor. Although the ratings provided by the Nevada Division of Water Resources at first glance may be somewhat alarming, it is extremely important to take into consideration that the hazard designation does not reflect the safety or condition of the dam, and is determined at the time the dam design plans are reviewed. The hazard rating may be altered when downstream conditions change.

Clark County has two high-profile dams within its purview: Hoover Dam and Davis Dam. Hoover Dam is located about 36 miles southeast of Las Vegas, in the Black Canyon of the Colorado River. Davis Dam is located near the town of Laughlin, Nevada. Further downstream along the Colorado River, Parker Dam and its reservoir, Lake Havasu, are located in Arizona. In addition to these high-profile dams, several detention basins are scattered throughout Clark County to divert and contain seasonal flood waters. Mill ponds that serve to store large quantities of water from mining operations are also of significant concern. Breach of these structures could also present a threat to lives and property throughout the County.

Hoover Dam is the highest (726 feet) and third largest concrete dam in the United States, with a storage capacity of 28,537,000 acre-feet. Lake Mohave is located downstream of Hoover Dam, and is the 1,818,300 acre-foot reservoir created by the 200 foot-high Davis Dam.

Location

Davis Dam is located near the unincorporated town of Laughlin, at the southern end of Clark County. Further downstream along the Colorado River, Parker Dam and its reservoir, Lake Havasu, are located in Arizona. The County's Emergency Operations Plan estimates that breach of the Davis Dam would occur within 3.3 hours of a Hoover Dam failure. Breach of either of the two upstream dams would have disastrous results on the town of Laughlin, Nevada, its immediate neighbor to the east, Bullhead City, Arizona, and, potentially, Parker Dam.

Warning Time

The National Weather Service (NWS) is responsible for most flood warning efforts in the United States, including Nevada. River Forecast Centers (RFC) use hydrological models for larger river systems, while most smaller streams rely on an automated system called ALERT (Automated Local Evaluation in Real Time). Although the ALERT system does not rely on volunteer observers, some communities may still need to rely on these observers to monitor water levels, the effectiveness of the levee system, or even provide additional verification for automated systems.

There are 13 River Forecast Centers (RFC) located throughout the United States that provide local National Weather Service (NWS) Weather Forecast Offices (WFOs) with hydrologic forecasts utilized in the preparation of hydrologic watches and warnings. The California Nevada River Forecast Center provides information for the state of Nevada, including Clark County. In addition to hydrologic advisories, the NWS is also responsible for providing public warnings and watches related to eminent or occurring dam failures.

In general, the warning time for dam failure can vary from none to days, depending on the nature of the dam failure. There may be little or no warning time available due to failure from a catastrophic earthquake, landslide, or other natural event. In the event of flash flooding, the warning time may also be short. The most common cause of dam failure, periods of prolonged rainfall and associated flooding, generally provide the most opportunity for advance warning. Warning times may be as short as several hours, but typically extend to days.

To address the potential hazards, the United States Department of the Interior, Bureau of Reclamation developed and implemented Emergency Action Plans (EAPs) for Hoover, Davis, and Parker Dams. Emergency Action Plans for the Hoover, Davis, and Parker Dams and Lower Colorado Dam's Facilities Office "Basic Plan" are on file with the Clark County Office of Emergency Management.

Vulnerability Assessment

The hazards identified in the Hazard Assessment affect the entire planning area within Clark County, although at varying degrees. There are three hazards that affect the planning area somewhat uniformly across the southern Nevada region to include all of Clark County. The three hazards are: Drought, Epidemic and Earthquake. The following Vulnerability Assessment will provide an analysis for the planning area in a regional scope, because the jurisdictions in the region would prepare, respond, recover and mitigate the hazards of drought, epidemic and earthquake cooperatively. The remaining three hazards, Flood, Flash Flood and Wildfire, although identified as regional in scope, they hold two characteristics that require separate description by jurisdiction. The characteristics are: the impact of the hazard to the jurisdiction and the vulnerability of the jurisdiction. As such, an overall summary description will be provided in this section of each jurisdiction's vulnerability to Flood and Wildfire and a summary description of the planning areas vulnerability to drought, epidemic and earthquake as well as the impact of these six hazards.

Overview

The vulnerability assessment provides an approximation of vulnerability and potential losses from hazards, typically based on a commonly accepted methodology and event type. Wherever possible a quantitative and comparable assessment of vulnerability to hazards was made.

Methodology

To prepare the Vulnerability Assessment the methodology followed a conservative exposure-level analysis to assess the risks of the identified hazards. This analysis is a simplified assessment of the potential effects of the hazard on total taxable values at risk without consideration of probability or level of damage. Using GIS, the building footprints of residential, commercial, public and critical facilities were compared to the 100-year and 500-year floodplains. If any portion of the critical facility fell within a hazard area, it was counted as impacted. A spatial proportion was also used to determine the amount of highways within a hazard area. The exposure analysis for street segments were measured in miles and replacement values were developed. For each physical asset located within a hazard area, exposure was calculated by assuming the worst-case scenario (that is, the asset would be completely destroyed and would have to be replaced). Finally, the aggregate exposure, in terms of total taxable value, for each category of structure or facility was calculated; no estimate of the number of potential injuries or deaths was prepared.

Data Limitations

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in an approximation of risk. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as approximations and simplifications that are necessary for a comprehensive analysis. It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of buildings, critical facilities and infrastructure to the hazard.

It was beyond the scope of this mitigation plan to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed with future updates of the mitigation plan.

Exposure Analysis

The results of the exposure analysis are summarized in Tables 21 through 50 and in the discussion below.

Clark County – Planning Area

Drought

Vulnerability Summary

No standard methodology exists for estimating vulnerability to drought. As opposed to posing a direct threat to life and structures, drought is primarily measured by its potential and actual economic effect. Drought sensitive sectors within the planning areas economy and natural resources include the following:

- Forestry from the increased risk of wildland fire,
- Wildlife and wildlife habitat, and
- Municipal and industrial water supply.

The Southern Nevada Water Authority (SNWA) has developed a Water Resource Plan, that is part of the SNWA Drought Plan, which provides a comprehensive overview of water resources and demands in Southern Nevada, including a discussion of the critical role conservation plays in SNWA demand forecasts and in efforts to meet future water demands. In 2000 SNWA initiated a conservation program for Southern Nevada. The first couple of years the success of this program was not consistent. However, by 2003 Southern Nevada achieved 23.1% conservation and is now expected to surpass the 2010 goal of 25% conservation by several years. The most challenging aspect of drought conditions is no one can tell when they will occur or how long they will last. Projections indicate that it will take several years of above average snow pack in the Colorado Rockies to abate the current drought facing Southern Nevada. Even if the drought ends, several years of significantly above normal runoff will be needed for Lake Mead water levels to recover. The ultimate goal of the Drought Plan is to define appropriate steps to meet these drought challenges in a coordinated, regional fashion, while ensuring the preservation of local control and oversight by each affected community. Droughts are a fact of life in virtually any climate and it is important to develop plans to reduce their impacts.

Impact

The impact of drought to the planning area has been significantly reduced as a result of the combined drought planning efforts. The planning and coordination that has occurred throughout Southern Nevada, to include the entire planning area, during this current drought has made it possible for the communities to continue building to accommodate new residents and businesses. The nearly 5,000 new residents a month into Clark County have unconditionally embraced the conservation program. The success of this program will set a precedent for future drought events.

Earthquake

Vulnerability Summary

The estimated economic loss for an M 6.7 scenario earthquake was developed under the oversight of Ron Hess at the Nevada Bureau of Mines and Geology. The earthquake scenario developed through a HAZUS methodology along the Frenchman Mountain fault that bounds the eastern side of Las Vegas Valley and lies in an area of urban expansion.²⁴

U.S. Census 2000 inventory data was used to anticipate the possible nature and scope of the scenario earthquake to estimate the consequences to the County.²⁵ The resulting “loss estimate” describes the scale and extent of damage and disruption that may result from the scenario. The HAZUS modeling output was designed to reflect the economic costs of direct building losses. Included in the analysis is the following information:

Quantitative estimates of losses in terms of direct costs for repair and replacement of damaged buildings and lifeline system components; and quantity of debris.

Functionality losses in terms of loss-of-function and restoration times for buildings, critical facilities such as hospitals, and components of transportation and utility lifeline systems and elementary analysis of loss-of-system-function for electrical distribution and potable water systems.

Extent of induced hazards in terms of fire.

Building Damage

It is estimated that 100,249 buildings, over 26% of the total number of the buildings in the region, will be at least moderately damaged. There are an estimated 7,160 buildings that will be damaged beyond repair. Table 14 and 15 below summarizes the expected damage by general occupancy and by general building type.

Table 14 Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	4	0.00	1	0.00	2	0.00	1	0.00	0	0.00
Commercial	1,031	0.57	711	0.70	1,339	1.96	1,000	1.07	408	5.70
Education	1	0.00	1	0.00	1	0.00	1	0.00	0	0.00
Government	20	0.01	14	0.01	29	0.04	24	0.10	10	0.14
Industrial	61	0.03	53	0.05	111	0.16	91	0.37	43	0.60
Other Residential	14,983	8.24	10,237	10.06	14,023	20.48	10,708	43.53	4,612	64.41
Religious	23	0.01	18	0.02	28	0.04	22	0.09	10	0.13
Single Family	165,771	91.14	90,742	89.16	52,957	77.32	12,753	51.84	2,077	29.01
Total	181,893		101,777		68,490		24,599		7,160	

²⁴ The Frenchman Mountain Fault is a steeply west-dipping fault that is inferred to produce earthquakes possibly as large as M7.0. Given the potential hazard to Las Vegas, it is critical to gather data from the FMF prior to the destruction of exposures by urbanization.

²⁵ It is important to note that the data employed to reflect the economic loss of the scenario earthquake provides an under valued approximation. Since 2000, the Las Valley has grown from 1.3M in population to 1.7M, an increase of 24%; increasing the number of households from 512,000 to over 554,000.

Table 15 Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	569	0.01	17	0.02	48	0.07	38	0.15	20	0.28
Manufactured Housing	6,435	3.54	4,741	4.66	9,794	14.30	8,939	36.34	4,014	56.06
Precast	151	0.05	63	0.06	157	0.23	173	0.70	78	1.10
Reinforced Masonry	3,746	2.03	1,443	1.42	3,183	4.65	3,038	12.35	1,067	14.90
Steel	418	0.08	105	0.10	212	0.31	156	0.63	79	1.10
Unreinforced Masonry	143	0.08	120	0.12	180	0.26	144	.59	123	1.72
Wood	170,431	93.60	94,459	92.81	53,367	77.92	10,959	44.55	1,260	17.59
Total	181,893		101,777		68,490		24,599		7,160	

Critical Facilities Damage

Before the Earthquake, the region had 2,974 hospital beds available for use. On the day of the earthquake, the model estimated 855 hospital beds (31%) would be available for use by patients already in the hospital and those injured by the earthquake. After one week, 64% of the beds will be back in service. By 30 days, 94% will be operational.

Table 16 Expected Damage to Critical Facilities

Classification	Total	Number of Facilities		
		Least Moderate Damage > 50%	Complete Damage > 50%	Number likely functional on day 1
Hospitals	15	2	0	13
Schools	302	0	0	302
Police Stations	21	0	0	21
Fire Stations	11	0	0	11

Table 17 Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Segments	87	0	0	87	87
	Bridges	423	7	0	416	418
Railways	Segments	99	0	0	99	99
	Bridges	17	0	0	17	17
	Facilities	5	2	0	5	5
Bus	Facilities	4	0	0	4	4
Airport	Facilities	15	0	0	15	15
	Runways	18	0	0	18	18

Table 18 Expected Utility System Facility Damage

System	Number of Locations				
	Total Number	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Potable Water	1	1	0	0	1
Waste Water	4	3	0	1	4
Natural Gas	1	0	0	1	1
Electrical Power	11	7	0	3	11
Communication	50	20	0	50	50

Table 19 Expected Utility System Pipeline Damage (Site-Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	16,840	2,504	626
Waste Water	10,104	1,980	495
Natural Gas	6,736	2,117	529

Induced Earthquake Damage

Fire Following Earthquake

HAZUS used a Monte Carlo simulation model to estimate the number of ignitions and the amount of burn area. The model estimated 62 ignitions that will burn about 0.73 square miles, 0.01% of the region's total area. The model also estimated the fires will displace approximately 2,826 people and burn about \$170M of building value.

Debris Generation

It is estimated 4 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 30% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of trucks, it will require 160,000 truckloads, at 25 tons per truckload, to remove the debris generated by the earthquake.

Direct Building Economic Losses

The direct building losses, costs to repair or replace the damage caused to the building and its contents, are expected to be \$8,291.31M.

Table 20 Direct Building Losses (million of dollars)

Category	Single Family	Other Residential	Commercial	Industrial	Other	Total
Structural	542.98	372.38	442.82	47.96	29.64	1,435.78
Non-Structural	2,259.61	1,747.86	1,042.78	139.51	71.94	5,261.68
Content	631.49	367.66	446.07	83.22	30.94	1,559.39
Inventory	0.00	0.00	16.20	17.72	0.54	34.46
Total	3,434.08	2,487.90	1,947.87	288.41	133.06	8,291.31

Impact

Baseline assumptions have been drawn regarding the impact of M 6.7 earthquake on the Las Vegas Valley planning area in the following categories:

Housing and Commercial Building Inventory

An estimated 383,000 buildings with a total building replacement value of (excluding contents) of \$80.7B.²⁶

Critical Facilities Inventory

Fifteen hospitals in the region with a total bed capacity of 2,874 beds.
Three hundred and two schools, 11 fire stations, and 21 police stations.

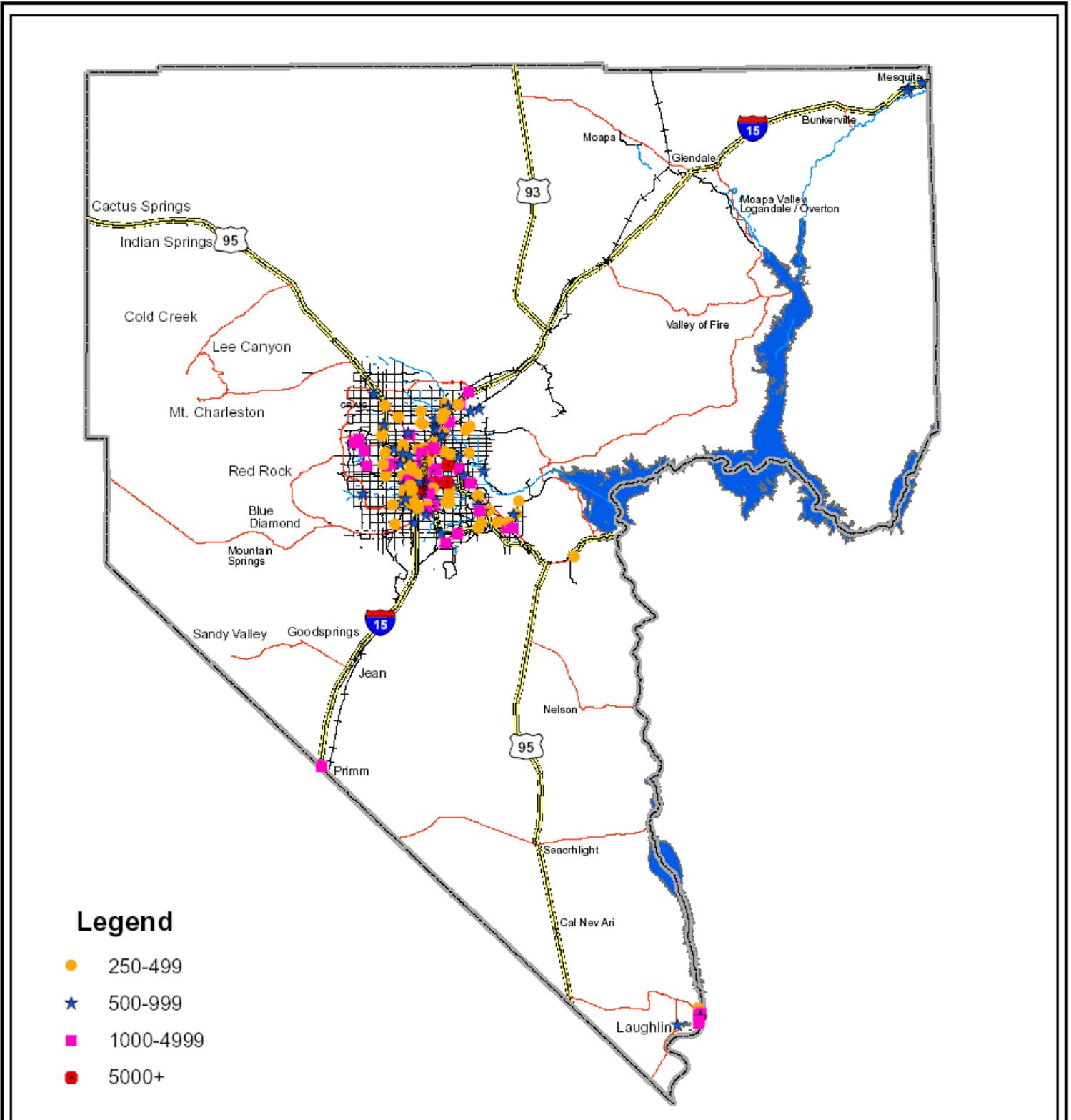
Transportation Inventory

Seven transportation systems that include highways, railways, light rail, bus, and airports, with a replacement value of \$7.30B.

Utility Inventory

Six utility systems that include potable water, wastewater, natural gas, and electric power and communications, with a replacement value of \$1.06B.

²⁶ Approximately 99% of the buildings, and 86% of the building value, are associated with residential housing.



1 inch equals 85,000 feet
Date: October 1, 2004



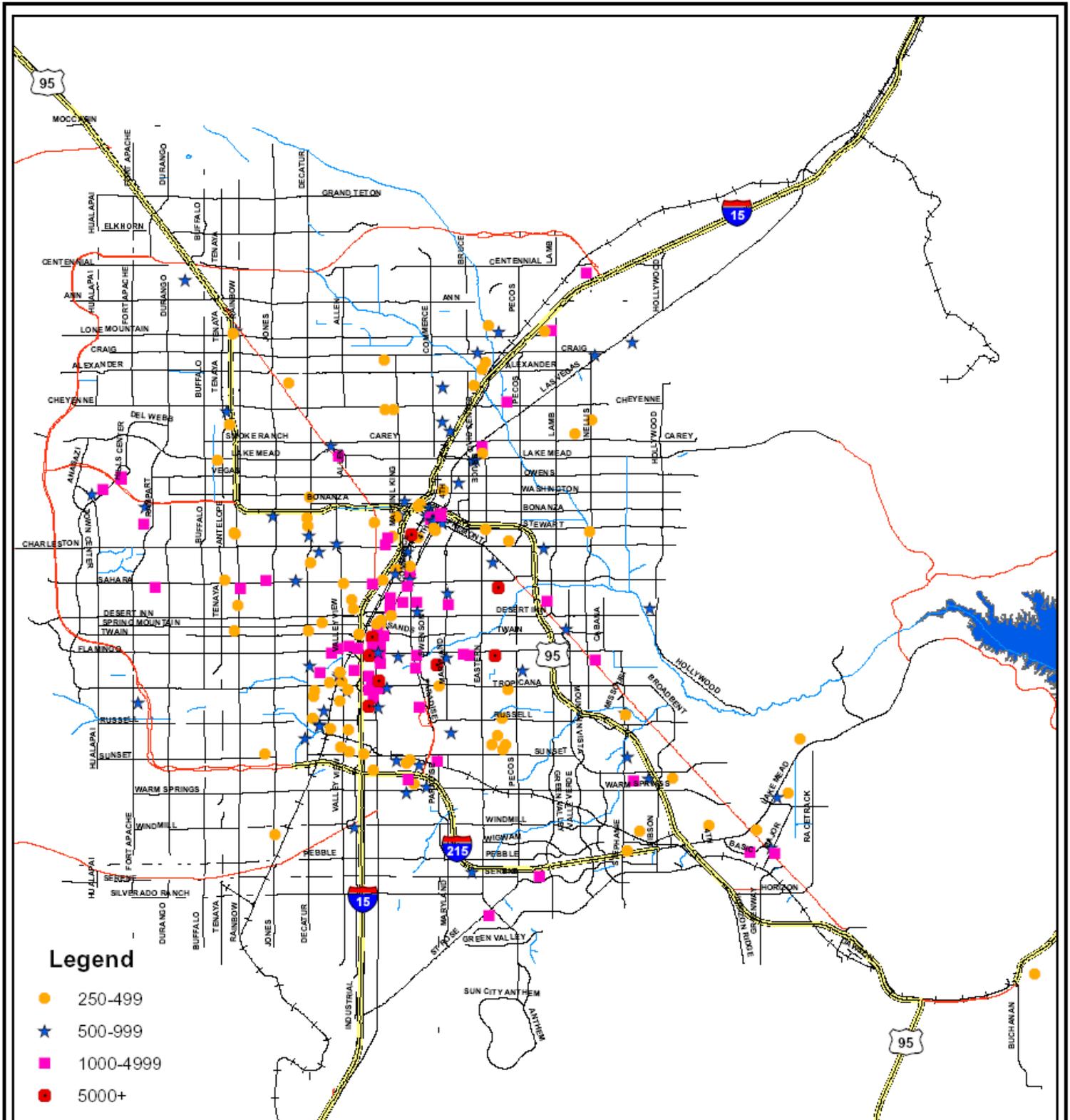
Clark County Large Employers

Clark County, Nevada



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.



Legend

- 250-499
- ★ 500-999
- 1000-4999
- 5000+

1 inch equals 20,000 feet
Date: October 1, 2004



Las Vegas Valley Large Employers

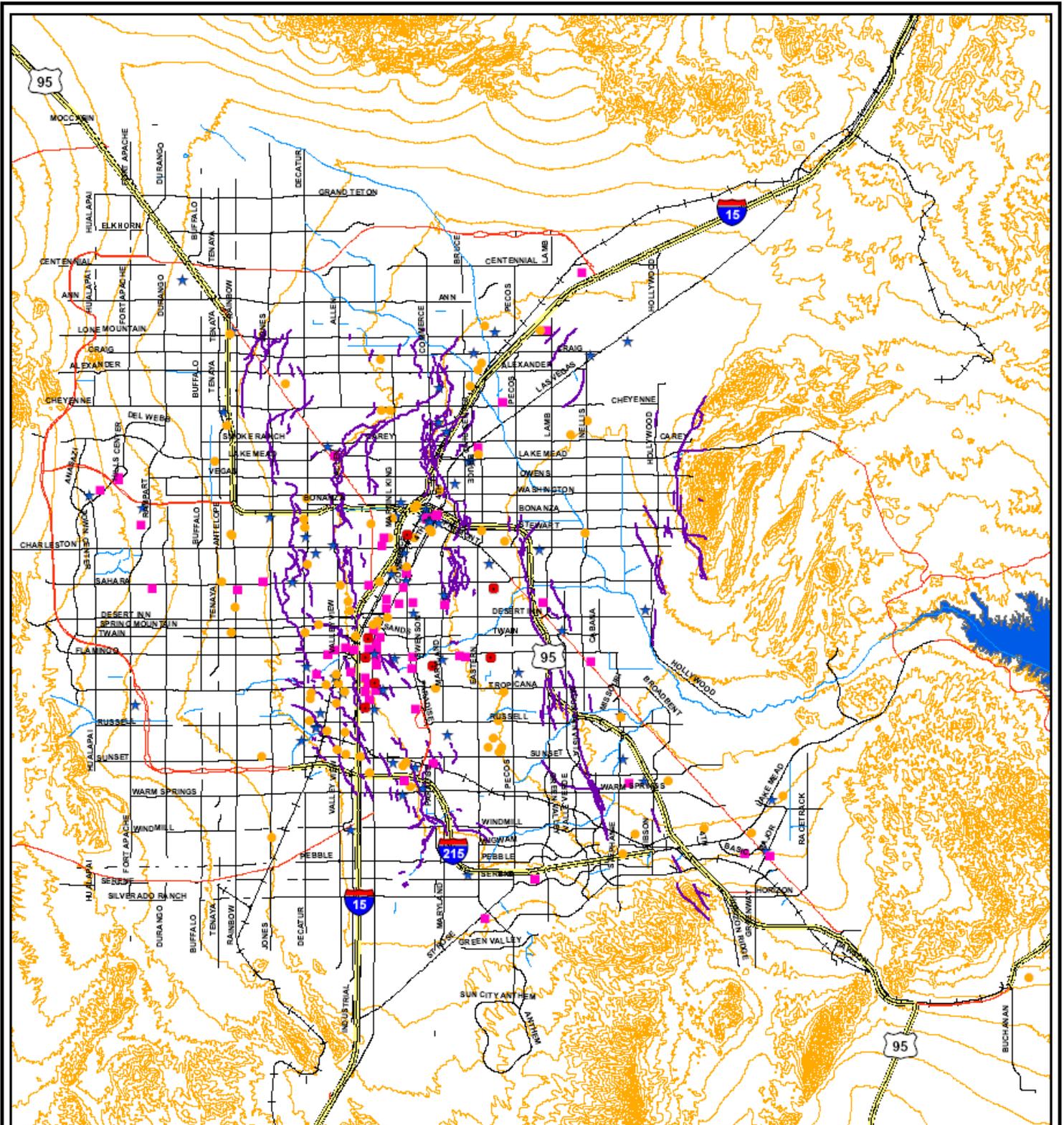


This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

Clark County, Nevada



Vicinity Map - No Scale



1 inch equals 20,000 feet

Date: October 1, 2004



Las Vegas Valley Fifty (50) Meter Contours & Faults w/ Large Employers

Clark County, Nevada

Legend

- Faults
- 50 Meter Contours
- 1000-4999
- 250-499
- 500-999
- 5000+



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.

Epidemic

The wide variation in disease characteristics makes evaluation of the vulnerability of people, animals and plants difficult to analyze. An **epidemic** is when a disease that appears as new cases in the population in a specific period of time at a rate that substantially exceeds what is expected, based on recent experience. It is therefore a somewhat subjective category and depends on common knowledge of the expected baseline. An epidemic may be restricted to one locale (an outbreak), more general (an epidemic) or even global (pandemic). Because it is based on what is thought normal, a few cases of a very rare disease, like rabies, may be classified as an epidemic, while many cases of a common disease, like the common cold, would not. Therefore, surveillance and effective communication throughout the planning area are critical for the timely identification of the onset of a suspected epidemic.

Vulnerability Summary

As such, a highly contagious and severe disease, such as smallpox or a new strain of influenza, could swiftly kill large numbers of people and incapacitate major systems, like health care. For emergency planning purposes, knowing how vulnerable people, animals and plants are can be valuable and desirable information. However, a vulnerability assessment of the healthcare infrastructure would be invaluable in assessing the ability of hospitals, public health departments, clinics, urgent care centers and similar facilities to ensure continued health care throughout the planning area should any one healthcare support system become inoperable or overwhelmed. Systems that should be included in a future vulnerability assessment study would include but would not be limited to: local and outside pharmaceutical suppliers, local laboratories, general and specialized medical suppliers, local military medical and hazardous materials support and committed or possible alternate sources for all of those listed above, including resources from the private sector and adjacent metropolitan jurisdictions.

Impact

The impact of an epidemic to the planning area would be catastrophic on many levels. Within the Las Vegas Valley it is common for residents to live in one jurisdiction, work in another and attend recreational activities in yet another. Additionally, the Las Vegas Valley is a prime destination spot for tourists and conventions with almost 36 million people visiting the area in 2004. Both of these common daily activities greatly increase the risk of the spread of a communicable disease, not only valley wide but worldwide.

Assessment By Jurisdiction

Flood/Flash Flood

Vulnerability Summary

The effects of flooding include loss of life, property damage and destruction, damage and disruption of communications, transportation, utility service, and community services as well as loss and interruption of business. Hazards of fire, health, transportation accidents, and contamination of water supplies are likely secondary effects of flooding. Flooding occurs throughout the planning area, although at varying degrees and impact. These variations are described by jurisdiction in the following sections. Flash floods occur regularly throughout the planning area and are of higher concern in regards to the threat against life and property. Due to the proximity of the Las Vegas Valley to the Spring Mountains, the topography and saturation density of the surface, no jurisdiction is exempt from flash floods. In extreme situations, flash flood waters reach depths of three to four feet traveling at a speed strong enough to move a parked car. Unfortunately, this extreme situation occurs with frequency throughout the entire planning area.

Clark County – Unincorporated Area

Impact

The risk posed by the 100-year flood to Clark County – Unincorporated Area is high, with 343 square miles, approximately 4.3 % of the total area in the 100-year floodplain. Exposed within the 100-year flood zone are 3,619 residential buildings (worth \$9.7 billion), 411 commercial buildings (worth \$7.7 billion), 37 public buildings to include schools, religious, libraries, parks and social type organizations (worth 4.1 million), 18 government facilities (worth \$ 1.3 million) and 129 bridges. However, an additional 24,760 residential buildings, 18 government facilities, 36 bridges and 6 fire stations are located in the 500-year floodplain. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate. The average cost of \$250,000* per mile to replace street segments destroyed by floodwaters for the Las Vegas Valley is based on a basic 2-lane segment with 3 inches to 1.5 feet of asphalt in addition to the appropriate foundation.

Table 21: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 22: Unincorporated Clark County– 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
<i>100-Year Flood Zone</i>		
0	3,834	\$ 8,917,066,931
110 – Residential, Single- to Multi-Family (up to four)	3,322	818,728,546
150 – Residential, Multi-Family (more than four)	297	588,226,091
200 – Commercial Development	411	7,683,629,169
410 – Schools	9	261,297,286
420 – Religious	6	11,435,403
430 Library	1	429,834
440 – Parks	20	137,821,886
450 – Social Type Organizations	2	1,301,240
460 – Government Facilities	18	102,696,283
470 – Non-Profit Entertainment and Recreation Facilities	1	2,621,540
500 – Other	481	879,346,740
<i>500-Year Flood Zone</i>		
0	4,384	\$ 3,345,534,009
110 – Residential, Single- to Multi-Family (up to four)	22,496	5,960,899,311
150 – Residential, Multi-Family (more than four)	2,264	947,010,983
200 – Commercial Development	487	3,412,941,771
410 – Schools	23	176,279,051
420 – Religious	19	53,909,543
430 Library	2	2,059,126
440 – Parks	12	\$ 40,776,217
450 – Social Type Organizations	4	1,485,649
460 – Government Facilities	18	123,240,297
470 – Non-Profit Entertainment and Recreation Facilities	2	3,654,391
500 – Other	184	153,119,980

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 23: Unincorporated Clark County – Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
<i>100-Year Flood Zone</i>		
0	1	2005
110 – Residential, Single- to Multi-Family (up to four)	3,322	1997
150 – Residential, Multi-Family (more than four)	295	1983
200 – Commercial Development	380	1990
410 – Schools	9	1990
420 – Religious	6	1973
430 Library	1	1987
440 – Parks	20	1977
450 – Social Type Organizations	2	1990
460 – Government Facilities	18	1971
470 – Non-Profit Entertainment and Recreation Facilities	1	2000
500 – Other	374	1996
<i>500-Year Flood Zone</i>		
0	8	2001
110 – Residential, Single- to Multi-Family (up to four)	22,496	1999
150 – Residential, Multi-Family (more than four)	2,258	1998
200 – Commercial Development	464	1994
410 – Schools	19	1987
420 – Religious	19	1982
430 Library	2	1991
440 – Parks	12	1990
450 – Social Type Organizations	4	1951
460 – Government Facilities	18	1986
470 – Non-Profit Entertainment and Recreation Facilities	2	1988
500 – Other	152	1990

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 24: Unincorporated Clark County – Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
100-Year Flood Zone			
1,711	3,394,652	643	\$ 250,000*
500-Year Flood Zone			
4,698	2,253,694	427	250,000*

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 25: Unincorporated Clark County – Features

Count	Feature
100-Year Flood Zone	
129	Bridges
0	Fire Stations
0	Hospitals
500-Year Flood Zone	
36	Bridges
6	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

City of Boulder City

The risk posed by the 100-year flood to the City of Boulder City is minimal, with 9.57 miles, approximately 4.78 % of the total area in the 100-year floodplain. Exposed within the 100-year flood zone are 5 single to multi-family (up to four) residential buildings (worth \$ 1.3 million), 1 multi-family (more than four) residential buildings (worth \$ 6 million), 5 commercial buildings (worth \$ 29 million, and 1 bridge. There are no structures located in the 500-year floodplain. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate.

Table 26: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
Boulder City	200.0	9.57	4.78%
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 27: Boulder City – 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
100-Year Flood Zone		
0	90	\$ 319,109,357
110 – Residential, Single- to Multi-Family (up to four)	5	1,314,240
150 – Residential, Multi-Family (more than four)	1	6,034,326
200 – Commercial Development	5	29,047,183
500 – Other	3	39,105,503
500-Year Flood Zone		
0		

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 28: Boulder City – Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
100-Year Flood Zone		
110 – Residential, Single- to Multi-Family (up to four)	5	1982
150 – Residential, Multi-Family (more than four)	1	1976
200 – Commercial Development	4	1986
500 – Other	3	1987
500-Year Flood Zone		
0		

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 29: Boulder City – Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
100-Year Flood Zone			
36	96,489	18	\$ 250,000*
500-Year Flood Zone			
0			

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 30: Boulder City – Features

Count	Feature
100-Year Flood Zone	
1	Bridges
0	Fire Stations
0	Hospitals
500-Year Flood Zone	
0	Bridges
0	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

City of Henderson

Impact

The risk posed by the 100-year flood to the City of Henderson is moderate, with 5.47 miles, approximately 5.78 % of the total area, in the 100-year floodplain. Exposed within the 100-year flood zone are 1,243 single to multi-family (up to four) residential buildings (worth \$ 366.5 million), 149 multi-family (more than four) residential buildings (worth \$ 212.8 million), 138 commercial buildings (worth \$ 535.8 million, 24 public buildings to include schools, religious, libraries, parks and social type organizations (worth \$ 235.4 million), and 3 government facilities (worth \$ 20 million) and 40 bridges. Additionally, there are 6,611 residential buildings, 3 government facilities, 17 bridges, and 1 fire station located in the 500-year floodplain. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate.

In 2006, the City of Henderson had a study performed on sanitary sewer and reclaimed water lines specifically to determine where they may be vulnerable to adverse effects of flash flooding. Approximately 970 miles of lines were reviewed, of which 100 miles were deemed of sufficient concern to warrant field study. The field study further broke down the potential vulnerability of the 100 miles of lines into a scaled chart, identifying approximately 9 miles of potentially vulnerable lines. The full report is located with the City of Henderson Emergency Coordinator.

Table 31: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
Henderson	94.5	5.47	5.78%
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 32: City of Henderson– 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
<i>100-Year Flood Zone</i>		
0	922	\$ 1,872,704,426
110 – Residential, Single- to Multi-Family (up to four)	1,243	366,476,851
150 – Residential, Multi-Family (more than four)	149	212,785,854
200 – Commercial Development	138	535,834,349
410 – Schools	10	183,714,140
420 – Religious	6	16,030,286
430 Library	1	706,409
440 – Parks	7	34,937,429
460 – Government Facilities	3	20,069,054
500 – Other	30	467,901,391
<i>500-Year Flood Zone</i>		
0	646	\$ 387,175,391
110 – Residential, Single- to Multi-Family (up to four)	6,470	1,424,110,934
150 – Residential, Multi-Family (more than four)	141	144,452,917
200 – Commercial Development	424	1,154,403,857
410 – Schools	4	29,094,023
420 – Religious	5	27,350,317
440 – Parks	5	27,926,823
460 – Government Facilities	3	11,166,920
500 – Other	45	308,469,703

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 33: City of Henderson– Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
100-Year Flood Zone		
0	1	2005
110 – Residential, Single- to Multi-Family (up to four)	1,242	1995
150 – Residential, Multi-Family (more than four)	142	1989
200 – Commercial Development	112	1994
410 – Schools	10	1993
420 – Religious	6	1993
430 Library	1	1930
440 – Parks	7	1997
460 – Government Facilities	3	1985
500 – Other	27	1988
500-Year Flood Zone		
110 – Residential, Single- to Multi-Family (up to four)	6,470	1996
150 – Residential, Multi-Family (more than four)	140	1997
200 – Commercial Development	416	1991
410 – Schools	4	1993
420 – Religious	5	1994
440 – Parks	5	2000
460 – Government Facilities	3	1994
500 – Other	38	1991

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 34: City of Henderson– Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
100-Year Flood Zone			
574	384,295	73	\$ 250,000*
500-Year Flood Zone			
1,248	653,517	124	250,000*

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 35: City of Henderson- Features

Count	Feature
100-Year Flood Zone	
40	Bridges
0	Fire Stations
0	Hospitals
500-Year Flood Zone	
17	Bridges
1	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

City of Las Vegas

Impact

The risk posed by the 100-year flood to the City of Las Vegas is a low moderate, with 2.57 miles, approximately 2.27 % of the total area in the 100-year floodplain. Exposed within the 100-year flood zone are 350 single to multi-family (up to four) residential buildings (worth \$ 94.5 million), 25 multi-family (more than four) residential buildings (worth \$ 132 million), 170 commercial buildings (worth \$ 568.7 million), 15 public buildings to include schools, religious, libraries, parks and social type organizations (worth \$ 33 million), and 2 government facilities (worth \$ 45.5 million) and 9 bridges. Additionally, in the 500-year floodplain there are 5,854 residential buildings, 10 government facilities, no bridges, and 1 fire station. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate.

Table 36: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
Las Vegas	113.0	2.57	2.27%
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 37: City of Las Vegas – 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
<i>100-Year Flood Zone</i>		
0	133	\$ 2,669,614,943
110 – Residential, Single- to Multi-Family (up to four)	350	94,523,071
150 – Residential, Multi-Family (more than four)	25	132,154,257
200 – Commercial Development	170	568,683,640
410 – Schools	2	13,683,014
420 – Religious	5	1,858,340
440 – Parks	7	16,733,746
450 – Social Type Organizations	1	704,211
460 – Government Facilities	2	45,544,351
470 – Non-Profit Entertainment and Recreation Facilities	1	2,621,540
500 – Other	10	6,155,154
<i>500-Year Flood Zone</i>		
0	596	\$ 593,836,449
110 – Residential, Single- to Multi-Family (up to four)	5,327	692,750,189
150 – Residential, Multi-Family (more than four)	527	165,860,774
200 – Commercial Development	161	175,712,754
410 – Schools	19	84,691,931
420 – Religious	48	14,678,649
440 – Parks	1	7,624,809
450 – Social Type Organizations	9	10,338,506
460 – Government Facilities	10	45,376,986
470 – Non-Profit Entertainment and Recreation Facilities	3	13,946,811
500 – Other	27	10,521,657

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 38: City of Las Vegas – Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
<i>100-Year Flood Zone</i>		
110 – Residential, Single- to Multi-Family (up to four)	350	1976
150 – Residential, Multi-Family (more than four)	24	1984
200 – Commercial Development	158	1990
410 – Schools	2	1983
420 – Religious	5	1969
440 – Parks	7	1990
450 – Social Type Organizations	1	1961
460 – Government Facilities	2	1986
470 – Non-Profit Entertainment and Recreation Facilities	1	2000
500 – Other	10	1986
<i>500-Year Flood Zone</i>		
0	1	1999
110 – Residential, Single- to Multi-Family (up to four)	5,322	1976
150 – Residential, Multi-Family (more than four)	523	1988
200 – Commercial Development	160	1976
410 – Schools	18	1970
420 – Religious	46	1964
440 – Parks	1	1983
450 – Social Type Organizations	9	1974
460 – Government Facilities	9	1969
470 – Non-Profit Entertainment and Recreation Facilities	3	1986
500 – Other	27	1977

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 39: City of Las Vegas – Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
<i>100-Year Flood Zone</i>			
184	131,702	25	\$ 250,000*
<i>500-Year Flood Zone</i>			
1,140	482,565	91	250,000*

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 40 City of Las Vegas – Features	
Count	Feature
100-Year Flood Zone	
9	Bridges
0	Fire Stations
0	Hospitals
500-Year Flood Zone	
0	Bridges
1	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

City of North Las Vegas

Impact

The risk posed by the 100-year flood to the City of North Las Vegas is a low moderate, with 1.34 miles, approximately 1.71 % of the total area, in the 100-year floodplain. Exposed within the 100-year flood zone are 191 single to multi-family (up to four) residential buildings (worth \$ 37.5 million), 6 multi-family (more than four) residential buildings (worth \$ 1.3 million), 66 commercial buildings (worth \$ 372.2 million), 6 public buildings to include schools, parks and social type organizations (worth \$ 77.8 million), no government facilities and 20 bridges. Additionally, in the 500-year floodplain there are 1,978 residential buildings, 6 government facilities, 8 bridges, and 1 fire station. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate.

Table 41: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
North Las Vegas	78.25	1.34	1.71%
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 42: City of North Las Vegas – 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
<i>100-Year Flood Zone</i>		
0	303	1,073,009,223
110 – Residential, Single- to Multi-Family (up to four)	191	37,497,789
150 – Residential, Multi-Family (more than four)	6	1,257,906
200 – Commercial Development	66	372,207,846
410 – Schools	3	75,467,706
440 – Parks	1	1,383,740
450 – Social Type Organizations	2	983,980
500 – Other	10	34,227,474
<i>500-Year Flood Zone</i>		
0	279	1,027,921,311
110 – Residential, Single- to Multi-Family (up to four)	1,976	288,826,586
150 – Residential, Multi-Family (more than four)	2	2,607,271
200 – Commercial Development	94	256,063,360
410 – Schools	5	8,526,843
420 – Religious	4	2,450,526
450 – Social Type Organizations	1	359,171
460 – Government Facilities	6	65,852,709
500 – Other	27	98,005,929

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 43: City of North Las Vegas – Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
<i>100-Year Flood Zone</i>		
110 – Residential, Single- to Multi-Family (up to four)	191	1993
150 – Residential, Multi-Family (more than four)	6	1970
200 – Commercial Development	62	1992
410 – Schools	3	1982
440 – Parks	1	2003
450 – Social Type Organizations	2	1967
500 – Other	10	1982
<i>500-Year Flood Zone</i>		
110 – Residential, Single- to Multi-Family (up to four)	1,976	1987
150 – Residential, Multi-Family (more than four)	2	1951
200 – Commercial Development	92	1993
410 – Schools	5	1976
420 – Religious	4	1974
450 – Social Type Organizations	1	1960
460 – Government Facilities	6	1986
500 – Other	23	1986

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 44: City of North Las Vegas – Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
100-Year Flood Zone			
187	149,246	28	250,000*
500-Year Flood Zone			
376	227,684	43	250,000*

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 45: City of North Las Vegas – Features

Count	Feature
100-Year Flood Zone	
20	Bridges
0	Fire Stations
0	Hospitals
500-Year Flood Zone	
8	Bridges
1	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

City of Mesquite

Impact

The risk posed by the 100-year flood to the City of Mesquite is moderate, with 2.12 miles, approximately 6.62 % of the total area, in the 100-year floodplain. Exposed within the 100-year flood zone are 163 single to multi-family (up to four) residential buildings (worth \$ 21.3 million), 81 multi-family (more than four) residential buildings (worth \$ 29.6 million), 18 commercial buildings (worth \$ 53 million), 3 public buildings to include schools, and parks (worth \$ 11.5 million), 3 government facilities (worth \$ 3.4 million) and 5 bridges. Additionally, in the 500-year floodplain there are 2 residential buildings. The inclusion of the “Average Construction Year” is pertinent because the total taxable value was based, in part, on the year the property was constructed. Therefore, total taxable value in many structures, specifically residential properties, is considerably lower than the current replacement cost resulting in a much higher loss than the tables indicate.

Table 46: 100-Year Floodplains

Jurisdiction	Total Area in Square Miles	Area Within 100-Year Floodplain	
		Square Miles	Percent
Mesquite	32.0	2.12	6.62%
Unincorporated Clark County	8,012	343	4.30%

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 47: City of Mesquite – 100- and 500-Year Flood Zones

Assessor's Office Code Descriptions	Number of Parcels	Taxable Value
100-Year Flood Zone		
0	284	76,587,597
110 – Residential, Single- to Multi-Family (up to four)	163	21,337,577
150 – Residential, Multi-Family (more than four)	81	29,603,674
200 – Commercial Development	18	52,958,117
410 – Schools	1	11,221,651
440 – Parks	2	315,874
460 – Government Facilities	3	3,361,543
500 – Other	41	1,453,006
500-Year Flood Zone		
110 – Residential, Single- to Multi-Family (up to four)	1	187,820
150 – Residential, Multi-Family (more than four)	1	57,071
200 – Commercial Development	1	8,384,080
500 – Other	4	45,906

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 48: City of Mesquite – Average Construction Year

Assessor's Office Code Descriptions	Number of Parcels	Average Construction Year
100-Year Flood Zone		
110 – Residential, Single- to Multi-Family (up to four)	163	1992
150 – Residential, Multi-Family (more than four)	81	1998
200 – Commercial Development	17	1997
410 – Schools	1	2003
440 – Parks	2	2001
460 – Government Facilities	3	1992
500 – Other	32	1986
500-Year Flood Zone		
110 – Residential, Single- to Multi-Family (up to four)	1	1977
150 – Residential, Multi-Family (more than four)	1	1978
200 – Commercial Development	1	1997
500 – Other	3	1955

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 49: City of Mesquite – Street Segments

Street Segment	Total Number of Feet	Total Number of Miles	Average Cost to Replace
100-Year Flood Zone			
112	207,797	39	250,000*
500-Year Flood Zone			
2	4,271	1	250,000*

Source: Clark County Geographic Information Systems Management Office (GISMO)

Table 50: City of Mesquite - Features	
Count	Feature
<i>100-Year Flood Zone</i>	
5	Bridges
0	Fire Stations
0	Hospitals
<i>500-Year Flood Zone</i>	
0	Bridges
0	Fire Stations
0	Hospitals

Source: Clark County Geographic Information Systems Management Office (GISMO)

Wildfire

Vulnerability Summary

The extreme hazard communities in Clark County are all located at higher elevations within or adjacent to the Spring Mountains. The communities with the most hazardous conditions include Kyle Canyon, Lee Canyon, Mt. Springs, and Trout Canyon. The homes in these communities that are situated amongst dense trees and shrubs are in urgent need of defensible space treatment. The forests surrounding these communities need aggressive thinning in order to reduce the risk of catastrophic fires and lower the probability for loss of life and property.

Impact

The current fuel conditions, limited access, and high ignition risks characterizing the above referenced communities are the precursors for disastrous fires such as those that have plagued the western United States with increasing regularity in recent years. Fuelbreaks and fuels reduction treatments are recommended around these communities as well as around the high hazard communities of Cold Creek and Torino Ranch. Increased visitor levels to these areas underscore the need to establish and publicize evacuation routes and safe zones to enhance the safety for residents and for those unfamiliar with the area. The communities of Cold Creek, Kyle Canyon, Lee Canyon, Mt. Springs, Trout Canyon, and Torino Ranch are also advised to develop helicopter dip sites that will enhance initial attack capabilities. Communities located along riparian corridors such as Bunkerville, Glendale, Logandale, Mesquite, Moapa, and Overton are advised to implement or continue existing tamarisk abatement programs to remove this flammable invasive plant and replace it with more fire-resistant species. All communities in Clark County need to implement, maintain, or improve defensible space treatments. In communities with sparse vegetative fuels, an annual treatment of weeds and general clean up is important. Additional water storage capacity, such as 50,000-gallon tanks, is recommended for the communities of Goodsprings, Sandy Valley, and Sloan, for wildfire initial attack and suppression. The impact of a wildland fire to the planning area would predominately affect the current and planned development at the interface along the west side of the Spring Mountain area.

A summary of recommendations for each community is given in Table 52. To be most effective, fire safe practices need to be implemented on a community-wide basis. There is no way to completely eliminate the threat that wildfires present to communities at the wildland interface. However, there are steps that can be implemented to increase public awareness and encourage concerned community members to take proactive actions to effectively reduce the risk of wildfire ignitions near their communities. Implementing defensible space, fuels reduction projects, and public education programs will help to mitigate the hazards inherent in wildland interface areas. (The Nevada Fire Safe Council published the Nevada Community Wildfire Risk / Hazard Assessment Project, Clark County in June 2005.)

Table 51: Community Risk and Hazard Assessment Results

COMMUNITY	INTERFACE CONDITION	INTERFACE FUEL HAZARD CONDITION	IGNITION RISK	COMMUNITY HAZARD RATING
HIGH AND EXTREME HAZARD COMMUNITIES				
Cold Creek	Intermix	High to Extreme	Moderate	High
Kyle Canyon	Rural	Extreme	High	Extreme
Lee Canyon	Intermix	Extreme	High	Extreme
Mt. Springs	Intermix	High to Extreme	High	Extreme
Nelson	Intermix	Low to Moderate	Moderate	High
Torino Ranch	Classic	Low to Extreme	High	High
Trout Canyon	Intermix	Extreme	High	Extreme
MODERATE HAZARD COMMUNITIES				
Cactus Springs	Classic	Low	Low	Moderate
Goodsprings	Classic	Moderate	Moderate	Moderate
Moapa	Classic	Low to High	Low	Moderate
Sandy Valley	Intermix	Low	Low	Moderate
Searchlight	Intermix	Low	Low	Moderate
LOW HAZARD COMMUNITIES				
Arden	Occluded	Low	Low	Low
Blue Diamond	Intermix	Low	Low	Low
Boulder City *	Classic	Low	Low	Low
Bunkerville	Classic	Low to High	Low	Low
CalNevAri	Classic	Low to Moderate	Low	Low
Cottonwood Cove	Classic	Low	Low	Low
Glendale	Classic	Low to High	Low	Low
Henderson *	Classic	Low	Low	Low
Indian Springs	Classic	Low	Low	Low
Las Vegas *	Classic	Low	Low	Low
Laughlin	Classic	Low	Low	Low
Logandale	Classic	Low to High	Low	Low
Mesquite *	Classic	Low to High	Low	Low
North Las Vegas *	Classic	Low	Low	Low
Overton	Classic	Low to High	Low	Low
Palm Gardens Estates	Classic	Low	Low	Low
Primm	Classic	Low	Low	Low
Sloan	Classic	Low	Low	Low

Source: Nevada Community Wildfire Risk / Hazard Assessment Project, Clark County in June 2005

* Incorporated Jurisdictions All other listed communities are Clark County Unincorporated Area

Table 52: Summary of Hazard Reduction Recommendations for Communities in Clark County

Community	Description	Estimated Treatment Area
HIGH AND EXTREME HAZARD COMMUNITIES		
Cold Creek	Brush thinning in drainage 400' X 0.5 mi	24 acres
	Perimeter fuelbreak 300' X 2.4 mi	87 acres
	Additional perimeter brush thinning: 300' X 1.0 mi	36 acres
Kyle Canyon	Shaded fuelbreak, SR 157 from Mile Marker 8 to Junction with SR 158: 300' both sides of road 9.2 mi	670 acres
	Shaded fuelbreak, SR 157 from Junction with SR 158 to Mt. Charleston Lodge: 300' uphill, 600' downhill 3.5 mi	383 acres
	Roadside brush removal, SR 157: 20' X 36 mi	175 acres
	Shaded fuelbreak at Fletcher View and Kyle Canyon Campgrounds and USFS admin site	80 acres
	Shaded fuelbreak/fuels reduction within Echo and Rainbow subdivisions, extending 300' beyond residential clusters	362 acres
	Shaded fuelbreak on downhill side of access road from SR 158 to Spring Mountain Youth Camp 600' X 1.7 mi	123 acres
	Shaded fuelbreak/fuels reduction on North and South slopes below Spring Mountain Youth Camp 600' X 2m640' X 2	72 acres
Lee Canyon	Shaded fuelbreak around communications facilities on Angel Peak: 300' X perimeter	8.25 acres
	Shaded fuelbreak, SR 156: 300' both sides of road from Jct with 158, 2.5 mi to lower end of PJ cover type	272 acres
	Shaded fuelbreak, SR 156: 600' downhill, 300' uphill from Jct 156 and 158 to ski area, 3.2 mi	346 acres
	Fuels reduction within residential clusters in canyon, including 300' buffer beyond 30' firebreak and 300' shaded fuelbreak around electric transfer station	240 acres 8.25 acres
Mt. Springs	Roadside fuelbreak, SR 160 50' X 1.25 mi	15 acres
	Shaded fuelbreak, Benedict Dr. and selected perimeter segments 200' X 1.0 mi	24 acres
	Roadside fuelbreaks, residential. 50' width adjacent to parcels containing homes, 100' adjacent to undeveloped parcels. Approx. 3,500 lineal feet	4-8 acres
	30' firebreak and 300' shaded fuelbreak around electric transfer stations	8.25 acres
Nelson	Fuels reduction in utility corridor and 30' around electric transfer station	N/A
Torino Ranch	Shaded fuelbreak, 300' X 1.0 mi	36 acres
	Roadside brush thinning 30' both sides of roads	N/A
	Reduce fuels in power line corridors	N/A
Trout Canyon	Shaded fuelbreak, perimeter 300' X 2.1 mi	76 acres
	Roadside brush thinning 30' both sides of roads	N/A
	Reduce fuels in power line corridors	N/A
MODERATE HAZARD COMMUNITIES		
Cactus Springs	Fuels reduction on vacant lots	N/A
	Annual grass treatment on roadsides	N/A
Goodsprings	30' fuel clearance around transformers	N/A
Moapa	Roadside fuelbreaks, residential: 20' either side of roads	N/A
	Continue tamarisk reduction program	100 acres per year
	Maintain fuels along railway corridor 15' from tracks	N/A
Sandy Valley	Roadside fuelbreakd, residential: 15' each side of road	N/A
Searchlight	Remove abandoned structures	N/A
	Defensible space	N/A

Source: Nevada Community Wildfire Risk / Hazard Assessment Project, Clark County in June 2005

Community	Description	Estimated Treatment Area
LOW HAZARD COMMUNITIES		
Arden	Defensible space	N/A
Blue Diamond	Defensible space	N/A
Boulder City*	Defensible space	N/A
Bunkerville	Defensible space	N/A
	Continue tamarisk reduction program	N/A
CaNevAri	Perimeter fuelbreak 100' X 621'	1.42 acres
	Roadside fuelbreaks ¹ , residential: 20' each side of road	N/A
Cottonwood Cove	Roadside fuelbreaks, SR 164 10' X 0.7 mi	1.75 acres
Glendale	Fuels removal from along fence lines and irrigation ditches	N/A
	Continue tamarisk reduction program	100 acres per year
Henderson *	Defensible space	N/A
	Initiate tamarisk reduction program along the Las Vegas Wash	N/A
Indian Springs	Fuels reduction in vacant lots	N/A
Las Vegas *	Annual grass control and defensible space	N/A
Laughlin	Defensible space	N/A
Logandale	Fuels removal from along fence lines and irrigation ditches	N/A
	Begin tamarisk reduction program	100 acres per year
	Maintain fuels along railway corridor 15' from tracks	N/A
Mesquite *	Continue tamarisk reduction program	100 acres per year
North Las Vegas *	Defensible space	N/A
Overton	Begin tamarisk reduction program	100 acres per year
	Remove fuels from along fence lines and irrigation ditches	N/A
Palm Garden Estates	Perimeter fuelbreak 50' X 4,000'	4.5 acres
Primm	Maintain fuels along railway corridor 15' from tracks	N/A
Sloan	Defensible space	N/A

Source: Nevada Community Wildfire Risk / Hazard Assessment Project, Clark County in June 2005

* **Incorporated Jurisdictions** All other listed communities are Clark County Unincorporated Area

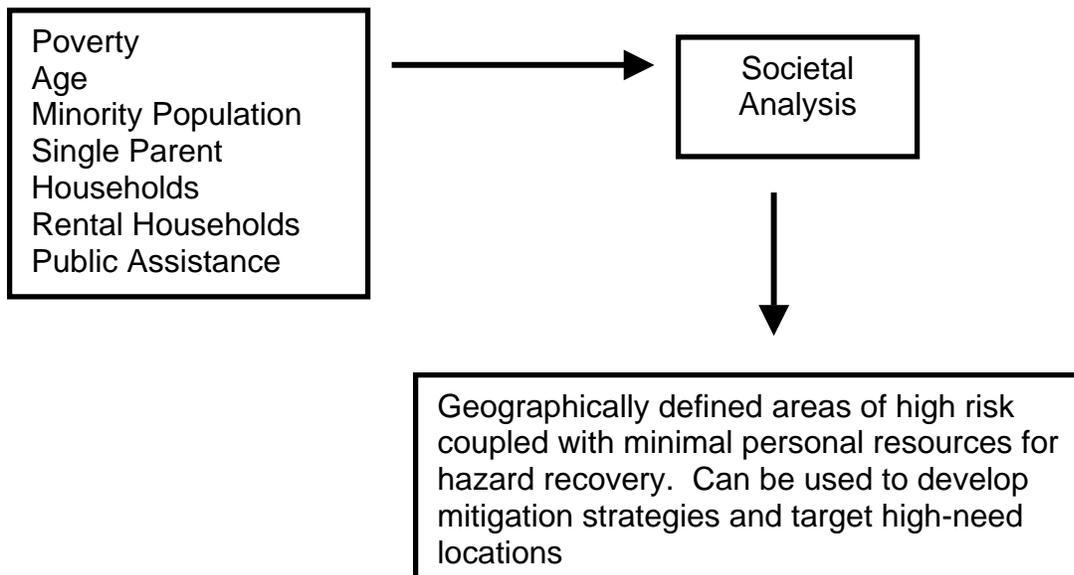
Societal Analysis

The following Societal Analysis was conducted for the Clark County unincorporated area exclusively and may not reflect the specific conditions of each of the incorporated jurisdictions.

Special consideration areas are those locations where individual resources are minimal and personal resources for dealing with hazards can be extremely limited. These areas could be most dependent on public resources after a disaster and thus could be good investment areas for hazard mitigation activities. By utilizing existing low-to-moderate income designations for community development grants or by analyzing key census data categories, special consideration areas can be utilized. Due to the recent release of the 2000 Census data, the information available for this phase is relatively current. Analysis will focus on the exposure of the different communities relating to the identified hazards. The primary focus of the data conversion activities for this phase will be reconciliation of the Census data to other County datasets.

To further target areas for potential hazard mitigation activities, Clark County has identified special consideration areas that are located in the high-risk areas. This helps to determine which mitigation strategies should be focused on the different neighborhood by overlaying the special consideration neighborhoods with hazard risk considerations areas.

INPUT



OUTPUT

Percent of Minority Populations – A high proportion of minority problems indicates potential language or cultural considerations that must be addressed.

Percent of Households below Poverty Level – A high proportion of households below the poverty level indicates limited resources.

Percent of Population over Age 65 - A high proportion of the population indicates possible mobility or cultural considerations.

Percent of Single Parent with Child Families - A high proportion of single parent with child families indicate special childcare considerations.

Percent of Populations with no High School Diploma – A high proportion of populations with no High School Diploma indicates a possible need for personal interactivity in lieu of written communication.

Percent of Households with Public Assistance Income – A high proportion of households with Public Assistance Income indicates households likely to require public disaster aid.

Percent of Housing Rentals - A high proportion of households that rent indicates households least likely to insure the contents of the households.

Special Needs Populations

The cost of disaster recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private structures. Discussions about effects of disaster that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making process.

Certainly, families and individuals at or below poverty level have fewer resources to draw upon after a disaster. In Clark County, census data reveals that 7.9% of families and 10.8% of individuals in Clark County are at or below the national poverty level. Although this falls well below the national average, it is still a consideration for mitigation planning and post-disaster recovery planning efforts.

Vulnerable populations, including seniors, disabled citizens, and children, as well as those people living in poverty, may be disproportionately impacted by a disaster occurrence. In Clark County, the percentage of the population over 65 has decreased slightly from 7.0% in 1990 to 6.4% in 2000. However, the percentage of residents under 18 years of age has increased from 32.8% in 1990 to 34.6% in 2000.

“As in other major metropolitan areas, homelessness is a significant problem in Las Vegas,” according to experts, Markos and Allen.²⁷ “They (the homeless) have limited economic resources to meet the demands of an inflated market in which cost of food, clothing, and shelter has dramatically escalated.” The homeless segment of the population is exceptionally vulnerable to hazards because homeless people do not have permanent housing and have limited access to medical care. Without a permanent address homeless people cannot receive a Medicaid Card.

Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA’s Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private

²⁷ Patricia A. Markos, Ph. D., Professor in the Department of Counseling at the University of Nevada, Las Vegas, Daniel N. Allen, Ph. D., Professor in the Department of Counseling at the University of Nevada, Las Vegas, *A Model of Primary Healthcare Service Delivery for Individuals Who Are Homeless*, published in *Guidance and Counseling* (2001) (16) 4.

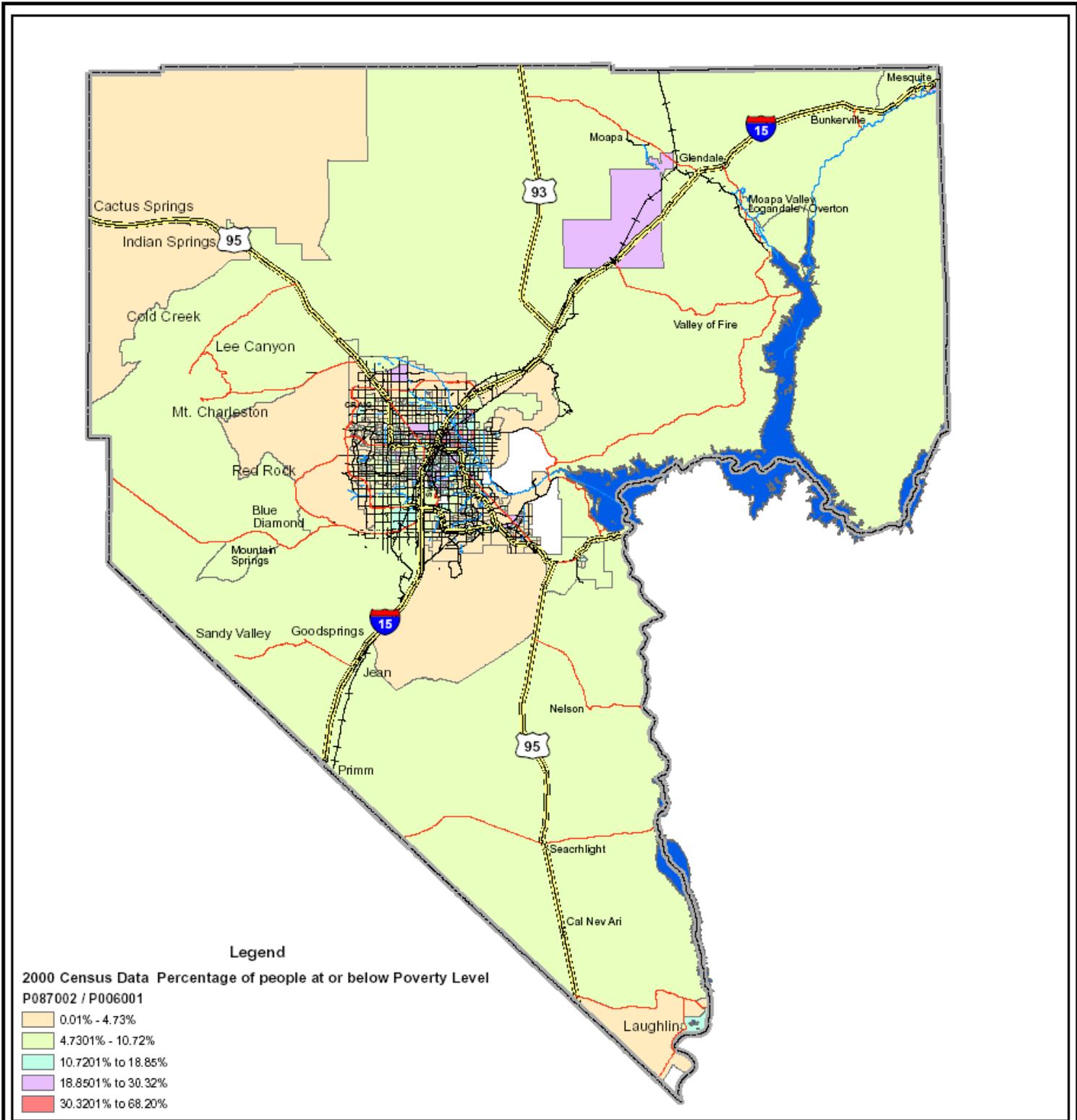
structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making processes.

Clark County recognizes gaps in service to residents living in poverty exist. In order to correct this situation, Clark County recently implemented a mitigation action by conducting a service gap analysis to compare the County's current level of service with the needed level of service. After the analysis is complete, the County will propose service levels designed to close or eliminate the identified service gaps.

Clark County Information Technology GIS Department identified and mapped Clark County high-density poverty neighborhoods in which fifty-percent or more of the population lives at or below the poverty level, as established by U. S. guidelines. Sections of the City of North Las Vegas, the City of Las Vegas and pockets of unincorporated Clark County are marked in red on the attached map to designate the highest density areas of impoverished residents. See the map at the end of this section.

Housing And Community Development

With the rapid expansion of the population in Clark County, comes the rapid growth in housing projects. According to Homebuilders Research, Inc., 25,230 new homes were built in 2003. Toward the end of 2005 the median sales price was \$320,000 and the median square footage was 1,964. The Center for Business and Economic Research at UNLV reports that the total number of households in Clark County is 592,865. The percentage of households who own is 65.9%, while the percentage of households who rent is 34.1%. The average monthly apartment rental rate \$737.89.



1 inch equals 85,000 feet
 Date: October 1, 2004



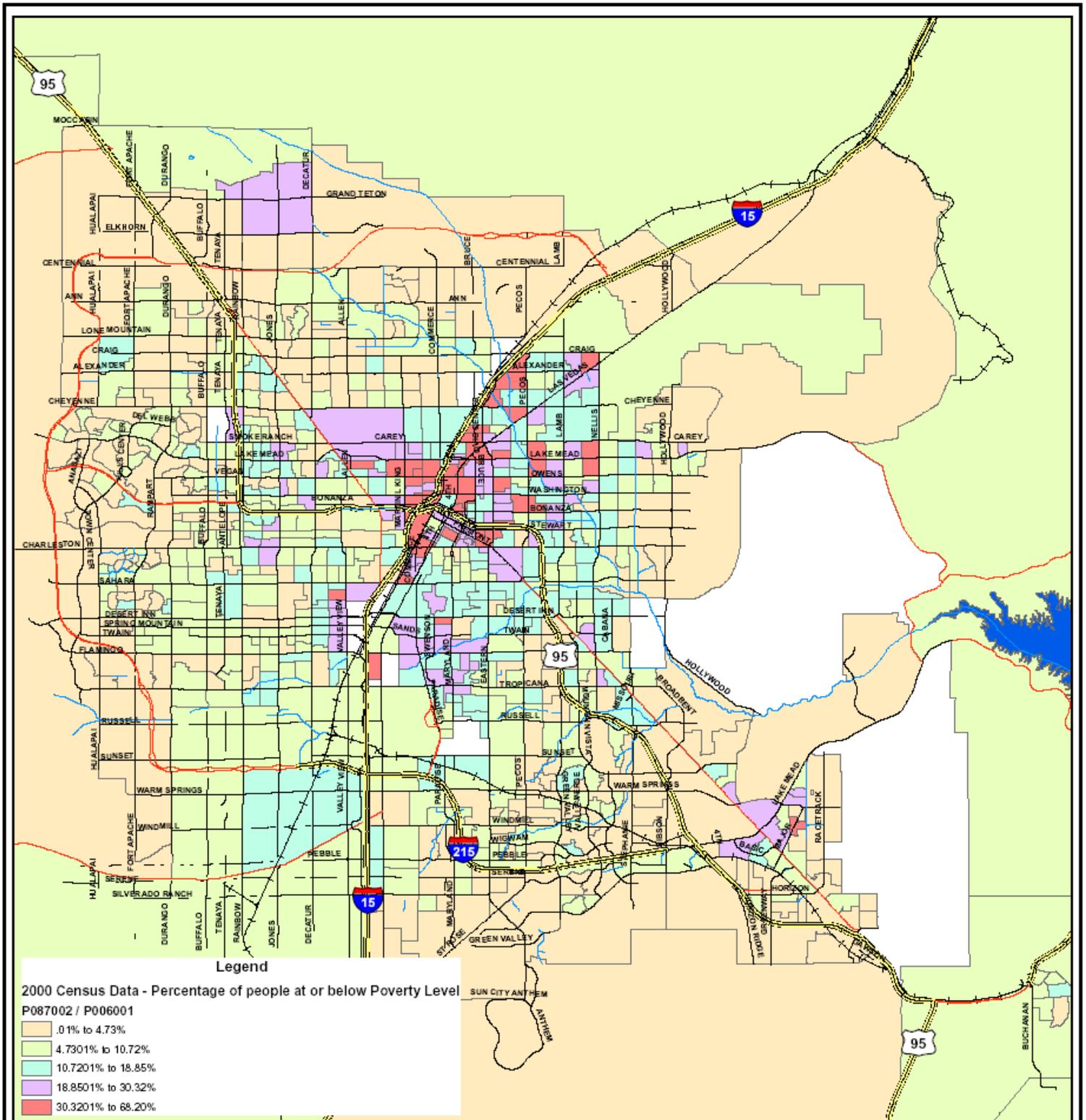
Clark County 2000 Census Data Poverty Level

Clark County, Nevada



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated hereon.



1 inch equals 20,000 feet

Date: October 1, 2004



Las Vegas Valley 2000 Census Data Poverty Level

Clark County, Nevada



Vicinity Map - No Scale

This information is for display purposes only. No liability is assumed as to the accuracy of the data delineated herein.

Mitigation Goals And Objectives

The Planning Team from each jurisdiction and URS Corporation reviewed the hazard profiles and initial risk assessment results as a basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. Objectives are statements that detail how a community's goals will be achieved. Typically, objectives define strategies or implementation steps to attain identified goals. The Planning Team and URS developed eight goals with associated objectives to reduce or avoid long-term vulnerabilities to the identified hazards.

Potential Mitigation Actions

In addition to developing goals and objectives, the Planning Team created a list of potential mitigation actions. Mitigation actions are activities, measures, or projects that help achieve the goals and objectives of a mitigation plan. Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. The Planning Team and URS reviewed the jurisdiction's risk assessment as a basis for developing potential mitigation actions. In addition, particular emphasis was placed on actions that reduced the effects of hazards on both new and existing buildings and infrastructure.

Overview of the Mitigation Goals, Objections, and Potential Actions

Developed by each jurisdiction and listed below are specific hazard mitigation goals and objectives as well as related potential actions. For each goal, one or more objectives have been identified that provide strategies to attain the goal. Where appropriate, each jurisdiction has identified a range of specific actions to achieve the objective and goal. The first three sets of goals, objectives, and actions were developed by the entire planning team for the planning area with the intention of the jurisdictions working together, coordinating with and supporting one another to ensure the stated goals, objectives, and actions are met.

Goal 1. Promote disaster-resistant future development.

Objective 1.A Encourage and facilitate the development or updating of comprehensive and master plans and zoning ordinances to limit development in hazard areas.

Action 1.A.1 Review the existing County/City's comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.

Action 1.A.2 Establish periodic monitoring and review of the County/City's comprehensive and master plans as well as zoning ordinances to determine effectiveness at preventing and mitigating hazards. Based on the results, recommend amendments as necessary.

Objective 1.B Encourage and facilitate the adoption of building codes that protect existing assets and minimize new development in hazard areas.

Action 1.B.1 Review existing building codes to determine if they adequately protect new development in hazard areas. Where feasible and necessary, recommend modification of codes to help mitigate hazards imposed on such development within the limits of state statutes, while also

respecting private property rights.

Action 1.B.2 Involve all organizations, to include private businesses, throughout the planning area in mitigation planning particularly during plan review and/or in preparation of a grant application.

Objective 1.C. Promote consistent enforcement of comprehensive and master plans, zoning ordinances, and building codes.

Action 1.C.1 Support the distribution of all development master plan, zone change, and subdivision applications to all applicable entities for review to ensure consistency with the adopted hazard mitigation plan.

Action 1.C.2 Each jurisdiction's Office of Emergency Management will provide training to applicable County/City staff of the adopted hazard mitigation plan and its requirements.

Action 1.C.3 Continue coordination between each jurisdiction's Office of Emergency Management and their county/city departments to identify and mitigate hazards associated with new development.

Goal 2. Promote public understanding, support and demand for hazard mitigation.

Objective 2.A Promote partnerships between the federal, state, county, local, tribal governments, public sector, private industry, civic and non-profit groups to identify, prioritize, and implement mitigation actions. In turn, publicize mitigation actions implemented.

Action 2.A.1 Proactively promote availability of Pre Disaster Mitigation and Hazard Mitigation Grant Program funds.

Action 2.A.2 Encourage and seek regional mitigation planning and projects.

Action 2.A.3 Educate county/city departments how to explore variety of funding sources.

Goal 3. Build and support local capacity to warn the public about emergency situations and assist in their response.

Objective 3.A Improve upon existing capabilities to warn the public of emergency situations.

Action 3.A.1 In coordination with Clark County Office of Emergency Management, test the ability of each jurisdiction's Office of Emergency Management to activate the Emergency Alert System (EAS) and emergency notification systems.

Objective 3.B Develop a program to enhance the safety of the residents of the planning area during an emergency.

Action 3.B.1 Develop an Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).

Action 3.B.2 Develop a Shelter-in-Place educational program for the County and each City.

Objective 3.C Educate the public to increase awareness of hazards and opportunities for mitigation actions.

Action 3.C.1 Clark County Regional Flood Control District (CCRFCDD) will increase their outreach program of public school curriculum materials to include a four-page teacher guide, eight-page student activity book and flood safety video (there is one school district for all of Clark County; more than 16,000 elementary-aged students participated in 2003/2004).

Action 3.C.2 CCRFCDD will increase its education program focused towards children

regarding the dangers of playing in washes and other flood control facilities (presentations were made to approximately 5,000 children in 45 area schools in 2003/2004).

- Action 3.C.3 Create or supplement public information sheets on natural hazards to include suggested mitigation actions for each jurisdiction's Office of Emergency Management.
- Action 3.C.4 Add mitigation actions to each jurisdiction's website.
- Action 3.C.5 Announce approval of plan with suggested mitigation actions through a variety of media outlets.
- Action 3.C.6 Develop mitigation brochure

The remaining five sets of goals, objectives, and actions are hazard-specific. Each action lists the corresponding jurisdiction with which the action is associated. Those actions that list the "Planning Area" have been selected as a potential mitigation actions by each of the participating jurisdictions: Clark County Unincorporated Area, City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas and City of Mesquite.

Goal 4. Reduce the possibility of damage and losses due to infestations and disease.

Objective 4.A Protect existing county/city assets, as well as new development, from the effects of infestations and diseases.

- Action 4.A.1 **(Planning Area)** Support the efforts of the CCHD to enforce Health-related regulatory requirements through on-going inspections of a variety of permitted establishments and implementation of environmental surveillance and enforcement programs as listed below:
 - Individual Sewage Disposal Systems
 - Solid Waste Program encompassing:
 - Underground storage tanks (UST)
 - Landfills, both open and closed
 - Waste storage bins
 - Compost Facilities
 - Conditionally-exempt small quantity generators of hazardous waste
 - Hazardous waste generators
 - Recycling centers
 - Material recovery facilities
 - Transfer stations
 - Waste tire haulers
 - Illegal dumping of any kind
 - Permanent and temporary food establishments and mobile vendors
 - Child care centers and family care homes
 - Tattoo, body piercing and permanent make-up establishments
 - Public or community swimming pools and spas
 - Public accommodation facilities
 - Mobile home and recreational vehicle parks

- Public and private schools
- Camps
- Institutions
 - Correctional facilities
 - Child haven
- Lead and mercury response
- Zoonotic disease surveillance and abatement
 - Vector control enforcement and abatement activities relating to:
 - Mosquitoes
 - Plague
 - Hantavirus
 - Bartonella
 - Raccoon Roundworm
 - Urban rodent surveillance

Action 4.A.2 **(Planning Area)** Support increased surveillance and development of more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, as well as restaurants, hotels/resorts and casinos located along “the strip”.)

Action 4.A.3 **(Planning Area, CCHD)** Participate and seek joint ventures and activities with multiple county/city departments and neighboring jurisdictions to develop exercises, training components and response procedures related to communicable disease outbreaks and vector infestations, such as mass release of tularemia, annual flu season, or mosquitoes carrying West Nile virus.

Goal 5. Reduce the possibility of damage and losses due to drought.

Objective 5.A Protect existing county/city assets, as well as new development, from the effects of drought.

Action 5.A.1 **(Planning Area)** Support all efforts by the Southern Nevada Water Authority to implement the drought response measures as defined in the SNWA Drought Plan 2005.

Action 5.B.2 **(Planning Area)** Support and encourage local developers to follow the Southern Nevada Water Authority and Southern Nevada’s Home Builders Association Water Smart Home Program guidelines to include Water Smart Home, Water Smart Neighborhood, and Water Smart Builder.

Action 5.B.3 **(Planning Area)** Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.

Goal 6. Reduce the possibility of damage and losses due to earthquake.

Objective 6.A Develop a comprehensive approach to reducing the possibility of damage and losses due to an earthquake.

Action 6.A.1 **(Clark County, City of Las Vegas)** In coordination with appropriate agencies, local, state, and federal, obtain site-specific studies to ascertain whether the zoning has been brought in line with the hazard, and how the

building stock, old and new, might fare if a credible earthquake were to occur with specific attention to lifelines: transportation corridors, buildings, and pipelines.

Action 6.A.2 **(Clark County)** Continue coordination and support to UNLV of their research into the earthquake hazard and risks in the Las Vegas Valley of which the outcomes will better prepare the valley's citizens and infrastructure for the threat of an earthquake.

Objective 6.B Educate the public regarding earthquake hazards and risks, and the steps that can be taken to minimize their effects.

Action 6.B.1 **(Planning Area)** Develop a comprehensive and multi-educational level outreach program that meets stated objectives.

Action 6.B.2 **(Planning Area)** Encourage interest by presenting site-specific information and the history of earthquakes in Southern Nevada, in an easy to read and understandable format.

Objective 6.C Encourage and facilitate broad and open technical interchange regarding earthquake safety in southern Nevada and efforts to inform citizens of earthquake hazards and mitigation opportunities.

Action 6.C.1 **(Planning Area)** Teach the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and attractive hands-on displays.

Action 6.C.2 **(Planning Area)** Interface with public agencies within the state to optimize public awareness of earthquake hazard and risk and mitigation activities.

Action 6.C.3 **(Planning Area)** Promote, coordinate, schedule, implement and conduct outreach activities to increase knowledge about earthquakes and enhance earthquake preparedness of the general public in southern Nevada.

Objective 6.D Protect existing county/city assets, as well as new development, from the effects of earthquake.

Action. 6.D.1 **(Planning Area)** Continue to enforce the Uniform Building Code (UBC) provisions pertaining to grading and construction relative to seismic hazards.

Action 6.D.2 **(Planning Area)** Continue to enforce UBC requirements for addressing liquefaction potential in the design of structures.

Action 6.D.3 **(Planning Area)** Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes.

Action 6.D.4 **(Planning Area)** Encourage utility companies to evaluate the seismic risk to their high-pressure transmission pipelines and implement mitigation measures, such as automatic shut-off valves.

Goal 7. Reduce the possibility of damage and losses due to flood and flash flooding.

Objective 7.A Protect existing county/city assets, as well as new development, from the effects of floods within the 100-year floodplain.

Action 7.A.1 **(Planning Area)** Encourage the maximum use of natural drainage ways and discourage the disruption of natural flowage patterns.

Action 7.A.2 **(Planning Area)** Require engineered floodplain and hydrologic analysis to be prepared for new development projects within or directly adjacent to 100-year floodplains.

Action 7.A.3 **(Planning Area)** Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.

Action 7.A.4 **(Clark County)** Maintain and continue to develop the CCRFCD's Flood Safety Advertising Campaign that warns motorists about the dangers of flash flooding through advertising on billboards, flood safety messages airing on radio traffic reports, television commercials and newspaper and magazine advertisements.

Objective 7.B Minimize repetitive losses caused by flooding.

Action 7.B.1 **(Clark County PUBLIC UTILITY: Moapa Valley Water District)** Clark County Public Works and the Moapa Valley Water District will work in concert to improve flood control measures within and adjacent to the unincorporated community of Moapa Valley, NV.

Action 7.B.2 **(City of Henderson Public Utility)**
The City of Henderson Department of Utility Services will work to implement flood control measures to eliminate or limit the risk of flood damage to potentially vulnerable sewer and reclaimed water lines within it's jurisdiction.

Goal 8. Reduce the possibility of damage and losses due to wildfire.

Objective 8.A Protect existing county/city assets, as well as future development, from the effects of wildfires.

Action 8.A.1 **(Clark County)** Continue existing intergovernmental agreement between the county and the Fire Management Division of the State Land Department for assistance in the provision of emergency services within each other's jurisdictions.

Action 8.A.2 **(Clark County, the Cities of Boulder City, Henderson, North Las Vegas and Mesquite)** Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.

Action 8.A.3 **(The Cities of Boulder City, Henderson, North Las Vegas and Mesquite)** Cities in the county will enter into intergovernmental agreements for wildfire prevention/control with state and federal land management agencies that are adjoining or within their jurisdictions.

Action Plan

Methodology

As listed above under the Overview of the Mitigation Goals, Objections, and Potential Actions, each jurisdiction identified potential mitigation actions that will assist them in mitigating the impact of natural and human-caused hazards. The DMA 2000 requires the evaluation, selection, and prioritization of the potential mitigation actions. The goal of each jurisdiction was to identify the top actions (approximately 10) they feel they can meet during this planning period (five years). To identify the top mitigation actions a two-step process was followed.

Step One: Identify the Top Actions. To identify an action as a top action each Planning Team considered the following questions:

1. Does the action mitigate/protect assets identified as vulnerable in the Risk Assessment?
2. Is the action economically feasible (either through a grant or current funding sources)?
3. Are proper laws, ordinances, and resolutions in place to implement the action?
4. Is there enough political and public support to implement the action and ensure its success?
5. Are there adequate personnel and administrative capabilities necessary to implement the action (staffing, funding, technical support, maintenance requirements, etc.)? If not, would a grant or current funding resources provide this support?

Step Two: Prioritize actions. After the local Planning Team identified the top actions, they prioritized the actions based on a ranking system of high, medium, and low. The following considerations for this process included:

- Benefits versus costs
- Ease of implementation (can the action be absorbed in to the current workflow or with minor adjustments)
- Multi-objective actions (will the implementation of this action support more than one objection as listed in the Goals, Objectives and Actions)
- Time (time required versus time available)

Additionally, each Planning Team identified how the action would be implemented and administered; including which departments or agencies would be responsible, existing and potential funding sources, and time frame. The final action plan is outlined in Tables 53-58.

Table 53: Implementation Strategy – Clark County Unincorporated Area

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 1.A.1 Review the existing County/City’s comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development 	Existing funding & staff On-going	High	Limiting development in hazard areas will reduce losses of life and property.
2. 1.C.3 Continue coordination between each jurisdiction’s Office of Emergency Management and their county/city departments to identify and mitigate hazards associated with new development.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development 	Existing funding & staff On-going	High	Inclusion of all departments associated with mitigation planning will reduce losses countywide.
3. 2.A.2 Encourage and seek regional mitigation planning and projects.	<ul style="list-style-type: none"> • Emergency Management • Clark County Health District • Public Works • Flood Control • Flood Control District • Transportation 	HMGP or PDM funds On-going as is possible and more so as the funds become available	High	Regional projects increase the impact of the project while decreasing the cost to the individual participants.
4. 3.A.1 In coordination with Clark County Office of Emergency Management test the ability of each jurisdiction’s Office of Emergency Management to activate the Emergency Alert System (EAS).	<ul style="list-style-type: none"> • Emergency Management 	Existing funding & staff On-going	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
5. 3.B.1 Develop a Mass Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).	<ul style="list-style-type: none"> • Emergency Management • Region Transportation Commission • Clark County School District • Nevada Department of Transportation 	PDM grant or General Funds 2007	High	There are relatively few to no natural hazards within the Las Vegas Valley that necessitate mass evacuation. However, an incident involving chemicals or a bio-agent could require an immediate, coordinated mass evacuation of such a magnitude that hours lost could equal lives lost. Supports action 4.A.3.
6. 4.A.3 Participate and seek joint ventures and activities with multiple county/city departments and neighboring jurisdictions to develop exercises, training components and response procedures related to a bio-agent dispersal, communicable disease outbreaks and vector infestations, such as West Nile Virus and the mosquitoes that carry it, annual flu season, etc.	<ul style="list-style-type: none"> • Emergency Management (Co., City, State) • EMS • Fire Department • Police/Sheriff 	UASI or PDM grant 2006-2009	High	Prudent regional preparation is warranted given there are 1.6 million residents valley wide and thousands of visitor’s each year.

Table 53: Implementation Strategy – Clark County Unincorporated Area

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
7. 4.A.2 Support increased surveillance and development of more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, as well as restaurants, hotels/resorts and casinos located along “the strip”.)	<ul style="list-style-type: none"> Clark County Health District Emergency Management Fire Department Private Sector 	Existing funding & staff On-going	High	Supports and builds the foundation for Action 4.A.3.
8. 7.B.1 (Clark County PUBLIC UTILITY: Moapa Valley Water District) Clark County Public Works and the Moapa Valley Water District will work in concert to improve flood control measures within and adjacent to the unincorporated community of Moapa Valley, NV	<ul style="list-style-type: none"> Clark County Public Works Moapa Valley Water District 	HMGP funding 2006	High	Actively engages in regional flood control mitigation planning and projects.
9. 7.A.3 Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.	<ul style="list-style-type: none"> Planning & Development Local Developers 	HMGP grants, General Fund and/or private funding On-going	Medium	Appropriate uses of floodways will ensure the area is not left vacant for possible vandalism but developed in a way not to put lives and structures in harms way.
10. 8.A.2 Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.	<ul style="list-style-type: none"> Fire Department Planning & Development 	Existing funding & staff On-going	Medium	Enforcing appropriate safety zones will protect lives and property in those areas prone to wildfires throughout the Las Vegas Valley.
11. 5.B.3 Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.	<ul style="list-style-type: none"> Planning & Development Parks & Recreation Facilities Management 	Existing funding & staff On-going	Medium	Prudent action that supports the Southern Nevada Water Authority Drought Plan.
12. 6.D.1 Continue to enforce the Uniform Building Code (UBC) provisions pertaining to grading and construction relative to seismic hazards.	<ul style="list-style-type: none"> Planning & Development (Building Inspectors) 	Existing funding & staff On-going	Low	This action corresponds to the greater Las Vegas Valley earthquake risk, probability and magnitude.

Table 54: Implementation Strategy – City of Boulder City

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 1.A.1 Review the existing County/City’s comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Spring 2006 	High	Limiting development in hazard areas will reduce losses of life and property.
2. 3.A.1 In coordination with Clark County Office of Emergency Management, test the ability of each jurisdiction’s Office of Emergency Management to activate the Emergency Alert System (EAS).	Fire Dept/Emergency Management	<ul style="list-style-type: none"> Existing staff and budget Spring 2006 	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
3. 6.D.1 Continue to enforce the UBC provisions pertaining to grading and construction relative to seismic hazards.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Fall of 2005 	High	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.
4. 6.D.2 Continue to enforce UBC requirements for addressing liquefaction potential in the design of structures.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Ongoing 	High	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.
5. 6.D.4 Encourage utility companies to evaluate the seismic risk to their high-pressure transmission pipelines and implement mitigation measures, such as automatic shutoff valves.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Spring 2006 	High	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.
6. 2.A.3 Educate county/city departments how to explore a variety of funding sources.	Emergency Management	<ul style="list-style-type: none"> Existing staff and budget Spring 2006 	High	City departments that aggressively seek grant funds for mitigation planning and projects promote the development and safety of the City residents and visitors.
7. 1.C.2 [Planning Director] will provide training to applicable City staff of the adopted hazard mitigation plan and its requirements.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Summer 2006 	High	Providing training to applicable city staff encourages additional mitigation planning and the identification of mitigation projects.
8. 1.A.2 Establish periodic monitoring and review of the County/City’s comprehensive and master plans and zoning ordinances to determine effectiveness at preventing and mitigating hazards. Based on the results, recommend amendments as necessary.	Planning Dept	<ul style="list-style-type: none"> Existing staff and budget Ongoing 	Medium	City departments working cohesively to limit development in hazard areas will reduce losses of life and property.
9. 1.C.3 Continued coordination between each jurisdiction’s Office of Emergency Management and their county/city departments to identify and mitigate hazards associated with new developments.	Emergency Management	<ul style="list-style-type: none"> Existing staff and budget Ongoing 	Medium	Inclusion of all departments associated with mitigation planning will reduce losses citywide.

Table 54: Implementation Strategy – City of Boulder City

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
10. 1.B.1 Review existing building codes to determine if they adequately protect new development in hazard areas. Where feasible and necessary, recommend modification of codes to help mitigate hazards imposed on such development within the limits of state statutes, while also respecting private property rights.	Planning Dept	<ul style="list-style-type: none"> • Existing staff and budget • Ongoing 	Medium	This action supports limiting development in identified hazard areas, which will reduce losses to life and property.

Table 55: Implementation Strategy – City of Henderson

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 1.A.1 Review the existing County/City’s comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development • Public Works – Flood Control 	Existing funding & staff On-going	High	Limiting development in hazard areas will reduce losses of life and property.
2. 2.A.2 Encourage and seek regional mitigation planning and projects.	<ul style="list-style-type: none"> • Emergency Management • Clark County Health District • Public Works • Flood Control • Flood Control District • Transportation 	HMGP or PDM funds On-going as is possible and more so as the funds become available	High	Regional projects increase the impact of the project while decreasing the cost to the individual participants.
3. 3.A.1 In coordination with Clark County Office of Emergency Management, test the ability of each jurisdiction’s Office of Emergency Management to activate the Emergency Alert System (EAS).	<ul style="list-style-type: none"> • Emergency Management 	Existing funding & staff On-going	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
4. 3.B.1 Develop a Mass Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).	<ul style="list-style-type: none"> • Emergency Management • Clark County Regional Transportation Commission • Clark County School District • Nevada Department of Transportation • Public Works – Traffic Division 	PDM grant or General Funds 2007	High	There are relatively few to no natural hazards within the Las Vegas Valley that necessitate mass evacuation. However, an incident involving chemicals or a bio-agent could require an immediate, coordinated mass evacuation of such a magnitude that hours lost could equal lives lost.
5. 7.A.2 Require engineered floodplain and hydrologic analysis to be prepared for new development projects within or directly adjacent to 100-year floodplains.	<ul style="list-style-type: none"> • Flood Control • Clark County Flood Control District 	PDM grant or General Funds 2006	High	Additional scientific analysis that will support limiting development in hazard areas will reduce losses of life and property.
6. 8.A.2 Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.	<ul style="list-style-type: none"> • Fire Department • Planning & Development 	Existing funding & staff On-going	Medium	Enforcing appropriate safety zones will protect lives and property in those areas prone to wildfires throughout the City and possibly adjacent communities.

Table 55: Implementation Strategy – City of Henderson

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
7. 5.A.1 Support all efforts by the Southern Nevada Water Authority to implement the drought response measures as defined in the SNWA Drought Plan 2005.	<ul style="list-style-type: none"> • Planning & Development • Utilities • Facilities Management 	Existing funding & staff On-going	Medium	Prudent action that supports the Southern Nevada Water Authority Drought Plan.
8. 7.B.2 Implement flood control measures to eliminate or limit the risk of flood damage to potentially vulnerable sewer and reclaimed water lines within its jurisdiction.	<ul style="list-style-type: none"> • Department of Utility Services 	HMGP or PDM grant funds; existing funding and staff On-going	High	Preventing damage to sewer and reclaimed water pipes avoids potential environmental contamination and cleanup. Public Health precaution as well.

Table 56: Implementation Strategy – City of Las Vegas

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 1.A.1 Review the existing County/City’s comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development 	Existing funding & staff On-going	High	Limiting development in hazard areas will reduce losses of life and property.
2. 2.A.2 Encourage and seek regional mitigation planning and projects.	<ul style="list-style-type: none"> • Emergency Management • Clark County Health District • Public Works • Flood Control • Flood Control District • Transportation 	HMGP or PDM funds On-going as is possible and more so as the funds become available	High	Regional projects increase the impact of the project while decreasing the cost to the individual participants.
3. 3.A.1 In coordination with Clark County Office of Emergency Management test the ability of each jurisdiction’s Office of Emergency Management to activate the Emergency Alert System (EAS).	<ul style="list-style-type: none"> • Emergency Management 	Existing funding & staff On-going	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
4. 3.B.1 Develop a Mass Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).	<ul style="list-style-type: none"> • Emergency Management • Region Transportation Commission • Clark County School District • Nevada Department of Transportation 	PDM grant or General Funds 2007	High	There are relatively few to no natural hazards within the Las Vegas Valley that necessitate mass evacuation. However, an incident involving chemicals or a bio-agent could require an immediate, coordinated mass evacuation of such a magnitude that hours lost could equal lives lost.
5. 3.B.2 Develop a Shelter-in-Place educational program for the County and each City.	<ul style="list-style-type: none"> • Fire Department • Clark County School District • Emergency Management • Clark County Health District 	UASI grant, PDM grant or General Funds 2007	High	An incident involving chemicals or a bio-agent could require immediate action by the public as directed by the local fire department. This action is most effective in coordination with Action 3. A.1.
6. 4.A.2 Support increased surveillance and development of more stringent requirements at high-risk facilities, (i.e., day-care centers, hospitals, nursing homes, schools, as well as restaurants, hotels/resorts and casinos.	<ul style="list-style-type: none"> • Clark County Health District • Emergency Management • Fire Department • Private Sector 	Existing funding & staff On-going	High	Supports and builds the foundation for Action 4.A.3.

Table 56: Implementation Strategy – City of Las Vegas

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
7. 4.A.3 Participate and seek joint ventures and activities with multiple county/city departments and neighboring jurisdictions to develop exercises, training components and response procedures related to a bio-agent dispersal, communicable disease outbreaks and vector infestations, such as West Nile Virus and the mosquitoes that carry it, annual flu season, etc.	<ul style="list-style-type: none"> • Emergency Management (Co., City, State) • EMS • Fire Department • Police/Sheriff 	UASI or PDM grant 2006-2009	High	Prudent regional preparation is warranted given there are over 1.6 million residents valley wide and thousands of visitor's each year.
8. 7.A.3 Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.	<ul style="list-style-type: none"> • Planning & Development • Local Developers 	HMGP grants, General Fund and/or private funding On-going	Medium	Appropriate uses of floodways will ensure the area is not left vacant for possible vandalism but developed in a way not to put lives and structures in harms way.
9. 5.A.1 Support all efforts by the Southern Nevada Water Authority to implement the drought response measures as defined in the SNWA Drought Plan 2005.	<ul style="list-style-type: none"> • Planning & Development • Facilities Management 	Existing funding & staff On-going	Medium	Prudent action that supports the Southern Nevada Water Authority Drought Plan.
10.6.A.1 In coordination with appropriate agencies, local, state, and federal, obtain site-specific studies to ascertain whether the zoning has been brought in line with the hazard, and how the building stock, old and new, might fare if a credible earthquake were to occur with specific attention to lifelines: transportation corridors, buildings, and pipelines.	<ul style="list-style-type: none"> • Planning Dept • University of Nevada Las Vegas/Reno 	Existing staff and budget 2006/07	Low	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.

Table 57: Implementation Strategy – City of North Las Vegas

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 3.A.1 In coordination with Clark County Office of Emergency Management test the ability of each jurisdiction’s Office of Emergency Management to activate the emergency alert system (EAS).	<ul style="list-style-type: none"> • City of North Las Vegas Emergency Management • Clark County Office of Emergency Management 	Existing staff and budget 2006	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
4. 3.B.1 Develop a Mass Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).	<ul style="list-style-type: none"> • Emergency Management • Region Transportation Commission • Clark County School District • Nevada Department of Transportation 	PDM grant or General Funds 2007	High	There are relatively few to no natural hazards within the Las Vegas Valley that necessitate mass evacuation. However, an incident involving chemicals or a bio-agent could require an immediate, coordinated mass evacuation of such a magnitude that hours lost could equal lives lost.
3. 3.B.2 Develop a shelter-in-place educational program for the County and each City.	<ul style="list-style-type: none"> • Fire Department • Clark County School District • Emergency Management • Clark County Health District 	UASI grant, PDM grant or General Funds 2007	High	An incident involving chemicals or a bio-agent could require immediate action by the public as directed by the local fire department. This action is most effective in coordination with Action 3. A.1.
4. 3.C.3 Create or supplement public information sheets on natural hazards to include suggested mitigation actions for each jurisdiction’s Office of Emergency Management.	<ul style="list-style-type: none"> • Pubic Information • Emergency Management 	Existing staff + \$5,000 in PDM grants or general fund 2006	Medium	Public information regarding family preparedness for local natural hazards is invaluable.
5. 3.C.4 Add mitigation actions to each jurisdiction’s website.	<ul style="list-style-type: none"> • Information Technology • Public Information • Emergency Management 	Existing staff and budget On-going	Medium	Information provided to the public regarding the mitigation actions planned by the jurisdiction allows an opportunity for the public to become more involved in their local government.
6. 4.A.3 Participate and seek joint ventures and activities with multiple city departments and neighboring jurisdictions to develop exercises, training components and response procedures related to a bio-agent dispersal, communicable disease outbreaks and vector infestations, such as West Nile Virus, annual flu season, etc.	<ul style="list-style-type: none"> • Emergency Management • In conjunction with various agencies and jurisdictions. 	Current staff, UASI, HMGP or PDM grant 2007-2008	High	Prudent regional preparation is warranted given there are over 1.6 million residents valley wide and thousands of visitor’s each year.
7. 6.C.1 Teach the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and attractive hands-on displays.	<ul style="list-style-type: none"> • Emergency Management 	Current staff + \$15,000 in PDM grants or general fund On-going	Low	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.

Table 57: Implementation Strategy – City of North Las Vegas

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
8. 6.C.2 Interface with public agencies within the state to optimize public awareness of earthquake hazard and risk and mitigation activities.	<ul style="list-style-type: none"> • Emergency Management 	Current staff + \$20,000 in PDM grants or general fund 2006 and on-going	Low	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.
9. 6.C.3 Promote, coordinate, schedule, implement and conduct outreach activities to increase knowledge about earthquakes and enhance earthquake preparedness of the general public in southern Nevada.	<ul style="list-style-type: none"> • Emergency Management 	Current staff + \$10,000 in PDM grants or general fund 2007	Low	This action is consistent to the greater Las Vegas Valley earthquake risk, probability and magnitude.

Table 58: Implementation Strategy – City Mesquite

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
1. 1.A.1 Review the existing County/City’s comprehensive and master plans and zoning ordinances to determine how these documents help limit development in hazard areas. Recommend modifications with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development 	Existing funding & staff On-going	High	Limiting development in hazard areas will reduce losses of life and property.
2. 1.C.3 Continue coordination between each jurisdiction’s Office of Emergency Management and their county/city departments to identify and mitigate hazards associated with new development.	<ul style="list-style-type: none"> • Emergency Management • Planning & Development 	Existing funding & staff On-going	High	Inclusion of all departments associated with mitigation planning will reduce losses citywide.
3. 2.A.2 Encourage and seek regional mitigation planning and projects.	<ul style="list-style-type: none"> • Emergency Management • Clark County Health District • Public Works • Flood Control • Flood Control District • Transportation 	HMGP or PDM funds On-going as is possible and more so as the funds become available	High	Regional projects increase the impact of the project while decreasing the cost to the individual participants.
4. 3.A.1 In coordination with Clark County Office of Emergency Management, test the ability of each jurisdiction’s Office of Emergency Management to activate the Emergency Alert System (EAS).	<ul style="list-style-type: none"> • Emergency Management 	Existing funding & staff On-going	High	Regular drilling of this procedure could save lives & property by providing an immediate, coordinated warning to the public.
5. 3.B.1 Develop a Mass Evacuation strategy for the County and each City to include the Regional Transportation Commission (RTC), Clark County School District as well as Nevada Department of Transportation (NDOT).	<ul style="list-style-type: none"> • Emergency Management • Region Transportation Commission • Clark County School District • Nevada Department of Transportation 	PDM grant or General Funds 2007	High	There are relatively few to no natural hazards within the Las Vegas Valley that necessitate mass evacuation. However, an incident involving chemicals or a bio-agent could require an immediate, coordinated mass evacuation of such a magnitude that hours lost could equal lives lost.
6. 7.A.2 Require engineered floodplain and hydrologic analysis to be prepared for new development projects within or directly adjacent to 100-year floodplains.	<ul style="list-style-type: none"> • Flood Control • Clark County Flood Control District 	PDM grant or General Funds 2006	High	Additional scientific analysis that will support limiting development in hazard areas, which will reduce losses of life and property.
7. 8.A.2 Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.	<ul style="list-style-type: none"> • Fire Department • Planning & Development 	Existing funding & staff On-going	Medium	Enforcing appropriate safety zones will protect lives and property in those areas prone to wildfires throughout the City and possibly adjacent communities.

Table 58: Implementation Strategy – City Mesquite

Action	Responsible Agency	Funding & Timeframe/Deadline	Priority	Economic Justification
8. 5.B.3 Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.	<ul style="list-style-type: none"> • Planning & Development • Facilities Management 	Existing funding & staff On-going	Medium	Prudent action that supports the Southern Nevada Water Authority Drought Plan.

Implementation Through Existing Planning Mechanisms

After the adoption of the hazard mitigation plan by each participating jurisdiction, each Planning Team will ensure that hazard mitigation plan, in particular the action plan, is incorporated into existing planning mechanisms. Each Planning Team will achieve this by undertaking the following activities.

- Conduct a review of the regulatory tools to assess the integration of the mitigation strategy. These regulatory tools include:
 - General, Master or Comprehensive Plan of each jurisdiction
 - Municipal Code of each jurisdiction
 - Fire Department Master Plan of each jurisdiction
- Each Planning Team will continue to work with pertinent departments and associated agencies to increase awareness of the hazard mitigation plan and provide assistance in integrating the mitigation strategy (including the action plan) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.

Plan Maintenance and Evaluation

Overview

Coordination of plan development and updates will be led by the Clark County Office of Emergency Management in coordination with all Clark County agencies, participating city departments, and public and private organizations that have participated in the preparation of this current plan. The Planning Team will conduct informal updates annually with a formal update occurring every five years, per DMA 2000 guidance, to include forwarding all formal updates to FEMA. Training and evaluation of the plan for accuracy, reliability, and functionality is a continuous process facilitated by informal annual reviews, new information, and emergencies themselves as they occur. All sections of this plan are to be evaluated against these criteria and activities, and then updated as required. Clark County, City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas, City of Mesquite and the University Nevada, Las Vegas will continue with collaborative efforts to support the maintenance and accuracy of the Hazard Mitigation Plan.

Continued Public Involvement

Proposed formal changes to this plan will be posted on each jurisdiction's website; comments by the public will be encouraged and directed to each jurisdiction's Emergency Management Coordinator. The Clark County Office of Emergency Management will schedule informal annual reviews with this original Planning Team. Among other maintenance activities, personnel changes can be made during these informal annual reviews in order to keep this Planning Team current and active. The Department of Environmental Studies has volunteered to recruit graduate students to use the Mitigation Plan as the basis for their graduate studies to research and evaluate hazards in the Clark County planning area and to update and explore additional hazard mitigation strategies.

APPENDIX

Special thanks to the following for contributions of valuable data for this plan:

University of Nevada, Las Vegas
Environmental Studies
Center for Urban Planning
Geosciences
Public Health
Civil & Environmental Engineering
Center for Business and Economic research

Various departments at the cities of Las Vegas, Henderson, North Las Vegas, Mesquite and Boulder City

Various departments at Clark County

Clark County Health District
Clark County Regional Flood Control District
Clark County Water Reclamation
Regional Transportation Commission of Southern Nevada

State of Nevada Division of Health
State of Nevada Division of Emergency Management

Southwest Gas
Nevada Power
Overton Power District
Southern Nevada Water Authority

Nevada Bureau of Mines and Geology
Nevada Earthquake Safety Council
Homebuilders Research, Inc.

REFERENCES

Clark County General Plan (Comprehensive Planning)
Clark County Emergency Operations Plan (Office of Emergency Management)
Clark County Hazardous Materials Response Plan (Office of Emergency Management)
Clark County Health District, Clark County, Nevada June 30, 2004 (Comprehensive Annual Financial Report)
Clark County Regional Flood Control District Master Plan (Regional Flood Control District)
Clark County Regional Flood Control District Annual Report 2003/04
Clark County GISMO
Clark County Assessor's Office
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HAZUS 99 Estimated Annualized Earthquake Losses for the United States, FEMA-366, February 2001
How-To Guide #1: Getting Started: Building Support For Mitigation Planning (FEMA 2002c)
How-To Guide #2: Understanding Your Risks – Identifying Hazards and Estimating Loss Potential (FEMA 2001)
How-To Guide #3: Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies (FEMA 2003a)
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Nevada Community Wildfire Risk/Hazard Assessment Project June 2005, The Nevada Fire Safe Council.

U.S. Census Bureau

Bureau of Land Management

Hazard Mitigation Planning Team, Initial Roster

Ed Hulbert, Boulder City, Fire Dept. Office of Emergency Management, Emergency Management Coordinator
Scott Hansen, City of Boulder City Public Works Director (includes Flood Control)
Tom Finn, City of Boulder City Chief of Police
Roger Hall, Parks & Recreation Department Director
Tim McAndrew, City of Las Vegas, Office of Emergency Management, Emergency Manager
Rick Diebold, City of Las Vegas Emergency Management
Richard Wells, City of Las Vegas, IT, GIS Analyst
Stephan Greg, City of North Las Vegas, Engineering, Backflow Leader
Pat Lofft, City of North Las Vegas, Office of Emergency Management, EMC
Ziaohui Yu, City of North Las Vegas, Engineering, Engineer Assist
David Edwards, Clark County, CEIT, Assistant Director
Ann Elquist, Clark County, GISMO, GIS Analyst
Carolyn Levering, Clark County, Office of Emergency Management, Plans & Ops Coordinator
Jim O'Brien, Clark County, Office of Emergency Management, Manager
Michael Popp, Clark County, CMO, Management Analyst
Clint Woods, Clark County, GISMO, GIS Manager
Jane Shunney, Clark County Health District, Manager, Office of Public Preparedness
Nancy Hall, Clark County Health District, Environmental Health Division
Patricia Rowley, Clark County Health District, Epidemiology Manager, Office of Epidemiology
Gale Fraser, Clark County Flood Control
Cameron Harper, Clark County Public Works
Jeff Mills, Regional Transportation Commission of Southern Nevada
Fidel Calixto, Regional Transportation Commission of Southern Nevada
Michael Cyphers, Henderson, Office of Emergency Management, Emergency Manager
Brendan Lee, Henderson, GIS, GIS Analyst
Derek Hughes, Mesquite, Office of Emergency Management, Emergency Manager
Gavin Scott, Mesquite, GIS, GIS Analyst
Rick Martin, Nevada, DEM, Planner
David Hassenzahl, University of Nevada, Las Vegas, Environmental Studies, Assistant Professor
Christine Herndon, University of Nevada, Las Vegas, Environmental Studies, Graduate Student
Melanie Luna, University of Nevada, Las Vegas, Environmental Studies, Graduate Student
Brad Huza, General Manager, Mesquite Valley Water District

Hazard Mitigation Planning Team, Roster

Ken Evans, Citizen of Las Vegas
Debra Barnum, Citizen of Las Vegas
Melvin Henkin, Citizen of Las Vegas
Carolyn Huhn, Citizen of Las Vegas
Mike Petullo, Citizen of Las Vegas
Greg Toussaint, Citizen of Las Vegas
Kathy Gentile, City of Las Vegas
Bette Craik, Citizen of Las Vegas
Juanita Robeson, Citizen of Las Vegas
Page Spencer, Citizen of Las Vegas
Phil McKay, Citizen of Las Vegas
George Hamblet, Citizen of Las Vegas
Richard Walko, American Red Cross
Rosemary Hall, Citizen of Las Vegas
Ed Ruttan, American Red Cross
Penny Towers, American Red Cross
Jim McMillion, Citizen of Las Vegas

Hazard Mitigation Planning Team, Symposium Roster

Elizabeth Ashby, State of Nevada Division of Emergency Management, Public Assistance Officer
Rodney Allison, Clark County Comprehensive Planning, Assistant Planning Manager
Mario Bermidez, Clark County Comprehensive Planning, Planning Manager
Richard Brenner, Clark County Fire Department, Hazardous Materials Coordinator
Delores Broetzman, Clark County Office of Emergency Management, Grants Analyst
Chris Dingell, Clark County Comprehensive Planning, Senior Planner
Carolyn Levering, Clark County Office of Emergency Management, Plans and Operations Coordinator
Akil Manley, Clark County Administrative Services, Management Analyst
Sharon Rice, Clark County Information Technology, Sr. GIS Analyst
Larry Ashley, University of Nevada Las Vegas, Undergraduate Coordinator
Jacimaria Batista, Civil & Environmental Engineering, University of Nevada Las Vegas, Associate Professor
Renee Brown, Center for Urban Planning (CUP), University of Nevada Las Vegas, Events Coordinator
Brenda Buck, Geology Seismic, University of Nevada Las Vegas, Associate Professor
Tim Bungam, Health Promotion, Epidemiology, Exercise Behavior, and Pedestrian Safety
Gaye Cote, Geoscience Administration, University of Nevada Las Vegas, Earthquake Outreach Coordinator
Patrick Drohan, Geosciences, University of Nevada Las Vegas, GIS Analyst
Shawn Gerstenberger, School of Public Health, University of Las Vegas, Researcher
Mary Guinan, Public Health, School of Public Health, Acting Dean
Dave Hassenzahl, University of Nevada Las Vegas, Environmental Studies
David James, Civil & Environmental Engineering, University of Nevada Las Vegas, Associate Professor
Barbara Luke, Civil & Environmental Engineering, University of Nevada Las Vegas, Associate Professor
Pat Markos, Counseling, University of Nevada Las Vegas, Associate Professor
Susan Mears, Center for Urban Planning (CUP), University of Nevada Las Vegas, Director
Shashi Nambisan, Civil & Environmental Engineering, Transportation, Director, Transportation Research Center
Helen Neill, Environmental Studies, University of Nevada Las Vegas, Chair
Tom Piechota, Civil & Environmental Engineering, University of Nevada Las Vegas, Professor
Ron Sack, Civil & Environmental Engineering, University of Nevada Las Vegas, Professor
Cathy Snelson, Geosciences, University of Nevada Las Vegas, Assistant Professor
Wanda Taylor, Geosciences, University of Nevada Las Vegas, Researcher
Harry Teng, Civil & Environmental Engineering, University of Nevada Las Vegas, Professor

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Adoption Resolution – Clark County

**CLARK COUNTY BOARD OF COMMISSIONERS
AGENDA ITEM**

Issue: Clark County Multi-Jurisdictional Hazard Mitigation Plan	Back-up:
Petitioner: Donald G. Burnette, Chief Administrative Officer	Clerk Ref. #
Recommendation: That the Board of County Commissioners approve and adopt the Clark County Multi-Jurisdictional Hazard Mitigation Plan as developed in coordination with Clark County, the City of Boulder City, the City of Henderson, the City of Las Vegas, the City of North Las Vegas, and the City of Mesquite; and authorize the Chairman to sign the Letter of Promulgation. (The Plan is available in the County Clerks Office, Commission Division)	

FISCAL IMPACT:

None.

BACKGROUND:

Recognizing the need to develop a plan to effectively reduce the vulnerability the effects of disaster in the County and its surrounding areas, the Clark County Multi-Jurisdictional Hazard Mitigation Plan is the product of the combined effort between Clark County, the City of Boulder City, the City of Henderson, the City of Las Vegas, the City of North Las Vegas, and the City of Mesquite. This plan was created to establish a strategy to implement improvements and programs to reduce community impacts in the event of a natural disaster, the Clark County Multi-Jurisdictional Hazard Mitigation Plan was prepared pursuant to the federal Disaster Mitigation Act of 2000 (Public Law 106-390).

The current Hazard Mitigation Plan builds on programs currently employed by the County and cities. By forming this partnership, the County and cities hope to achieve a greater level of resiliency and avoid major disruptions and upheaval associated with a disaster.

Under Clark County Code Chapter 3.04, the Board is authorized to promote and secure the safety and welfare of the civilian population through such plans as the Clark County Multi-Jurisdictional Hazard Mitigation Plan.

The Hazard Mitigation Plan is available for review in the County Clerk's Office, Commission Division.

APPROVED/ADOPTED/AUTHORIZED AS RECOMMENDED

Respectfully submitted,



DONALD G. BURNETTE
Chief Administrative Officer
/sbf

Cleared for Agenda

9/19/06 BK

Agenda Item # 145

Adoption Resolution – Clark County



RORY REID
Chairman

Board of County Commissioners

CLARK COUNTY GOVERNMENT CENTER
500 S GRAND CENTRAL PKY
PO BOX 551601
LAS VEGAS NV 89155-1601
(702) 455-3500 FAX: (702) 383-6041

September 2006

LETTER OF PROMULGATION

The essential role of government is service. This is particularly true with respect to those services that are necessary for the protection of lives and property.

This document, the Clark County Multi-Jurisdictional Hazard Mitigation Plan, describes the vulnerabilities our collective community faces with respect to identified hazards and the mechanisms currently in place and planned for future implementation to mitigate or eliminate those vulnerabilities

The plan was developed by Clark County's five incorporated jurisdictions within the county as well as appropriate associated agencies, universities, private, non-profit, local, county, state, and federal governments under the coordination of the Division of Emergency Management and Homeland Security. It was formulated to serve as a strategy to implement improvements and programs to reduce community impacts in the event of a natural disaster for effective use of the County's resources and capabilities whenever emergency situations threaten the welfare of Clark County residents or guests.

I hereby encourage all who have a role in emergency management and public safety on behalf of Clark County to become thoroughly familiar with this plan, utilize the information presented and to be prepared to assist with its implementation whenever the need arises.

Sincerely,

A handwritten signature in black ink, appearing to read "Rory Reid", is written over a horizontal line.

RORY REID
Chairman

Adoption Resolution – Boulder City

Jan 29 07 11:23a BCFD Boulder City, NV 702-293-9221 p.2
JAN-29-2007 11:16 From: CITY CLERK BCNU 7022939245 To: 702 293 9221 P. 1/1

RESOLUTION NO. 4927

APPROVING AND ADOPTING THE CLARK COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, NRS 288.180 permits one or more public agencies to contract with any one or more public agencies to perform any governmental service, activity or undertaking, which any of the public agencies entering into the contract is, authorized to perform by law; and

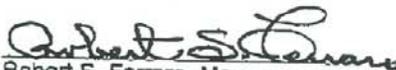
WHEREAS, Clark County, Nevada, Office of Emergency Management has the responsibility development and implementation for a county-wide multi-jurisdictional hazard mitigation plan; and

WHEREAS, the City of Boulder City has the responsibility for the adoption and implementation of the Multi-Hazard Mitigation Plan within its jurisdictional borders; and

WHEREAS, the City of Boulder City desires to adopt the Clark County Multi-Jurisdictional Hazard Mitigation Plan

NOW, THEREFORE, BE IT RESOLVED by the City Council that Resolution No. 4927 approving and adopting the Clark County Multi-Jurisdictional Hazard Mitigation Plan is hereby adopted.

DATED AND APPROVED this 29th day of January, 2007.


Robert S. Ferraro, Mayor

ATTEST:


Pamella A. Malmstrom, City Clerk

Adoption Resolution – City of Henderson



**HENDERSON CITY COUNCIL
AGENDA ITEM**

REGULAR MEETING

Date: 01/17/07

NB-084

SUBJECT	Adopt by resolution the Clark County Multi-Jurisdictional Hazard Mitigation Plan and the Henderson Addendum
PETITIONER	Emergency Management
RECOMMENDATION	Adopt the plan and addendum by resolution

FISCAL IMPACT:

No Impact
 Budget funds available
 Augmentation required

Funding Source, Amount, and Account Number(s) to be charged:

Pre-Disaster Mitigation Grant Funds

Failure to adopt the Plan will result in the City of Henderson being ineligible to apply for pre-disaster mitigation grants from the Federal Government.

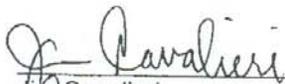
BACKGROUND / DISCUSSION / ALTERNATIVES:

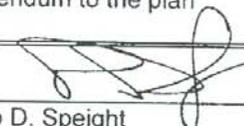
The Federal Disaster Mitigation Act of 2000 requires, as a condition of receipt of Federal hazard mitigation financial assistance to State or local governments, that each jurisdiction participate in and submit a Hazard Mitigation Plan. Clark County, inclusive of the five cities within Clark County, has developed and submitted a Hazard Mitigation Plan to FEMA for approval. This plan has been approved by FEMA *conditioned* upon its adoption by the governing bodies of each of the jurisdictions who participated in the planning. The Clark County Board of County Commissioners adopted this plan at their regularly scheduled September 19, 2006 meeting.

The addendum was added at the direction of FEMA to specifically address the potential vulnerabilities of some of our wastewater and reclaimed water transmission lines to damage from flooding events. The addendum has been reviewed and approved by the Clark County Office of Emergency Management, and the State of Nevada Department Division of Emergency Management.

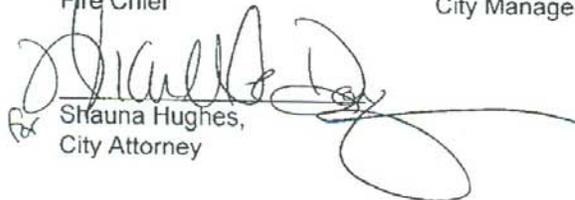
RECOMMENDED MOTION:

I move to adopt by resolution the Clark County Multi-Jurisdictional Hazard Mitigation Plan and the Henderson addendum to the plan


 John Cavalieri
 Fire Chief


 Philip D. Speight
 City Manager


 Steve Hanson
 Finance Director


 Shauna Hughes,
 City Attorney

RESOLUTION NO. _____

(Adoption of Clark County Multi-Jurisdictional Hazard Mitigation Plan)

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HENDERSON, CLARK COUNTY, NEVADA, ADOPTING THE MULTI-JURISDICTIONAL CLARK COUNTY HAZARD MITIGATION PLAN AS AN ANNEX OF THE CITY'S EMERGENCY OPERATIONS PLAN.

- WHEREAS, The Federal Disaster Mitigation Act of 2000 required jurisdiction to develop Hazard Mitigation Plans
- WHEREAS, The Jurisdictions within Clark County bounded together to develop one Hazard Mitigation Plan encompassing all of the geographical areas of Clark County, NV
- WHEREAS, This document, The Clark County Hazard Mitigation Plan, is the product of that collaboration, delineating the potential hazards, risks, and vulnerabilities of the community and actions that are currently in place or will be initiated to mitigate or reduce the potential impacts of such hazards
- WHEREAS, Future mitigation grants to jurisdictions or regional boards or commissions will be tied to the adoption of an approved Hazard Mitigation Plan, and this plan, in draft form, was approved by FEMA as meeting the requirements of the Disaster Mitigation Act of 2000.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Henderson, Nevada:

Hereby adopts this Hazard Mitigation Plan as an official annex of the city's emergency operations plan.

This resolution is effective upon adoption.

END OF RESOLUTION

Adoption Resolution – City of Las Vegas



**RESOLUTION OF THE CITY OF LAS VEGAS
MANAGEMENT COMMITTEE FOR EMERGENCY OPERATIONS**

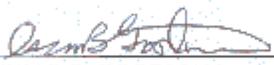
WHEREAS, one of the most important and uncontested functions of government is the protection of life and property. This is especially true with respect to emergency disaster operations; and,

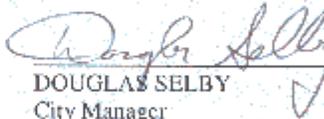
WHEREAS, Chapter 2.30.060 of the City of Las Vegas Municipal Code authorizes the Management Committee for Emergency Operations to serve as the designated body to review, approve and update the city's emergency operations plan; and,

WHEREAS, this document, the **Clark County Hazard Mitigation Plan**, is the product of a collaborative effort of the City of Las Vegas and other regional allied jurisdictions. In accordance with the Federal Disaster Mitigation Act of 2000 it delineates the potential hazards, risks and vulnerabilities of the community and actions that are currently in place or will be initiated to mitigate or reduce the potential impacts of such hazards.

NOW, THEREFORE, the City of Las Vegas Management Committee for Emergency Operations hereby adopts this hazard mitigation plan as an official annex of the city's emergency operations plan and directs the Emergency Management Officer to implement said plan.

Executed this 13th day of November 2006.


OSCAR B. GOODMAN
Mayor


DOUGLAS SELBY
City Manager


~~BARBARA J. RONEMUS~~
~~City Clerk~~

By: Beverly K. Bridges
Chief Deputy City Clerk

Adoption Resolution – City of North Las Vegas

**ACTION REPORT
CITY OF NORTH LAS VEGAS
REGULAR CITY COUNCIL MEETING**

December 20, 2006

Website – <http://www.cityofnorthlasvegas.com>

CITY COUNCIL MEETING

CALL TO ORDER

6:00 P.M., Council Chambers, 2200 Civic Center Drive, North Las Vegas, Nevada

Item	Description
25.	Approval and adoption of the Clark County Multi-Jurisdictional Hazard Mitigation Plan.
Action	Adopted

Adoption Resolution – City of Mesquite

RESOLUTION NUMBER 468

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MESQUITE
AGREEING LEASE APPROXIMATELY .54 ACRES OF CITY-OWNED LAND
THAT WAS PART OF THE FORMER CITY LANDFILL ALONG BIRDIE LANE
TO FALCON RIDGE, LLC**

WHEREAS, the Clark County Office of Emergency Management in cooperation with the City of Mesquite and the other cities in Clark County have created a Hazard Mitigation Plan.

WHEREAS, 44 CFR Parts 201 through 206 require all state and local governments to submit and have approved by the United States Department of Homeland Security a Hazard Mitigation Plan.

WHEREAS, Section 404 of the Stafford Act provides for a Hazard Mitigation Grant Program (HMGP) to provide local governments with federal hazard mitigation funds.

WHEREAS, these federal Hazard Mitigation Funds may be utilized to implement long-term hazard mitigation measures to prepare for potential disasters.

WHEREAS, the City Council finds it in the best interest to of the residents of the City of Mesquite to become eligible to receive Hazard Mitigation Grants Funds and where appropriate to seek funding to mitigate potential hazards.

WHEREAS, the City Council of the City of Mesquite hereby adopts the Clark County Hazard Mitigation Plan as submitted to the United States Department of Homeland Security.

NOW, THEREFORE, IT IS HEREBY RESOLVED by the Mayor and City Council of the City of Mesquite that this resolution for adoption of the Clark County Hazard Mitigation Plan is approved.

PASSED, ADOPTED AND APPROVED by the City Council of the City of Mesquite, Nevada on the 10TH day of OCTOBER, 2006.

THE CITY OF MESQUITE:
By: Bill Nicholes
Bill Nicholes, Mayor

ATTEST:
By: Carol Woods
Carol Woods, City Clerk.