Appendix B

Geography and Climatic Summary for the Las Vegas and Apex Valleys

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Geography of the Las Vegas and Apex Valleys

The Las Vegas Valley is one of the fastest growing metropolitan areas in the nation. The population has expanded from about 400,000 in 1980 to 1.4 million in 2000. The cities of Las Vegas, North Las Vegas and Henderson are located in the Las Vegas Valley within Clark County, in the southern tip of Nevada. Situated in the Las Vegas Valley, the Las Vegas metropolitan area serves as one of the largest growing cities, and busiest entertainment centers for the United States. Las Vegas is located in Hydrographic Area 212 in the extreme part of southern Nevada. Mountains surrounding the valley extend 2,000 to 10,000 feet above the valley floor. The Las Vegas Valley comprises about 600 square miles and runs from northwest to southeast. The Sheep Range bound the valley on the north. The Black Mountains bound the valley on the south. The Spring Mountains are to the west, which includes Mt. Charleston. Mount Charleston is the region's highest peak at 11,918 feet. There are several smaller ranges on the eastern rim of the valley, including the Muddy Mountains, and the Eldorado Range. The Las Vegas Valley slopes downward from west to east. This affects the local climatology significantly in terms of driving variations in wind, precipitation, and storm water runoff.

The Apex Valley area is located at the northeast corner of the Las Vegas Valley and is comprised of Hydrographic Areas 216 and 217. No residences are located in the Apex Valley, but a number of people are employed at the industrial facilities located in the valley. A regional landfill, power plants, mining operations, and mineral processing facilities are located in the southern part of the Apex Valley. All stationary sources within the Apex Valley have installed Best Available Control Technology for PM_{10}.

The two hydrographic areas that set the boundaries of the Apex Valley area comprises approximately 236 square miles and is split by the Arrow Canyon Range that divides Hydrographic Area 216 from Hydrographic Area 217. The Apex Valley area is bounded on the west by the Las Vegas Range with a peak elevation of approximately 5,880 feet, located in Hydrographic Area 217. The valley slopes to the southwest around the southerly foot of the Arrow Canyon Range and then northwest to the dry lake located in the Hydrographic Area 216. The dry lake elevation is approximately 1,970 feet. The Apex Valley area is bounded on the east by the Dry Lake Range. Air movement generally flows from the Las Vegas Valley into the Hydrographic Area 216 portion of the Apex Valley area and moves in a northeasterly direction.

Official weather observations began in 1937 at what is now Nellis Air Force Base[1]. In late 1948, the U.S. Weather Bureau moved to McCarran Field, now McCarran

[1] Skrbac, P. and S. Cordero, 1995: Climate of Las Vegas. NOAA Technical Memorandum NWS WR-235, updated March 12, 2002.

International Airport. McCarran is located in unincorporated Clark County, 7 miles south of downtown Las Vegas. The airport is approximately 5 miles southwest of, and 300 feet higher than the lowest part of the valley.

The climate is generally very pleasant during the fall, winter, and spring. However, during the summer months of June through August temperatures can climb into the 100's and humidity can reach the 90's, though rarely. Average annual precipitation is about 4.16 inches. However, during the years of 1999 through the present, the Las Vegas Valley and southern Nevada area has experienced a severe drought with an annual precipitation average of .68 inches of rainfall from July 1, 2001 to July 2002. Summers are long and have hot days and warm nights with accompanying mild winds that occur especially during these drier years. Problematic windstorms (High-Wind Event Level) are common during the late winter months and throughout the spring months. The predominant wind direction generally occurs from the southwest. It is due to these high-wind natural events that Clark County experiences most of the PM_{10} problems for the area.

General Climatic Summary

Beyond the formal climatic data publications, there are very few publications containing summaries of extreme wind events relevant to this plan.

The four seasons are well defined in the Las Vegas Valley, although different from the traditional view of seasonal variation. Summers display classic desert southwest characteristics. Daily high temperatures typically exceed 100 degrees with lows in the 70s. The summer heat is tempered by extremely low relative humidity. It is not uncommon for humidity to increase markedly for several weeks each summer in association with a moist "monsoonal flow" from the south, typically during July and August. Aside from increasing the discomfort level, these moist winds also support the development of spectacular desert thunderstorms, which are frequently associated with significant flash flooding and/or strong downburst winds.

Winters are mild and pleasant. Afternoon temperatures average near 60 degrees and skies are mostly clear. Pacific storms occasionally produce rainfall in the Las Vegas Valley, but in general, the Sierra Nevada Mountains of eastern California and the Spring Mountains immediately west of the Las Vegas Valley act as effective barriers to moisture.

The spring and fall seasons are generally considered ideal. Although rather sharp temperature changes can occur during these months, outdoor activities are seldom hampered. Strong winds are the most persistent and provoking weather hazard experienced in the area. Winds over 50 mph are infrequent but can occur with some of the more vigorous storms. Winter and spring wind events often generate widespread

areas of blowing dust and sand. Strong wind episodes in the summertime are usually connected with thunderstorms, and are thus more isolated and localized[2].

[2] Skrbac, P. and S. Cordero, 1995: Climate of Las Vegas. NOAA Technical Memorandum NWS WR-235, updated March 12, 2002.