From the Civil Law Doctrine to the reasonable use theory and from the frontier thesis to community action: Flood control in Las Vegas, Nevada, 1905-1976

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From the Civil Law Doctrine to the reasonable use theory and from the frontier thesis to community action: Flood control in Las Vegas, Nevada, 1905–1976

Scholl, James L., M.A.

University of Nevada, Las Vegas, 1993

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FROM THE CIVIL LAW DOCTRINE TO THE REASONABLE USE THEORY AND
FROM THE FRONTIER THESIS TO COMMUNITY ACTION:
FLOOD CONTROL IN LAS VEGAS, NEVADA
1905--1976

By

James L. Scholl

A thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Arts

in

History

Department of History
University of Nevada, Las Vegas
February 1993
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ABSTRACT

Flood control has long been a major problem for Phoenix, Tucson, Albuquerque and other southwestern boom towns, and Las Vegas was no exception. From its birth in 1905 until the mid 1970s, the "Civil Law Doctrine" was the legal concept used by courts and residents to settle disputes over drainage problems. Civil Law dictated that land owners had to accept "hostile upstream surface drainage" onto their property but could discharge it onto the downstream property owner’s land with no legal liability. This viewpoint coincided with the frontier notion of individualism so popular in Nevada and West. Moreover, it also dovetailed with the hallowed tradition of the less government intervention in local affairs the better. So, the Civil Law Doctrine and the frontier mentality along with a low tax base and a general distaste for government spending all conspired to delay the establishment of a meaningful flood control infrastructure in the Las Vegas Valley until the late 1980s.

Aside from the damages caused by the city’s rapid expansion over washes and flood plains in the 1960s and 1970s, the real breakthrough for flood control came in 1976 when Alfred Powers and others successfully challenged the Civil Law Doctrine in District Court in a
suite against Clark County. This suit had far reaching implications for the metropolitan area, because it overturned the Civil Law Doctrine that had been the law for 75 years in Nevada and for over 100 years in California. The court accepted another concept known as the Reasonable Use Rule, which stipulated that each case be judged on its own merits and that local governmental approving agencies could be held liable for urban development that caused increases in the ratio of rainfall to runoff. This change in legal thinking altered the structure of urban development and local governmental ideology concerning flood control in Las Vegas as well as the Western United States.

This paper will argue that the court’s decision to change the guiding legal principle from the Civil Law Doctrine to the Reasonable Use Rule in Nevada ended the frontier viewpoint of individualism and replaced it with a new spirit of communal action. The legal revolution, along with a series of events tied to the valley’s mushrooming urbanization energized the long dormant Las Vegas Valley Flood Control District which quickly won support in 1986 for implementing the flood control agenda. While emphasizing the legal dimension the paper will place the court ruling within the context of the city’s urban sprawl and the growing political sentiment favoring flood control.
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INTRODUCTION

Speculation about flood control, or lack of it in Las Vegas, has been a compelling community issue since the founding of the city in 1905. Early concern developed over the problem with the arrival of the first European-American settlers, and continues to be debated today. The passage of time, dimming of memories, frontier parsimony, and lack of official records have all contributed to the community’s failure to develop a comprehensive flood control history of the Las Vegas Valley. With factual data obscured, non-existent, fragmented, or distorted, local leaders have relied on newspaper accounts of past floods to guide them in the decision making process. Reports such as an article that appeared in the *Las Vegas Review Journal* on 11 August 1991, proclaiming that "Flood projects chase decades of neglect"1, often captured the attention of the reading public, but rarely resulted in remedial action to ameliorate the situation.

Accusing public officials of neglect has become the standard journalistic theme postulated by the press since the founding of the community. Solutions to the flood control problem, however, have not, and cannot, be found in newspaper headlines. Those answers remain
hidden in the geological, intellectual, cultural, political, and economic past of the community.

Las Vegas is situated in an artesian basin completely surrounded by mountains. Differences in altitude within the area range from a high of 11,900 feet above mean sea level at Charleston peak in the Spring Mountains to 1,200 feet on Lake Mead at Hoover Dam. The city’s average elevation is approximately 2,000 feet above sea level. Even though the Las Vegas basin drains an area of 1590 square miles, the Las Vegas Wash is the only outlet for storm water generated on the watersheds. All of the surface water, from morning dew to the severest rain storms must pass through it en-route to the discharge point at the Colorado River.

The mountains surrounding Las Vegas are composed of igneous rock interspersed with large deposits of exposed sedimentary rock, including limestone, dolomite, shale, and slate. Layers of weathered multi-hued sandstone, wrenched to the surface by eons of sub-surface folding and faulting, indicate erosion from both wind and water. Silt washed into the valley from eroded rock and sandstone forms an alluvial fan in the lower part of the basin. Thick deposits of sandy loam on the valley floor sustains a growth of green vegetation that boldly contrasts against the inhospitable barrenness of the surrounding desert.

Silt built up over eons had gone relatively unused by early indigenous tribes of hunters and gatherers
wandering across the valley floor prior to the arrival of the first generation of European-American settlers with their fences, orchards, and plowed fields. Early nomadic Paiute Indian tribes used the springs and shade trees along Las Vegas Wash as temporary resting places during their pilgrimages across southern Nevada's arid desert. Migratory Indians, unlike the newly arriving European-American pioneers, enjoyed a special relationship with nature that placed different values on both land ownership and use.

The Indians lived with nature, harvesting fish, game, roots, and herbs as they ripened, or came into season much as a farmer harvests his crops of alfalfa and grain. Moreover, they exercised a communal stewardship over the land that sanctioned tribal territorial rights rather than personal control. On the other hand, European-Americans believed in private ownership of land, fences, roads, buildings, livestock, and agricultural equipment for the operation of their farms and ranches. Furthermore, the freedom of movement enjoyed and practiced by nomadic aborigines in the region emphasized their notion of communal land ownership, and their ability to change home sites to avoid natural disasters. When faced with challenges such as floods, Indians followed their instincts by moving to the safety of high ground. Whereas, European settlers, bound by their system of private ownership, remained at home to rebuild their damaged property.
Supported by a strong frontier mentality of self-reliance and independence, early European-Americans settled into their new homes in the Las Vegas Basin, and adjusted to periodic flooding that occasionally plagued the valley. Like the Indians before them, the settlers considered storms as an inconvenience brought about by nature. Consequently, during the first part of the twentieth century, townspeople in the Las Vegas Valley acquired cheap land in other locations after a severe flood, or lacking money for the acquisition of a new safer location, cleaned up the debris and continued with their lives. Coping with flooding and the elements became a personal challenge between the settlers, and nature. The triad of a small population, dry desert weather, and an unfavorable "cost benefit ratio" contributed to the failure of pioneers to construct flood control projects during the town's embryonic period.

Flood protection for the fledgling whistle stop on the San Pedro, Los Angeles & Salt Lake Railroad became an individual effort left to the discretion of the new property owners, who had purchased building lots in the townsite. Early flood control measures to protect the town and its people came from a reaction to periodic downpours rather than from careful planning, designing, and engineering against future destructive storms. Without a positive, well engineered flood control system the pioneers defied nature and accepted the harsh environment as a normal condition of frontier life.
On 11 August 1991, the Review Journal quoted a present-day official of Clark County as saying that "initial flood control was approached with a wild west philosophy, where government oversight of developers was limited." 4 The argument that Las Vegans did nothing to remedy the hazards of flooding was true, however it only illustrated one facet of the problem. Another issue besides the wild west philosophy, centered on the lack of ability or desire by local and Federal governmental agencies to provide tax revenues for the construction of flood works. Furthermore, the influx of migrants to the area shortly after the founding of Las Vegas also hindered and delayed local efforts to address meaningful development. Seeking bargains in cheap land for homesteads, newly arriving residents often purchased property in gullies and natural washes for home sites, blocked streambeds, and diverted flood water from drainage swales to previously safe ground. Taken together, all of the unsupervised land development by local people did more to retard the adoption of protective flood control measures than any other single event in the community's development.

Without funding for construction of flood works, and using every means at their disposal, early residents coped with the forces of nature and built a city in the desert. While it cannot be denied that massive protective flood control works could have been more cheaply constructed eighty five years ago, the city with
a population of 5,000 or less during the early part of the twentieth century, could not have supported such a costly and ambitious project. Furthermore, in the earliest years of the town's existence, floods did not threaten the community's safety.

Flood control has long been a major problem for Phoenix, Tucson, Albuquerque and other southwestern boom towns, and Las Vegas was no exception. From its birth in 1905 until the mid 1970s, the "Civil Law Doctrine" was the legal concept used by courts and residents to settle disputes over drainage problems. Civil Law required land owners to accept hostile upstream surface drainage onto their property but could discharge it onto the downstream property owner's land with no legal liability. This viewpoint coincided with the frontier notion of individualism so popular in Nevada and the West. It also dovetailed with the hallowed tradition of the less government intervention in local affairs the better. So, the Civil Law Doctrine and the frontier mentality along with a low tax base and a general distaste for government spending all conspired to delay the establishment of a meaningful flood control infrastructure in the Las Vegas Valley until the late 1980s.

Aside from the damages caused by the city's rapid expansion over washes and flood plains in the 1960s and 1970s, the real breakthrough for flood control came in 1976 when Alfred Powers and others successfully
challenged the Civil Law Doctrine in District Court in a suite against Clark County. This suit had far-reaching implications for the metropolitan area, because it overturned the Civil Law Doctrine that had been the law for 75 years in Nevada and for over 100 years in California. The court accepted another concept known as the Reasonable Use Rule, which stipulated that each case be judged on its own merits and that local governmental approving agencies could be held liable for urban development that increased the ratio of rainfall to runoff. This change in legal thinking altered the structure of urban development and local governmental ideology concerning flood control in Las Vegas as well as the western United States.

The focus of this paper is the development of flood control in the Las Vegas Valley between 1905 and 1976. Central to the thesis is the argument that legal, intellectual, political, and economic forces unintentionally conspired to diminish the community's will for the planning and construction of flood control projects. At the present time, it is not enough for Las Vegans to dismiss the past with a few sentences about the failure or perceived inaction of the city's founders concerning the problem. Instead, we must understand the forces that acted upon the intellectual, political, and economic environment of the community in order to establish a more accurate history of flood control in the Las Vegas Valley.
CHAPTER I
FLOOD CONTROL IN LAS VEGAS
1905 TO 1955

By April 1905, over fifteen hundred people had erected temporary homes and shelters in the McWilliams Townsite, and along the Las Vegas Creek. Like the early Mormon settlers, who settled the oasis in 1855, new inhabitants to Las Vegas sought relief from the searing desert sun beneath the shade of cottonwood trees along the stream bed. The creek starts its journey to the sea in the hills west of Las Vegas, and meanders southeasterly for approximately 45 miles before discharging into the lower reaches of the Las Vegas Wash.

Without an abundance of fresh water from the springs and creek, Las Vegas could not have developed as a community, nor survived as a city. Pioneers in the valley avoided building in, or obstructing existing washes that served as natural conduits for drainage from watershed areas surrounding the basin. Instead, they sought high mesas of loamy silt on the alluvial fan that provided safety from flooding. Recognizing that nature had established drainage swales and gullies in crucial
locations to carry runoff from homes, farms, and ranches to the lower Las Vegas Wash, farmers periodically cleared debris and trash from them allowing surface drainage to flow in an unimpeded manner to its destination. Intelligent use of existing un-disturbed terrain enabled farmers to produce abundant harvests of fruit, hay, grain, and vegetables to feed the expanding local population.

During the first decades of settlement in the Las Vegas Basin, the need for artificial drainage channels as protection from flooding was not necessary. Even though the organizers of Clark’s Las Vegas Townsite in 1905 had engineered, surveyed, and laid the townsite out into lots, blocks, streets, and school sites, they neither planned, nor provide for, surface drainage. The east-west streets, following the natural drainage pattern, provided the only method for nuisance or storm water to leave the townsite.

Four major factors influenced the community’s failure to enact a positive flood control system in the valley during first half of the twentieth century. The first was the disturbance to the natural drainage pattern caused by construction of the San Pedro, Los Angeles and Salt Lake railroad. A second disruption came in the 1920s and 1930s with the construction of the Salt Lake Highway, which paralleled the railroad’s route and adopted the same drainage procedures. The third factor was the opening of the Boulder Highway in 1931
between Boulder City and Las Vegas an artery that cut across all of the natural washes that flowed from west to east between both entities impeding the free flow of storm water into the lower Las Vegas Wash. Finally, the fourth and most serious impediment to the advancement of flood control policy evolved from the provincial frontier mentality of both settlers and local officials who opposed excessive governmental spending.

The railroad built Las Vegas and, at the same time helped create the flooding problem. In 1904, railroad construction crews pushed their steel rails southward into the valley establishing a division point, round house, and maintenance facility. Water played a leading role in site selection for the route as well as the new townsite. Cognizant of the water requirements of steam powered locomotives when pulling long trains across the hot dry desert, railroad engineers sought locations for division towns along the proposed route that provided water, food, and home sites for their employees.

Following standard engineering and construction practice in use at the turn of the twentieth century, the railroad installed a system of culverts in the larger washes supplemented with wing ditches that diverted storm water from smaller gullies into the major channels. However, lack of foresight by railroad engineers to perceive future urban development precluded the acquisition of easements and rights-of-ways for run off channels in washes and gullies that had been deemed
by the railroad to be waste land, with little or no value.3

Clark’s Townsite and railroad shops, located on the alluvial fan between the two major drainage channels rarely experienced major destruction from floods, unless a rain storm swept directly over the town. Likewise, although flash flooding did not constitute a problem during the early years of the city, it became a primary source of concern in later years because of inadequate building regulation and a rapid rise in the community’s population.4 By 1920, population growth coupled with inexpensive land induced many newly arriving settlers to build homes and businesses in marginal areas that had previously been considered unsafe because of flood hazards.

The earliest townsmen coped with periodic storms, and property damage on an individual basis, because they had no other recourse. A small tax base, lack of governmental funding, and failure to develop a comprehensive plan for flood control projects forced the settlers to rely upon individual solutions for their preservation. Furthermore, local leaders within the community usually followed the less politically popular expedient of keeping taxes low rather than proposing flood control works. In times of crisis, Las Vegans responded favorably to the challenges of nature and the appeals from their political leaders with enterprise, individualism, and self-assurance.
From the city's inception in 1905 hostile flood waters prompted problems between adjacent land owners, city owned streets, rights-of-ways and other properties. By necessity residents had to establish a flood control strategy that excluded the expenditure of large amounts of capital. Confined between the parameters of self-help and a parsimonious government, local planning officials had little latitude for innovation. Consequently, community leaders developed inexpensive solutions that relied upon legal remedies coupled with individualism.

Rainstorms usually generated little or no property damage to Las Vegas before the 1920s. Newspaper accounts of flooding indicate that during the early part of the twentieth century, Las Vegans became hostage to floods that occurred in other parts of southern Nevada, rather than local rainstorms. Frequent destruction of the railroad line caused by natural disasters meant a suspension of trade and commerce between the outside world and the community. Above all else, people living in the isolated Southern Nevada oasis recognized that their lives and fortunes depended upon the success and well being of the railroad.

Today, we can only imagine the emotions of local residents concerning stability of life on the frontier as they picked up the *Las Vegas Age* on 9 March 1907 and scanned the headlines that boldly proclaimed: "60 miles of track destroyed and no trains to Salt Lake for 30
days, Las Vegas Marooned. The thirty day interruption of rail service, stopped trade, food supplies, mail, and commerce from the northern and eastern parts of the United States. It demoralized the townspeople, and reduced the city to an isolated outpost in the desert. Unhappily for the community, the railroad provided the only rapid means of passage across the arid desert of the Great Basin, and diminution of the service constituted a serious setback for the fledgling town.

During floods and other natural disasters the average Las Vegan tightened his belt and accepted such calamities as acts of "God" to be dealt with by the railroad company or local political leaders. On 9 March 1907, the editor of the Las Vegas Age voiced the prevalent sentiment of the townspeople that it must be plain to railroad management that passengers and freight would avoid the Salt Lake rail line in storm seasons rather than take the risk of being wrecked in Meadow Valley Canyon. In short, the editor attempted to raise the public consciousness by asking the question: "How many more lives must be sacrificed before removal of the Salt Lake track from the river bed to a safe position above high water is completed?"

More than anything else, the shortsighted argument by the press that flooding was the railroad's concern, and not society's problem, added to the community's failure to develop a regional blue print for flood control. Here again, we can see a single minded theme
calling for reliance upon individualism rather than marshalling the community’s collective social conscience for the development of a realistic flood control system.

Although Las Vegans knew that flooding posed a threat to life and property, danger from storms usually concerned the railroad at a considerable distance from Las Vegas. Significantly, the notion that "it can’t happen here" reinforced reluctance to pursue a comprehensive flood control plan. Moreover, newspaper accounts of early floods in southern Nevada focused primarily on the railroads and farm communities of the Meadow and Muddy River Valleys. This emphasis supported the atavistic notion of false security.

The fragility of Las Vegas’s life line to the outside world continued to be expressed in the headlines of the daily papers. On 24 March 1906, the Las Vegas Age reported that washouts had occurred in the Cajon Pass in southern California forcing the Salt Lake Limited (a passenger train) to be re-routed through San Francisco. Additionally, the storm caused a devastating washout north of Moapa requiring 350 workers to be moved from Las Vegas to the flooded area to facilitate repairs. Railroad officials estimated that it would take at least ten days to repair the tracks and possibly result in twenty to thirty days of interrupted train service. The City of Las Vegas received only minor wind damage, but once again became isolated from the outside world.
During the first week of January 1910, a massive storm struck Southern Nevada. Although it did not flood Las Vegas the local press described it as the most destructive storm in recent years. The deluge washed out one hundred miles of railroad track in Meadow Valley Wash, no trains ran between Las Vegas and Salt Lake City for nearly six months. Raging through the Muddy Valley, the storm destroyed crops, live stock, and fences leaving only devastation in its wake. One farmer lost 60 hogs while the Moapa Improvement Company at Logan, Nevada lost sixty acres of grain and fifty acres of asparagus due to silting.

According to the earliest newspaper accounts of damage caused by rain storms following heavy rains, Las Vegas appeared to have been spared large scale destruction. Moreover, it had managed to deal effectively with flooding problems without large man-made flood control works. In other words, storm damage to the local infrastructure prior to the 1920s was not large enough to be considered newsworthy.

More typically, storms of short duration merely washed out roads and caused minor damage to local homes. On 19 July 1919, a reporter observed that "Jupiter Pluvious" briefly visited Las Vegas with rain drops as large as satsuma plums. The storm deposited 1.10 inches of rainfall on the community, with no damage to homes in the area. Some dirt roads in the county had been slightly damaged, but the journalist characterized the
storm as a "cool refreshing downpour." 10

One of the most devastating storms to hit Las Vegas occurred on 28 July, 1923. The Las Vegas Age reported a torrential downpour that centered over the city causing severe damage to individuals as well as business establishments. Several buildings had been struck by lightning, a garage collapsed, and on 8th street, the wind blew a building down. Out at Ladd’s Development, the bath house collapsed and fell into a swimming pool causing thousands of dollars in damages. The building which was heaviest hit was the Union Pacific Railroad shop, it suffered lightning strikes in several places. 11

By 1923, seasonal storm patterns had been well established and the summer months defined and recognized as the rainy season. The United States Army Corps of Engineers reported in its flood analysis of the Las Vegas Wash, published in 1959, that large floods had occurred in Las Vegas and vicinity in July 1923, August 1931, and June 1955. Furthermore, most floods in the area resulted from thunder storms during the summer season, when all precipitation fell as rain in the mountains, although some flooding had also occurred in February, March, October, and November. An average of thirteen thunderstorms per year had fallen on the Las Vegas area over a twenty-one year period from 1937-57. According to the Army engineers, the floods of June 1923 and August 1931 surpassed that of June 1955 in
From its inception, Las Vegas had searched for inexpensive methods to provide flood protection for its people. Like the railroad, the city relied on the use of natural washes and gullies for drainage while, at the same time, neglecting to provide rights-of-ways for surface water discharging from streets, roads, and ditches into existing washes. Extending ditches into the desert without clearly defined rights-of-ways left flood areas open to developers, who sought to maximize their profits by building homes, and commercial projects on cheap, marginal land within flood plains.

As the city began to grow and expand after its founding in 1905, engineers and planning officials faced a more complicated set of circumstances than the original railroad designers had dealt with upon their arrival in the valley. The railroad remained fixed in its original location with a static drainage equation. At the same time, the city enlarged its physical boundaries and population, creating and intensifying the probability of flood hazards. Furthermore, the town had to protect streets and public property, as well as adjudicate problems arising from surface waters entering and leaving private property. In short, the railroad constituted a one-time project, whereas the city's continued growth magnified drainage problems by concentrating the flow of storm water from streets into washes that nature had created but had not designed to
carry large volumes of runoff.

Seeking the most economical method to deal with storms and the attendant damage, public works officials directed their attention to legal as well as engineering solutions. Lawyers and engineers concluded that the simplest and least expensive system entailed the acceptance of surface water into streets and ditches alongside the roads from abutting properties, than disposing of the storm runoff by directing it into the nearest natural wash through major east-west arteries. To complement the surface water carriage system, officials adopted a legal system that provided standard, predictable methods for ameliorating friction between property owners forced to accept drainage water from abutting neighbors.

After reviewing the three basic rules governing flood waters, city and county commissioners selected the "civil law rule"13 as the legal principle that best suited the needs of the community. The civil law rule recognized that a servitude of natural drainage existed between adjoining lands, so that the lower owner had to accept surface water that drained onto his land. On the other hand, the upstream neighbor had no right to alter the natural system of drainage so as to increase the burden on the lower property owners.14

The doctrine had its inception in Roman law and the Code Napoleon and had been predicated upon the concept that those buying or acquiring land should be required
to accept the burdens of natural drainage entering their property as well as discharging surface water into its natural downstream channel. The civil law doctrine had the advantage that property rights could be readily predictable. Among the legal options available to Las Vegans, the Civil Law Rule fit local needs more closely than other legal doctrines available to them at the time. The underlying concept of the Civil Law rule that advocated private responsibility over governmental action clearly favored inept community leaders, because it permitted them to dodge the difficult choices inherent in a confrontation over the issue, and instead allowed them to follow the easy path of political expediency.

In its pristine condition, soil in the Las Vegas Basin tends to act as a blotter during rain storms. Porous and granular natural ground absorbs a certain amount of water while trapping other surface drainage in depressions or low spots in the ground. Gradual infiltration and pooling of flowing water across the soil tends to retard the advance of flood water, while decreasing its capacity for erosion. Altering the infrastructure by constructing dwellings, streets, sidewalks, and other urban requirements increases the ratio of rainfall to runoff by creating an artificially impervious surface that fails to trap or absorb storm water, increases its velocity, and multiplies the destructive scouring ability of the runoff. Rain
falling on roof tops, paved streets, sidewalks, and other covered areas drains on to neighboring down stream property with more potential for damage than it normally develops in its undisturbed condition.

The civil law rule required every citizen in the valley to take care of themselves, while respecting their neighbors' rights. It is here, that we can conceptualize the meshing of a frontier ideology, inadequate funding, and short sighted leadership. Additionally, these fundamental physical and ideological qualities continued to guide the community until 4 June 1980 when the Nevada Supreme Court, in a landmark case, overturned an appeal to an unfavorable ruling in a law suit by the Clark County Flood Control District. In its decision the court replaced the seventy year old doctrine of civil law rule with "The third surface water doctrine generally known as the "rule of reasonable use." 16

In 1923, the Las Vegas Age reported that Las Vegas represented a progressive rural county seat with a population of 3,000, and expectations of reaching 10,000 by 1925.17 According to the reporter, the town prided itself in being the county seat of Clark County, Nevada, headquarters of the United States Reclamation Service for work on the Boulder Canyon Damsite, and a paradise for farmers. Moreover, the area contained 100,000 acres of fertile land in a proven artesian belt, with ideal conditions for growing peaches, pears, apricots, prunes,
plums, apples, grapes, pecans, almonds, melons, cotton, hemp, and alfalfa, with as many as seven crops of alfalfa per year.18

The strength and weakness of early Las Vegans, resided in their provincialism, and the belief that they represented pioneers living on the last frontier carrying on the tradition of manifest destiny, and a living expression of Fredrick Jackson Turner’s concept of the American frontier.19 Indeed they prided themselves on their uniqueness. In May 1923, the month before one of the largest floods of record to fall on the community, the Secretary of Commerce, Herbert Hoover wrote a series of timely messages to the American people. His thesis was "American Individualism"20, and it received wide acclaim in the Las Vegas Age.

He wrote that "the American pioneer is the epic expression of that individualism, and the pioneer spirit is the response to the challenge of opportunity, to the challenge of nature, to the challenge of life, to the call of the frontier." Moreover, he declared that "American individualism had received much of its character from contacts with the forces of nature."21 Here again, the significance of popular rhetoric from the nation’s leaders, with the parsimonious dispensation of public works funds combined to support the local concept that the remedy for flood control lay in the realm of the private sector.

Land developers and builders relied on the theory
of caveat emptor (buyer beware) when selling prospective home owners a new house that had been built in the middle of an existing wash. Cheap land, coupled with minimal building restrictions, made it easier to move to higher ground after a flood than to stay and rebuild in a proven flood hazard. County and City public works officials, lacking financial resources to design and construct adequate flood control works to safeguard the public, simply reviewed plans and approved building permit submittals. As late as 1975, Clark County, Nevada continued to rely on the secondary solution of using streets to carry surface runoff during storms.

After the railroad, the second major project to affect the natural drainage of Las Vegas was the construction of the Los Angeles, Las Vegas, Salt Lake highway (U. S. Highway #91). Paralleling the railroad and conforming to the same general drainage pattern, the highway, built in the 1920s and 1930s reinforced the short-sighted concept that negated the need of rights-of-ways for building positive drainage structures in future years. The Nevada State Highway Department erected culverts and bridges in the same general washes as the railroad, but no rights-of-ways for surface runoff had been secured to handle the water after it left the highway property.

The third major displacement to the natural drainage system in the Las Vegas Valley resulted from the construction of Boulder Highway in 1931. The
two-lane highway became the critical artery connecting Las Vegas to Boulder City during the construction of Hoover Dam. The proximity of Las Vegas to the dam site, and the recognition that Las Vegas was the closest rail head as well as the nearest metropolitan center of any consequence to the construction site mandated that a connecting highway be built between the two growing cities. The Nevada State Highway Department awarded it's first contract for construction on the roadway in 1924. Designated as contract number 117, the new highway improvements followed the old Searchlight roadbed. The significance of the highway from a flood control view-point rested on the certainty that the location of the new arterial disturbed all of the natural drainage courses that flowed from west to east, and that discharged into the Las Vegas wash between the two cities.

Even into the 1920s, no major flood control channels had been constructed in anticipation of future growth in the valley. During the 1930s the highway provided a route for the influx of workers, their families and attendant supporting businesses between the two rapidly expanding cities. The once open desert land alongside the highway soon began to sprout homes, businesses, shanty towns, and tent cities that continued to grow and expand into the 1950s.

On 30 August 1927, floods deluged Las Vegas. The Searchlight road (later renamed the Boulder Highway)
suffered more damage than any other area in Southern Nevada. According to County Road Supervisor King it was eighty percent washed out. King estimated that repairs to the road-way could go as high as several thousand dollars for full repairs. Even after flooding, as the city, county, and state road maintenance crews continued to dry out and make repairs, local officials made no concerted effort to organize a flood control plan for the area.

Undeveloped land along both sides of the Boulder Highway became prime areas for the development of small roadside businesses and campsites for new Hoover Dam workers arriving daily from all parts of the country. Many of the prospective employees looking for employment at the dam site depended on the automobile for transportation to and from the project, and slept in shanties, tents, and makeshift shacks along side of the roadway. Whitney (just north of today's Henderson) was one of these sites, and although closer to the Dam site than Las Vegas it had the misfortune of being located in a flood prone area (see appendix A).

Indeed in August 1942 a major flood damaged the area. A tent city between Whitney and Midway on Boulder highway was virtually destroyed after a heavy rain storm sent a wall of water through the camp and over the highway. Several of the tents had been split open by the force of the water, and many of the campers had to hang all of their water soaked belongings on mesquite
bushes to dry. Here again, the old self reliant frontier mentality continued to work, with the campers in the tent city near Whitney.

The County's overworked building and safety officials overlooked the erection of homes on cheap land adjacent to washes and flood plains previously considered unfit for human habitation. Moreover, in some cases officials sympathized with the campers because of the hard economic conditions brought about by the great depression of the 1930s, and looked the other way rather than evict them from their barren desert campsites. In any case, many of the original squatters improved their temporary quarters with more substantial buildings, replacing the earlier tents and shacks with permanent structures.

The public only finally began to focus its attention on flooding in the 1930s after newspaper articles described flood hazards in terms of near disaster. Although many areas had been flooding for years, no one had observed the damage at first hand, or more often considered cheap land on a flood plain to be marginal for development. It required keen eyed land speculators to fully evaluate the profit potential of the desert flood plains in southern Nevada. However, water soaked, mud covered, homes, when silhouette against a background of multicolored sandstone mountains made a striking contrast for the news-hungry reporters whose lurid descriptions of the disasters captured the
Two factors influenced growth in southern Nevada during the 1930s. Both seriously impinged on flood plains in the area. Legalization of gambling and the attendant attraction of tourism can be seen as the first major step that led to massive growth in both the city and county. These changes brought tourists in growing numbers making the area one of the most highly developed and popular resort centers in the United States. More than anything else, the frontier spirit of Nevadans led to the acceptance of wide open legal gambling, with table games and card rooms as a growth industry in Nevada. Las Vegas proudly proclaimed itself the "Last Frontier".

In the 1940s, Las Vegas continued to expand especially to the south and east filling in gaps between the main streets and highways, while following water and sewer line locations that had been approved in a piecemeal fashion for construction by the city and county governments that worked from no adequate overall plan. The result was a hodge-podge of developments based largely on an unsystematic infrastructure. Primitive or non-existent building restrictions, and the shortage of building and on-site inspectors guaranteed a proliferation of sub-standard construction. Furthermore, the lack of inspection led to inadequate safeguards necessary for the safe development of the community.
Between 1905 and 1940, few records of rainfall and damages had been carefully documented. The newspapers contain the best source of information on storms for the early years of Las Vegas. Clearly, lack of data hampered flood control officials in later years, when inaction could no longer be tolerated, and it became imperative to act in the public interest for the protection of lives and property.

During World War II, the need for the establishment of the U.S. Army Gunnery range set the stage for the largest population explosion since the construction of Hoover Dam in the early 1930s. The United States Army, located its Gunnery Range along the south side of Salt Lake Highway, and west of Sunrise Mountain, the most flood proof area in the valley.

Las Vegas traditionally receives most of its flood water from the North and West in the opposite quadrants from the Sunrise Mountain area. Knowing this, the Army Corps of Engineers had reviewed the air base's proposed location in advance of its construction in 1941. Good engineering and site selection precluded major damage in later years to the airfield during storms while, at the same time, Las Vegas suffered millions of dollars in property damage and loss of life.

With the Army base slated to open in January 1942, wives, dependents, and camp followers flocked to the city in late 1941, overwhelming the housing market and forcing the construction of new schools, streets and an
utility networks. Even the most naive and unsophisticated, government officials knew that changes in the existing infrastructure had to keep pace with the expanding population. Many of these army families would return after the war and settle permanently in the valley, adding their voices to the growing call for change.
CHAPTER II
PUBLIC AWARENESS AND COMMUNITY ACTION
1950--1963

While the pressures to establish a major flood control system mounted during the New Deal and especially during the war years, the turning point in the frontier ideology for Las Vegans began in early 1949 after a series of heavy thunder storms struck the city. Massive destruction caused by flooding forced municipal officials to reconsider their traditional attitude about the problem. They began searching for realistic alternatives to the situation. At the same time, public discontent compelled inert local governmental bodies to discontinue harboring notions of individual self-help as a means of combating flooding, and to begin exploring alternate methods for collective security. Compulsion from social, economic, and political forces such as the expanding military facility at Nellis Air Force Base, a heavy influx of discharged veterans and their families, a surge of war weary tourists, the growth of the divorce and gambling industries, and to some extent, the industrialization of the Henderson area all demanded relief from flooding.
After the storm of 1 August 1949 that injured three people and cost tens of thousands of dollars in damages, concerned citizens began to question the city and county's ability to act responsibly in its search for alternate methods for flood protection. Impatient with the slow progress and vacillation of elected representatives, ordinary people formed ad hoc citizens committees to deal with the problem.

One such group started in Marrachie Flats, a small residential area located in North Las Vegas. On 4 August 1949, a loose association of eighteen residents held a neighborhood meeting, and drafted a petition to the Clark County Commission demanding that government adopt a strong flood control policy. All in attendance signed the petition. The central argument of the committee focused on the proposition that positive action to control flooding had to be taken by elected county officials. In fairness, they noted that although Marrachie Flats had not been totally destroyed, it had been severely damaged, and could not withstand another storm.

Suggesting that the cost of any remedy would not exceed future losses due to property damage, the petitioners advocated several methods to ameliorate the situation. Their recommendations included construction of earth check dams, retention basins for storage of storm water, and a modern road system complete with culverts to channel overflow water under roads without
destroying the road bed. Moreover, they commented on damage to the soil from sheet flow, and the consequences to Hoover Dam from silting action that had resulted from the storm. The committee also urged that a flood control district be formed to set a positive agenda of safeguards to control floods and minimize damages, such as the community had experienced during and following the storm of 31 July 1949.2

The residents forwarded their petition to the County Commission, and the ad hoc citizens committee planned its second session for 21 August 1949. At that meeting, W.A. Reynolds, chairman of the committee, reported that surface water washing out of flooded septic tanks and cesspools had infiltrated many water wells in the Marrachie Flats area. Committee members demanded that County Commissioners be advised of the contaminated wells as soon as possible. At the same time, the committee questioned the prudence of County Commissioners allowing Vegas Heights, Bellview Heights and other housing projects to alter the natural drainage and discharge flood water into Marrachie Flats without making any provision for safeguarding the interests of local inhabitants.3

The Civil Law Doctrine, with all of its ramifications and shortcomings clearly evidenced itself in the Marrachie Flats situation. An increase in the ratio of rainfall to runoff brought about by the construction of housing projects and urban
infrastructure flooded and contaminated the water wells in an area that had previously been secure. Under the law, home owners had been compelled to accept the diversion of storm water and its subsequent contamination to their water wells with little or no legal recourse. Determined to alter this laissez-faire approach, the Marrachie group formulated an alternative for presentation to the County Commissioners for consideration.

The strength of the plan proposed by the Marrachie Committee manifested itself in a resolution addressed to the County Commission that suggested five fundamental principles. First, it recommended that a separate flood control district be formed with one County Commissioner on the board. Second, it recommended that the new district make provisions for financial aid from local, county, state, and federal agencies for money to fund flood control works. Third, it suggested that taxation should be explored as a means of financing flood control works. Fourth, that provisions be made for the actual construction of flood control works in the Las Vegas Valley. Fifth, that measures be undertaken for the continuous maintenance of flood works after they are constructed. Most of these recommendations later became state law, and formed the basis of flood control policy in southern Nevada.

It is significant to note that while the Marrachie group espoused the activist spirit of the frontier by
challenging the status quo, it simultaneously embraced the progressive ideology that government experts and bureaucrats know what is in the public interest. More broadly, the group believed that government experts had at their disposal sufficient expertise acquired from other areas that had experienced similar problems, and could step in and remedy local flooding problems with a minimum of effort.

On 29 November 1949, Helen Scott Reed, County Clerk and Ex-officio Clerk of the Clark County Commission responded to the petition. At the request of the County Commission, she wrote to Doctor Reed Bailey of the United States Forestry Service in Ogden, Utah. In her letter to Doctor Bailey, the County Clerk solicited his aid in obtaining a flood control survey for the Las Vegas Valley. She noted that a survey in the Virgin River-Meadow Valley Wash district in Southern Nevada approached completion, and that this would be an opportune time to come into the Las Vegas area.

In his response, Bailey stated that the small size of his flood control survey staff precluded any immediate attempt to start a Clark County survey. Furthermore, plans needed to be approved in advance by the Secretary of Agriculture and the budget bureau, because appropriations from Congress required approval for specific annual programs. In addition, he explained that his department had been committed to a two year project on the Columbia River Basin that precluded any
possibility of starting new work in Southern Nevada. At the same time, he advised her that the United States Department of Agriculture had tentatively planned a similar basin wide survey of the Colorado River and its tributaries, but still lacked the funding.6

Bailey's letter of response was prompt, short and to the point. His department had no funds for the project. Financing would have to be approved and provided in advance by the Secretary in Washington, D.C. and the department was already committed to other projects for at least the next two years. Clearly, the United States Forestry Department was in no position to help Las Vegas alleviate its flooding problem.

More floods hastened city-county efforts for a solution. On 8 September 1950, a cloudburst dumped 0.62 of an inch of water on the city in little more than two hours. Fremont and Charleston Boulevards suffered the heaviest damage. Water swept through the Mayfair Addition seeping under door sills, destroying carpets, furniture, and lawns. The subdivision had been built across the natural drainage on the flood plain downstream from Clark's Las Vegas Townsite during the Second World War. Streets in Mayfair had been constructed in a north-south direction while the principal drainage carrying streets in Clark's Townsite ran in an east-west direction. Thus, the drainage from Clark's Townsite drained into the subdivision, blocking storm water seeking its way to the lower Las Vegas
Wash.7 Years of suburban home construction on the flood plain finally had claimed a high price in water damage to the residents of Mayfair.

Again on 20 July 1951, Nellie Bunch, Postmaster of Whitney, reported that water surged over Boulder Highway and stood eight inches deep in some yards (see Appendix A).8 On 22 August 1951, another thunderstorm hit the city of Las Vegas shutting down telephone communications and causing power outages. It struck the Vegas Heights area so hard that some residents saw people paddling rubber boats through the streets.9 The pressing need for flood protection could no longer be ignored, and as a result, County Commissioners intensified their search for help.

On 7 September 1951, Rodney Colton Chairman of the Clark County Commission, wrote to Nevada Senator Pat McCarran asking him to lobby in behalf of federal flood control funding for Las Vegas. He also enclosed the letters that had been exchanged between Helen Scott Reed and Doctor Reed Bailey of the United States Forestry Service in 1949. Colton indicated that after investigating the damages from recent rain storms, and the community’s inability to solve the problem on a piecemeal basis, the County Commission had decided that the only feasible alternative was to develop a flood control program. More than anything else, Colton believed that the county needed federal monetary and technical assistance. In short, Colton suggested to
Senator McCarran that because of the immense cost involved in flood control construction perhaps, the commission would have to work with some federal agencies.10

After nearly a half century of benevolent neglect, the county finally began to act. It recognized that a flood control problem existed and that the local community could not handle it alone. Determined in their search for federal assistance, Commissioners sought help from Nevada's Congressional delegation in Washington, D.C.. On 13 November 1951, Nevada's Democratic Congressman Walter Baring responded by writing Lt. Colonel Wright Hiatt, Deputy Director of Civil Works for Flood Control, Corps of Engineers, United States Army. In his letter he enclosed the previously mentioned correspondence between the county and Doctor Reed of the Forestry Service.

Representative Baring relayed the information that a meeting had been held in Las Vegas on 8 March 1950 for the specific purpose of discussing flood control issues facing that area. Officials of the Department of Agriculture expressed their willingness to cooperate with local interests, indicating that in their opinion flood problems affecting the city of Las Vegas and adjacent areas seemed similar to those previously encountered in cities of similar size by the Corps of Engineers in its flood control investigations.11

Hiatt forwarded the letter from Congressman Baring
to the Chief of Engineers in Washington, D.C. who sent a favorable and speedy response. In his response to Baring, General Chorpening indicated that Senate Bill 1020, authorizing a preliminary examination and survey for flood control and allied purposes of Las Vegas Wash and tributaries, had been passed by the Senate on 9 August 1951. Furthermore, it had been favorably reported without amendment in the House of Representatives, as Report No. 1200, on 17 October 1951. Additionally, General Chorpening advised that the bill remained on the House calendar, and if passed into law, the investigation would be assigned to the Division Engineer, South Pacific Division.12

Baring relayed this information to Helen Scott Reed and assured her that "you may be sure that when this measure comes before the House for action it will receive my utmost support."13 The legislative package moved through Congress after receiving letters of recommendation from both Frank Pace Jr., Secretary of the Army and Charles F. Brannan, Secretary of the Department of Agriculture. Two agencies, the Corps of Engineers and the Department of Agriculture, assigned committees to provide interim guidance to Clark County during this period.14

On 27 May 1952, various government officials met in the County Extension Agent’s Office. In was attendance was Warren Murphy-Field representative of the Secretary of Agriculture, for Pacific South West region, Harry
Jamison, Water Conservation, Hugh Shamberger, Nevada State Engineer, Henry L. Lobstein, chief of flood control survey, Inter-mountain forest and range experiment station of the United States Forestry Service, and many other local participants with an interest in the ongoing flood control problem. Every agency present declared its for controlling the flood hazards threatening the valley, but until such time as a flood control district could be formed to collect and evaluate data accumulated by the government, no work could be performed. Clark County had to establish a responsible agency to handle the correspondence and to assume a leadership role in coordinating the various federal and state agencies.

The task facing community leaders focused on overcoming bureaucratic red tape, and moving the principal actors off dead center. They needed action not meetings; letters and inter-departmental squabbling over jurisdiction could not be tolerated. The citizens in the Las Vegas Valley with their take charge frontier attitude continued to agitate local public officials to bring the area into the mainstream of contemporary flood control technology.

In 1954 and 1955, flooding became even more severe than it had been in past years. It reached crisis proportions because the city continued to grow without necessary flood protection measures to insure the safety of the public. Land developers and governmental
officials still elected to have streets designed as conduits for surface drainage while continuing to authorize subdivisions on cheap land located in or near washes and flood plains. On 27 June 1954, a series of cloudbursts struck Las Vegas causing the worst deluge in years.

As the result of the storm, Mayor James French of Henderson added his voice to the growing chorus of public officials demanding action instead of rhetoric from the County Commissioners over the lack of flood control. Boulder Highway had been the hardest hit area in Clark County. One Deputy Sheriff on duty told reporters that "the highway must have been built in an old wash, because the water [ran] due east along side of the road."16 French, told reporters that the city had hired everyone it could find to help salvage at least 100 homes in the Federal Home Development on the east side of the highway. On 3 August 1954, he wrote the County Commission stressing the seriousness of flood problems in Henderson and proposed that all of the municipalities within the county join together in a joint flood control effort.17

The County Commissioners responded on 11 August 1954, that the Board of Commissioners together with the flood control committees from all of the entities located in the valley had petitioned the assistance of Hugh Shamberger, Nevada’s State Engineer, United States Senator George Malone, Senator Pat McCarran, and former
congressman Walter Baring for assistance in the matter. All of the agencies petitioned for help had responded that they would work with the various county departments, and do everything in their power to support a program. Despite all of their assurances, another year passed before the Nevada State Legislature enacted laws enabling local communities to take positive remedial action.

Enumerated in the Nevada Revised Statutes as NRS 542 the "Watershed Protection and Flood prevention District Act of 1955" became the first Nevada law to address the flood situation. It provided for the establishment of a watershed protection and flood prevention district not exceeding 750,000 acres in size. Although restricting the legislation to small watershed areas precluded its implementation as a meaningful tool in the struggle to control flooding, it nevertheless represented Nevada’s first feeble attempt to address flood control, through legislation.

In any case, while political leaders deliberated over solutions to the problem, nature continued to inundate the city with rain storms. On 13 June 1955, a "tidal wave" of water swept across Las Vegas. Although there were no fatalities, flooding became acute at both the Charleston and the Bonanza underpasses. The storm centered over the famed Las Vegas night club strip section of the county, turning it into a disaster area. Mud, debris, and storm water swept eastward across and
down Highway 91, stacking flotsam over the median strip as far south as the Sands Hotel. Las Vegas’s sewage treatment plant became dysfunctional under tons of silt and mud, spewing millions of gallons of untreated raw sewage into the lower Vegas wash. Streets under 18 inches of flood water became impassable to motor vehicles and, train traffic crawled to a stop. Every auxiliary policeman and off-duty officer responded to the emergency providing 24 hour service to cope with the situation.21

John Cahlan, reported that "at least two feet of water ran along West Charleston all the way to the Hyde Park section. Many residents out my way were virtually isolated as water backed into yards and homes from a depth of eight to 18 inches."22 On 13 June 1955, Senator Alan Bible discussed the matter with Las Vegas, City Manager A.H. Kennedy, demanding immediate action. The Senator requested that a team of Army Engineers be contacted to make a study of the flood control options open to the community at that time.23

The gravity of the situation, and the severity of the damage prompted Bible to return to Washington, D.C. and confer with Major General A.D. Sturgis, Chief of the Corps of Engineers in Washington, D.C.. Above all else, the Army pledged complete assistance to the Senator and to the people of Southern Nevada.24 Filing an immediate request for federal assistance with the United States government under "Public Law 875, for emergency disaster
relief, the city urged Governor Charles Russell in Carson City to add his voice to the appeal. Damage estimates climbed to $3 million, before the Corps of Engineers team finally arrived late in the summer of 1955 to make their assessment.25

Regarded as the worst storm that Las Vegas had experienced in thirty years, it compelled the city fathers to redouble their efforts to find solutions. They found that the rapid increase in population coupled with home building on small lots side by side with insufficient drainage provisions precluded storm water from finding a safe path through the city without flooding. Lands that had been previously considered flood prone or marginal in the early days of Las Vegas’s growth now appealed to developers as prime building sites for leapfrog development.

Many home owners seeking help and unable to find it from local governmental agencies, sought out their insurance agents. According to the Review Journal, agents and adjusters in Las Vegas spent more time informing policy holders that their home owners’ insurance did not cover flood damage than in selling new policies.26 One insurance agent observed that the dry desert location together with the high cost of premiums had deterred most residents from purchasing flood insurance. He concluded that few people living in arid regions cared to pay approximately 250 dollars for a flood insurance policy.27
With their hopes for insurance coverage dashed, troubled home owners turned to other sources for assistance. Some help came from an unexpected source, George Gibson, Agent-in-charge of the Las Vegas branch of the Bureau of Internal Revenue, reported that under certain conditions flood losses could be claimed as a deductible item under the category of casualty.28

Impatient with waiting for vague or non-existent federal plans to prevent flooding, county and city leaders finally took action. Mayor C.D. Baker, and his Las Vegas city staff moved on two fronts to ease the hazards. First, in cooperation with the Army Engineers on the scene, the city prepared a plan to intercept slope borne torrents and channel them into the desert areas north and south of the populated areas. Second, city planners and engineers wrote stiff new subdivision regulations that required complete design data be approved by the city before construction of a project or a home began.29

These stop gap and short term measures supplemented long range plans being developed by more visionary elements within the community. The public had been alerted by the press that the Corps of Engineers survey requested by Senator Bible had nothing to do with the immediate problem of repairing damage to the city, but instead represented the start of a long range program to design flood control works. On another front, the Review Journal reinforced the gravity of the situation
by announcing that Governor Charles Russell had asked Eisenhower to declare Las Vegas a disaster area, and had requested $600,000 from Federal Emergency Funds.30

On 21 June 1955, President Eisenhower, officially declared Las Vegas a major disaster area and ordered that $200,000 in federal funds be made available to the city for repairs.31 North Las Vegas, in the spirit of the frontier tradition, declined federal assistance deciding instead to clean up the destruction with local labor. North Las Vegas Councilman Earl Evans stated that "he did not believe the total amount of damage was enough to seek federal relief funds, pointing out that if the city should borrow federal funds it would be necessary to repay them at a later date."32

On 28 June 1955 the Review Journal reported that Senator Bible appeared before the Senate Appropriations Subcommittee seeking $25,000 to conduct a detailed survey of Las Vegas to determine the exact flood control measures which would be needed to prevent future flash flood damage.33 Every available federal agency had been mustered to aid Las Vegas in its search for flood relief. In his testimony before the Senate Appropriations Committee considering Public Works appropriations for the Corps of Engineers, Bible argued that this "This growing city cannot wait another year before carrying off this needed investigation to map definite work specifications to meet the situation."34

Responding to the local demand for assistance, the
Bureau of Land Management announced that it might construct several small detention dams in Red Rock Canyon, west of Las Vegas, the primary source of runoff in the recent flood.35

Finally, in 1955, the Corps of Engineers began its study, handicapped by the lack of detailed records of flood damage prior to 1954. This information had not been kept owing to the infrequency of major floods that usually occurred many years apart. A sparse population, cheap land, and non-existent or minimal building codes in the city and county building departments had offered inexpensive alternatives to the costly construction of flood control works. Now the absence of historical storm data became a nightmare for the Army as it struggled with the planning and design of a sound infrastructure.

In its preliminary investigation, the Corps found that as a result of urban development and the construction of a substantial infrastructure in suburban sections west of the Union Pacific Railroad, the area had become subject to damage from a flood of standard project magnitude.36 (The Corps of Engineers defined a standard project flood as a "large hypothetical flood that would be exceeded only on rare occasions."37) In other words, flood works designed to withstand a standard project storm would guarantee almost one-hundred percent protection from flooding. Home building generated by land developers had not taken into
account these major rain storms. Moreover, thanks to little or no government regulation, they had modified or altered the natural drainage courses without improving the well-defined channels throughout the urbanized parts of the Las Vegas Wash drainage system. Therefore, nearly all floods originating west of the Union Pacific Railroad caused appreciable damage to the city especially after 1940.38

Despite the lack of information necessary for a thorough evaluation of the problem, the Army Corps not only prepared and documented the causes and effects of flooding in the valley but offered solutions. On 15 November 1955, fifty five persons attended a public hearing that had been called by the Corps of Engineers to discuss its plans. To those who had suffered in previous floods, improvements proposed and considered by the Corps of Engineers sounded reasonable. Civic leaders at the meeting stated their belief that levees and channel improvements would have prevented large property damages and business losses resulting from frequent flooding during past years.39

What is more, the local interests boiled down their requests of the Corps to three main points: first, to prevent inundation of intensively developed residential, commercial, and industrial areas in the cities of Las Vegas, North Las Vegas, Henderson, and in the community between Nellis Air Force Base and Las Vegas Wash.40 In view of the savage destructive force of the flood
preceding the meeting, local representatives stressed residential protection as their primary concern. The second area of concentration centered on protection of the extensively developed resort area in Las Vegas (the Strip). The third and final goal embodied measures to prevent disruption of railroad transportation, highway communication, and utility service.41

The Army supplemented local input with cost benefit ratio studies that indicated that its plan exceeded unity. Essentially the cost benefit ratio focuses on the notion that if a project produced two-hundred dollars in benefits and cost one hundred dollars the cost benefit ratio would be 2:1. If the cost benefit ratio is less than unity (one) than the project is not worth undertaking.42 Therefore, because of the favorable cost benefit ratio of the Las Vegas proposal all of the governmental entities agreed that the plan was financially sound.

In determining the scope of the project, the Corps arrived at a three phase framework with a joint funding formula between the local community and the Federal Government. The first part of the plan, known as the Las Vegas unit, would provide protection for most of North Las Vegas, Las Vegas, and the developed area south of Las Vegas from floods in the Las Vegas Loop, Las Vegas Creek, Charleston Boulevard, and Flamingo Wash drainage area (see appendix B).43 To arrive at the desired level of protection, the Corps proposed to
construct one diversion levee and a detention basin southwest of the cities of North Las Vegas and Las Vegas. This levee, ranging in height from four to twenty feet above natural ground surface, would extend for 31,000 feet generally southward from a point about seven miles northwest of the city of Las Vegas and about one mile southwest of Highway No. 95 to the Las Vegas detention basin (net capacity 12,660 acre-feet) on Flamingo wash west of the Union Pacific railroad about five miles southwest of Las Vegas.

The outlet channel, which would be constructed eastward for about 50,000 feet from the detention basin to Las Vegas Wash, required a capacity ranging from 3,500 cubic feet per second at the upstream end to 20,000 at the Las Vegas Wash. Construction of the outlet channel would involve building one railroad bridge and three new highway bridges. The Las Vegas unit also called for a second levee about one-half mile about 1/2 mile West of the Las Vegas airport (McCarran Field). Approximately 6.5 feet high, this levee would extend 8,000 feet northward from the Union Pacific railroad, Boulder branch line to the outlet channel.

The second phase, the Henderson Unit, would provide protection for Henderson and adjacent industrial plants from floods in the washes south and east of Henderson. To complete the plan, the Corps planned to construct the Power Line Road unit that would safeguard the developed area south of Nellis Air Force Base from floods in
washes northeast and northwest of the airbase. Together, these two systems planned and designed by the Corps of Engineers had covered every flood prone urbanized district in the valley (see Appendix B).

At first glance, the Corps plan seemed like a gift from heaven that would appeal to every interest in the valley. However, that was not to be the case. Five prerequisites had to be met by Clark County prior to finalization of the plan and commencement of construction. On the surface, these items seemed reasonable, but after a complete review of the proposal the community divided into two opposing camps. Many found the plan unacceptable after analyzing the conditions that the Corps intended to impose.

The local community’s obligations consisted of:

(a) Provide free of cost to the United States all lands, easements, and right-of-way necessary for the construction of the project at a cost estimated at $4,545,000 (June 1959).

(b) Pay for relocation of utilities, construct necessary highway bridges, and dip crossing relocations at a cost estimated at $385,000 (June 1959).

(c) Hold and save the United States free from damages due to the construction and operation of the works.

(d) Maintain and operate the improvements after completion in accordance with regulations prescribed by the secretary of the Army, at an annual cost estimated at $54,000.

(e) Establish and enforce flood channel limits and regulations satisfactory to the Secretary of the Army, for the preservation of the flood-carrying capacity of the recommended channel improvements.
The Army Corps of Engineers accepted responsibility for the excavation and construction of the channel and appurtenances. This entailed the largest percentage of the initial cost of the works. The local community, however, found itself faced with the maintenance of the project forever, and in a manner satisfactory to the Army. Preliminary estimates for the total cost of the operation amounted to $18,460,000. A cost breakdown indicated that local entities would pay $4,930,000 while the Federal government’s share amounted to $13,530,000.48

In an effort to solve the problem the State of Nevada and Clark County moved on two fronts to expedite the implementation of a flood control program. The first was to send Hugh Shamberger, state director of conservation and natural resources, to Washington, D.C., to press for authorization for county-wide flood control. Meanwhile Mayor Baker, who was also chairman of the conservation district, met with concerned citizens and stressed the urgency of the situation. Moreover, he tried to muster public support for the creation of a viable program. In his meetings, Baker drove home the argument that the immediate problem of right-of-way acquisition had to be faced before property values increased. Furthermore, he emphasized the difficulties involved with financing the project. Mayor Baker went so far as to suggested that it might be necessary to call a special session of the Nevada State
Legislature to create a new special flood control district.49

Establishment of a flood control district to supplant the Watershed Protection and Flood Prevention District became a reality and the vehicle selected by the county to manage financing, construction, and maintenance of the project. Legislation necessary to achieve these ends became law in 1960. Entitled "NRS 543"50 the Nevada law provided a permanent governmental body that incorporated all of the tools necessary to comply with the Corps of Engineers report. Clark County Commissioners acted as the Board of Directors, and all other county elected officials became ex-officio members of the district. One of the most important chapters in the law, 543.720, permitted the District to issue general obligation bonds. County Commissioners and other local officials decided that the best method for financing the local entities’s share of the project would be to sell general obligation, flood control bonds. This meant that an election had to be held, and approval of the voters secured prior to the issuance of the bonds. Plans for the bond election gained acceptance locally, and the date for the election was set for 10 April, 1962."51 Officials assumed that the general public wanted flood control in the valley, and would vote for bonds as a means of financing the project. Accordingly, they instructed the County Election Department to prepare ballots and conduct the
Unhappily for those favoring the program, the election also presented an opportunity for special interests within the valley, to oppose the Corps of Engineers plan. Voters wanted and expected protection for the community using the least expensive methods available. Yet, as in all issues requiring a vote of the general public, two sides emerged over the argument. Those opposed to a major flood control program in Las Vegas took the opportunity to study the Corps of Engineers plan, and point out weaknesses to help defeat the bond issue at the polls.

One minority group consisted of residents living on the alluvial plain, not subjected to flooding. They took the position that since they lived in a safe zone they should not be taxed to pay for other people's mistakes. Furthermore, they grumbled that folks ought to have had better sense than to build or buy homes in a flood prone section of the valley.

Land developers also viewed the flood control project negatively because it encroached on prime land in the Charleston Heights area west of Jones Boulevard that they considered desirable for development. Many speculators had already prepared plans to construct subdivisions in the area under appraisal for the levee and channel west of the city. Charleston Heights Tract 40-A represented one of the Final Maps that had been approved by the Las Vegas City Planning Commission prior
to the election. Located in the path of the proposed flood control channel, Charleston Heights Tract 40-A had been approved by the Las Vegas Planning Commission on 27 March 1962 and the Las Vegas City Commission on 4 April 1962. These approvals came just a few days prior to the bond election.52

Anticipating the defeat of the bond issue at the polls, and fearing further efforts to reactivate the issue after the election, developers prepared to move expeditiously to block the proposed levee west of the city. Additionally, a group of local consulting engineers joined in the argument and advanced several compelling arguments against the project. They studied the plans of the Corps of Engineers, and presented sound engineering and economic reasons why the Corps plan ought to be defeated.

Then, in March 1962, just two weeks before the election, local engineers called a meeting with members of the Army Corps of Engineers to advance their notion that the $20 million dollar flood control project had been overdesigned.53 Army representatives privately viewed the assembly as a "cross examination",54 but responded to the inquiry. Louis La Porta, chairman of the Board of County Commissioners, Oscar Scherer, George Von Tobel, Land Surveyor Jack Levitt; Jack Turner, Clyde Keegle, Ewalt Anderson and Boyd Yaden all engineers except Leavitt,55 attended the confrontation and presented arguments that the project had been
overdesigned.

The Army responded that the design had been based on studies conducted to establish a maximum hypothetical storm and the relative damage and loss of life it would cause. These local engineers failed to consider that few or no records of the previous storms from flooding in the valley existed. Newspaper accounts of storms and flooding contained the only reliable source of information for the Corps. The significance of the lack of data on rainfall in the Las Vegas area dictated that the Corps of Engineers had to use similar storms that had occurred in areas like Las Vegas.

On 4 April 1962, the Review Journal, reported that most officials predicted an easy victory for the project. The writer went on to say that businessmen on the Strip, as well as land developers and speculators strongly favored the project, and saw no reason for its defeat. Moreover, he bolstered his assessment of an easy victory at the polls by noting that although there had been voices questioning the project, no open strong opposition to the bond issue had presented itself until the present time. More broadly, the press declared that a group of professional engineers questioned the size of the project, but had not taken a stand either favoring or rejecting it.

Two days later on 6 April 1962, the headlines in the Review Journal, announced in bold black print, "Consulting Engineers Here Oppose Flood Control Plan".
The consulting engineers gave several reasons for their decision. First they predicted that the cost could go as high as $40-million dollars, a sum substantially higher than that estimated by the Corps of Engineers. Nevertheless, they admitted that the project would protect the city of Las Vegas from severe flood damage that occurred during a general storm over the entire water shed.

Central to the argument presented by local engineers, and the one that caused the great disparity between the Corp's estimated costs and local estimates resulted from the notion that because the project would not protect areas below the proposed levee from damage, a storm drain needed to be included in the plans. Consulting engineers argued that the urban area could not be adequately protected without the construction of an underground storm drain network, and that it needed to be built in conjunction with the main channel system as proposed by the Army Corps of Engineers. As a consequence, the urban areas in Las Vegas faced an all or nothing choice.

On Sunday 8 April 1962, an editorial in the Review Journal, presented both sides of the story. The press focused upon the pragmatic notion that flood control like all federal activities usually developed into "pork barrel" projects, however work on the proposal ought to go forward for the good of the community. They pointed out that costs would never be less, and that some
protection from the ravages of flooding would be better than nothing. Commending local consulting engineers on their astute observations, the editor nevertheless, encouraged voters to pass the bond issue on the 10th of April.60

Time had run out, and the accelerated expansion of the city in a westerly direction coupled with a massive population explosion led the reporter to observe that Las Vegas had already jumped beyond the temporary dirt barrier that had been erected along its western perimeter.61 The stage was set for the biggest bond issue to ever appear on the ballot in Clark County until that time.

On election day, both sides continued to press their arguments to prospective voters. Oscar Scherer, a private consulting engineer and opponent of the project speculated that La Porta (Chairman of the County Commission) would realize his hope for approval of the bond issue. His main criticism focused on the idea that the Army’s flood control system did not include an internal drainage system to drain off water that fell below the dike area.62 The polls opened on time and the voters began to cast their ballots. Only owners of real property could vote, and they did not need to be registered to cast a ballot.63

The County Commissioners and Mayor Baker suffered a surprising defeat. "Voters Toss Out LV Bond Issue. ... Less than 5000 vote here",64 proclaimed the headlines
the day after the election. The vote was 7 to 4 against the proposal. Las Vegas had lost its chance to start a flood control program with federal assistance and it would never be given another chance. Discouraged public works officials began to pick up the pieces and salvage what they could from the ashes of defeat. Local Engineers, either by intent or by accident, had came forth in the newspapers at just the right time to state their case and had not allowed time for a rational rebuttal by other interested parties.

Pressure from a minority pressure group left the public in doubt about the validity of the Army Corps of Engineers plan and the wisdom of their elected public officials. The argument that the proposed project would stop flash flooding that threatened the inundation of Las Vegas, while not protecting it from rainfall that fell directly on the city had merit. Nevertheless, funding for an internal drainage system could have waited till the later while the metropolitan area developed and expanded its tax base. The inability of forces favorable to the flood measures to respond to the consulting engineers arguments in the short span of time between their attacks upon the plan and the election led to the defeat of the measure. Clark County and Las Vegas in defeat would have to search for new sources of financing to build flood control works for its residents.
The defeat of the flood control bond issue on 10 April 1962 devastated public works officials and local entities. County Commissioner White in stunned disbelief observed that "The public doesn’t realize what it has done to itself."1 In an attempt to save the day Richard Sauer, Director of Public Works for the City of Las Vegas, suggested that an alternative solution to the Corps of Engineers’ plan would be to seek cooperation from state and county agencies to turn Rainbow Avenue into a combination dike and highway.2 Rainbow Avenue paralleled the main flood control channel proposed by the Army Engineers, and Sauer believed that a dirt levee could be constructed cheaply.

Sauer expected the proposed dike to provide a limited amount of protection for the city from flash flooding that came from the Spring mountains west of Las Vegas. He argued that the combination highway-dike would intercept most of the storm water, although unlike the Corps plan, it would not channel it directly into the lower Vegas wash. It presented an inexpensive alternative for the community. Along with Sauer,
frustrated public officials debated other alternatives for dealing with the problem, while the community continued to urbanize, sprawling over into the surrounding flood prone areas.

Each of the political entities located within the Las Vegas basin zealously guarded its political independence, choosing to make its own political and economic decisions, often without consulting its neighbors. Failure of the bond issue contributed to the polarization of local governments by introducing conflict over construction methods, means of financing, size of proposed projects, and the location of future flood control works. Flooding, the only common element in the situation facing the communities in Southern Nevada, lost its significance in the ensuing economic and political conflicts that arose among the entities.

Thunderstorms and raging torrents of flood water failed to respect artificial boundaries erected by legislative fiat. Storm water continued to flow in its original channel, ignoring homes, streets or other objects artificially erected in its pathway. Some concerned officials believed that one useful vehicle to help solve the valley's mounting flood problems lay in the utilization of the Flood Control District law. It had been enacted by the Nevada State Legislature in 1960 for the administration of the proposed Army Engineer's flood control plan. Established as a regional agency, the Clark County Flood Control District contained all of
the tools necessary to bring consensus to the municipal entities.

Unfortunately for these officials the District had not become functional prior to the bond election, and existed solely as a paper entity. Without funding for personnel to plan and engineer projects, or the means to construct flood works the district had no value to the community. Although city and county engineers continued to isolate problems and design structures to ameliorate hazards, without financial backing their efforts resulted in meaningless stacks of useless blueprints.

The nexus in the flood control equation binding communities in the valley together had been the proposition that flooding presented a deadly hazard in every entity regardless of political boundaries. On the other hand, continuing conflict over the allocation of state tax dollars to local communities created friction and fueled ongoing adversarial political relationships. Clark County, Las Vegas, North Las Vegas, and Henderson each struggled to retain the power to oversee the expenditure of funds within its own borders. Moreover, Commissioners looked suspiciously at any institution not under their political supervision, especially empowered to spend scarce tax revenue in parts of the county other than their own. More than anything else, this atavistic notion encouraged political gridlock among the various communities, and shaped flood control planning during the 1960s and 1970s.
When faced with competing demands for tax revenues from an expanding population base for schools, social programs, hospitals, police, and fire departments, flood control took a back seat. The normally mild climate, together with one of the lowest annual rainfall rates in the country continued to lull residents into a false sense of security. Touted as a tourist mecca and desert paradise by the Chamber of Commerce and the news media, Las Vegas in the 1960s assumed a reputation of security that belied the hazards from flood storms. Realists who continued to remind local residents that floods could and would strike the valley again often achieved the status of iconoclastic pessimists.

Each political subdivision realized that storm water had to flow through the Las Vegas and Flamingo Washes where they crossed municipal boundaries yet officials could not agree upon the size or the location of the works to be constructed. Recognizing the need for unity of purpose, the various communities decided to fund a master drainage plan. In 1963, they jointly retain VTN of Nevada, a consulting engineering firm, to compile the necessary data and prepare the "Las Vegas Master Drainage Plan." The plan identified all of the major channels passing through the valley. This master plan guided the cities and county on the optimum location for proposed flood control works and size of channels. Local public works departments could, and did, alter the size of the recommended channels to fit
their budgets or political views. Furthermore, each entity funded and constructed only those parts of channels that flowed through its jurisdiction, when and if it deemed it necessary.

Lacking money and pressed by the demands of the people for schools and social services, community leaders of the various entities left flood control to their planning and engineering departments. Both groups constantly stressed the importance of preserving the integrity of natural washes and attempted to control land development in flood prone areas by requesting their governing bodies pass planning and zoning ordinances. As early as 1975, public works officials attempted to place restrictions on land developers, builders, and contractors when they believed it to be in the public interest and in accordance with local and state statutes.

These restrictions, presented as staff recommendations to the City and County Commissioners, detailed the flood control situation prior to final approval of the plans for construction. The outcome of this loose inter-governmental situation resulted in the construction of inadequate, piecemeal flood control works. On 5 July 1975, the Review Journal accurately described the situation by reporting that land developers and construction crews often filled up washes to accommodate subdivisions while diverting the flow of storm water onto other property that had not been
subjected to flooding. The picture of upstream concrete flood works emptying into a subdivision that had been built in a flood plain as the result of greedy land speculation or poor planning made news.

The Review Journal bitterly denounced the ongoing land development process as "backward construction," and focused attention on the poorly funded system that encouraged the construction of channels whose segments often did not connect with each other or had differing depths and widths. Attempting to concentrate public attention on the need for flood control, the newspapers often spoke out for reform. The defeat of the bond issue at the polls, however, rendered their efforts a lost cause.

The day-to-day attempts of public works officials to cope with an expanding population, while hampered by understaffed and underfunded departments, precluded the planning or development of an adequate infrastructure. Inexpensive land in marginal areas yielded a larger profit than similar land located in sites that were free from flooding. Despite the efforts of well intentioned governmental officials, land developers continued to seek methods to avoid paying for costly flood control measures necessary to protect their developments.

As a last resort, local entities began requiring engineers to calculate the volume of storm water that paved streets would carry during a rain storm of a defined magnitude. Using streets and alleys to carry
surface runoff in lieu of costly channels, culverts, and storm drains during floods became standard practice for land developers. The theory had been tried, tested, and adopted in the pioneer days of the settlement of Las Vegas, and once again became the method chosen to dispose of surface drainage. Acceptance of this archaic system by the general public, with its flooded streets, water damaged homes, and disrupted communications systems indicated their acquiescence in the atavistic ideology that had dominated the city since its inception as a railroad division point.

The notion of raising taxes to fund a comprehensive system of flood control found little support with the public. Despite the parsimonious mood of the taxpayers and the State Legislature, County Public Works Director, George Monahan intended to upgrade the program with the appointment of James Scholl, as Deputy Director of Public Works for Flood Control and Off-Sites in 1971. Scholl’s budget for the 1972-1973 fiscal year was a meager $35,441.5 These funds, had been earmarked for flood control in the county’s urban Las Vegas area as well as the towns of Mesquite, Bunkerville, Overton, and Logandale.

The limited funds barely covered the Deputy Director’s salary and cost of cataloging existing flood structures and hazards within the county. But in 1974, after identifying the worst problems, the County Commission allocated $700,000 to flood control for the
express purpose of launching an interim program. Moreover, in January of 1974 the commissioners approved the county flood control division to sign a $44,500 contract with Baughman, Haught and Turner Inc., Consulting Engineers, to start work on the top priority—design of a flood control channel on Monson Road between Nellis Boulevard and the Las Vegas Wash.6

Although many more small projects followed, they were reactions to events rather than results of advanced planning. The other communities of the valley had also begun to establish flood works along the major washes within their boundaries. Generally, engineers followed the VTN master plan for the location of their projects; however, the size of the works often prompted disagreement between the entities. Yet, each city independently funded the total cost of the project through their respective areas. On the national level, flood control had captured the interest of the federal government, mainly because of severe flooding in the eastern part of the United States especially in the Mississippi Valley.

In the mid-1960s, the federal government began to address the need for non-structural approaches to flood loss reduction through land use planning, building, construction standards, and an insurance program. Federal agencies concerned with flooding recognized that some sections of the country suffered flood damage year after year and that financial losses to the public at
large were becoming intolerable.

The United States Congress finally responded to the crisis by passing the National Flood Insurance Act in 1968 and the Flood Disaster Protection Act of 1973. The heart of this legislation was the identification and mapping of flood prone areas within the United States. Federal insurance rates in turn focused upon the elevation of existing and proposed construction above the identified flood plain shown on the government's maps as the basis for insurance premiums. The property owner paid a premium amount based upon the probability, predictability, and frequency of flooding of his property within the identified flood hazard. Many local communities throughout the United States did not want to participate in the program. Federal authorities, however, made it impossible for them to avoid entering the plan.

Clark County was scheduled to enter the program on 1 July 1975. The lever used to guarantee both entry and compliance with the program came from Washington's threat to withhold federal funds from the county. To show its determination the Federal Insurance Administration issued an edict stating that if Clark County failed to enter the program within the prescribed time, it would institute a moratorium on all loans for new construction and mortgages from lending institutions insured under the Federal Deposit Insurance Corp. (FDIC)

On 7 October 1974, at the regular meeting of the
County Commission, Deputy Director of Flood Control, James Scholl appeared before the Board to seek authorization for the county to institute the necessary paperwork to make flood insurance available to the people of Clark County under the National Flood Insurance Program of 1973. Scholl told the Board that enrollment had to be accomplished prior to 1 July 1975 to ensure the continuation of federal funds for Clark County. The motion to proceed with the application passed the Board of Commissioners unanimously.

Entry into the insurance program required the passage by the County Commission of two resolutions, Resolution "A" and Resolution "B". Resolution "A" recognized that certain sections of Clark County had been subjected to periodic flooding from streams and washes causing serious damage to properties at those locations. Furthermore, the county resolved to enact and maintain in force for those areas having flood hazards adequate land use and control measures together with enforcement provisions consistent with the criteria set forth in section 1910 of the National Flood Insurance Program Regulation. Moreover, Clark County vested the Flood Control Division, of its Department of Public Works with the responsibility, authority, and means to maintain for public inspection, and to furnish upon request, a record of elevations (in relation to sea level) of the lowest floor (including basement) of all new or substantially improved structures located in the
special flood hazard areas. If the lowest floor elevation was below grade on one or more sides, the elevation of the floor immediately above also needed to be recorded.8

At the same meeting, County Commissioners passed Resolution "B" that verified the fact that the county had adopted the "Uniform Building Code, 1973 Edition, (International Conference of Building Officials).9 This resolution strengthened the enforcement of flood control procedures and minimized future abuses by local developers and contractors, who often failed to take into account the problem of flooding. The Commission directed Scholl to review all plans submitted for building permits to ascertain that all public facilities, such as sewer, gas, electrical, and water systems are located, elevated, and constructed to minimize or eliminate flood damage.10

Using the newly approved resolutions, Scholl made application for Clark County to the Federal Insurance Administrator for flood insurance under the Flood Disaster Protection Act of 1973. On 30 May 1975, the Acting Federal Insurance Administrator, J. Robert Hunter, once again clarified the government’s intention to freeze local financing for building construction.11

 Barely a month later on 4 July 1975, the Review Journal announced that, just in time for torrential rains and flooding streets, Clark County had been accepted into the National Flood Insurance Program.12
Hunter, acting Federal Insurance Administrator predicted that the new program would offer "the best way of protecting property owners from the ravages of floods, while easing the burden on the general public."13

That day, 4 July 1975, the worst storm since the 1950s struck Las Vegas sending damage estimates into the millions of dollars. Two men died in the storm, which was believed to be the most destructive flood to hit Las Vegas in twenty years. The men, both North Las Vegas street workers, perished under a wall of flood water that swept their vehicle off the road. Scholl reported to the news media that most of the damage in the valley related to homes and autos and that preliminary damage estimates exceeded two million dollars. Larry Hampton, Las Vegas Director of Public Works, reported that the City's sewage system had been put out of service, and fixed the city's cost of repairs at more than $100,000. At the federal level, Robert Stevens had been dispatched to the area to assist with damage assessment.14

Pointing to a factor unique in the Las Vegas flood control equation, Bob Whitney, Public Works Director of Henderson, observed in an interview with reporters from the Review Journal that flood control is something that no one needs until it rains; He further observed that many residents, as well as some government officials, when advised about flood danger, gaze at the cloudless sky in disbelief and say: "Flood? Here?"15 The significance of the rhetorical question and answer
highlight the misconception that desert areas are immune to flood hazards.

In the wake of the flood of 1975 Army Corps of Engineers economist Dan Young and Hydraulic Engineer Tim Yeh began collecting data in Las Vegas for future possible designs of flood works. Swamped with requests for assistance from local residents, the Corps's representatives responded that they came to Las Vegas to collect information, "not begin any construction or take complaints from the residents." They suggested that any information helpful to the Corps could be mailed to James Scholl at Clark County's Flood Control Department.

Seventy years of drainage problems and flooding caused by the construction of impervious surfaces such as paved streets, parking lots, and roof tops in conjunction with Las Vegas's population explosion resulted in a legal challenge to the County's adaptation and use of the civil law doctrine as the principle for adjudicating damages between property owners. In 1976, a number of local residents jointly filed an action against Clark County for damages sustained to their properties. The lower court agreed with the plaintiff, and entered a judgment for just compensation and damages against Clark County.

Clark County's District Attorney, Robert Miller, appealed to the Nevada State Supreme Court for relief. Speaking for the Court, Justice Mowbray held that the
lower court correctly adopted the "reasonable use" rule for determining competing rights between landowners and the County. Furthermore, the high court held that the land-owner’s situation had been caused by the County’s unreasonable acts, making it "liable for such injuries." Judge Mowbray’s decision overturned the foundation upon which drainage disputes had been settled in Las Vegas and other parts of the southwestern United States for decades.

There are three basic legal doctrines that dictate the adjudication of flood water in the United States, the "common enemy doctrine", the "civil law rule", and the "rule of reasonable use". The common enemy doctrine stipulates that property owners have the right to do as they please with their land. Moreover, they can fend off hostile storm waters and refuse to allow them to enter or cross their property. Furthermore, they need not take into account the consequences of damage to other surrounding land owners. It is apparent, even to the casual observer, that this principle is of no practical value in addressing flood problems in urban areas.

Diametrically opposed to the common enemy doctrine is the civil law concept. As noted earlier, the civil law rule states that the lower land owner must accept any surface water that drains onto his property but the upper owner has no right to increase the quantity of water over the amount that would have occurred
naturally. Civil law rule traces its roots back to Roman law, and more recently to the Code Napoleon. Clark County had used the civil law rule as its guiding legal principle since the founding of the community, and the State of California has followed the rule for over one-hundred years.21

The strength of the civil law rule places the burden of flooding upon those who purchase the land, requiring that they accept it subject to the natural drainage conditions.22 This concept fit the individualism of the founding fathers of the city, as well as the pioneering spirit of the early European-American settlers in the region. Furthermore, use of the legal plan added support to the community’s parsimonious philosophy toward the expenditure of tax money for flood control works.

Judge Mowbray’s decision in favor of the reasonable use rule constituted a substantial departure from contemporary legal ideology in the 1970s. Its acceptance over the common enemy rule and civil law concept forced the community and public works officials to consider new options when dealing with land development and flood control issues.23 Essentially, the opinion focused on factors other than the location of the litigants’ land with respect to their downstream neighbors’ boundary line. After Mowbray’s decision, each and every case had to be judged upon all of the urban development that had taken place on land in a
watershed contributing surface water onto a property situated further downstream.

Public works officials argued that because all urban development increased the ratio of rainfall to runoff, every new construction project in the County increased the probability for future flooding and litigation. Moreover, by continuing to issue building permits without the construction of an underground storm drain system or other positive drainage facility, local governments, as approving agencies assumed the liability for property damage resulting from flooding. In essence, they perceived that municipal construction and land development might be slowed or halted because of the change in legal philosophy.

The legal action taken by Powers, Lowe, et al, against Clark County clearly illustrated and defined the situation. In the 1950s and 1960s, Powers, Lowe, et al. purchased property on the banks of a dry wash outside of the urban center of the community near Topaz Street and Desert Inn Road. Rain storms had eroded a natural channel through their land on its way to the Flamingo Wash. At the time of their purchase, flooding rarely occurred because of the gentle slope, small amount of storm water, porous soil conditions, and lack of nuisance water. These conditions prevailed until the mid 1970s, when pressure from an expanding population increased the density of new home construction, apartment dwellings, and shopping centers
upstream from the litigants property.

New development with its asphalt streets, concrete sidewalks, and impervious roof tops brought an increased volume of nuisance water as well as an accelerated flow of storm water through the litigant's property. The intermittent stream had been transformed into a continuous free-flowing creek complete with reeds, mosquitos, and other aquatic life. Under the civil law doctrine, Powers and his neighbors would have had no recourse other than to accept the surface water onto their property and discharge onto their neighbor's land. Each one knowingly built his home in a marginal flood hazard and had no redress other than to accept the water onto their property, and to discharge it on the land of their neighbor downstream.

During the eleven-day trial, the litigants based their case on the theories of reasonable use and argued the legal points of inverse condemnation, nuisance, and trespass. Furthermore, the litigants demanded that Clark County pay them for their injuries and purchase the Powers property in its entirety, because it had no further value other than as a flood channel. Judge Mowbray agreed with the inverse condemnation charge of illegally taking a property without just compensation. Attorneys for Powers, et al. further argued that one landowner could not enrich himself at the expense of another. The County rebutted the plaintiff's arguments by citing the notion that it was "not liable for
injuries caused by what it terms 'urbanization' or rapid economic growth."27 The court responded to the County's argument with the statement, "We cannot agree."28 Clark County's loss of the Powers, Lowe case demonstrated the need for long-term planning, construction, and maintenance of a flood control infrastructure in the Las Vegas Valley. More broadly, it synthesized the community's perceptions of the effects of urbanization on the drainage eco-system in the valley, and led to a complete re-evaluation of the flood control program. Additionally, future land developers, landowners, and officials had to consider the full consequences of their plans upon the community before approving them for final implementation.29 More importantly, it forced a fundamental ideological change from a frontier mentality of individualism to the concept of collective community action.

The development of flood control in the Las Vegas Valley followed the lines of least resistance. Most of the year the residents accepted the dry fair weather bestowed upon them by nature. Living in a small town, surrounded by vast areas of cheap land, and with one of the lowest annual rainfall rates in the country the people failed to perceive the dangers of flooding. Events greater than the dreams of the early European American settlers overtook the railroad community, and forced it and its people to change their personal outlook from that of free pioneering spirits living on
the last frontier in the United States to members of a large cosmopolitan city.
EPILOGUE

Eighty five years after the founding of Las Vegas, residents continue to speculate about the hazards of flooding. On 11 August 1991, the Review Journal reported that rain and lightning hit the valley starting fires and closing streets to vehicular traffic. The storm caused Marian Timmerman to recall the death of her friend Misty Alexander who drowned in a flood channel at Topaz and Russell roads during the flood in June 1990. Her death and the property damages estimated to have been about 8.7 million dollars resulting from the summer floods of 1990 illustrated the community's legacy of failure through ignorance and neglect of the flood control problem. Flood control officials concede that they are trying to remedy years of mistakes, and inattention to the problem but that playing "catch up" is difficult.

The errors, inattention, and mistakes that prevented an effective response to the dangers of flooding can be attributed to politics, greed, and economics. Counter-factually, if the voters had passed the bond election in the early 1960s, and accepted the Army Corps of Engineers plan, the hazards from flooding could have been lessened. Those who argued for the defeat of the bond issue failed to grasp the significance between no flood control system or a
partial system that could be expanded at a later date. Despite the continuing arguments and finger pointing about the failure to remedy the dangers from flooding, they still exist. George Monahan put the situation in context when he said: "It wasn't ignorance, it wasn't pressure, it wasn't anything else, except the money just wasn't available for flood control measures."3

The decision by County leaders to design streets to carry flood water rather than constructing storm drains resulted from a parsimonious economic approach. Political expediency dictated that social programs take precedence over flood control in the bureaucratic struggle for public funds. Lack of significant annual rainfall in the Las Vegas Valley permitted local leaders to justify the denial of funds for an expensive storm drain.4

On 11 August 1991, Urban Livengood, a Clark County Deputy Director of Public Works noted that the drainage practice in Clark County's early development dictated leaving flood control decisions to private developers.5 Public Works Director, George Monahan concurred with Livengood's perception that land developers exerted a strong influence on matters pertaining to flood control. According to Monahan, developers often sought permission to divert storm water on to property other than their own, and "this was fine. As long as we didn't authorize it, nobody could blame us. We wouldn't have the liability."6 It is here, in both Livengood's and
Monahan’s perceptions, that we can see the effects of the early settlers philosophical notions of individualism, and the reason for the court’s decision to overturn the Civil Law Doctrine. Furthermore, the biased attitude of the political leaders of the community in favor of land developers and speculators often acted to deter dedicated employees from acting in the best interests of the public.

The case of Wishing Well Ranches #5 illustrates the friction that often occurred because public works officials attempted to protect the residents from the hazards of flooding. On 29 September 1976, Don Ware, a homeowner who lived at 8041 South Wishing Well Road wrote the County Flood Control Division complaining that new construction by a land developer and contractor had occurred behind his home, increasing the probability of flooding to his property. James Scholl, Deputy Director of Public Works, responded to the letter by conducting a field investigation of the area. Scholl agreed with Mr. Ware that a problem existed and that the developer’s engineer would be notified of the problem and directed to take remedial action to ameliorate the situation. After being notified of the homeowner’s fears, the engineer employed by the developer responded in writing to Scholl.

On 26 October 1977, the engineer submitted a written report that asserted that the new construction enhanced the situation rather than increased the danger
to the property owner. Furthermore, the engineer argued that the area would not flood and presented his approved Federal Housing Administration (FHA) plans to substantiate his position. Scholl disagreed with the engineer’s assessment, however, but when faced with the written report and the FHA approved plans, he allowed construction to proceed. On 16 August 1977, a rainstorm flooded Wishing Well Ranch Subdivision.

A meeting took place in Wishing Well Ranch on 18 August 1977 among the engineer, land developer, contractor, and residents. Scholl stood by his original claim that the new construction had increased the possibility of flooding in the area. The developer countered that both FHA and Clark County had approved the plans and therefore he should not be held responsible for the damages. Scholl took the position that the County’s policy toward developers ought to be more rigorously enforced and promised in the future to review their plans more closely in an effort to better protect the public.

Enraged by Scholl’s statement, the developer on 18 August 1977 wrote to Thalia Dondero, Chairman of the Clark County Commission, asserting that Scholl had set himself up as "judge, jury, and executioner." Moreover, the developer wondered whether such a threat by a county employee constituted a case for the district attorney, the courts, or if it was simply an
administrative problem. In any event, Scholl ended the inquiry by responding in writing to Chairman Dondero stating the facts surrounding the issue. Cought between the political forces that controlled local government and a private sector motivated by profit often left well intentioned public employees such as Scholl in an untenable situation.

The difficulty in enforcing community standards by government officials is clearly illustrated in the foregoing situation. It also illustrated the pressing need for reform of the legal system that had manifested itself in the Powers, Lowe v Clark County court case that overturned the archaic Civil Law Doctrine and the frontier philosophy.

The courts in their wisdom set new legal standards requiring the approving governmental agency to accept financial responsibility for the approval of plans and building permits. Forced by law, local governmental agencies had to enforce rigid flood control measures in flood prone areas. However, the struggle over flood control continued on another front. On 11 November 1992, the Review Journal reported that land developers continued to seek a re-definition of flood area maps in Clark County. These maps provide the basis for flood insurance rates in Clark County.

Under pressure from land developers the Federal government with a stroke of the pen can make the flood hazard zones disappear from the maps, but will the
danger go away? John Hall, a reporter for the Review
Journal observed that "in Southern Nevada, where it is
difficult to distinguish the developers from some city
councilmen and county commissioners, these questions are
bound to have more than one answer."12 Therein lies the
core truth for many of the flood control failures as
well as the future of flood control in the Las Vegas
Valley.
END NOTES

INTRODUCTION


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16  Ibid., 9 July 1975, 8.
17  Ibid.
18  Clark County V. Powers, Appeal from judgment
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19  Ibid., 498.
20  Robert L. Sax, Water Law, Planning & Policy, 495.
21  Ibid., 497.
22  Ibid., 496.
23  Clark County v. Powers, Appeal to the Nevada
Supreme Court. 503.
24  Ibid.
25  Ibid., 500.
26  Ibid., 498.
27  Ibid., 504.
28  Ibid.
29  Ibid., 503.

EPILOGUE.
2. Ibid.
3. Ibid.
4. Ibid., 8.
5. Ibid., 9.
6. Ibid., 8.
7. Don Ware, Las Vegas, Nevada, to Clark County Flood Control Division, 29 September 1976.
10. Ibid., 2.
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