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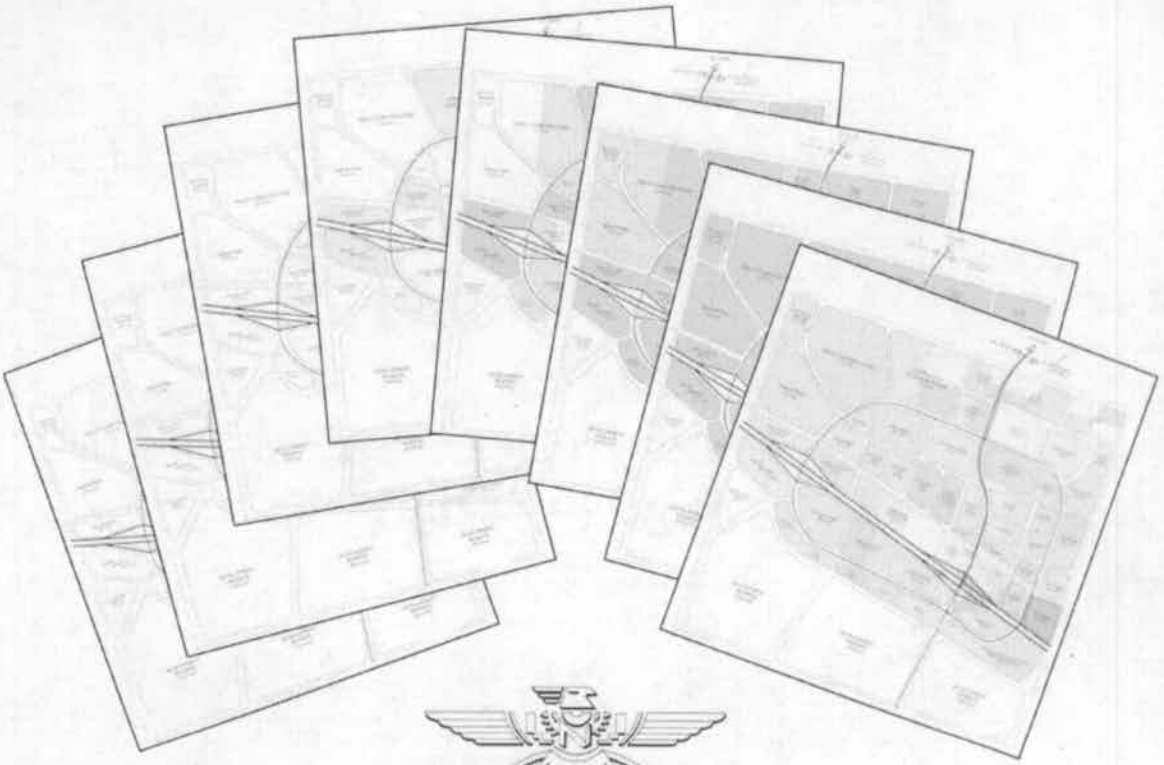

Yucca Mountain Project Gateway Area Concept Plan

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Prepared For:
Nuclear Waste Repository
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Nye County, Nevada

June 2007

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Disclaimer

This report was prepared by the Nuclear Waste Repository Project Office, funded by the U.S. Department of Energy, and neither Nye County nor any of its contractors or subcontractors nor the U.S. Department of Energy, nor any person acting on behalf of either, assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method, or process disclosed in this report. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Department of Energy or Nye County. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Department of Energy.

Acronym List

AF/YR	Acre-Feet Per Year
AVSTP	Amargosa Valley Science and Technology Park
BLM	Bureau of Land Management
DOE	Department of Energy
DWR	Division of Water Resources
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FHA	Federal Highway Administration
GROA	Geologic Repository Operations Area
LTREP	Long-Term Real Estate Plan
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NRS	Nevada Revised Statutes
NTS	Nevada Test Site
NTSDC	Nevada Test Site Development Corporation
NWPA	Nuclear Waste Policy Act
NWRPO	Nuclear Waste Repository Prjoect Office
PM10	Particulate Matter with a Diameter Less than 10 Microns
RMP	Resource Management Plan
ROD	Record of Decision
R&PP	Recreation and Public Purpose Act
RV	Recreational Vehicle
SBC	Southwestern Bell Communications, Inc.
STP	Sewage Treatment Plant
VEA	Valley Electric Association
YMP	Yucca Mountain Project

Executive Summary

Consistent with the requirements of Section 116(C) of the Nuclear Waste Policy Act, which addresses impact assessment and mitigation, this report presents a land use concept that Nye County has prepared as guidance to mitigate the expected impacts of the Yucca Mountain Project (YMP) in the communities adjacent to and in the vicinity of the Project's entrance area. To offset the anticipated impacts associated with the increase in YMP-related activities, Nye County is proposing this plan to ensure that land development in the vicinity of YMP entrance area occurs in an orderly and consistent manner, while increasing the opportunities for industrial and commercial development. Land management in the entrance area (Figure ES-1), will be accomplished by designating specific uses, and the land developed in phases. It is envisioned that appropriate planning measures would also provide an incubator to stimulate industrial and related opportunities as the repository project proceeds through the phases of site planning, infrastructure improvement, repository construction, and repository operation.

A cohesive plan to best utilize and manage existing initiatives while expanding and improving the area is critical to the success of the enterprise. The potential effects of unplanned development in a critical location such as the Gateway Area include: land use conflicts; duplication and excessive area-wide infrastructure costs for Department of Energy (DOE) and Nye County; damage to environmental and cultural resources; regional and local traffic conflicts, and excessive commuting time for YMP employees.

The report presents Nye County's conceptual, multi-phased plan for encouraging industrial and commercial development that would be both consistent with and beneficial to the repository program, while mitigating the potentially adverse affects that could accompany increased activity associated with repository operations. The plan also describes the existing characteristics of the Gateway Area that will affect its development, and the additional work necessary to completely define the specific infrastructure needs and their implications for future development.

With proper planning, revenue streams from new business opportunities can aid in mitigating impacts of an expanding population and improve existing schools, medical facilities, recreational opportunities, and entertainment venues. The report also briefly considers land-management options, financing alternatives for capital improvements, residential housing conditions in Amargosa Valley, and expansion of Nye County's institutional capacity.

Finally, the report summarizes the process to date, and provides conclusions about the status of development in the area, and recommendations for continued work towards Concept Plan implementation. The Gateway Area concept is a starting point for mitigating impacts by developing the infrastructure, institutional capacity, and facilities to support the YMP. The challenge will be to plan the development and expansion in the crucial area between the Gateway Area and surrounding residential communities in a manner that promotes the industrial base and commercial sectors and offsets impacts of residential development.

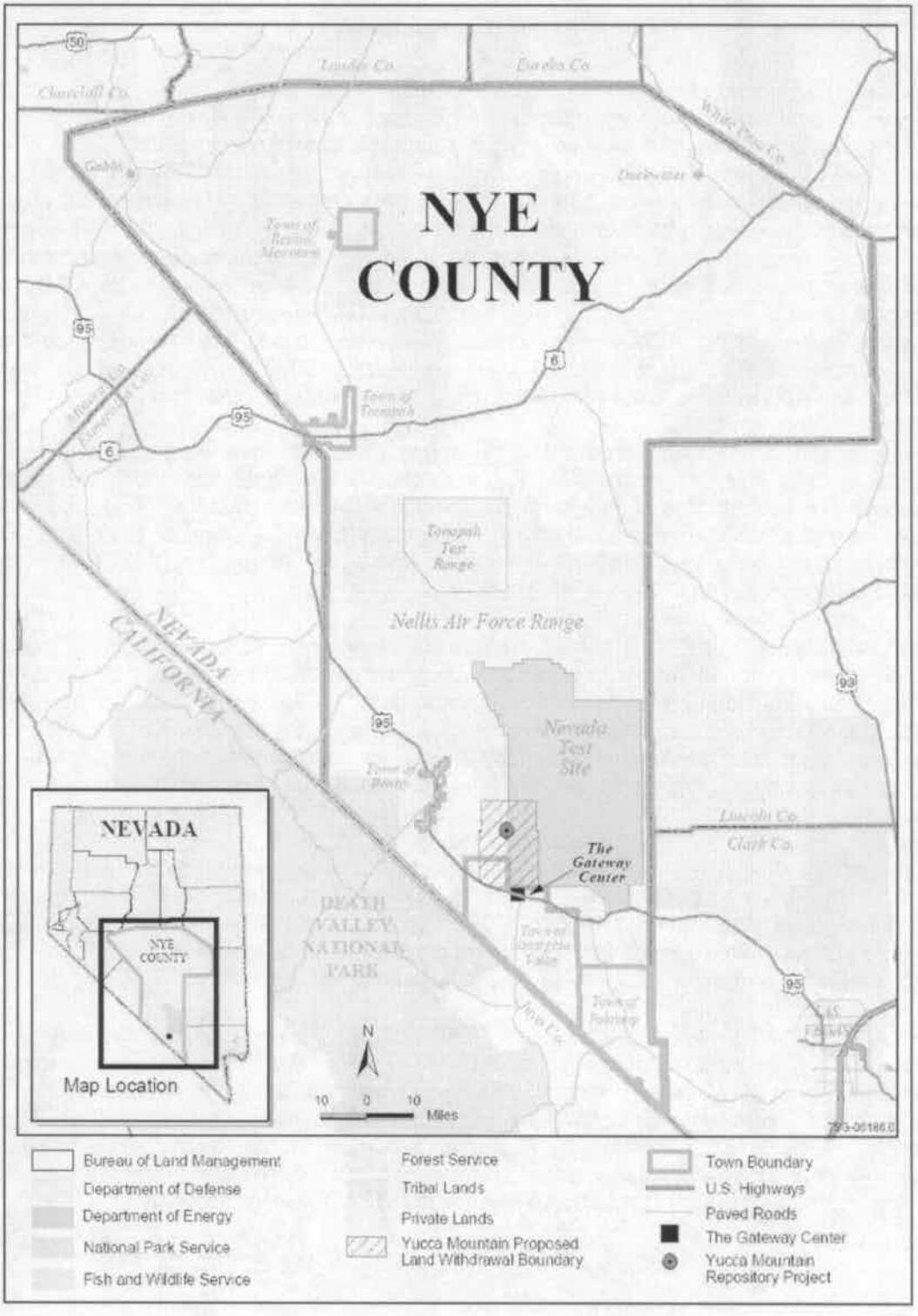


Figure E1. General location showing the proposed Gateway Area in Nye County, Nevada

1.0 Overview and Objectives

The Gateway Area encompasses approximately nine sections of land, or about nine square miles, south of the Gate 510 entrance to the Nevada Test Site (NTS). The Gateway Area encompasses a three-mile segment of U.S. Highway 95 (extending to Las Vegas and Reno), and the northern extent of Nevada Highway 373, which extends south towards Death Valley and Baker, California. Included within the Gateway Area is the Department of Energy's (DOE) existing site access road, which makes it the regional access hub for prospective Yucca Mountain Project (YMP) activity. The entrance area is located entirely within the Town of Amargosa Valley, whose current residential and agricultural development lies mainly five to ten miles south, between Farm and Mecca roads.

Nye County has advanced several initiatives at the Gateway Area. In 1992, as part of the U.S. Bureau of Land Management (BLM) Resource Management Planning process, Nye County first requested inclusion of the approximately nine square miles of land comprising the Gateway Area on BLM's land disposal list. The BLM land was segregated from all forms of public entry under the land laws and made available for public purchase in 1998 with the issuance of the Record of Decision (ROD) (BLM, 1998a). In 1998, in cooperation with the Nevada Test Site Development Corporation (NTSDC), Nye County conducted a study of the area, focusing mainly on the current condition of natural resources and infrastructure (NTSDC, 1998).

In November 1999, Congress enacted Public Law 106-113. Section 132 afforded Nye County the exclusive right to purchase 354 acres within the entrance area at fair market value for commercial purposes, and 470 acres at special government prices for educational purposes. In 2002, using a grant from the U.S. Economic Development Administration, Nye County purchased and began developing the first 61 acres to establish the Amargosa Valley Science and Technology Park (AVSTP). The County is currently completing development of the first phase and is working with BLM to purchase the remaining commercial acreage, approximately 293 acres. The 470 acres of land for educational purposes is under Recreation and Public Purposes (R&PP) application by the County for a variety of uses including a museum, research center, public safety facilities, and renewable energy demonstration projects. An additional 1280 acres of land is under R&PP application as a contingency site for a regional landfill and related facilities (chapter 2 describes these applications in greater detail). Nye County would relinquish the application for waste management land uses upon conveyance of other suitable public lands. Figure 1 shows the current land status in the vicinity of the Gateway Area, including the proposed boundary of the imminent YMP land withdrawal.

Consistent with the requirements of Section 116(C) of the Nuclear Waste Policy Act (NWPA, 1982), which addresses impact assessment and mitigation, this report presents a land use concept that Nye County has prepared as a guidance to mitigate the expected impacts of the YMP in the communities adjacent to and in the vicinity of the Project's entrance area. Table 1 is a summary of cumulative impacts resulting from the withdrawal of public lands in Nevada (applicable to Nye County and/or DOE actions), as disclosed in the Special Nevada Report (SAIC, 1991). This set of existing, unmitigated, cumulative effects is the baseline of cumulative impacts to which YMP actions will contribute.

To offset the anticipated impacts as federal activities increase, Nye County is proposing this plan to concurrently increase the opportunities for industrial and commercial development at the project's entrance area. The entrance area located in southern Nye County in the Town of

Table 1. Summary of Cumulative Effects[1]

EFFECTS
COMMUNICATION
Federal agencies, either internal or external to the state, have not communicated with the state nor with each other in a manner that keeps the state either aware of or postured to plan for federal activities and their resultant effects.
PUBLIC HEALTH AND SAFETY
Water Quality and Flood Hazard
Water resource contamination
Possible transport of contaminants off-site by surface water fun off.
Flood Hazard
Facility Accidents
Possible fuel and spills through fuel spills and leaks.
PUBLIC AND PRIVATE PROPERTY
Housing
Effect on housing market in rural areas
Land Use
Effects on economic contribution from mining.
Removed from public use/limited access.
Social Effects
Annoyance with aircraft noise results in social effects.
PLANTS, FISH, AND WILDLIFE RESOURCES
Possible effects on some species of plants, fish, and wildlife as a result of land disturbance.
Possible effects on some species of wildlife due to aircraft noise.
CULTURAL AND HISTORICAL RESOURCES
Impacts to historic and archaeological resources.
Impacts on Native American cultural values and religious practices.
SCIENTIFIC VALUES
Effect on development of scientific knowledge through lack of full access for scientific purposes.
RECREATIONAL RESOURCES
Effect on recreational resources by lack of access.
Effect on some recreational experiences by annoyance with noise.
WILDERNESS RESOURCES
Effect on wilderness resources by closure of public access.
Effect on wilderness values by aircraft noise.
MINERAL AND ENERGY RESOURCES
Current and future restrictions on access to [military] lands in Nevada have had, and will continue to have, two primary effects in the area of mineral and energy resources: 1. Lost opportunities for the development of mineral and energy resources (unquantifiable economic impacts to the State). 2. Gaps in geologic knowledge over a large area of southern Nevada (Chiefly the Nellis Air Force Range) that have caused unquantifiable effects on the evolution of geologic thought concerning mineral and energy resources in Nevada.
WATER RESOURCES
Lack of access to potentially developable water resources.
Resource consumption and competition.
Water resource consumption.

[1]Source: Modified from *Table 9-1, Special Nevada Report*, p. 9-3 through 9-10, September 23, 1991, by Science Applications International Corporation, Desert Research Institute in cooperation with Department of the Army and Department of Energy

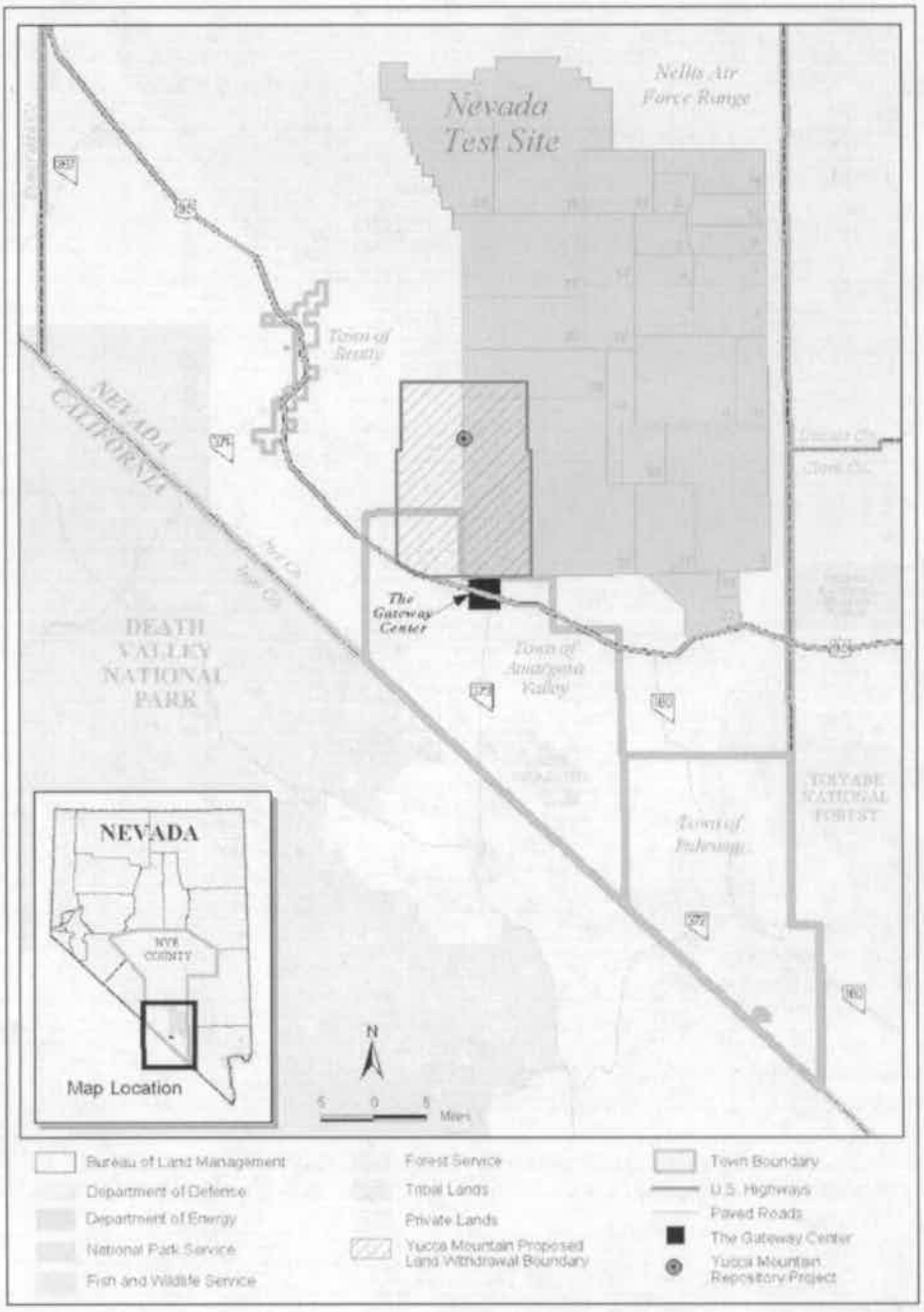


Figure 1. The Gateway Area, located in southern Nye County, in Amargosa Valley.

Amargosa Valley and herein referred to as the Gateway Area, would provide the incubator to stimulate industrial and related opportunities as the repository project proceeds through the phases of site planning, infrastructure improvement, repository construction, and finally, repository operation.

In addition to the cumulative impacts described in Table 1, an increase in the population of Nye County, could potentially exacerbate growth-related problems already experienced in the community of Pahrump, and could lead the same type of problems in the Towns of Amargosa Valley and Beatty, unless mitigating actions are implemented. In preparing the *Yucca Mountain Project Gateway Area Concept Plan*, Nye County has taken steps to identify measures that DOE could embrace to mitigate the expected impacts in Nye County.

One challenge of implementing this mitigation action proposal will be to integrate local opportunities for commercial and industrial expansion and development in the critical area between the YMP entrance and the surrounding residential communities. Correspondingly, a number of objectives are identified herein.

First, the plan presents a land-use framework that will encourage orderly commercial and industrial development in the Gateway Area. As noted previously, the land comprising the nine sections has been designated for disposal and as such, sale and subsequent development of the land can begin at any time. This will ensure that industrial, commercial, and ancillary development are adequately protected from routine risk associated with the transportation of the vast quantities of construction materials that are expected to move through this area in support of infrastructure and repository construction. When implemented, the land use concept will continue to ensure the safe movement of the converging waste shipments in the community of Amargosa Valley by routing materials and waste off of the main through-going highway, U.S. Highway 95, on its final approach to the repository. Thus, the Concept Plan also seeks to mitigate transportation risk in the community nearest to the planned repository.

Second, Nye County believes that it is in the best interest of its residents and the DOE to ensure that the land area located along the southern compliance boundary of the repository, (the accessible environment having uncontrolled access and unrestricted use), be reserved for uses that are consistent with the adjacent industrial, specifically radioactive and hazardous waste disposal, and other potentially high-risk activities. This would exclude residential and mixed uses other than heavy and light industrial, and limited commercial enterprises. The benefits are twofold: first it will reduce the risk to future generations by prohibiting the establishment of residential populations along the groundwater pathway down gradient of the repository in the accessible environment. Second, it will afford the DOE, its contractors, and other federal agencies with a lower-cost operational area for ancillary activities than what is normally available on federal reservations, resulting in a savings to both rate payers and taxpayers.

Third, it is the objective of Nye County to actively mitigate the long-term socioeconomic impacts, particularly fiscal impacts, to its overall economic well being. The goal is to balance residential growth and the need for government-provided services, which currently surpasses the revenue base generated by the various contributing sectors.

The Towns of Tonopah, Amargosa Valley, and Beatty have historically withstood significant population peaks and corresponding declines and infrastructure decay with the transfer, closure, and cessation of federal missions and product development such as the Stealth Bomber, Tonopah Test Range, and underground nuclear testing, respectively. The rapid

population growth in the Town of Pahrump, as it has become a residential option to Las Vegas living, has strained the economy because of the need to increase services and infrastructure without the benefit of a robust commercial and industrial tax base. As southern Nye County communities grow in relation to increased activities at Yucca Mountain, the County will apply accepted planning principles as required pursuant to the Nevada Revised Statutes (NRS), and will work to expand the existing infrastructure at Amargosa Valley and Beatty. This will provide a framework for the development of commerce and industry necessary to support community life that will be attractive to new and existing YMP employees.

Thus, the final objective of the Concept Plan is to demonstrate that Nye County and its communities are prepared to engage DOE and other federal agencies doing business in Nye County to establish a sustainable live-work community environment that will be attractive to federal agency and contractor workers in the short-term and for many years to come. To this end, this Concept Plan addresses land use planning for the entrance area to the YMP that describes general reception and visitor areas, parking facilities, and service hubs for work-related activities including contractor and material staging areas, emergency services, medical treatment, a transportation base to interior locations, and a general receiving area for vendors. Additionally, scientific research facilities, a museum and a renewable energy park are envisioned, as well as short-term residential facilities for YMP employees and visitors. The concept plan describes a phased approach to land management that would systematically release land for development for anticipated services and infrastructure that should coincide with development of the YMP.

1.1 The Concept Plan

The purpose of the Concept Plan is to:

- Describe key objectives and methods for managing the expected impacts of repository-related activities, including growth in the neighboring Towns of Amargosa Valley, Pahrump, and Beatty;
- Review existing conditions and identify the necessary planning and infrastructure improvements that would be necessary to mitigate potential transportation-related risk;
- Review financial options for land and utility development; and
- Present a land use concept that can be considered by the Town of Amargosa Valley and Nye County for implementation in the Gateway Area to ensure orderly and compatible development.

In advancing the mitigation objectives described in the Concept Plan, Nye County has made numerous investments at the Gateway Area in order to attract the types of businesses that would ultimately support the repository and other federal activities already present. These actions, which include ensuring that land, water, and utilities are available for offsite development of primary and support facilities, related business, and industrial aspects of YMP construction and operation, are described in detail in subsequent sections. In all of this, implementation will require the engaged cooperation and support of the DOE, Nye County's elected officials, and the nearby communities.

Implementation of the Gateway Area Concept Plan and land use plans will provide guidelines for integrated, time-phased development of infrastructure systems for the area as a whole, and consider Amargosa Valley, since its proximity to site activities will result in more immediate impacts. The objective is to limit random development of individual systems. Specifically, the Concept Plan addresses:

- Transportation systems,
- Water storage, treatment and transmission,
- Sewage and wastewater treatment,
- Electrical power transmission,
- Telecommunications.

A cohesive plan to best utilize and manage existing initiatives while expanding and improving the area is critical to the success of the enterprise. The potential effects of unplanned development in a critical area such as the Gateway Area include:

- Land use conflicts,
- Duplication and excessive area-wide infrastructure costs for DOE and Nye County,
- Damage to environmental and cultural resources,
- Regional/local traffic conflicts, and excessive commuting time for YMP employees.

In the chapters that follow, Nye County presents a conceptual, multi-phased plan for encouraging industrial and commercial development that would be both consistent with and beneficial to the repository program, while mitigating the potentially adverse effects associated with repository operations. The Concept Plan focuses on managed development of the 9 square miles south of NTS Gate 510.

2.0 Current Conditions

This section describes the existing key characteristics of the Gateway Area that will affect its development. While this assessment has defined the current conditions over much of the area, additional work is needed to completely determine the specific infrastructure needs and their implications for future development.

2.1 The Study Area

The study area is located in southern Nye County, Nevada in the Town of Amargosa Valley. The study area is bisected by U.S. Highway 95 and encompasses the intersection with Nevada Highway 373. The Town of Beatty is located to the northwest, and the rapidly growing Town of Pahrump is located to the southeast. While the residential centers of Amargosa Valley and Pahrump are widely separated, they share a common town boundary. While Nye County recognizes the need for concurrent planning efforts beyond the 9-square mile area, including the community of Amargosa Valley (residential uses), and Crater Flat, located approximately 10 miles to the northwest (regarding rail-related fabrication and industrial uses), the following sections focus on natural resources, infrastructure and, services that currently exist in the Town of Amargosa Valley. Figure 2 presents the current land status, town boundaries, and the proposed repository land withdrawal. Figure 3 shows existing infrastructure and easements and currently planned infrastructure improvements.

2.2 Natural Resources

This section describes the baseline conditions of natural resources,. In addition to the baseline conditions, this section identifies the remaining information needs and actions that are necessary to move the Concept Plan forward to the implementation phase.

2.2.1 Land

Approximately 410 acres of the nine square miles are either owned by private entities or existing utility rights-of-way. Of the 410 acres, approximately 41 acres are privately developed as two truck stops, a brothel, an RV/trailer park, a private residence, and a materials lay-down yard leased by the Nye County Nuclear Waste Repository Project Office (NWRPO). Utility easements for Nevada Department of Transportation (NDOT), Nye County Public Works, Southern Bell Communications (SBC), Incorporated, and Valley Electric Association (VEA) comprise approximately 308 acres. Nye County holds the patent to approximately 61 acres currently under development as the AVSTP. The U.S. Highway 95 occupies a 400-feet wide right-of-way, which would allow widening to a four lane limited access Highway.

Additional rights-of-way for exit and entrance ramps exist for U.S. Highway 95 and Nevada Highway 373, although these rights-of-way would not accommodate an 800-feet wide separate grade exit configuration. The conceptual layout of the Gateway Area has been designed in consideration of the existing private lands and utility rights-of-way such that the proposed land development would be as consistent as possible to minimize conflicts and inconsistencies. The remainder of the nine square miles is free of encumbrances.

2.2.2 Water Resources and Supply

Obtaining and conveying water for full development will require a phased approach that coincides with development of the Gateway Area. Nye County currently holds 80 acre-feet of quasi-municipal water rights at the AVSTP, where a water supply well and aboveground storage

Figure 2. The current land status in the vicinity of the Gateway Area, including the boundary of the proposed land withdrawal.

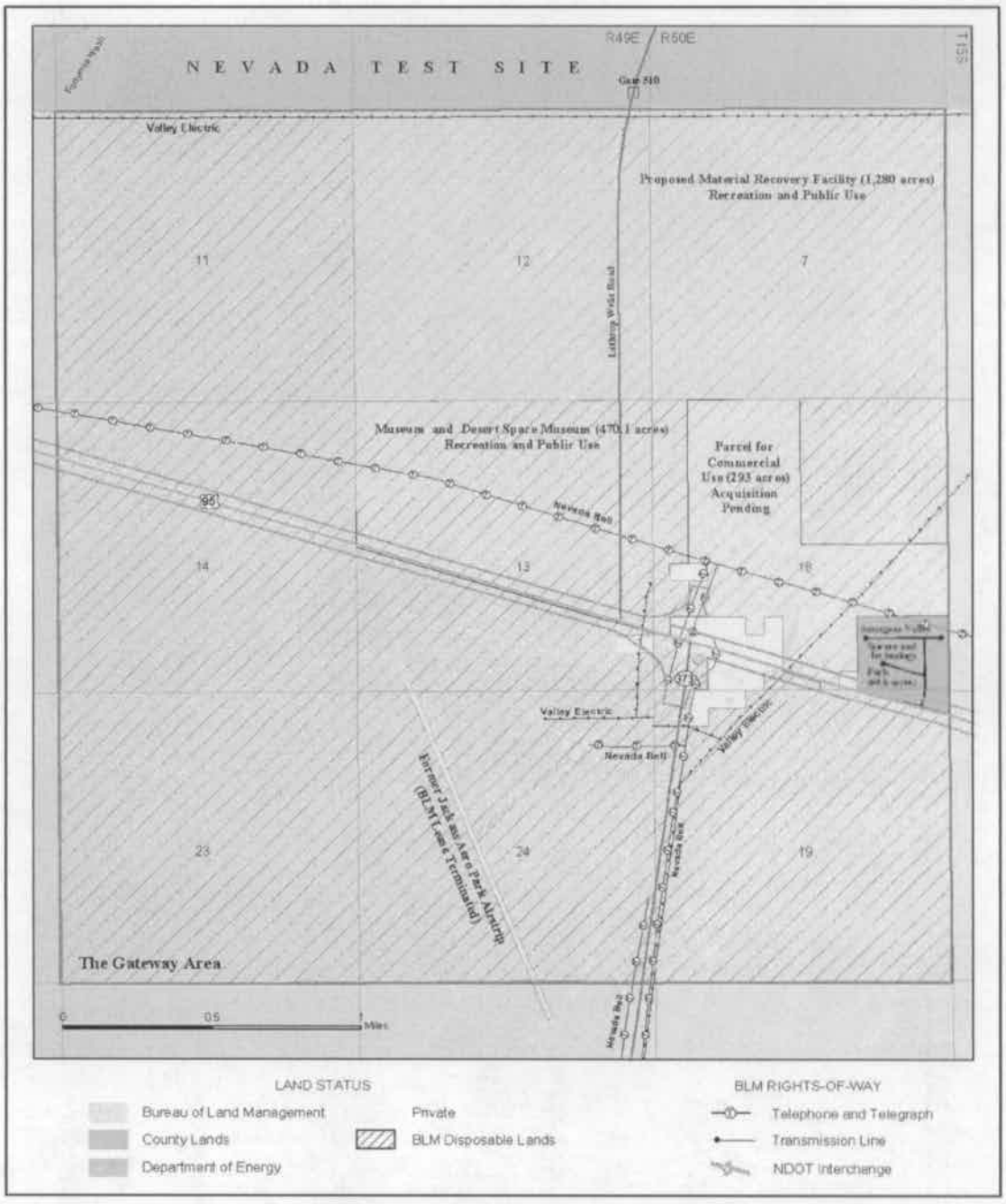


Figure 3. Nine square miles south of Nevada Test Site Gate 510 showing current land status, existing easements, and utilities.

tanks have been installed. The 80 acre-feet appropriation is adequate to support approximately 500 employees and fire suppression capacity for the initial phase of development. The groundwater quality does not meet the new Environmental Protection Agency (EPA) Safe Drinking Water Act standard for arsenic, and is high in iron. This is common in the area and is attributed to mineralization in geologic units that form the aquifers. With point of use treatment, the current well is sufficient to supply the first phase of development that comprises the 61-acre AVSTP.

Additional water rights are currently being sought through application to the State Engineer by Nye County to support the subsequent build-out of the Gateway Area. In June 2006, Nye County presented testimony before the Nevada State Engineer regarding applications for 23,000 acre-feet of water from Basin 230. This 23,000 acre-feet accounts for the estimated perennial yield for Basins 227A, 226 and 225, all of which was discounted when Basin 230 was designated by the State Engineer for additional management actions (Morros, 1982).

Concurrently, Nye County is evaluating other options, including water rights purchase, and the possible acquisition of existing public water supply systems from local businesses who have expressed interest in an area-wide county-run water system. Additional well sites and hydrologic testing to identify new sources to supplement anticipated water supply demands for the Gateway Area are also being pursued.

2.2.3 Water Demand

Order of magnitude estimates of water demand have been prepared (Buqo, 2005), and will be refined with further specification of building and landscaping requirements and guidelines. Order of magnitude water demand for full build-out as envisioned in this concept plan is conservatively estimated at 800 acre-feet per year (AF/yr). The estimated demand for development of the 61-acre AVSTP is 65 acre-feet per year (AF/yr), and can be met through the existing water supply well. The plan for obtaining and conveying water for full development will require follow-on work, including but not limited to the acquisition of additional water rights, engineering studies to determine daily water demand, and economic studies for water treatment, storage and conveyance.

2.3 Existing and Proposed Utilities

The following sections briefly describe existing and planned infrastructure and utilities, and the currently offered public services in the Gateway Area. Improvements required to support additional development are also identified.

2.3.1 Wastewater Treatment

Available water supply and potential costs will dictate lower land-use densities, preservation and enhancement of the native desert vegetation, and use of reclaimed water wherever possible. Open spaces can be concentrated near the roadways, and much wider-than-usual rights-of-way can be utilized to allow natural paths and trails to be a major feature within the open space system. Natural paths and trails could be incorporated into parks and recreation facilities, and large amounts of enhanced desert landscaping could be incorporated within the rights-of-way of the roads and utility easements. This approach would accommodate a reclaimed water irrigation system.

An on-site Sewage Treatment Plant (STP) would be the primary source of reclaimed water for landscape irrigation. A single-phase treatment plant is recommended to discharge gray water for irrigating the rights-of-way and other open areas of the Gateway Area. This system is

proposed for a combination of water conservation and to avoid the high cost, energy demand and space necessary to operate traditional three phase wastewater treatment plants. An STP might be located in the northeast corner of the Gateway Area, which is the highest elevation in the nine square mile area. This location would require the use of lift stations for conveying the wastewater to the STP, but it would also accommodate a reclaimed water irrigation system for the rights-of-way and other open areas of the Gateway Area. Using reclaimed water for on-site irrigation would minimize the impact of the Gateway Area development on the down-gradient hydrology.

2.3.2 Storm Water Management and Grading

The nine square mile Gateway Area is a fairly flat alluvial plain, with an approximate one percent grade that slopes from northeast to southwest and no significant features. The use of zero runoff designs would reduce downstream flooding that typically occurs as a result of urban runoff. Use of typical "curb and gutter" designs normally envisioned with infrastructure development could be avoided to the extent possible.

Lower land use densities would allow for wide street rights-of-way and large lot sizes. Roadway designs would incorporate crowned cross sections and wide rights-of-way. This would facilitate the extensive use of swales and runoff retention areas, which would allow percolation and infiltration of the floodwaters. The use of porous pavement materials and modular pavement designs for parking lots and other paved areas would promote better drainage and reduce the need for concrete storm water gutters. Where the use of porous pavement may be impractical, such as truck loading aprons and high-traffic areas, concrete curbs would direct storm water into wide swales or retention areas in order to reduce down gradient flooding.

Two natural drainages (washes) bound the Gateway Area: Fortymile Wash along the west and Topopah Wash along the east. The two washes converge south of the Gateway Area and ultimately discharge into the Amargosa River. The on-site system of paved areas, roadways, and swales should be designed for zero runoff. Any excess runoff from the Gateway Area should be directed into these natural washes as a final measure to avoid on-site flooding. A portion of the Topopah Wash crosses the southeast portion of the 9 square mile Gateway Area through the AVSTP. This wash will require some engineering measures to minimize potential damage to planned roadways and other infrastructure.

2.3.3 Electrical Power

The VEA, a rural cooperative that currently procures its power from the Nevada Power Company, provides electricity in the area. VEA is in the process of upgrading its transmission infrastructure with a new 230 kV line from Las Vegas, along U.S. Highway 95 to Mount Stirling, where a substation is being constructed. The transmission lines will cross over the pass and enter the Pahrump Valley from the northwest.

In addition to these general improvements, VEA is working with Nye County staff to determine the current and near future power demands at current AVSTP. and in the nearby areas. Work to obtain additional utility easement right-of-way through the BLM is ongoing. Order of magnitude estimates of electrical power requirements have been prepared, and will be refined with further specification of building and landscaping requirements and guidelines.

2.3.4 Natural Gas Service

Natural gas service is not available in this location at present. Southwest Gas Company, which provides natural gas service to the Las Vegas Valley, obtains the gas from the Kern River

pipeline that extends from the production fields in Wyoming to California via Utah and southern Nevada. To provide natural gas service to the Gateway Area, a pipeline extension of approximately 87 miles (adjacent to the U.S. Highway 95 right-of-way) would be required. Southwest Gas Company was previously consulted regarding the economic feasibility of a similar pipeline and distribution works to Pahrump. Southwest Gas Company expressed little interest to a proposal from Nye County for the extension of a natural gas pipeline to the Town of Pahrump. The County proposal presented a case for commercial demand and residential growth in the Town of Pahrump, but did not consider the potential demand of a fully developed Gateway Area.

Natural gas service could benefit the YMP, the Gateway Area, and Pahrump. As repository development proceeds, Nye County may consider a revised proposal to Southwest Gas Company, establishing a public utility to transmit natural gas from the Kern River pipeline to the Gateway Area via Pahrump, or community propane distribution.

2.3.5 Communications

An SBC right-of-way (shown as "Nevada Bell" in Figure 3) crosses the Gateway Area roughly parallel to U.S. Highway 95. Underground fiber-optic cables are located in the right-of-way that runs between Reno and Las Vegas. A spur from the right-of-way branches to the south along Nevada Highway 373. Line telecommunication systems will be provided to the Gateway Area by SBC.

Several wireless networks currently provide limited coverage in the area. Market demand is expected to dictate the expansion of coverage in the area. There is currently no cable television service provider in the area.

2.4. Public Facilities and Services

This section briefly describes the public facilities and services that are currently available.

2.4.1 Schools

Elementary, middle, and high schools are the purview of the Nye County School District, a unit of state government. Total enrollment for 2006 was 6,536 students, with 433 certified personnel. Teacher-to-student ratios range from 1-to-13 to 1-to-22. Class sizes are generally small ranging from 13 to 22 students.

Amargosa Valley currently has an elementary school with grades kindergarten through eight. High school students from Amargosa Valley attend Beatty High School. Approximately 74 of the 120 students attending Beatty High School are from Amargosa Valley. The Amargosa Valley Town Advisory Board has developed preliminary plans, for consideration by the Nye County School District, for the construction of a three building campus to be located near the intersection of Anvil Road and School Lane. The plan identifies separate buildings for elementary and high school students, with shared athletic and recreational facilities. The proposed location is approximately one mile east of the existing school and near the geographic center of Amargosa Valley. This land is currently managed by the BLM.

Parcels within the Gateway Area have been designated for educational use, which can include a college campus and related facilities. Construction of a campus within the Gateway Area, although it would be approximately five miles north of the geographic center of Amargosa Valley, would be more centrally located with regard to students traveling from Beatty. The Town of Pahrump currently has four elementary schools (grades kindergarten through five), one

middle school, and two high schools. Students from Amargosa Valley (or Beatty) do not attend schools in Pahrump. The Nye County School District, which is responsible for determining the need and location of new schools and facilities, should be consulted in the planning process. Additional information on Nye County schools can be found at Nye County School District website.

2.4.2 Emergency Services

As part of its license application for the repository, DOE must demonstrate that off-site assistance for emergency response will be available. Nye County's ability to provide this assistance will be greatly enhanced through the provision of integrated services at the Gateway Area. Law enforcement and security is proposed to be provided by Nye County through the Nye County YMP Public Safety Project (Nye County, 2007).

Consistent with Nye County's community readiness and engagement philosophy, it has proposed to DOE to establish an integrated emergency services group, which would include law enforcement, fire, and medical services. The proposal has been submitted to DOE for approval and ratification. The capital facilities necessary to provide these services would include fire stations, law enforcement facilities, medical facilities, administrative offices, and an emergency operations center. Major equipment requirements for each agency would be provided, including such items as fire vehicles and response equipment, law enforcement vehicles, dispatch center equipment, and medical emergency room equipment. Implementation of the Public Safety Project should coincide with the construction and operation of the YMP, which in turn should coincide with the development of the Gateway Area.

Long lead times may be required to design and construct the capital facilities required for the program. Temporary facilities may be required to meet the initial requirements of the program until permanent facilities can be provided. The recruiting and training of personnel necessary to provide the services would be the responsibility of Nye County, with financial and logistical support from DOE.

2.4.2.1 Law Enforcement

Regional law enforcement in Amargosa Valley and on NTS is provided by the Nye County Sheriff's Office. There are three deputies currently assigned to Amargosa Valley. The Town of Beatty has one Lieutenant and four deputies. Law enforcement staff levels are determined based on a matrix of factors, including population, funding, response time, and crime rate.

2.4.2.2 Fire Service

Nye County has an all-volunteer fire department to respond to fire emergencies outside of Pahrump. Nye County is currently negotiating with DOE to provide services for a fire department staffed with nine full time fire fighters to be stationed at the Gateway Area, This battalion would respond to fire emergencies and hazardous materials incidents at the Gateway Area, and could also service the Geologic Repository Operations Area (GROA).

2.4.2.3 Health Care

The Towns of Beatty and Amargosa Valley each have a medical clinic. Each clinic is staffed with one full time medical doctor. A third doctor is shared by the two clinics. The nearest hospital, Desert View Regional Medical Center, is located in Pahrump, more than a 30-minute drive from the Gateway Area. Mercy Air Flight Service operates an emergency medical evacuation helicopter service out of Pahrump that serves the southern Nye County area,

including the Nevada Test Site and areas under management of the YMP. Nye County currently has nine contract EMTs to respond to medical emergencies outside of Pahrump.

2.4.3 Solid Waste Management and Refuse Collection

Nye County owns three contractor-operated or maintained solid waste management facilities in southern Nye County: a bin station in Beatty, a bin station in Amargosa Valley, and a Class I Municipal Solid Waste Landfill in Pahrump. The landfill is the subject of a Settlement Agreement with the Nevada Division of Environmental Protection (NDEP) to be closed as soon as is practicable, and upon receipt of a permit to operate a (replacement) Class I landfill. To this end, Nye County has applied to the BLM to acquire two sections (two square miles) of land in the Gateway area. This is the only federal land under BLM control that is identified for disposal that meets federal EPA and state NDEP siting criteria for a Class I Landfill. Haul distances to this site from Pahrump, however, are not reasonable, and as such, the County is working with its federal Congressional delegations to secure land nearer to Pahrump. Until it is certain that such land can be obtained, the County will maintain its applications with the BLM for the two sections of land.

Pahrump Valley Disposal provides refuse collection and waste management services in southern Nye County. The Pahrump landfill and adjacent recycling center are operated by Southwestern Environmental Services.

2.4.4 Parks and Recreation

The Town of Amargosa Valley has a Community Recreational Center and gymnasium, outdoor ball field and play, and is currently working a Community Development Block Grant to design and construct a community swimming pool. The Longstreet Inn, located near the California state line, hosts a 9 hole golf course.

The Town of Beatty has a large community center, ball field, and driving range. Numerous opportunities exist for outdoor recreation including hiking, rock-hounding, camping and the presence of a variety of historic sites. The town hosts several events including numerous road rallies, off-road races, and horse tournaments.

The Town of Pahrump has numerous recreational opportunities. Outdoor athletic facilities include a rodeo arena, soccer, baseball, basketball and tennis courts, and children's playground, and community swimming pool. Pahrump also hosts three professional 18-hole golf courses, a speedway, and skate park. Like Beatty, there are numerous opportunities for hiking, equestrian, and all-terrain vehicle enthusiasts.

There are currently no parks or recreational facilities located in the Gateway Area.

3.0 The Gateway Area Concept

The Gateway Concept Plan is based on discussions with community leaders from the Towns of Amargosa Valley and Beatty, consideration of DOE's operational needs during the planning, construction, and operation of the repository, the potential needs of other federal agencies, and the appropriate role and responsibilities of Nye County as the local unit of government having jurisdiction over planning and infrastructure. Additionally, it is intended to provide a demonstration of design quality and resource conservation in the desert environment, and be a focal point for stakeholder participation.

Nye County believes that a number of industrial and commercial opportunities will emerge as a result of repository development, and that a certain percentage of people working either directly or indirectly on the YMP will choose to live in the surrounding area. This could have important practical advantages for the DOE, its contractors and workers in that:

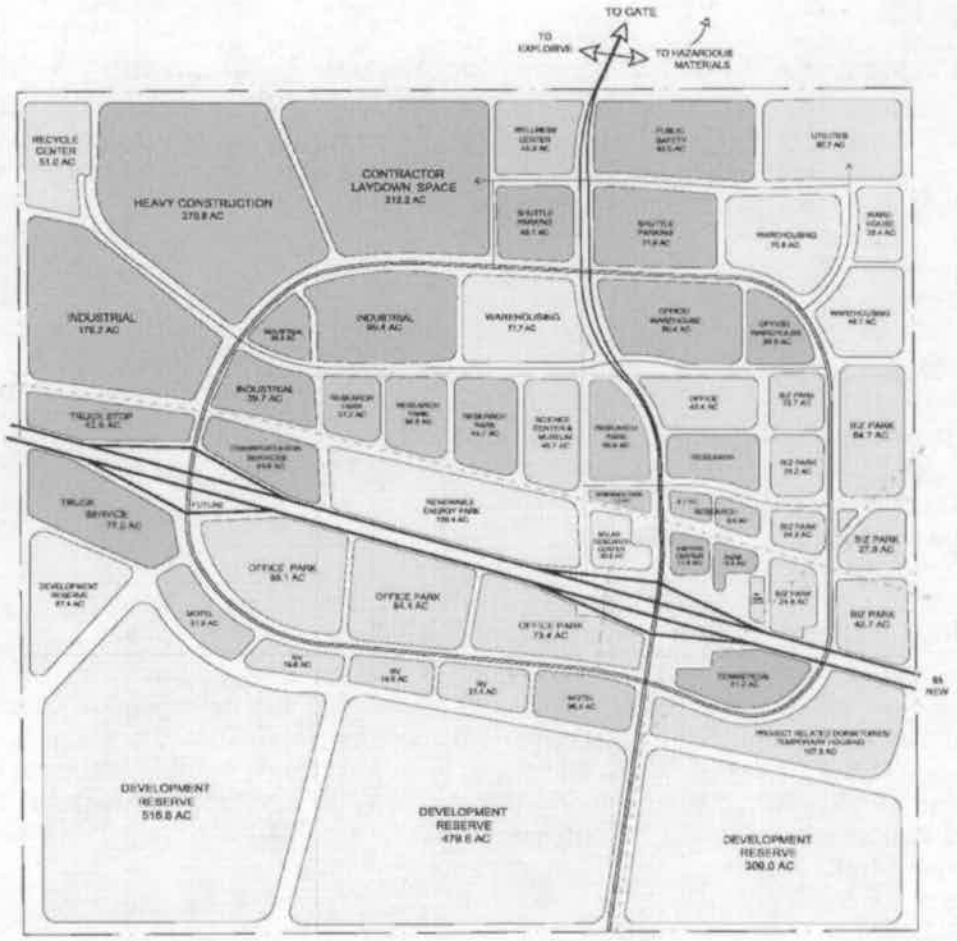
- Transportation costs for materials and services during construction and management of the repository would be reduced.
- Commuting time for employees would be reduced, thereby reducing accident risk and saving time for productive work and for engagement with family and community.
- Competitively priced residences and high-quality residential services can attract and retain the high-quality workforce on which YMP performance will depend.

By design, the Gateway Area transportation network would provide for more effective regional and local traffic management by separating regional from local traffic. Traffic destined for the repository site would be routed onto a bypass, which would reduce the risk of truck accidents in turning from and onto U.S. Highway 95 and provide more efficient delivery of construction and support materials to the YMP. The result would be to limit traffic impacts in the community of Amargosa Valley and efficiently manage repository-related traffic.

In addition to enhancing management of materials, adoption of the Gateway Area Concept Plan would provide for efficient transport of workers from the local communities to their work destination. For example, a shuttle bus system could provide transportation between the key residential areas of Amargosa Valley, southern Beatty, and northern Pahrump to work areas at the Gateway Area, as well as to on-site facilities in the GROA, which will be located approximately 13 miles inside the withdrawal boundary.

The Concept Plan also includes examples of landscape and building design standards that are specially suited to the arid desert conditions affording local businesses the opportunity to showcase attractive, energy-efficient, low-water-consumption architecture in desert environments, and creating long-term value for all development partners in the process. Examples of water-efficient architectural and landscape design standards are in Appendix A.

Another objective of the Concept Plan is to mitigate the fiscal impacts of population growth by encouraging commercial and industrial development in the Gateway Area. A primary goal is to provide the infrastructure and services that would attract commercial and industrial entities to locate in the Gateway Area. These would be accomplished through long-term planning and integrated development in partnership with DOE and other interested parties. Such dynamic land planning and management would need to comply with Nye County's planning and zoning programs. Figure 4 is the draft Land-Use Plan that would guide development in the Gateway Area



LEGEND

- INDUSTRIAL/CONTRACTOR LAYDOWN
- OFFICE/WAREHOUSE
- COMMERCIAL
- MOTEL
- WAREHOUSING
- EXISTING COMMERCIAL AND RESIDENTIAL
- COMMUNITY FACILITY
- OFFICE
- WELLNESS CENTER
- RESEARCH
- SCIENCE CENTER & DESERT SPACE MUSEUM
- RENEWABLE ENERGY PARK
- RV / TEMPORARY HOUSING
- UTILITIES
- DEVELOPMENT RESERVE

- Existing/Proposed Roads
- Existing Telephone/Electrical
- BLM Disposal Boundaries
- Section Boundaries
- Future NDOT Highways/Ramps
- Boulevard (200' Right-of-Way)
- Roadway (150' Right-of-Way)

SCALE: 1" = 800'

Figure 4. Draft Land Use Plan proposed to guide development in the Gateway Area.

3.1 Yucca Mountain Project and Repository-Related Requirements

The YMP-related requirements presented in this section are working assumptions based on the anticipated impacts of the YMP construction and operation, as initially described in the DOE Environmental Impact Statement (EIS) and related documents. These requirements were further refined based on discussions between DOE and Nye County. The Concept Plan is intended to serve as a planning guide for Nye County and DOE's YMP, and phased development actions by Nye County, DOE/OCRWM, builder-developers, and others. The types of operational support and services anticipated at the Gateway Area include:

- Integrated infrastructure,
- Industrial and construction support facilities,
- Professional office space,
- Scientific research and museum facilities,
- Community service facilities,
- Commercial service facilities,
- Open development reserve.

3.1.1 Industrial and Construction Support Facilities

Because of its proximity to the YMP GROA, the Gateway Area can provide an advantageous location for quick-turnaround for non-secure deliveries and the management of construction materials. Portions of the Gateway Area are proposed for warehousing, construction materials staging, and industrial use. These areas have been designated on the northwest arc of the beltway truck loop, where they would have easy roadway access from U.S. Highway 95 and the Gate 510 without interfering with other facilities. This location near the Gate 510 entrance could provide space for:

- Non-secure truck delivery from regional sources,
- None-secure just-in-time delivery to YMP,
- Materials lay-down space for construction contractors,
- Heavy construction materials and supplies warehousing,
- Mining and excavation equipment maintenance and supplies warehousing,
- Contractors and sub-contractors offices.

3.1.2 Professional Office Space

The Gateway Area offers an efficient, attractive, and interactive working environment for YMP employees and related business entities. It encourages interdisciplinary science and organizational learning, and provide an interface between the YMP GROAs and the surrounding region outside the withdrawal boundary. Because of its proximity to the site, it also offers enhanced adjunct opportunities in waste management research, science and monitoring, visitor learning, and commercial business expansion.

By establishing a central work area proximal to the site, DOE can create and foster a more inclusive community of managers, scientists, engineers, technicians and administrators. Relocating the DOE/Contractor corporate offices, which are currently located in Las Vegas, would provide a high-quality, near-site working environment for day-to-day management and administration of YMP activities. The site design provides effective linkages with science and research functions, visitor and stakeholder participation functions, and the repository site itself.

The preliminary concept is to provide office space in multiple buildings connected by shaded and landscaped walkways and seating areas. The office parks would include the following types of comprehensive services and features:

- Campus design, promoting efficient informal interaction,
- Enhanced desert landscaping,
- Distinctive visual access from U.S. Highway 95,
- Parking screened and buffered from the beltway,
- Access to the Science Center and Visitor Center,
- Design for both efficient security and multi-use flexibility,
- Easy access to commercial (e.g., restaurant, branch bank) services.

3.1.3 Scientific Research and Science Museum

A substantial buffer along the north side of U.S. Highway 95 within the central loop of the Gateway Area, with enhanced desert landscaping is planned to be a solar research center and renewable energy demonstration park. It is envisioned that the area could include wind turbines and solar energy panels that can supplement the on-site power requirements. Land to the north of this area could house interactive science and research facilities regarding YMP performance and other aspects of the evolving waste management program, including review of findings and consideration of revised directions. Both federal and non-federal agencies could be represented in the overall facility.

The Science Museum, solar energy research center, and renewable energy park are an anticipated source of tourism, public outreach and education, as well as a supplemental source of electrical power to the Gateway Area.

3.1.4 Community Service Facilities

The need for increased local government capacity and provision of community services is expected to be generated by growth and development. Community services addressed include:

- Emergency Services,
- Wellness Clinic,
- Visitor's Center,
- Shuttle Parking,
- Utilities Management Facilities.

An integrated emergency services facility, which would house fire and rescue, police and security, and related functions will be located in a Logistics Center, serving the YMP, the Gateway Area business and visitor community, the YMP employees, and families and guests. They will be linked with the YMP logistics center. These state-of-the-art facilities are expected to include:

- Security badge service,
- Gate guard house,
- Integrated fire and police facility,
- Emergency Operations Center/Joint Information Center.

Nye County proposed to DOE to establish a jointly operated, integrated medical facility in the

Gateway Area. The proposed facility would include an occupational health center, urgent care center, and outpatient clinic. The facility would eventually be staffed and operated by Nye County. The medical facility would be located on the parcel designated as a Wellness Clinic, near the 510-gate entrance.

The Wellness Clinic can combine several other related health and wellness services for YMP employees, their families, and community residents. The combination is critical to employee recruitment, performance, and retention. In addition to the medical facility, the Wellness Clinic could include fitness and swimming facilities, child day care facilities, and other related services. Other related services, such as physicians' offices, pharmacy, outdoor recreation, and organized sports activities for children and adults are considered in the development reserve areas south of U.S. Highway 95.

A visitor's center located immediately north of the U.S. Highway 95 eastern ramp, provides tourists with an easily accessible orientation to the nation's nuclear waste program, the role and function of the YMP, and an understanding of the physical environment of the Amargosa Desert. It can be the gathering and orientation point for visitors, and a location for diverse training and orientation displays that would enhance visitor understanding of the YMP program.

Because of the limited supply of water, conventional parks, sports facilities, and other large areas of grass should not be developed. An area designated for a park is located adjacent to the Visitor Center. Recreational facilities that do not require irrigation water, such as basketball and tennis courts, athletic fields with artificial turf, and running tracks are more likely to be developed in conjunction with local schools. Due primarily to the lack of residential development, no other recreational facilities within the Gateway Area are proposed. Natural paths and trails featuring large areas of enhanced desert landscaping will be incorporated into street rights-of-way and the professional office and commercial areas.

A recycle collection point is proposed to be located in the northwest corner of the Gateway Area for the staging of recyclable materials derived from YMP construction. Smaller collection centers should be considered at multiple locations within the Gateway Area as necessary.

3.1.5 Commercial Facilities

The Gateway Area commercial areas is planned south of and adjacent to U.S. Highway 95. The proposed commercial use areas would be located adjacent to existing commercial facilities and include automobile service facilities, hotels, recreational vehicle (RV) parks, dining and retail services. Located just off U.S. Highway 95 at the western truck loop entrance, a truck stop would provide integrated services to the anticipated flow of construction and materials haulers. Such services would be located at the western interchange of U.S. Highway 95 and the northwest arc of the beltway. This would segregate the flow of heavy construction vehicles and machinery from the commercial, business and research centers. Truck-related services may include fueling, wash bays, maintenance and other driver services.

3.1.6 Industrial and Contractor Lay-down Space

Industrial and contractor lay-down space will be a vital component during the construction phase of the repository program. It is anticipated that as the YMP transitions from the construction phase to the operation and maintenance phase, some of the contractor lay-down space would be converted into permanent industrial, warehousing or other land use as necessary and appropriate.

3.1.7 Development Reserve

Approximately 1,375 acres of the southern portion of the Gateway Area is reserved for future development to be determined based on market forces. This future development area currently excludes residential use as resolved by Nye County Board of Commissioner Resolution, while future mechanisms might include passage of zoning ordinances or other appropriate measures.

3.2 Phased Development

The Concept Plan proposes seven phases of development, as presented in Figure 5. The purpose is to allow for the gradual development of land for provision of facilities and services as they become necessary to and to offset impacts of YMP support activities. The Concept Plan describes two types of development: roadway and infrastructure development, which does not generate revenue; and land development, which can generate revenue through developer and tenant leases, and tax revenues from the conversion of BLM lands to private ownership.

The initial infrastructure development should coincide with anticipated land use needs and occupancies. This strategy can allow for later infrastructure costs to be offset by revenue generated from early land development. Because the development and expansion of U.S. Highway 95 and Nevada Highway 373 are under the jurisdiction of the NDOT, they discussed separately from the phased land and secondary road development, which would occur under County authorities.

3.2.1 Phase 1

Approximately 42.7 acres of land will be released for Phase 1 development. The majority of development would involve improvement and expansion of the road network to facilitate traffic flow and increase access to existing private land development. The southeast portion of the beltway could be initiated with a temporary exit from U.S. Highway 95. This land will be released for development of the AVSTP for use as a business park. Phase 1 development is summarized below and shown in Figure 6.

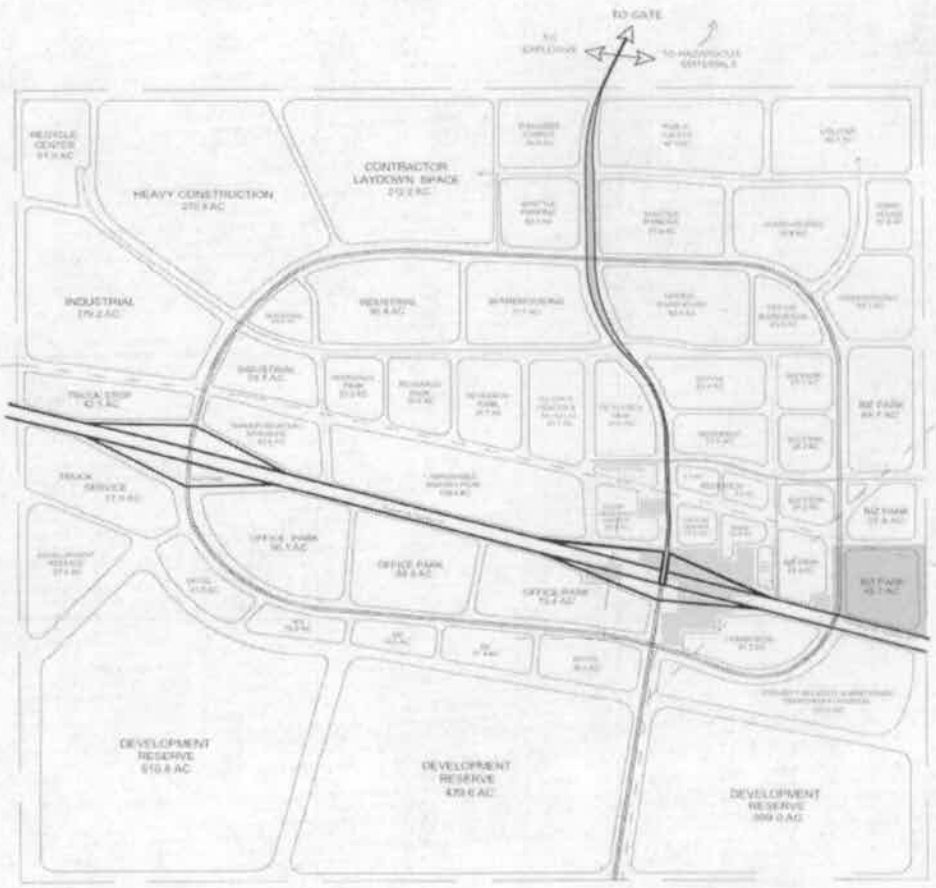
Land use	Acreage	Roadway	Miles
Business Park	47.2	Primary	2
		Secondary	1.6

3.2.2 Phase 2

Phase 2 development would continue the expansion of the secondary road network to access areas throughout the eastern and northern central sections of the Gateway Area. Land uses will include medium and heavy industrial uses, such as contractor laydown space, public purpose uses such as the initial wings of public safety facilities and wellness clinic, shuttle parking, utility services, a visitor's center, solar research center, and the pilot for the renewable energy park. The Phase 2 development is summarized in the following table and shown in Figure 7.

Land use	Acreage	Roadway	Miles
Industrial/Contractor Lay-down	54	Primary	5
Community Facilities	119	Secondary	4.5
Utility Services	40		
Research/Energy	75		
Commercial	10		

Figure 5. Seven phases of development proposed in the Gateway Area concept.



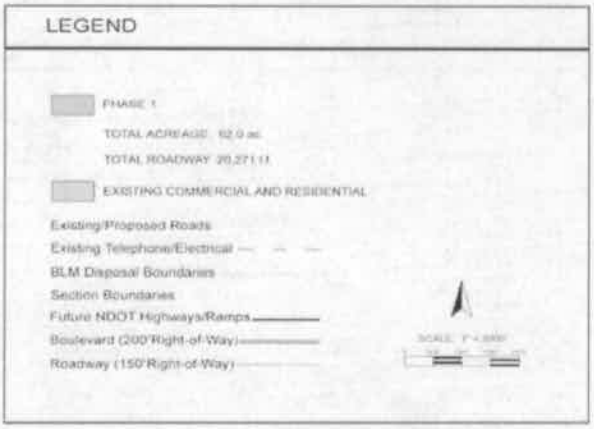
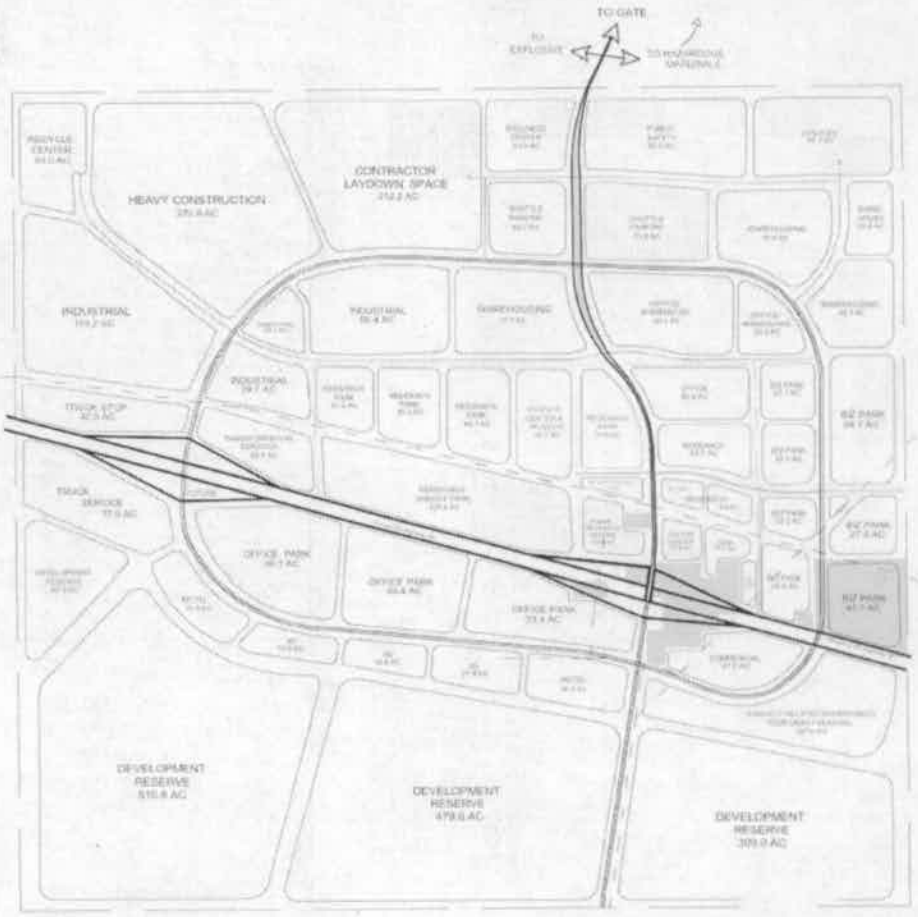


Figure 6. Phase 1 Development



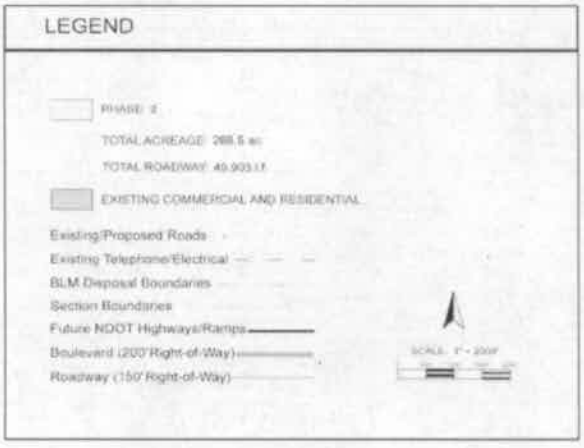


Figure 7. Phase 2 Development

3.2.3 Phase 3

During Phase development 3, the road network would continue to be improved, focusing on the northwest arc of the beltway, including a grade level exit ramp from U.S. Highway 95, to divert the construction-related traffic away from the commercial and professional areas. Additional secondary roadways inside the beltway loop will be expanded to facilitate the future development of the research parks and a renewable energy park.

Additional land would be released to correspond with the needs of YMP construction and ancillary activities. Land use could include additional contractor lay-down space, expansion of the wellness clinic and public safety facilities, expansion of utility service facilities, additional shuttle parking, office/warehouse space, two new business parks, and additional research area. The Phase 3 development is summarized in the following table and shown in Figure 8.

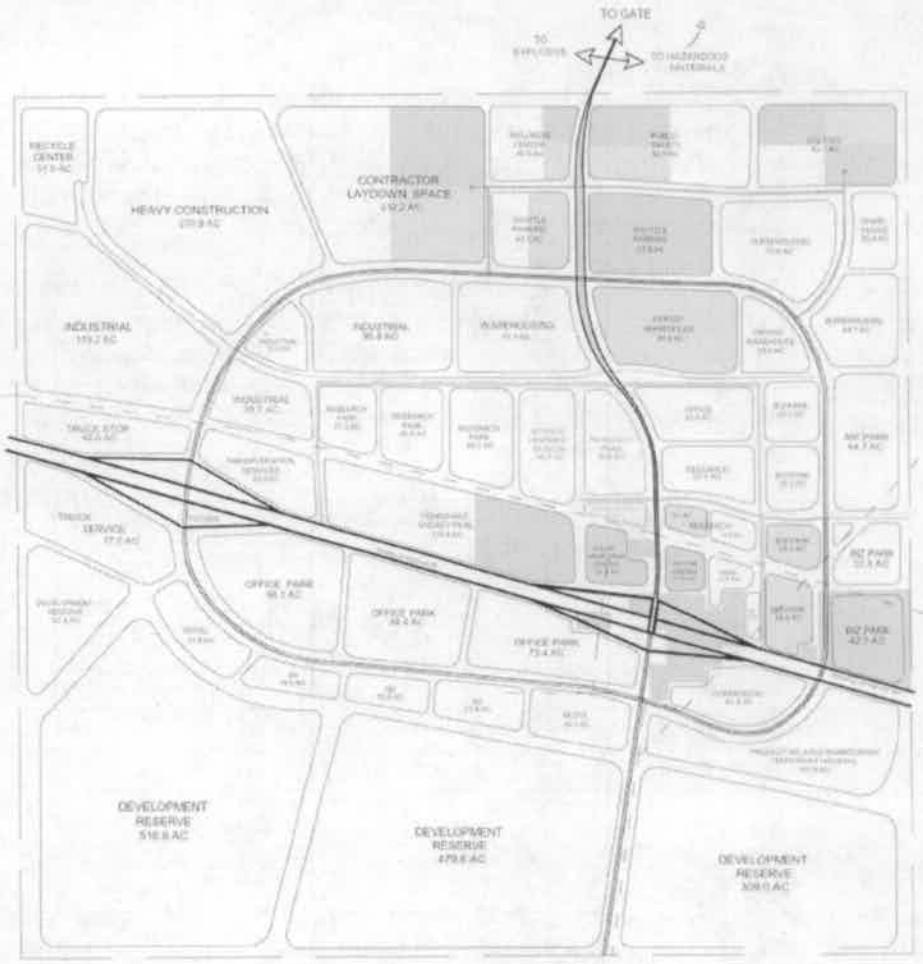
Land use	Acreage	Roadway	Miles
Industrial/Contractor Lay-down	54	Primary	4.3
Community Facilities	53	Secondary	-
Utility Services	20		
Office/Warehouse80			
Office/Business Park	49		
Research/Energy	8		

3.2.4 Phase 4

During Phase 4, land would be released for contractor lay-down and industrial space, including warehousing and other related storage areas. Other likely expansion would include the wellness clinic, the shuttle parking area, and the development of commercial truck service facilities. Additional office space, the science center and museum, and various other compatible research facilities would be developed, The hotel/motel and other temporary housing, would be expanded as necessary in response to demand.

No road development is proposed for Phase 4. The Phase 4 development is summarized in the following table and shown in Figure 9.

Land use	Acreage	Roadway	Miles
Industrial/Contractor Lay-down	140	Primary	-
Community Facilities	50	Secondary	-
Commercial Facilities	130		
Office/Warehouse	155		
Research/Energy	73		
Office/Business Park	70		
Hotel/RV/Temporary Housing	75		



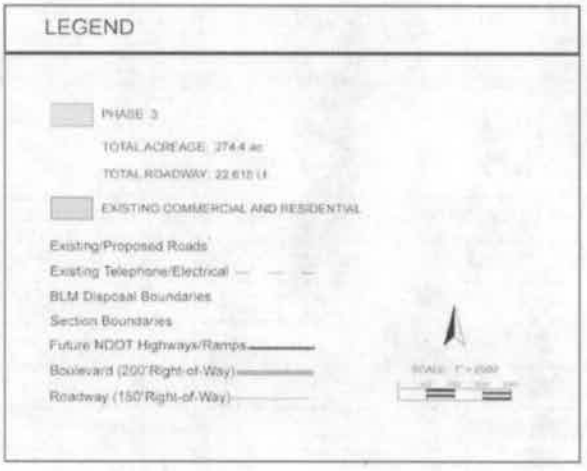


Figure 8. Phase 3 Development

LEGEND

PHASE 4

TOTAL ACREAGE: 893.2 ac

TOTAL ROADWAY: 0.0 LF

EXISTING COMMERCIAL AND RESIDENTIAL

Existing/Proposed Roads

Existing Telephone/Electrical

BLM Disposal Boundaries

Section Boundaries

Future NDOT Highways/Ramps

Boulevard (200' Right-of-Way)

Roadway (150' Right-of-Way)

Figure 9. Phase 4 Development

3.2.5 Phase 5

During Phase 5, the southwest and northeast arcs or beltway, and secondary roadways across the central and northwest sections are proposed. Land would be released for a western hotel area, an RV park, office use, expanded employee temporary housing, industrial and warehouse space, business parks, research areas, completion of the Public Safety facilities, Science Center and Science Museum and utility area. The Phase 5 development is summarized in the table below and shown in Figure 10.

Land use	Acreage	Roadway	Miles
Hotel/RV/Temporary Housing	90	Primary	2
Office/Business Park	160	Secondary	2.7
Community Facilities	45		
Commercial Facilities	35		
Office/Warehouse55			
Research/Energy	90		
Industrial/Contractor Lay-down	180		
Utility Services	20		

3.2.6 Phase 6

No road development is proposed for Phase 6. Land will be released for industrial areas, research park, completion of the commercial area, another RV park, office space, and completion of the temporary housing areas. The Phase 6 development is summarized in the table below and shown in Figure 11.

Land use	Acreage	Roadway	Miles
Industrial/Contractor Lay-down	435	Primary	-
Community Facilities	10	Secondary	-
Commercial Facilities	40		
Office/Warehouse50			
Research/Energy	64		
Office/Business Park	145		
Hotel/RV/Temporary Housing	55		

3.2.7 Phase 7

No major road development is proposed for Phase 7. Approximately 189 acres of land will be released for development and would include a research park, office parks, and RV park. The Phase 7 development is summarized in the following table and shown in Figure 12.

Land use	Acreage	Roadway	Miles
Research/Energy	90	Primary	-
Office/Business Park	79	Secondary	-
Hotel/RV/Temporary Housing	20		

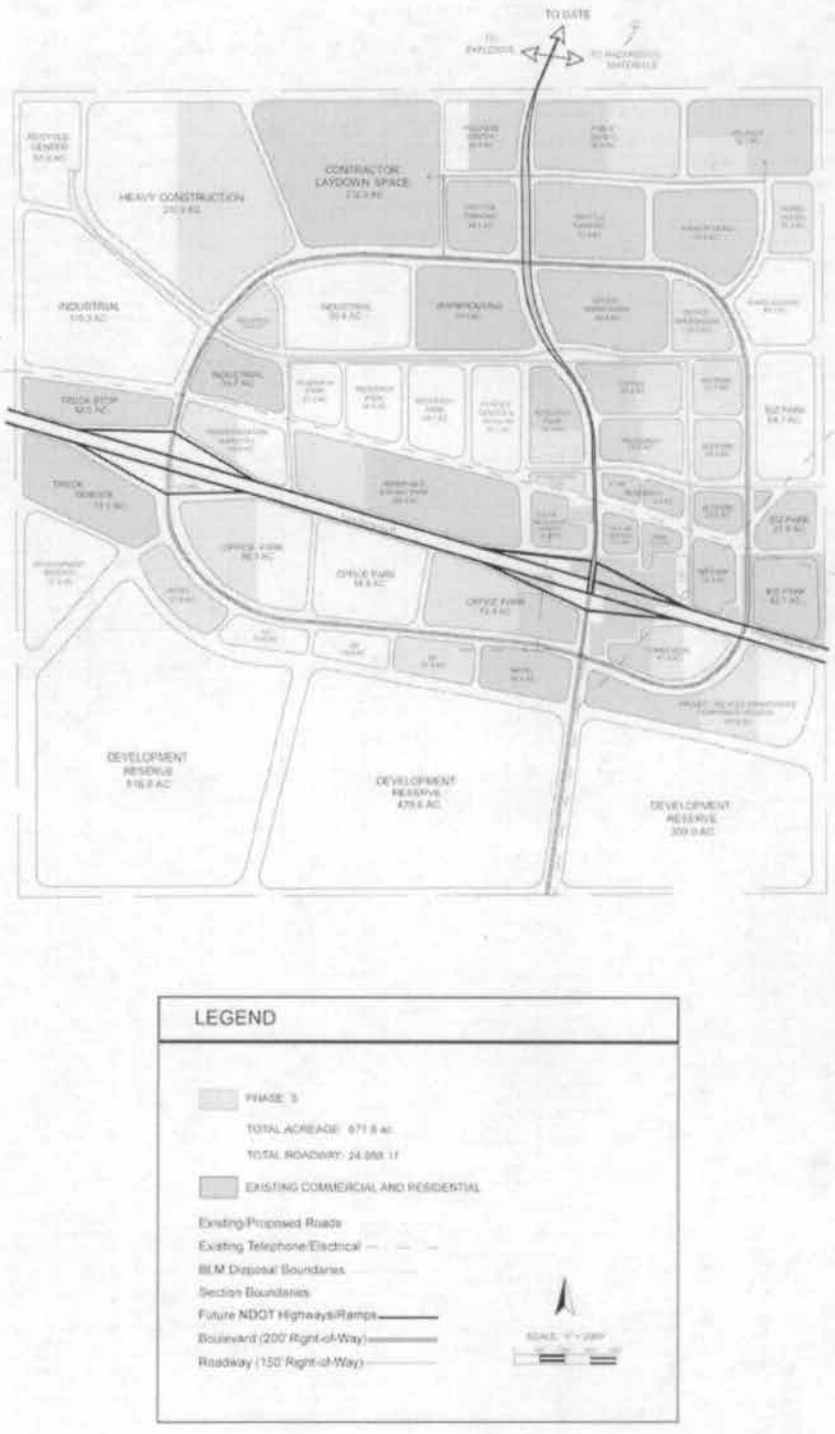


Figure 10. Phase 5 Development

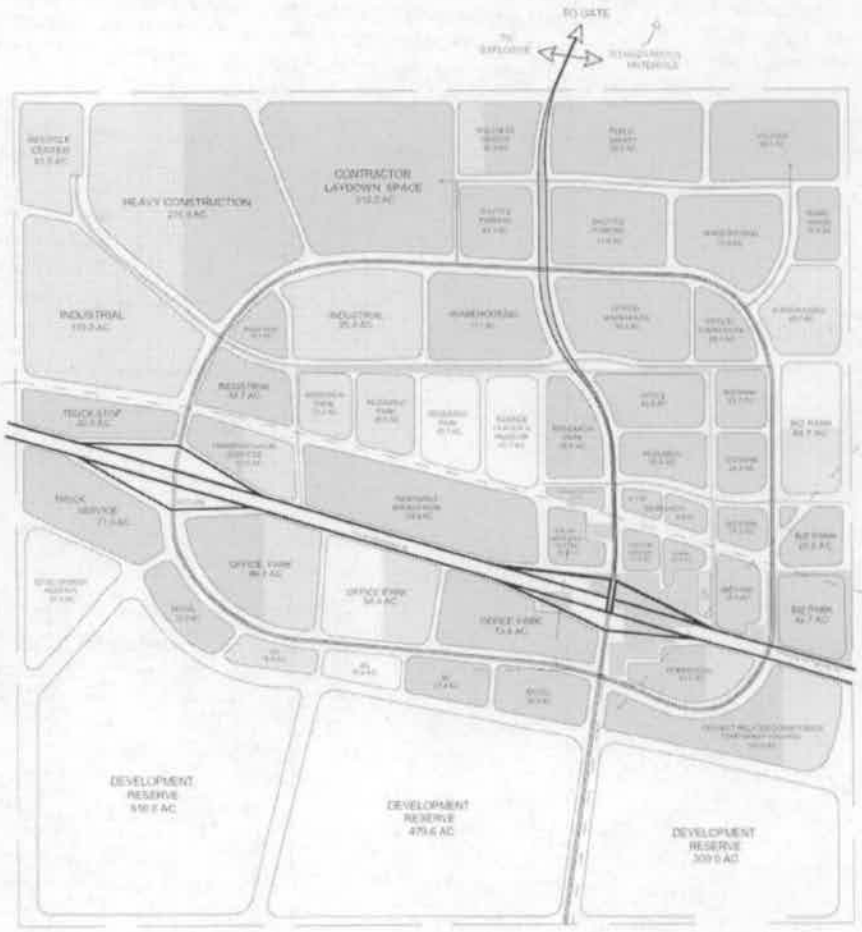


Figure 11. Phase 6 Development

Figure 12. Phase 7 Development

3.3 U.S. Highway 95 Expansion

The Gateway concept plan envisions the expansion of U.S. Highway 95 to a divided, restricted access road from Mercury to Beatty, which would comprise approximately 64 miles. Two grade-separated interchanges would be required to re-route material and waste shipments off of the highway, and thus offset the impacts of increased traffic through the Gateway area to and from the repository site. The Gate 510 Road would be upgraded and rerouted toward the east to align with Nevada Highway 373, which would become the main artery from U.S. Highway 95 to the YMP entrance. The authority to upgrade the highway rests with the NDOT and the U.S. Federal Highway Administration.(FHA). Nye County has participated in preliminary discussions with NDOT to gain an understanding of the process for initiating upgrades along the U.S. Highway 95 corridor, including design standards, planning requirements, funding cycles and mechanisms, and other issues that would affect Nye County's ability to successfully implement this concept plan. Although Nye County has no direct jurisdiction regarding regional transportation improvements, as the local government, its role will be to provide input to the NDOT State Transportation Improvement Plan to identify the need for upgrades.

The existing NDOT right-of-way may not be adequate to accommodate access ramps between U.S. Highway 95 and Nevada Highway 373. NDOT would require right-of-way for additional land, some of which is currently owned by commercial entities and other private interests. Negotiations to either purchase the land at fair market value or arrange for a land exchange may be necessary to accommodate an eastern access ramp, and/or other appurtenant infrastructure. These issues should be considered within the scope of a feasibility study for the expansion of U.S. Highway 95.

3.4 Residential Development

The Gateway Area concept does not include land for permanent residential developments. It is anticipated that new residents would assimilate into established or other privately developed communities. An increase in population can increase local government revenues only if it corresponds with an increase in industry and commerce. Expansion of utilities, public services and educational facilities require revenue from industrial and commercial activities. To ensure that these services and facilities will be realized, Nye County may propose to establish land use designations in the communities near the Gateway Area that will encourage and enhance the type of residential development and community growth that is consistent with and complementary to the anticipated demand.

4.0 From Concept to Reality

This section describes the various ways in which the Concept Plan could reach fruition. If managed properly, new business opportunities can mitigate impacts of an expanding population and even improve existing school facilities, medical centers, recreational opportunities and entertainment venues. To accomplish this, the following considerations must be addressed; land management options, defining financing options for capital improvements, residential housing conditions in Amargosa Valley, and expansion of Nye County's institutional capacity.

The various alternatives do not affect the basic site design for the Gateway Area concept but could affect development arrangements and phasing. Other alternatives beyond those discussed here could be presented, but the discussion below addresses only considerations at this stage of the impact mitigation.

4.1 Land Management Options

Current conditions indicate that the BLM disposal land within the Gateway Area is not likely to be conveyed to Nye County via Congressional action. Using this as a working assumption, Nye County would have two alternative options available for land management; 1) privatization, in which land development is based on market forces or 2) implementation of master land use planning and zoning ordinance.

4.1.1 Land Privatization

The clearly preferred course is that Nye County becomes the major landholder of the Gateway Area. This would enable Nye County greater control to mitigate impacts through the systematic release of parcels to commercial developers through build-lease agreements. Where conflicts with existing private landholders are encountered, Nye County could establish land exchange and/or purchase arrangements. As the major landholder, Nye County would be in a position to be a strong and effective partner in land development, and would be responsible for planning and implementing infrastructure for the Gateway Area, and in doing so undertake impact mitigation.

4.1.2 Master Planning and Zoning Ordinances

Under this alternative, Nye County would hold approximately ±764 acres, private and commercial interests would hold their existing ±350 acres, and BLM would remain the majority landholder, with the remaining ±4646 acres of the Gateway Area. For the ±4646 acres under BLM management, a Nye County Master Plan and zoning ordinance would be the critical (not supplemental) means of land management in the Gateway Area. Nye County could plan and systematically develop infrastructure on an integrated basis (perhaps via an economic development zone), but it would have to borrow in order to implement the plans, and require developers to participate in the integrated infrastructure system.

With direct control of less than 15 percent of the Gateway Area, Nye County would be in a weaker position to manage the type and pace of development, but it could determine land use patterns based on zoning ordinances. The Gateway Area concept implementation process would need to be reconsidered for this alternative to be viable. Nye County might negotiate a land trade with BLM or it could purchase additional acreage from BLM, but it would need to borrow funds (based, in part, on assurances from DOE). It is assumed that Nye County will not borrow to purchase BLM land.

4.2 Housing in the Amargosa Valley Community

Land currently managed by BLM and located between the Gateway Area and the existing residential areas could readily be zoned for residential development within the Town of Amargosa Valley Master Plan. Much of this will be determined by the Town of Amargosa Valley in their planning process. Using covenants, restrictions, or zoning, Nye County and Amargosa Valley could coordinate with developers interested in purchase and development. Such guidelines might permit housing at greater density than traditionally found in Amargosa Valley, with integrated rather than individual water and sewer systems, enhanced desert landscaping and landscape maintenance, and other features that are determined to be attractive to YMP staff and families seeking a quality suburban lifestyle.

4.3 Financing Options

Options for development financing can include Special Improvement Districts, revenue and general obligation bonds, tax increment financing, DOE Investments, Federal and State loans and grants, private developer investments and contributions, revenue generated from land conveyances, and management association fees. These options are described in more detail below.

4.3.1 Special Improvement District

A special improvement district, as can authorized by NRS Chapter 271 (NRS, 2006a), permits the County to pay for construction and maintenance of certain public improvements through the levy of a supplemental property tax on the properties that benefit from the improvement. Normally, bonds are sold to pay for construction of the improvements, and the supplemental taxes collected are pledged to repay the bonds, with real property as collateral. In this way, the County will not have to pledge its resources.

4.3.2 Revenue Bonds

Special Improvement District financing is one type of revenue bond for general use public improvements. But for improvements where user fees are collected, such as water supply and wastewater treatment, NRS Chapter 278A permits similar bonds to be issued by the County to construct the facilities, with repayment from connection and user fees.

4.3.3 General Obligation Bonds

For certain improvements with benefits beyond the Gateway Area, the County may choose to issue general obligation bonds which are repaid from the County's general fund.

4.3.4 Tax Increment Financing

NRS Chapter 279.383-.685 permits the County to declare the Amargosa Valley expansion property a redevelopment area and to freeze the existing property taxes, which currently are minimal. As development occurs, the increased property taxes received can be pledged to construct public improvements or to repay bonds issued to construct public improvements serving the community. A Redevelopment Area is established for a 30-year period.

4.3.5 DOE Investments

A DOE partnership agreement could result in DOE, its contractors, and its suppliers making significant investments in real estate and in the infrastructure that is required to support real estate development. These investments include the expansion of U.S. Highway 95 and the proposed interchanges through the NDOT, and construction of the major access roads to the repository site. Also, the County has been successful in obtaining Congressional appropriations

to DOE to support development of the AVSTP, and it is expected that future appropriations can be available to support expanded mitigation and development. Finally, to the extent that the Amargosa Valley expansion can become a test bed for experimental renewable energy and other demonstration projects, other DOE investments will also be made.

4.3.6 Private Investor Investments and Contributions

A master developer can sell or lease parcels for specific developments, and it will be the responsibility of the land developer to install, to County standards, the roads, water, sewer, and other public facilities needed for their project. These conveyances also include improvements for contributions to more general infrastructure needs, and even for support of the master development entity.

4.3.7 Federal and State Loans and Grants

The Federal government operates a myriad of loan and grant programs, directly from Federal agencies, but in many cases, channeled through state agencies. While many of these programs should be considered for potential funding sources, many conventional programs will not consider funding of mitigation actions to be within their programmatic purview.

4.4 Institutional Capacity

To control and moderate the impacts within Nye County, it will be necessary to expand the planning and development capacity of Nye County. As a minimum, Nye County will need additional planners and engineers. Additionally, continued coordination is necessary with the Town of Amargosa Valley and its emerging master plan; with the Town of Beatty and its master plan, and possible rail-related development at Crater Flat; and with the Town of Pahrump as it continues to grow and to expand available services. It is imperative that Nye County and DOE continue to plan together so that the Gateway Area can be developed to provide the infrastructure, facilities and services necessary to support the YMP and mitigate the potential impacts to the surrounding communities. Unplanned development will create negative environmental and socio-economic impacts in Nye County. Nye County is in a position to provide the coordination necessary to effectively minimize and mitigate negative impacts.

5.0 Conclusion and Recommendations

From the outset, the Gateway Area Concept effort is expected to provide a framework for prioritized implementation of initiatives involving the affected communities, Nye County Commission, County government departments, and DOE. The Gateway Area Concept is a starting point for mitigating impacts by developing the infrastructure, institutional capacity, and facilities to support the YMP. The benefit to this approach is that it can mitigate impacts while at the same time provide support to the YMP as the project evolves from construction to operation and maintenance. In order for the concept to be refined and ultimately realized, Nye County, DOE and the other interested parties must establish and coordinate detailed implementation strategies.

If the Gateway Area Concept is realized, residential development within the established expanded communities of Amargosa Valley, Beatty, and Pahrump will be able to thrive and survive independently of the YMP, yet provide the services and facilities necessary for the YMP to be successful.

As the Gateway Area concept evolves, Nye County will continue to share the results with DOE at various levels, and with the affected communities. Nye County will continue to facilitate venues for impact mitigation through proactive planning for the Gateway Area. The challenge is to plan the development and expansion in this critical area between the Gateway Area and surrounding residential communities in a way that promotes the industrial base and commercial sectors and offsets impacts of residential development.

This section summarizes the process to date, and provides conclusions about the status of development in the area, and recommendations for continued work towards implementation.

5.1 The Process to Date

To date the Gateway Area Concept effort has:

- Assembled a team of experts,
- Established a consultation process with the Nye County Department of Planning and the communities of Amargosa Valley and Beatty,
- Identified key parameters and requirements,
- Identified general design goals and alternative options,
- Prepared a conceptual site design,
- Considered requirements for implementation,
- Conducted preliminary review of the concept with DOE.

The Concept Plan presents an opportunity for Nye County to realize its objectives as the host county by considering YMP-related requirements in the area, and how these might be addressed. It also considers local and regional transportation systems, nearby communities, and how future industrial and commercial development can work synergistically with the prospective activity at the YMP. Additionally, the Concept Plan considers a range of efforts that would be required for implementation, and the types of development guidelines that might be employed.

5.2 Coordination, Management and Prioritization

While development at the Gateway area is not expected to occur at a rapid pace initially, Nye County remains concerned that the availability of relatively low-priced land will draw a market in

the near future. Without a plan in place to guide development and growth, the most likely outcome will be the emergence of sprawl and incompatible land use. Thus, it is crucial to maintain the momentum and remain engaged with the community and DOE from concept into implementation.

The affected communities, Nye County, DOE and the other interested parties will have different responsibilities, based on the evolving project and its corresponding requirements. The focus has been the development of a concept for the Gateway Area. All considerations (parameters, needs, site design, guidelines, etc.) have supported that single focus. Concept implementation, by contrast, will proceed on multiple fronts, which must nevertheless be coordinated and systematically integrated. To maintain continuity of purpose, individual members of the Project Team should take responsibility for various implementation efforts with support from others (current team members and other subject matter experts) as appropriate. At the same time, Nye County should review and assess progress, and maintain an evolving concept and a strategic implementation process.

The management, coordination, prioritization effort includes:

- Expansion of Nye County's institutional capacity for planning and urban development,
- Specify more definitive strategies for managing and financing development of the Gateway Area,
- Coordinate and manage the recommended initiatives, ensuring that they are integrated in an evolving concept of increasing detail and specificity,
- Prioritization of implementation initiatives,
- Coordination and consultation with Nye County government departments,
- Coordination and consultation with the affected communities,
- Administration by a single County Department for strategic implementation of the Phase One concept for the Gateway Area.

5.3 Coordinate With DOE's Infrastructure Readiness Initiatives

Beginning in Fiscal Year 2006, DOE initiated a series of infrastructure readiness projects to replace and upgrade existing YMP facilities. These included:

- A sample management facility,
- A new Gate 510 guardhouse,
- A new road from Gate 510 to the YMP,
- A small (40-person) conference facility,
- Extension of 138 KV power to YMP,
- Extension of microwave/fiber-optic communications to the YMP,
- The relocation and upgrade of existing north portal facilities,

Continued coordination activities should includes:

- Meetings with DOE to understand the nature and status of the various initiatives,
- Identification of possible implications for Nye County,
- Initiate feasibility inquiries,
- Advance the effort to minimize impacts to Nye County as well as DOE's schedule.

5.4 Coordinate with DOE Long-Term Real Estate Plans (LTREP)

The LTREP is DOE's vehicle for planning its acquisition of support facilities for its core missions, for identifying acquisition options, and for developing relevant criteria for inclusion in contracts. During the next few years DOE may revisit the LTREP for its Summerlin complex in the process.

Nye County must consult with and provide input to these processes and continue to coordinate with DOE's Long-Term Real Estate Plans, for non-licensed YMP facilities that can be reasonably expected to be sited outside the GROA.

5.5 Prepare Prioritized Infrastructure Plans

The Gateway Area Concept envisions integrated infrastructure development for the entrance area as a whole, considering early opportunities in the context of a comprehensive long-term infrastructure development strategy. Efforts in this area must be prioritized, and integrated with master plan development. Considerations should include:

- Preparation of integrated infrastructure development strategies for the Gateway Area, as a basis for both current coordination efforts and longer-term implementation.
- The strategy and phasing of the various utility systems;
- The integration of utility systems with Gateway Area development;
- The costs and financing of utility systems.

5.5.1 Transportation

Nye County has initiated and should continue its dialogue with NDOT, DOE and Nye County Public Works regarding existing and proposed road rights-of-way and designs for the proposed U.S. Highway 95 exit and entrance ramps. Additional issues to be considered should include:

- Develop policies and procedures for addressing expected land use conflicts with existing land holders,
- Perform a transportation study to define existing and planned roadways, and integrated costs,
- Establish design standards for the transportation network.

5.5.2 Water Supply

Nye County should continue to pursue additional water rights in anticipation of the Gateway Area development. Additional issues to be considered should include:

- Perform a tiered water demand study based on the phased build-out of the Gateway Area and the anticipated land use,
- Research water treatment options for the new potable water system at AVSTP and new wells in the area that can be expected to exceed the safe drinking water standard,
- Costs and logistics of water transmission system for the proposed well field and distribution network.

5.5.3 Wastewater Treatment

Individual septic systems can treat wastewater during the preliminary phases of the Gateway Area development, such as the AVSTP. A wastewater treatment facility and sewage network can be designed and brought on-line to coincide with the land use demands when logistically and financially practicable. Additional issues to be considered include:

- Prepare preliminary design for wastewater treatment facilities,
- Perform a feasibility study for black water and gray water recycling, to be considered in the treatment facility designs,
- Perform a water demand survey for proposed desert landscaping areas relative to anticipated wastewater generation.

5.5.4 Electrical Power

The existing grid is expected to provide the majority of electrical service at the Gateway Area. The proposed renewable energy research parks can supplement the power supply at the Gateway Area. Additional issues to be considered include:

- Solicit input from VEA engineering as necessary regarding the proposed phased development.
- Provide support to VEA to expedite the BLM issuance of a utility right-of-way to AVSTP.
- Perform a preliminary power demand study based on the seven-phase rollout, and including the potential for on-site generation and distribution.

5.5.5 Natural Gas Service

Natural gas service is not currently available in Amargosa Valley. The Kern River Pipeline, which extends along Interstate Highway 15 through southern Nevada, transmits natural gas from the gas-producing fields in Wyoming for delivery into Utah, Nevada and California. Additional issues to be considered include:

- Nye County should re-approach Southwest Gas Company regarding the prior proposed pipeline to Pahrump and include potential Gateway Area demand.
- Nye County should perform an inquiry regarding the establishment of a public utility to provide natural gas supply from the Kern River pipeline to the Gateway Area through Pahrump.

5.5.6 Broadband Communications

SBC fiber-optic lines pass through the Gateway Area. Service is provided by AT&T, who would likely be the provider for any tenants in the area. Capacity exists for additional service for either standard commercial or dedicated service.

5.5.7 Storm Water Management

Zero runoff designs will require detailed hydrologic studies. Portions of the Gateway Area are within the 100-year flood zone. Additional issues to be considered include:

- Perform a hydrologic study to approximate the required retention volume per area of impermeable development (buildings, roads, loading aprons, etc.).
- Perform an engineering study to redirect the Topopah Wash away from the Gateway Area.

5.6 Landscape and Architecture Design

The interested parties should establish preliminary landscape and architectural designs for review and approval. Additional issues to be considered include:

- Establish design standards for the visitor center, park and entrance signs,

- Establish construction standards for selected components of the Gateway Area,
- Establish a preliminary landscape and drainage plan.

Appendix A presents sample building design and landscape standards.

5.7 Rail Corridor at Crater Flat

A Nye County initiative, proposed as a cooperative agreement with DOE, is needed to consider the potential for a rail corridor at Crater Flat in greater detail. This may include:

- Minor adjustment of the proposed rail alignment in the vicinity of the YMP site boundary,
- Arrangements for shared use of the rail line, and for sidings or "team tracks" in the vicinity of Crater Flat,
- YMP-related activities requiring rail access outside of the YMP,
- Private activities for which rail access is advantageous.

In general, rail-related activities should be located at Crater Flat, or at other appropriate locations along the Nevada rail line.

5.8 Conclusion

In summary, Nye County will remain engaged with DOE to ensure that land development at the Gateway to Yucca occurs in an organized and well planned manner. Anticipated growth and development in the gateway area is expected to occur over several years, but will likely occur at a faster rate when repository licensing process advances. To ensure that growth does not adversely impact either Nye County or the repository program activities. While Nye County recognizes that there are many uncertainties associated with the schedule and fate of the proposed repository at Yucca Mountain, it believes that if the project is ultimately approved, that it must be an absolute success.

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Appendix A. Sample Architectural and Landscape Design Standards

ILLUSTRATIVE DEVELOPMENT AND INFRASTRUCTURE DESIGN GUIDELINES

This section describes in greater detail the types of infrastructure guidelines and design standards that could be implemented in the Gateway area. Implementation efforts, especially the master plan process, will develop the guidelines for infrastructure systems. Hard requirements, if desired by the community, could be adopted through zoning ordinances.

A1.0 ACCESS AND CIRCULATION

Regional access to greater Amargosa Valley and the Gateway area is provided by U.S. Highway 95. Sub-regional access is provided by Nevada Highway 373 and Nevada Highway 160. YMP development will likely require the upgrade of U.S. Highway 95 to a 4-lane restricted-access highway from Mercury to Beatty, with at least one grade-separated interchange at the Gateway area. One of the interchanges would connect with Nevada Highway 373, which would be extended north and rerouted to the west so that it would become the main access road to the YMP through Gate 510.

The Gateway area concept includes two interchanges, one at the western beltway loop connection, and the other at Nevada Highway 373, which would be extended north and redirected to the west to be the main artery to Gate 510. This configuration would efficiently separate YMP-destined traffic from local traffic while allowing both southbound and northbound delivery trucks to safely exit U.S. Highway 95 and take direct routes to Gate 510 without passing through the professional, commercial and research areas of the Gateway area. The majority of the workforce would travel on Nevada Highway 373 from the U.S. Highway 95 interchange to reach the parking and shuttle facilities near Gate 510. Interior circulation featuring a hierarchy of arterial, collector, and sub-collector streets is discussed on the following pages.

A1.1 Traffic Analysis

The transportation system within the Gateway area would address many types of traffic, from large trucks delivering nuclear waste storage containers to regional and local auto/truck traffic to cycle and foot traffic. YMP-destined, large truck traffic would be separated from regional and local auto/truck traffic and routed to the YMP via the northwest beltway loop. A hierarchy of internal streets, parking areas, commercial and industrial uses, and park-and-ride facilities would accommodate regional and local auto/truck traffic. Extensive paths and trails, together with shuttle service and storage areas at park-and-ride locations, would provide alternative travel options for the workforce.

A1.1.1 Large Truck/YMP-Destined Traffic

A primary mission of the YMP is to safely accommodate the transportation and delivery of nuclear waste storage containers via large tractor-trailer trucks. The highway and street systems within the Gateway area can accomplish this mission while also providing a safe and efficient transportation network for community residents and visitors.

The U.S. Highway 95 restricted-access, divided highway with grade-separated interchange(s) would convey all YMP-destined truck traffic to the site. Some YMP-destined traffic may enter the site from Nevada Highway 373 or other state roads from the south. The interior boulevard loop will connect to US-95 at the western interchange, and YMP-destined traffic will be carried between US-95 and the YMP entrance Gate 510 without leaving the boulevard. Large trucks serving heavy construction, industrial, and warehousing parcels will also reach their destinations via the northwestern boulevard loop.

A1.1.2 Regional and Local Auto/Truck Traffic

Most visitors and YMP workers who live in surrounding communities will commute by auto, but it is anticipated that many will utilize alternative modes of transportation, as discussed below. Park-and-ride facilities near the YMP work site entrance (Gate 510) would provide parking areas for autos and alternative vehicles.

A1.1.3 Alternative Modes of Transportation

Alternative modes of transportation would be encouraged throughout the Gateway area. As discussed above, a variety of paths and trails would provide greater connectivity, safety, convenience, and economy for the Gateway area and YMP workforce.

Transit stops within the surrounding communities could provide shuttle service to the YMP work site entrance at Gate 510, where additional parking would be provided for workers who do not ride the internal shuttle. Bicycle storage facilities would be provided at the park-and-ride sites. At Gate 510, workers would board shuttle buses to ride the remaining 12.5 miles to the YMP work site.

A1.1.4 U.S. Highway 95

The U.S. Highway 95 right-of-way is 400 feet in width, and no existing development is located within the right-of-way. Except for the grade-separated interchange(s), the 4-lane divided highway would have no access along the 9 sections. Continuous flow across U.S. Highway 95 would be provided by the centrally located Nevada Highway 373 interchange and by the east and west beltway overpasses. The proposed highway design features a 50-foot wide landscaped median and has two 14-foot wide lanes of auto/truck traffic with a 10-foot wide paved shoulder in each direction. Desert landscaping will be restored and enhanced to the limits of grading and construction disturbance. See Figure A1 for Cross Section of U.S. 95.

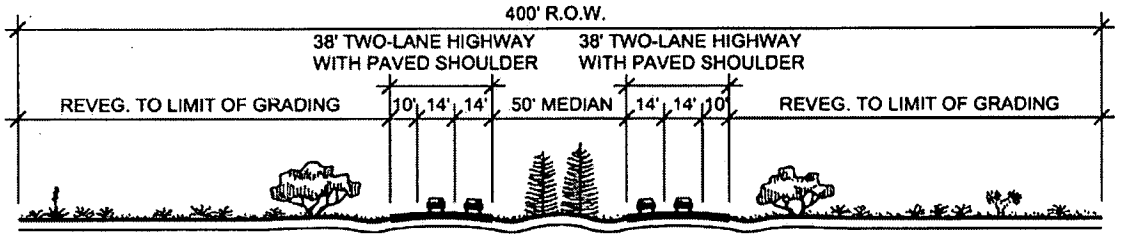

Figure A1: Cross Section – U.S. Highway 95 (400' ROW)

A1.2 Hierarchy of Surface Streets

A hierarchy of streets would provide an efficient interior circulation system. A 4-lane beltway loop would link with U.S. Highway 95 via the western interchange and serve as the construction and industrial traffic arterial. Nevada Highway 373 would offer more direct access from nearby residential areas in the valley and community service areas to the YMP entrance at Gate 510. The major collector function will be provided by 3-lane streets with center turn lanes, which would carry moderate traffic volumes through professional and commercial areas, between multiple user parcels and the beltway. The minor collector function would be provided by 2-lane roads, which would carry lower traffic volumes and access community services, and peripheral areas such as the sewage treatment plant and recycle parcels.

A1.2.1 Beltway Loop

The Beltway loop south of U.S. Highway 95 and Nevada Highway 373 north to YMP entrance Gate 510 would be gateway boulevards, with extensive landscaping and a very low volume of large truck traffic. The gateway boulevards would pass through professional, commercial, research, community service, and warehousing areas. The 4-lane gateway boulevards would be configured within 200 feet of right-of-way and would feature 25-foot wide landscaped medians with curbs. The gateway boulevards would have two 14-foot wide lanes of auto/truck traffic and a 6-foot wide paved bike lane in each direction. Additionally, 10-foot wide pedestrian pathways would be incorporated into wide, heavily landscaped buffer areas flanking both sides of the boulevards (refer to Figure A2).

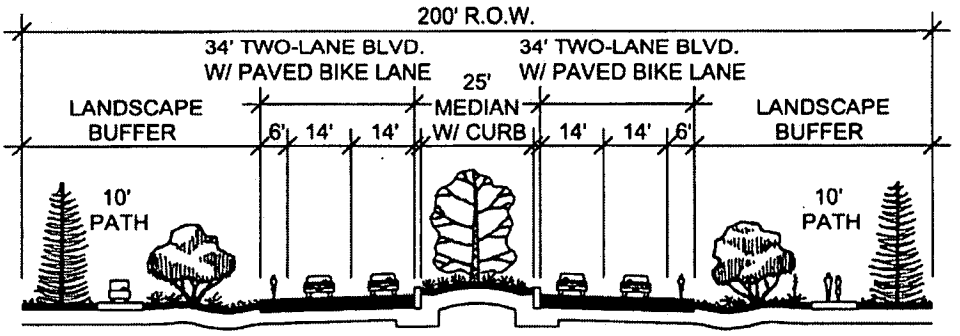

Figure A2: Cross Section – Gateway Boulevard (200' ROW)

A1.2.2 Truck Route Boulevard

The northwestern beltway loop would be a truck route boulevard, with a high volume of large truck traffic destined for the YMP and heavy construction, industrial, contractor laydown, warehousing, transportation, and material storage parcels in that area. The 4-lane truck route boulevard would be configured within 200 feet of right-of-way and feature a 25-foot wide landscaped median with curbs. The boulevard would have two 14-foot wide lanes of auto/truck traffic in each direction plus 6 feet of paved shoulder. An optional 10-foot wide pedestrian pathway could be incorporated into wide landscape areas flanking one or both sides of the truck route boulevard. Landscaping would be less mature and extensive than along gateway boulevards, transitioning at the edges to moderately enhanced desert (refer to Figure A3).

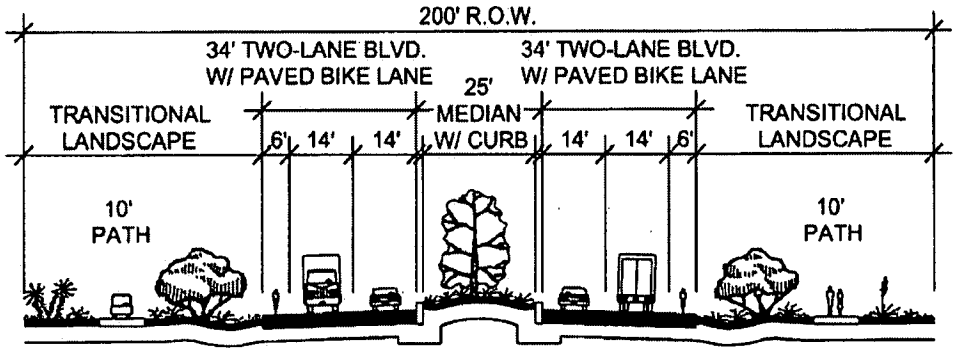

Figure A3: Cross Section – Truck Route Boulevard (200' ROW)

A1.2.3 3-Lane Commercial Street

The 3-lane commercial streets would provide access from Nevada Highway 373 and the beltway loop to large commercial areas. The 3-lane commercial street would be configured within 150 feet of right-of-way. It would have one 14-foot wide lane of auto/truck traffic and a 6-foot wide paved bike lane in each direction, as well as a 14-foot wide center turn lane. Wide, but unequal, landscape buffers would be featured on both sides of the street, and a 12-foot wide pathway to accommodate 2-way traffic pedestrian traffic could be incorporated into the larger landscape buffer (refer to Figure A4).

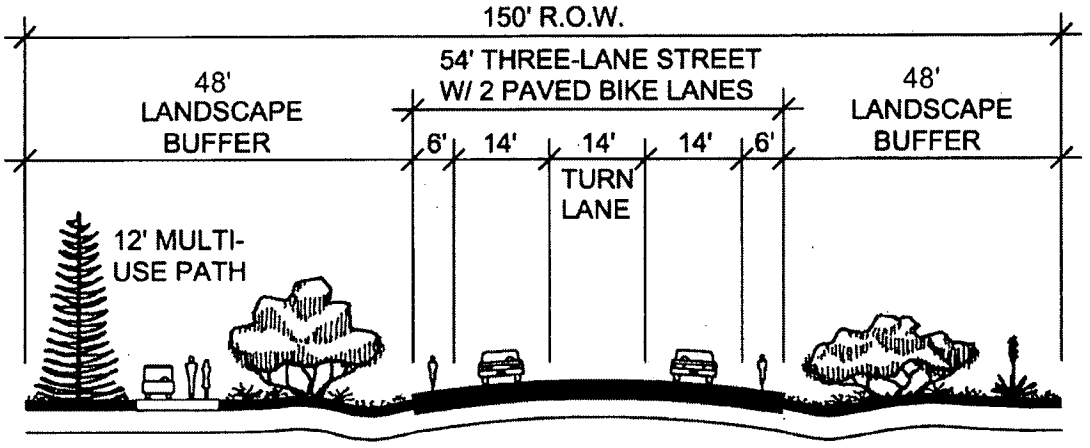

Figure A4: Cross Section – 3-Lane Commercial Street (150' ROW)

A1.2.4 2-Lane Road

The 2-lane roads would be located primarily in peripheral areas and within parcels with multiple structures. The 2-lane road would be configured within a 100 foot right-of-way. It would have one 14-foot wide lane of auto/truck traffic in each direction and a 6-foot wide paved bike lane on one side only. Landscape buffers, unequal in width, would be featured on both sides of the road, and a 12-foot wide pathway to accommodate 2-way pedestrian traffic could be incorporated into the larger landscape buffer (refer to Figure A5).

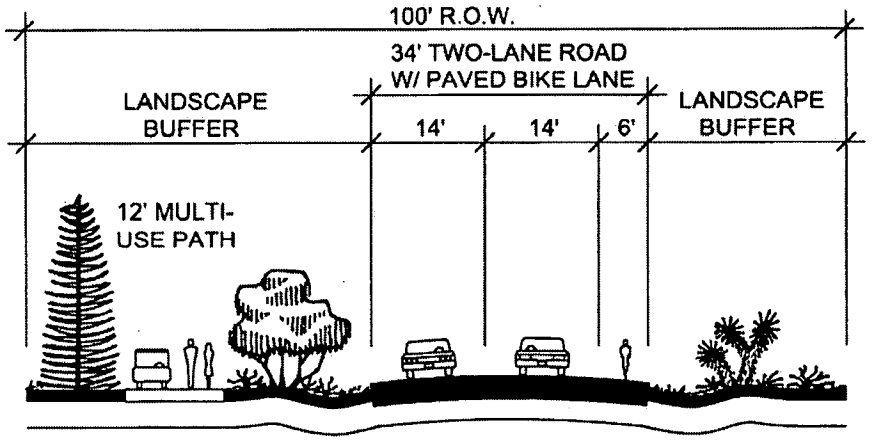

Figure A5: Cross Section – 2-Lane Road (100' ROW)

A1.2.5 Paths and Trails

Paths and trails would be an integral part of the transportation system. Construction of all interior streets would include as part of the roadway pavement, and separate within the right-of-way, a variety of paths and trails to accommodate pedestrians and other non-motorized modes of transportation. The Gateway area would provide a work environment offering the workforce with the opportunity to safely and conveniently walk or cycle to a transit stop, and from there be transported directly to their work site. The development of natural paths and trails would be emphasized between professional, commercial and research facilities. Whether commuting to work, to shop, or simply for exercise and relaxation, the workforce would have access to an extensive network of paths and trails connecting with most parts of the Gateway area.

A2.0 STORM WATER MANAGEMENT AND GRADING

The nine square mile Gateway area is a relatively flat alluvial plain, with an approximate 1% slope gradient from northeast to southwest and no significant physical features. Zero runoff designs would be utilized to reduce the chances of downstream flooding that often results from urban development. Typical "curb and gutter" designs normally envisioned with infrastructure development would be avoided wherever possible. A roadway and swale system is envisioned to handle the runoff with onsite retention facilities provided for most parcels.

Low land use densities would allow for wide street rights-of-way and large lot sizes. This would facilitate the extensive use of swales and runoff retention areas, which would percolate dry and provide natural irrigation for the desert landscape. The use of porous pavement materials and modular paver designs would be encouraged to promote rainwater infiltration and reduce the need for concrete gutters. Concrete curbs may be needed only for traffic control, such as medians and turn lanes in high traffic areas, or to support the edges of modular pavers and certain other paving materials.

As previously illustrated, most roadways would be constructed with crowned cross sections and wide swales instead of curbs and gutters along both sides of the pavement. The boulevard arterial would be constructed with a pitched cross section and a raised median, with only a curb (no gutter) at the median, and with wide swales along both outer edges of the pavement. Parking lots and other paved areas should be designed to utilize porous pavement and distribute runoff into wide swales or retention areas that reduce downstream flooding and benefit the on-site landscaping.

The Gateway area is straddled by two natural washes along the east and west boundaries. The on-site system of paved areas, roadways, and swales should direct excess runoff into these natural washes to avoid on-site flooding.

A.3.0 SAMPLE PUBLIC FACILITY DESIGN STANDARDS

Just as infrastructure can be designed to be energy and water efficient, so to can public facilities. The back cover of this report include sample design guidelines for energy efficient sustainable schools. The sample guidelines were developed by for the Clark County School District by Innovative Design, Inc. and are included for the purpose of illustration with the permission of the architect.

Appendix B. Previous Environmental Reviews

Previous Environmental Reviews

This appendix summarizes relevant environmental reviews that have been performed to date in the Gateway Area. The environmental consequences of the entrance area land conveyance have been generally, or programmatically, evaluated as part of BLM's Resource Management Plan (RMP) for the Las Vegas region. The potential environmental consequences from development of the parcels (combined area of approximately 900 acres) proposed for commercial and public purpose uses as part of the November 1999 conveyance legislation were evaluated by the BLM prior to conveyance of the initial 61 acres to Nye County. However, environmental reviews may need to be conducted for the balance of the nine square miles.

The Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (DOE, 2000) evaluated: (1) the projected impacts on the Yucca Mountain environment of the construction, operation and monitoring, and eventual closure of the geologic repository; (2) the potential long-term impacts of repository disposal of spent nuclear fuel and high-level radioactive waste; (3) the potential impacts of transporting these materials nationally and in the State of Nevada; and (4) the potential impacts of not proceeding with the Proposed Action. The analyses indicated that the direct impacts to the environment resulting from the proposed Yucca Mountain Repository would be minimal.

The Yucca Mountain Repository Final EIS did not evaluate the potential indirect socioeconomic impacts Nye County expects will result from the influx of new residents in the neighboring Nye County communities that will absorb the majority of the repository workforce. To mitigate these impacts, Nye County would invest in the planning and infrastructure development necessary to provide an attractive locale to host repository-related industry and development on land adjacent to the repository entrance if, and when, repository construction is approved. Additional evaluation would be needed to address the potential impacts resulting from the development of the Gateway Area.

Site-specific impact analyses have not been conducted for the Gateway Area, and the information presented in this Concept Plan is not intended to supplant the National Environmental Policy Act process or any other applicable regulatory or statutory requirements.

The following sections briefly describe the activities and their consequences that are reasonably expected to result from the development of approximately 3,000 acres within the Gateway Area. The estimate of 3,000 acres represents the land that is available for development, less existing private development, and existing road and utility easements and rights-of-way. Possible mitigation measures that may be implemented to minimize the impacts are briefly described.

Land Use

Development of the nine-section area could potentially disturb up to approximately 3,000 acres of land. The proposed Gateway Area site would transition from undeveloped open space to developed commercial, heavy and light industrial, temporary-residential, and educational and recreational land uses. Formal planning of the area in accordance with the provisions of the NRS Chapter 278 Planning and Zoning (NRS, 2006b) would minimize the potential for land use conflicts and over-commitment of resources.

Biological Resources

The development of approximately 3,000 acres of mostly land could result in the loss of habitat for plants and wildlife. At least one threatened specie, the Mojave Desert tortoise, is known to

occur in the area. Approximately 900 acres of the land to be disturbed has been previously permitted under Section 10A of the Endangered Species Act to allow for incidental take of the tortoise. The remaining land will need to be surveyed for plant and wildlife prior to land-disturbing activities to identify the presence of protected plant and animal species, and to evaluate habitat densities and conditions. If protected species or critical habitat are identified in the area of the proposed site mitigation measures may include restricting surface disturbance to the minimum amount needed for construction, educating construction personnel about listed species, monitoring of construction activities by qualified biologists, placing tortoise fencing in areas of known tortoise habitat, restoring habitat in areas temporarily disturbed during project construction, and paying remuneration fees for habitat compensation.

Cultural Resources

The disturbance of up to 3,000 acres could result in the destruction of archaeological sites. The approximately 900 acres of land identified for legal conveyance have been surveyed for artifacts and cultural resources. Surveys of the remaining 2,600 acres would need to be conducted by qualified archaeologists to identify cultural resources. If sites are identified: pre- and post-construction condition assessments would be conducted for the sites, construction crews would be advised of the sites' presence and directed to avoid the archaeological site, or qualified archaeologists would prepare treatment plans and excavate the archaeological sites. If there is the potential for encountering previously unknown cultural resources during ground-disturbing activities associated with construction, a qualified construction monitor would be present during construction activities. If cultural resources are found during construction, all work would cease and the appropriate federal agency would be contacted immediately to coordinate assessment of the find.

Air Quality

An increase in dust (particulate matter with a diameter less than 10 microns (PM10) could occur during ground-disturbing activities. Emissions from construction vehicles could also occur. It is likely that these impacts would be temporary and localized. Specific actions by construction contractors may be implemented to reduce emissions of criteria pollutants during construction. The EPA has established new air quality standards for diesel engines that will become effective 2007. The 2007 diesel engines will reduce PM10 by 90 percent, and reduce sulfur to 15 parts per million, which will reduce nitrogen oxides by 50 percent (EPA, 2004). Compliance with these measures would substantially limit the magnitude of potential air quality impacts. Additionally, Nye County currently operates a Air Quality Program in the Pahrump Regional Planning District to control fugitive dust. As the Town of Amargosa Valley expands, a similar program to require the formalization of control measures in a dust control plan will likely be required. Such measures that can be incorporated into a dust control plan include: using wind breaks, regulating vehicle speeds, and reducing vehicle volume by providing perimeter parking and shuttle service to the construction areas.

Water Resources

Potential impacts related to water resources that could result from the development of the Gateway Area include: increases in water demand resulting in a lowering of the water table, degradation of water quality, and subsidence and fissuring. Activities could also affect jurisdictional drainages and wetlands, surface water from fuel and hazardous materials spills, flooding of structures, and increased run-off from urbanization. The Gateway Area would be developed in response to the increased need for facilities and infrastructure to support the growth of business and industry related to the Yucca Mountain repository.

Jurisdictional drainages and wetlands that are protected under the Clean Water Act and are the responsibility of the U.S. Army Corps of Engineers may be present within the proposed Gateway Area. Therefore, a jurisdictional determination would be conducted prior to construction to ensure that appropriate measures are taken to reduce the impact to these resources, and that the appropriate permits, if applicable, are obtained.

The potential for contaminants to reach surface water generally would be limited to spills or leaks followed by a precipitation event large enough to result in runoff. The most likely sources of potential surface water contaminants would be fuels and lubricants needed for equipment. To minimize the potential impacts to surface water resources from these contaminants, the fuels and lubricants would be stored inside buildings with appropriate containment structures, and these materials would be managed in accordance with standard best management practices.

Portions of the 3,500-acre Gateway Area site may be located within a 100-year or 500-year floodplain. A hydrologic study would be conducted for the site to assess the potential for flooding, and if necessary, recommend protection measures. Possible management practices may include: construction of facility foundations above the flood level; design and construction of facilities to withstand flooding, consistent with common industrial practices; and use of bridges or culverts to protect roadways from flood damage.

The rate at which water infiltrates the surface would be altered by development of the land. To the extent practicable, the areas around buildings, roads, and parking facilities would be landscaped with natural plants to decrease runoff from these areas.

Socioeconomics

According to the Yucca Mountain Repository Final EIS, less than a 1-percent increase in population is expected to occur in Nye County as a result of the Yucca Mountain Repository. However, based on current demographic trends and housing stock, Nye County expects that the majority of repository personnel will reside in Nye County communities such as Amargosa Valley, Beatty, or Pahrump. While increased population would result in a slight increase in the tax base of Nye County, it would also result in an increased need for services - support facilities (hospital, day care, schools), utilities (electric power, water, natural gas, wastewater treatment), and safety services (fire, police, paramedics). Such increased need will place an even greater burden on Nye County to provide the additional infrastructure necessary to deliver these services. Thus, a major concern of the increase in residential population is that the tax revenues will be insufficient to provide the level of improvements needed by those residents.

In response to Nye County's scoping comments on the Supplemental EIS, the DOE will look at a 80/20 and 20/80 population distribution for repository workers. Funding sources to support the needs of the increasing population would need to be identified. Innovative and early planning of the growing communities, including the Gateway Area, would ensure that the needed facilities and services are available in a cost-effective and time-efficient manner. Effective planning would minimize the potential for duplication of efforts between DOE and Nye County, excessive area-wide infrastructure costs, and conflicts between regional and local needs. Additionally, early planning will identify and promote the finest opportunities for development and the best approach for managing growth within the communities of Amargosa Valley and Beatty.

Traffic and Roadways

Construction traffic is expected to increase in the vicinity of the repository and proposed Gateway Area during repository construction phases. Additionally, there would be an increase

in the number of trucks delivering shipments to the repository when it begins to accept waste, and an increase in the number of employees accessing the Yucca Mountain site via Gate 510. Effective planning would ensure that the appropriate network of roadways are designed and constructed to handle not only the truck-shipment traffic, but also the Repository personnel traffic and the Gateway Area personnel and visitor traffic. Transportation plans would address: potential regional and local traffic issues: management of different types of traffic such as trucks delivering radioactive-waste shipments, trucks delivering equipment and supplies, and automobiles; and recommendations such as implementation of a shuttle service for minimizing traffic congestion.

The DOE is currently evaluating the environmental impacts of a rail line to the YMP across Crater Flat, west of the Gateway Area. Nye County strongly prefers and supports the rail transport of waste to the repository over other modes, it believes that DOE should give consideration to the possibility that rail service may not become available by the currently planned date of 2014. In this eventuality, additional upgrades along U.S. Highway 95 corridor within the Gateway Area, may be necessary.

Visual Resources

The proposed Gateway Area site would transition from open space to developed commercial, light industrial, temporary residential, and recreational land uses. Therefore, the view from key observation points, such as locations along U.S. Highway 95 would change from existing conditions. However, the areas would be planned and designed to ensure that facility designs, colors, and landscaping would minimize adverse visual impacts.

Cumulative Impacts

While the exact period of activity at the Gateway Area cannot be predicted with a high degree of certainty, it can be reasonably assumed that development of the lands will begin within the next five year period. Further, if DOE receives a license to proceed with repository construction, the rate of land development can reasonably be expected to accelerate in parallel with in the increased need for local public and commercial services.