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**MINERAL COUNTY COMMISSIONERS**

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GOVERNING BOARD FOR THE TOWNS OF  
HAWTHORNE, WALKER LAKE, LUNING  
AND MINA  
LIQUOR BOARD AND GAMING BOARD

December 6, 2006

**Mineral County Scoping Comments**

**RECEIVED BY OCRWM CCU**  
**12/12/2006**

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Office of Civilian Radioactive Waste Management  
U.S. Department of Energy  
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1. DOE needs to evaluate the potential to site and an intermodal near Hawthorne and compare the use of this facility to one proposed for the Caliente area. Because the rail line terminates at Hawthorne and the cost of rail construction are significant, DOE should evaluate an intermodal site as an alternative to rail construction.
2. The EIS needs to describe the advantages of having a military security force and hazardous response team available at the Hawthorne Army Ammunition Depot to support rail shipments within the corridor. The Depot has a full-time professional fire department that maintains an on-site hazardous materials team. Also, the Depot is already licensed by the NRC to handle certain types of radioactive materials. The costs and advantages to having this type of support should be compared against similar options available along the Caliente corridor.
3. The EIS needs to fully describe all facilities that will be located along the portion of the Mina Route. The advantages and disadvantages of various locations of support facilities should be discussed in detail in the EIS. The Hawthorne Army Ammunition Depot should be considered as a perspective site given its ability to provide security and emergency response capabilities. (See attached document "Transportation Emergency Preparedness-Hawthorne Army Depot Fire and Emergency Services, October 2004").
4. DOE needs to perform a comprehensive risk assessment along the Mina Route from Hazen to Yucca Mountain that analyzes impacts from normal operations and from a severe accident leading to a release.
5. DOE needs to obtain ROWs that are sufficient to provide some level of buffering from future development that might encroach upon the rail line.
6. DOE needs to thoroughly evaluate the potential impacts to mineral resources and development along the proposed rail line and alternatives.
7. DOE need to evaluate the risks and costs of leaving waste on site at generator facilities versus transportation along routes. It appears that one viable no-action alternative is to leave waste at the generator site. This no-action should be compared against the proposed action.

8. As part of the proposed action, DOE needs to examine areas where additional land withdrawals could occur to facilitate future economic development (i.e. rail and industrial parks). Such development would contribute to the O&M costs of the route through user fees. Also DOE needs to evaluate the potential for other commercial rail users. There is new industrial development in the Hawthorne area that will desire to access the line.
9. DOE needs to identify all the terms and conditions of use associated with the Mina Rail corridor and evaluate whether or not such conditions will have a negative or beneficial impact on future commercial users and development along the rail corridor.
9. Construction and staging areas should be evaluated in the EIS as well as all of the associated impacts.
10. The EIS should evaluate impacts to local communities in Mineral County during construction. The EIS should evaluate the entire range of social and economic impacts associated with rail construction and operation. The EIS should compare and contrast the ability of local communities along the Caliente and Mina Corridors to accommodate impacts from construction and operations.
11. DOE needs to describe and show the locations of the rail routes and the proximity to population. Some discussion should occur with respect to a release and the potential for radiation exposure.
12. DOE needs to provide estimates of radiation exposure to maximally exposed individuals along the proposed rail route under normal operating conditions with no accidents. DOE needs to determine if a maximally exposed individual even exists along the Mina Corridor.
13. DOE needs to evaluate lands in Mineral County and along the route to determine the prospects for future conflicts. DOE should avoid private lands to the extent practicable.
14. DOE needs to commit to work with local communities along the Mina Branch line as they conduct their risk assessment. DOE needs to communicate with local communities to the extent to which accident conditions exist and what would be the likely outcomes under a severe accident scenario.
15. DOE needs to recognize that the majority of the waste shipments to Yucca Mountain may now be entering the State in the north. DOE need to refocus its resources, institutional interactions and support to northern Nevada. In the EIS, DOE needs to commit to regular interactions with communities along the rail corridor.
16. DOE needs to establish a Yucca Mountain Information Center in Hawthorne, such as the new center in Nye County. Education about the project is key to citizens, school students as well as visitors traveling through Mineral County. (See attached "Community Survey Results, July 2006").

17. DOE needs to evaluate whether or not Yucca Mountain train operations will impact the Walker Lake recreation areas. The Lake and associated facilities attracts approximately 100,000 visitors each year. DOE needs to evaluate (with respect to economic impacts) whether or not the presence of nuclear waste trains (which is in close proximity to the east shore) would have an impact on visitors.

18. For the public health and safety of citizens along the Mina route, DOE needs to build underpasses or overpasses anywhere the rail line traverses U.S. Highway 95.

19. DOE needs to ensure that any potential infrastructure and economic impacts that may be brought about as a result of the risks to Mineral County because of the transportation of nuclear waste be maximized, and any rail developed in Mineral County be available for commercial/shared use to include extending the rail line to the Las Vegas area. A dead end line is of no use to any rail users desiring a direct north to south route and vice-versa.

20. Mineral County has a substantial amount of data related to existing conditions. The Yucca Mountain oversight office maintains the Geographical Information System for the county. DOE should contact the Yucca Mountain oversight office to evaluate available information. (See attached document "Mineral County Baseline Report Update 2005").

21. DOE also needs to recognize that most first responders in rural areas will be local law enforcement, thereby the need to evaluate the potential impact to local law enforcement as well as volunteer Fire Departments.

22. The EIS needs to evaluate whether or not the Mina Route will result in Yucca Mountain shipments avoiding the Las Vegas and Salt Lake City areas.

23. DOE needs to describe how western generator sites will ship to Yucca Mountain and explain the potential impacts to the routes. Doe should not use the I-15 corridor through Las Vegas to access Yucca Mountain, particularly when such a route is not the shortest and safest route to Yucca Mountain for many western generator sites.

24. DOE should be responsible to ensure that any and all impacts upon the environment, the infrastructure, the economy and/or the lifestyle of Mineral County residents be fully assessed and that appropriate requests for mitigation of such impacts be submitted to the federal government on all relevant matters including but not limited to; medical services, early warning systems, safety of the public and emergency response.

Respectfully,



Richard Bryant, Chairman  
Mineral County Board of Commissioners

CC: Nancy Black, Vice Chairwoman  
Ed Fowler, Member

**Transportation Emergency Preparedness  
Program Model Needs Assessment**

**Hawthorne Army Depot Fire and Emergency Services**

**· October 2004**

**Mineral County  
Office of Nuclear Projects**

## **Hawthorne Army (HWAD) Depot Fire Services Review Summary**

In October 2004, Mineral County Yucca Mountain Oversight Program representatives met with members of the Hawthorne Army Ammunition Depot (HWAD) Fire Department more commonly known as the HWAD Fire and Emergency Services operated by the Day Zimmerman Hawthorne Corporation (DZHC). The purpose of the meeting was to discuss the current capabilities and resources of HWAD Fire and Emergency Services particularly as they relate to Yucca Mountain and shipments of high-level nuclear waste and spent nuclear fuel through Mineral County.

HWAD Fire and Emergency Services, a professionally trained full time operation, supports the mission of the Depot. Specifically, DZHC is to guarantee the Hawthorne Army Depot a safe working and living environment by providing the most proficient fire suppression, emergency medical services, technical rescue, hazardous materials intervention, and fire prevention services. The extensive capabilities of DZHC Fire and Emergency Services are due to the existing functions at HWAD.

HWAD's principal function is to serve as a Department of Defense (DOD) ammunition depot; produce, assemble, test, and demilitarize munitions; maintain equipment, and provide tenant support to various military organizations. The Joint Munitions Command (JMC) has requirements for services for the demilitarization and renovation of conventional ammunition, ammunition supply depot operations, MILVAN repair, and tenant support.

The Western Area Demilitarization Facility located at Hawthorne is the premiere resource recovery and recycling center of conventional ammunition. HWAD covers approximately 226 square miles, providing ample room for expansion, and is divided into three ammunition storage and production areas, plus an industrial area housing command headquarters, facilities engineering shops, etc. HWAD claims to be the "Worlds Largest Depot" and is the largest industrial activity in the state of Nevada.

HWAD has nearly 1,800 permanent, earth covered munitions magazines and 97 permanent explosive storehouses, with a combined storage capability of approximately 92,250,000 cubic feet. No chemical, biological, or radiological materials are handled. Various conventional, non-lethal chemical and riot control munitions are handled and stored at HWAD. Munitions are shipped to and from HWAD via rail and truck. HWAD includes an extensive railway system that allows direct delivery to most operational facilities. Six loading docks and three container holding facility (pads) are strategically located for this purpose. These docks and pads can be used to load and unload trucks. A truck inspection station is provided for required inspection of all munitions trucks entering or leaving the facility. Figure 1 shows the location of HWAD, the Town of Hawthorne and major transportation facilities in Mineral County.

DZHC Fire and Emergency Services has 24 full-time professional fire and emergency service personnel supporting the mission of HWAD. Most of the Fire and Emergency Services personnel live in the Hawthorne area and also serve as volunteers for the

**Mineral County Volunteer Fire Department. The presence of full-time fire fighters also helps stabilize the capabilities and operational readiness of the volunteer force in Hawthorne.**

**As part of the interview process with DZHC Fire and Emergency Services, an emergency response readiness evaluation and needs assessment survey was completed. The needs assessment survey used in this analysis was developed by the Department of Energy for the Transportation Emergency Preparedness Program (TEPP) as a tool to assist State, Tribal and Local officials in determining emergency responder readiness. The authority (DZHC) conducted this self-assessment to determine readiness for response to a transportation incident involving radioactive materials.**

**Upon completion of the self-assessment, the assessment authority (DZHC) recognized strengths and identified improvement areas associated with Yucca Mountain shipments.**

**The current DZHC Fire and Emergency Services assessment is included as part of this report. A summary of findings from the current assessment indicates a need for:**

- New radiation detection equipment. The Fire Services have older units.**
- Regular calibration and maintenance of radiation detection equipment.**
- Training in radiological basics, radiological hazard identification, and shipping packages.**
- The ability to identify information sources that can provide responders with details about a radioactive materials shipment.**
- General awareness and understanding of radiological survey instruments and how they can be used to survey for radiation exposure and contamination.**
- Assessing package integrity.**
- Understanding DOE's transportation program.**

**With the exception of training and equipment capabilities related directly to radiological materials, DZHC Emergency and Fire Services can provides a full compliment of fire and emergency services including hazardous materials response capabilities and the ability to provide on-scene incident command.**

**In the Fall of 2003, the Model Needs Assessment was also provided to Mineral County emergency response agencies. The assessment was used in an effort to identify potential impacts from Yucca Mountain radioactive waste shipments to emergency response resources in Mineral County. The assessment was provided to the following agencies:**

- Mount Grant Hospital (Hawthorne)**
- Mineral County Ambulance Services**
- Mineral County Sheriff's Department**
- Mineral County Fire Department/Emergency Management**

Section 180(c) of the Nuclear Waste Policy Amendments Act directs the Department of Energy to provide technical assistance and funds to States for training for public safety officials of appropriate units of local government and Indian tribes. DOE will begin Section 180(c) implementation approximately 3 years before the first scheduled shipments to the repository.

There has been a significant level of discussion related to the difficulties and cost associated with implementation of Section 180(c). One of the greatest challenges is to ensure that small rural volunteer fire departments serving communities adjacent to or near highway and rail shipment corridors are adequately prepared. Many of the communities throughout the west and mid-west responsible for first response capabilities for Yucca Mountain shipments will be comprised of volunteers. One principal drawback to volunteer fire departments is the ability to maintain training and response capabilities for fire and emergency crews due to continual turnover of staffing. Also, the financial resources to provide and maintain proper equipment are often limited.

Another problem that has been associated with rural communities is the limited availability and proximity of a fully trained hazard materials response team. It may require several hours before trained personnel can reach an incident involving Yucca Mountain shipments.

Hawthorne is in a unique position for a small rural community by having a full-time professional fire department associated with a military installation. DZHC maintains mutual aid agreements with Mineral County for emergency assistance. As discussed earlier, most of the full-time DZHC fire department personnel are also members of the Mineral County Volunteer Fire Department.

There are several potential advantages for the purposes of providing emergency response for Yucca Mountain shipments that are associated with HWAD Fire and Emergency Services. Those advantages are:

- The presence of professional fire and emergency service capabilities with 24-hour on-duty staff. Most rural areas do not have access to full-time fire and emergency services.
- A full-time staff would make it easier for states and local communities to maintain training and ultimately response capabilities utilizing the "train the trainer" concept. HWAD could provide on-going training to volunteer fire departments in the region.
- An existing professional fire department that is capable of providing emergency response to a sizeable area in west central Nevada.
- DZHC is the existing Department of Defense contractor at HWAD. As such there could be an opportunity for future contractual arrangements with DOE to provide emergency response along Yucca Mountain transportation corridors.
- Cost savings in terms of training and equipment, and cost sharing with another federal agency such as DOE could be achieved.

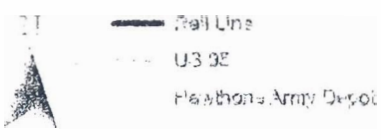
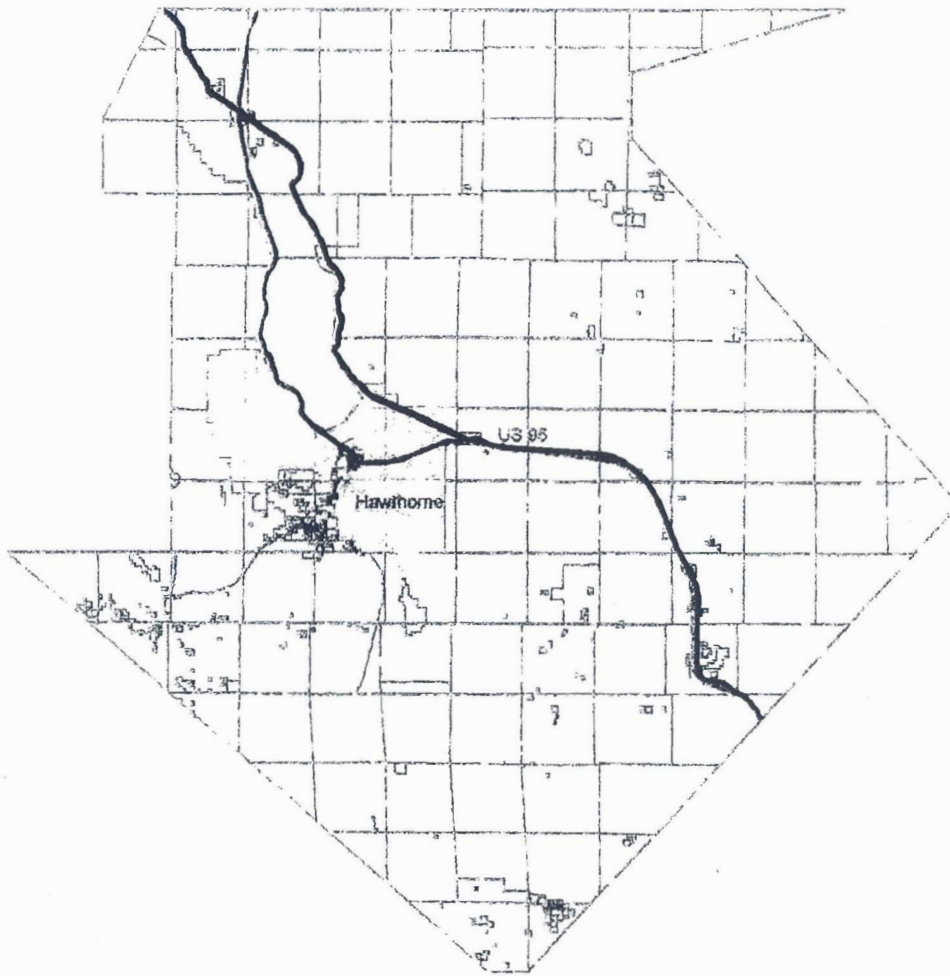
- Experience with hazardous materials and response to incidents involving hazardous materials and incident command. As such DOE would maintain a high level of capability utilizing contract fire services provided by HWAD.

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# HWAD, Hawthorne, and Major Transportation Facilities



The scale and configuration of all information shown herein are approximate only and are not intended as a guide for design or survey work. Reproduction is not permitted without prior written permission from the Mineral County Nuclear Projects Office.

Figure 1

# table of contents

planning tools

Transportation Emergency Preparedness Program (TEPP)

## Model Needs Assessment (Self-Assessment Documents)



Forward	2
A Introduction	2
B Assessment Elements	4
1. Emergency Management Planning Procedures and Capabilities	4
2. Emergency Communications Center Procedures and Capabilities	4
3. Hazardous Materials Team Procedures and Capabilities	5
4. Fire Response Organization Procedures and Capabilities	7
5. Law Enforcement Response Organization Procedures and Capabilities	8
6. Emergency Medical Services and Care Facilities Procedures and Capabilities	9
C Training Element	11
D Discussions and Recommendations	16
E Signature Page	18
F Attachments	18
Appendix A	19

## Model Needs Assessment (Self-Assessment Documents)

### FORWARD

The Model Needs Assessment document was developed by the Department of Energy for the Transportation Emergency Preparedness Program (TEPP) as a tool to assist State, Tribal and Local officials in determining emergency responder readiness. Upon implementation of this document, the authority having jurisdiction will be conducting a self-assessment to determine responder readiness for response to a transportation incident involving radioactive materials. As the user of this document works through the assessment questions, the jurisdiction will determine strengths and identify possible improvement areas. To support the authorities assessment and recommendations for improvements, this document includes descriptions of additional TEPP planning and training tools. These tools have been developed to assist State, Tribal and Local officials in correcting identified improvement areas. Appendix A includes a listing of TEPP planning and training tools.

### A. INTRODUCTION

*A typical introduction would describe the reason for conducting the assessment, what services are being assessed, and identify a recommended plan for improvement.*

This Needs Assessment is being conducted as part of the TEPP planning process. This assessment will determine State, Tribal or Local current readiness and capabilities (planning and training) for dealing with a transportation incident involving radiological materials. This assessment provides an evaluation of the various functions of emergency response organizations.

Upon completion of the self-assessment, the assessment authority should recognize strengths and identify improvement areas. A written report should identify the method for improving responder skills/capabilities. This should include a description of the need for the development of specific emergency response plans/procedures. To validate the developed plans/procedures or to evaluate current responder readiness, a series of training drills or an exercise with applicable emergency response organizations should be conducted. These drills should be conducted to allow participants the opportunity to demonstrate a thorough knowledge and understanding of response needs for a transportation incident involving radioactive materials.

The integration of planning and training resources into the existing emergency management system is an objective of the TEPP. Through participation and use of TEPP products, officials will strengthen their emergency preparedness and response capabilities. A typical drill effort will include participation from the following emergency service organizations (including both career and volunteer responders): Fire Services, Emergency Medical Services, Hazardous Materials Teams, Emergency Management and Law Enforcement. In addition to State, Tribal or Local agencies, the extent of play for drills could also include, U.S. Department of Energy Regions.



**Model Needs Assessment**  
(Self-Assessment Documents)

The assessment document is divided into six sections. These six sections are Law Enforcement, Fire, Emergency Medical Services, Hazardous Materials, Emergency Communication Center and Emergency Management Services. It is recommended that the assessment be conducted at various State, Tribal or Local facilities. Telephone interviews are also an option to expedite the assessment process.

*List participants from each organization interviewed during your assessment.*

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### Model Needs Assessment (Self-Assessment Documents)



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## B. ASSESSMENT ELEMENTS

### 1. Emergency Management Planning Procedures and Capabilities

Does the State, Tribal, or Local organization have an Emergency Plan?

Yes  No  Partial

Discussion \_\_\_\_\_

Are radioactive materials used or shipped within the county?

Yes  No  Partial

Discussion TRAVELING DOWN THE HIGHWAY

Define uses:

Medical _____	Manufacturing _____
Research _____	Industrial _____
Waste _____	Spent Fuel _____

Does the Emergency Plan address a response to a transportation incident involving radioactive materials?

Yes  No  Partial

Discussion \_\_\_\_\_

Does the State, Tribal, or Local organization want an example of a Model Emergency Plan Annex that identifies standard content guide for transportation emergency preparedness (TEPP Planning Tool)?

Yes  No  Partial

Discussion \_\_\_\_\_

Has the State, Tribal or Local organization conducted a hazardous materials drill within the past 12 months?

Yes  No  Partial

Discussion \_\_\_\_\_

Did this drill involve a radioactive material?

Yes  No  Partial

Discussion \_\_\_\_\_

When was the last date State, Tribal or Local responders conducted a drill or responded to an incident involving radioactive materials?

Record Date 7/23/2003

### 2. Emergency Communications Center Procedures and Capabilities

Have Emergency Communication Specialists (ECS) been trained in the use of the North American Emergency Response Guidebook?

Yes  No  Partial

Discussion \_\_\_\_\_

**Model Needs Assessment**  
(Self-Assessment Documents)

Identify the methods the ECS can contact the following agencies:

Agency	Telephone	Cellular	Radio	FAX
County Environmental Official	✓			
State Nuclear Safety Official				
State Environmental Official				
Hazardous Materials Team				
Incident Command Post (Fire)	✓			
Incident Command Post (EMS)	✓			
Incident Command Post (LE)	✓			
County Environmental Official	✓			
State Nuclear Safety Official				
State Environmental Official				

Does the Emergency Communication Specialist routinely check/test the call-list/radio to confirm communication capabilities with the agencies listed in the previous question?

Yes  No  Partial  
Discussion YEARLY

**3. Hazardous Materials Team Procedures and Capabilities**

Does the County have a Hazardous Materials Team?

Yes  No  Partial  
Discussion \_\_\_\_\_

Has the Hazardous Materials Team completed a self-evaluation as outlined by EPA Regulation 540-G90-003?

Yes  No  Partial  
Discussion ANNUAL TESTING OF ALL EMT MEMBERS

Has the Hazardous Materials Team been trained to the 1910.120 Technician Level?

Yes  No  Partial  
Discussion \_\_\_\_\_

Has the Hazardous Materials Team been trained for response to radiological materials incidents/releases?

Yes  No  Partial  
Discussion \_\_\_\_\_

Has the Hazardous Materials Team been trained for response to transportation incidents involving radiological materials?

Yes  No  Partial  
Discussion \_\_\_\_\_



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Model Needs Assessment  
(Self-Assessment Documents)



DEPARTMENT OF ENERGY



Are hazardous material response services available 24 hours a day?

- Yes No Partial

Discussion

Do hazardous materials response organizations utilize an incident scene accountability system?

- Yes No Partial

Discussion

Are mutual aid agreements developed to support hazardous materials incidents?

- Yes No Partial

Discussion

Has the hazardous materials mutual aid agreement been exercised/practiced in the past year?

- Yes No Partial

Discussion

Does the Hazardous Materials Team have radiological instrumentation in its equipment inventory?

- Yes No Partial

Discussion

If yes, identify number of instruments, model and manufacture.

Table with 3 columns and 5 rows for recording instrument details.

Is the monitoring equipment calibration current?

- Yes No Partial

Discussion

Is there a program to routinely test and maintain monitoring equipment calibration?

- Yes No Partial

Discussion

Has the Hazardous Materials Team been trained on the use of each type radiation instrument and is a program in place to maintain/demonstrate proficiency?

- Yes No Partial

Discussion



**Model Needs Assessment  
(Self-Assessment Documents)**

Has the Hazardous Materials Team developed response procedures that include Site Safety Plan and Radiation Exposure Guidelines?

- Yes    No    Partial

Discussion \_\_\_\_\_

Does the assessment authority want a copy of a model hazardous materials response procedure that includes a Site Safety Plan and Radiation Exposure Guidelines (TEPP Planning Tool)?

- Yes    No    Partial

Discussion \_\_\_\_\_

**4. Fire Response Organization Procedures and Capabilities**

Are all emergency response vehicles equipped with the latest copy of the Emergency Response Guidebook?

- Yes    No    Partial

Discussion \_\_\_\_\_

Have response organizations been trained in the Incident Command System?

- Yes    No    Partial

Discussion \_\_\_\_\_

Do response organization utilize an incident command procedure/checklist?

- Yes    No    Partial

Discussion \_\_\_\_\_

Have response organizations been trained to the OSHA 1910.120 Operations Level?

- Yes    No    Partial

Discussion \_\_\_\_\_

Have response organizations been trained for response to transportation incidents involving radioactive materials?

- Yes    No    Partial

Discussion \_\_\_\_\_

Do fire response organizations have SOPs for response to transportation incidents involving radiological materials?

- Yes    No    Partial

Discussion \_\_\_\_\_

Does the assessment agency want a copy of a model response procedure for transportation incident involving radioactive materials (TEPP Planning Tool)?

- Yes    No    Partial

Discussion \_\_\_\_\_



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### Model Needs Assessment (Self-Assessment Documents)



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Do fire response organizations utilize an accident scene accountability system?

- Yes    No    Partial

Discussion \_\_\_\_\_

Do fire response organizations operate and maintain radiological monitoring equipment as part of its equipment inventory (not required)?

- Yes    No    Partial

Discussion \_\_\_\_\_

If yes, identify number of instruments, model and manufacture.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Is the monitoring equipment calibration current?

- Yes    No    Partial

Discussion \_\_\_\_\_

Is there a program to routinely test and maintain monitoring equipment calibration?

- Yes    No    Partial

Discussion \_\_\_\_\_

Have fire department responders been trained on the use of each type radiation instrument and is a program in place to maintain/demonstrate proficiency?

- Yes    No    Partial

Discussion \_\_\_\_\_

#### 5. Law Enforcement Response Organization Procedures and Capabilities

Are all emergency response vehicles equipped with the latest copy of the Emergency Response Guidebook?

- Yes    No    Partial

Discussion \_\_\_\_\_

Have response organizations been trained in the Incident Command System?

- Yes    No    Partial

Discussion \_\_\_\_\_

Do response organizations utilize an incident command procedure/checklist?

- Yes    No    Partial

Discussion \_\_\_\_\_

Model Needs Assessment (Self-Assessment Documents)

Do law enforcement response organizations utilize an incident scene accountability System?

- Yes No Partial

Discussion

Have response organizations been trained to the OSHA 1910.120 Awareness Level?

- Yes No Partial

Discussion

Have response organizations been trained for response to transportation incidents involving radioactive materials?

- Yes No Partial

Discussion

Do law enforcement response organizations operate and maintain radiological monitoring equipment as part of its equipment inventory?

- Yes No Partial

Discussion

If yes, identify number of instruments, model and manufacture.

Table with 3 columns and 4 rows for recording instrument details.

Is the monitoring equipment calibration current?

- Yes No Partial

Discussion

Is there a program to routinely test and maintain monitoring equipment calibration?

- Yes No Partial

Discussion

Have Law Enforcement responders been trained on the use of each type radiation instrument and is a program in place to maintain/demonstrate proficiency?

- Yes No Partial

Discussion

6. Emergency Medical Services and Care Facilities Procedures and Capabilities

Have response organizations been trained in the Incident Command System?

- Yes No Partial

Discussion



DEPARTMENT OF ENERGY



**Model Needs Assessment**  
(Self-Assessment Documents)



DEPARTMENT OF ENERGY



Do response organizations utilize an incident command procedure/checklist?

Yes  No  Partial

Discussion \_\_\_\_\_

Do emergency medical response organizations have SOPs for treatment and transportation of a potentially contaminated patient?

Yes  No  Partial

Discussion \_\_\_\_\_

Does the assessment agency want a copy of a model procedure for the handling and packaging of a potentially contaminated patient (TEPP Planning Tool)?

Yes  No  Partial

Discussion \_\_\_\_\_

Do emergency medical service organizations utilize an incident scene accountability system?

Yes  No  Partial

Discussion \_\_\_\_\_

Do emergency medical service response organizations operate and maintain radiological monitoring equipment as part of its equipment inventory?

Yes  No  Partial

Discussion \_\_\_\_\_

Is the monitoring equipment calibration current?

Yes  No  Partial

Discussion \_\_\_\_\_

Is there a program to routinely test and maintain monitoring equipment calibration?

Yes  No  Partial

Discussion \_\_\_\_\_

Have emergency medical service responders been trained on the use of each type radiation instrument and is a program in place to maintain/demonstrate proficiency?

Yes  No  Partial

Discussion \_\_\_\_\_

Have hospitals with treatment/care capabilities for radiologically contaminated patients been identified?

Yes  No  Partial

Discussion \_\_\_\_\_

Has the hospital staff been trained in the handling, decontamination, and treatment of radiologically contaminated patients?

Yes  No  Partial

Discussion \_\_\_\_\_

**Model Needs Assessment**  
(Self-Assessment Documents)

Has there been a drill with the local/regional hospital in the past 12 months?

- Yes    No    Partial

Discussion \_\_\_\_\_

Has a drill been conducted utilizing a radiologically contaminated patient in past 12 months?

- Yes    No    Partial

Discussion \_\_\_\_\_

**C. TRAINING ELEMENT**

When conducting this section of the assessment, consider all response agencies (law enforcement, fire, hazardous materials, emergency medical and emergency management). This section will assist the assessment agency in determining training topics that are not being provided in existing training programs. Upon completion of this section, topics not being presented in existing training programs will be identified. The assessment agency can then decide and provide recommendations on which DOE developed training materials can be used to augment existing training. The format for this Section (checklist) corresponds with the objectives outlined in the Modular Emergency Response Radiological Transportation Training (MERRTT).

✓ = yes.

**Radiological Basics**

Upon completion of this module, you will have a better understanding of the basic structure of an atom and the fundamentals of radiation.

	LE	FD	EMS	HMT	EMA
Identify the basic components of an atom.					
Define ionizing radiation, radioactivity, radioactive material, and radioactive contamination.					
Distinguish between radiation and contamination.					
Identify common sources of radiation and radioactive material.					

**Biological Effects**

The purpose of this module is to increase your understanding of how ionizing radiation affects the human body. This knowledge will help you, as a responder, function with confidence during incidents that involve radioactive material.

	LE	FD	EMS	HMT	EMA
Define acute and chronic radiation doses.		✓			
Identify ways that radioactive material can enter the body.		✓			
Identify the potential health effects of radiation exposure.		✓			



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**Model Needs Assessment**  
(Self-Assessment Documents)

**Hazard Recognition**

*The purpose of this module is to increase your understanding of package markings, warning labels and placards used for packaging and shipping radioactive material.*

*Your ability, as a responder, to recognize and interpret package marking, labeling, and vehicle placarding will help you function safely during incidents involving radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify markings on packages used to transport radioactive material.		✓			
Identify labels on packages/containers used to indicate the presence, or absence, of radioactive material.					
Identify vehicle placards used on radioactive material shipments.		✓			

**Initial Response Actions**

*The purpose of this module is to provide a basic understanding of the initial actions you should take when arriving at a scene of a radioactive material transportation incident.*

*Your ability to effectively identify the hazard using the ERG will enhance your efficiency in responding to the incident.*

	LE	FD	EMS	HMT	EMA
Identify the actions required by "Safety, Isolation, and Notification."		✓			
Identify the importance of shipping papers.		✓			
Locate, in the U.S. Department of Transportation Emergency Response Guidebook (ERG), the response guide for radioactive material by using one or all of the following: UN identification number, material name, or shipment placards.		✓			



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**Model Needs Assessment**  
 (Self-Assessment Documents)

**Radioactive Material Shipping Packages**

*The purpose of this module is to provide you with a basic understanding of the types of packages used to transport radioactive material and the potential hazard posed by the material contained within these packages. This information will help increase your knowledge of appropriate responses to a radiological transportation incident.*

	LE	FD	EMS	HMT	EMA
Identify typical packages used in the transport of radioactive material.		✓			
List examples of radioactive material that are shipped in various shipping packages.					
Identify the risks associated with the various shipping packages.					
Identify the testing methods for Type A and B Packages.					

**Patient Handling**

*The purpose of this module is to help you assess the potential risks in handling contaminated patients at a radioactive material transportation incident. This module will aid you in preparing patients for transport from the incident scene to the hospital.*

	LE	FD	EMS	HMT	EMA
Identify the risks to response personnel when rescuing injured persons at a radioactive material transportation incident.		✓			
Identify the importance of gross decontamination for radiologically contaminated patients.		✓			
Identify methods for preparing radiologically contaminated patients for transport to the hospital.		✓			



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**Model Needs Assessment**  
 [Self-Assessment Documents]

**Information Resources**

*The purpose of this module is to increase your awareness of the resources available to you for use when responding to an incident involving radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify information sources that can provide responders with details about a radioactive material shipment.					
Identify the information contained on shipping papers used for transporting radioactive material.		✓			
Identify state and federal resources that provide assistance to on-scene responders.		✓			

**Scene and Incident Control**

*This purpose of this module is to help you understand the importance of donning the proper personal protective equipment, controlling contamination, and maintaining crowd control. The information in this module will help you protect yourself and others from radioactive contamination at the scene of a transportation incident involving radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify the basic steps for identification and hazard assessment at the scene.		✓			
Identify ways to protect on-scene personnel from radiological contamination at the scene of a transportation incident involving radioactive material.		✓			
Identify the basic protection measures of time, distance, and shielding.		✓			
Identify ways to control the spread of contamination while taking defensive measures to limit impacts of an incident involving radioactive material.		✓			
Identify factors to consider when implementing public protective action and crowd control at the scene of a transportation incident involving radioactive material.		✓			



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**Model Needs Assessment**  
(Self-Assessment Documents)

**Radiological Terminology and Units**

*The purpose of this module is to increase your knowledge of ionizing radiation. Knowing the terminology and measuring units associated with radioactive material will help you communicate more effectively with assisting agencies while responding to an incident involving radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify four basic types of ionizing radiation.					
Identify the terms used to measure radiation and radioactivity.					
Identify terminology and acronyms associated with shipments of radioactive material.					
Define transuranic waste, low-level waste, high-level waste, and mixed waste.					
Identify commonly used Proper Shipping Names for radioactive material.		✓			

**Radiological Survey Instruments and Dosimetry Devices**

*The purpose of this module is to provide you with a general awareness and understanding of radiological survey instruments and how they can be used to survey for radiation exposure and contamination. Proper use of radiological survey instruments will provide you with more information on the hazards present at the scene.*

	LE	FD	EMS	HMT	EMA
Identify two categories of radiological survey instruments.					
State the proper application and limitation of contamination survey instruments.					
State the proper application and limitation of radiation exposure survey instruments.					
Identify commonly used dosimetry devices.		✓			





**Model Needs Assessment**  
(Self-Assessment Documents)

**Assessing Package Integrity**

*The purpose of this module is to increase your understanding of the information contained on warning labels and the radiation levels associated with radioactive material packages. Being able to correctly read the warning labels can help you assess the radioactive material package integrity, which in turn will improve your ability to respond safely.*



	LE	FD	EMS	HMT	EMA
Identify radiation levels associated with the various radiation warning labels.		✓			
Identify the importance of the transport index in determining package integrity.					
Identify the maximum radiation levels expected on shipping packages and/or transport vehicle surfaces.					

**Tactics and Strategies**

*The purpose of this module is to increase your understanding of some basic tactics and strategies that can be used at the scene of an incident involving radioactive material. Once you understand these tactics and strategies, you will help control the spread of radiological contamination and minimize personnel exposure to ionizing radiation.*

	LE	FD	EMS	HMT	EMA
Describe reasons for and methods of establishing hot, warm, and cold zones at the scene of a transportation incident involving radioactive material.		✓			
Describe methods for implementing radiological controls at the scene of a transportation incident involving radioactive material.		✓			
Describe considerations for selecting PPE for responders working at the scene of a transportation incident involving radioactive material.		✓			



## Model Needs Assessment (Self-Assessment Documents)

### Decontamination Disposal and Documentation

The purpose of this module is to inform you of methods used to decontaminate personnel and equipment. This information will help you prevent further spread of radiological contamination and minimize the amount of radioactive waste generated when performing response activities at the scene of a transportation incident involving radioactive material.

	LE	FD	EMS	HMT	EMA
Identify how personnel, personal protective equipment, apparatus, and tools become contaminated with radioactive material.		✓			
State the purpose of radioactive decontamination.					
Identify field decontamination techniques for equipment.		✓			
Identify field decontamination techniques for personnel.		✓			
Identify your responsibilities for radioactive material disposal and event documentation.					

### Incident Commander--Response Phase

The purpose of this module is to provide you with an understanding of the actions that should be considered during the response phase of an incident involving radioactive material. This module will help you realize that a successful response involves the integration of all responding organizations and agencies.

	LE	FD	EMS	HMT	EMA
Identify the steps an IC should take at the scene of an incident involving radioactive material.		✓			
Identify actions, hazards and other considerations that the IC should assess before allowing personnel to enter the immediate incident area that involves radioactive material.		✓			
Identify federal agencies available to provide assistance to the IC at an incident involving radioactive material.		✓			
Identify actions necessary for controlling access to an incident involving radioactive material.		✓			



**Model Needs Assessment**  
(Self-Assessment Documents)

**Incident Commander-Recovery Phase**

*The purpose of this module is to provide you with the necessary information to successfully transition from the response phase to the recovery phase of a radiological incident.*

	LE	FD	EMS	HMT	EMA
Identify actions that must be completed before transitioning to the recovery phase of an incident involving radioactive material.					
Identify issues that may be of concern during the transition from response to recovery phase.					
Identify recovery-planning issues that must be addressed by the IC.					
Identify tactical objectives the IC should consider when developing a recovery plan.					
Explain the difference between short-term and long-term recovery activities.					

**Public Information Officer**

*The purpose of this module is to provide the Public Information Officer with the necessary information to successfully communicate to the public the events and outcomes of the incident. You may not necessarily be an expert in radiological principles so this module will inform you of the basic concepts, enabling you to more effectively communicate necessary information to the media and public, ensuring they are adequately and correctly informed during a transportation incident involving radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify public concerns and perceptions about incidents involving radioactive material.		✓			
Identify basic messages that should be delivered to the media and the general public during a transportation incident involving radioactive material.		✓			
Identify emergency public information sources available to support an incident response.		✓			
Identify agencies that will require public information coordination during a response to an incident involving radioactive material.		✓			





**Model Needs Assessment**  
(Self-Assessment Documents)

**Pre-Hospital Practices**

*The purpose of this module is to increase your understanding of unique aspects of pre-hospital patient care during a radioactive material transportation incident. This knowledge will help you, as a responder, function with confidence during incidents that involve radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify protective measures for responder safety.		✓			
Demonstrate proper patient management based on acceptable medical practice.		✓			
Identify techniques for patient transfer to medical facility.		✓			
Demonstrate proper procedures for returning personnel, equipment, and vehicles to service.		✓			

**Shipments by DOE**

*The purpose of this module is to increase your knowledge of the DOE's transportation program. Having an understanding of the material being transported by DOE and how it is transported will increase your ability to quickly recognize, safely respond, and accurately relay information during an accident involving DOE owned radioactive material.*

	LE	FD	EMS	HMT	EMA
Identify the types of radioactive material being transported to and from various DOE sites.					
Identify the transportation modes used by DOE to transport radioactive material.					
Identify the enhanced safety measures used by DOE.					



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### Model Needs Assessment (Self-Assessment Documents)

#### WIPP

*The purpose of this module is to increase your knowledge of the Waste Isolation Pilot Plant and its transportation system. Having an understanding of the material being transported to WIPP and how it is transported will increase your ability to quickly recognize, safely respond, and accurately relay information during an accident involving WIPP material.*



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	LE	FD	EMS	HMT	EMA
State the importance of the Waste Isolation Pilot Plant (WIPP).					
Identify large quantity transuranic waste generator sites.					
Identify waste verification techniques.					
Identify the characteristics of the waste transported to WIPP.					
Identify the packages used to transport waste to WIPP.					
Identify the enhanced safety measures used to transport waste to WIPP.					

**Model Needs Assessment**  
(Self-Assessment Documents)

planning tools

**D. DISCUSSIONS AND RECOMMENDATIONS**

*This section of the assessment identifies recommendations or actions necessary to improve planning and training skills/capabilities for Responders (Fire, Emergency Medical Service, Hazardous Materials Teams, Law Enforcement and Emergency Management personnel). Using the results of the previous sections, describe identified weaknesses and develop recommendations that upon implementation will improve responder capabilities. Several examples are provide below:*

**Discussion and Recommendations for Emergency Management Planning**

With the exception of an annex for transportation emergencies involving radioactive materials, the County has an Emergency Plan that addresses typical disasters/emergencies. Through the TEPP, a model annex for transportation accidents involving radiological materials was developed and has been provided to County for review and comment and eventual incorporation into the existing County Emergency Plan. Emergency Management officials have reviewed the provided model annex. This review determined that the provided model format and contents would assist the County in the development of an annex for transportation accident involving radiological materials.

Discussions with State officials indicate a willingness to also evaluate the TEPP model annex. This evaluation, including comment and revision to the TEPP model annex is on going at the time of this draft report.

*Recommendation—Utilize the TEPP Model Annex for State/Local Emergency Plans to develop an Annex for Transportation Accident Involving Radiological Materials.*

**Discussion and Recommendations for Capabilities**

The County has a Hazardous Materials Team that provides around-the-clock response capabilities. The team is supported by typical hazardous materials training and response equipment. Currently all members meet OSHA 1910.120 Technical Level Training Requirements. The equipment cache for radiological response should be re-evaluated. An adequate number of radiological monitoring instruments (9) is available for a radiological transportation accident. However, the instrumentation available requires calibration and should be evaluated to determine if some existing instruments could be replaced with more current model/units. Mutual Aid agreements for additional support are developed and approved by neighboring counties.

*Recommendation—Re-evaluate currently available radiological monitoring equipment determine calibration needs and availability of more current model of monitoring equipment.*

**Discussion and Recommendations for Law Enforcement Training**

Based on response to the assessment questions concerning existing training programs associated with transportation accidents involving radioactive materials, the following discussion and recommendations are provided.



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### Model Needs Assessment (Self-Assessment Documents)

During the assessment process, discussions with Law Enforcement officials it was determined that each law enforcement recruit receives hazardous materials training as part of their initial qualifications. The hazardous materials training that each recruit receives was described by law enforcement officials very general, does include the use of the Emergency Response Guidebook. After completion of the recruitment training program, each law enforcement officer routinely receives refresher training. However existing refresher training programs do not include specifics on responding to transportation accidents involving radioactive materials.

Based on discussion with law enforcement officials during the process it was identified that an Awareness Level Training Program for law enforcement officers would be useful. Law enforcement officials also expressed that because training hours are very limited, available training programs should be packaged in 30 minute or less delivery system (video, slides or hand outs). By developing training in this format/delivery system the training could be conducted during daily lineup activities or specially called meetings/activities.

*Recommendation—Have Law Enforcement complete training modules at the Awareness Level and establish a regular refresher training cycle.*

#### E. SIGNATURE PAGE

*Typical Signature Page would include signatures from organizational authorities such as Police and Fire Chiefs, Emergency Management Director, State Radiation Supervisor, Hazardous Materials Team Chief, Emergency Medical Service Chief and Authority conducting the assessment.*

The information included in this assessment is current and accurate to the best of each assessment team participant's knowledge.

_____	_____
Fire Chief	Date
_____	_____
Police Chief	Date
_____	_____
Emergency Management Director	Date
_____	_____
Emergency Medical Service Chief	Date
_____	_____
Hazardous Materials Team Chief	Date
_____	_____
Conducting Authority	Date



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## Model Needs Assessment (Self-Assessment Documents)

### F. ATTACHMENTS

*This section should include a list of attachments that have been considered useful and have become part of the report. Examples of the Model Plans and Procedures can be viewed on the U.S. Department of Energy Web Site ([www.em.doe.gov/otem/program.html](http://www.em.doe.gov/otem/program.html)).*

### APPENDIX A

#### Needs Assessment

This model assessment provides evaluation criteria to assist State, Tribal, or Local officials in determining responder readiness. This document will assist in identifying improvement areas within various response organizations including law enforcement, fire, emergency management, communication center, hazardous materials teams, and emergency medical services/care facilities.

#### Offsite Emergency Plan Model

A model transportation emergency plan that integrates the FEMA REP 5 guidance is available for use. The model leads a planner through step-by-step development, resulting in a FEMA-consistent emergency plan for state, local and tribal organizations. The model provides both format and content guides.

#### Response Procedure Models

First response organizations that do not have procedures specifically addressing response to radiological shipments will benefit from model procedures covering various response activities. The first uses a flow chart format and includes life saving, fire-fighting and radioactive materials considerations as well as Incident Command and size up guidelines. A second procedure developed is for Hazardous Materials Teams. This procedure includes site safety plan information, exposure guidelines, and forms to document response activities. The third procedure developed is a Patient Handling procedure for potentially contaminated victims. This procedure includes gross decontamination instructions, patient handling and packaging instructions. A fourth model procedure provides guidance to medical examiners/coroners in dealing with a radiologically contaminated body or human remains. And the fifth model procedure assist responders in determining an appropriate method for decontamination of responders.

#### Tabletops/Drills/Exercises

A manual containing seven scripted transportation scenarios has been developed. Each scenario provides a different type of transportation incident that may or may not include the release of radioactive materials. In addition to the scenarios a "Guide to Conduct of Tabletops/Drills/Exercises" was developed to accompany the materials and provide step-by-step instructions on how to use the pre-scripted scenarios and tailor them to individual needs. Other supporting documents include sample drill schedules, facilitator materials for tabletops, and a medical data base with layman's symptoms for a myriad of injuries for use by medical controllers.







**COMMUNITY SURVEY RESULTS  
YUCCA MOUNTAIN PROJECT  
MINERAL COUNTY, NEVADA**

**July 2006**

**Prepared For:  
Mineral County  
Board of County Commissioners**

**Prepared By:  
Mineral County  
Office of Nuclear Projects**

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**Mineral County  
Community Survey Results  
Yucca Mountain Project  
July 2006**

**Prepared For:  
Mineral County  
Board of County Commissioners**

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Office of Nuclear Projects**

## Contents

Section	Page
<b>1.0 INTRODUCTION</b> .....	<b>1</b>
1.1 Background.....	1
1.2 Methodology .....	1
1.3 Summary of Findings .....	2
<b>2.0 SURVEY RESULTS</b> .....	<b>4</b>
2.1 Community Survey Results.....	4
<b>3.0 COMPARISON OF SURVEY RESULTS</b> .....	<b>10</b>
<b>Appendix A</b> .....	<b>12</b>

## Tables

<b>Table No</b>	<b>Page</b>
Table 2-1 .....	4
Table 2-2 .....	4
Table 2-3 .....	5
Table 2-4 .....	5
Table 2-5 .....	6
Table 2-6 .....	6
Table 2-7 .....	7
Table 2-8 .....	7
Table 2-9 .....	7
Table 3-1 .....	11
Table 3-2 .....	11

## Figures

<b>Figure No.</b>	
Figure 3-1 .....	8
Figure 3-2 .....	9
Figure 3-3 .....	10

## **1.0 INTRODUCTION**

### **1.1 Background**

The characterization of Yucca Mountain as a potential site for the first high-level nuclear repository is opposed by the State of Nevada. Responses to surveys conducted by the State of Nevada suggest that roughly 70 percent of Nevadans oppose the development of the repository at Yucca Mountain. The State survey results primarily reflect the opinions of Clark County, Nevada due to the population distribution in the State and the survey methodology. Over the last several years, Mineral County has monitored local public opinion through a variety of survey efforts.

The State survey was intended to represent the views of the State in general, but provides little or no insight about the opinions and beliefs held by Mineral County residents with respect to the repository program. To date, Mineral County has completed a number of public opinion surveys that provide somewhat different results using similar questions found in the State's survey.

As part of its impact assessment and oversight program of Yucca Mountain, Mineral County initiated a new community survey using a revised set of questions that are substantially different from previous Yucca Mountain survey efforts. Survey questions were directly related to the Yucca Mountain project and more generally related to nuclear energy, and transportation of nuclear waste to Yucca Mountain. 2006 Survey questions can be found in Appendix A. Several of the questions used in this year's survey were the same as those used by the Nuclear Energy Institute to gauge public opinion about nuclear waste and nuclear energy.

### **1.2 Methodology**

Mineral County High School students conducted Approximately 170 face-to-face surveys in order to ascertain the views and knowledge of the repository program. This year Mineral County survey questions focused on questions and issues that have been the subject of national survey efforts related to Yucca Mountain. Mineral County reviewed several national survey efforts and selected questions relevant to Yucca Mountain.

The purpose of using these questions is to compare Mineral County survey responses with responses from a national survey sample. Using similar questions allows for comparability with other survey results concerning the Yucca Mountain project. Such comparisons can be found in Section 3.0 of this report.

### **1.3 Summary of Findings**

This section summarizes the responses from the 2006 Yucca Mountain community survey for 2006. Mineral County High School students completed a total of 170 surveys. Almost 90 percent of the survey respondents were familiar with the Yucca Mountain Project and the federal government's efforts to store spent nuclear fuel in Nevada (Table 2-1).

Almost 74 percent of community survey respondents either strongly favored or somewhat favored nuclear energy as one of the ways to provide electricity in the United States (Table 2-2). The percent of Mineral County survey respondents favoring nuclear energy as a means to provide electricity is higher than findings of national survey efforts (Figure 3-1). In 2005, national surveys showed that approximately 70 percent of respondents either strongly supported or somewhat supported nuclear energy as one of the ways to provide electricity.

Similarly, Mineral County respondents appear to support the construction of new nuclear power plants. In 2006, just over 66 percent of Mineral County respondents either strongly agreed or somewhat agreed that more nuclear power plants should be built in the future (Table 2-3). Such a level of support is even higher than national survey responses. As recent as 2003, approximately 54 percent of national survey respondents either strongly favored or somewhat favored the development of new nuclear power plants (Figure 3-2).

A vast majority of Mineral County community survey respondents said it was extremely important or very important to have a clear plan of action for handling the high-level radioactive waste from America's 103 electricity-generating nuclear power plants (Table 2-4). The number of Mineral County survey respondents who felt that having a clear plan for handling high-level nuclear waste was important, is similar to national survey responses (Figure 3-3).

Mineral County survey respondents are becoming increasingly confident that spent nuclear fuel and high-level waste can be shipped safely. In 2006, approximately 70 percent of Mineral County respondents were either very confident or somewhat confident that nuclear waste from America's nuclear power plants could be safely transported to Yucca Mountain (Table 2-5). The percentage of Mineral County survey respondents having this view increased from last year. In 2005, about 66 percent of the Mineral County survey respondents indicated that they were very confident or somewhat confident in the safety of nuclear waste shipments.

Finally, Mineral County survey respondents were asked whether they think it is possible for state, tribal and local governments to continue to challenge the Yucca Mountain project while developing a benefits package for Nevada. The majority of respondents (39.4 percent) answered yes. Almost a third of the respondents did not know. The results for this question from the 2005 Community Survey were similar to the results in 2006 (See Table 2-6).

## 2.0 SURVEY RESULTS

### 2.1 Community Survey Results

This section contains 2006 community survey results for Mineral County. The survey instrument used for the 2006 survey can be found in Appendix A. Survey respondents were first asked whether or not they were familiar with the Yucca Mountain Project. Nearly 88 percent indicated that they were familiar with the project. Frequency tabulations are shown for each survey question beginning with question 1.

Question 1: Are you familiar with the Yucca Mountain Project and the federal government's efforts to store spent nuclear fuel in Nevada?

<b>Table 2-1</b>		<b>Survey Respondent</b>	
<b>Response</b>	<b>Freq.</b>	<b>Percent</b>	
Yes	150	87.7	
No	21	12.3	

Question 2: Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear energy as one of the ways to provide electricity in the United States?

<b>Table 2-2</b>		<b>Mineral County Survey Respondent</b>	
<b>Response</b>	<b>Freq.</b>	<b>Percent</b>	
Strongly favor	43	25.8	
Somewhat favor	80	47.9	
Somewhat oppose	23	13.8	
Strongly Oppose	21	12.5	



Question 3: Please tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the following statement: "We should definitely build more nuclear energy plants in the future?"

<b>Mineral County Survey Respondents</b>		
<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Strongly Agree	41	24.7
Somewhat Agree	69	41.6
Somewhat Disagree	35	21.1
Strongly Disagree	21	12.6

Question 4: How important is it to have a clear plan of action for handling the high-level radioactive waste from America's 103 electricity-generating nuclear energy plants? Is it extremely important, very important, somewhat important, not very important, or not at all important?"

<b>Mineral County Survey Respondent</b>		
<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Extremely Important	121	72.5
Very Important	29	17.4
Somewhat Important	9	5.4
Not Very Important	6	3.6
Not at All Important	2	1.2

Question 5: Radioactive waste is transported in rugged vault-like containers, under strict regulations, using cautious procedures, and in collaboration with state agencies. In the past 35 years, there have been more than 3,000 shipments of this radioactive waste across a total of nearly 2 million miles, and no radiation leaks. After hearing this statement, how confident are you that the radioactive waste from America's nuclear

power plants will be transported safely to the proposed Yucca Mountain disposal site?

<b>Mineral County Survey Respondent</b>		
<b>Table 2-5</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>		
Very Confident	55	33.1
Somewhat Confident	62	37.3
Not too Confident	33	19.9
Not Confident at All	16	9.6

Question 6: Do you think it is possible for the state, tribal and local governments to continue to challenge the Yucca Mountain Project while developing a benefits package for Nevada?

<b>Mineral County Survey Respondent</b>		
<b>Table 2-6</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>		
Yes	65	39.4
No	48	29.1
Don't Know	52	31.5
No Answer	1	1.4

Question 7: Age of Respondent (survey respondent)

<b>Mineral County Survey Respondents</b>		
<b>Table 2-7</b>		
<b>Response</b>		
Average Age	39.2 yrs	
Median Age	38 yrs	
55 year or older	35	22.0
25 to 55 years old	81	51.0
Less than 25 years	44	28.0

Question 8: Household Size

<b>Mineral County Survey Respondent</b>		
<b>Table 2-8</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>		
1 person	25	15.5
2 person	44	27.3
3 person	33	20.5
4 person	32	19.9
More than 4 persons	27	16.8

Question 9: Sex of Respondent

<b>Mineral County Survey Respondent</b>		
<b>Table 2-9</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>		
Male	82	52.0
Female	79	48.0

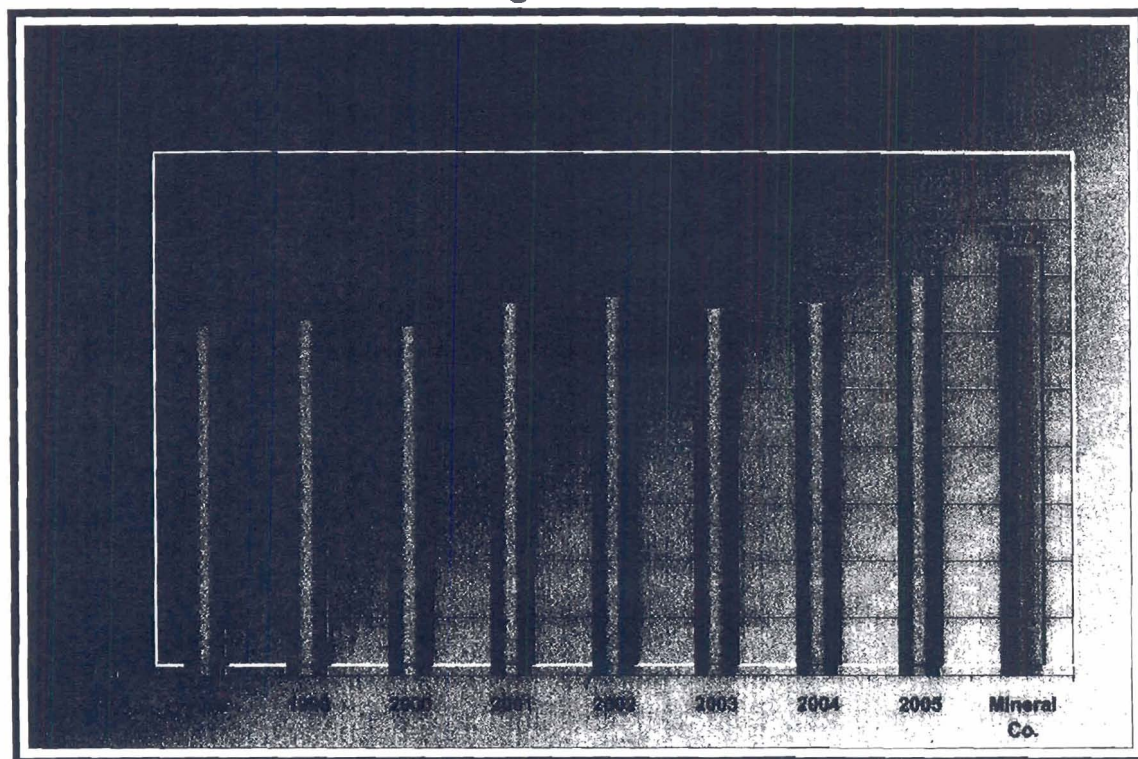
### 3.0 COMPARISON OF SURVEY RESULTS

Section 3.0 compares the result of the 2006 Mineral County survey to national survey responses. The Nuclear Energy Institute conducted a number of survey efforts related to Yucca Mountain and nuclear energy use over the last several years.

Question:

Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear energy as one of the ways to provide electricity in the United States?

**Figure 3-1**



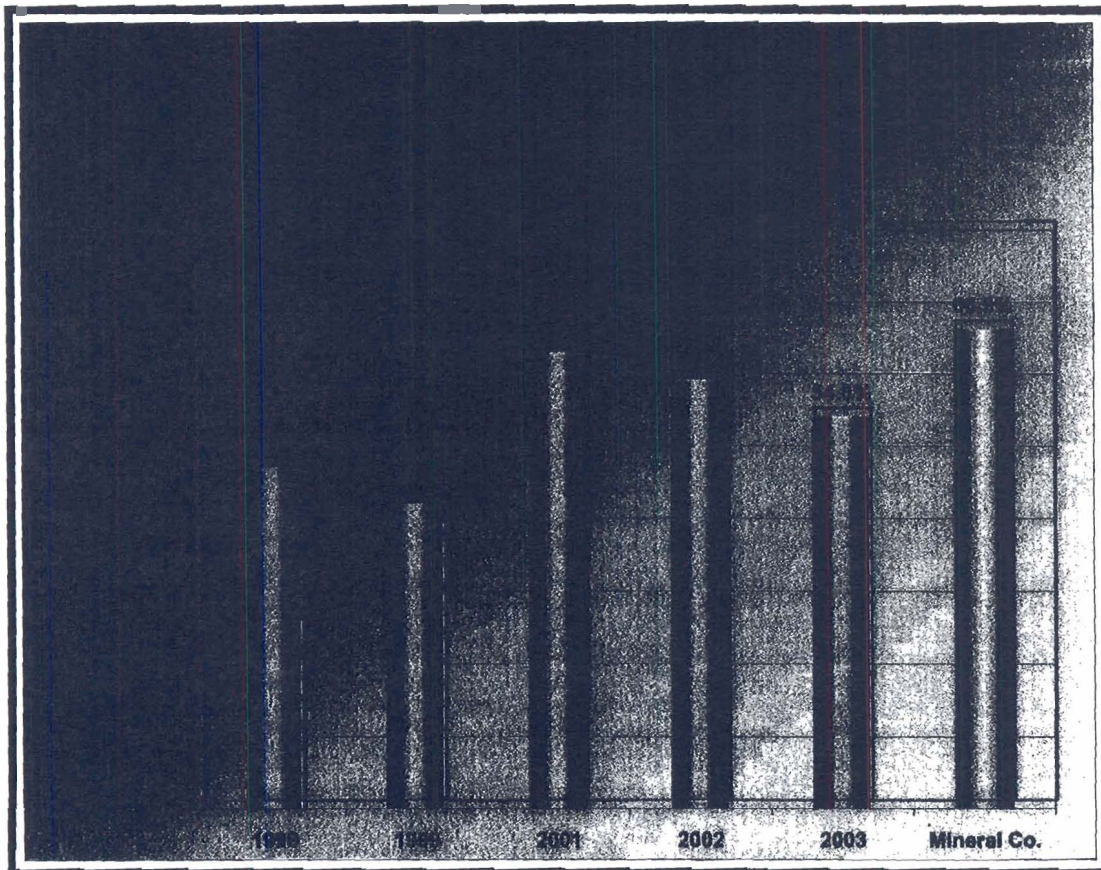
Source: NEI, 1998-2005, Mineral County, 2006

As compared to national survey results, Mineral County survey respondents have a more favorable view of nuclear energy as a source of electricity in the United States. Overall, there is an increasing favorable view of nuclear energy.

Question:

Please tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the following statement: "We should definitely build more nuclear energy plants in the future?"

**Figure 3-2**



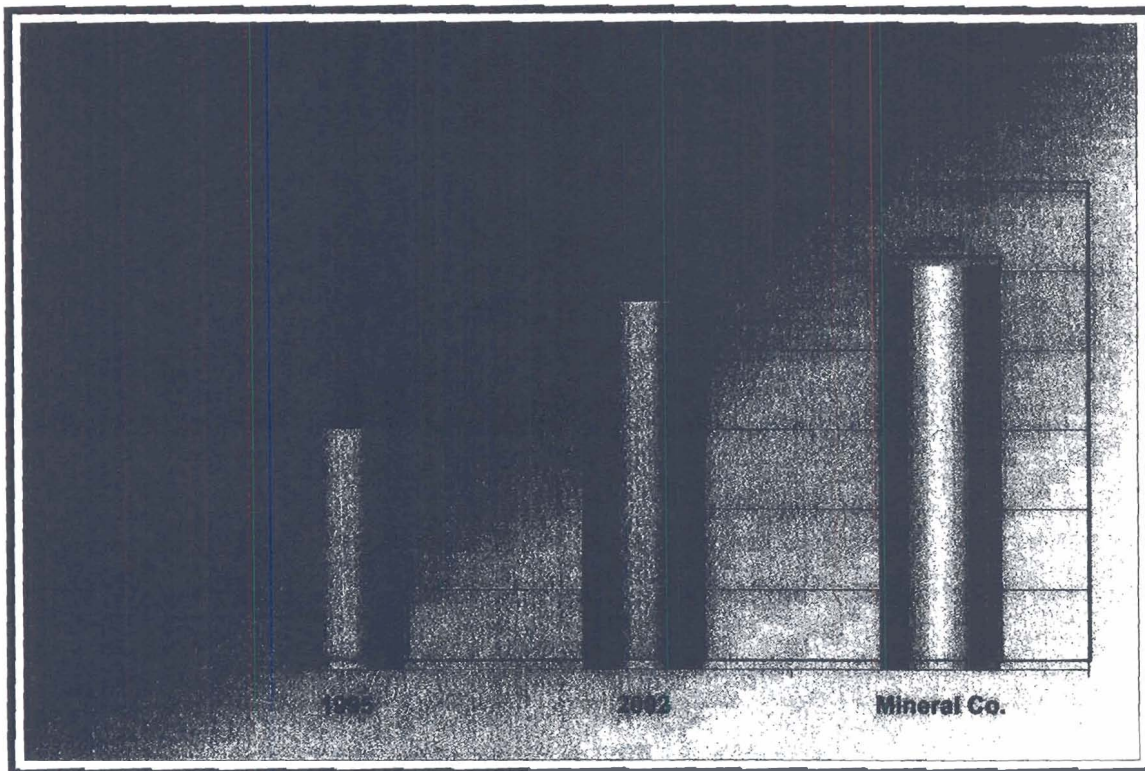
Source: NEI, 1998-2005, Mineral County, 2006

Again, Mineral County survey respondents appear to have even stronger support for development of new nuclear power plants as compared to national survey respondents.

Question:

How important is it to have a clear plan of action for handling the high-level radioactive waste from America's 103 electricity-generating nuclear energy plants? Is it extremely important, very important, somewhat important, not very important, or not at all important?

**Figure 3-3**



Source: NEI and Mineral County, 2006

Section 3.0 also compares the results from the 2006 Mineral County community survey against the results from previous community survey efforts, specifically those in 2005. The following two questions were asked in 2005 and 2006.

**Question :** Radioactive waste is transported in rugged vault-like containers under strict regulations using cautious procedures, and in collaboration with state agencies. In the past 35 years, there have been more than 3,000 shipments for this radioactive waste across a total of nearly 2 million miles, and no radiation leaks.

After hearing this statement how confident are you that the radioactive waste from America's nuclear power plants will be transported safely to the proposed Yucca Mountain disposal site?

<b>Table 3-1</b>	<b>2005 Mineral County Survey</b>		<b>2006 Mineral County Survey</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>				
Very Confident	44	28.4	55	33.1
Somewhat Confident	58	37.4	62	37.3
Not Too Confident	34	21.9	33	19.9
Not confident at all	19	12.3	16	9.6

**Question:** Do you think it is possible for the state, tribal and local governments to continue to challenge the Yucca Mountain Project while developing a benefits package for Nevada?

<b>Table 3-2</b>	<b>2005 Mineral County Survey</b>		<b>2006 Mineral County Survey</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
<b>Response</b>				
Yes	69	43.9	65	39.4
No	21	13.4	48	29.1
Don't Know	7	4.4	52	31.5
Refused	50	31.8	1	1.4
No Answer	10	6.4	-	-

**Appendix A:**

Mineral County is conducting this survey as part of its oversight responsibilities of the Yucca Mountain project. Funding for the survey is provided by a grant from the U.S. Department of Energy. Mineral County High School students have volunteered to conduct this survey.

Are you familiar with the Yucca Mountain Project and the federal government's efforts to store spent nuclear fuel in Nevada?

Yes \_\_\_\_\_

No \_\_\_\_\_

Survey # \_\_\_\_\_



Question 1:

Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear energy as one of the ways to provide electricity in the United States?

- 1. Strongly Favor \_\_\_\_\_
- 2. Somewhat Favor \_\_\_\_\_
- 3. Somewhat Oppose \_\_\_\_\_
- 4. Strongly Oppose \_\_\_\_\_

Question 2:

Please tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the following statement: "We should definitely build more nuclear energy plants in the future?"

- 1. Strongly Favor \_\_\_\_\_
- 2. Somewhat Favor \_\_\_\_\_
- 3. Somewhat Oppose \_\_\_\_\_
- 4. Strongly Oppose \_\_\_\_\_

Question 3:

How important is it to have a clear plan of action for handling the high-level radioactive waste from America's 103 electricity-generating nuclear energy plant? Is it extremely important, very important, somewhat important, not very important, or not at all important?"

1. Extremely Important \_\_\_\_\_
2. Very Important \_\_\_\_\_
3. Somewhat Important \_\_\_\_\_
4. Not Very Important \_\_\_\_\_
5. Not at all important \_\_\_\_\_

**Question 4**

Radioactive waste is transported in rugged vault-like containers, under strict regulations, using cautious procedures, and in collaboration with state agencies. In the past 35 years, there have been more than 3,000 shipments of this radioactive waste across a total of nearly 2 million miles, and no radiation leaks.

After hearing this statement How confident are you that the radioactive waste from America's nuclear power plants will be transported safely to the proposed Yucca Mountain disposal site?

1. very confident \_\_\_\_\_
2. somewhat confident \_\_\_\_\_
3. not too confident \_\_\_\_\_
4. not confident at all \_\_\_\_\_

**Question 5:**

Do you think it is possible for the state, tribal and local governments to continue challenge the Yucca Mountain Project while developing a benefits package for Nevada?

- 1 Yes \_\_\_\_\_

2 No \_\_\_\_\_

3 Don't Know \_\_\_\_\_

**I. Demographic Questions**

1. Age of Respondent (Survey respondent) \_\_\_\_\_ Years

2. Total number of persons living in your household \_\_\_\_\_

3. Sex of respondent \_\_\_\_\_



**Mineral County  
Baseline Report  
Update 2005**

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## TABLE OF CONTENTS

---

Summary .....	1
1.0 INTRODUCTION AND BACKGROUND.....	3
1.1 Purpose .....	4
2.0 SOCIAL AND ECONOMIC CHARACTERISTICS .....	6
2.1 Population.....	6
2.2 Economic Activity .....	8
2.2.1 Labor Force and Unemployment .....	8
2.2.2 Taxable Sales and Assessed Value .....	11
2.2.3 Housing .....	12
2.2.4 Tourism/Visitation .....	13
2.3 Relationship of the Area's Economy to that of the Larger Region.....	15
3.0 PUBLIC INFRASTRUCTURE .....	18
3.1 Sewer and Water Community .....	18
3.2 Communications.....	18
3.3 Energy Distribution .....	18
3.4 Transportation.....	18
3.5 Health Care .....	19
3.6 Schools and Other Public Facilities.....	20
4.0 NATURAL RESOURCES.....	24
4.1 Land and Water Resources.....	24
4.1.1 Lands.....	24
4.2 Water Resources .....	30
4.2.1 Surface Water.....	30
4.2.2 Ground Water.....	33
4.2.3 Water Use .....	34

---

## **TABLE OF CONTENTS (CONTINUED)**

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### **List of Table**

Table S-1	Summary of Economic and Demographic Conditions.....	2
Table 2-1	Mineral County Population Forecasts: 2003 to 2012 .....	7
Table 2-2	Age of Population, Mineral County: 1990 - 2000 .....	8
Table 2-3	Industrial Employment by Sector and Wages: 1998-2004 .....	9
Table 2-4	Employment and Average Weekly Wages.....	10
Table 2-5	Mineral Labor Force and Unemployment: 1998-2005 .....	11
Table 2-6	Major Employers 2004 .....	11
Table 3-1	Public Facilities Mineral County: 2003 .....	20
Table 4-1	Mineral County Hydro Basins: 2002.....	34
Table 4-2	Mineral County Water Usage .....	35
Table 4-3	Mineral County Water Usage Rates.....	36
Table 4-4	Mineral County Agricultural Water Use Analysis.....	37

### **List of Figures**

Figure 2-1	Historic Population Growth Mineral County.....	7
Figure 2-2	Population and Employment Mineral County 1997 - 2004.....	9
Figure 2-3	Per Capita Income Mineral County and Nevada .....	10
Figure 2-4	Mineral County Taxable Sales & Assessed Values .....	12
Figure 2-5	Major Markets for Overnight Travelers to Mineral County .....	16
Figure 3-1	Location of Public Facilities.....	21
Figure 3-1A	Public Facilities in Hawthorne .....	22
Figure 3-1B	Public Facilities in Walker Lake .....	23
Figure 1-A	Major Land Use in Mineral County.....	25
Figure 2-A	Land Use in Hawthorne .....	26
Figure 3-A	Land Use in Walker Lake.....	27
Figure 4-A	Land Use in Mina .....	28



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**TABLE OF CONTENTS** *(CONTINUED)*

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**Figure 5-A Land Use in Luning..... 29**  
**Figure 4-1 Major Water Features, Mineral County ..... 31**  
**Figure 4-2 Mineral County and Hawthorne Projected Water Use ..... 37**

**Appendix A- Combined Statement of Revenues and Expenditures: 2001 - 2004 . 38**



## Summary of Economic and Demographic Changes

This report is being prepared as part of Mineral County's efforts to establish baseline conditions for the purposes of assessing potential impacts associated with the Yucca Mountain Project. The baseline report is updated annually in order to establish a thorough understanding of local socioeconomic and demographic conditions in Mineral County.

There have been few demographic changes in Mineral County over the last year. Population has remained relatively flat at approximately 4,673 persons countywide in 2004. Since 1990 Mineral County population has declined by nearly 2,000. These declines were attributed to reductions in civilian and military personnel at Hawthorne Army Ammunition Depot and a local downturn in Mining activity.

In the future, population growth could rebound significantly as several new businesses are in the process of moving to the Hawthorne area. These businesses include a waste disposal and recycling operation associated with the reuse of the Rawhide Mine, a new defense and security contractor, and Skyview Academy, a private youth correction facility. These new business operations could provide more than 300 new jobs in the local economy with the potential to expand. Additionally, numerous part-time job opportunities associated with the defense and security contractor will be created as well as increased short-term visitor activity. The total population associated with the increase in employment could be as high as 790 people. Unlike the mineral industry, the aforementioned new employment opportunities will not be as cyclical in nature as mining. Therefore, Mineral County is likely to benefit from more permanent housing developments and the willingness of local businesses to invest long-term to increase the level of goods and services offered locally. Most of the 300 new jobs are expected to be created in 2005 and 2006.

Employment in the County has stabilized around 1,700 jobs in 2004. The unemployment rate has declined to about 6.4 percent. Since 1998, Mineral County has lost nearly 700 jobs. With the limited economic base in the County, recent job losses translated directly into population declines in the County. Unemployed workers leave the area in search of employment opportunities elsewhere. As of the third quarter of 2004, the Mineral County unemployment rate declined to 5.8 percent about 2 percentage points higher than the state unemployment rate of 3.9 percent.

After several years of limited mineral industry activities, a number of new mining projects are slated for Mineral County in 2005 and 2006. The total workforce associated with this activity is currently unknown, but could add substantially to the local employment base.

One potential bright spot for Mineral County has been the increase in taxable sales. For the year ended June 30, 2005, taxable sales for Mineral County increased by nearly \$6,000,000 over the same 12 month period ending June 30, 2004.



Along with the previous job losses in Mineral County, the local housing market had suffered as well. During 2003 and the early part of 2004, a number of foreclosure and tax sales of single-family properties occurred in Mineral County. Based upon Mineral County Assessor data, the average single-family sales price was about \$60,000. The median price was approximately \$53,000, and the highest sales price for a single family residential unit in the last 18 months was \$169,000. More recently, housing prices have increased at the upper end with the most expensive home selling for \$190,000. Both the average and median price of a single family detached home increased slightly year over year. With increasing local employment, the demand for housing should increase along with the price.

This year's baseline report identified very few changes in other resources in Mineral County. There has been little or no change to traffic counts, health care and public facilities, and natural resources. If new businesses become fully established during the next year, most population gains will probably be made in the Hawthorne area. Such increases will probably lead to greater increases in municipal water demand, traffic counts, and sales and room tax. However, as new employment and job increases take place, more significant changes should occur.

A summary of economic and demographic conditions are shown in Table S-1.

<b>Table S-1 Summary of Economic and Demographic Conditions Mineral County: 2000, 2003 and 2004</b>			
	<b>2000</b>	<b>2003</b>	<b>2004</b>
Population	5,071	4,687	4,673
Employment	1,840	1,740	1,780
Unemployment Rate	10.1%	6.4%	6.2%
Per Capita Income	\$24,306	*\$23,495	*\$24,254
Taxable Sales	\$40,740,499	\$30,867,093	\$36,424,537
Assessed Value	\$94,364,550	\$73,108,979	\$73,359,340
Median S.F. Home	\$59,500	\$53,000	\$55,000

\* 2002 and 2003 per capita income, respectively, + 2000 Census

## 1.0 INTRODUCTION AND BACKGROUND

Mineral County, Nevada, was created out of the northern portion of Esmeralda County on February 10, 1911. Nevada's earliest maps show the presence of Walker Lake, a prominent feature of Mineral County and a noted landmark to early explorers. Jedediah Smith, first non-native explorer into Nevada, passed near Walker Lake in 1827 during his remarkable trip from west to east across the state. Peter Skene Ogden, another noted earlier explorer of the region now known as The Great Basin, was here in 1829, then Fremont in 1845 with his guides Kit Carson and Joseph Walker, for whom the lake was named.

The town site of Hawthorne was selected in 1880 by H.M. Yerington, president of the Carson and Colorado Railroad Company as a division and distribution point for the new railroad. Yerington named the new town Hawthorne after a lumberman friend in Carson City. On April 14, 1881, the first train arrived at the town's site, loaded with prospective buyers for the new town. Hawthorne's location, at the southern end of Walker Lake, was adjacent to the important Knapp's Station and Ferry Landing on the busy Esmeralda toll road from Wadsworth to Candelaria. Radiating roads ran to all of the surrounding mining areas, adding importance to this area and its development as distribution point. In its early years the county had many well known mining towns such as Aurora, Belleville, Candelaria, Rawhide and others congregated to exchange merchandise and news. In 1883, Hawthorne took the Esmeralda county seat from declining Aurora, but later lost it to booming Goldfield. In 1911, Hawthorne again became a county seat, this time for the newly formed Mineral County.

In 1926, a destructive munitions explosion in the east caused the United States military to explore alternative, relatively remote sites for the storage of explosives. In 1930, the U.S. Navy selected the Hawthorne-Whiskey Flat portion of the lower Walker Lake Valley as the site for its ammunition depot. The storage facilities grew over the years and became the Navy's largest such munitions facility. The town of Babbitt was subsequently built on the northern edge of the facility to house military personnel. The town of Hawthorne underwent significant growth due to this facility. The County's total population expanded from 1,863 persons in 1930 to 5,560 by 1950



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and eventually peaked at 7,051 persons by 1970. During the 1980's and 1990's the depot's activities declined.

Presently, Hawthorne is a central point for desert travelers and for the vacation, sporting, and recreational activities on nearby Walker Lake. Walker lake, along with Pyramid Lake located in Washoe County to the north, represents one of two remaining lake remnants of Ice Age Lake Lahontan, which some 12,500 years ago covered approximately 8,600 square miles and a large portion of northwestern Nevada. Due to upstream irrigation diversions and drought, Walker Lake's surface elevation and volume have declined significantly since the early 1900's, increasing the salinity of the lake's waters and jeopardizing its fishery.

Mineral County is also home to the Walker River Paiute Indian Reservation, which occupies over 200,000 acres and is located in the northwestern portion of Mineral County, spilling over to the north into Churchill County and to the west into Lyon County. Although the area around Walker Lake in the Utah Territory was set-aside for "Indian Purposes" in 1859, it was not until 15 years later that President Grant signed the executive order formally establishing the Walker River Indian Reservation on March 19, 1874. In 1906, after many years of pressure from state and federal government officials, and particularly local mining interests, the Walker River Paiute Tribe ceded 268,000 acres of reservation land to the federal government, including all lands surrounding Walker Lake. It was first believed that the ceded lands contained extensive mineral deposits, although later exploration failed to find significant ore bodies. Later, on several occasions the federal government added to the reservation lands, first in 1918 (34,000 acres), then again in 1928 (69,000 acres), and finally in 1936 (171,200 acres), eventually increasing the reservation's total acreage to its current level of 232,902 acres.

Mineral County is located in the west-central portion of Nevada and borders the State of California on the southwest. Mineral County is the sixth smallest county in Nevada, covers approximately 4,019 square miles, (9,938 square kilometers) and accounts for approximately 3.5 percent of Nevada's total surface area of 110,540 square miles (285,298 square kilometers).

Of Mineral County's 2,572,160 acres of surface area, 2,091,422 acres, or just over 81.3 percent of the county's total area are controlled and managed by the federal government. Of these federally managed public lands, approximately 382,499 acres are managed by the U.S. Forest Service (USFS). The USFS managed lands include a portion of the Toiyabe National Forest, which covers much of the southernmost portion of Mineral County. Relative to Nevada's seventeen counties, Mineral County ranks as the eighth highest in terms of its percentage of federal land ownership and fifth lowest in terms of the actual area of federal ownership.

### **1.1 Purpose**

This report provides a baseline description of existing conditions in Mineral County as of 2004. The report provides information on social, economic, public services and facilities,



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and natural resources available in Mineral County and its communities. The report will be used to measure potential changes to Mineral County as a result of the high-level nuclear waste repository at Yucca Mountain and associated transportation activities. Additionally, material presented in the following chapters represents a compilation of previous investigations by Mineral County for Yucca Mountain oversight activities such as the Transportation Status Report and Impacts to Mineral County Visitors. The baseline report contains information about population, labor force, employment, wages, fiscal conditions, natural resources, and land uses. The Yucca Mountain draft and final environmental impact statement contained very little information about Mineral County. This report will help supplement the lack of information developed by DOE. The baseline report will be updated periodically as part of Mineral County's on-going efforts to assess potential impacts associated with the Yucca Mountain Project.



## 2.0 SOCIAL AND ECONOMIC CHARACTERISTICS

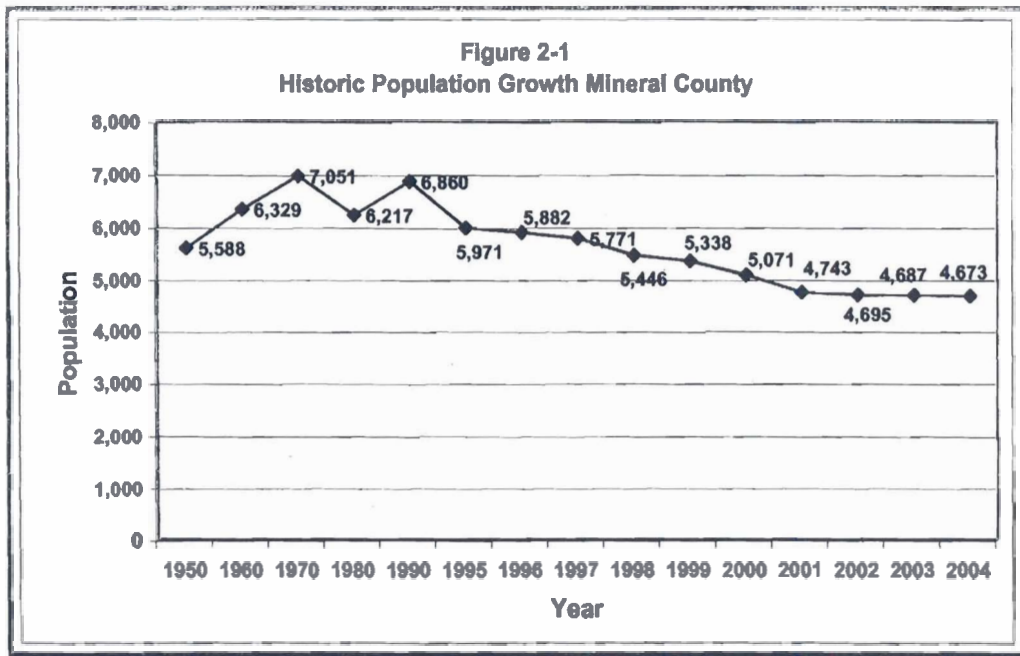
### 2.1 Population

The population of Mineral County has fluctuated significantly. Population swings can largely be attributed to mining and defense related activities. Historically, mining has played an important role in Mineral County along with the build-up of U.S. Army Ammunition Plant at Hawthorne. In recent years the area has experienced some population declines attributed to the downturn in precious metals mining that has resulted in the shutdown of many active sites throughout Mineral County and Nevada. Figure 2-1 shows current and historic population patterns for Mineral County. Since the late 1990s, the population has declined. This current reduction can again be attributed to a reduction in personnel at the Army's ammunition depot and a slowdown of mining operations. The only increase in population during the last decade occurred in Schurz where total population increased from 617 in 1990 to 721 in 2000.

Population levels in Mineral County will stabilize as long as further reductions in personnel at the Depot do not occur. In coming years, the population will probably begin to rise based on several factors. Recent efforts to attract new industry and jobs to the area have been moderately successful. Small increases in the employment base will continue to occur. Areas adjacent to Mineral County continue to develop. Churchill County to the north and Lyon County to the north and west continue to experience significant population and employment gains. Even areas to the west of Mineral County in California are showing increases in population. As the population of the region grows more people will visit the area for recreation and other purposes. Employment centers will move closer to Mineral County providing job opportunities for residents who choose to commute. Also, U.S. 95 will play an increasing role in interstate highway transportation and goods movement. Traffic use statistics provided by the Nevada Department of Transportation confirms this trend (See Section 3.4)

The aforementioned conditions will probably result in relatively modest gains in population growth over the next several years. Table 2-1 provides population forecasts for Mineral County through 2012. The forecast calls for growth at or below 1 percent per year and a total population increase of about 500 from 2002 to 2012. Future growth may occur with resurgence in mining, and other economic development activities. Recently, in the fall of 2004, two new major employers are moving to the area. As many as 300 new jobs may be created in the Hawthorne area.

Table 2-2 contains a comparison of population characteristics for Mineral County, the Town of Hawthorne, and Schurz. Most apparent in the population data is the general aging of the population. Mineral County has one of the highest percentages of people age 65 and older. Also, the median age in the County has climbed to 42.9 while the percentage of the population that is age 5 and under has declined from 8.8 percent in 1990 to 5.3 percent in 2000. Nearly 20 percent of the population in Mineral County was age 65 or older in 2000. In comparison the percentage of persons age 65 and older in the State of Nevada is 11 percent and the median age was 35 in 2000. Again trends in Mineral County are due to the loss of workers and their families.



Source: U.S. Census and Nevada State Demographer

**Table 2-1  
Mineral County Population Forecasts: 2003-2012**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mineral County (1)	4,734	4,673	4,695	4,950	5,299	5,746	5,934	5,994	6,054	6,114
Hawthorne	3,311	2,968	2,975	3,316	3,550	3,965	4,095	4,136	4,177	4,219
Walker Lake	410	318	350	386	426	469	517	570	628	692
Schruz	721	725	728	732	736	739	743	747	750	754
Mina	380	318	316	315	313	312	310	309	307	306
Luning	106	97	97	97	96	96	96	96	96	95
Mineral County(2)	4734	4,673	4,695	4,687	4,673	4,720	4,767	4,815	4,863	4,911
Hawthorne	3311	2,968	2,998	3,028	3,058	3,089	3,119	3,151	3,182	3,214
Walker Lake	410	318	350	386	426	469	517	570	628	692
Schruz	721	725	728	732	736	739	743	747	750	754
Mina	380	318	316	315	313	312	310	309	307	306
Lunning	106	97	97	97	96	96	96	96	96	95

(1) Mineral County forecasts with new employment, and (2) Nevada State Demographer.

Many older retirees particularly those formerly associated with the U.S Department of Defense have remained in the community. As economic development occurs and new jobs become available in Mineral County, the percentage of persons age 65 and older will become lower.

<b>Table 2-2 Age of Population, Mineral County</b>	<b>1990</b>	<b>2000</b>
<b>Mineral County Population</b>	6,475	5,071
Percentage of Population 5 yrs or younger	8.8%	5.3%
Percent of Population age 65 yrs or Older	13.1%	19.8%
Median age	33.9 yrs	42.9%
<b>Hawthorne Population</b>	4,162	3,311
Percent of Population age 5 yrs or younger	8.6 yrs	5.0%
Percent of Population age 65 yrs or Older	13.8%	20.6%
Median Age	34.2	43.7
<b>Schurz Population</b>	617	721
Percent of Population age 5 yrs or younger	16.4%	8.7 %
Percent of Population age 5 yrs or younger	8.9%	11.9%
Median age	28.0 yrs	34.6 yrs

Source: 1990 and 2000 Census

## 2.2 Economic Activity

### 2.2.1 Labor Force and Unemployment

Economic activity in Mineral County and its communities has been fairly narrow. Population growth and declines have largely been influenced by changes in mining and Department of Defense activities. Traditionally, mining, trade, services and government provide the largest employment sectors (Table 2-3). The services and government sector are strongly influenced by activities at the Hawthorne Army Ammunition Depot. Since 1998 total industrial employment has declined from 2,260 to approximately 1,790. The labor force bottomed in 2002 and appears to have stabilized in 2002 and 2003. Figure 2-2 shows population growth and total employment in Mineral County. The primary reason unemployment rates tend to decline in Mineral County over time is that unemployed workers seek employment outside Mineral County or relocate after layoffs occur.

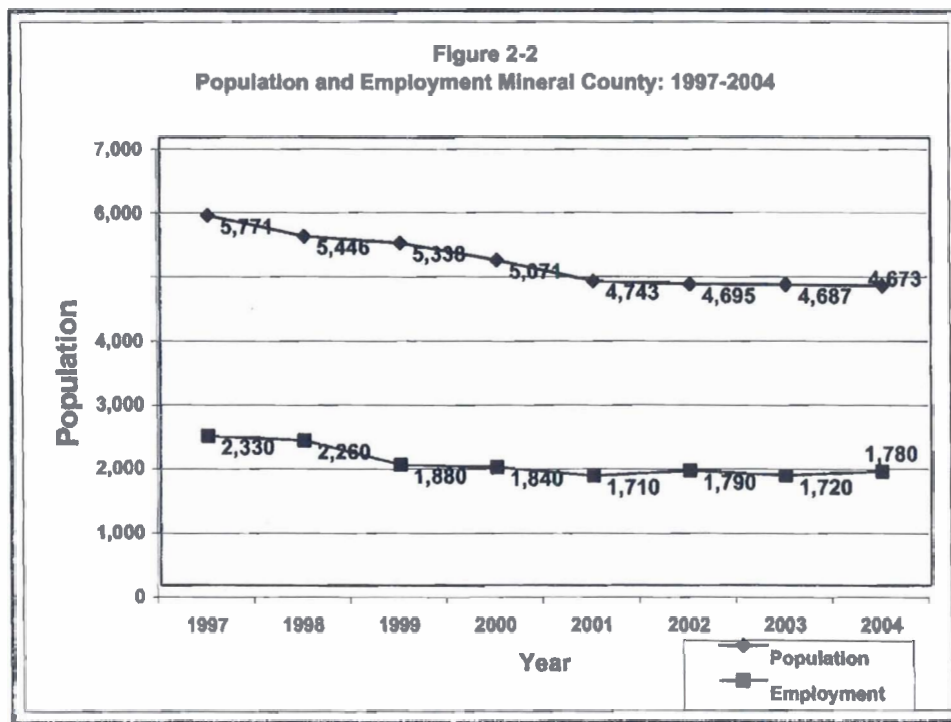
Wages in Mineral County are typically lower as compared to wages for industries throughout the State. On average, weekly wages in Mineral County as of the 1<sup>st</sup> quarter of 2002 were \$602 slightly lower than the State average of \$649 (Table 2-4). The differences in wages are also shown in a comparison of per-capita income. On average, annual per capita income in Mineral County is about \$4,000 lower than the average for the State of Nevada (Figure 2-3).

Unemployment rates in Mineral County have been relatively high peaking in 2000 at 10.1 percent and declining to 6.0 percent 2003 and further to 5.8 percent in 2004 (Table 2-5). The current rate is about 2.0 percent above the State's unemployment rate. Just over 120 people remain unemployed in Mineral County. Major employers

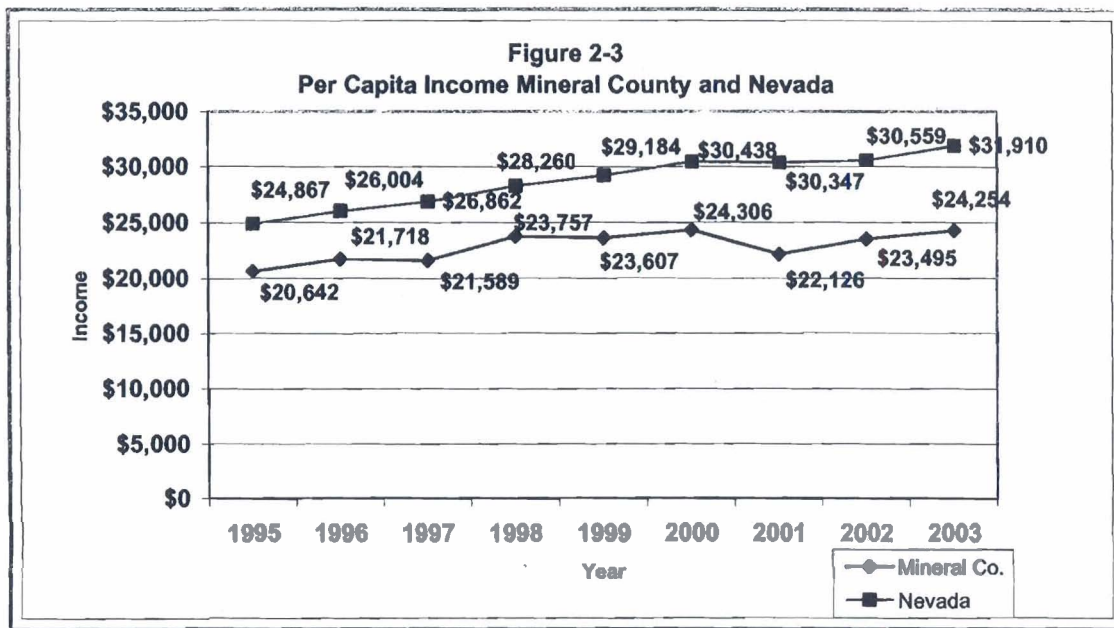
are shown in Table 2-6. The largest employer is Day Zimmerman contractor operator for the U.S. Department of Defense facility at Hawthorne.

Sector	1998	1999	2000	2001	2002	2004
Total Employment	2,260	1,880	1,840	1,710	1,790	1,780
Services	1,070	940	780	670	670	670
Government	600	580	580	570	620	610
Mining	240	230	190	170	140	0
Whole/Retail Trade	230	220	220	210	220	220
Construction	40	*	40	20	20	30
Manufacturing	*	*	*	*	10	10
TCPU	20	20	20	10	20	20
Fire	40	40	40	40	40	40

Source: Nevada Department of Employment, Training and Rehabilitation.







Per capita income for Mineral County remains below the overall State level. From 1996 to 2003 only small gains were made Mineral County's per capita income.

**Table 2-4 Employment and Wages: Mineral County: 2004**

Industry	Mineral County			State of Nevada		
	Avg Emp	% of Total	Wages	Avg. Emp	% of Total	Wages
Total	1,735	100.0%	\$673	1,145,773	100.0%	\$713
Natural Resources/Mining	*		*	11,701	1.0%	\$1,084
Construction	28	1.6%	\$317	118,174	10.3%	\$816
Manufacturing	13	0.7%	\$402	45,932	4.0%	\$816
Trade, Transportation,	148	8.5%	\$479	204,140	17.8%	\$641
Information	*	*	*	14,883	1.3%	\$917
Financial Activities	50	2.9%	\$499	61,993	5.4%	\$888
Professional Services	*	*	*	133,609	11.7%	\$873
Education and Health Serv.	325	18.7%	\$647	79,868	7.0%	\$800
Leisure and Hospitality	240	13.8%	\$241	312,466	27.3%	\$509
Other Services	11	0.6%	\$344	25,383	2.2%	\$522
Government	252	14.5%	\$657	135,495	11.8%	\$972

	2005	2003	2001	2000	1999	1998
<b>Labor Force</b>	2,028	1,830	1,830	2,060	1,980	2,420
<b>Unemployment</b>	125	120	160	210	170	170
<b>Unemployment Rate</b>	6.2%	6.4%	8.60%	10.10%	8.40%	6.80%
<b>Total Employment</b>	1,903	1,710	1,670	1,860	1,810	2,250

Source: Nevada Department of Employment, Training and Rehabilitation

Company	Sector	Number of Employees
Day & Zimmerman	Service	400-499
Mineral County Schools	Government	100-199
Kennecott Rawhide	Mining	100-199
El Capitan	Service	100-199
Mineral County	Government	100-199
Mt. Grant Hospital	Government	50-99
Hawthorne Misc.	Service	20-49
Tribal Council	Government	20-49
Safeway Stores, Inc.	Trade	20-49
HCU	Finance	20-49

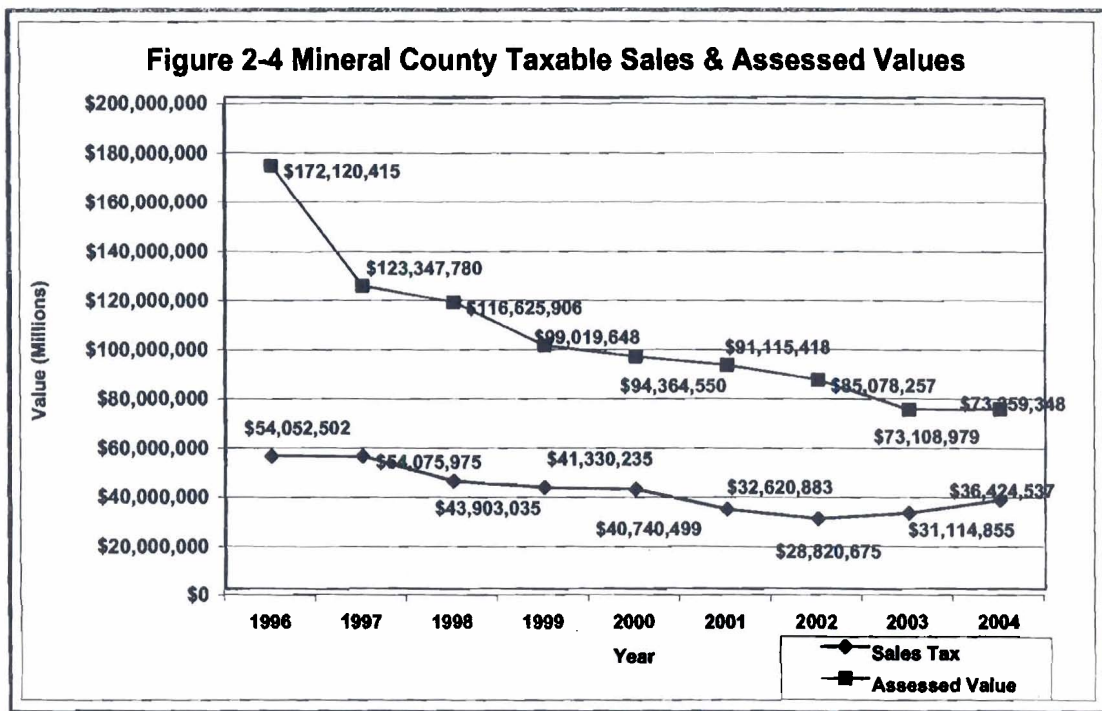
Source: Nevada Department of Employment Security, 2004

### 2.2.2 Taxable Sales and Assessed Value

In 1997 total assessed value in Mineral County was just over \$153 million. Since that time assessed value declined about 40 percent to \$91.8 million. In the year 2003 Taxable sales in Mineral County declined by nearly 50 percent since 1997. The drop in taxable sales and assessed value is shown in Figure 2-4. Declines have generally occurred across a range of business sectors. The most sizeable declines have occurred in the construction, chemical and allied products, wholesale trade, and automotive dealers and gasoline. It appears that the mining sector has had the greatest impact on taxable sales over that past several years. The decline in taxable sales has important fiscal ramifications for Mineral County and the ability to fund services. In addition to

the decline in taxable sales, total assessed value has also declined significantly but appears to have leveled off in 2003. In 2004, taxable sales increased by approximately \$6.0 million over 2003 levels.

Appendix A shows the general revenues and expenditures of Mineral County. Locally generated revenues have declined significantly in Mineral County. Property tax as a percentage of the total revenues has declined from just over 30 percent to about 25 percent of total revenues. At the same time cuts in government expenditures have continued as well.



Source: Nevada Department of Taxation, various years

### 2.2.3 Housing

Along with the previous job losses in Mineral County, the local housing market suffered as well. During 2003 and the early part of 2004, a number of foreclosure and tax sales of single family properties occurred in Mineral County. Based upon Mineral County Assessor data, the average single family sales price was about \$60,000 in 2004. The median price was approximately \$53,000, and the highest sales price for a single family residential unit in the last 18 months was \$169,000. Based upon the ratio of median sales prices of a single family home to the median family income, Mineral County remains very affordable in 2004. Since 2004 housing prices have improved in response to new employment growth and development in the Hawthorne area. The highest reported sales price in Mineral County was \$190,000 during 2004 and the first half of 2005. The median price also rose to about \$60,000.

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In 2000 there were 2,167 housing units of which 1,780 were single-family detached housing units. Nearly all of the single family attached and multi-family housing is found in the Town of Hawthorne. Very few new homes have been constructed in Mineral County in recent years. The Mineral County Housing Authority operates an elderly housing complex.

Information on rental rates is very difficult to find because most rental units are comprised of single family homes, and mobile homes. The 2000 median gross rent was \$398 per month and the median value of specified owner occupied units was \$59,900 (2000 Census). Most rental rates in Mineral County range from a low of \$300 per month to \$750 per month.

The housing cost burden in Mineral County is largely concentrated among households that have incomes at or below 50 percent of the median income. Those households with the greatest cost burden in 2000 tend to be small renter households and owners.

The construction of new housing units will be required for new development in Mineral County. The availability of the current housing stock is very limited. Rental units and multi-family housing is very difficult to find. In the near-term housing prices should rise in response to increased demand and limited housing supply.

Overall housing affordability has improved in Mineral County from 1990 to 2004. The ratio of the median value of a single family home to the median household income was 1.09 in 2004. Improvement in local affordability is due to significant declines in mineral industry employees (Rawhide and Candelaria Mines).

The housing cost burden among both lower income renters and owners has generally decreased. Based upon 2004 median home sales price, households at or above 30 percent of the median income can still afford to purchase the median value of a home sold in Mineral County. Lower income households including those at the 30 percent of the median income can afford rental housing Mineral County, if it were available. However, new employment and associated housing demand will probably lead to price increases.

#### **2.2.4 Tourism/Visitation**

The total number of visitors is difficult to estimate, particularly outdoor recreation users to Mineral County. The primary recreational resource in the area is Walker Lake. The majority of out-of-area recreation users probably have Walker Lake as a destination although other forms of dispersed recreation such as hunting, camping, off-road vehicle use are readily available in Mineral County. Estimates of the type and volume of visitors to Mineral County include the following:

- **Hotel/Motel Overnight Visitors**

There are approximately 276 motel rooms in Hawthorne. Based upon discussions with local operators, the overall occupancy rate could be as high as 70 percent resulting in as many as 70,518 room nights per year. The occupancy rate is likely to fluctuate

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depending upon general economic conditions. The average number of persons per room is assumed to be 2 based upon visitor registration information collected from local motels. The total number of estimated overnight motel visitor's in Mineral County is 141,036, annually. A portion of said visitors attend special events in the Hawthorne area each year. It is important to make this distinction because visitors who attend special events tend to spend more and stay longer as compared to overnight travelers passing through the area. Major markets for overnight travelers and likely high-level waste routes were discussed in Impacts to Mineral County Visitors and Waste Transportation to Yucca Mountain, August 2002.

### **RV Park Visitor**

There are approximately 149 RV spaces in the Hawthorne area. Assuming average occupancy is similar to the hotel/motel rate, there could be approximately 38,069 RV space rentals per year. With an average of 2 persons per RV rental would result in 76,139 visitors per year. A new RV park opened in 2004 adjacent to U.S. Highway 95. The new park will likely increase the number of RV related visitors staying in the Hawthorne area.

RV park visitors are noticeably different from overnight hotel visitors in terms of their place of origin. RV park users from Nevada are a small percentage of the total (9.8 percent) as compared to overnight hotel visitors where Nevada accounts for about 42 percent of that market segment. There are a higher percentage of RV travelers from the Pacific Northwest including Canada as compared to hotel visitors. Canada, Washington, and Oregon account for approximately 16.39 percent of the RV park users. Another strong market area is Arizona (12.3 percent of RV park users), particularly central and southwestern portions of the State. The Sacramento Valley is a sizeable market for both RV park users as well as overnight hotel visitors. Not surprisingly, snowbirds and the movement of travelers during the fall and spring months heavily influence RV park users and their place of origin.

The RV park users and the overnight hotel visitors appear to be two distinct market areas. A vast majority of overnight hotel visitors are within close proximity whereas RV park users come from more distant origins.

- **Recreational Users**

The Bureau of Land Management operates a campground and other day use facilities at Walker Lake. Total visitation as recorded by BLM was 34,086 visits and a total of about 21,000 visitor days. A visitor day is defined as one visit on one day. At Sportsman's Beach total visits were 20,274 in 2001 and 12,629 visitor days. BLM sees heavier usage at Sportsman's Beach during the off-season primarily due to snowbirds moving through the area either south in fall or north in the spring. Additional information from BLM concerning the place of residence or length of stay for recreation users was not available. Given that a number of visitors are snowbirds traveling in RV units, information about RV

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park visitors may be similar to those using Sportsman's Beach, particularly in terms of their place of residence.

- **Special Events**

Special events in the Hawthorne area generate approximately 15,100 visit and 7,050 visitor nights.

### **2.3 Relationship of the Area's Economy to that of the Larger Region**

Mineral County's current relationship to that of the larger region is somewhat limited. The County has limited retail and wholesale trade activity, as many local residents must travel to other areas to purchase durable and non-durable goods as well as certain types of services.

Mining employment and associated economic activity has little connection to the larger region. In recent times, local mining employment and operations have been located in Mineral County. Often times with mining, the employment base is in a different location from the actual mining operation. With recent mining operations, the place of employment (Mineral County) has been the same as the place of residence for employees.

There are strong commuting patterns in Mineral County as well. The 2000 census provides commuting patterns for Mineral County Workers leaving Mineral County traveling principally to Churchill County, Lyon County, Washoe County and Nye County. In 2000, 198 workers traveled to these four counties. At the same time 117 workers from Churchill, Lyon and Washoe traveled to Mineral County.

Defense Department related activities have some connection with the Fallon Naval Air Station. However, the majority of economic related activity associated with the Hawthorne Army Ammunition Depot is located in Mineral County.

The strongest relationship of the area's economy to that of the larger region is directly and indirectly associated with water, transportation, and tourism. Walker Lake provides regional opportunities for recreation. As discussed in Section 4.0, the ability to sustain a sport fishery and water levels in Walker Lake is threatened by the lack of river inflows. This situation is attributed to upstream diversions for irrigated agriculture. Activities associated with the Lake help draw tourists to the area who in turn utilize local lodging, gaming, and service related industries in Mineral County. Prevailing economic conditions of the region can have some impact on the outdoor recreation and tourism occurring at Walker Lake and the greater Mineral County region. Carson City, Reno and surrounding areas provide the largest share of visitors staying overnight in the Hawthorne area (See Figure 2-5).

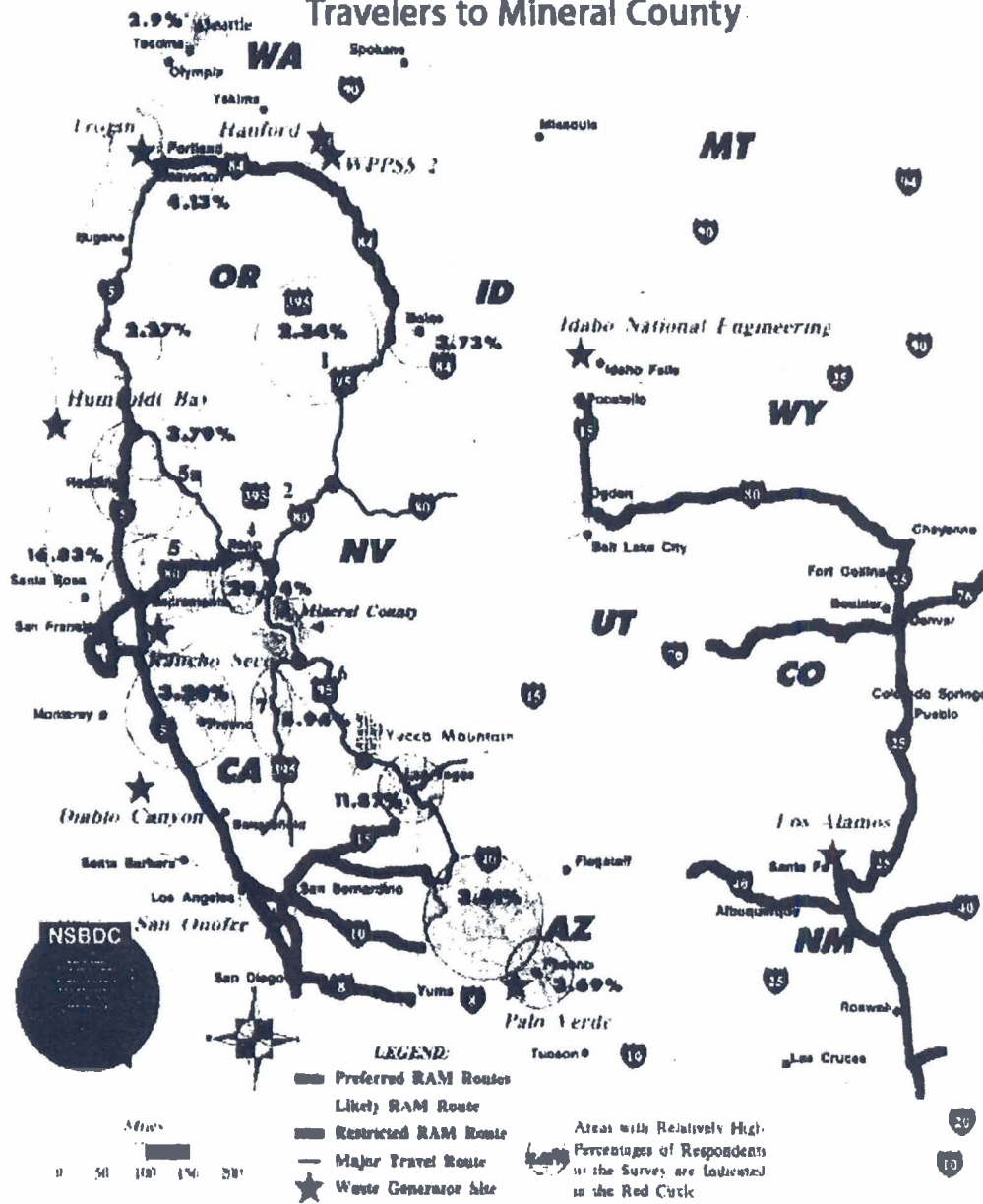
In addition to those coming to Mineral County to enjoy Walker Lake, the Hawthorne area in particular benefits from highway traffic and travelers on U.S. 95. Travelers using U.S. 95 stay overnight in Hawthorne, these visitations contribute to gaming,



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services, and to a lesser extent, retail sectors of the local economy. National or western regional economic conditions can influence overall activity in Mineral County.

Figure 2-5  
Major Markets for Overnight  
Travelers to Mineral County





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## **3.0 PUBLIC INFRASTRUCTURE**

### **3.1 Sewer and Water Community**

Sewer and water services are provided in the Town of Hawthorne, Mina and Luning. Currently, the Hawthorne, Mina and Luning service areas have sufficient water resources to accommodate a 60 percent increase in water use. Mina and Luning serve approximately 39 commercial and industrial customers and 135 residential customers. Hawthorne provides water service to 1,554 residential customers and 139 commercial and industrial users. The Hawthorne system has the capacity to serve approximately 6,000.

### **3.2 Communications**

Telephone service is available in all communities in Mineral County. Internet service is also provided in most areas of the County. Radio and cell phone coverage is available throughout most of the County.

### **3.3 Energy Distribution**

Energy available in Mineral County includes electricity and heating oil, and propane gas. Natural gas service is currently not available. Sierra Pacific Resources is the electrical energy provider to Mineral County.

### **3.4 Transportation**

Transportation modes available to commercial traffic include highway and air service. U.S. 95 is a major north-south highway extending from Canada to Mexico. Average daily traffic volumes have been gradually increasing. Nevada Department of Transportation traffic counts show average daily traffic on the Hawthorne By-pass road increasing from 2,280 in 1992 to 2,700 in 2001. There is no recorded change in traffic counts for 2002. Similar increases were measured south of Schurz. The increase in traffic flows on 95 north of Hawthorne is largely coming from U.S. 95 connecting into Fallon. Comparing U.S. 95 traffic counts at the north and southern end shows a 600-count increase at the northern end of Mineral County and a 400-count increase on the southern end. U.S. 95 through Mineral County also serves as a major route connecting to U.S. 395 to the Los Angeles Basin and Interstate 80.

The Hawthorne municipal airport is located immediately north of the town along Bonanza Road and U.S. 95. Ground access to the airport is from U.S. 95. The airport was originally developed and operated by the U.S. Navy. In 1962 the facility was transferred to county ownership and operation. There are three runways, 2 dirt and 1 asphalt. The general aviation area, located at the south end of the airport, consists of one fixed base operator (FBO)/terminal building and support areas including aprons, hangers, fueling facilities and related activities. In the terminal area there are six hangers, one of which is owned by the County. In addition, there is a wood frame 25X50 terminal building with FBO office. An aircraft-parking apron accommodating 49

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tie down spaces is located in the terminal area. A 65-acre industrial park is being developed along U.S. 95 to the west of the terminal area.

There are no other local transit operators in the County. There is currently no commercial rail service to Hawthorne. The Department of Defense operates and maintains the branch rail to Hawthorne for dedicated purposes.

### 3.5 Health Care

The Mount Grant Hospital has three licensed agencies, the acute hospital, skill nursing facility, and the adult day care center.

- **Acute Care:** Mt. Grant General Hospital is licensed for eleven acute care beds. Two beds are equipped for ICU/CCU care, and the remaining beds are designated for medical/surgical. There are five physicians on the active medical staff and two physician assistants.
- **Skilled Nursing Facility:** The Lefa L Seran Skill Nursing Facility has 24 licensed beds for long-term care. The levels of care provided range from skilled to intermediate.
- **Emergency Room:** The emergency room at Mt. Grant General Hospital is open 24 hours a day to render urgent medical care for major injuries and illness. Two certified physician's assistants in conjunction with three local physicians provide 24-hour coverage. Modern instrumentation is found in the emergency room and a highly trained, motivated staff is there to assist during medical emergencies. For medical emergencies that require care beyond the scope of services offered, air ambulance service is located in Reno and is capable of responding and being on hospital premises within 45 minutes.
- **Laboratory:** two well-qualified medical technologists, one medical laboratory technician and one clerk/phlebotomist staff the laboratory. Laboratory services are available 24 hours a day, with call-out after office hours and on weekends. State-of-the-art instrumentation allows for a great number of in-house testing, making test results available to your physician today, not tomorrow. Specialty testing is sent to a reference laboratory in Reno daily, and results are returned to the hospital within 24 hours.
- **Adult Day Care:** The Sunrise to Sunset Adult Day Care Center is licensed to care for five clients. The center operates Monday through Friday from 7:00am to 7:00 pm. Physician referral is required.

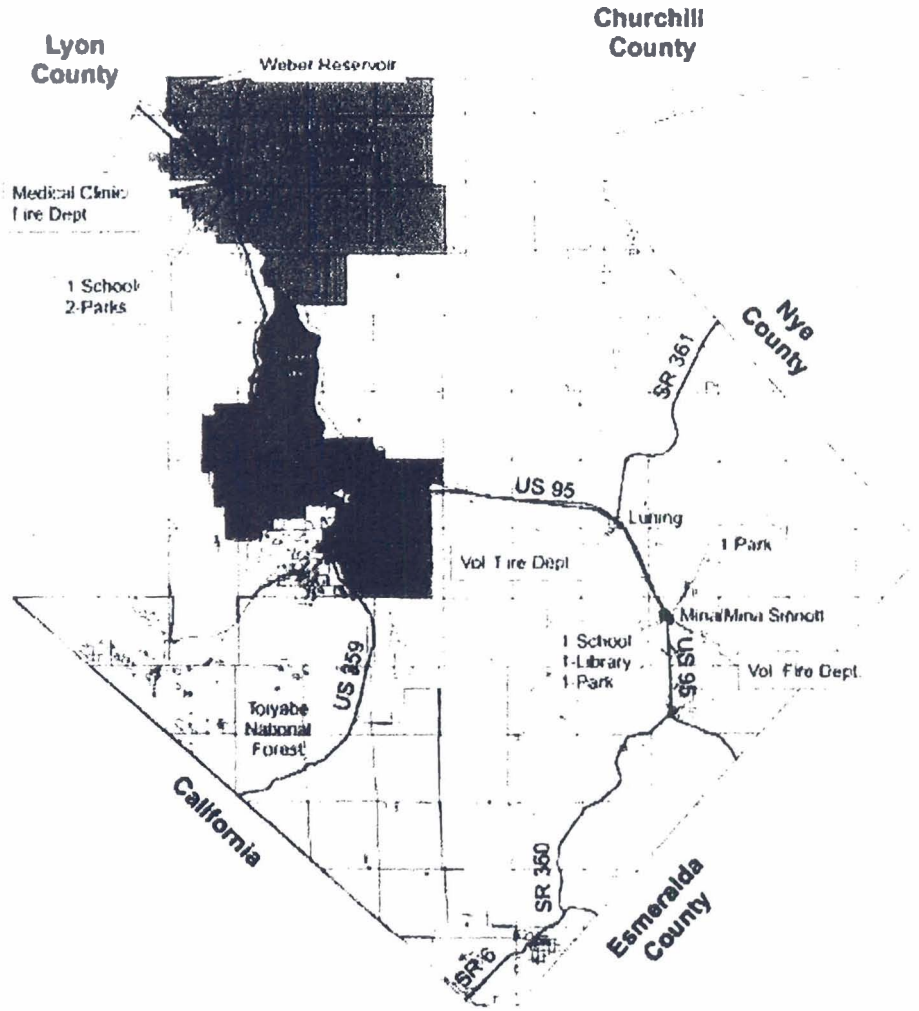
Other services include: homemaker service for elderly, blood bank, radiology, electrocardiogram, surgery, respiratory therapy, dietitian, nursing, and consulting physicians. The specialties include: 1) cardiology, 2) ob/gyn, 3) ear, nose and throat, 4) podiatry, 5) ophthalmology, 6) gastroenterology, 7) psychiatry, 8) endocrinology, 9) orthopedics, 10) Urology, and 11) general surgery.

### 3.6 Schools and Other Public Facilities

There are three elementary, one middle school, and one high school within .5 miles of the highway. These facilities are generally less than .25 miles from the highway. There are approximately 865 children enrolled in public schools. Figure 3-1, 3-1A and 3-1B show the location of public facilities in relation to the U.S. Highway 95 corridor.

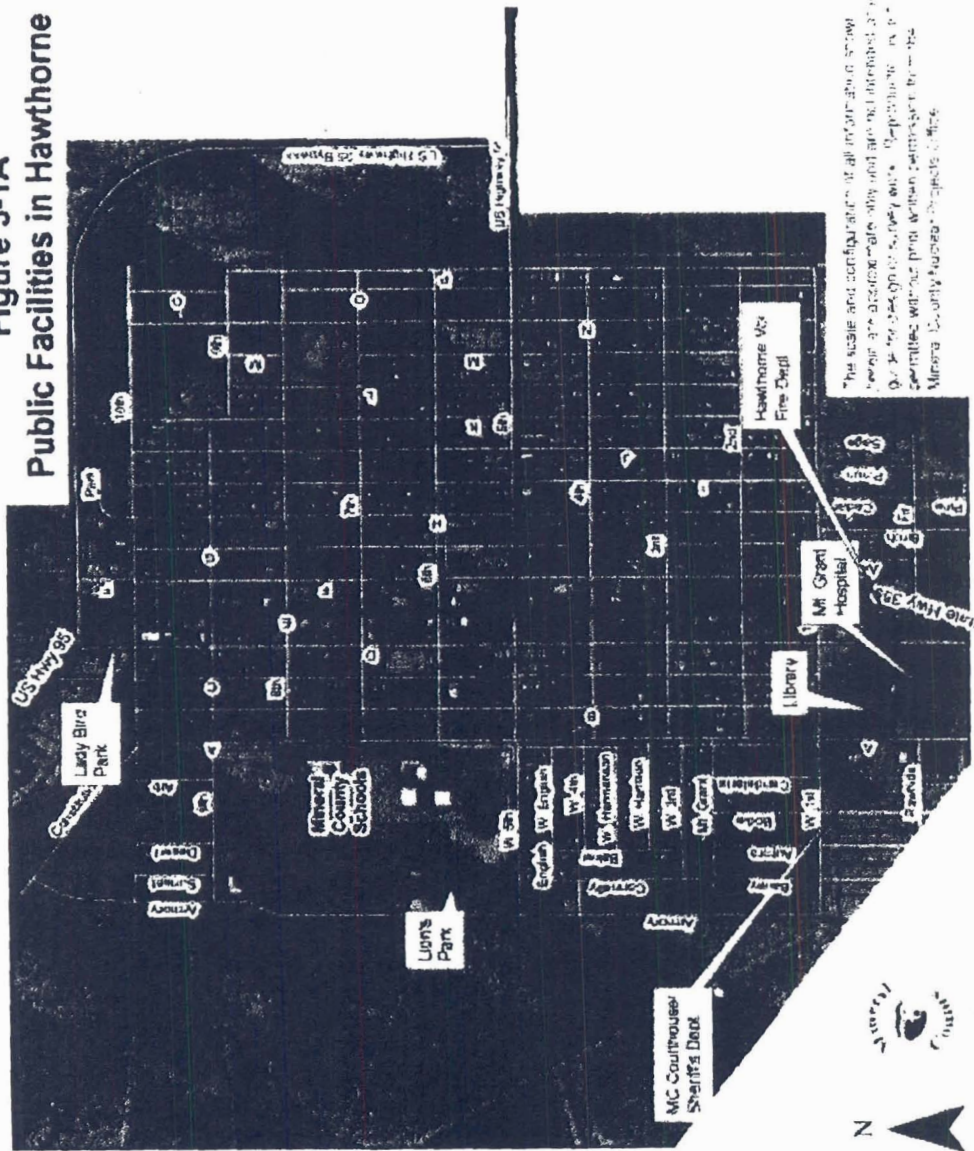
<b>Area</b>	<b>Facilities</b>
Hawthorne to Walker Lake	
Elementary Schools	1
Middle/Secondary Schools	1
Fire Station/Public Safety Building	2
Library	1
Parks	4
Campgrounds	3
Hospital	1
Schurz Area	
Elementary Schools	1
Middle Schools	0
Fire Station/Public Safety	1
Library	0
Parks	2
Medical Clinic	1
Mina to Luning	
Elementary Schools	1
Middle Schools	0
Fire Station/Public Safety	2
Library	1
Parks	1
<b>Total Facilities</b>	<b>24</b>

Figure 3-1  
Location of Public Facilities



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**Figure 3-1A  
Public Facilities in Hawthorne**



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## **4.0 NATURAL RESOURCES**

### **4.1 Land and Water Resources**

#### **4.1.1 Lands**

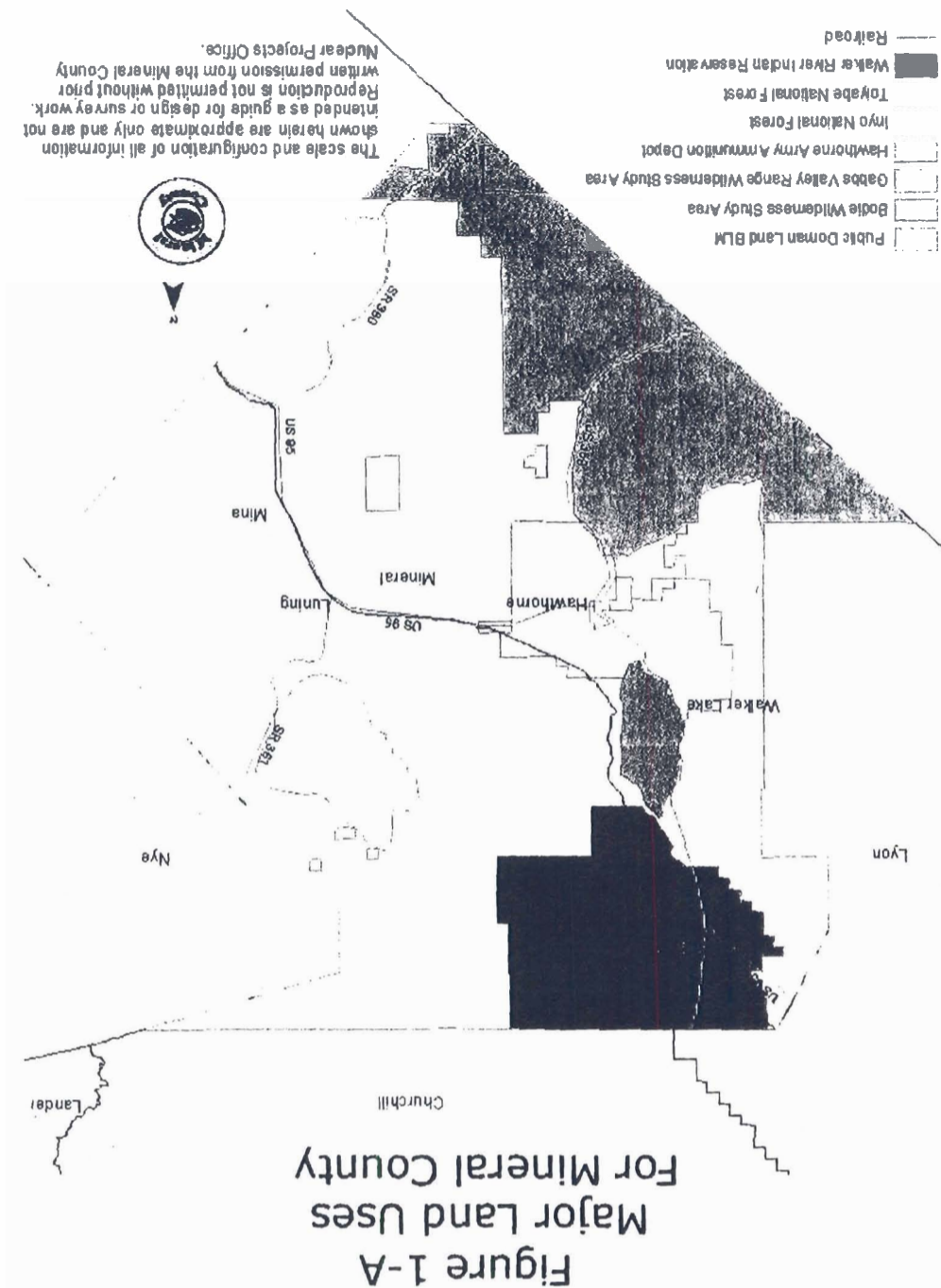
Mineral County is located in the west-central portion of Nevada and borders the State of California on the southwest. Mineral County is the sixth smallest county in Nevada, covers approximately 4,019 square miles, (9,938 square kilometers) and accounts for approximately 3.5 percent of Nevada's total surface area of 110,540 square miles (286,297 square kilometers). Of Mineral County's 2,572,160 acres of surface area, 2,091,422 acres, or just over 82 percent of the county's total area are controlled and managed by the federal government. Of these federally managed public lands approximately 1,561,512 acres of Mineral County are managed by the U.S. Bureau of Land Management (BLM), and 382,499 acres are managed by the U.S. Forest Service (USFS). The USFS managed lands include a portion of the Toiyabe National Forest, which covers much of the southernmost portion of Mineral County. Relative to Nevada's seventeen counties, Mineral County ranks as the eighth highest in terms of its percentage of federal land ownership and fifth lowest in terms of the actual area of federal ownership. Major land uses for Mineral County are shown in Figure 1A. Figure 2A through 4A show land use in Hawthorne, Walker Lake, Mina, and Luning.

Most land in Mineral County is public land used for livestock grazing, mining, and recreation. In the Hawthorne area, the Department of Defense has large land holdings used for storage of conventional weapons. At the very northern end of Mineral County there is the Walker River Paiute/Shoshone reservation that has a population of approximately 860. Within the reservation there is residential housing, small commercial establishments, and a few Tribal administration buildings. There is a Tribal school just south of the intersection with U.S. Highway 95A.

South of the Reservation, the Highway corridor runs parallel to Walker Lake for approximately 25 miles. There are two camp/rest areas along the highway near Walker Lake. The Highway passes through the community of Walker Lake. There are a small number of tourist commercial uses along the Highway as well as residential housing.

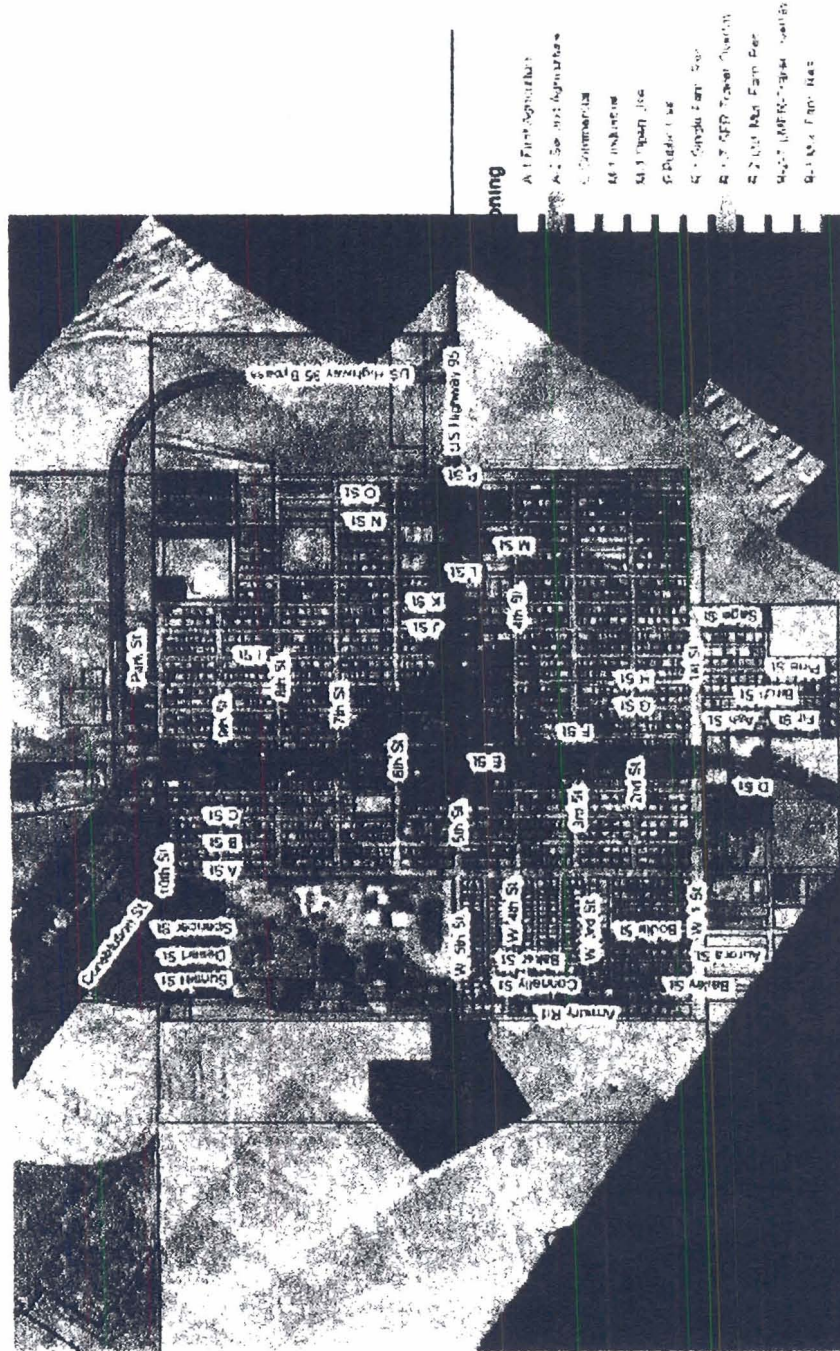
The predominate land use from the community of Walker Lake to Hawthorne is Department of Defense lands. The Hawthorne Army Ammunition Depot (HWAAD) is a government owned contractor operation that encompasses 147,044 acres including the southern one-third of Walker Lake. The mission of HWAAD is to serve as an ammunition depot; produce, assemble, test, and demilitarize munitions; maintain equipment; and provide tenant support. HWAAD has 1,793 permanent, earth covered munitions magazines and 97 permanent explosive storehouses, with a combined storage capability of 92,250,000 cubic feet (U.S. Department of the Air Force, 1991).

In the Town of Hawthorne land uses are mixed. There are primarily commercial and residential developments on the highway corridor. Several of the commercial establishments along the corridor are motels. Many of the major motels in the area





**Figure 2-A  
Land Use in Hawthorne**



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**Figure 3-A**  
**Land Use in Walker Lake**

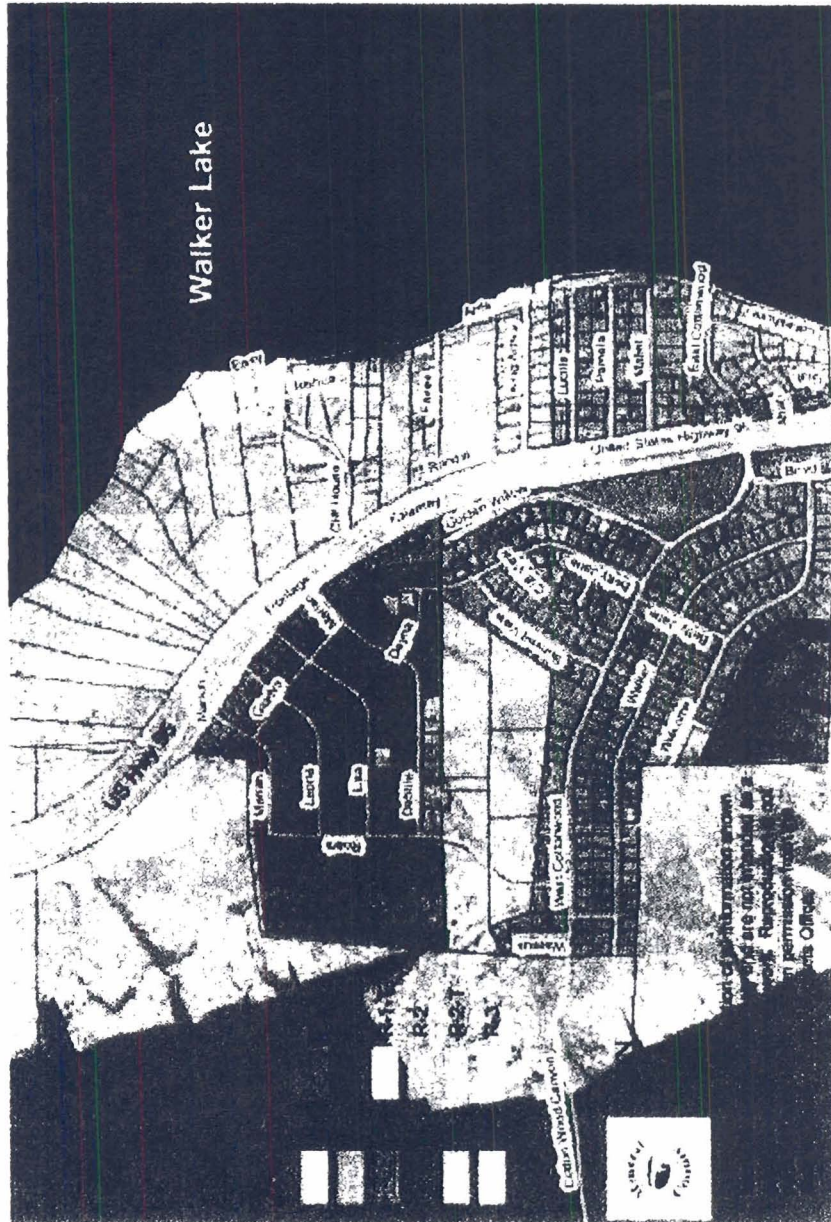
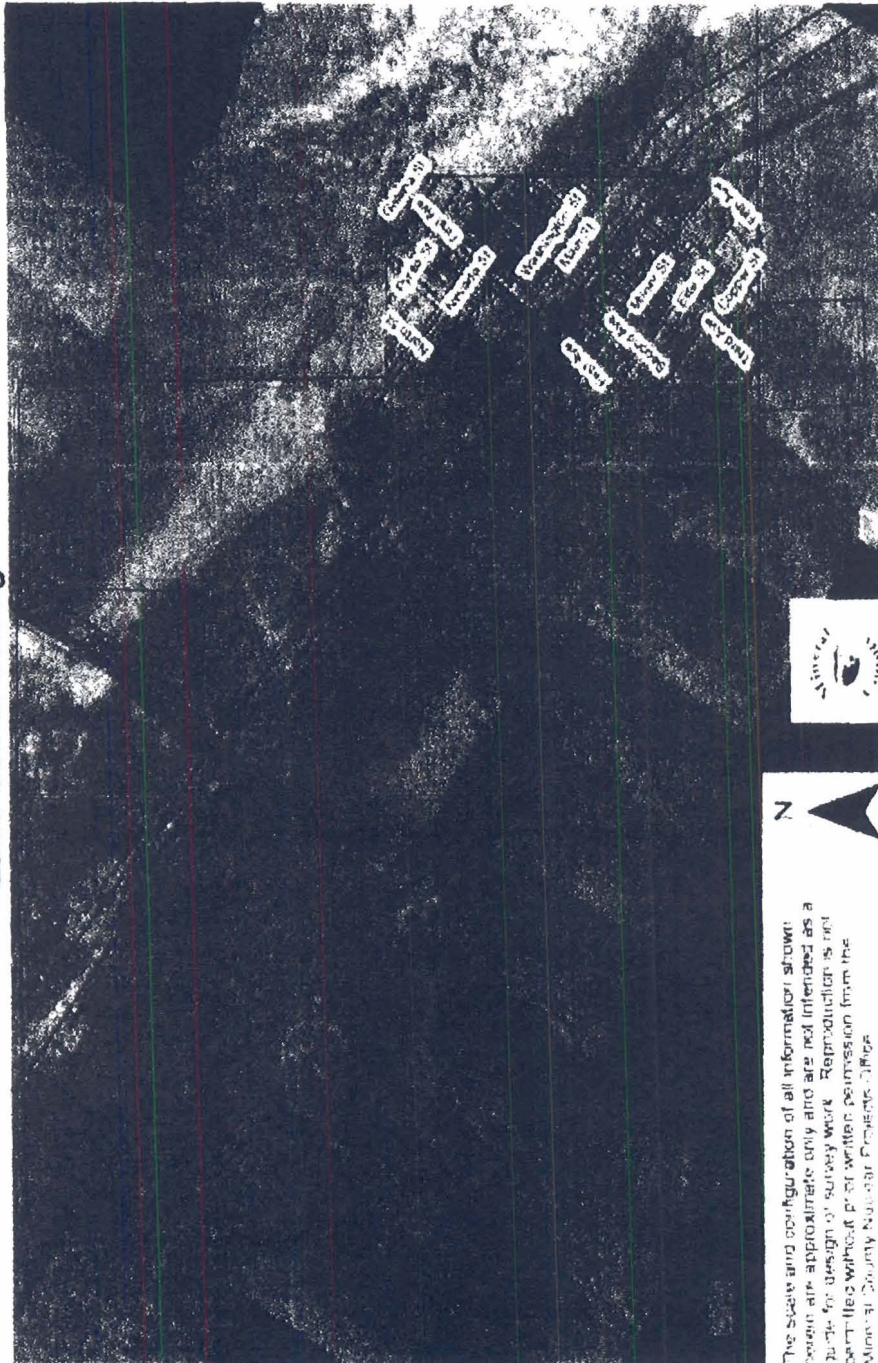


Figure 4-A  
Land Use in Mina



**Figure 5-A  
Land Use in Luning**



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are located adjacent to the highway effectively increasing the population density of the corridor. There are also a number of RV parks along in the corridor. Most of these parks are adjacent to the highway. Their presence, particularly in the summer and fall months effectively increases the permanent population along the corridor. In all there are approximately 149 RV spaces in the corridor. Most are located in Hawthorne. Lands immediately south and east of Hawthorne are under the control of the Department of Defense.

In the Towns of Mina and Luning, which are located adjacent to U.S. 95, there are a variety of land uses. The most predominate land use are small tourist commercial and residential. The location of many residential and commercial establishments within the corridor is much closer than default assumed in the Radtran Analysis used in the Yucca Mountain DEIS. In the Town of Hawthorne, commercial establishments along U.S. 95 are generally within 15 to 30 feet of the highway.

## **4.2 Water Resources**

This section describes the surface and groundwater resources available in Mineral County

### **4.2.1 Surface Water**

Major surface water features are shown in Figure 4-1. With the exception of Walker Lake and Walker River there are few perennial streams in the County. Most of the perennial streams are located in the Wassuk Range west of Walker Lake.

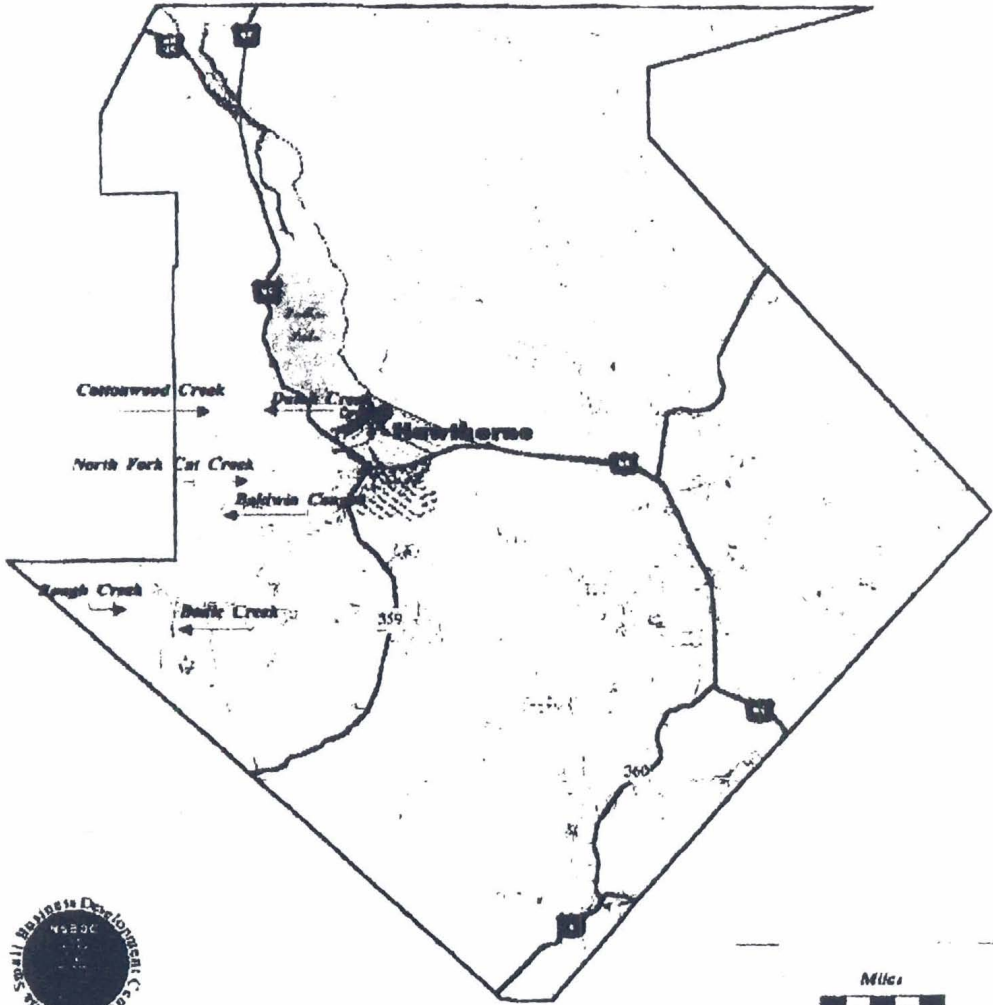
#### **The Walker River System--Confluence and Main stem**

Today, in the absence of the effects of an ascending and descending Lake Lahontan, or the natural shifting of the Walker River's channel through the Adrian Valley, the river's course continues through Mason and Campbell valleys and enters Walker Lake. Seven miles downstream from Yerington, the Walker River runs alongside the Mason Valley Wildlife Management Area, an extensive natural habitat area of over 13,000 acres maintained by the Nevada Division of Wildlife. Just beyond this area, at the north end of Mason Valley, the Walker River begins a swooping clockwise turn from north to east to southeast and enters the Walker River Paiute Indian Reservation. Here, the Walker River flows through Campbell Valley and after some 13 miles, enters Weber Reservoir. From Weber Reservoir, the Walker River continues mostly south for another 21 miles across alluvial flats of dried lakebed before entering Walker Lake.

#### **Walker Lake**

Walker Lake is the terminal (i.e., without outflow) lake of the Walker River system. It represents one of only two remaining major remnants of ancient Lake Lahontan, an Ice Age lake, which covered much of northwestern Nevada as recently as 12,500 years ago. Walker Lake is approximately 25 miles long, just over five miles wide, about 90

Figure 4-1  
Major Water Features  
Mineral County



Miles  
0 2 4 6 8 10  
Map Updated 10/11/02

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feet deep, and contains just over two million acre-feet of water. Walker Lake's waters are of relatively poor quality, characterized by high concentrations of total dissolved solids (TDS), consisting mostly of salts, relatively high temperatures, low dissolved oxygen, and the presence of hydrogen sulfide. The lake also tends to support large blooms of plank tonic blue-green algae, which, when combined with high TDS concentrations and low dissolved oxygen, creates a relatively inhospitable environment to fish species, particularly native Lahontan cutthroat trout. Except where the Walker River enters the lake at its northern end, Walker Lake's shores are virtually devoid of major riparian plant growth due, no doubt, to highly variable lake levels. In this respect, Walker Lake's barren shoreline resembles the other classic Great Basin desert terminal lakes (e.g., Pyramid Lake in Nevada, Mono Lake in California, and the Great Salt Lake in Utah).

Walker Lake's future as a viable fishery has been seriously threatened over the last one hundred years or so due to insufficient inflows from the Walker River. From data covering the 1939-1993 period of record, the U.S. Geological Survey (USGS) estimated that an average of 76,000 acre-feet per year flowed into the lake from the Walker River. However, due to the highly variable hydrology of this region, the Walker River has rarely produced "average" inflows to Walker Lake. As an example, during the recent ten-year period of 1987-1996, which encompassed the eight-year drought period of 1987-1996, Walker Lake received inflows from the Walker River in essentially only three years (1987, 1995, and 1996). Nonetheless, under such "average" hydrologic conditions, in addition to Walker River inflows, the USGS estimated that Walker Lake might expect to receive an average of 14,000 acre-feet per year of lake surface precipitation (4.9 inches per year), 11,000 acre-feet per year of local ground water inflows, and 3,000 acre-feet per year of local surface water inflows. More than off-setting these inflows into Walker Lake, however, has been a rate of lake surface evaporation totaling approximately 137,000 acre-feet per year (4.1 feet per year), thereby producing a water budget deficit for Walker Lake of approximately 33,000 acre-feet per year over the 1939-1993 study period. With the exception of the 1997-98 winter, water flows into Walker Lake have been relatively small.

Since I.C. Russell took initial lake recordings in 1882, Walker Lake's surface elevation has declined by 134 feet, from approximately 4,080 feet above mean sea level (MSL) to 3,946 feet MSL presently (March 1996). This has resulted in a decline in the lake's depth from 224 feet recorded in 1882 to only 90 feet at the present time. Today, Walker Lake is only 50 percent of its 1882 surface area and 28 percent of its 1882 volume. The decline in Walker Lake's volume from an estimated nine million acre-feet in 1882 to just over two million acre-feet by 1996 has produced the most pronounced effects on the lake's water quality. Primarily as a result of this dramatic reduction in volume, Walker Lake's concentration of total dissolved solids has risen from 2,560 milligrams per liter (mg/l) reported by Russell in 1882 to nearly 13,000 mg/l presently (1996). Primary contributors to Walker Lake's salt content have been the re-dissolution of salts found in lakebed sediment layers, a groundwater inflow component, and inflows from the Walker River.

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For the period of 1903-1994, the USGS estimated that approximately 30 percent of Walker Lake's total salt "load" (i.e., its total quantity of salts) has come from the re-dissolution of salts embedded in lakebed sediment layers. These salts have accumulated over time in the lake's bed due to prior desiccations of Walker Lake, as well as from salt deposition from wind-blown salts falling onto the lakebed during such dry periods. It was also estimated that groundwater inflows within the lake have accounted for approximately 20 percent of the lake's present salt load, while the remaining 50 percent of Walker Lake's total salt loading has come from the Walker River itself.

TDS concentrations within Walker Lake now stand at approximately 13,000 mg/l, a level well above TDS levels of the Walker River as it enters the lake (approximately 100-500 mg/l, depending on rate of inflow). In a 1994 water analysis of Walker Lake conducted by the USGS, which followed essentially eight years of virtually no freshwater inflows, TDS concentrations within Walker Lake were found to be 13,400 mg/l, and consisted primarily of sodium chloride, dissolved carbon, and sulfate. In terms of the ionic concentrations found within Walker Lake, sodium amounted to 4,100 mg/l (31 percent by volume), chloride amounted to 3,200 mg/l (24 percent), sulfate amounted to 3,000 mg/l (22 percent), bicarbonate 2,400 mg/l (18 percent), and carbonate 670 mg/l (5 percent).

### **Weber Reservoir**

Weber Reservoir is located on the Walker River Paiute Indian Reservation and is the only reservoir located on the main stem of the Walker River. The dam was completed in 1935 with a built-in capacity of 13,000 acre-feet; however, in 1972, the U.S. Geological Survey (USGS) estimated that sedimentation had reduced the reservoir's storage capacity to 10,700 acre-feet. Stored waters have no priority date; however, the reservation does have a priority date of 1859 for a flow rate of 26.25 cfs at the Wabuska gage (located at the north end of Mason Valley at the entrance to the reservation) which may be used to fill this reservoir, with such waters subsequently being used for the irrigation of lands on the reservation.

#### **4.2.2 Ground Water**

Mineral County stretches across parts of two of Nevada's fourteen major hydrographic regions or water basins (watersheds) with approximately the eastern half of the county located within the Central Region (Hydrographic Region 10) and the remaining western half of the county located within the Walker River Basin (Hydrographic Region 9). In addition to the two major hydrographic regions encompassing Mineral County, the county also contains, either wholly or partially, twenty-three hydrographic areas and hydrographic sub-areas. These hydrographic units typically consist of a single valley or discrete drainage area within a larger hydrographic region.

Table 4.1 shows the current groundwater basin status, permitted water rights and pending applications. Most basins in Mineral County are currently designated. The availability of groundwater is critical to future growth and development of the County. It is unlikely the



County could rely upon surface water resources for a future source of municipal and industrial supply. It is also important to note, that unlike other areas in Nevada there is very little irrigation water use in and around populated areas of Mineral County. The option to convert irrigation water to another use is not available.

<b>Basin</b>	<b>Active Pending Acre Feet</b>	<b>Perennial Yield</b>	<b>Designated</b>
110b	2,092.96	700	No
110c	15,692.80	5,000	Preferred Mun., Irr. Denied
110a	637.40	1,500	No
111B	0	700	No
112	0	300	No
113	2,596.49	150	No
114	132.41	1,400	No
115	0	150	No
119	42.10	1,000	No
120	0	150	No
121a	3,168.72	600	All
121b	300.29	200	All
136	138.65	400	No
135	133.36	2,500	No
122	21,186.16	5,000	All
124	39.71	250	All
123	115.67	500	No
108	159,430.38	25,000	All
107	60,672.09	17,000	Portion, Con, Ind, Stk
109	20,390.39	5,500	No
116	121.00	600	No
118	1,202.37	4,000	No

Source: Nevada Division of Water Resources, 2002.

#### 4.2.3 Water Use

In 1995 Mineral County's total water withdrawals were estimated at 19,714 acre-feet, or only 0.5 percent of estimated total water withdrawals within the State of Nevada (See Table 4.2). Total water withdrawals in 1995 were down 44.3 percent from total withdrawals in 1990 and also down 53.4 percent from total water withdrawals estimated in 1985. These declines were due entirely too reduced levels of irrigation

water use from prior periods. Of the total 1995 water withdrawals, public supplied water withdrawals (i.e., municipal and industrial water withdrawals) were estimated at 1,255 acre-feet, or 6.4 percent of total water withdrawals. As shown in Table 4-2, it may be seen that water withdrawals in Mineral County in 1995 were dominated by irrigation withdrawals (79.6 percent of total water withdrawals), while mining water withdrawals accounted for 12.8 percent of total withdrawals and domestic uses accounted for 5.8 percent of total water withdrawals in Mineral County.

More recent water data indicates that Mineral County has a per capita use rate of 446 gallons per day. This relatively high per capita use can be attributed to the number motel/hotel units relative to the local population.

Water Use by Major Category	1985	1990	1995	Percent of 1995 Total Water Use
Total Water Withdrawals/Use	42,348	35,402	19,714	100.00%
Domestic Water Withdrawals	1,117	913	1,153	5.85%
Commercial Water Withdrawals	291	1,199	280	1.42%
Industrial Water Withdrawals	0	0	0	0%
Thermoelectric Water Withdrawals	0	0	0	0%
Mining Water Withdrawals	605	1,646	2,520	12.78%
Livestock Water Withdrawals	90	34	34	0.17%
Irrigation Water Withdrawals	40,123	31,364	15,682	79.55%
Public Use & Losses	123	246	45	0.023%

*Notes:* "Water Use" and "Water Withdrawals" are equivalent terms, but are not the same as consumptive use and do not account for return flows. Total Water Withdrawals and Domestic, Commercial, Industrial, and Thermoelectric Water Withdrawals include both public supplied and self-supplied water. Mining Water Use includes both mine consumptive use (i.e., processing) and mine dewatering. One acre-foot is equivalent to 325,851 gallons.

*Source Data:* U.S. Geological Survey (USGS); U.S. Department of Agriculture (USDA), Nevada Agricultural Statistics Service; Nevada State Demographer; Nevada Division of Water Planning (NDWP).

Based on 1995 water use data, along with comparable period population and employment figures, it was estimated that Mineral County's public supplied water use per person (also referred to as municipal and industrial, or M&I, water use), based only on the estimated population served by public supply water systems, was 212 gallons per person per day, compared to 224 gallons per person per day in 1985, and 342 gallons per person per day in 1990. Table 4.3 presents a number of estimated water usage rates for Mineral County for the years 1985, 1990, and 1995 based on water use per person, per worker, or per occupied housing unit, i.e., per household.

<b>Table 4-3 Mineral County Water Usage Rates</b>			
<b>(Gallons per Person, per Worker or per Household per Day) Water Usage Rates by Type/Sector 1985 1990 1995)</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>
Municipal & Industrial Water Use per Person	224	342	212
Domestic Public Supplied Water Use per Person	163	127	157
Total Domestic (Residential) Water Use per Person	161	127	157
Total Commercial & Industrial Water Use per Worker	127	543	116
Total Domestic Water Use per Household	413	322	393

Notes: "Water Use" and "Water Withdrawals" are equivalent terms, but are not the same as consumptive use and do not account for return flows. "Municipal & Industrial Water Use per Person" includes public supplied domestic, commercial, industrial and thermoelectric water withdrawals divided by the resident population served by such public supply water systems; "Domestic Public Supplied Use per Person" includes only public supplied residential water use divided by the resident population served by the public supply water system; "Total Domestic (Residential) Water Use per Person" includes both public supplied and private supplied residential water use divided by the total county resident population; "Total Commercial and Industrial Water Use per Worker" equals both public supplied and self-supplied water withdrawals divided by the county's total covered employment, excluding mining water use and mining employment; "Total Domestic Water Use per Household" includes both public supplied and self-supplied water divided by the number of occupied housing units. Households are equivalent to occupied housing units and are not the same as total housing units. One acre-foot is equivalent to 325,851 gallons.

Source Data: U.S. Geological Survey (USGS); Nevada State Demographer; U.S. Bureau of the Census; Nevada Department of Employment, Training and Rehabilitation (DETR); Nevada Division of Water Planning (NDWP).

From a 1995 survey, it is estimated that 2,900 acres were irrigated in Mineral County in that year (7,440 irrigated acres in 1985 and 5,800 irrigated acres in 1990). This amount of irrigated acreage comprised approximately 0.4 percent of the state's total 1995 irrigated acreage of 715,439 acres (843,760 acres in 1985 and 728,650 acres in 1990). The 1995 level of irrigated acreage placed Mineral County as the third lowest in terms of county irrigated acreage in Nevada at that time only ahead of Carson City and Storey County.

Based on 1995 estimates of both total irrigated acreage and total irrigation water withdrawals, the average water use (withdrawals) on irrigated acres in Mineral County was estimated at approximately 5.4 acre-feet per acre per year. Mineral County's 1995 irrigation conveyance losses were estimated at 1.6 acre-feet per acre per year, thereby leaving irrigation water available for consumptive use of approximately 3.8 acre-feet per acre per year (See Table 4-4).

Figure 4-2 shows the projected municipal and industrial water use in Mineral County based upon population projections in Table 2-1. Overall, municipal and industrial water use will rise slowly and generally will not exceed the availability of current resources.

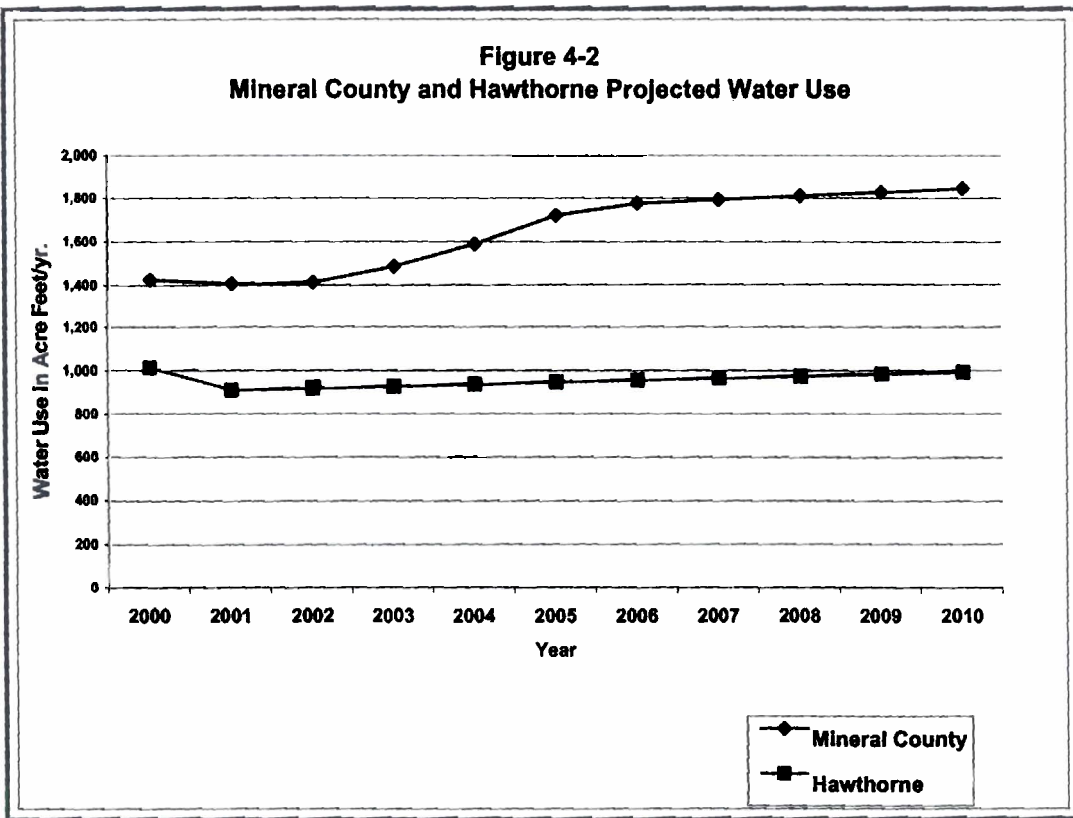
**Table 4-4 Mineral County Agricultural Water Use Analysis**

<b>(Acres, Acre-Feet, Acre-Feet per Acre per Year) Agricultural-Related Measure 1985 1990 1995)</b>			
Total County Irrigated Acreage (Acres)	7,440	5,800	2,900
Total Irrigation Water Withdrawals (Acre-Feet)	40,123	31,364	15,682
Average Irrigation Water Use (Acre-Feet/Acre/Year)	5.4	5.4	5.4
Irrigation Conveyance Losses (Acre-Feet/Acre/Year)	1.6	1.6	1.6
Water for Crop Consumptive Use (Acre-Feet/Acre/Year)	3.8	3.8	3.8
Total Farm Marketing's (Millions of Dollars)	\$0.955	\$2,228	\$2,476

Notes: Irrigated acreage is not the same as water-riighted acreage and includes only that acreage estimated to have actually received irrigation water during the irrigation period. One acre-foot is equivalent to 325,851 gallons.

Source Data: U.S. Geological Survey (USGS); U.S. Department of Agriculture (USDA), Nevada Agricultural Statistics Service; U.S. Department of Commerce, Bureau of Economic Analysis (BEA), Regional Economic Information System (REIS); Nevada Division of Water Planning (NDWP).

**Figure 4-2  
Mineral County and Hawthorne Projected Water Use**



**Appendix A: Mineral County Combined Statement of Revenues and Expenditures**

<b>Revenues</b>	<b>2004</b>	<b>2002</b>	<b>2001</b>
Taxes	\$1,924,252	\$1,650,706	\$1,797,770
Licenses and Permits	\$ 200,783	\$151,299	\$150,842
Intergovernmental	\$5,640,233	\$4,122,038	\$4,207,053
Charges of Services	\$1,134,302	\$887,879	\$926,665
Fines and Forfeits	\$ 293,197	\$237,604	\$284,100
Miscellaneous	\$ 272,830	\$978,966	\$456,725
<b>Total Revenues</b>	<b>\$9,465,597</b>	<b>\$8,028,492</b>	<b>\$7,823,162</b>
General Government	\$1,801,417	\$2,438,725	\$1,552,777
Public Safety	\$3,375,867	\$2,863,255	\$2,943,338
Judicial	\$ 657,879	\$636,527	\$711,951
Highways and streets	\$ 980,094	\$1,015,844	\$1,040,537
Health and sanitation	\$ 226,373	\$348,316	\$391,296
Welfare	\$ 428,738	\$285,522	\$280,574
Culture and Recreation	\$ 317,818	\$345,542	\$321,598
Community Support	\$1,392,971	\$362,840	\$592,412
Debt Service	\$ 97,611	\$46,675	\$54,433
Intergovernmental	\$ 17,151	\$74,490	\$58,500
Capital Outlay		\$54,640	\$52,696
<b>Total Expenditures</b>	<b>\$9,295,919</b>	<b>\$8,472,376</b>	<b>\$8,100,212</b>
Excess (Deficiency)	\$169,678	-\$443,884	-\$227,050
Total other financing sources (uses)	\$50,000	\$100,000	\$150,000
<b>Total Excess (Deficiency)</b>	<b>\$274,678</b>	<b>-\$343,884</b>	<b>-\$127,050</b>
Fund Balance-Begin, July 1		\$2,599,342	\$2,726,391
Fund Balance-End, June 30		\$2,255,457	\$2,227,177