LINCOLN COUNTY NUCLEAR WASTE MANAGEMENT PROGRAM: IMPACT ASSESSMENT AND ALLEVIATION PLANNING SYSTEM DESCRIPTION AND STATUS REPORT 1985-1996

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WHY HAS THIS DOCUMENT BEEN PREPARED?

Due to suspension of oversight funding during Fiscal Year 1996 and uncertainty over availability of future funding, the Lincoln County/City of Caliente repository oversight program is being positioned in a stand-by mode. This report is intended to assist County and City elected officials and staff in re-starting independent impact assessment and mitigation planning activities as funding becomes available to do so. To mitigate the likely loss of corporate memory regarding previously completed and in-progress assessment and impact alleviation planning functions, this document seeks to summarize repository program information availability, work yet needing completion, and likely applications of program products as necessary to effect minimization of waste management risks and maximization of related benefits.

After nearly 12 years of state and federal assistance, Lincoln County's repository program faces temporary closure due to suspension by the Congress of FY 96 oversight funding. While federal, state, and local officials expect restoration of oversight program funding, a high degree of temporal uncertainty attends the timeframe within which re-activation of assessment and mitigation activities might occur. Given the possibility that one or more years might elapse between suspension and renewal of oversight functions, Lincoln County and the City of Caliente have elected to document previous work completed, tasks remaining, and guidance in the use of program documents in future efforts to manage waste management risks and benefits. It is hoped that the reader of this report will find the information contained herein invaluable to guiding reactivated repository oversight initiatives.

This report has been organized around provision of responses to questions which future County officials might ask in the course of re-starting local independent assessment and impact alleviation planning activities. To facilitate understanding of the basis for the County program, a response to the question, "Why did Lincoln County establish a nuclear waste management oversight program?" is provided after the introduction. This section focuses upon the relationship of the federal nuclear waste management program to Lincoln County and the City of Caliente.

To familiarize the reader with the organization of the joint County/City repository oversight initiatives, the third portion of this report answers the question, "What are the major elements of the Lincoln County nuclear waste oversight program?". This section begins by reviewing program funding, county/city operating agreements, program offices and staffing, and the role and activities of the Joint City/County Impact Alleviation Committee. A description of programmatic elements including oversight, impact assessment, mitigation planning and public involvement completes this component of the report.

Having acquainted the reader with major elements of the program, the document next focuses upon a description of activities and tasks which comprise the impact assessment and alleviation planning system. In so doing, the question, "What activities and tasks comprise the impact assessment and alleviation planning system?", is answered. A primary objective of this section is to make clear the various study components and their

interrelationships.

The report then turns to a review of impact assessment and mitigation planning work completed through mid-1996. This part of the document responds to the question, "What work has been completed to support development and application of the system?". Providing a response to this question is intended to assist County and City staff in attaining knowledge about what tools exist to facilitate impact assessment and mitigation planning activities in the future.

This document concludes with an overview of necessary work yet to be completed. This review seeks to answer the question, "What work remains to be completed to support development and application of the system?". The analysis of tasks remaining is premised upon the assumption that the County and City will develop and submit an impact assessment report and request for mitigation assistance to the Secretary of Energy, as provided for in Section 116(c)(2)(B) of the Nuclear Waste Policy Act, as amended. As a consequence, this final section of the report is focused at those remaining activities and tasks required to support preparation of said impact assessment and request for mitigation.

WHY DID LINCOLN COUNTY ESTABLISH AND MAINTAIN A NUCLEAR WASTE MANAGEMENT OVERSIGHT PROGRAM?

In February of 1983, then Nevada Governor Richard H. Bryan was notified by the Secretary of Energy pursuant to the Nuclear Waste Policy Act that certain public lands on

and around Yucca Mountain in Nye County were under consideration for a repository for the disposal of high-level radioactive waste and spent nuclear fuel. By Spring of 1984, work by the Department of Energy (DOE) on a draft environmental assessment of the Yucca Mountain site made clear the possibility for nuclear waste to be transported by rail and/or truck through Lincoln County (DOE, 1984). In April of 1984, the State of Nevada offered a modest grant to Lincoln County to enable local monitoring of and input to the DOE repository siting process. The Lincoln County Repository Oversight Program was then authorized by the Board of Lincoln County Commissioners. In organizing its local repository oversight program, the Board of Lincoln County Commissioners embraced the following guiding principal:

> "Assuming that the State of Nevada is unsuccessful in its efforts to prevent the repository from being located at Yucca Mountain, maximize benefits and minimize negative impacts which may accrue therefrom to residents of Lincoln County and the City of Caliente."

All subsequent activities of the Lincoln County repository oversight program have sought to comply with the spirit of this directive.

The potential for DOE to transport large quantities of radioactive waste through Lincoln County has been and continues to be, the prime reason for the local repository oversight program. Since publication by DOE of its 1984 environmental assessment of the Yucca Mountain site, several other actions have made clear the potential for rail and/or truck shipments of radioactive waste to cross Lincoln County and the City of Caliente. When published in 1986, DOE's final environmental assessment for the Yucca Mountain

site identified the Union Pacific mainline through Lincoln County as a candidate route for transporting radioactive waste and spent nuclear fuel (DOE, 1986).

In 1989, both the Nevada Department of Transportation (NDOT, 1989) and the Department of Energy (DOE, 1989) published studies identifying highway routes through Lincoln County as candidates for shipment of radioactive waste. In September of 1989, the Director of the State of Nevada's Nuclear Waste Project Office wrote DOE requesting the Department to "include in its evaluations rail access routes through the eastern portion of the Nevada Test Site and the Nellis Range to Yucca Mountain" (NWPO, 1989). The rail alignment suggested by the State of Nevada would route shipments of radioactive waste across Lincoln County.

DOE produced a 1990 study identifying several possible rail routes through Nevada to Yucca Mountain, including one ("Caliente Route") across Lincoln County (DOE, 1990). During 1992, Science Applications International Corporation (SAIC), a DOE contractor, completed a conceptual design study of a proposed rail corridor connecting the Union Pacific mainline to Yucca Mountain through Lincoln County (SAIC, 1992). In April of 1995, TRW Environmental Safety Systems, Inc. (TESS), a DOE contractor, published a study which identified potential rail routes, heavy-haul truck routes and rail to truck intermodal transfer facility sites within Lincoln County (TESS, 1995).

Lincoln County is one of ten units of local government which have been designated by the Secretary of Energy as an "affected unit of local government" pursuant to the

Nuclear Waste Policy Act, as amended. The County is one of only three counties which the Secretary of Energy voluntarily designated as affected by repository activities. What was identified in the 1986 Yucca Mountain environmental assessment remains true in 1996: Lincoln County is likely to serve as the gateway for most shipments of high-level radioactive waste entering Nevada and destined for storage and disposal at the Nevada Test Site. More recently, it has become evident that mutual interests of the State of Nevada and DOE to minimize risks to the health and safety of a majority of Nevada's residents and economy of southern Nevada will likely shift said risks to residents and businesses of Lincoln and other rural counties. Such risk minimization objectives have been translated into proposed federal legislation introduced in the House (HR 1020) and Senate (S 1271) during the Fall of 1995. In response to efforts by the State of Nevada and DOE to shift risks away from Nevada's populated areas, the Board of Lincoln County Commissioners and the Caliente City Council have responded with recommendations focused at local risk minimization and benefit maximization.

WHAT ARE THE MAJOR ELEMENTS OF THE LINCOLN COUNTY NUCLEAR WASTE OVERSIGHT PROGRAM?

Funding - Between 1984 and 1988, the State of Nevada provided funding (derived from a federal grant to the State) to Lincoln County and the City of Caliente to enable operation of a local repository oversight program. As shown in Table 1, a total of $106,000 was provided to the County and City by the State of Nevada for oversight activities during FY 85 and FY 86. Section 116(c) of the Nuclear Waste Policy Act, as amended in 1987, required the Secretary of Energy to "make grants to the State of Nevada and any affected

unit of local government for purposes of enabling such State or affected unit of local government -

> "(i) to review activities taken under this subtitle with respect to the Yucca Mountain site for purposes of determining any potential economic, social, public health and safety, and environmental impacts of a repository on such State, or affected unit of local government and its residents;
>
> "(ii) to develop a request for impact assistance under paragraph (2);
>
> "(iii) to engage in any monitoring, testing, or evaluation activities with respect to site characterization programs with regard to such site;
>
> "(iv) to provide information to Nevada residents regarding any activities of such State, the Secretary, or the Commission with respect to such site;
>
> "(v) to request information from, and make comments and recommendations to, the Secretary regarding any activities taken under this subtitle with respect to such site."

Upon designation in July 1988 as an "affected unit of local government", Lincoln County was eligible to receive oversight funding from the Department of Energy. During FY 87 through FY 95, DOE has provided Lincoln County with repository oversight funds. These monies are derived by assessing generators of nuclear electricity a fee for every kilowatt produced. Fees collected by DOE are deposited into the Nuclear Waste Fund. All costs for civilian radioactive waste management by DOE (including funding local government oversight functions) are paid from the Nuclear Waste Fund. No state or local tax dollars have been used to pay costs of oversight activities conducted by Lincoln County and the City of Caliente.

Table 1
Lincoln County/City of Caliente
Repository Oversight Program Funding
FY 85 through FY 95

1984/85	$ 30,000

1985/86	$ 76,000
1986/87	$132,000
1987/88	$127,000
1988/89	$395,000
1989/90	$479,000
1990/91	$596,000
1991/92	$372,000
1992/93	$475,000
1993/94	$544,000
1994/95	$544,000
1995/96	$ -0-

County/City Memorandum of Understanding - To establish an understanding between Lincoln County and the City of Caliente concerning the organization and joint conduct of repository related impact alleviation planning, the Board of Lincoln County Commissioners and the Caliente City Council entered into a Memorandum of Understanding (MOU) in June of 1984. The MOU between the County and City has been renewed regularly during the past twelve years. In addition to establishing a joint County/City repository oversight function, the MOU sets forth the parameters within which program funding and administrative and technical responsibilities will be divided between the parties. The MOU also establishes a repository oversight program management committee (described in detail later in this report) compromised of members appointed by the County Commission and the City Council. Finally, the MOU authorizes the County and City to retain technical, management and legal consultants as necessary to carry out each participant's program responsibilities. To facilitate City implementation of responsibilities under the MOU, the memorandum also provided for a subgrant of funding from the County to the City.

Program Offices and Staff - Prior to temporary suspension of oversight funding by

the Congress, both Lincoln County and the City of Caliente operated repository oversight program offices. The offices were located at the Lincoln County Courthouse in Pioche and the Caliente City Hall. Each office was open during normal County and City business hours for public access. Program offices maintained comprehensive sets of federal, state and locally derived information

about DOE's repository program in Nevada. Certain printed materials were available for distribution. Other information items, including state and federal information videos were available for loan.

The County and City repository program offices were staffed with personnel as required to provide administration, technical program management, and public information. Pertinent information regarding authorized staffing at the time of funding suspension for each office is shown below.

COUNTY STAFF
- Coordinator
- Special Projects Administrator
- Research Assistant
- Clerical Assistant

CITY STAFF
- Coordinator
- Research Assistant
- Clerical Assistant

The program coordinators in each office provided essential linkages between other program staff and consultants and elected officials of the County and City. Each

coordinator provided regular updates on local oversight program activities and federal progress in advancing the repository project. In addition, each coordinator represented the County and/or City at various meetings of local, state and federal program participants.

The special projects administrator for the County served as the person with primary responsibility for oversight program fiscal management. This included managing and reporting upon the flow of oversight funds between DOE and the County, and between the County and its employees, the City of Caliente and various contractors.

Joint City/County Impact Alleviation Committee - As noted previously, the MOU between the County and City created the Joint City/County Impact Alleviation Committee (JCCIAC). The purpose of the Committee was to guide the County/City repository oversight program. Recommendations regarding program direction, including budgetary matters, were regularly made to the County Commission and City Council. Originally a six-member committee when organized in 1984. The JCCIAC was expanded to eight members in 1987. JCCIAC members serve at the pleasure of the County Commission and the City Council. Four members were appointed by the County and four by the City. During the past ten years, the JCCIAC has diligently sought to provide guidance to local repository programs. The Committee, representing both geographic and disciplinary diversity, has met no less than 60 times and has invested over 1,000 hours of largely volunteer time to understand the implications of the Nation's nuclear waste management program to Lincoln County. A listing of Committee membership as of Fall 1995 is provided in Table 2.

The JCCIAC has typically met bi-monthly. Meetings usually were held in the early afternoon or early evening. JCCIAC meetings typically lasted 2 to 3 hours. A consensus approach was used in deciding matters to be recommended to the County Commission and/or City Council.

Table 2
Members of the Joint City/County Joint
Impact Alleviation Committee As Of Fall 1995

- Eve Culverwell, Board of Lincoln County Commissioners
- Marge Gunn, County Emergency Management Coordinator
- Sylvia Pierce, Independent Geologist
- Jenny Logan, Small Business Owner
- Kevin Phillips, Mayor, City of Caliente
- Glenn Van Roekel, Caliente City Manager
- Judy Larson, Coordinator, City of Caliente Repository Program Office
- Carolyn Wilcox, Planning Commission

As the group of County and City residents vested with the responsibility of obtaining a corporate knowledge about DOE's repository program, JCCIAC members periodically

participated in tours of nuclear facilities and in meetings with community residents in areas hosting such facilities. Between 1984 and 1995, various members of the JCCIAC participated in tours of facilities identified in Table 3. All costs for JCCIAC travel were covered by federal repository oversight funding.

Table 3
Nuclear Facilities and/or Locations Toured
By Members of the Joint City/County Impact
Alleviation Committee Between 1984 and 1995

Nevada Test Site/Yucca Mountain

European Spent Fuel Management
- France (Nuclear Energy Agency)
- Switzerland (NGRA)
- Sweden (SKB)
- Germany (DBE)

Three Mile Island Nuclear Power Plant (Harrisburg, PA.)

Waste Isolation Pilot Project (Carlsbad, NM.)

Babcock and Wilcox Nuclear Fuel Plant (Lynchburg, VA.)

DOE Hanford Reservation (Richland, WA.)

Duke Power Nuclear Generating Station (Oconnee, SC.)

DOE Savannah River Site (Aiken, SC.)

Surry Nuclear Power Plant (Surry, WV.)

DOE Oak Ridge Site (Oak Ridge, TN.)

Prairie Island Nuclear Power Plant (Redwing, MN.)

Federal, State and Other Local Government Program Oversight - Various agencies of the federal government, certain Native American Indian Tribes, the State of Nevada and units of local government in Nevada and California are working to implement or influence implementation of the Nuclear Waste Policy Act. Lincoln County and the City of Caliente have regularly reviewed and submitted comments to nuclear waste management related documents published by these entities. In addition, County and City representatives have been active participants in federal, state, tribal and other local government sponsored waste management meetings. County and City involvement in these activities, has been focused upon ensuring that actions by other governmental bodies do not serve to adversely shift unmitigated risk or reduce potential benefits otherwise accruing to the area.

In addition to DOE, federal agencies involved with NWPA implementation include the Nuclear Regulatory Commission, Environmental Protection Agency, Bureau of Land Management, Department of Defense (particularly the Navy), Department of Transportation, Federal Emergency Management Agency, the Nuclear Waste Technical Review Board and the United States Geological Survey. Together with executive agencies of the federal government, both Congress and the federal judicial system regularly influence the direction of the Nation's nuclear waste management program. Among federal meetings, DOE sponsored "Affected Units of Government" (AUG) and "Transportation Coordination Group" (TCG) were important venues for local input.

The State of Nevada, like affected units of local government, receives DOE funding to conduct repository oversight activities. The Nevada Agency for Nuclear Projects, Nuclear Waste Project Office (NWPO) is responsible for conduct of the State's repository oversight activities. NWPO has sponsored numerous technical studies and federal document reviews. The County and City have reviewed and, in many cases provided comments to, NWPO documents. Because NWPO is charged with implementing state policy regarding disposal of radioactive waste in Nevada, and because such policies are driven by the needs of the metropolitan Las Vegas area, the potential for such policies to conflict with County and City objectives is real.

As previously noted, nine other counties have been designated as "affected" by the Secretary of Energy and have therefore conducted DOE funded repository oversight programs. As with the State of Nevada, actions or recommendations by other counties may serve to adversely impact Lincoln County and the City of Caliente. As a consequence, the County and City have found it necessary to closely monitor other county repository oversight activities, including review of documents and participation in meetings. Collectively, the ten affected units of local government have produced dozens of reports concerning DOE's waste management program. Frequent staff level contact with counterpart county representatives has served to minimize, although not eliminate inter-jurisdictional conflicts. Of particular benefit has been County and City participation in quarterly meetings of NWPO, County, and tribal repository program staffs. Although not formally a group, when meeting together these entities have referred to themselves as the State, Tribal, Local Government Coordination Group.

Ten years ago, Lincoln County and the City of Caliente provided DOE with verbal and written comments to the draft environmental assessment of the Yucca Mountain site, Nevada Research and Development Area. The concerns raised by the County and City in February of 1985 remain equally valid today. Chief among issues brought to DOE's attention was the fact that the environmental assessment failed to adequately consider the propensity of the repository program to impact the County and City. During 1985, DOE appeared far more concerned about the potential for a few thousand repository workers to impact Clark County's population of several hundred thousand. Lincoln County and the City of Caliente successfully demonstrated the relative importance of 150 new residents in a County having a few thousand residents as compared to a few thousand workers impacting a community of nearly a million persons. The County and City remain concerned today that DOE will tend to pay more attention to impacts measured in absolute magnitude rather than in relative terms.

More recently, the County and City have provided extensive input to DOE on the scope of the Sitewide EIS for the Nevada Test Site and the Multi-Purpose Canister EIS. As of 1996, responsibility for completion of the MPC EIS has been vested with the U.S. Navy. Each of these NEPA compliance activities address transportation of spent nuclear fuel and/or other high-level radioactive waste. In each case, comments submitted by the County and City reflect concern that the consequences of the environment upon safe transport be considered. In addition, DOE was asked in each case to make a draft of the subsequent EIS implementation plan for each topic available to stakeholders for review and

comment. The County and City also expressed concern in each case over the relationship of decisions involving shipping containers and routing of LLRW as factors influencing decisions about shipments of spent nuclear fuel and other high-level waste. Issues raised in each of these previous cases remain largely relevant to the current repository EIS. In December of 1995, the County and City provided DOE with extensive comments to the scope of the repository EIS.

Impact Assessment - Before Lincoln County and the City of Caliente can effectively strive to "minimize risks and maximize benefits" associated with DOE waste management activities, it is necessary to understand the spatial, temporal and magnitudinal characteristics of potential impacts. While DOE is conducting assessments of repository system effects, such evaluations tend to be more broadly focused than what may be required to comprehend local consequences. Pursuant to authorization contained within the NWPA, as amended, Lincoln County and the City of Caliente have embarked upon a course leading to establishment and execution of independent impact assessment capabilities.

As planned, the County and City intend to develop tools to support local assessment of waste management effects. Data collection, model development and impact projection capabilities in the areas of economics, demographics, local government finance, public health and the environment are being pursued by the County and City. Collectively, the availability of these analytical functions will enable independent assessment of repository system impacts. Results of local impact evaluations will be useful in reviewing DOE

prepared estimates of impact as well as in development of local impact assessment reports. This information will be particularly useful to the County and City in preparing detailed comments to DOE's draft repository EIS.

Mitigation Planning - The NWPA, as amended, and the National Environmental Policy Act (NEPA) require that DOE identify, evaluate and propose effective measures to mitigate waste management system impacts. To ensure that the federal government adequately identifies the full range of plausible mitigation options, and fairly evaluates the feasibility of implementing various alternatives, Lincoln County and the City of Caliente have embarked upon an ambitious enterprise focused at independent identification and evaluation of mitigation choices. County/City initiatives in this regard are aimed at achievement of mitigation by one or more of the following means:

- **avoiding** the impact by not taking certain action or parts of an action;

- **minimizing** impacts by limiting the degree or magnitude of the action and its implementation;

- **rectifying** the impact by repairing, rehabilitating, or restoring the affected environment;

- **reducing or eliminating** the impact over time by preservation and maintenance during the life of the action; and

- **compensating** for the impact by replacing or providing substitute resources or environments.

In principal, all impacts of a seemingly significant degree identified either by DOE or through independent County/City assessment activities should be mitigated. The results of

federal and local impact studies serve as the basis for identification of impacts potentially requiring mitigation. Efforts to mitigate impacts should focus upon those characterized by a high probability of occurrence and high degree of consequence rather than effects less likely to occur and posing lower levels of harm. Based upon preliminary data collection and impact assessment activities, the probability of occurrence/degree of consequence matrices included as Tables 4 through 8 have been prepared by the County and City. This initial information has guided early efforts by the JCCIAC to consider possible options for mitigation of repository system effects.

Table 4. Lincoln County Socioeconomic Impact Characterization Matrix
Site Characterization Phase

Probability of Occurrence	Low	High
High	**increased tax revenues generated** **creation of new government agencies** **opposition from groups who oppose nuclear waste** **Tribal sovereignty issues**	**higher costs for government** **divisiveness within or among counties or county/state conflicts** **legal concerns**
Low	**increased traffic through Lincoln County/longer travel times** **lower air quality and more noise** **increased accident rates** **stigmatization**	**need for infrastructure development** **degradation of Lincoln County highways** **less retiree inmigrants** **a decline in visitation** **difficulty in marketing Lincoln County agricultural products**

Consequence

Table 5. Lincoln County Socioeconomic Impact Characterization Matrix
Transportation System Construction Phase

Probability of Occurrence	Low	High
High	demands for higher community service standards increase in local demand for consumer goods and services increase in local business sales increased tax revenues generated necessity of budget amendments and short-term financing creation of new government agencies opposition from groups who oppose nuclear waste Tribal sovereignty issues unfavorable social consequences change in community cohesion	new direct basic employment new indirect basic employment union employment out of County workers brought in increase in population increased demand for public services need for infrastructure development increase in demand for housing increase in property values higher costs for government divisiveness within or among counties or county/state conflicts agricultural sector disruptions impairment of livestock grazing
Low	reduced demand for public services and community standards increased traffic through Lincoln County/longer travel times lower air quality and more noise increased accident rates stigmatization	new induced non basic employment County residents will leave to pursue job opportunities increase in vacancy rates downturn in the local economy lower demand for goods and services less tax revenues lower operating costs legal concerns degradation of Lincoln County highways the quality of life may diminish less retiree inmigrants a decline in visitation difficulty in marketing Lincoln County agricultural products

Consequence

Table 6. Lincoln County Socioeconomic Impact Characterization Matrix
Transportation Phase

Probability of Occurrence	Low	High
High	**creation of new government agencies** **opposition from groups who oppose nuclear waste** **Tribal sovereignty issues** **increased traffic through Lincoln County/longer travel times** **lower air quality and more noise** **increased accident rates**	**basic employment** **loyment** **ts for government** **al sector disruptions** **razing may be impaired** **or the County to maintain a qualified radiological emergency response team** **ss within or among counties or county/state conflicts** **tion** **of life may diminish** **inmigrants** **n visitation** **difficulty in marketing Lincoln County agricultural products**
Low	**reduced demand for public services and community standards**	**population** **demand for public services** **government revenues** **costs** **sidents will leave to pursue job opportunities** **vacancy rates** **rating costs** **in the local economy** **and for goods and services** **venues generated** **diological exposure to water supplies** **esulting in radiological exposure** **erns** **degradation of Lincoln County highways**

Consequence

Table 7. Lincoln County Socioeconomic Impact Characterization Matrix
Repository Construction Phase

Probability of Occurrence	Low	High
High	increase in population demands for higher community service standards increase in local demand for consumer goods and services increase in local business sales increased demand for public services need for infrastructure development increase in demand for housing increase in property values increased tax revenues generated higher costs for government necessity of budget amendments and short-term financing creation of new government agencies opposition from groups who oppose nuclear waste Tribal sovereignty issues unfavorable social consequences change in community cohesion	new direct basic employment new indirect basic employment union employment out of County workers brought in divisiveness within counties or county/state conflicts agricultural sector disruptions impairment of livestock grazing
Low	reduced demand for public services and community standards increased traffic through Lincoln County/longer travel times lower air quality and more noise increased accident rates stigmatization	new induced non basic employment County residents will leave to pursue job opportunities increase in vacancy rates downturn in the local economy lower demand for goods and services less tax revenues lower operating costs legal concerns degradation of Lincoln County highways the quality of life may diminish less retiree inmigrants a decline in visitation difficulty in marketing Lincoln County agricultural products

Consequence

Table 8. Lincoln County Socioeconomic Impact Characterization Matrix
Repository Operations Phase

Probability of Occurrence	Low	High
High	higher costs for government creation of new government agencies opposition from groups who oppose nuclear waste Tribal sovereignty issues increased traffic through Lincoln County/longer travel times lower air quality and more noise increased accident rates	basic employment loyment ss within or among counties or county/state conflicts tion of life may diminish inmigrants n visitation difficulty in marketing Lincoln County agricultural products
Low	reduced demand for public services and community standards increase in population increased demand for public services increase in government revenues	sidents will leave to pursue job opportunities vacancy rates rating costs in the local economy and for goods and services venues generated diological exposure to water supplies esulting in radiological exposure legal concerns

Consequence

Public Involvement - The County/City joint repository oversight program utilizes a combination of meetings, newsletters, and library collections to seek informed involvement of area residents. All bi-monthly meetings of the Joint City/County Impact Alleviation Committee are open to the public. The County, City and their JCCIAC have also organized periodic townhall meetings involving DOE, State of Nevada, university, and contractor personnel. Such meetings afford area residents opportunities to ask questions of and receive information from professionals involved in the waste management program. In addition, County and City staff have provided regular updates on repository program activities at meetings of the Board of Lincoln County Commissioners and the Caliente City Council.

Also, the JCCIAC has overseen production of *The Yucca Report*, a quarterly newsletter intended to provide information on federal, state and local aspects of the radioactive waste management program. Table 9 lists topics included in past issues of the newsletter.

WHAT ACTIVITIES AND TASKS COMPRISE THE IMPACT ASSESSMENT AND ALLEVIATION PLANNING SYSTEM?

Due to the constantly changing nature of the DOE nuclear waste management program it has been difficult to establish and maintain a framework for assessing and planning for the mitigation of related impacts. During the past ten years, DOE's waste management mission has been restructured numerous times resulting in revisions to timelines, reconfiguration of waste management system elements, and restatement of anticipated effects upon local areas. The ever-present uncertainty associated with the direction and outcome of DOE's waste management program has required Lincoln County and the City of Caliente to embrace an impact assessment and alleviation planning system which is itself flexible. The constantly changing nature of the DOE program has also resulted in the County and City having to emphasize and de-emphasize various facets of its

Table 9
Topics Included In Issues
Of The Yucca Report

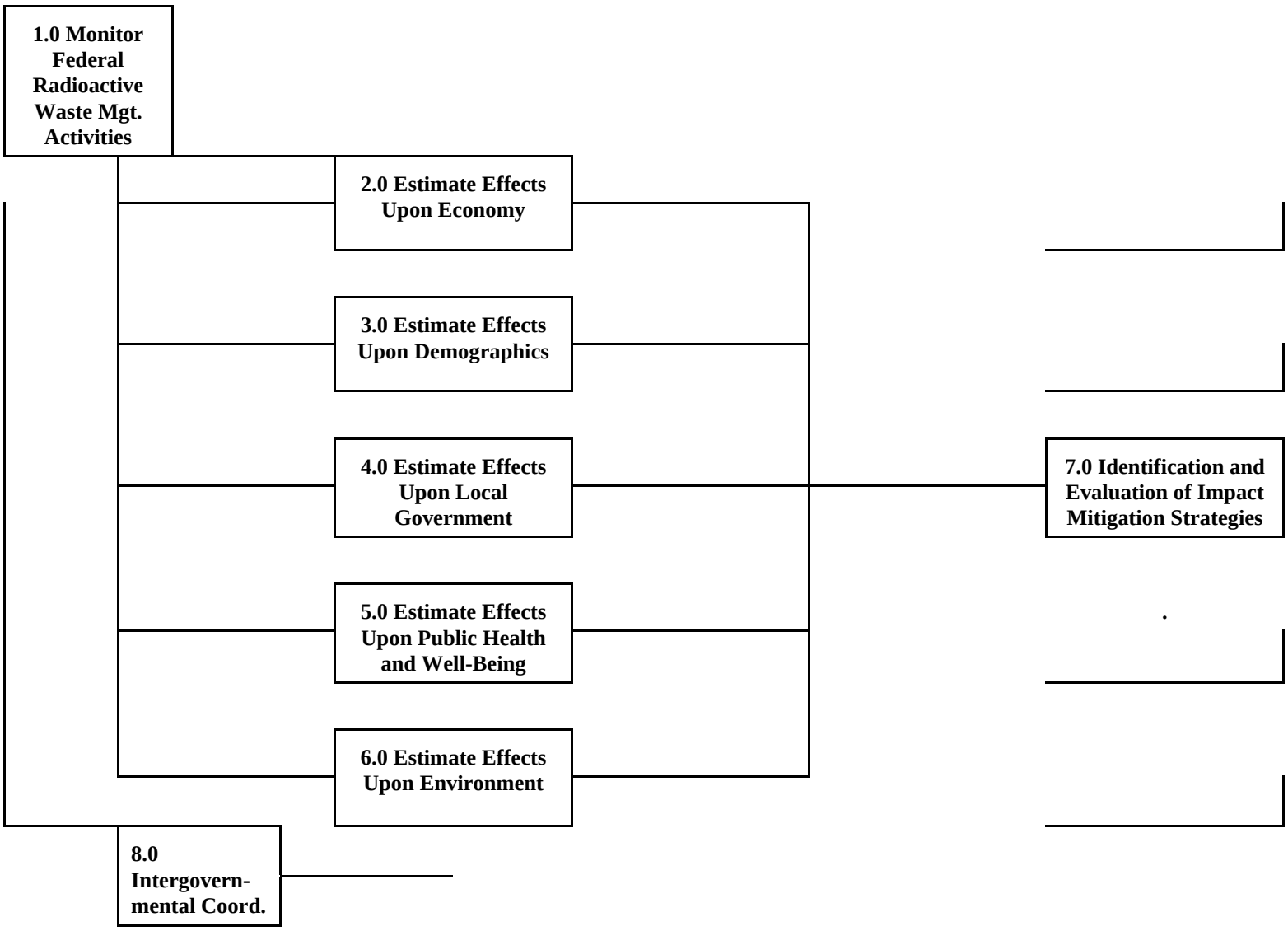
Issue Date	Topics Included
May 1992	A Little History Where Does The Money Come From? What Has This Meant In Terms of Money for Lincoln County? What Have We Done With All That Money? High-Level Waste: What Is It and Where Does It Come From? How Much Waste Is There? Where Is it Stored Now? Why Geologic Disposal? Tough Standards? Why Yucca Mountain? What Will Scientists Study?
January 1993	Oral Histories Suggested Reading And We Have Videos Residents to Be Surveyed How Are Radiation and Nuclear Waste Related? Community Wastewater System Baseline Assessment Rail Studies Continue
September 1993	Federal Interim Storage Speaker's Bureau Compensation Offered New Committee Members Appointed How Ready Are We? Business Opportunities Available Lincoln County's GIS
February 1994	School District Reps Tour Yucca Mountain and Nevada Test Site Where We've Been...Where We're Going Impact Assessment Emphasized Human Experimentation Hot Line Formal Education Agreement Signed Oak Ridge National Lab Toured Potential for Tourism Impacts Found Computer-Based Nuclear Waste Management Education Capability for PVHS Lincoln County Has Improved Fiscally but Faces Uncertain Future
May 1994	Radiation Center to Be Based in Las Vegas Nevada Test Site Proposed for Solar Energy Facility

	Where Can You Find Additional Information about Transporting Radioactive Materials? Who Regulates the Transportation of Radioactive Materials? DOE to Consider Nevada Test Site for Management of Spent Fuel DOE Loans Rural Nevada Counties Lifesaving Equipment Clinton Seeks Shortcut for DOE Dump Yucca Mountain Project... Heats up the Rocks Results of State Poll Revealed Public Opinion Polling and the Yucca Mountain Controversy Is it Time to Raise the Rent in Nevada?
September 1994	DOE Declassifies More Documents Tour of Minnesota's Prairie Island Nuclear Power Plant Tunnel Boring Machine Offers Advanced Technology DOE Proposes to Accelerate Yucca Mountain Studies
June 1995	Mayor Testifies Before U.S. Senate Energy and Natural Resources Committee DOE's Work Checked By Other Experts Congress Considering Numerous Bills Radiation: A Review How Much Radiation Do People Living Along Transport Routes Receive? What Measures Ensure Safe Transportation of High Level Nuclear Waste? The Cask What Will A Geologic Repository Look Like? If Yucca Mountain is Found Suitable Interested in Learning More? Shipping Routes Nuclear Waste Strategy Coalition

independent oversight and impact assessment initiatives in response to federal activities.

Figure 1 illustrates the general framework which captures the various elements of the County/City oversight program. Activities can be defined as those which involve monitoring (Activity 1.0), impact assessment (Activities 2.0,3.0,4.0,5.0,6.0), mitigation planning (Activity 7.0) and

Figure 1. Lincoln County Nuclear Waste Management Program
Impact Assessment and Alleviation Planning System

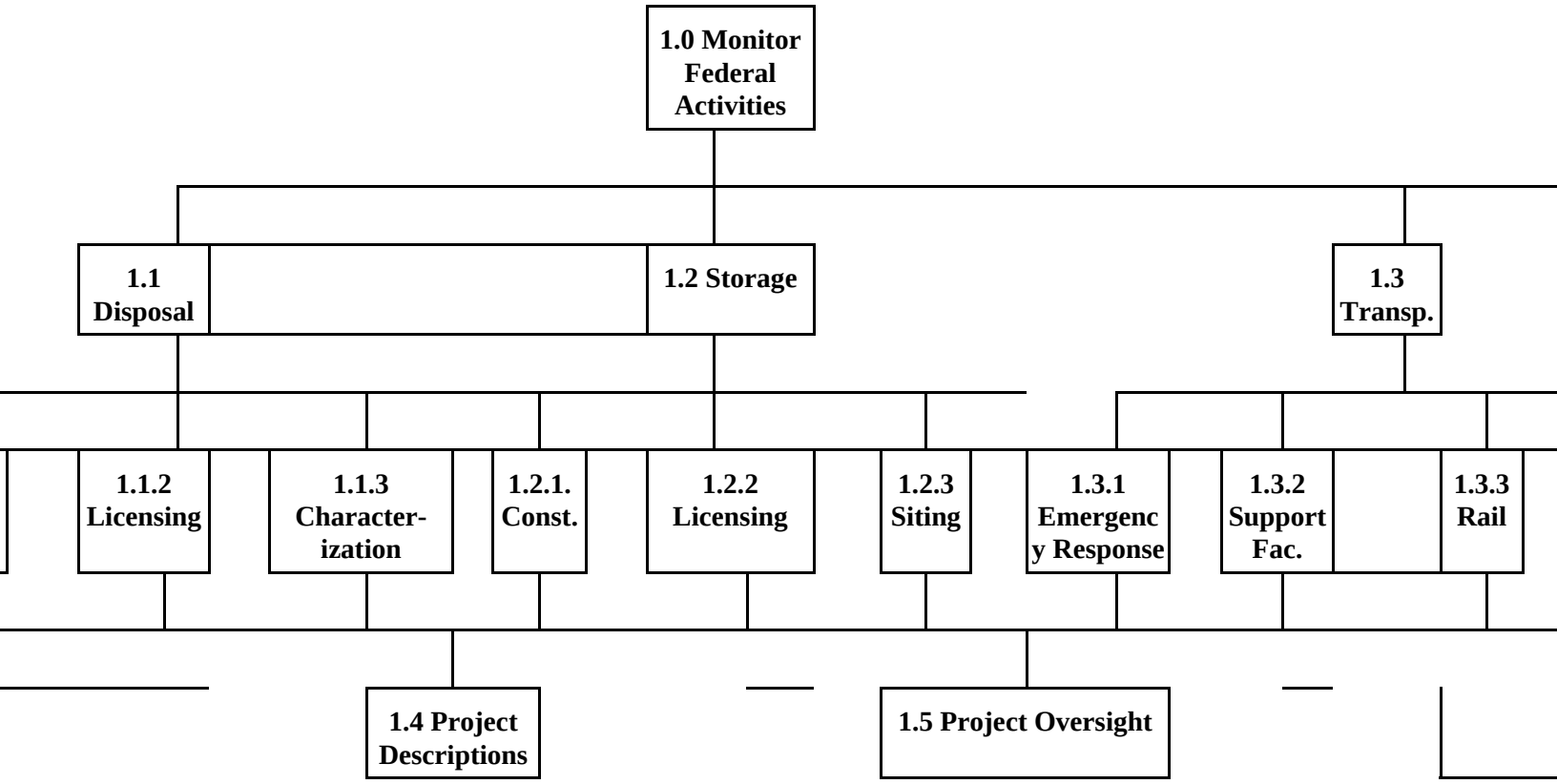

1.0 Monitor Federal Radioactive Waste Mgt. Activities
2.0 Estimate Effects Upon Economy
3.0 Estimate Effects Upon Demographics
4.0 Estimate Effects Upon Local Government
5.0 Estimate Effects Upon Public Health and Well-Being
6.0 Estimate Effects Upon Environment
7.0 Identification and Evaluation of Impact Mitigation Strategies
8.0 Intergovern-mental Coord.

coordination with others (Activity 8.0). Within impact assessment activities are included estimation of economic (2.0), demographic (3.0), local government (4.0), public health and well-being (5.0), and environmental (6.0) effects. A brief description of each activity and related tasks follows.

Activity 1.0 - Monitor Federal Radioactive Waste Management Activities - One of the most important and foundational aspects of the County/City repository oversight program is the monitoring of federal waste management activities. It would not be possible to establish and maintain a local impact assessment and alleviation planning capability absent a current knowledge of federal program initiatives. Because the local impact assessment is designed to evaluate the effects of the federal waste management program, it is imperative that the federal program be understood. The ever-changing nature of the federal program requires constant local vigilance.

As shown in Figure 2, monitoring of the federal waste management program must be focused at disposal (1.1), storage (1.2), and transportation (1.3), all system elements which might result in effects to the County and City. For both disposal and storage functions, construction (1.1.1, 1.2.1) and licensing (1.1.2, 1.2.2) activities must be watched. Characterization of the repository site (1.1.3) and siting of interim storage facilities (1.2.3) are also important areas for County and City attention. Within the transportation element, important activities requiring oversight include emergency response (1.3.1), siting and development of support facilities (1.3.2), and rail and highway related modal choices and routing considerations (1.3.3, 1.3.4). For each of these components of the waste management system, updated descriptions of the project (1.4) and provision of oversight to federal activities (1.5) is needed.

Figure 2
Activity 1.0 - Monitor Federal Radioactive Waste Management Activities



Entities to Be Monitored

Congress	**DOE**
NRC	**DOT**
EPA	**NWTRB**
CNWRA	**NARUC**
NWSC NEI	

In addition to the DOE, entities whose waste management activities must be monitored for each of the task areas described above and on Figure 2 include the Nuclear Regulatory Commission (NRC), Environmental Protection Agency (EPA), Center for Nuclear Waste Regulatory Analysis (CNWRA), Department of Transportation (DOT), Nuclear Waste Technical Review Board (NWTRB), National Association of Regulatory Utility Commissioners (NARUC), and the Nuclear Energy Institute (NEI). Each of these entities plays a key role in either being responsible for implementation of or directly influencing at a national level, implementation of the Nuclear Waste Policy Act, as amended.

Activity 2.0 - Estimate Effects Upon Local Economy - As a project characterized by health risks, DOE's waste management activities have the potential to result in stigma induced effects upon the economies of Lincoln County and the City of Caliente. In addition, as a multi-billion public works endeavor which will employ hundreds within southern Nevada, DOE's waste management activities are likely to induce direct and indirect employment and income effects upon local economies. Because the economies of the County and City are narrowly based upon services, government, and agriculture, it is imperative that prospective changes in local economic conditions be known.

The economies of Lincoln County and the City of Caliente are heavily dependent upon government activities, particularly at the federal level. The Bureau of Economic Analysis estimates that services account for 49.49 percent of total personal incomes earned in Lincoln County during 1990. This compares to just 7.58 percent in 1970. Nationally, services accounted for just 17.95 percent of total personal income during 1990 (CED, 1994). The significant difference between the importance of services nationally and in Lincoln County is likely attributable to contractor activities at the Groom Lake Operating Area (U.S. Air Force).

After services, federal, state, and local government employment represented the next most significant contributors to total personal income in Lincoln County (15 percent) during 1990 (CED, 1994). Waste management system activities by DOE within Lincoln County and/or the City of Caliente (ie. rail to truck transfer, heavy-haul transport) may produce economic consequences for the area. Activity 2.0 is intended to provide the County and City with capabilities to estimate and monitor waste management system induced changes in local economic conditions.

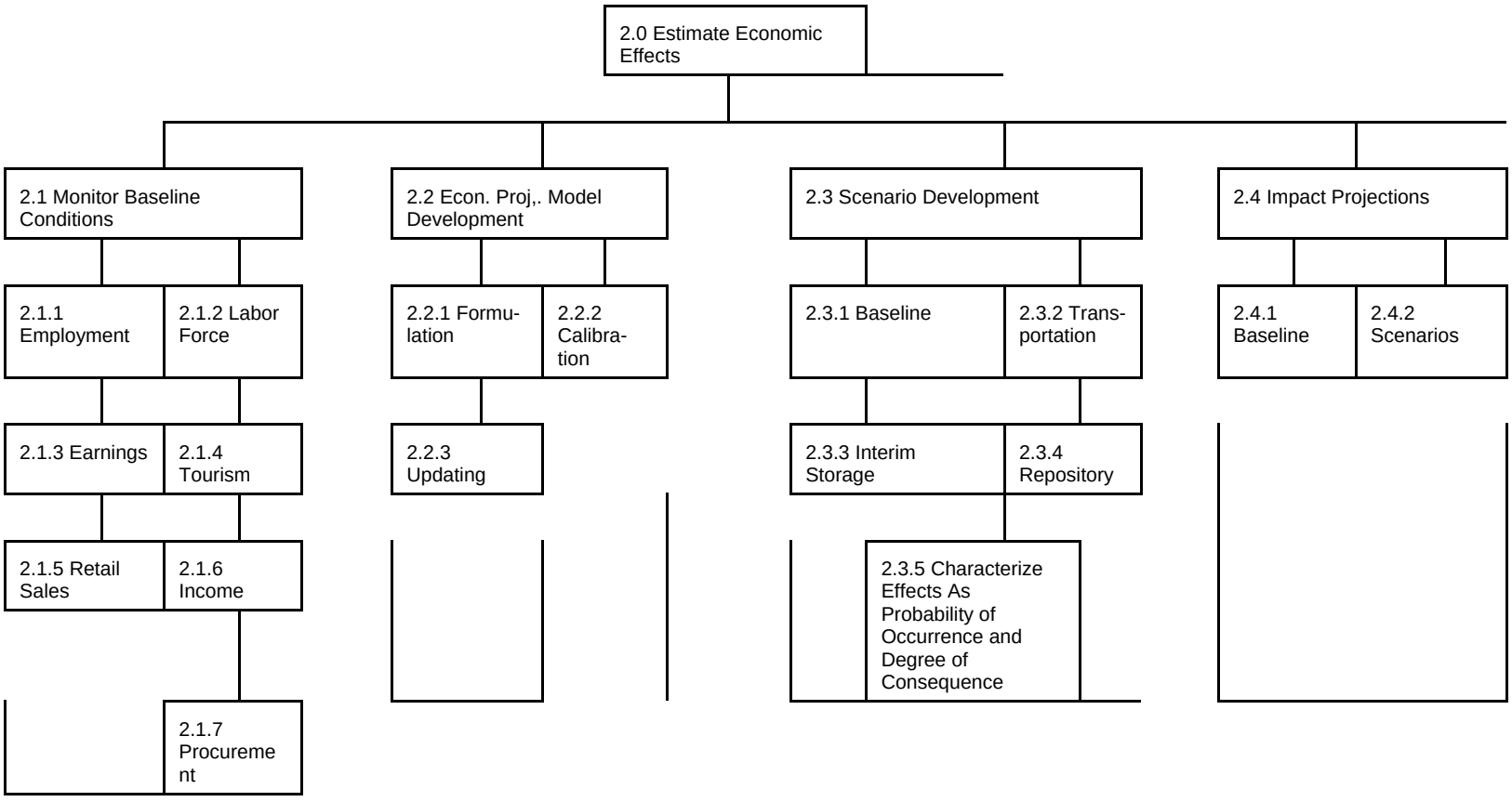
As shown in Figure 3, the process for estimating economic effects comprises four distinct, yet related task areas. Those include: monitoring baseline economic conditions (2.1); development of an economic projection model (2.2); development of impact scenarios (2.3); and projection of economic impacts (2.4). A brief description of each task area follows.

<u>Monitoring Baseline Economic Conditions</u> - In order to evaluate the consequences of waste management activities upon the economies of Lincoln County and the City of Caliente, one must understand the characteristics of the economy prior to commencement of such activities. Such baseline conditions are subtracted from estimated "with project" impacts (derived through Task 2.4) to derive

economic effects. As shown in Figure 3, monitoring of baseline economic conditions considers "without project" characteristics of area employment, labor force, earnings, tourism, retail sales, income, and procurement.

<u>Development Of An Economic Projection Model</u> - The economy of Lincoln County can be generally described as a set of interconnected transactions induced by dollars entering and eventually leaving

Figure 3
Activity 2.0 - Estimate Effects Upon the Local Economy



the area. DOE waste management activities may serve to introduce or removed from dollars from the Lincoln County economy. An economic projection model which is capable of accounting for the flow of dollars through the local economy is needed in order to quantify the impacts of federal actions upon the area. As shown in Figure 3, development of an economic projection model (2.2) involves model formulation, calibration, and updating. Formulation
involves a mathematical specification of the interrelatedness of various economic sectors within the local economy. In formulating a model for Lincoln County, it is imperative that the tool be widely applicable to various projects or actions which might stimulate a gain or loss of economic activity (ie. new mine, expansion of Caliente Youth Center, closing of prison honor camp).

Calibration (2.2.2) involves adjustments to the model so that it is capable of accurately replicating existing economic conditions and therefore able to predict future characteristics of the economy. If the model can not accurately replicate existing conditions, it can not be counted upon to provide useful predictions of the future. Finally, the projection model must be updated (2.2.3) as baseline economic conditions change.

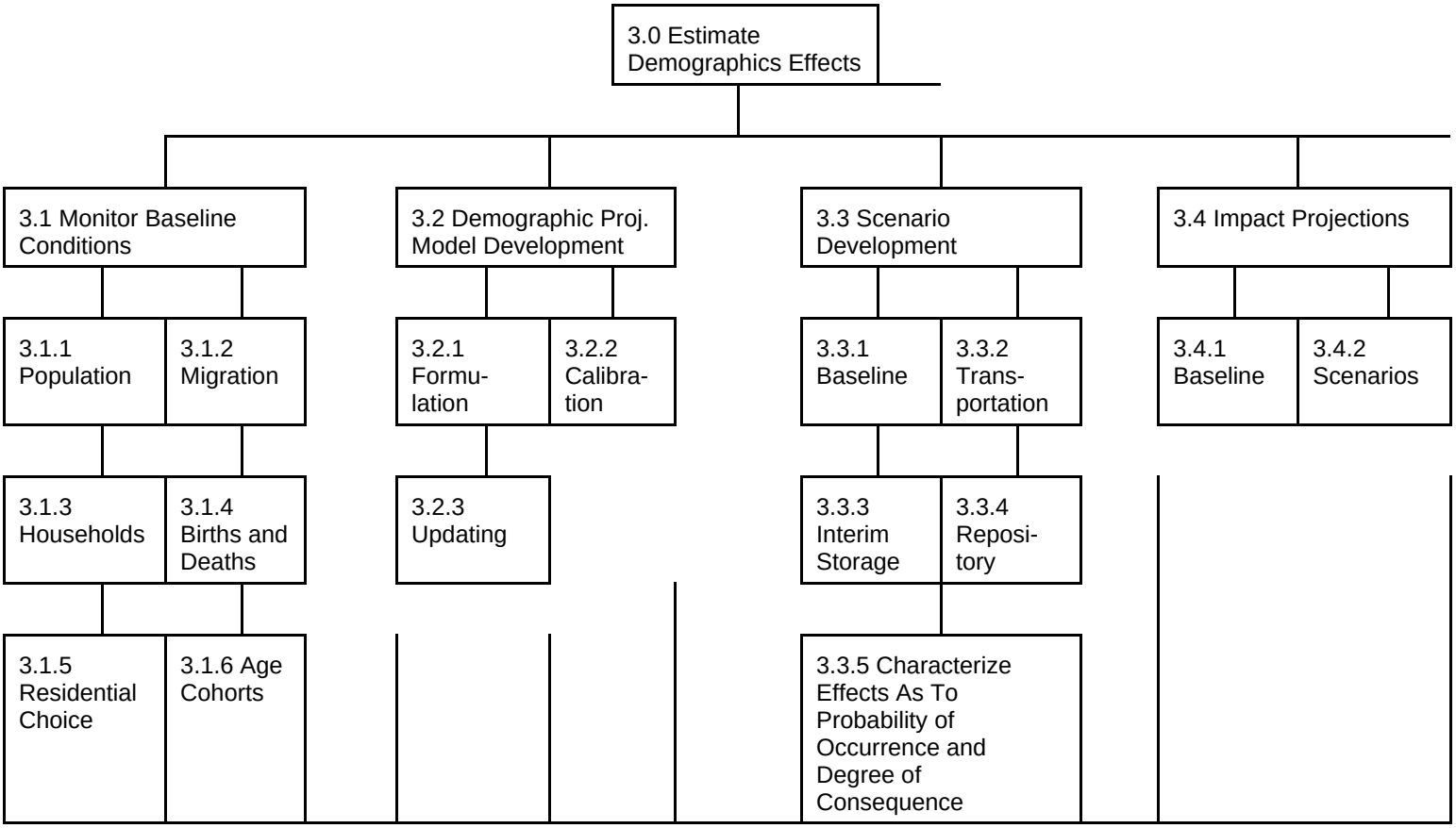
Development of Impact Scenarios - Any attempt to accurately estimate the economic consequences of a project or event upon the economy of Lincoln County is in part dependent upon ones's ability to define the cause of change. Indeed, uncertainty surrounding the nature of projects or events produces a need to develop impact scenarios which address the range of possibilities. With regard to DOE's waste management initiatives, development of impact scenarios should cover possible baseline conditions (2.3.1) as well as transportation (2.3.2), interim storage (2.3.3), and repository (2.3.4) programmatic phases. To aide in devising scenarios, the County can undertake an intermediate step to qualitatively characterize effects as to their probability of occurrence and degree of consequence (2.3.5). Effects thought to have a high probability of occurrence and high degree of consequence might be considered for scenario development and quantitative assessment prior to those having a low probability of occurrence and low degree of consequence.

Impact Projections - Application of the economic projection model to baseline or "without project" conditions (2.4.1) and impact scenarios (2.4.2) would produce estimates of economic effects. Projections of effects can the be used to define the need and appropriate measures to mitigate waste management system consequences.

Activity 3.0 - Estimate Effects Upon Local Demographics - Like economic consequences, the County and City must consider the potential for DOE waste management activities to result in changes to area population characteristics. Such changes can have immediate implications upon need for and affordability of community services and housing. The approach to estimating demographic change is very similar to that described previously for economic impacts. Population change can result in economic consequences, as can changes in employment and income opportunities effect area

demographics. Major tasks associated with the estimation of demographic effects include: monitoring baseline conditions (3.1); development of a demographic projection model (3.2); development of impact scenarios (3.3); and projection of demographic impacts (3.4) (see Figure 4). A brief description of the baseline monitoring task area

Figure 4
Activity 3.0 - Estimate Effects Upon Local Demographics

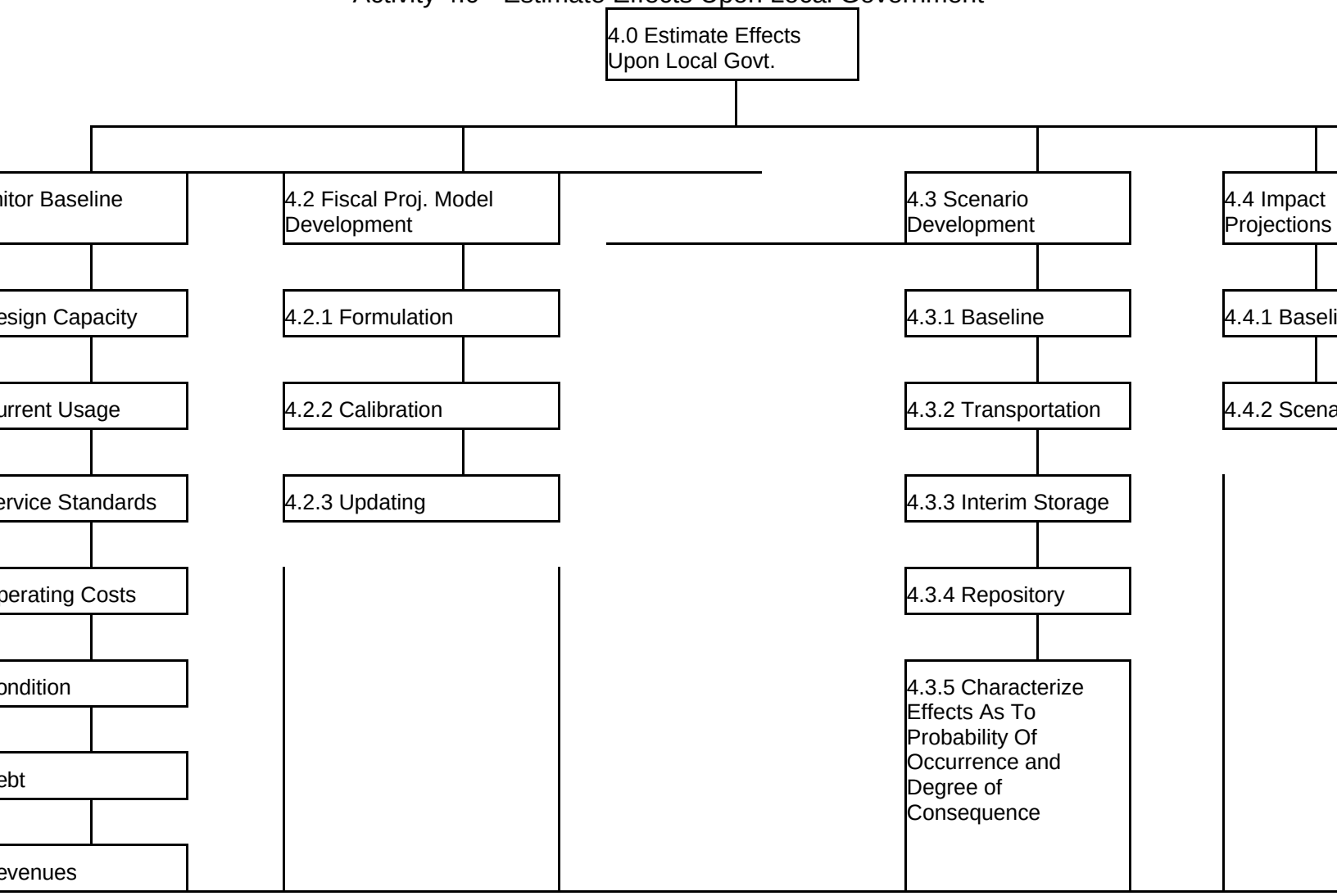


follows. The approach to other tasks involved in estimating demographic effects is essentially the same as for economic effects.

Monitoring of Baseline Conditions - In order to evaluate the consequences of waste management activities upon demographic or population characteristics of Lincoln County and the City of Caliente, one must understand the attributes of the local population prior to commencement of such activities. Such baseline conditions are subtracted from estimated "with project" impacts (derived through Task 3.4) to derive demographic effects. As shown in Figure 4, monitoring of baseline demographic factors would include "without project" characteristics of area population, migration, households, births and deaths, residential choice, and age cohorts.

Activity 4.0 - Estimate Effects Upon Local Government - DOE waste management activities can influence both the demand for and cost of local government services and facilities. such effects can result directly from project activities (ie. emergency response) or indirectly as a result of project induced changes in employment, income, and population. As illustrated in Figure 5, estimating effects to local government involves monitoring baseline conditions (4.1), development of a fiscal projection model (4.2), development of impact

Figure 5
Activity 4.0 - Estimate Effects Upon Local Government



Functions to be Monitored

Schools	Police	Fire	Public TV
Sewer	Electric	Water	Airports
Recreation	Emerg. Mgt.	Roads	Animal Cntrl.
Solid Waste	Admin.	Libraries	

scenarios (4.3), and projection of impacts (4.4).

While model development, scenario development, and impact projection tasks are similar to economic and demographic activities, the focus of baseline conditions to be monitored is unique. Among factors of local government services and facilities to be considered are included

facility design capacity (4.1.1), facility or service demand (4.1.2), quality of service demanded or provided (4.1.3), costs of operating facilities and providing services (4.1.4), condition of facilities (4.1.5), obligated debt and debt service for facilities (4.1.6), and revenues derived from facilities and services (4.1.7). The types of facilities and services for which these baseline data would be collected include schools, sewer. water, recreation, police, fire, electric, emergency management, roads, solid waste, administrative services, libraries, public television, airports, and animal control.

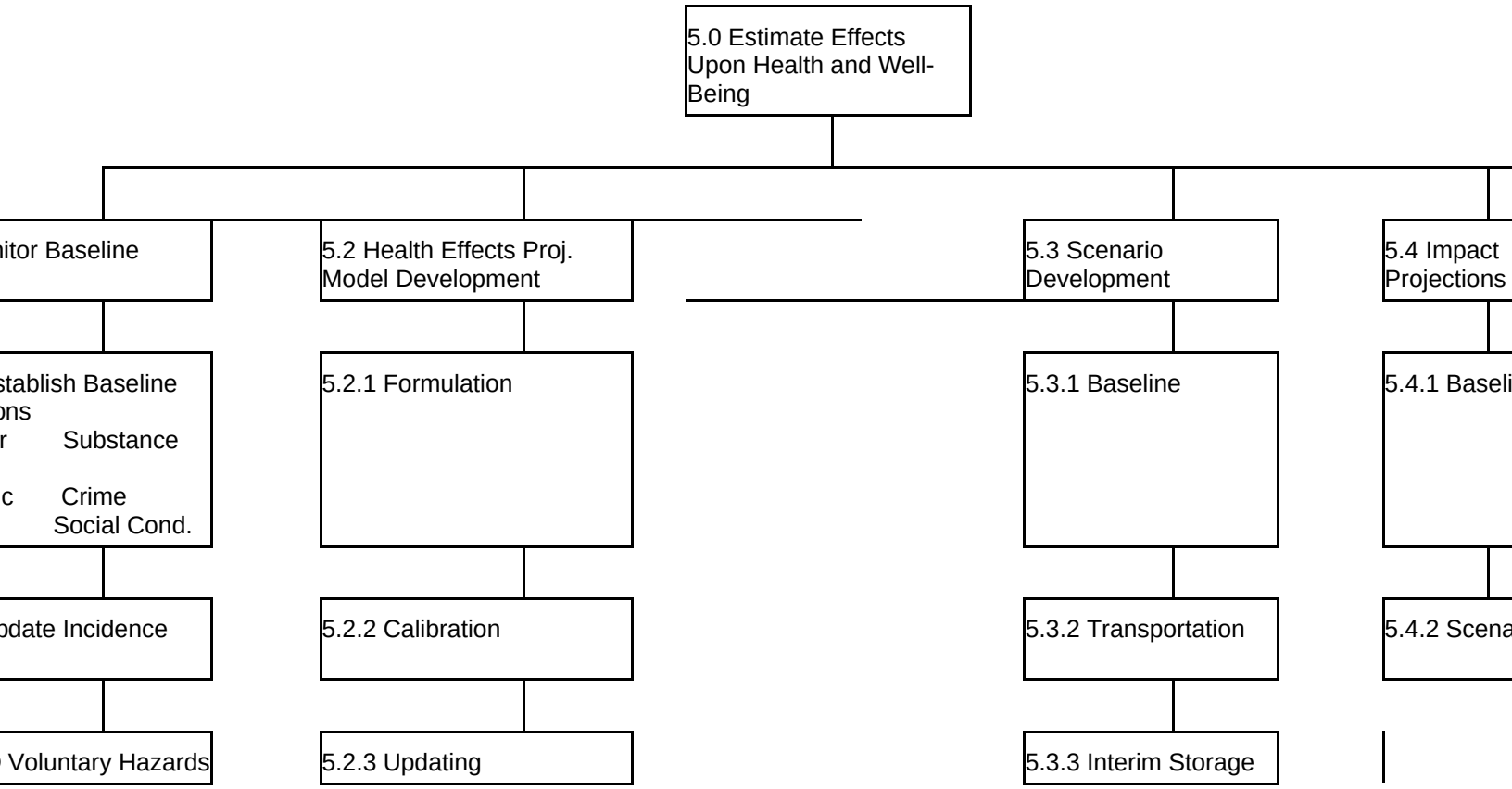
Activity 5.0 - Estimate Effects Upon Health and Well-Being - Quality of life within Lincoln County is to a large part defined by characteristics of public health, safety and well-being. Public health can be influenced by physiological, environmental, medical service, and psychological factors. Public safety may be characterized by resident protection from crime, fire, and disasters of natural and human origin. Well-being can be considered resident satisfaction with his/her quality of life. Factors influencing quality of life can include economic, environmental, social, psychological, and physiological. As with any industrial activity, development and operation by DOE of waste management facilities within Lincoln County may alter existing conditions contributing to the areas quality of life. Resident health might be effected by perceived risk induced stress. Alternatively, employment opportunities may provide economic security to certain residents thereby enhancing their quality of life.

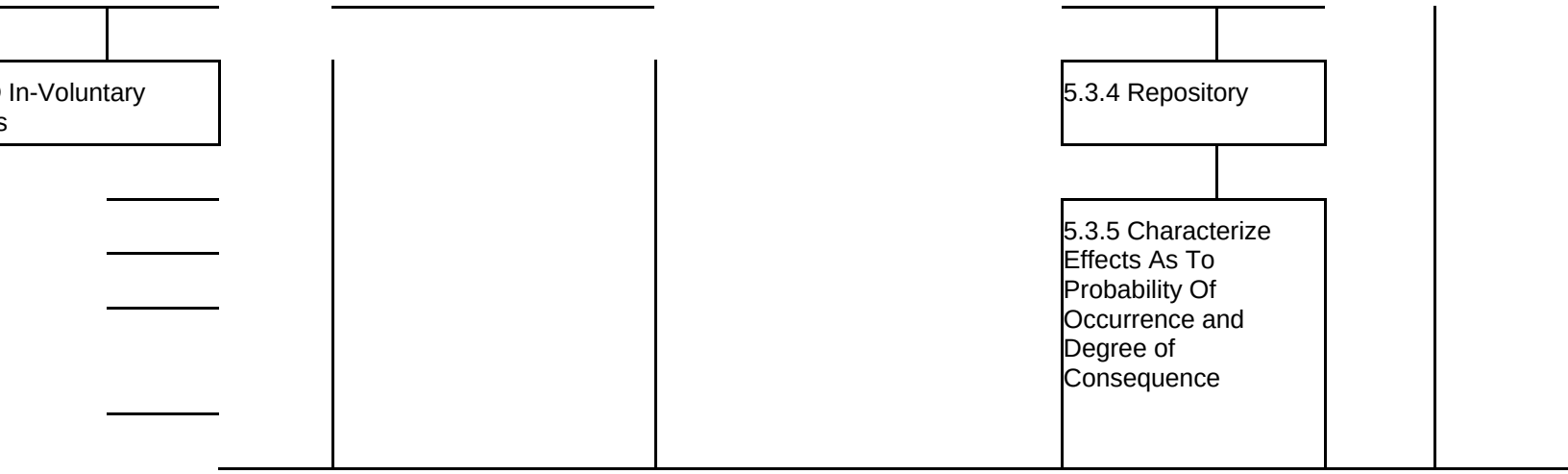
As depicted in Figure 6, Acidity 5.0 seeks to monitor and evaluate waste management system induced effects upon health and well-being. Tasks involved in the activity include monitoring baseline conditions (5.1), development of a health effects projection model (5.2), development of impact scenarios (5.3), and projection of impacts or effects (5.4). The process of health effects impact model development and use is similar to economic, demographic, and local government activities. The baseline data to be collected does differ for this activity and is summarized in the following section.

Establishment of baseline conditions (5.1.1) should include collection of data descriptive of incidence of cancer of various types, genetic disorders, stress and stress induced disease, substance abuse, crimes of various types, and social conditions (ie.

divorce rate, spousal and child abuse). These incidence files or the database should be regularly updated to enable detection of variances from established trends (5.1.2). Characterization of area hazards as to their voluntary (5.1.3) and in-voluntary (5.1.4) nature should be done to establish a baseline assessment of resident risk-taking. For example, resident exposure risks to chemical hazards on trucks and trains passing through Lincoln County is an in-voluntary risk for residents. Resident participation in smoking could be considered a voluntary risk. Once established, baseline health and well-being conditions can then be compared to "with DOE project" conditions to ascertain the degree of

Figure 6
Activity 5.0 - Estimate Effects Upon Health and Well-Being




In-Voluntary
s
5.3.4 Repository
5.3.5 Characterize Effects As To Probability Of Occurrence and Degree of Consequence

effect attributable to federal waste management activities.

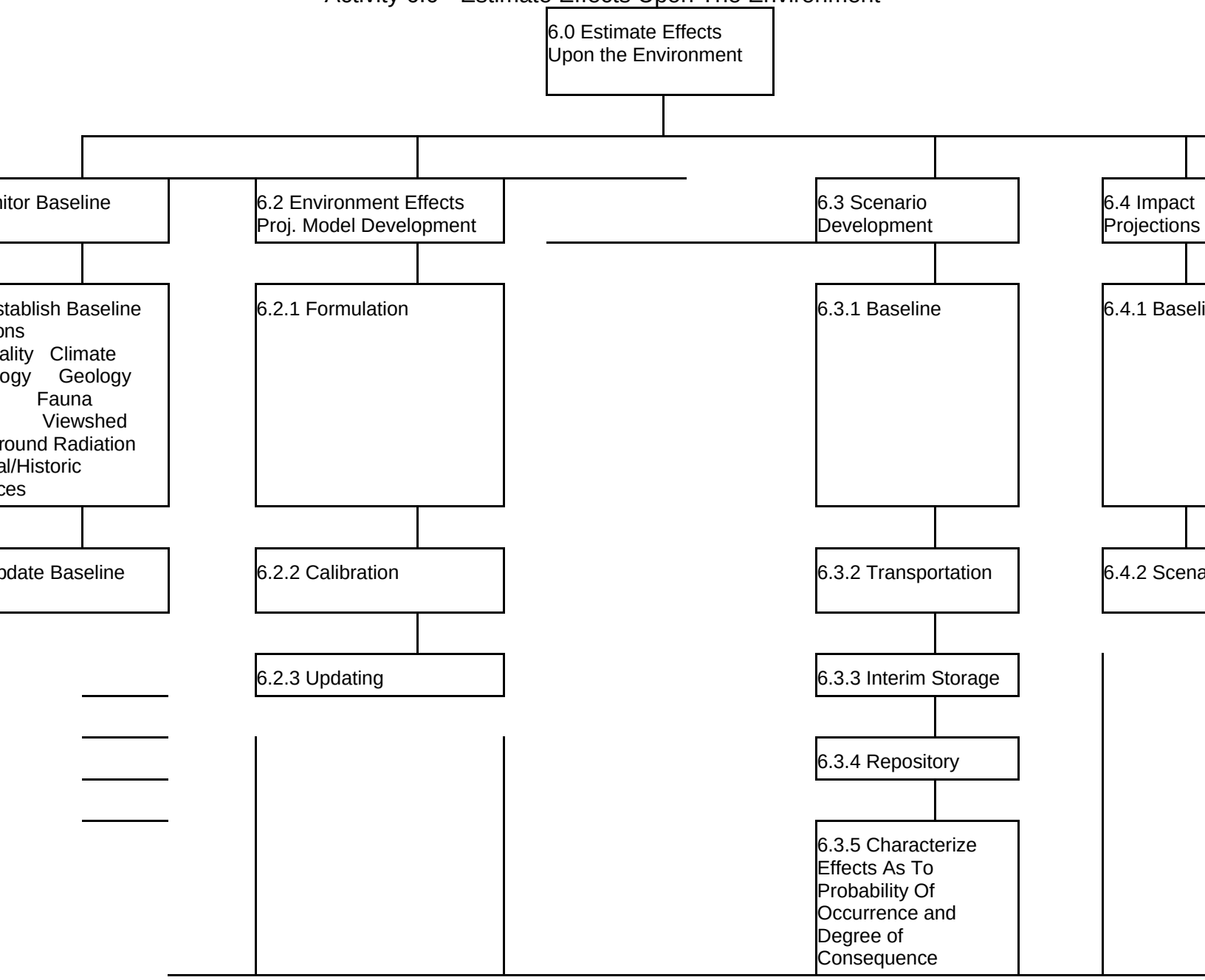
Activity 6.0 - Estimate Effects Upon The Environment - DOE's waste management activities have the potential for imposing change upon the environment of Lincoln County. The County must therefore have the capability of assessing such environmental modification. Like other components of the impact assessment system, evaluation of environmental impacts requires monitoring baseline conditions (6.1), development of models for projecting environmental change (6.2), developing impact scenarios (6.3), and projection of environmental impacts (6.4). (See Figure 7)

Baseline environmental conditions (6.1.1) for which pre-project monitoring data might be collected include air quality, climate, hydrology, geology, flora, fauna, noise, viewshed characteristics, background radiation, and cultural/historic resources. As shown in Figure 7, data descriptive of these conditions should be updated on a regular basis (6.1.2). The availability of an adequate baseline information base will enable comparison of estimated "with-project" conditions to those pre-existing. Differences may be attributable to the project. For example, existing noise levels in Caliente may be altered due to additional train or truck traffic moving through the community.

Activity 7.0 - Identification and Evaluation of Impact Mitigation Strategies - A local ability to quantify potential

waste management system impacts is of little consequence if such information is not used as the basis for identification and evaluation of strategies to mitigate

Figure 7
Activity 6.0 - Estimate Effects Upon The Environment



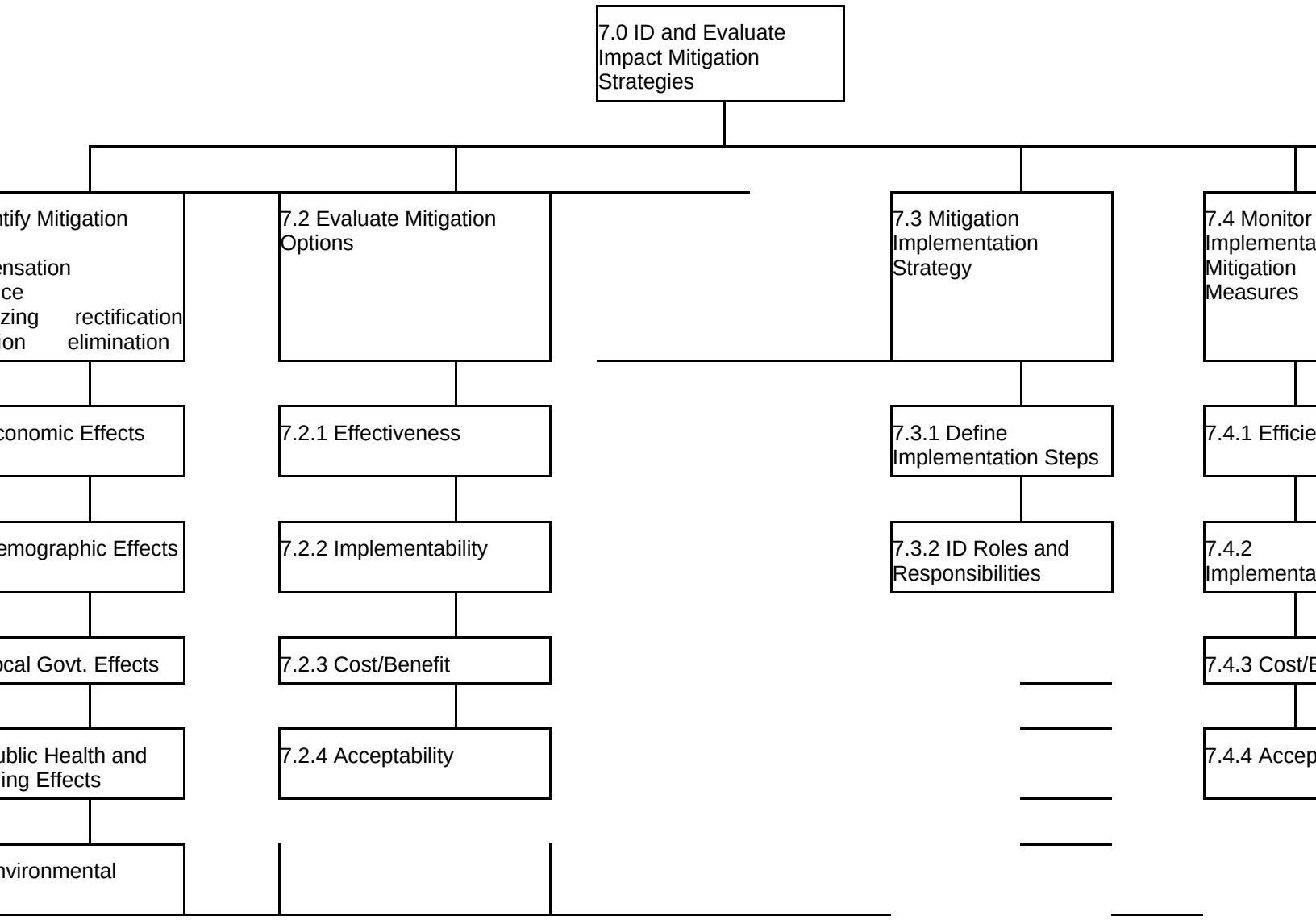
effects. Indeed, the purpose of independent impact assessment should be to ensure that potential waste management system effects are known and mitigated to the degree practical. As illustrated in Figure 8, the process of identifying and evaluating mitigation strategies involves four distinct, yet interrelated tasks. Following estimation of effects and determination of those requiring mitigation, an initial task involves the identification of possible mitigation options (7.1). Types of options considered should include elimination, avoidance, minimization, rectification, reduction, and compensation. Compensation should be considered as the last resort for mitigating effects for which other options are not possible. The identification of possible mitigation options should be focused at mitigating economic, demographic, local government, public health and well-being, and environmental effects.

Having identified various mitigation options, the next task involves evaluation (7.2). Each possible mitigation measure should be considered for its effectiveness in mitigating the effect, implementability, cost/benefit, and acceptability to area residents. Based upon this evaluation, mitigation measures can be selected for implementation. A strategy for successfully implementing each selected mitigation measure should then be developed (7.3). A complete implementation strategy should address implementations steps as well as identify and assign roles and responsibilities for implementation.

Following implementation of selected mitigation measures, a process for monitoring and evaluating mitigation success

should be undertaken. The mitigation monitoring process (7.4) might be best developed as a component of the mitigation implementation strategy. Factors to

Figure 8
Activity 7.0 - Identification and Evaluation of Impact Mitigation Strategies

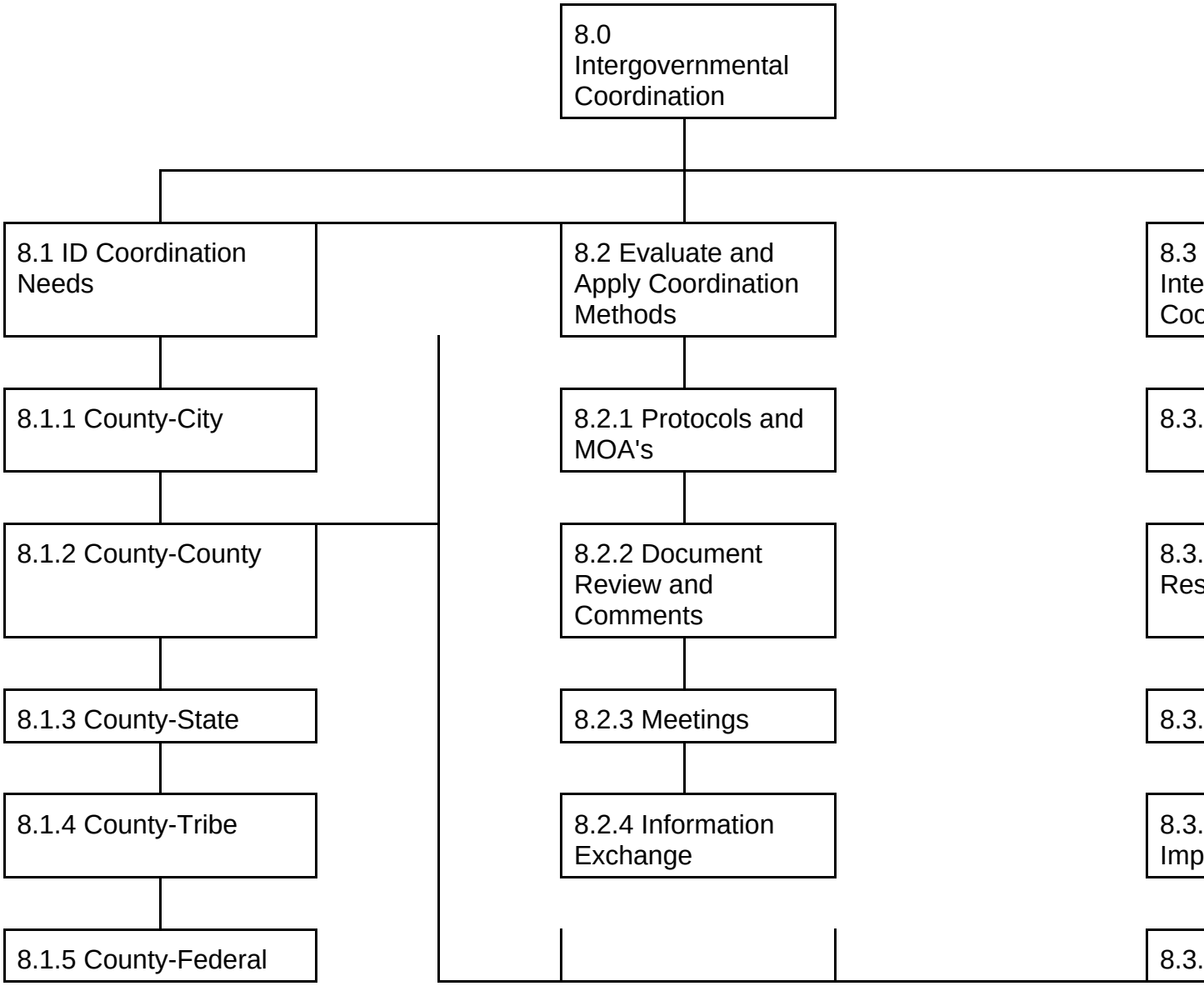


be considered in monitoring mitigation measures should include efficiency, implementability, cost/benefit, and acceptability. Where mitigation measures are shown to not be performing to anticipated standards, modification of selected strategies should be considered.

Activity 8.0 - Intergovernmental Coordination - This activity is essential to understanding federal, state, and other local government actions which might influence waste management activities within Lincoln County. Because of the constantly changing nature of the federal waste management program, County vigilance is needed to ensure up to date knowledge about programmatic direction and schedules. Equally important is the County's ability to influence waste management program direction and schedule (through verbal and written comments), as such serves the purposes of the County.

The intergovernmental coordination activity involves three tasks: identification of coordination needs (8.1); evaluation and application of coordination methods (8.2); and monitoring of coordination effectiveness (8.3) (see Figure 9). Among intergovernmental coordination needs are interactions between Lincoln County and the City of Caliente; Lincoln County and other affected counties in Nevada and California; Lincoln County and the State of Nevada; Lincoln County and various Native American Indian tribes; and Lincoln County and various agencies of the federal government. In response to each need for coordination, the County will evaluate and apply relevant methods for providing effective input. Methods to be considered

Figure 9
Activity 8.0 Intergovernmental Coordination



include among other possibilities, protocols and MOA's; document review and commenting; attendance and participation at meetings; and exchange of information. Lincoln County will apply methods as appropriate on a case by case basis. In some cases, multiple approaches to coordination may be applied (ie. MOA leading to protocols, leading to review of documents and provision of written comments).

The importance of the intergovernmental coordination activity suggests the need for monitoring of its implementation to ensure its proper functioning. Monitoring should consider effectiveness of coordinative efforts; responsiveness of those coordinated with; cost and benefit of coordinative actions; implementability of coordinative measures; and the acceptability of adopted coordination activities. By applying these factors in considering coordination activities it should be possible to establish the utility of each approach and to determine the need for adjustments in the coordination process.

WHAT WORK HAS BEEN COMPLETED TO SUPPORT DEVELOPMENT AND APPLICATION OF THE SYSTEM?

Since 1984, Lincoln County and the City of Caliente have sought to undertake an independent impact assessment and alleviation planning program which would enable effective local initiatives to seek minimization of waste management system risks and maximization of system economic benefits. During this period, County and City leaders have attempted to focus federal oversight funded initiatives in those areas of seemingly greatest importance to area residents. The general impact assessment and alleviation planning framework described in the previous section reflects the evolving thinking of County and City leaders. Certain components of the system have been emphasized through supporting research, model development, and implementation while others have been given only modest attention.

In excess of 45 research studies have been sponsored by the County and City in recent years to support various facets of the impact assessment and alleviation planning system. This section of the document seeks to correlate various sponsored studies with the activities and tasks of the system to which they are most closely related. In this way the reader should be empowered to understand how best to apply the work completed to date in further implementation of the system.

Appendix A contains a comprehensive listing of nuclear waste program research products sponsored by the County and City during the past several years. Each document included in the listing has been assigned an ascension number. Table 10 provides a correlation of County and City sponsored research with the activities and tasks comprising the impact assessment and alleviation planning system. As shown in Table 10, the County

and City have tended to emphasize investigations of repository impacts upon local government services and facilities, local economic conditions, and public health and safety, particularly transportation risk induced effects. In each case, extensive documentation of baseline conditions has occurred. Quantitative models for use in estimating economic, demographic, fiscal, and transportation risk effects have been developed. Qualitative and/or conceptual models have been conceived for health effects assessment.

Table 10
Correlation of Lincoln County and City of Caliente Sponsored Nuclear Waste Research with Activities and Tasks of the County/City Impact Assessment and Alleviation Planning System

Activity	Task	Related County/City Sponsored Research
2.0 Estimate Effects Upon Economy	2.1 Monitor Baseline Conditions	ED-86-01 ED-90-01 ED-91-01 ED-91-02 ED-94-01 ED-94-02 ED-94-03 ED-95-01 TSM-ND-01 IMT-91-01
	2.2 Economic Projection Model Development	TSM-93-01 IMT-94-01 IMT-95-01
	2.3 Scenario Development	ED-88-01 TSM-93-01 IMT-91-01 IMT-94-01 RMP-91-01 RMP-92-02
	2.4 Economic Impact Projections	TSM-93-01 IMT-91-01 IMT-95-02
3.0 Estimate Effects Upon Local Demographics	3.1 Monitor Baseline Conditions	ED-86-01 ED-95-01 ED-90-01 ED-94-01
	3.2 Demographic Projection Model Development	IMT-94-01 IMT 95-01

	3.3 Scenario Development	ED-88-01 TSM-93-01 IMT-91-01 IMT-94-01 RMP-91-01 RMP-92-01
	3.4 Demographic Impact Projections	IMT-91-01
4.0 Estimate Effects Upon Local Government	4.1 Monitor Baseline Conditions	ED-95-01 FIS-89-01 FIS-89-02 FIS-90-01 FIS-93-01 FIS-94-01 EM-85-01 EM-89-02 EM-92-01 IMT-91-01 CD-89-02 CD-89-03 CD-90-01 CD-90-02 CD-90-03 CD-91-01 CD-93-03 CD-93-02 CD-95-01
	4.2 Fiscal Projection Model Development	IMT-96-01
	4.3 Scenario Development	ED-88-01 TSM-93-01 RMP-91-01 RMP-92-02
	4.4 Fiscal Impact Projections	IMT-96-01
5.0 Estimate Effects Upon Health and Well-Being	5.1 Monitor Baseline Conditions	TRN-86-01 TRN-89-01 TRN-ND-01 ETH-01 thru 27 RMP-90-01 RMP-91-01 RMP-92-01 RMP-94-01 RMP-95-01 IMT-91-01
	5.2 Health Effects Projection Model Development	RMP-94-01 RMP-95-01

Table 10 Cont'd.

	5.3 Scenario Development	RMP-91-01 RMP-92-02 RMP-94-01 RMP-95-01
	5.4 Health and Well-Being Impact Projections	RMP-95-01

6.0 Estimate Effects Upon the Environment	6.1 Monitor Baseline Conditions	TRN-ND-01 CD-89-01 CD-90-01
	6.2 Environmental Effects Projection Model Development	RMP-94-01 RMP-95-01
	6.3 Scenario Development	IMT-94-01
	6.4 Environmental Impact Projections	IMT-95-02

WHAT WORK REMAINS TO BE COMPLETED TO SUPPORT DEVELOPMENT AND APPLICATION OF THE SYSTEM?

Pursuant to the Nuclear Waste Policy Act, as amended, and other controlling federal laws (ie. National Environmental Policy Act (NEPA)), Lincoln County and the City of Caliente will have opportunities to apply results of their impact assessment and alleviation planning system at several junctures. Most important of these will be review and comment upon the draft environmental impact statement for Yucca Mountain and/or interim storage facilities; input to congressional consideration of a likely State of Nevada veto of selection of Yucca Mountain; input to congressional consideration of selection of an interim storage site; and NRC licensing proceedings for both interim storage and repository construction. In each of these procedural settings the County and City will be afforded opportunities to provide suggestions about how impacts might be mitigated. County and City recommendations could become part of NEPA related Record of Decisions; federal legislation; or conditions of NRC construction and operating licenses.

To facilitate consideration of the timeframes associated with needed local impact assessment and mitigation input, Table 11 provides an outline of key federal waste

management milestone dates. Future activities of the County and City should be focused upon being ready to provide input at these important programmatic junctures.

Table 11
Federal Nuclear Waste Management Program
Key Program Milestone

Milestone Event	Est. Date
Congressional designation of interim storage site	Late FY 1998 to Early FY 1999
Draft repository environmental impact statement published	Mid FY 1999
NRC review of interim storage license application	Early FY 2000 to late FY 2000
Final repository environmental impact statement published	Late FY 2000
NRC review of repository construction license application	Early FY 2002 to Early FY 2005

Source: U.S. Department of Energy, *Civilian Radioactive Waste Management Program Plan: Revision 1*, Office of Civilian Radioactive Waste Management, DOE/RW-0458, May 1996.

In order to offer federal officials with meaningful input on methods to mitigate impacts, the County and City must demonstrate that such effects are likely to occur with a degree of consequence worthy of redress. In addition, the County and City must be able to provide reasonable alternatives for mitigation. While much work has been done by the County and City to provide local capabilities to provide this needed information, additional development and application actions will be required.

To assist County and City elected officials and staff to consider needed work to continue impact assessment and alleviation planning activities as necessary to provide

input to key DOE programmatic milestones, Table 12 has been developed. For each activity and major task element of the impact assessment and alleviation planning system, Table 12 provide a description of additional work needed. Additional work should be prioritized to first provide information to substantiate impacts and mitigation requirements associated with high probability/high consequence effects (as illustrated in Tables 4 through 8).

Table 12
Work Remaining To Be Completed To Support Lincoln County and City of Caliente Sponsored Nuclear Waste Impact Assessment and Alleviation Planning Initiatives

Activity	Task	Additional Work Required
2.0 Estimate Effects Upon Economy	2.1 Monitor Baseline Conditions	Update baseline data Collect missing data Revise data needs
	2.2 Economic Projection Model Development	Update transactions tables Update population/housing multipliers Develop sub-county allocation module
	2.3 Scenario Development	Develop scenarios using current DOE project descriptions
	2.4 Economic Impact Projections	Run baseline and "with-project" projections using current model and scenarios
3.0 Estimate Effects Upon Local Demographics	3.1 Monitor Baseline Conditions	Update baseline data Collect missing data Revise data needs
	3.2 Demographic Projection Model Development	Update population/housing multipliers Develop sub-group allocations (ie. age, sex, etc.) Develop sub-county allocation module
	3.3 Scenario Development	Develop scenarios using current DOE project descriptions
	3.4 Demographic Impact Projections	Run baseline and "with-project" projections using current model and scenarios
4.0 Estimate Effects Upon Local Government	4.1 Monitor Baseline Conditions	Update baseline data Collect missing data Revise data needs

	4.2 Fiscal Projection Model Development	Update service, labor, and cost coefficients Develop sub-county allocation module
	4.3 Scenario Development	Develop scenarios using current DOE project descriptions
	4.4 Fiscal Impact Projections	Run baseline and "with-project" projections using current model and scenarios

Table 12 Cont'd.

5.0 Estimate Effects Upon Health and Well-Being	5.1 Monitor Baseline Conditions	Update baseline data Collect missing data Revise data needs Collect epidemiological data Characterize existing risk sources
	5.2 Health Effects Projection Model Development	Revise transp. risk model to address heavy-haul Develop health effects model Develop well-being model
	5.3 Scenario Development	Develop scenarios using current DOE project descriptions
	5.4 Health and Well-Being Impact Projections	Run baseline and "with-project" projections using transp. risk, health, and well-being models and scenarios
6.0 Estimate Effects Upon the Environment	6.1 Monitor Baseline Conditions	Update baseline data Collect missing data Revise data needs
	6.2 Environmental Effects Projection Model Development	Define model development needs Develop relevant models
	6.3 Scenario Development	Develop scenarios using current DOE project descriptions
	6.4 Environmental Impact Projections	Run baseline and "with-project" projections

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APPENDIX A
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1985 - 1996

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ETHNOGRAPHY

(Oral histories of the following individuals have been completed.)
Report ascension numbers are proceeded by ETH (ETH-#).

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