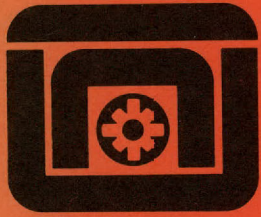


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Texas
Low-Level
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Disposal Authority

ECONOMIC IMPACT OF
RADIOACTIVE WASTE
DISPOSAL SITES
IN TEXAS

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In the interest of timeliness, final editing has not been done by the Authority staff and the report is published as submitted by the project investigators.

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ECONOMIC IMPACT OF RADIOACTIVE WASTE
DISPOSAL SITES IN TEXAS

Prepared by:

Jerry Olson and Susan Goodman

Bureau of Business Research
University of Texas at Austin
Austin, Texas 78712

Prepared For:

Texas Low-Level Radioactive Waste Disposal Authority
1300-C East Anderson Lane, Suite 175
Austing, Texas 78752

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ACKNOWLEDGEMENTS

The authors wish to thank Mike Branum and Lawrence R. Jacobi, Jr., P.E. of the Texas Low-Level Radioactive Waste Disposal Authority for their interest and assistance in this research, and Seungmook Choi of the Bureau staff for computational assistance.

Principal Investigators

Jerry Olson

Susan Goodman

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FOREWORD

This publication is the result of three separate contracts with Dr. Jerry Olson, Research Economist with the Bureau of Business Research at the University of Texas. The report is divided into three sections: the main report on the development of the economic model and two appendices discussing the application of the model to Hudspeth and Dimmit counties.

Dr. Olson selected three counties with divergent characteristics to test the applicability of his economic model. These counties, Borden, Zavala, and Lamar, are discussed in the main body of the report. The application of the model to Dimmit County is discussed in Appendix A. The results of the model for Hudspeth County are discussed in Appendix B.

Dr. Olson's work shows that a small scale radioactive waste disposal facility will have relatively little economic impact on typical Texas rural communities. Over the 30 year operating life of the facility, in all cases, the model shows a modest positive income for the county and the community ranging from \$3.7 million in Hudspeth County to \$7.8 million in Lamar County.

This report does not address the effect on the value of adjacent land, the effect on the local economy of spin-off industries, or the effect of payments in lieu of taxes. These will be addressed in later reports.

The Authority staff always welcomes comments on staff reports. Comments or questions concerning this report should be directed to Michael Branum at the Authority's offices, 512/835-6795.

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Executive Summary

This research study develops and implements a methodology for estimating the economic impacts of low-level radioactive waste disposal sites in Texas. Impacts are computed for potential locations in Borden, Lamar and Zavala counties.

Description of Methods Used

The economic impact analysis performed for each county is divided into four steps. The baseline profile, showing significant economic and demographic characteristics of the area, is followed by a description of the direct impacts of the site on employment, population, income, and local fiscal conditions. These direct impacts, similar for each of the three counties, result from the immediate changes in economic activity of those persons directly involved in the waste disposal facility.

The indirect impacts of the facility, which result when those directly involved change the economic activity of others, are estimated in the third step of the analysis. The indirect changes in employment, population, income, and local fiscal conditions are derived through the use of the income-multiplier method. Summing the direct and indirect impacts gives the total impact.

Major Findings

As documented in this study, the economic impacts of the waste disposal site in Borden, Lamar, and Zavala counties are rather small:

1) Population impacts will be minimal in Lamar and Zavala counties, as most of the individuals needed for the project will be recruited from the existing labor force. In Borden County, however, the population impact is more significant, as nine of the twenty-one workers for the site will have to be imported from outside the local labor force.

2) The employment impacts are most significant during the construction and operational phases of the project. Most of the jobs during the later phases will be in the government sector, filled by those monitoring and maintaining the site.

3) In the first phase of the project, much of the additional income will be in the service sector. But in the operational phase income effects will occur in other sectors, such as manufacturing, transportation, and government. The discounted present value of the stream of the additional income generated by the project ranges from \$4.14 million in Borden County to \$7.52 million in Lamar County.

4) Local fiscal conditions are improved by the presence of the facility for the first three phases of the project because the small

losses of tax revenue from the land taken over by the state for the site will be offset by increases in tax revenue induced by the increased income and wealth of the larger population. In the closure phase, however, there is not enough offset, and the counties suffer a small reduction in revenue. Nevertheless, the discounted present value of the net changes in local fiscal conditions over the 30 year period is positive for all three counties. The discounted present values are \$52,000, \$193,000, and \$262,000 for Borden, Lamar, and Zavala respectively.

SUMMARY TABLE OF FINDINGS

	<u>Borden</u>	<u>Lamar</u>	<u>Zavala</u>	<u>Dimmit</u>	<u>Hudspeth</u>
Main Industry Multiplier	Oil 1.25	Manufacturing 2.27	Agriculture 1.39	Oil 1.73	Agriculture 1.13
Baseline:					
Population - 1980	859	42,156	11,666	11,367	2,728
Employment - 1980	459	19,287	4,320	3,765	841
Income - 1980 (Millions)	\$7.2	\$220.2	\$49.8	\$42.8	\$17.6
Annual Average Growth Rates (1983-2012) %:					
Population and Employment	.8	2.0	3.3	4.5	2.8
Income	6.8	4.5	8.1	6.0	5.0
Total Impact:					
Employment					
Construction	49	81	52	67	43
Operational	27	43	28	36	24
Income					
Construction	\$ 923,000	\$1,676,000	\$1,027,000	\$1,278,000	\$834,000
Operational	477,000	866,000	530,000	660,000	431,000
Present Value	4,144,000	7,525,000	4,608,000	5,734,700	3,591,700
Revenue changes					
Construction	\$ 12,000	\$60,000	\$46,000	\$8,811	\$16,810
Operational	6,000	30,000	21,000	4,063	8,542
Closure	-1,000	-2,000	-4,000	-815	49
Present Value	52,000	262,000	193,000	33,588	70,544

METHODOLOGY FOR PROJECTING ECONOMIC IMPACTS
OF LOW-LEVEL RADIOACTIVE WASTE SITES
IN TEXAS

I. Introduction

A. Background

The Texas Low-Level Radioactive Waste Disposal Authority has been asked to study alternative locations for potential low-level radioactive waste disposal sites in Texas. One of the most important considerations in determining the site is the economic impact of the site on the local community. Many of the impacts of a disposal activity would be positive--creating jobs and improving economic conditions in the community.

B. Objective

The objective of this study is to develop and implement a methodology to produce quantitative estimates of the the economic impacts of proposed disposal sites, as an aid to selecting a the best site. The impacts which have been estimated are: (1) changes in employment, (2) changes in population, (3) changes in income, (4) changes in local government revenue and expenditures.

Three potential sites have been studied: Borden County, Lamar County and Zavala County. The direct impacts in these counties are the same, but because the three counties are quite different in their economic and demographic characteristics, the indirect impacts differ.

II. Description of Methods Used

This section describes the methods used in estimating the impacts. The steps described below have been performed for each of the three areas to be studied.

A. Baseline Profile of the Impact Area

In order to learn a little about the community in which the disposal site will potentially be placed, a profile of each area has been prepared, showing the significant economic and demographic characteristics of each area. The data profile is a collection and display of relevant data from the Bureau's data files. It includes data from the Bureau of Economic Analysis, the Department of Labor, the Texas Department of Health, the Texas Department of Water Resources, the Texas Almanac, the Texas Fact Book, the City and County Data Book, and other sources.

B. Direct Impacts of the Proposed Waste Site

1. Employment

Direct employment impacts are based on data supplied by Texas Low-Level Radioactive Waste Disposal Authority. The data are primarily taken from Chapter II of EBASCO's economic analysis study dated June 30, 1983.¹ There are four distinct phases in the life of the project. In phase one, most of the employment is related to site screening, site characterization, and related activities. Employment requirements during phase one have been estimated as one job for every \$15,300 of personal income generated in the county during this phase of the project. The \$15,300 per job is based on the statewide relation between personal income and employment in the service industry.

In the construction phase of the project, the number of workers is estimated by taking the value of construction put in place, as tabulated in the EBASCO report, and multiplying these figures by coefficients relating man-hour requirements to construction costs.* The coefficients are shown in table II-1.²

Phase three of the project begins when the plant starts operation, and phase four is the closure phase. Employment requirements for phases three and four are taken directly from the appropriate tables in the EBASCO report. During phases three and four, the personnel requirements are

¹Ebasco Services Incorporated, "Texas Low-level Radioactive Waste Disposal Facility, Economic Analysis," final report prepared under contract CON-83-002, New York, June 30, 1983.

²"Labor Requirements for Federal Office Building Construction," Bureau of Labor Statistics Bulletin 1331, Government Printing Office, Washington, D.C., 1962. The coefficients in the original report have been adjusted for inflation.

Table 11.1 Direct Manyear Requirements per
Million Dollars of Construction Costs

Construction	10.98
Trade	1.22
Transportation and Public Utilities	1.22
Services	1.22

classified under the "government" industry, since government personnel will operate the site.

2. Population

Population impacts in phase one of the project are expected to be minimal. The personnel who do the site screening and related tasks will be transitory, since their tasks will last so short a time. In phase two, the construction personnel will be there for a somewhat longer period, but we assume they also will leave when their work is completed.

Population impacts in the operational phase are based on the assumption that the site will have to "import" the following four personnel: the Site Manager, the Site Supervisor, the Health Physics Supervisor, and the Health Physics Technician. It is assumed that each of these four individuals will move themselves and their households to the county from some other place. We assume that the total number of individuals coming to the county will be 12, based on the average Texas family size of 2.91 persons per family. The other 17 individuals needed to operate the site will be recruited from the existing labor force. In Lamar and Zavala counties, the additional labor force requirement is quite small relative to the labor force. In fact, in these two counties, the entire force could be recruited from the ranks of the unemployed. In Borden county, however, we estimate the number of unemployed as 12. This suggests that 9 of the 21 workers will have to be imported, rather than just 4 as in the other two counties. This gives a total population impact of 26, based on the average Texas family size. Table II.2 summarizes the employment,

Table 11.2 Employment, Unemployment, and Population Impacts
Operational Phase

	Borden	Lamar	Zavala
Unemployment Rate*	2.5%	7.8%	20.2%
Labor Force**	480	24,328	6,310
Number of Unemployed	12	1,898	1,275
Number of Workers "imported"	9	4	4
Population Impact	26	12	12

Notes:

*average of 1981 and 1982 rates

**based on our 1988 baseline employment estimate

unemployment and population impacts of the operational phase of the project.

In the closure phase of the project, the entire labor force (one employee) can be recruited from the existing labor force, and no population impact is anticipated.

3. Income

In phase one of the project, we assumed that one third of the site screening spending, one half of the contingency spending and one half of the money spent on land would become income to the residents of the affected county. Land acquired is assumed to be by purchase from the private sector rather than utilization of State lands. This income is assigned to the services industry.

Direct income impacts due to wage and salary employment have been determined by adding up the wages and salaries of the jobs directly created by the site. We used average wage rates for the appropriate industries for phases one and two of the life of the site, and we used the wage rates in the EBASCO report for phases three and four.

4. Local Government Fiscal Impacts

Local government fiscal impacts will be both positive and negative. On the positive side, increases in personal income will increase the property

holdings of the population, resulting in increases to the property taxes. The income increase will also increase consumption, inducing increases in sales tax collections in those counties which collect the one percent county sales tax. These tax increases were estimated differently in the three counties studied. In Lamar and Zavala counties, the county collects most of its property taxes from non-mineral wealth--that is, land and structures above the ground. Both counties also collect the sales tax. It was assumed that both the property tax base and the sales tax base would go up by the same percentage as personal income went up. Accordingly, tax collections will go up by the same percentage.

In Borden county, on the other hand, much of the property tax is levied against mineral wealth (oil) in the ground, and the county does not collect the sales tax. Accordingly, since much of the tax base is not directly related to personal income, the method used in Lamar and Zavala counties will not work in Borden county. In Borden county, we multiplied the percentage increase in personal income by the proportion of total taxes levied against above-ground property to get the percentage increase in property taxes.

One fiscal impact which has not been dealt with quantitatively relates to provisions in the legislation for the state to assist local governments with payments of money, and/or assistance in kind. The Legislature may appropriate grand funds to subsidize the county as a result of needs that may arise from location of a site within the county. Similarly, equipment and/or personnel may be made available to the local government when possible.

Increases in personal income induced by the site tend to improve the county's fiscal condition by raising the amount of tax collected. However, there are three forces that will tend to work against the county's fiscal condition.

First, increases in population will tend to increase demands for services. If the number of individuals moving to a county were large, it is likely that the local governments would have to increase spending in order to keep the same quality of services. However, we do not believe that the additional twelve individuals projected to show up in Lamar and Zavala would be a sufficient impact to warrant analysis. Even in Borden county, where the projected increase in population is 26 people, there is unlikely to be a significant impact on spending.

The second negative fiscal impact on the counties results when the land used for the disposal site is removed from the property tax base, resulting in decreased tax collections. The property for the site will be owned by the state, and the state does not pay taxes to local government. We have estimated this loss to the tax base by multiplying the 200 acres to be used for the site by the estimated price per acre. The loss of revenue is determined by multiplying the loss of tax base by the tax rate. Both the estimated price and the tax rates are shown in Table II-3.

The third negative fiscal impact to be considered is the possibility that property near the site may lose value due to its proximity to a locally unwanted facility. In a 1977 case, a Texas landowner brought suit against the Texas Electric Service Company for two types of loss of

Table II.3 Changes in Property Tax Collections

	Borden	Lamar	Zavala
Estimated Price of Farm Land, Per Acre	\$750	\$750	\$950
Total Value of Land Removed from the Tax Base	\$150,000	\$150,000	\$190,000
Tax Rate (cents per \$100 of Assessed Valuation)	16	39	48
Estimated Loss of Property Taxes	\$240	\$585	\$912

Sources:

Farm Land Price--Texas Real Estate Center, Trend, 1982
 Tax Rate--Data Provided by County Officials

property value due to a railroad the company put across his land. The first loss was due to a reduction in productive capacity caused by the route's placement across the property. This loss was claimed without regard to the type of freight transported by the railroad, but rather the negative impact on economic activity due to its construction and operation. The property owner claimed that this impact lowered the value of his land from \$800 to \$500 per acre. The second loss was attributed to the fear of nuclear danger from accidents or sabotage during transport of nuclear waste across the land. The second loss is based on loss of market value of the land due to fear that may be in the minds of the buying public. No actual physical damage is being claimed--the claim is based on the fear of possible future damage. The property owner claimed that damage from this cause lowered the value of his land from \$500 to \$350 per acre. The court ruled that the second claim was justified, but the total damages awarded to the property owner happened to be exactly the amount he sued for on the grounds of the first loss--\$300 per acre. Had the court separately listed the amount of the total loss attributable to the two component parts, we would be able to use the court's judgement in assigning a quantitative value to the second loss in the counties under study.

The above discussion of "fear damage" comes from Ronda Hageman's 1981 article in Natural Resources Journal.³ The article is recommended for readers interested in this issue. The findings regarding the reduction of

³Ronda K. Hageman, "Nuclear Waste Disposal: Potential Property Value Impacts." Natural Resources Journal 2 (October 1981): 789-810

land values due to fear damage "... seem to support the theoretical view that property value loss due to the proximity of potential nuclear hazards may occur. However such losses may be overshadowed by impacts of proximity of nuclear facilities and waste transport routes on local economic activity. In those states where officials were able to point to claims of property value damage in legal records, only two plaintiffs actually purported to have suffered or expected to suffer losses because of fear of potential nuclear dangers "... Of these two (in Texas and North Carolina), only the suit in Texas provided expert testimony as to the actual monetary damage..." The plaintiffs claims in the North Carolina suit were not upheld because the evidence showed that land values in the area actually increased in the vicinity of the site."

Hageman's observations regarding the overshadowing of property value reductions by property value increases is worth considering. Observations of radioactive waste sites currently in operation show that firms in the radioactive waste disposal business frequently set up offices, vehicle maintenance facilities, and other activities near the disposal site. The demand for land by these firms will probably cause land prices to go up in the vicinity of the site. Furthermore, the structures these firms build will become part of the property tax base, offsetting losses in the value of the land itself.

Based on the above considerations, we have estimated the property tax loss due to the fear argument by assuming that all land within two miles

⁴Hageman, p. 806.

of the center of the site loses half of its value. We believe this assumption will wildly overestimate the extent of the loss, but as the computations in Table II.4 show, the impact is still quite small, compared to the county's total budget.

C. Indirect and Total Impacts

The direct impacts of locating a new facility in an area result from the immediate changes in economic activity of those directly involved--for example, the construction workers, and those who will man the facility. Indirect impacts result when those directly involved change the economic activity of others. For example, when the construction worker buys something from a local store, an indirect impact has taken place. The store owner's income goes up, even though he is not directly involved in the waste facility. The indirect impacts on a community are often as important as the direct impacts.

The indirect impacts of the facility have been computed using a simple income-multiplier method.⁶ The multiplier is derived by dividing the total personal income of the area being considered by the personal income in the "export" industries. The export industries are those that primarily serve customers outside the area. We assumed that agriculture, mining, manufacturing, and federal government were export industries. All other industries, trade, services, local government and so forth, were domestic.

⁶Walter Isard, Methods of Regional Analysis (Cambridge: MIT Press, 1960), p. 192ff.

Table 11.4 Property Tax Losses Due to the "Fear" Argument

	Borden	Lamar	Zavala
Acres Involved	1,810	1,810	1,810
Value per Acre	750	750	950
Total Value of Property	1,357,500	1,357,500	1,719,500
Tax Rate per Hundred Dollars	16	36	48
Lost Taxes	\$1086	\$2443	\$4,126
1982 Taxes Collected	\$1,166,441	\$921,154	\$2,308,611

The multiplier relates the direct changes in community income to the indirect changes in the following way: for example, if the direct income change is \$100,000, and the multiplier is 1.5, then the indirect income change is \$50,000, and the total impact is \$150,000. This simple approach is widely used in this sort of application, because of its well-accepted theoretical underpinnings. More complex methods, such as input-output methods could have been used, but would have been beyond the scope of this study.

The multipliers are shown in table II.5.

In general, areas which are more highly developed will have higher multipliers, and less developed areas will have smaller multipliers. The more integrated an economy, that is the more inter-industry linkages that exist within the economy, the greater the indirect impacts of a specific project. The three counties being analyzed seem to be in consonance with this general rule. Borden and Zavala counties are relatively undeveloped compared to Lamar county.

Given the total income changes from the multiplier analysis, we estimated indirect income changes by industry on the assumption that each industry gets a share of the indirect income that is equal to its share of income in the baseline forecast.

Indirect employment impacts by industry were assumed to be proportional to the indirect income impacts by industry. The total

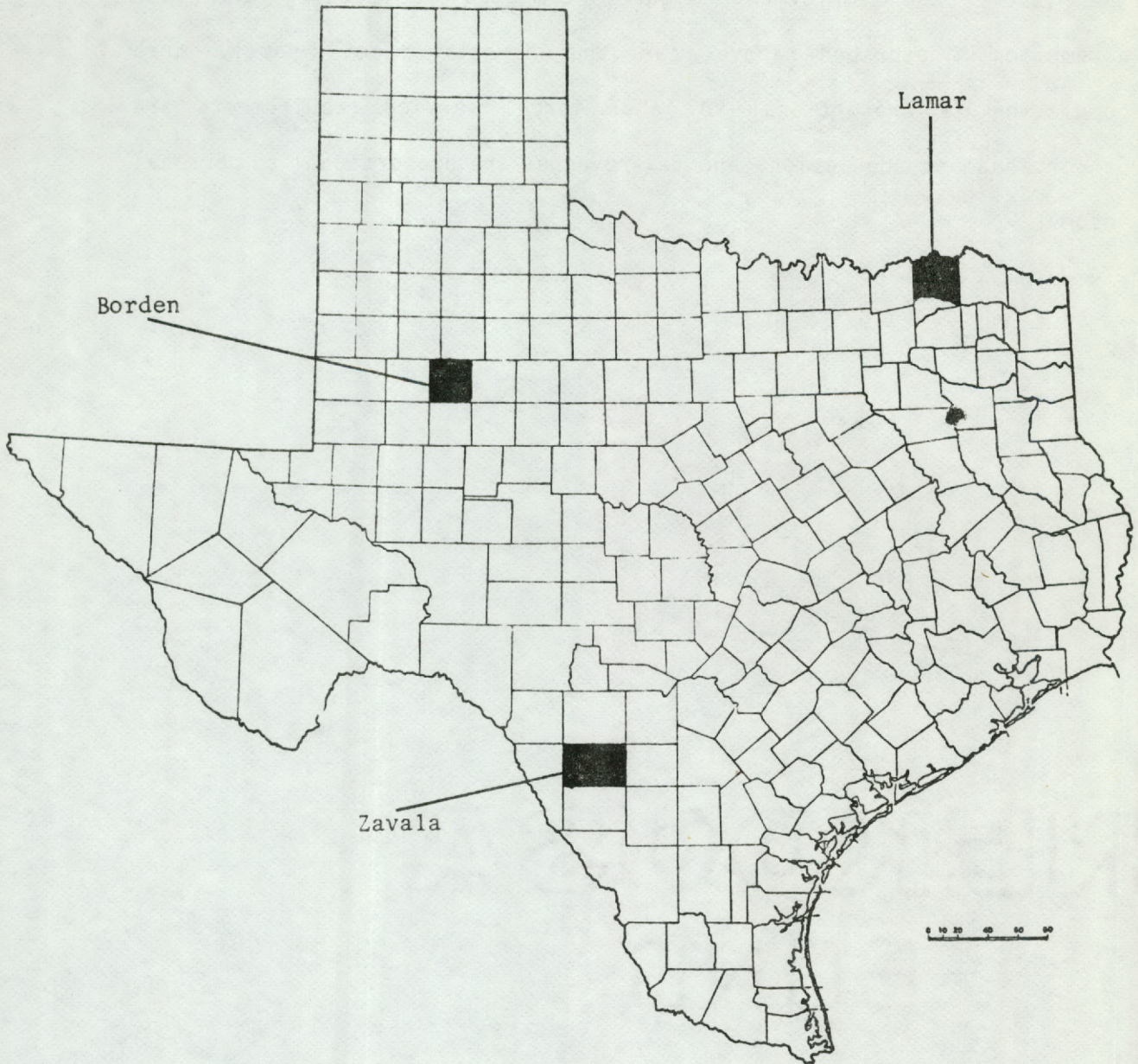
Table 11.5 Multipliers Used to Estimate Indirect Impacts

Borden	1.25
Lamar	2.27
Zavala	1.39

indirect employment impact was derived by adding the impacts of the industries.

Indirect population and local government fiscal impacts were based on the income and employment figures computed above, using the same assumptions described above for the direct impacts--namely that population is proportional to labor force, service requirements are proportional to population, and tax revenues are proportional to personal income.

FIGURE 1
Potential Waste Sites



III. Economic Impacts for Borden County

A. Baseline Profile of Borden County

1. Introduction

Borden County, located in west Texas, is the smallest and most sparsely populated of the three counties under study (see Figure 1). Its 1980 population of 859 occupied 907 square miles of land. The land itself consists of rolling hills, which are broken by the Caprock Escarpment. Borden County's chief industries are oil and agribusiness, which together employ 74.3% of the county's labor force. There is no manufacturing in Borden County.

2. Employment

Table III-1 shows the projected employment for Borden County through 2012. Total employment is projected to increase through 2012, most of this increase accounted for by mining employment. Although in 1980, there were more employees in agriculture (63% of the workforce), mining employment is projected to grow at an average of 5% annually and will exceed agricultural employment to the point that it accounts for 41.4% of the total employment in the county in 2012. Table III-1 also shows that manufacturing will not be a part of the county's industrial base. These employment projections show that, through 2012, all other sectors will have negative growth rates, especially agriculture, construction, and trade.

Table III-1. Baseline Employment Projections for Borden County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transportation	Trade	Service	Gov't	Total
1980	289	52	10			7	9	5	87	459
1983	284	60	10			7	9	5	87	461
1984	282	63	10			7	9	5	87	462
1985	280	66	10			7	9	5	87	463
1986	278	70	10			7	9	5	87	464
1987	276	73	9			7	8	5	87	466
1988	275	77	9			7	8	5	86	468
1989	273	80	9			7	8	5	86	469
1990	271	85	9			7	8	5	86	471
1991	269	89	9			7	8	5	86	474
1992	268	93	9			7	8	5	86	476
1993	266	98	9			7	8	5	86	479
1994	264	103	9			7	8	5	86	482
1995	263	108	9			7	8	5	86	485
1996	261	113	9			7	8	5	86	489
1997	259	119	9			7	8	5	86	492
1998	258	125	9			7	8	5	86	496
1999	256	131	9			7	8	5	86	501
2000	254	137	9			7	8	5	86	506
2001	253	144	9			7	7	5	86	511
2002	251	151	9			7	7	5	86	516
2003	250	159	8			7	7	5	85	522
2004	248	167	8			7	7	5	85	528
2005	246	175	8			7	7	5	85	534
2006	245	184	8			7	7	5	85	541
2007	243	193	8			7	7	5	85	549
2008	242	202	8			7	7	5	85	556
2009	240	213	8			7	7	5	85	565
2010	239	223	8			7	7	5	85	574
2011	237	234	8			7	7	5	85	583
2012	236	246	8			7	7	5	85	593

3. Population

Table III-2 details population projections for Borden county, prepared by the Bureau of Business Research, the Texas Department of Health, and Texas Department of Water Resources. The Bureau's estimates fall between those of the other two for 1990 and 2000; the projections made by the Department of Health for 2000 greatly exceed the other estimates. Borden County's population is estimated to increase by 29% between 1980 and 2012, or an average of .8% per year.

4. Income

As shown in Table III-3, mining and agricultural income comprise the major portion of the county's personal income. In 1980, income derived from these two sectors represented 77% of the county's total income, and forecasts reveal that, as a result of the growth in mining through 2012, these two sectors will generate 81.5% of the total income in the county. These projections show, nonetheless, that income from agriculture will decline through the thirty-year period as mining income increases.

B. Direct Impacts

1. Employment

As the site is scheduled to employ 21 people in the operational phase, long term employment impacts are minimal. In 1987, at the height of the construction phase, 20 people will be employed in the construction sector,

Table III-2. Baseline Population Projections for Borden County

Year	Population
1980	859
1983	863
1984	865
1985	867
1986	869
1987	872
1988	875
1989	879
1990	882
1991	887
1992	891
1993	896
1994	902
1995	908
1996	914
1997	922
1998	929
1999	937
2000	946
2001	955
2002	965
2003	976
2004	988
2005	1,000
2006	1,013
2007	1,027
2008	1,041
2009	1,057
2010	1,074
2011	1,091
2012	1,110

Table III-3. Personal Income Projections for Borden County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transportation	Trade	Service	Gov't	Total
1980	3,493	2,116	128			165	139	64	1,108	7,213
1983	3,456	3,837	173			253	190	80	1,472	9,460
1984	3,434	4,224	172			272	196	80	1,481	9,859
1985	3,412	4,650	171			293	203	80	1,489	10,299
1986	3,390	5,119	169			316	211	80	1,499	10,784
1987	3,369	5,635	168			340	218	80	1,508	11,318
1988	3,347	6,204	167			366	226	80	1,517	11,907
1989	3,326	6,829	166			394	234	80	1,526	12,556
1990	3,305	7,518	164			425	242	80	1,535	13,270
1991	3,284	8,276	163			457	251	80	1,545	14,056
1992	3,263	9,111	162			493	260	80	1,554	14,923
1993	3,242	10,030	161			530	269	80	1,563	15,876
1994	3,222	11,041	160			571	279	80	1,573	16,926
1995	3,201	12,155	158			615	289	80	1,582	18,081
1996	3,181	13,381	157			663	299	80	1,592	19,353
1997	3,161	14,730	156			714	310	80	1,602	20,752
1998	3,141	16,216	155			769	321	80	1,611	22,292
1999	3,121	17,851	154			828	332	80	1,621	23,987
2000	3,101	19,651	153			892	344	80	1,631	25,851
2001	3,081	21,633	152			960	356	80	1,641	27,903
2002	3,061	23,815	151			1,034	369	80	1,651	30,161
2003	3,042	26,217	149			1,114	382	80	1,661	32,645
2004	3,023	28,860	148			1,200	396	80	1,671	35,378
2005	3,003	31,771	147			1,292	410	80	1,681	38,384
2006	2,984	34,975	146			1,391	425	80	1,691	41,693
2007	2,965	38,502	145			1,499	440	80	1,701	45,332
2008	2,946	42,385	144			1,614	455	80	1,712	49,337
2009	2,928	46,660	143			1,738	472	80	1,722	53,742
2010	2,909	51,365	142			1,872	488	80	1,733	58,589
2011	2,890	56,546	141			2,016	506	80	1,743	63,922
2012	2,872	62,248	140			2,172	524	80	1,754	69,789

Table III-4. Direct Employment Projections for Borden County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983								15		15
1984								10		10
1985								3		3
1986								1		1
1987			20			2	2	2	12	37
1988									21	21
1989									21	21
1990									21	21
1991									21	21
1992									21	21
1993									21	21
1994									21	21
1995									21	21
1996									21	21
1997									21	21
1998									21	21
1999									21	21
2000									21	21
2001									21	21
2002									21	21
2003									21	21
2004									21	21
2005									21	21
2006									21	21
2007									21	21
2008									21	21
2009									3	3
2010									1	1
2011									1	1
2012									1	1

6 people will be employed in transportation, trade and service sectors, and 12 people will be employed in the government sector (see Table III-4). The government sector, which includes those people hired to maintain the site, will employ 21 workers through the operational phase of the project, after 2008, the direct employment impact of the site decreases substantially. Therefore, the direct impact will be felt most strongly in 1987, as 38 new jobs are created as a result of the waste disposal site.

2. Population

As detailed in Table II-2, above, the direct population effect of a waste disposal site in Borden County is 26, which is substantially greater than the population effects in the other counties. Because of Borden County's small population, 9 of the 21 workers hired for the operational phase will have to be imported from outside the county; therefore, the direct population effects will differ from the other two counties.

3. Income

As with employment, income impacts will be most substantial in 1987, especially in the construction sector. In the first years of the project, income will be derived in the service sector; with construction of the site in progress, income will be generated in transportation, trade, and government sectors (see Table III-5). In the operational phase, all of the personal income directly induced by the project will be derived from the government sector.

Table III-5. Direct Personal Income Impacts for Borden County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp	Trade	Service	Gov't	Total
1983								225		225
1984								297		297
1985								45		45
1986								20		20
1987			413			48	28	31	218	738
1988									382	382
1989									382	382
1990									382	382
1991									382	382
1992									382	382
1993									382	382
1994									382	382
1995									382	382
1996									382	382
1997									382	382
1998									382	382
1999									382	382
2000									382	382
2001									382	382
2002									382	382
2003									382	382
2004									382	382
2005									382	382
2006									382	382
2007									382	382
2008									382	382
2009									69	69
2010									15	15
2011									15	15
2012									15	15

4. Local Fiscal Conditions

The projected changes in tax revenue resulting from the existence of a waste site in Borden County are detailed in Table III-6. Although net revenue is projected to increase by \$10,000 in 1987, revenue changes are expected to be only \$4,000 for most of the project's life. At the end of the project's life, the revenue change is negative since the loss of tax revenue due to land being taken out of the property tax base exceeds the gain due to increased income.

C. Indirect Impacts

Indirect impacts of the disposal site result when those directly involved change the economic activity of others within the county. These indirect impacts are computed for Borden County by using an income multiplier, which is, in this case, 1.250.

1. Employment

Indirect employment effects for Borden County are minimal, and are seen in the transportation, trade, and government sectors (see Table III-7). In contrast to the other counties, the indirect employment effects are not visible in the service sector at any time through 2012. Similar to direct effects, the indirect employment effects will occur in 1987, as 12 jobs will be indirectly created as a result of the project. The indirect effects diminish as the end of the project draws near.

Table III-6. Direct Revenue Impacts for Borden County
(in thousands of dollars)

Year	Change in Revenue
1983	3
1984	4
1985	1
1986	0
1987	10
1988	4
1989	4
1990	4
1991	4
1992	4
1993	4
1994	4
1995	4
1996	4
1997	4
1998	4
1999	4
2000	4
2001	4
2002	4
2003	4
2004	4
2005	4
2006	4
2007	4
2008	4
2009	0
2010	-1
2011	-1
2012	-1

Table III-7 Indirect Employment Projections for Borden County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983									3	4
1984									4	5
1985									1	1
1986										
1987			1			1	1		9	12
1988						1			4	6
1989						1			4	6
1990						1			4	6
1991						1			4	6
1992						1			4	6
1993						1			4	6
1994						1			4	6
1995						1			4	6
1996						1			4	6
1997						1	1		4	6
1998						1	1		4	6
1999						1	1		4	6
2000						1	1		4	6
2001						1	1		4	6
2002						1	1		3	6
2003						2	1		3	6
2004						2	1		3	6
2005						2	1		3	6
2006						2	1		3	6
2007						2	1		3	6
2008						2	1		3	6
2009						2	1		1	6
2010										
2011										
2012										

2. Income

As an indirect result of the waste site in operation in Borden County, personal income in construction, transportation, trade, service, and government sectors will be affected (see Table III-8). In 1987 alone, an additional \$185,000 in personal income will be derived as an indirect result of the project. Nonetheless, these personal income gains will diminish towards the end of the project.

3. Local Fiscal Conditions

Table III-9 indicates the new revenue generated as an indirect impact of the proposed waste site in Borden County. Unlike direct fiscal impacts, the indirect fiscal impacts will be positive throughout the duration of the project, as a result of the additional tax collections induced by indirect income.

D. Total Impact

In order to assess the total impact of the siting of a waste disposal facility in Borden County, one must add the direct and indirect impacts generated by the disposal site. These total impacts are shown in Tables III-10 through III-12. Table III-10 shows that employment gains will occur for one year in construction as a result of the project, with 21 jobs created in that year. Other significant impacts occurring throughout the duration of the project occur in transportation, trade, and the government sector. Service employment is affected in the first phase of

the project but diminishes after 1988. It is interesting to note that employment in Borden County's main industry, mining, is not affected whatsoever by the waste disposal site.

Personal income, arrayed in table III-11, will be most significantly attributable to the government sector throughout the duration of the project, although the service, trade, transportation, and construction sectors will induce additional personal income into the county. Table III-12 shows that the fiscal condition of the county as a result of the site will be relatively healthy until 2010, resulting in annual net revenues of \$6,000 from 1988 to 2008. It is the final phase of the project that will result in negative net tax revenue for the county. Nonetheless, the discounted present value of the stream of net revenues generated as a result of the waste disposal site in Borden County is estimated as \$52,000, and the discounted present value of the stream of personal income for Borden County is estimated to be \$4,144,000.

Table III-8. Indirect Income Projections for Borden County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983			5			7	5	2	38	56
1984			6			9	7	3	50	74
1985			1			1	1		7	11
1986						1			3	5
1987			13			27	17	6	120	185
1988			7			15	9	3	61	95
1989			7			16	9	3	61	95
1990			6			17	9	3	60	95
1991			6			17	10	3	59	95
1992			6			18	10	3	58	95
1993			6			19	10	3	57	95
1994			6			20	10	3	56	95
1995			6			22	10	3	55	95
1996			5			23	10	3	54	95
1997			5			24	10	3	53	95
1998			5			25	10	3	52	95
1999			5			26	11	3	51	95
2000			5			27	11	2	50	95
2001			5			29	11	2	49	95
2002			4			30	11	2	48	95
2003			4			31	11	2	47	95
2004			4			33	11	2	46	95
2005			4			34	11	2	44	95
2006			4			36	11	2	43	95
2007			4			37	11	2	42	95
2008			3			38	11	2	41	95
2009			1			7	2		7	17
2010						2			2	4
2011						2			1	4
2012						2			1	4

Table III-9. Indirect Revenue Changes for Borden County
(in thousands of dollars)

Year	Change in Revenue
1983	1
1984	1
1985	0
1986	0
1987	3
1988	1
1989	1
1990	1
1991	1
1992	1
1993	1
1994	1
1995	1
1996	1
1997	1
1998	1
1999	1
2000	1
2001	1
2002	1
2003	1
2004	1
2005	1
2006	1
2007	1
2008	1
2009	
2010	
2011	
2012	

Table III-10. Total Employment Effects in Borden County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur Durable	Transp.	Trade	Service	Gov't	Total
1983							15	3	18
1984							10	4	14
1985							3	1	4
1986							1		2
1987			21		3	3	2	20	49
1988					1			25	27
1989					1			25	27
1990					1			25	27
1991					1			25	27
1992					1			25	27
1993					1			25	27
1994					1			25	27
1995					1			25	27
1996					1			25	27
1997					1	1		25	27
1998					1	1		25	27
1999					1	1		25	27
2000					1	1		25	27
2001					1	1		25	27
2002					1	1		24	27
2003					2	1		24	27
2004					2	1		24	27
2005					2	1		24	27
2006					2	1		24	27
2007					2	1		24	27
2008					2	1		24	27
2009								4	4
2010								1	1
2011								1	1
2012								1	1

Table III-11. Total Income Effects for Borden County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983			5			7	5	228	38	282
1984			6			9	7	299	50	371
1985			1			1	1	45	7	56
1986						1		20	3	25
1987			427			75	45	38	338	923
1988			7			15	9	3	443	477
1989			7			16	9	3	442	477
1990			6			17	9	3	441	477
1991			6			17	10	3	441	477
1992			6			18	10	3	440	477
1993			6			19	10	3	439	477
1994			6			20	10	3	438	477
1995			6			22	10	3	437	477
1996			5			23	10	3	436	477
1997			5			24	10	3	435	477
1998			5			25	10	3	434	477
1999			5			26	11	3	433	477
2000			5			27	11	2	432	477
2001			5			29	11	2	431	477
2002			4			30	11	2	430	477
2003			4			31	11	2	428	477
2004			4			33	11	2	427	477
2005			4			34	11	2	426	477
2006			4			36	11	2	425	477
2007			4			37	11	2	424	477
2008			3			38	11	2	422	477
2009			1			7	2		76	86
2010						2			16	19
2011						2			16	19
2012						2			16	19

Table III-12. Total Revenue Effects for Borden County
(in thousands of dollars)

Year	Change in Revenue
1983	4
1984	5
1985	1
1986	0
1987	12
1988	6
1989	6
1990	6
1991	6
1992	6
1993	6
1994	6
1995	6
1996	6
1997	6
1998	6
1999	6
2000	6
2001	6
2002	6
2003	6
2004	6
2005	6
2006	6
2007	6
2008	6
2009	0
2010	-1
2011	-1
2012	-1

IV. Economic Impacts for Lamar County

A. Baseline Profile of Lamar County

1. Introduction

Located in Northeast Texas, Lamar County is the most populated of the three counties studied. The 1980 population of 42,156, occupied 894 square miles of land. The land is chiefly Blackland Prairie, except for some pine and hardwood forests along the Red River. The primary industries in the area are services and manufacturing, which together employ 53.7% of the employed labor force. The county has no oil or significant mineral resources.

2. Employment

As Table IV-1 indicates, employment in Lamar County is projected to increase by an annual average rate of 2.1% through 2012. As the county is large and its economy more diversified than those of Borden and Zavala, employment is projected to increase in all sectors with the exception of agriculture and construction; manufacturing and service sectors are projected to employ 70.5% of the workforce by 2012. Trade, service, and government employment are expected to increase by an annual average of 3% from 1983 to 2012 in Lamar County, but mining employment, albeit a small proportion of total employment, is expected to grow at a faster rate than the other sectors.

Table IV-1. Baseline Employment Projections for Lamar County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transportation	Trade	Service	Gov't	Total
1980	2,089	26	466	4,083	2,077	623	3,430	4,206	2,287	19,287
1983	2,023	30	436	4,309	2,141	644	3,770	4,530	2,501	20,382
1984	2,001	31	426	4,387	2,163	651	3,890	4,643	2,577	20,769
1985	1,980	32	416	4,466	2,184	659	4,015	4,759	2,655	21,167
1986	1,959	34	407	4,547	2,207	666	4,143	4,878	2,735	21,576
1987	1,938	35	398	4,629	2,229	674	4,276	5,001	2,818	21,997
1988	1,918	36	389	4,713	2,252	681	4,412	5,126	2,903	22,430
1989	1,897	38	380	4,798	2,274	689	4,553	5,254	2,991	22,876
1990	1,877	40	372	4,885	2,298	697	4,699	5,386	3,082	23,334
1991	1,857	41	364	4,974	2,321	704	4,849	5,520	3,175	23,805
1992	1,837	43	355	5,064	2,344	712	5,005	5,659	3,271	24,290
1993	1,818	45	348	5,155	2,368	720	5,165	5,800	3,370	24,789
1994	1,798	47	340	5,249	2,392	728	5,330	5,945	3,472	25,301
1995	1,779	49	332	5,344	2,416	736	5,500	6,094	3,577	25,828
1996	1,760	51	325	5,440	2,441	745	5,676	6,247	3,685	26,370
1997	1,741	53	318	5,539	2,466	753	5,858	6,403	3,797	26,927
1998	1,723	56	310	5,639	2,491	761	6,045	6,563	3,912	27,500
1999	1,704	58	304	5,741	2,516	770	6,238	6,728	4,030	28,089
2000	1,686	61	297	5,845	2,542	779	6,438	6,896	4,152	28,695
2001	1,668	63	290	5,951	2,567	787	6,644	7,069	4,278	29,318
2002	1,651	66	284	6,058	2,593	796	6,856	7,245	4,408	29,957
2003	1,633	69	277	6,168	2,620	805	7,076	7,427	4,541	30,615
2004	1,616	72	271	6,280	2,646	814	7,302	7,613	4,679	31,292
2005	1,598	75	265	6,393	2,673	823	7,535	7,803	4,820	31,987
2006	1,581	78	259	6,509	2,700	833	7,776	7,998	4,966	32,701
2007	1,565	81	253	6,627	2,728	842	8,025	8,199	5,116	33,436
2008	1,548	85	248	6,747	2,755	851	8,282	8,404	5,271	34,191
2009	1,531	89	242	6,869	2,783	861	8,547	8,614	5,431	34,967
2010	1,515	93	237	6,993	2,811	871	8,820	8,830	5,595	35,765
2011	1,499	97	232	7,120	2,840	880	9,102	9,051	5,765	36,585
2012	1,483	101	226	7,249	2,869	890	9,393	9,277	5,939	37,427

3. Population

Population projections for Lamar County are detailed in Table IV-2 below. The Bureau of Business Research's estimates for 1990 and 2000 are greater than those of the Health and Water Resources departments; indeed, the Water estimates are quite conservative in relation to the other projections. Nonetheless, the estimates show that population in Lamar county will almost double in size between 1980 and 2012.

4. Income

As shown in Table IV-3, 41.5% of Lamar county's personal income in 1980 was derived from manufacturing, while 20.6% was derived from the service sector. Manufacturing income, as a proportion of total income, is projected to increase to 46.3% by 2012, while the share of total income generated by the service sector remains unchanged in 2012. This table also shows the greater diversification of the economy relative to the other counties.

B. Direct Impacts

1. Employment

Similar to Borden County, the direct employment impacts generated by the existence of the waste disposal site will be most significant in 1987. Table IV-4 shows that in the operational phase of the project, 21 jobs will be created in the government sector to maintain the site.

Table IV-2. Baseline Population Projections for Lamar County

Year	Population
1980	42,156
1983	44,550
1984	45,395
1985	46,265
1986	47,159
1987	48,079
1988	49,026
1989	50,000
1990	51,002
1991	52,032
1992	53,091
1993	54,181
1994	55,301
1995	56,453
1996	57,638
1997	58,856
1998	60,108
1999	61,396
2000	62,719
2001	64,080
2002	65,479
2003	66,917
2004	68,395
2005	69,914
2006	71,476
2007	73,082
2008	74,732
2009	76,428
2010	78,172
2011	79,964
2012	81,806

Table IV-3. Personal Income Projections for Lamar County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transportation	Trade	Service	Gov't	Total
1980	3,386	762	7,495	59,125	32,389	11,798	33,080	45,392	26,820	220,247
1983	3,307	1,176	9,681	77,645	43,756	17,004	46,070	64,719	39,574	302,933
1984	3,272	1,227	9,465	82,089	45,501	17,948	48,036	67,623	41,236	316,397
1985	3,237	1,280	9,254	86,788	47,315	18,944	50,087	70,657	42,967	330,528
1986	3,202	1,335	9,048	91,755	49,201	19,995	52,225	73,826	44,771	345,359
1987	3,168	1,393	8,846	97,007	51,163	21,105	54,454	77,139	46,651	360,925
1988	3,135	1,453	8,648	102,559	53,203	22,276	56,778	80,599	48,609	377,261
1989	3,101	1,516	8,456	108,429	55,324	23,513	59,202	84,215	50,650	394,406
1990	3,068	1,581	8,267	114,635	57,530	24,818	61,729	87,993	52,777	412,398
1991	3,035	1,650	8,082	121,196	59,824	26,195	64,364	91,941	54,993	431,280
1992	3,003	1,721	7,902	128,132	62,209	27,648	67,111	96,066	57,302	451,095
1993	2,971	1,795	7,726	135,466	64,689	29,183	69,975	100,376	59,708	471,890
1994	2,940	1,873	7,554	143,219	67,269	30,802	72,962	104,879	62,215	493,712
1995	2,908	1,954	7,385	151,416	69,951	32,512	76,077	109,584	64,827	516,614
1996	2,877	2,038	7,220	160,083	72,740	34,316	79,324	114,500	67,549	540,647
1997	2,847	2,126	7,059	169,245	75,640	36,220	82,710	119,637	70,385	565,869
1998	2,816	2,218	6,902	178,932	78,656	38,231	86,240	125,004	73,340	592,339
1999	2,786	2,314	6,748	189,173	81,792	40,352	89,921	130,613	76,419	620,118
2000	2,757	2,414	6,597	200,000	85,053	42,592	93,759	136,472	79,628	649,272
2001	2,727	2,519	6,450	211,447	88,444	44,955	97,762	142,595	82,971	679,870
2002	2,698	2,627	6,306	223,549	91,971	47,450	101,934	148,992	86,455	711,983
2003	2,669	2,741	6,166	236,344	95,638	50,083	106,285	155,676	90,085	745,687
2004	2,641	2,859	6,028	249,871	99,451	52,863	110,822	162,660	93,867	781,063
2005	2,613	2,983	5,894	264,173	103,416	55,796	115,552	169,958	97,808	818,193
2006	2,585	3,112	5,762	279,292	107,539	58,893	120,485	177,583	101,915	857,166
2007	2,558	3,246	5,634	295,278	111,827	62,161	125,627	185,550	106,194	898,074
2008	2,530	3,387	5,508	312,178	116,286	65,611	130,990	193,874	110,652	941,015
2009	2,503	3,533	5,385	330,045	120,922	69,252	136,581	202,572	115,298	986,092
2010	2,477	3,686	5,265	348,935	125,743	73,095	142,411	211,660	120,139	1033,411
2011	2,450	3,845	5,147	368,907	130,757	77,152	148,490	221,156	125,183	1083,086
2012	2,424	4,011	5,033	390,021	135,970	81,433	154,828	231,077	130,439	1135,237

Table IV-4. Direct Employment Projections for Lamar County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983								15		15
1984								10		10
1985								3		3
1986								1		1
1987			20			2	2	2	12	37
1988									21	21
1989									21	21
1990									21	21
1991									21	21
1992									21	21
1993									21	21
1994									21	21
1995									21	21
1996									21	21
1997									21	21
1998									21	21
1999									21	21
2000									21	21
2001									21	21
2002									21	21
2003									21	21
2004									21	21
2005									21	21
2006									21	21
2007									21	21
2008									21	21
2009									3	3
2010									1	1
2011									1	1
2012									1	1

Note: Direct employment impacts are identical for all three counties. The impacts shown in this table are identical to those in table III-4.

2. Population

As detailed in Table II-3 above, the direct population impact of the siting of a plant in Lamar County would be rather minimal, as only 12 new people will enter the county in the site's operational phase. As only 4 of the workers in the plant must be imported from outside the county, the resulting population impact is relatively small compared to Borden County.

3. Income

Table IV-5 shows that most of the direct impact on personal income as a result of the site will occur in 1987 in construction, transportation, trade, service, and government sectors. In the initial phases of the project, the service sector will reap all of the personal income generated directly by the project; in the operational phase, the government sector will be the sole generator of personal income in the county.

4. Local Fiscal Conditions

Table IV-6 details the projected net revenues resulting from the existence of a disposal site in Lamar County through 2012. Net revenue generated as a result of the project will peak in 1987 at \$25,000, will stabilize at \$11,000 from 1988 to 2008, but will be negative during the closing phase of the project. This trend, similar to the direction of local fiscal conditions over the project's life, reveals the impact of the project: when the project phases out and the county does not feel the

Table IV-5. Direct Personal Income Impacts for Lamar County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983								225		225
1984								297		297
1985								45		45
1986								20		20
1987			413			48	28	31	218	738
1988									382	382
1989									382	382
1990									382	382
1991									382	382
1992									382	382
1993									382	382
1994									382	382
1995									382	382
1996									382	382
1997									382	382
1998									382	382
1999									382	382
2000									382	382
2001									382	382
2002									382	382
2003									382	382
2004									382	382
2005									382	382
2006									382	382
2007									382	382
2008									382	382
2009									69	69
2010									15	15
2011									15	15
2012									15	15

Note: Direct personal income impacts are identical for all three counties. The impacts shown in this table are identical to those in table III-5.

Table IV-6 Direct Revenue Impacts for Lamar County
(in thousands of dollars)

Year	Change In Revenue
1983	9
1984	11
1985	2
1986	1
1987	25
1988	11
1989	11
1990	11
1991	11
1992	11
1993	11
1994	11
1995	11
1996	11
1997	11
1998	11
1999	11
2000	11
2001	11
2002	11
2003	11
2004	11
2005	11
2006	11
2007	11
2008	11
2009	-1
2010	-3
2011	-3
2012	-3

effects generated through employment and personal income gains, tax revenue will be lost.

C. Indirect Impacts

The indirect impacts generated by the siting of a waste disposal facility in Lamar county are greater in magnitude than those for the other counties because of the magnitude of the multiplier, which is, in this case, 2.27. As noted before, the more developed an economy, the larger its multiplier will be. Therefore, the size of the multiplier will have a greater effect on the indirect impacts in Lamar County.

1. Employment

The indirect employment effects generated by the waste disposal project will occur in all sectors with the exception of agriculture and mining. Most of the jobs are projected to be in manufacturing, but, as one would expect, the trade, transportation, service, and government sectors will be affected. Table IV-7 shows that 44 jobs will be indirectly created in 1987, but the total amount of jobs created will diminish after 2009.

2. Income

Additional income indirectly generated by the existence of the waste disposal site is projected in Table IV-8. Personal income in all of the sectors with the exception of agriculture and mining will be affected by

Table IV-7 Indirect Employment Projections for Lamar County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983			1	3	2	1	2	3	3	14
1984			1	3	3	1	3	3	4	18
1985				1				1	1	3
1986										1
1987			1	9	6	3	7	9	9	44
1988			1	5	3	1	4	4	5	23
1989			1	5	3	1	4	4	5	23
1990			1	5	3	1	4	4	5	23
1991			1	5	3	1	4	4	5	23
1992			1	5	3	1	4	4	5	23
1993				5	3	1	4	4	5	23
1994				5	3	1	4	4	4	23
1995				5	3	2	3	4	4	22
1996				5	3	2	3	4	4	22
1997				5	3	2	3	4	4	22
1998				5	3	2	3	4	4	22
1999				5	3	2	3	4	4	22
2000				5	3	2	3	4	4	22
2001				5	3	2	3	4	4	22
2002				5	3	2	3	4	4	22
2003				5	3	3	3	4	4	22
2004				6	3	2	3	4	4	22
2005				6	3	2	3	4	4	22
2006				6	3	2	3	4	4	22
2007				6	3	2	3	4	4	22
2008				6	3	2	3	4	4	22
2009				1	1		1	1	1	4
2010										1
2011										1
2012										1

Table IV-8. Indirect Income Projections for Lamar County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983			9	74	42	16	44	62	38	286
1984			11	99	55	22	58	82	50	377
1985			2	15	8	3	9	12	8	57
1986			1	7	4	1	4	6	3	25
1987			23	255	135	56	143	203	123	938
1988			11	133	69	29	74	105	63	485
1989			11	135	69	29	74	105	63	485
1990			10	136	68	29	73	105	63	485
1991			9	138	68	30	73	104	62	485
1992			9	139	68	30	73	104	62	485
1993			8	141	67	30	73	104	62	485
1994			7	142	67	31	72	104	62	485
1995			7	143	66	31	72	104	61	485
1996			7	145	66	31	72	104	61	485
1997			6	146	65	31	71	103	61	485
1998			6	148	65	32	71	103	61	485
1999			5	149	64	32	71	103	60	485
2000			5	150	64	32	71	103	60	485
2001			5	152	64	32	70	102	60	485
2002			4	153	63	33	70	102	59	485
2003			4	155	63	33	70	102	59	485
2004			4	156	62	33	69	102	59	485
2005			4	158	62	33	69	101	58	485
2006			3	159	61	34	69	101	58	485
2007			3	160	61	34	68	101	58	485
2008			3	162	60	34	68	100	57	485
2009				29	11	6	12	18	10	87
2010				6	2	1	3	4	2	19
2011				7	2	1	3	4	2	19
2012				7	2	1	3	4	2	19

the indirect impacts. The non-durable manufacturing sector and the service sector will generate the greatest share of this additional personal income in the county. In 1987, \$938,000 in additional personal income will be generated as a result of the disposal site activities; from 1988 to 2008, \$485,000 in personal income represents the indirect effect of the operational state of the project.

3. Local Fiscal Conditions

Table IV-9 shows the projected net tax revenue generated indirectly as a result of the economic activities associated with the disposal site. Lamar County could expect a surplus of revenue throughout the duration of the project, having \$18,000 of net revenue available from 1988 to 2008; as opposed to direct fiscal impacts, the indirect impacts will be positive even during the final phase of the project.

D. Total Impact

The total impact of the siting of a low-level waste disposal facility in Lamar county is detailed in Tables IV-10 through IV-12. Employment gains will occur most heavily in the operational phase in the manufacturing and government sectors; service employment growth is estimated to be large in the first phases of the project. In 1987, total employment will increase by 81, including 21 construction workers, 15 manufacturing workers, 25 workers in transportation, trade, and service, and 20 government workers. As is the case in other counties, the greatest impact in the operational phase is in government employment, which employs

25 people during that phase. Personal income, detailed in Table IV-11 will be primarily generated by the manufacturing, government, and service sectors. Table IV-12 shows that projected net revenue will be positive, around \$30,000 during the operational phase of the project, but will be negative during the closing phase, from 2010 to 2012.

The discounted total impact for Lamar County as a result of the waste disposal site will induce \$262,000 in tax revenues over the life of the project, and will induce \$7,525,000 in additional personal income.

Table IV-9. Indirect Revenue Changes for Lamar County
 (in thousands of dollars)

Year	Change in Revenue
1983	11
1984	14
1985	2
1986	1
1987	35
1988	18
1989	18
1990	18
1991	18
1992	18
1993	18
1994	18
1995	18
1996	18
1997	18
1998	18
1999	18
2000	18
2001	18
2002	18
2003	18
2004	18
2005	18
2006	18
2007	18
2008	18
2009	3
2010	1
2011	1
2012	1

Table IV-10. Total Employment Effects for Lamar County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983			1	3	2	1	2	17	3	28
1984			1	3	3	1	3	13	4	27
1985				1				3	1	6
1986					6	5	9	11	20	81
1987			21	9	3	1	4	4	26	44
1988			1	5	3	1	4	4	26	44
1989			1	5	3	1	4	4	26	44
1990			1	5	3	1	4	4	26	44
1991			1	5	3	1	4	4	26	44
1992			1	5	3	1	4	4	26	44
1993				5	3	1	4	4	25	44
1994				5	3	2	3	4	25	43
1995				5	3	2	3	4	25	43
1996				5	3	2	3	4	25	43
1997				5	3	2	3	4	25	43
1998				5	3	2	3	4	25	43
1999				5	3	2	3	4	25	43
2000				5	3	2	3	4	25	43
2001				5	3	2	3	4	25	43
2002				5	3	2	3	4	25	43
2003				5	3	2	3	4	25	43
2004				6	3	2	3	4	25	43
2005				6	3	2	3	4	25	43
2006				6	3	2	3	4	25	43
2007				6	3	2	3	4	25	43
2008				1	1		1	1	4	7
2009									1	2
2010									1	2
2011									1	2
2012										

Table IV-11. Total Income Effects for Lamar County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983			9	74	42	16	44	288	38	512
1984			11	99	55	22	58	378	50	673
1985			2	15	8	3	9	57	8	102
1986			1	7	4	1	4	26	3	45
1987			437	255	135	104	171	234	340	1,676
1988			11	133	69	29	74	105	445	866
1989			11	135	69	29	74	105	445	866
1990			10	136	68	29	73	105	444	866
1991			9	138	68	30	73	104	444	866
1992			9	139	68	30	73	104	444	866
1993			8	141	67	30	73	104	444	866
1994			7	142	67	31	72	104	443	866
1995			7	143	66	31	72	104	443	866
1996			7	145	66	31	72	104	443	866
1997			6	146	65	31	71	103	442	866
1998			6	148	65	32	71	103	442	866
1999			5	149	64	32	71	103	442	866
2000			5	150	64	32	71	103	442	866
2001			5	152	64	32	70	102	441	866
2002			4	153	63	33	70	102	441	866
2003			4	155	63	33	70	102	441	866
2004			4	156	62	33	69	102	440	866
2005			4	158	62	33	69	101	440	866
2006			3	159	61	34	69	101	440	866
2007			3	160	61	34	68	101	439	866
2008			3	162	60	34	68	100	439	866
2009				29	11	6	12	18	79	156
2010				6	2	1	3	4	17	34
2011				7	2	1	3	4	17	34
2012				7	2	1	3	4	17	34

Table IV-12. Total Revenue Effects for Lamar County
 (in thousands of dollars)

Year	Change in Revenue
1983	19
1984	25
1985	4
1986	2
1987	60
1988	30
1989	30
1990	30
1991	30
1992	30
1993	30
1994	30
1995	30
1996	30
1997	30
1998	30
1999	30
2000	30
2001	30
2002	30
2003	30
2004	30
2005	30
2006	30
2007	30
2008	30
2009	-3
2010	-2
2011	-2
2012	-2

V. Economic Impacts for Zavala County

A. Baseline Profile of Zavala County

1. Introduction

Zavala County, located in southwest Texas, encompasses 1,291 square miles of land and had a population of 11,666 in 1980. Consisting mainly of agricultural land, Zavala County's chief industry is farming. As the unemployment rate in Zavala County has been higher than those of the other two counties (see Table II-2 above), the economic effects of a waste disposal site may be of greater consequence to employment in the county than in Borden and Lamar counties.

2. Employment

Employment projections for Zavala county through 2012 are detailed in Table V-1. Total employment is projected to increase by an average of 3.2% annually, most of this increase due to a surge in mining employment (growing at a rate of 14% per year). In 1980, 45.8% of the employed labor force was employed in agriculture and 15.7% was employed in the government sector. The focus on agricultural employment will continue through 2012, as projected employment in agriculture will constitute 40.8% of the workforce, mining will employ 38.6%, and government will employ 6.5% of the labor force in 2012. These employment estimates show that each sector, with the exception of construction and nondurable manufacturing, will experience positive growth rates through 2012.

Table V-1. Baseline Employment Projections for Zavala County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transportation	Trade	Service	Gov't	Total
1980	1,981	79	34	638	14	59	466	367	682	4,320
1983	2,162	116	29	638	14	60	470	376	692	4,558
1984	2,226	132	27	637	15	61	471	380	696	4,644
1985	2,291	150	26	637	15	61	472	383	699	4,735
1986	2,359	170	24	637	15	62	474	386	703	4,830
1987	2,429	194	23	637	15	62	475	389	706	4,930
1988	2,500	220	22	637	15	63	476	392	710	5,036
1989	2,574	250	21	637	15	63	478	396	714	5,147
1990	2,650	284	20	637	15	64	479	399	717	5,265
1991	2,728	323	19	636	16	64	480	403	721	5,390
1992	2,809	367	18	636	16	65	481	406	724	5,522
1993	2,892	417	17	636	16	65	483	409	728	5,663
1994	2,977	474	16	636	16	66	484	413	732	5,814
1995	3,065	539	15	636	16	67	485	416	735	5,975
1996	3,156	613	14	636	16	67	487	420	739	6,147
1997	3,249	696	13	635	17	68	488	423	743	6,332
1998	3,345	791	13	635	17	68	489	427	746	6,532
1999	3,444	899	12	635	17	69	491	430	750	6,747
2000	3,545	1,022	11	635	17	69	492	434	754	6,981
2001	3,650	1,162	11	635	17	70	493	438	758	7,234
2002	3,758	1,321	10	635	17	70	495	441	762	7,509
2003	3,869	1,501	10	635	18	71	496	445	765	7,809
2004	3,983	1,706	9	634	18	72	497	449	769	8,138
2005	4,101	1,939	9	634	18	72	499	453	773	8,497
2006	4,222	2,204	8	634	18	73	500	457	777	8,893
2007	4,346	2,505	8	634	18	73	502	460	781	9,327
2008	4,475	2,847	7	634	18	74	503	464	785	9,807
2009	4,607	3,236	7	634	19	74	504	468	789	10,338
2010	4,743	3,678	7	634	19	75	506	472	793	10,925
2011	4,883	4,180	6	633	19	76	507	476	797	11,577
2012	5,027	4,751	6	633	19	76	508	480	801	12,302

3. Population

Baseline population projections for Zavala County are shown in Table V-2. The Bureau's projections show that population will increase by an annual average of 2.0% through 2012; these projections are larger than those of the Water Resources department for 1990 and 2000. Nonetheless, Zavala County's population is projected to triple by 2012.

4. Income

As detailed in Table V-3, 49.5% of Zavala County's personal income in 1980 was derived from agriculture; this trend is projected to continue to the point at which, in 2012, 76.9% of total personal income will be derived from the agriculture sector. Nondurable manufacturing comprised 13.6% of total county personal income in 1980.

With the projected increase in mining employment, personal income in that sector will increase to comprise 13.7% of income in 2012. Personal income in all other sectors will increase throughout the duration of the project, with the exception of the construction sector.

B. Direct Impacts

1. Employment

As the site is scheduled to employ 21 people, most of them from within the county's existing labor force, direct employment effects are

Table V-2. Baseline Population Projections for Zavala County

Year	Population
1980	11,666
1983	12,307
1984	12,541
1985	12,786
1986	13,043
1987	13,314
1988	13,599
1989	13,900
1990	14,218
1991	14,555
1992	14,913
1993	15,294
1994	15,700
1995	16,135
1996	16,600
1997	17,101
1998	17,639
1999	18,221
2000	18,851
2001	19,534
2002	20,278
2003	21,089
2004	21,975
2005	22,947
2006	24,014
2007	25,188
2008	26,484
2009	27,917
2010	29,503
2011	31,264
2012	33,221

Table V-3 Personal Income Projections for Zavala County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Transportation Durable	Trade	Service	Gov't	Total	
1980	24,691	1,170	702	6,813	154	1,393	4,826	3,664	6,413	49,826
1983	33,188	2,335	839	8,376	191	2,011	6,074	5,033	8,635	66,682
1984	36,523	2,654	799	8,663	192	2,124	6,124	5,193	8,727	70,999
1985	40,193	3,016	761	8,960	194	2,243	6,173	5,359	8,820	75,720
1986	44,232	3,428	725	9,267	196	2,368	6,224	5,530	8,914	80,885
1987	48,677	3,897	690	9,585	198	2,501	6,274	5,707	9,009	86,538
1988	53,568	4,429	658	9,913	200	2,641	6,325	5,889	9,105	92,728
1989	58,951	5,034	626	10,253	202	2,789	6,376	6,077	9,202	99,511
1990	64,874	5,721	597	10,604	204	2,946	6,428	6,271	9,300	106,946
1991	71,393	6,503	568	10,967	206	3,111	6,480	6,472	9,399	115,099
1992	78,567	7,391	541	11,343	208	3,285	6,533	6,678	9,499	124,046
1993	86,462	8,400	516	11,731	210	3,469	6,586	6,892	9,601	133,867
1994	95,150	9,547	491	12,133	212	3,664	6,639	7,112	9,703	144,652
1995	104,711	10,851	468	12,549	214	3,869	6,693	7,339	9,806	156,502
1996	115,233	12,333	446	12,979	216	4,086	6,747	7,573	9,911	169,525
1997	126,813	14,018	425	13,424	219	4,315	6,802	7,815	10,017	183,846
1998	139,555	15,932	405	13,884	221	4,557	6,857	8,065	10,123	199,598
1999	153,578	18,108	385	14,359	223	4,812	6,913	8,323	10,231	216,933
2000	169,011	20,581	367	14,851	225	5,082	6,969	8,588	10,340	236,015
2001	185,994	23,392	350	15,360	227	5,367	7,025	8,863	10,451	257,028
2002	204,683	26,587	333	15,886	230	5,668	7,082	9,146	10,562	280,177
2003	225,251	30,218	317	16,430	232	5,985	7,140	9,438	10,675	305,686
2004	247,885	34,345	302	16,993	234	6,321	7,198	9,739	10,788	333,806
2005	272,794	39,035	288	17,575	236	6,675	7,256	10,050	10,904	364,814
2006	300,205	44,367	274	18,178	239	7,049	7,315	10,371	11,020	399,018
2007	330,371	50,426	261	18,800	241	7,445	7,374	10,702	11,137	436,759
2008	363,569	57,313	249	19,444	244	7,862	7,434	11,044	11,256	478,415
2009	400,102	65,140	237	20,111	246	8,302	7,495	11,397	11,376	524,406
2010	440,306	74,037	226	20,800	248	8,768	7,555	11,761	11,497	575,198
2011	484,550	84,149	215	21,512	251	9,259	7,617	12,137	11,620	631,309
2012	533,240	95,641	205	22,249	253	9,778	7,678	12,524	11,744	693,313

projected to be short-lived in the first phases of the project. As shown in Table V-4, twenty of the thirty-seven jobs induced by the site in 1987 will be in construction, while the transportation, trade, and service sectors will see a one year increase in jobs. As in the other two counties, direct employment impacts will be felt most strongly in 1987.

2. Population

Population impacts will be rather minimal, as only four of the workers will have to be imported from outside the county. In the operational phase, 12 people will be brought into the county's population, which is quite small relative to the total population of the county. As the final phase of the project employs only one person, no significant population effect is expected after 2008.

3. Income

In the first phase of the project, the service sector will be the only recipient of direct personal income effects. Nonetheless, Table V-5 shows that income effects occur in other sectors, including construction, transportation, trade, and government during 1987. In the operational phase, personal income will be derived solely from the government sector.

4. Local Fiscal Conditions

Table V-6 shows that Zavala County's net revenues directly attributable to the disposal site project are of greater magnitude than in

Table V-4. Direct Employment Projections for Zavala County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983								15		15
1984								10		10
1985								3		3
1986								1		1
1987			20			2	2	2	12	37
1988									21	21
1989									21	21
1990									21	21
1991									21	21
1992									21	21
1993									21	21
1994									21	21
1995									21	21
1996									21	21
1997									21	21
1998									21	21
1999									21	21
2000									21	21
2001									21	21
2002									21	21
2003									21	21
2004									21	21
2005									21	21
2006									21	21
2007									21	21
2008									21	21
2009									3	3
2010									1	1
2011									1	1
2012									1	1

Note: Direct employment impacts are identical for all three counties. The impacts shown in this table are identical to those in table III-4.

Table V-5. Direct Personal Income Impacts for Zavala County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983								225		225
1984								297		297
1985								45		45
1986								20		20
1987			413			48	28	31	218	738
1988									382	382
1989									382	382
1990									382	382
1991									382	382
1992									382	382
1993									382	382
1994									382	382
1995									382	382
1996									382	382
1997									382	382
1998									382	382
1999									382	382
2000									382	382
2001									382	382
2002									382	382
2003									382	382
2004									382	382
2005									382	382
2006									382	382
2007									382	382
2008									382	382
2009									69	69
2010									15	15
2011									15	15
2012									15	15

Note: Direct personal income impacts are identical for all three counties. The impacts shown in this table are identical to those in table III-5.

Table V-6 Direct Revenue Impacts for Zavala County
 (in thousands of dollars)

Year	Change in Revenue
1983	11
1984	15
1985	2
1986	1
1987	31
1988	14
1989	14
1990	14
1991	14
1992	14
1993	14
1994	14
1995	14
1996	14
1997	14
1998	14
1999	14
2000	14
2001	14
2002	14
2003	14
2004	14
2005	14
2006	14
2007	14
2008	14
2009	-2
2010	-4
2011	-4
2012	-4

the other counties; the \$14,000 of net revenue which will be generated by the project in the operational phase will be lessened by the deficits that are projected to occur after 2008. These negative net revenues are also of a greater magnitude than those projected as a direct effect of the proposed site. This fact is due to the loss of property tax revenue on the more expensive land values relative to the other counties.

C. Indirect Impact

Indirect impacts of a waste disposal site result when those involved change the economic activity of others within the county. The following indirect impacts have been computed using an income multiplier derived for Zavala County, which is 1.39.

1. Employment

Indirect employment effects generated by the disposal site will be felt in nondurable manufacturing, transportation, trade, service, and government sectors, albeit these increases having a minimal effect in the operational phase of creating 7 jobs. The indirect employment effects diminish in the final phase of the project (see Table V-7).

2. Income

Table V-8 shows that personal income in all the sectors except agriculture and mining will be affected as an indirect result of the site. As those people directly involved induce economic activity within the

Table V-7 Indirect Employment Projections for Zavala County

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Manufacturing Durable	Transp.	Trade	Service	Gov't	Total
1983				1			1	1	2	4
1984				1			1	1	2	6
1985										1
1986										
1987				3		1	3	2	6	15
1988				1		1	1	1	3	7
1989				2		1	1	1	3	7
1990				2		1	1	1	3	7
1991				2		1	1	1	3	7
1992				2		1	1	1	3	7
1993				2		1	1	1	3	7
1994				2		1	1	1	3	7
1995				2		1	1	1	3	7
1996				2		1	1	1	3	7
1997				2		1	1	1	3	7
1998				2		1	1	1	2	7
1999				2		1	1	1	2	7
2000				2		1	1	1	2	7
2001				2		1	1	1	2	7
2002				2		1	1	1	2	7
2003				2		1	1	1	2	7
2004				2		1	1	1	2	7
2005				2		1	1	1	2	7
2006				2		1	1	1	2	7
2007				2		1	1	1	2	7
2008				2		1	1	1	2	7
2009										1
2010										
2011										
2012										

Table V-8. Indirect Income Projections for Zavala County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983			2	24	1	6	17	14	24	88
1984			3	31	1	8	22	19	32	116
1985				5		1	3	3	5	18
1986				2		1	1	1	2	8
1987			6	81	2	21	53	48	76	288
1988			3	42	1	11	27	25	39	149
1989			3	43	1	12	27	25	39	149
1990			2	43	1	12	26	26	38	149
1991			2	44	1	12	26	26	38	149
1992			2	44	1	13	26	26	37	149
1993			2	45	1	13	25	26	37	149
1994			2	45	1	14	25	26	36	149
1995			2	46	1	14	24	27	36	149
1996			2	46	1	14	24	27	35	149
1997			1	46	1	15	24	27	35	149
1998			1	47	1	15	23	27	34	149
1999			1	47	1	16	23	27	34	149
2000			1	48	1	16	22	28	33	149
2001			1	48	1	17	22	28	33	149
2002			1	48	1	17	22	28	32	149
2003			1	49	1	18	21	28	32	149
2004			1	49	1	18	21	28	31	149
2005			1	49	1	19	20	28	31	149
2006			1	50	1	19	20	28	30	149
2007			1	50	1	20	20	28	30	149
2008			1	50	1	20	19	29	29	149
2009				9		4	3	5	5	27
2010				2		1	1	1	1	6
2011				2		1	1	1	1	6
2012				2		1	1	1	1	6

county, income generated in nondurable manufacturing, trade, service, and government sectors will be most affected throughout the duration of the project.

3. Local Fiscal Conditions

As Table V-9 indicates, local fiscal conditions throughout the duration of the project will be positive as a result of indirect economic impacts. Unlike the direct fiscal projections, revenues should match expenditures in Zavala County in the final phase of the project.

D. Total Impact

The summation of the direct and indirect effects generated by the siting of a waste disposal facility in the county gives one the total economic impact of the site on the county. Table V-10 details the total employment effect in Zavala County as a result of the site. In short, the project would induce short-term employment in construction, and longer term employment in nondurable manufacturing, transportation, trade, service, and government sectors. In Zavala County, 28 additional jobs will arise as an effect of the site; as the project enters the final phase, these employment effects diminish. It is interesting to note that employment in agriculture and mining, two of the county's major industries, are not affected throughout the duration of the project.

Total personal income effects, shown in Table V-11, are distributed among all sectors except mining and agriculture. During the first phase, income is heavily generated by the service sector; in the construction phase, income is attributable to the construction sector. In the operational phase, government income is a major part of total county income, although nondurable manufacturing, transportation, trade, and service sectors contribute to additional income generated by the site. Similar to Borden and Lamar counties, Zavala County will experience a loss of tax revenue in the last three years of the project because of its agricultural base and land prices; \$4,000 will be lost in net revenues in 2010, 2011, and 2012. Therefore, this county's fiscal health will be more affected than those of the other counties.

The discounted total impact for Zavala County as a result of the site will induce \$193,000 in tax revenues over the life of the project; the site will induce \$4,600,000 in additional personal income.

Table V-9. Indirect Revenue Changes for Zavala County
(in thousands of dollars)

Year	Change in Revenue
1983	4
1984	6
1985	1
1986	0
1987	14
1988	7
1989	7
1990	7
1991	7
1992	7
1993	7
1994	7
1995	7
1996	7
1997	7
1998	7
1999	7
2000	7
2001	7
2002	7
2003	7
2004	7
2005	7
2006	7
2007	7
2008	7
2009	1
2010	0
2011	0
2012	0

Table V-10. Total Employment Effects for Zavala County

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't	Total
				Non-Dur	Durable					
1983				1			1	15	2	19
1984				1			1	10	2	15
1985								3		4
1986								1		2
1987			20	3		3	5	4	17	52
1988				1		1	1	1	24	28
1989				2		1	1	1	24	28
1990				2		1	1	1	24	28
1991				2		1	1	1	24	28
1992				2		1	1	1	24	28
1993				2		1	1	1	24	28
1994				2		1	1	1	24	28
1995				2		1	1	1	24	28
1996				2		1	1	1	24	28
1997				2		1	1	1	24	28
1998				2		1	1	1	23	28
1999				2		1	1	1	23	28
2000				2		1	1	1	23	28
2001				2		1	1	1	23	28
2002				2		1	1	1	23	28
2003				2		1	1	1	23	28
2004				2		1	1	1	23	28
2005				2		1	1	1	23	28
2006				2		1	1	1	23	28
2007				2		1	1	1	23	28
2008				2		1	1	1	23	28
2009									3	4
2010									1	1
2011									1	1
2012									1	1

Table V-11. Total Income Effect for Zavala County
(in thousands of dollars)

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't	Total
1983			2	24	1	6	17	240	24	313
1984			3	31	1	8	22	315	32	412
1985				5		1	3	48	5	63
1986				2		1	1	21	2	28
1987			419	81	2	70	81	80	294	1 27
1988			3	42	1	11	27	25	421	530
1989			3	43	1	12	27	25	420	530
1990			2	43	1	12	26	26	420	530
1991			2	44	1	12	26	26	419	530
1992			2	44	1	13	26	26	419	530
1993			2	45	1	13	25	26	418	530
1994			2	45	1	14	25	26	418	530
1995			2	46	1	14	24	27	417	530
1996			2	46	1	14	24	27	417	530
1997			1	46	1	15	24	27	416	530
1998			1	47	1	15	23	27	416	530
1999			1	47	1	16	23	27	415	530
2000			1	48	1	16	22	28	415	530
2001			1	48	1	17	22	28	414	530
2002			1	48	1	17	22	28	414	530
2003			1	49	1	18	21	28	413	530
2004			1	49	1	18	21	28	413	530
2005			1	49	1	19	20	28	412	530
2006			1	50	1	19	20	28	412	530
2007			1	50	1	20	20	28	411	530
2008			1	50	1	20	19	29	411	530
2009				9		4	3	5	74	96
2010				2		1	1	1	16	21
2011				2		1	1	1	16	21
2012				2		1	1	1	16	21

Table V-12. Total Revenue Effects for Zavala County
(in thousands of dollars)

Year	Change in Revenue
1983	15
1984	20
1985	3
1986	1
1987	46
1988	21
1989	21
1990	21
1991	21
1992	21
1993	21
1994	21
1995	21
1996	21
1997	21
1998	21
1999	21
2000	21
2001	21
2002	21
2003	21
2004	21
2005	21
2006	21
2007	21
2008	21
2009	0
2010	-4
2011	-4
2012	-4

VI. CONCLUSIONS

In addition to detailing pertinent information on Borden, Lamar, and Zavala counties, the summary table shows the total impact of the waste disposal site on employment, income, and revenue changes within each county. A comparison of the demographic and total impact figures reveals the differences between the counties in terms of the impact of a waste disposal site.

Borden, Lamar, and Zavala counties have different industrial bases: Borden County's economy is primarily based on oil, Lamar County's economy is more diversified and concentrated in manufacturing, and Zavala County's main industry is agriculture. These differences in industrial structure are reflected in the multiplier, which is used to project the indirect economic effects. Because of its size and more diversified economy relative to the other counties, Lamar County has a larger multiplier; therefore, the indirect effects generated by the site will be more significant for that county.

1. Employment

The total impacts estimated for employment, income, and local fiscal conditions in the various phases of the project are shown in the summary table. Although the direct impacts are the same for all three counties, the indirect effects, estimated through the use of the income-multiplier method, differ. Because Lamar County has a larger multiplier, the total impact in employment in the construction and operational phases is more

significant than that of the other two counties. Nonetheless, compared to its total labor force, this impact is rather minimal. As indicated earlier in the study, Borden County will have to import more workers than the other counties to construct and maintain the site; this fact heightens the economic impact of the site in Borden County.

2. Income

Most of the additional income induced by the site is generated during the construction phase in all three counties. This sudden burst of income during that phase results as workers directly involved in the project participate in the economy at large; during the operational phase, additional income generated by the project is roughly half of what was gained during the construction phase.

When these streams of estimated additional income are discounted in order to obtain the present value of income over the thirty-year period, there appear to be more significant differences between the three counties. The additional income generated by the disposal site is very significant for Borden County, as the \$4.1 million of projected income generated by the site is almost one-half of the total income in Borden County in 1980. Although the present value of the additional income is substantial for Lamar and Zavala counties, it is a relatively smaller when compared with the county's 1980 personal income.

3. Local Fiscal Conditions

As noted in the summary table, revenue changes for all three counties will be positive during the construction and operational phases, but during the closure phase, these revenue changes will be negative. Zavala County is projected to experience the most significant revenue change during the final phase; because of its agricultural base and more expensive land, the County's loss is estimated to be \$4,000 during the closure phase of the project. The discounted present values of the stream of revenue changes induced by the presence of the site are shown in the summary table.

Summary Table of Findings

	Borden	Lamar	Zavala
Main industry	Oil	Manufacturing	Agriculture
Multiplier	1.25	2.27	1.39
Baseline:			
Population-1980	859	42,156	11,666
Employment-1980	459	19,287	4,320
Income-1980 (Millions)	\$7.2	\$220.2	\$49.8
Annual average growth rates (1983-2012):			
Population and Employment	.8	2.0	3.3
Income	6.8	4.5	8.1
Total Impact:			
Employment			
Construction	49	81	52
Operational	27	43	28
Income			
Construction	\$ 923,000	\$ 1,676,000	\$ 1,027,000
Operational	477,000	866,000	530,000
Present value	4,144,000	7,525,000	4,608,000
Revenue changes			
Construction	\$12,000	\$60,000	\$46,000
Operational	6,000	30,000	21,000
Closure	-1,000	-2,000	-4,000
Present value	52,000	262,000	193,000

APPENDIX A

Impact Analysis for Dimmit County

ABSTRACT
DIVISION

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B. Direct Impacts	
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Executive Summary

This research estimates the economic impacts of a low-level radioactive waste disposal site in Dimmit County, Texas.

Description of Methods Used

The analysis is divided into four steps. The baseline profile, showing significant economic and demographic characteristics of the area is followed by a description of the direct impacts of the site on employment, population, income, and local fiscal conditions. These direct impacts result from the immediate changes in economic activity of those persons directly involved in the waste disposal facility.

The indirect impacts of the facility, which result when those directly involved change the economic activity of others, are estimated in the third step of the analysis. The indirect changes in employment, population, income, and local fiscal conditions are derived through the use of the income-multiplier method. Summing the direct and indirect impacts gives the total impact.

Major Findings

As documented in this study, the economic impacts of the waste disposal site in Dimmit county are rather small:

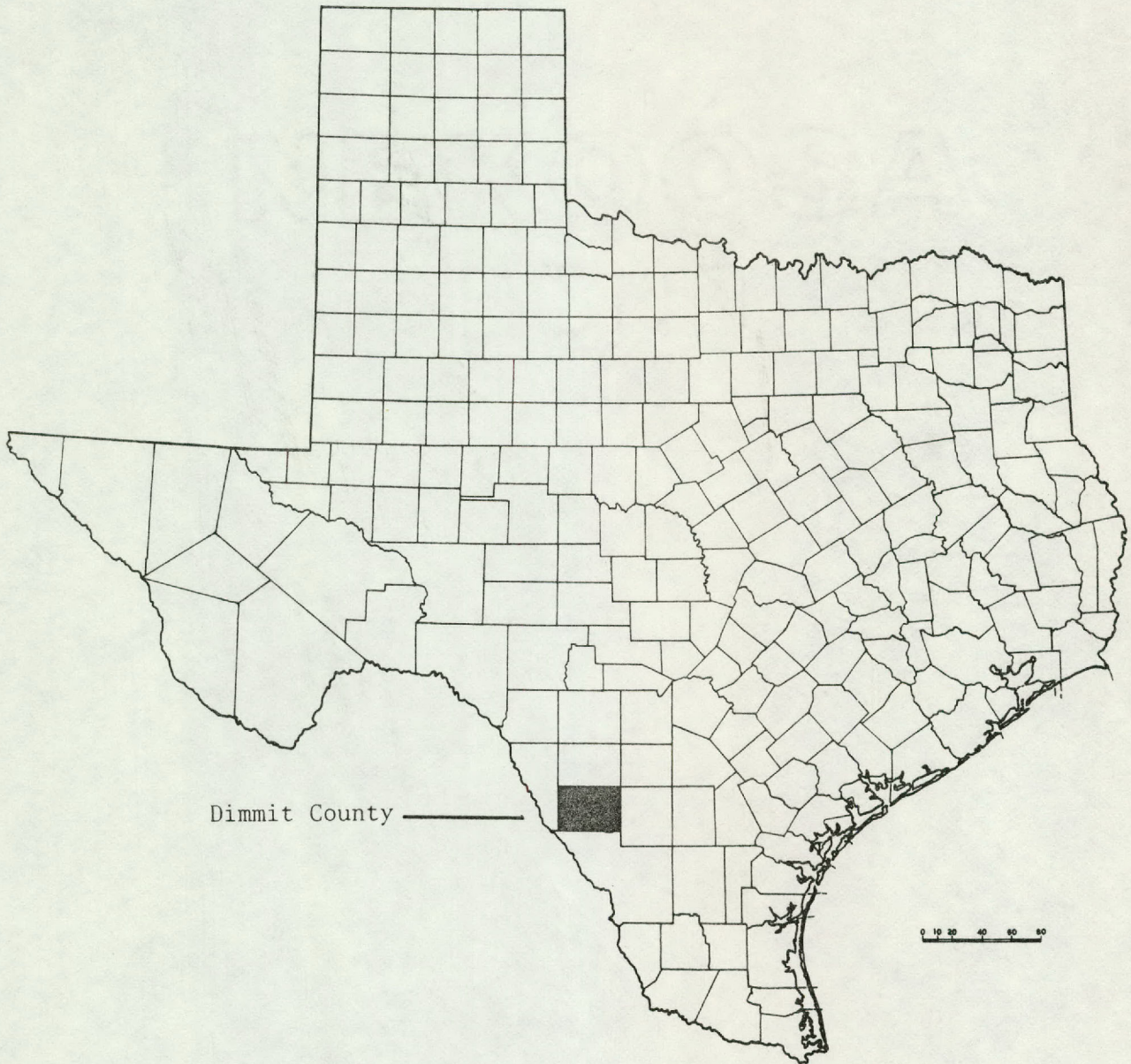
- 1) Population impacts will be minimal, as most of the individuals needed for the project will be recruited from the existing labor force.
- 2) The employment impacts are most significant during the construction and operational phases of the project. Most of the jobs during the later phases will be in the government sector, filled by those monitoring and maintaining the site.
- 3) In the first phase of the project, much of the additional income will be in the service sector. But in the operational phase income effects will occur in other sectors, such as manufacturing, transportation, and government. The discounted present value of the stream of the additional income generated by the project is \$5,734,700.
- 4) Local government fiscal conditions are improved by the presence of the facility for the first three phases of the project because the small losses of tax revenue due to reductions in the value of property will be offset by increases in tax revenue induced by the increased income and wealth of the population. In the closure phase, however, there is not enough offset, and the county suffers a

small reduction in revenue. Nevertheless, the discounted present value of the net changes in local fiscal conditions over the 30 year period is a positive \$33,588.

Summary Table of Findings for Dimmit County

Main industry	Oil
Multiplier	1.73
Baseline:	
Population-1980	11,367 persons
Employment-1980	3,765 workers
Income-1980	\$42.8 million (current dollars)
Annual average growth rate (1983-2012):	
Population and Employment	4.5 percent
Real Income	6.0 percent
Total Impact:	
Employment	
Construction Phase	67 workers
Operational Phase	36 workers
Income (1983 constant dollars)	
Construction Phase	\$1,278,000
Operational Phase	660,000
Present Value	5,734,700
Net Change in Revenues of Local Government (1983 constant dollars)	
Construction Phase	\$8,811
Operational Phase	4,063
Closure Phase	-815
Present Value	33,588

COUNTY OUTLINES



Dimmit County

0 10 20 40 60 80

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Printed by the Government Printer, Ottawa, 1910.

ECONOMIC IMPACTS
OF A LOW-LEVEL RADIOACTIVE WASTE SITE
IN DIMMIT COUNTY, TEXAS

I. Introduction

A. Background

The Texas Low-Level Radioactive Waste Disposal Authority is evaluating locations for potential low-level radioactive waste disposal sites in Texas. One consideration in determining the final site is the economic impact of the site on the local community. Many of the impacts of a disposal activity would be positive--creating jobs and improving economic conditions in the community; however, some may be negative.

B. Objective

The objective of this study is to implement the methodology developed in our earlier study¹ to produce quantitative estimates of the economic impacts of proposed disposal sites, as an aid to selecting the best site. The impacts which have been estimated are: (1) changes in

¹Olson, Jerry, and Goodman, Susan, Methodology for Projecting Economic Impacts of Low-Level Radioactive Waste Sites in Texas, University of Texas, Bureau of Business Research, Austin Texas (November 1983).

employment, (2) changes in population, (3) changes in income, (4) changes in local government revenue.

II. Description of Methods Used

A. Baseline Profile of Dimmit County

In order to learn a little about the community in which the disposal site will potentially be placed, a profile has been prepared showing the area's significant economic and demographic characteristics. The profile is a collection of relevant data from the Bureau's files. It includes data from the Bureau of Economic Analysis, the Department of Labor, the Texas Department of Health, the Texas Department of Water Resources, the Texas Almanac, the Texas Fact Book, the City and County Data Book, and other sources.

B. Direct Impacts of the Proposed Waste Site

1. Employment

Direct employment impacts are based on data supplied by Texas Low-Level Radioactive Waste Disposal Authority. The data are primarily taken from Chapter II of EBASCO's economic analysis study dated June 30, 1983.² There are four distinct phases in the life of the project. In phase one, most of the employment is related to site screening, site characterization, and

² Texas Low-level Radioactive Waste Disposal Facility, Economic Analysis, Ebasco Services, Inc., New York (June 30, 1983).

related activities. Employment requirements during phase one have been estimated as one job for every \$15,300 of personal income generated in the county during this phase of the project. The \$15,300 per job is based on the statewide relation between personal income and employment in the service industry. Personal income is the sum of wages, interest, profit and rent earned in an industry.

In the construction phase of the project, the number of workers is estimated by taking the value of total construction, as tabulated in the EBASCO report, and multiplying these figures by coefficients relating man-hour requirements to construction costs. The coefficients are shown in table II-1.³

Phase three of the project begins when the plant starts operation, and phase four is the closure phase. Employment requirements for phases three and four are taken directly from the appropriate tables in the EBASCO report. During phases three and four, the personnel requirements are classified under the "government" category, since government personnel are expected to operate the site.

2. Population

Population impacts in phase one of the project are expected to be minimal. The personnel who will do the site screening and related tasks

³"Labor Requirements for Federal Office Building Construction," Bureau of Labor Statistics Bulletin 1331, Government Printing Office, Washington, D.C., 1962. The coefficients in the original report have been adjusted for inflation.

**Table II.1 Direct Manyear Requirements per
Million Dollars of Construction Costs**

Construction	10.98
Trade	1.22
Transportation and Public Utilities	1.22
Services	1.22

will be transitory, since their tasks will last so short a time. In phase two, the construction personnel will be there for a somewhat longer period, but they are also expected to leave when their work is completed.

Population impacts in the operational phase are based on the assumption that the site will have to "import" at least the following four personnel: the Site Manager, the Site Supervisor, the Health Physics Supervisor, and the Health Physics Technician. It is assumed that each of these four individuals will move themselves and their households to the county from some other place. We assume that the total number of individuals coming to the county will be 12, based on the average Texas family size of 2.91 persons per family. The other 17 individuals needed to operate the site will be recruited from the available labor force. If there are not enough unemployed, then additional individuals will migrate from outside the county, bringing their households.

In the closure phase of the project, the entire labor force (one employee) can be recruited from the existing labor force, and no population impact is anticipated.

3. Income

In phase one of the project, we assumed that one third of the site screening spending, one half of the contingency spending and one half of the money spent on land would become income to the residents of the affected county. Land acquired is assumed to be by purchase from the

private sector rather than utilization of State lands. This income is assigned to the services industry.

Direct income impacts due to wage and salary employment have been determined by adding up the wages and salaries of the jobs directly created by the site. We used average wage rates for the appropriate industries for phases one and two of the life of the site, and we used the wage rates in the EBASCO report for phases three and four.

Unless otherwise specified, all dollar magnitudes, including personal income, are expressed in 1983 constant dollars. Constant or "real" dollars are used so that the importance of the impacts are related to an unchanging standard of economic value. If current dollars had been used, the magnitudes of the impacts would increase over time, with inflation. The tables depicting these changes could easily be misinterpreted as showing an increase in the economic impacts of the site over time.

4. Local Government Fiscal Impacts

Local government fiscal impacts will be both positive and negative. On the positive side, increases in personal income will increase the property holdings of the population, resulting in increases to the property taxes. The income increase will also increase consumption, inducing increases in sales tax collections in those counties which collect the one percent county sales tax. These tax increases were estimated by assuming that the tax bases would increase in proportion to the aggregate personal income of the county.

One fiscal impact which has not been dealt with quantitatively relates to provisions in the legislation for the state to assist local governments with payments of money, and/or assistance in kind. The Legislature may appropriate grant funds to subsidize the county as a result of needs that may arise from location of a site within the county. Similarly, equipment and/or personnel may be made available to the local government when possible.

Increases in personal income induced by the site tend to improve the county's fiscal condition by raising the amount of tax collected. However, there are three forces that will tend to work against the county's fiscal condition.

First, increases in population will tend to increase demands for services. If the number of individuals moving to a county were large, it is likely that the local governments would have to increase spending in order to keep the same quality of services. However, we do not believe that the few additional individuals projected to relocate in the county would induce a sufficient impact to warrant analysis.

The second negative fiscal impact on the county results when the land used for the disposal site is removed from the property tax base, resulting in decreased tax collections. The property for the site will be owned by the state, and the state does not pay taxes to local government. We have estimated this loss to the tax base to be \$110,000, based on 200

acres of land valued at \$550 per acre.⁴ The loss of tax revenue is determined by multiplying the tax rate, 24¢ per hundred dollars of valuation, by the value of the land taken out of the base, to get a loss of \$264.

The third negative fiscal impact to be considered is the possibility that property near the site may lose value due to its proximity to a locally unwanted facility. In a 1977 case, a Texas landowner brought suit against the Texas Electric Service Company for two types of loss of property value due to a railroad the company put across his land.⁵ The first loss was due to a reduction in productive capacity caused by the route's placement across the property. This loss was claimed without regard to the type of freight transported by the railroad, but rather the negative impact on economic activity due to its construction and operation. The property owner claimed that this impact lowered the value of his land from \$800 to \$500 per acre. The second loss was attributed to the fear of nuclear danger from accidents or sabotage during transport of nuclear waste across the land. The second loss is based on loss of market value of the land due to fear that may be in the minds of the buying public. No actual physical damage is being claimed--the claim is based on the fear of possible future damage. The property owner claimed that damage from this cause further lowered the value of his land from \$500 to

⁴Texas Real Estate Research Center, Trend, College Station (1982). \$550 is the median price per acre of rural land in 1981.

⁵Texas Electric Service Company v. Helon, 546 S.W. 2d 864 (Tx. Ct. App. 1977), rehearing denied, March 4 1977; cited in Rhonda K. Hageman, "Nuclear Waste Disposal: Potential Property Value Impacts," Natural Resources Journal 2 (October, 1981):789-810.

\$350 per acre. The court ruled that the second claim was justified, but the total damages awarded to the property owner happened to be exactly the amount he sued for on the grounds of the first loss--\$300 per acre. Had the court separately listed the amount of the total loss attributable to the two component parts, we would be able to use the court's judgement in assigning a quantitative value to the second loss in the counties under study.

The findings regarding the reduction of land values due to fear damage "... seem to support the theoretical view that property value loss due to the proximity of potential nuclear hazards may occur. However such losses may be overshadowed by impacts of proximity of nuclear facilities and waste transport routes on local economic activity. In those states where officials were able to point to claims of property value damage in legal records, only two plaintiffs actually purported to have suffered or expected to suffer losses because of fear of potential nuclear dangers "... Of these two (in Texas and North Carolina), only the suit in Texas provided expert testimony as to the actual monetary damage...." The plaintiffs claims in the North Carolina suit were not upheld because the evidence showed that land values in the area actually increased in the vicinity of the site.⁶

Hageman's observations regarding the overshadowing of property value reductions by property value increases is worth considering. Observations of radioactive waste sites currently in operation show that

⁶Hageman, p. 806.

firms in the radioactive waste disposal business frequently set up offices, vehicle maintenance facilities, and other activities near the disposal site. The demand for land by these firms would possibly cause land prices to go up in the vicinity of the site. Furthermore, the structures these firms build would become part of the property tax base, offsetting losses in the value of the land itself.

Based on the above considerations, we have estimated the property tax loss due to the fear argument by assuming that all land within one half mile of the site loses half of its value. We believe this assumption will wildly overestimate the extent of the loss, but the impact is still quite small, compared to the county's total budget. The 200 acres for the site itself can be fit into a circle .315 miles in radius. All land within one half mile of the site is thus a circle .815 miles in radius. This outer circle covers 1336 acres, of which 200 are included in the site itself. The acreage subject to fear damage is thus 1136 acres. At \$550 per acre, the total value of the affected land is \$624,800. Half of this value is \$312,400, and the taxes collected on this value would be \$749.76, at the prevailing tax rate of 24¢ per \$100.

C. Indirect and Total Impacts

The direct impacts of locating a new facility in an area result from the immediate changes in economic activity of those directly involved--for example, the construction workers, and those who will man the facility. Indirect impacts result when those directly involved change the economic activity of others. For example, when the construction worker buys something from a local store, an indirect impact has taken place.

The store owner's income goes up, even though he is not directly involved in the waste facility. The indirect impacts on a community are often as important as the direct impacts.

The indirect impacts of the facility have been computed using a simple income-multiplier method.⁷ The multiplier is derived by dividing the total personal income of the area being considered by the personal income in the "export" industries. The export industries are those that primarily serve customers outside the area. We assumed that agriculture, mining, manufacturing, and federal government were export industries. All other industries, trade, services, local government and so forth, were domestic.

The multiplier relates the direct changes in community income to the indirect changes in the following way: for example, if the direct income change is \$100,000, and the multiplier is 1.5, then the indirect income change is \$50,000, and the total impact is \$150,000. This simple approach is widely used in this sort of application, because of its well-accepted theoretical underpinnings. More complex methods, such as input-output methods could have been used, but would have been beyond the scope of this study.

The multiplier computed for Dimmit county is 1.73.

⁷Isard, Walter, Methods of Regional Analysis pp. 192ff, MIT Press, Cambridge (1960).

Given the total income changes from the multiplier analysis, we estimated indirect income changes by industry on the assumption that each industry gets a share of the indirect income that is equal to its share of income in the baseline forecast.

Indirect employment impacts by industry were assumed to be proportional to the indirect income impacts by industry. The total indirect employment impact was derived by adding the impacts of the industries. The workers who fill the new jobs are assumed to come from the available labor force. If there are not enough unemployed, then workers and their households are assumed to migrate to the county from other places.

Indirect population and local government fiscal impacts were based on the income and employment figures computed above, using the same assumptions described above for the direct impacts--namely that population changes are proportional to the number of "imported" workers, and tax revenues are proportional to personal income.

III. Economic Impacts for Dimmit County

A. Baseline Profile

1. Introduction

Dimmit County, located in southeast Texas, covers 1,344 square miles of land and had a population of 11,367 in 1980. Consisting mainly of level to rolling land, Dimmit County's chief industry is oil, which accounts for 18 percent of employment in the county. Other major industries are state and local government, agriculture, and retailing. There is not much manufacturing or other highly developed industry in the county.

2. Employment

As Table III-1 indicates, total employment in Dimmit County is projected to increase by an annual average rate of 4.5 percent through 2012. Employment is projected to increase in all sectors except agriculture. Mining (i.e. oil) employment is forecast to increase by a rate of 4.9 percent annually through 2012 to the point at which it comprises 21 percent of the county workforce. Employment in the trade, services, and government sectors is expected to increase through 2012 to the point at which the sectors will employ 14.9 percent, 18 percent, and 22.1 percent of the labor force, respectively.

3. Population

Table III-1 Baseline Employment Projections

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	638.	729.	161.	177.	0	158.	508.	495.	1007.	3874.
1984	627.	767.	173.	186.	0	168.	534.	525.	1049.	4028.
1985	616.	806.	185.	195.	0	178.	562.	557.	1091.	4192.
1986	606.	847.	199.	205.	0	189.	591.	591.	1136.	4364.
1987	596.	891.	213.	216.	0	201.	621.	627.	1182.	4547.
1988	586.	937.	229.	227.	0	213.	653.	665.	1231.	4740.
1989	576.	985.	245.	239.	0	226.	686.	706.	1281.	4943.
1990	566.	1035.	263.	251.	0	240.	721.	749.	1333.	5158.
1991	556.	1088.	282.	264.	0	255.	758.	795.	1387.	5386.
1992	547.	1144.	302.	277.	0	271.	797.	843.	1444.	5626.
1993	538.	1203.	324.	292.	0	288.	838.	894.	1503.	5879.
1994	528.	1264.	348.	306.	0	305.	881.	949.	1564.	6147.
1995	519.	1329.	373.	322.	0	324.	926.	1006.	1628.	6429.
1996	511.	1397.	400.	339.	0	344.	974.	1068.	1695.	6727.
1997	502.	1469.	429.	356.	0	366.	1024.	1133.	1764.	7042.
1998	494.	1544.	460.	374.	0	388.	1076.	1202.	1836.	7374.
1999	485.	1623.	494.	394.	0	412.	1131.	1275.	1911.	7725.
2000	477.	1707.	529.	414.	0	438.	1189.	1352.	1989.	8095.
2001	469.	1794.	568.	435.	0	465.	1250.	1435.	2070.	8485.
2002	461.	1886.	609.	457.	0	494.	1315.	1522.	2154.	8897.
2003	453.	1983.	653.	481.	0	524.	1382.	1615.	2242.	9332.
2004	445.	2084.	700.	505.	0	556.	1453.	1713.	2334.	9792.
2005	438.	2191.	751.	531.	0	591.	1527.	1817.	2429.	10276.
2006	430.	2304.	806.	558.	0	627.	1606.	1928.	2528.	10787.
2007	423.	2422.	864.	587.	0	666.	1688.	2045.	2631.	11327.
2008	416.	2546.	927.	617.	0	707.	1774.	2170.	2739.	11896.
2009	409.	2676.	994.	649.	0	751.	1865.	2302.	2850.	12497.
2010	402.	2814.	1066.	682.	0	798.	1961.	2442.	2967.	13131.
2011	395.	2958.	1143.	717.	0	847.	2062.	2591.	3088.	13801.
2012	388.	3110.	1226.	754.	0	899.	2167.	2749.	3214.	14507.

Table III-2 details population projections for Dimmit County prepared by the Bureau of Business Research, the Texas Department of Health, and Texas Department of Water Resources. The Bureau estimates, larger than those of the Health and Water Resources departments, show that the population of Dimmit County is expected to grow at an annual average rate of 4.5 percent.

4. Income

As shown in Table III-3, mining and government income comprise the major portion of the county's personal income. In 1980, income derived from these two sectors represented 53.2 percent of the county's total income. In addition to the mining and government sectors, a major portion of personal income in 2012 will be derived from the construction and transportation sectors.

B. Direct Impacts

1. Employment

As the site is scheduled to employ only 21 people in the operational phase, long-term employment impacts are minimal. In 1987, at the height of the construction phase, 20 people will be employed in the construction sector, 6 people will be employed in transportation, trade and service sectors, and 12 people will be employed in the government sector (see Table III-4). The government sector, which includes those people hired to maintain the site, will employ 21 workers through the operational phase of

Table III-2 Baseline Population Projections

Year	BBR	Health	Water
1983	12482.		
1984	12979.		
1985	13506.		
1986	14062.		
1987	14650.		
1988	15271.		
1989	15927.		
1990	16620.	15158.	14272.
1991	17352.		
1992	18126.		
1993	18942.		
1994	19804.		
1995	20714.		
1996	21675.		
1997	22689.		
1998	23759.		
1999	24889.		
2000	26081.	20084.	17303.
2001	27340.		
2002	28668.		
2003	30069.		
2004	31548.		
2005	33109.		
2006	34756.		
2007	36495.		
2008	38329.		
2009	40265.		
2010	42309.		
2011	44465.		
2012	46742.		

BBR- Bureau of Business Research
 Health- Texas Department of Health
 Water- Texas Department of Water Resources

Table III-3 Baseline Income Projections

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	2148.	7979.	1624.	1732.	0	1600.	2511.	2328.	5592.	25515.
1984	2090.	8388.	1795.	1813.	0	1768.	2646.	2463.	5879.	26843.
1985	2033.	8819.	1984.	1898.	0	1954.	2789.	2605.	6180.	28263.
1986	1977.	9271.	2193.	1988.	0	2160.	2940.	2756.	6497.	29782.
1987	1924.	9746.	2423.	2081.	0	2387.	3099.	2916.	6830.	31406.
1988	1871.	10246.	2678.	2179.	0	2638.	3266.	3085.	7180.	33143.
1989	1820.	10771.	2960.	2281.	0	2915.	3442.	3263.	7549.	35002.
1990	1771.	11323.	3271.	2388.	0	3222.	3628.	3452.	7936.	36992.
1991	1723.	11904.	3615.	2500.	0	3561.	3824.	3652.	8343.	39122.
1992	1676.	12514.	3996.	2618.	0	3935.	4031.	3864.	8770.	41403.
1993	1630.	13156.	4416.	2741.	0	4349.	4248.	4088.	9220.	43848.
1994	1586.	13830.	4880.	2869.	0	4807.	4478.	4324.	9693.	46467.
1995	1542.	14539.	5393.	3004.	0	5312.	4720.	4575.	10190.	49276.
1996	1500.	15285.	5961.	3145.	0	5871.	4975.	4840.	10712.	52289.
1997	1460.	16068.	6588.	3293.	0	6488.	5243.	5120.	11261.	55522.
1998	1420.	16892.	7280.	3448.	0	7171.	5527.	5417.	11839.	58993.
1999	1381.	17758.	8046.	3610.	0	7925.	5825.	5730.	12446.	62721.
2000	1344.	18669.	8892.	3779.	0	8759.	6140.	6062.	13084.	66728.
2001	1307.	19626.	9827.	3957.	0	9680.	6471.	6413.	13755.	71036.
2002	1271.	20632.	10861.	4143.	0	10698.	6821.	6785.	14460.	75670.
2003	1237.	21690.	12003.	4337.	0	11823.	7189.	7178.	15201.	80658.
2004	1203.	22802.	13266.	4541.	0	13066.	7577.	7593.	15980.	86029.
2005	1170.	23971.	14661.	4754.	0	14440.	7987.	8033.	16800.	91817.
2006	1139.	25200.	16203.	4977.	0	15959.	8418.	8498.	17661.	98056.
2007	1108.	26492.	17907.	5211.	0	17637.	8873.	8990.	18567.	104785.
2008	1077.	27851.	19790.	5456.	0	19492.	9352.	9511.	19519.	112048.
2009	1048.	29279.	21871.	5712.	0	21542.	9857.	10062.	20519.	119891.
2010	1020.	30780.	24172.	5981.	0	23808.	10389.	10645.	21571.	128365.
2011	992.	32358.	26714.	6262.	0	26312.	10950.	11261.	22677.	137526.
2012	965.	34017.	29523.	6556.	0	29079.	11542.	11913.	23840.	147435.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-4 Direct Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	0	0	0	0	0	0	0	15.	0	15.
1984	0	0	0	0	0	0	0	10.	0	10.
1985	0	0	0	0	0	0	0	3.	0	3.
1986	0	0	0	0	0	0	0	1.	0	1.
1987	0	0	20.	0	0	2.	2.	2.	12.	37.
1988	0	0	0	0	0	0	0	0	21.	21.
1989	0	0	0	0	0	0	0	0	21.	21.
1990	0	0	0	0	0	0	0	0	21.	21.
1991	0	0	0	0	0	0	0	0	21.	21.
1992	0	0	0	0	0	0	0	0	21.	21.
1993	0	0	0	0	0	0	0	0	21.	21.
1994	0	0	0	0	0	0	0	0	21.	21.
1995	0	0	0	0	0	0	0	0	21.	21.
1996	0	0	0	0	0	0	0	0	21.	21.
1997	0	0	0	0	0	0	0	0	21.	21.
1998	0	0	0	0	0	0	0	0	21.	21.
1999	0	0	0	0	0	0	0	0	21.	21.
2000	0	0	0	0	0	0	0	0	21.	21.
2001	0	0	0	0	0	0	0	0	21.	21.
2002	0	0	0	0	0	0	0	0	21.	21.
2003	0	0	0	0	0	0	0	0	21.	21.
2004	0	0	0	0	0	0	0	0	21.	21.
2005	0	0	0	0	0	0	0	0	21.	21.
2006	0	0	0	0	0	0	0	0	21.	21.
2007	0	0	0	0	0	0	0	0	21.	21.
2008	0	0	0	0	0	0	0	0	21.	21.
2009	0	0	0	0	0	0	0	0	3.	3.
2010	0	0	0	0	0	0	0	0	1.	1.
2011	0	0	0	0	0	0	0	0	1.	1.
2012	0	0	0	0	0	0	0	0	1.	1.

the project; after 2008, the direct employment impact of the site decreases substantially. Therefore, the direct impact will be felt most strongly in 1987, as 37 new jobs are created as a result of the waste disposal site.

2. Population

The direct population impact of the site is zero from 1983 to 1986. During this period, all of the employment needs can be met from the ranks of the available work force. In 1987, the first of the "imported" workers arrive, and the population impact is an increase of seven people. During the operational phase, the population impact is an increase of twelve people, the four workers required to be imported, and their households. No other workers will have to be imported, and thus there is no additional population impact. (See detailed tabulation below under the discussion of total employment requirements and population change.)

3. Income

As with employment, income impacts will be most substantial in 1987, especially in the construction sector. In the first years of the project, income will be derived in the service sector. With construction of the site in progress, income will be generated in transportation, trade, and government sectors (see Table III-5). In the operational phase, all of the personal income directly induced by the project will be derived from the government sector.

Table III-5 Direct Personal Income Impacts

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't.	Total
1983	0	0	0	0	0	0	0	225.	0	225.
1984	0	0	0	0	0	0	0	297.	0	297.
1985	0	0	0	0	0	0	0	45.	0	45.
1986	0	0	0	0	0	0	0	20.	0	20.
1987	0	0	413.	0	0	48.	28.	31.	218.	738.
1988	0	0	0	0	0	0	0	0	382.	382.
1989	0	0	0	0	0	0	0	0	382.	382.
1990	0	0	0	0	0	0	0	0	382.	382.
1991	0	0	0	0	0	0	0	0	382.	382.
1992	0	0	0	0	0	0	0	0	382.	382.
1993	0	0	0	0	0	0	0	0	382.	382.
1994	0	0	0	0	0	0	0	0	382.	382.
1995	0	0	0	0	0	0	0	0	382.	382.
1996	0	0	0	0	0	0	0	0	382.	382.
1997	0	0	0	0	0	0	0	0	382.	382.
1998	0	0	0	0	0	0	0	0	382.	382.
1999	0	0	0	0	0	0	0	0	382.	382.
2000	0	0	0	0	0	0	0	0	382.	382.
2001	0	0	0	0	0	0	0	0	382.	382.
2002	0	0	0	0	0	0	0	0	382.	382.
2003	0	0	0	0	0	0	0	0	382.	382.
2004	0	0	0	0	0	0	0	0	382.	382.
2005	0	0	0	0	0	0	0	0	382.	382.
2006	0	0	0	0	0	0	0	0	382.	382.
2007	0	0	0	0	0	0	0	0	382.	382.
2008	0	0	0	0	0	0	0	0	382.	382.
2009	0	0	0	0	0	0	0	0	382.	382.
2010	0	0	0	0	0	0	0	0	69.	69.
2011	0	0	0	0	0	0	0	0	15.	15.
2012	0	0	0	0	0	0	0	0	15.	15.

Note: All figures are expressed in thousands of 1983 constant dollars

4. Local Government Fiscal Conditions

The projected changes in tax revenue resulting from the existence of a waste site in Dimmit County are detailed in Table III-6. Although net revenue is projected to increase by \$4,665 in 1987, revenue changes are expected to be only \$1,921 for most of the project's life. At the end of the project's life, the revenue change is negative since the loss of tax revenue due to land being taken out of the property tax base exceeds the gain due to increased income.

C. Indirect Impacts

Indirect impacts of the disposal site result when those directly involved change the economic activity of others within the county. These indirect impacts are computed for Dimmit County by using an income multiplier of 1.73.

1. Employment

Indirect employment effects for Dimmit County are minimal, but are most significant in the mining, transportation, trade, and government sectors (see Table III-7). As with the direct effects, the greatest indirect employment effects will occur in 1987, as 29 jobs are indirectly created during the construction phase of the project.

2. Income

Table III-6 Direct Revenue Impacts

Year	Change in Revenue
1983	720.
1984	1267.
1985	-668.
1986	-860.
1987	4665.
1988	1921.
1989	1921.
1990	1921.
1991	1921.
1992	1921.
1993	1921.
1994	1921.
1995	1921.
1996	1921.
1997	1921.
1998	1921.
1999	1921.
2000	1921.
2001	1921.
2002	1921.
2003	1921.
2004	1921.
2005	1921.
2006	1921.
2007	1921.
2008	1921.
2009	-485.
2010	-899.
2011	-899.
2012	-899.

Note: All figures are expressed in 1983 constant dollars

Table III-7 Indirect Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't.	Total
1983	1.	2.	1.	1.	0	0.	1.	1.	3.	9.
1984	1.	2.	1.	1.	0	1.	2.	1.	4.	12.
1985	0.	0.	0.	0.	0	0.	0.	0.	1.	2.
1986	0.	0.	0.	0.	0	0.	0.	0.	0.	1.
1987	2.	6.	2.	2.	0	2.	4.	3.	9.	29.
1988	1.	3.	1.	1.	0	1.	2.	2.	5.	15.
1989	1.	3.	1.	1.	0	1.	2.	2.	5.	15.
1990	1.	3.	1.	1.	0	1.	2.	2.	5.	15.
1991	1.	3.	1.	1.	0	1.	2.	2.	5.	15.
1992	1.	3.	1.	1.	0	1.	2.	2.	4.	15.
1993	1.	3.	1.	1.	0	1.	2.	2.	4.	15.
1994	1.	3.	1.	1.	0	1.	2.	2.	4.	15.
1995	1.	3.	1.	1.	0	1.	2.	2.	4.	15.
1996	0.	3.	2.	1.	0	1.	2.	2.	4.	15.
1997	0.	3.	2.	1.	0	1.	2.	2.	4.	15.
1998	0.	3.	2.	1.	0	1.	2.	2.	4.	15.
1999	0.	3.	2.	1.	0	1.	2.	2.	4.	15.
2000	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2001	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2002	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2003	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2004	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2005	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2006	0.	3.	2.	1.	0	2.	2.	2.	4.	15.
2007	0.	2.	2.	1.	0	2.	2.	2.	4.	15.
2008	0.	2.	2.	1.	0	2.	2.	2.	4.	15.
2009	0.	0.	0.	0.	0	0.	0.	0.	1.	3.
2010	0.	0.	0.	0.	0	0.	0.	0.	0.	1.
2011	0.	0.	0.	0.	0	0.	0.	0.	0.	1.
2012	0.	0.	0.	0.	0	0.	0.	0.	0.	1.

As an indirect result of the waste site in operation in Dimmit County, personal income in all sectors except durable manufacturing will be affected. (See Table III-8.) In the construction year, an additional \$539,000 in personal income will be derived as an indirect result of the project. During the operational phase, the gain will be \$279,000 per year.

3. Local Fiscal Conditions

Table III-9 indicates the new revenue generated as an indirect impact of the proposed waste site in Dimmit County. Unlike direct fiscal impacts, the indirect fiscal impacts will be positive throughout the duration of the project, as a result of the additional tax collections induced by indirect income.

D. Total Impact

In order to assess the total impact of the siting of a waste disposal facility in Dimmit County, one must add the direct and indirect impacts generated by the disposal site. These total impacts are shown in Tables III-10 through III-12. Table III-10 shows that employment gains will occur for one year in construction as a result of the project, with 67 jobs created in that year. Other significant impacts occurring throughout the duration of the project occur in transportation, trade, and the government sector. Service employment is affected in the first phase of the project but remains rather insignificant after 1987.

Table III-8 Indirect Income Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	14.	51.	10.	11.	0	10.	16.	15.	36.	165.
1984	17.	68.	14.	15.	0	14.	21.	20.	47.	217.
1985	2.	10.	2.	2.	0	2.	3.	3.	7.	33.
1986	1.	5.	1.	1.	0	1.	1.	1.	3.	15.
1987	33.	167.	42.	36.	0	41.	53.	50.	117.	539.
1988	16.	86.	23.	18.	0	22.	27.	26.	60.	279.
1989	14.	86.	24.	18.	0	23.	27.	26.	60.	279.
1990	13.	85.	25.	18.	0	24.	27.	26.	60.	279.
1991	12.	85.	26.	18.	0	25.	27.	26.	59.	279.
1992	11.	84.	27.	18.	0	26.	27.	26.	59.	279.
1993	10.	84.	28.	17.	0	28.	27.	26.	59.	279.
1994	10.	83.	29.	17.	0	29.	27.	26.	58.	279.
1995	9.	82.	30.	17.	0	30.	27.	26.	58.	279.
1996	8.	81.	32.	17.	0	31.	27.	26.	57.	279.
1997	7.	81.	33.	17.	0	33.	26.	26.	57.	279.
1998	7.	80.	34.	16.	0	34.	26.	26.	56.	279.
1999	6.	79.	36.	16.	0	35.	26.	25.	55.	279.
2000	6.	78.	37.	16.	0	37.	26.	25.	55.	279.
2001	5.	77.	39.	16.	0	38.	25.	25.	54.	279.
2002	5.	76.	40.	15.	0	39.	25.	25.	53.	279.
2003	4.	75.	41.	15.	0	41.	25.	25.	53.	279.
2004	4.	74.	43.	15.	0	42.	25.	25.	52.	279.
2005	4.	73.	44.	14.	0	44.	24.	24.	51.	279.
2006	3.	72.	46.	14.	0	45.	24.	24.	50.	279.
2007	3.	70.	48.	14.	0	47.	24.	24.	49.	279.
2008	3.	69.	49.	14.	0	48.	23.	24.	49.	279.
2009	0.	12.	9.	2.	0	9.	4.	4.	9.	50.
2010	0.	3.	2.	1.	0	2.	1.	1.	2.	11.
2011	0.	3.	2.	0.	0	2.	1.	1.	2.	11.
2012	0.	3.	2.	0.	0	2.	1.	1.	2.	11.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-9 Indirect Revenue Changes

Year	Change in Revenue
1983	1266.
1984	1665.
1985	253.
1986	112.
1987	4146.
1988	2142.
1989	2142.
1990	2142.
1991	2142.
1992	2142.
1993	2142.
1994	2142.
1995	2142.
1996	2142.
1997	2142.
1998	2142.
1999	2142.
2000	2142.
2001	2142.
2002	2142.
2003	2142.
2004	2142.
2005	2142.
2006	2142.
2007	2142.
2008	2142.
2009	386.
2010	84.
2011	84.
2012	84.

Note: All figures are expressed in 1983 constant dollars

Table III-10 Total Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't.	Total
1983	1.	2.	1.	1.	0	0.	1.	16.	3.	24.
1984	1.	2.	1.	1.	0	1.	2.	11.	4.	21.
1985	0.	0.	0.	0.	0	0.	0.	3.	1.	5.
1986	0.	0.	0.	0.	0	0.	0.	1.	0.	2.
1987	2.	6.	22.	2.	0	4.	6.	5.	20.	67.
1988	1.	3.	1.	1.	0	1.	2.	2.	26.	36.
1989	1.	3.	1.	1.	0	1.	2.	2.	26.	36.
1990	1.	3.	1.	1.	0	1.	2.	2.	26.	36.
1991	1.	3.	1.	1.	0	1.	2.	2.	26.	36.
1992	1.	3.	1.	1.	0	1.	2.	2.	25.	36.
1993	1.	3.	1.	1.	0	1.	2.	2.	25.	36.
1994	1.	3.	1.	1.	0	1.	2.	2.	25.	36.
1995	1.	3.	1.	1.	0	1.	2.	2.	25.	36.
1996	0.	3.	2.	1.	0	1.	2.	2.	25.	36.
1997	0.	3.	2.	1.	0	1.	2.	2.	25.	36.
1998	0.	3.	2.	1.	0	1.	2.	2.	25.	36.
1999	0.	3.	2.	1.	0	1.	2.	2.	25.	36.
2000	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2001	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2002	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2003	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2004	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2005	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2006	0.	3.	2.	1.	0	2.	2.	2.	25.	36.
2007	0.	2.	2.	1.	0	2.	2.	2.	25.	36.
2008	0.	2.	2.	1.	0	2.	2.	2.	25.	36.
2009	0.	0.	0.	0.	0	0.	0.	0.	4.	6.
2010	0.	0.	0.	0.	0	0.	0.	0.	1.	2.
2011	0.	0.	0.	0.	0	0.	0.	0.	1.	2.
2012	0.	0.	0.	0.	0	0.	0.	0.	1.	2.

Personal income, arrayed in table III-11, will be most significantly attributable to the government sector throughout the duration of the project, although the other sectors, with the exception of durable manufacturing will inject additional personal income into the county. Table III-12 shows that the fiscal condition of the county as a result of the site will be relatively healthy until 2009, resulting in annual net revenues of \$4,063 from 1988 to 2008. It is the final phase of the project that will result in negative net tax revenue for the county. Nonetheless, the discounted present value of the stream of net revenues generated as a result of the waste disposal site in Dimmit County is estimated as \$33,588, and the discounted present value of the stream of personal income for Dimmit County is estimated to be \$5,734,700.

Table III-13 shows the total labor requirements relative to the number of unemployed, and shows how many workers will come from the available labor force and how many will come from the outside. The population impacts, based on the number of workers imported are shown in the last column. The number of unemployed is fixed at ten percent of the labor force, based on recent experience.⁸ The labor force is estimated to be a constant 31 percent of the population. The labor requirements shown in table III-13 are the same as the last column of table III-10.

⁸Average unemployment, annually from 1978 to 1982 has been 9.5, 9.4, 9.2, 10.4, and 11.6 percent.

Table III-11 Total Income Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	14.	51.	10.	11.	0	10.	16.	240.	36.	390.
1984	17.	68.	14.	15.	0	14.	21.	316.	47.	513.
1985	2.	10.	2.	2.	0	2.	3.	48.	7.	78.
1986	1.	5.	1.	1.	0	1.	1.	21.	3.	35.
1987	33.	167.	455.	36.	0	89.	81.	81.	335.	1278.
1988	16.	86.	23.	18.	0	22.	27.	26.	442.	660.
1989	14.	86.	24.	18.	0	23.	27.	26.	442.	660.
1990	13.	85.	25.	18.	0	24.	27.	26.	441.	660.
1991	12.	85.	26.	18.	0	25.	27.	26.	441.	660.
1992	11.	84.	27.	18.	0	26.	27.	26.	441.	660.
1993	10.	84.	28.	17.	0	28.	27.	26.	440.	660.
1994	10.	83.	29.	17.	0	29.	27.	26.	440.	660.
1995	9.	82.	30.	17.	0	30.	27.	26.	439.	660.
1996	8.	81.	32.	17.	0	31.	27.	26.	439.	660.
1997	7.	81.	33.	17.	0	33.	26.	26.	438.	660.
1998	7.	80.	34.	16.	0	34.	26.	26.	438.	660.
1999	6.	79.	36.	16.	0	35.	26.	25.	437.	660.
2000	6.	78.	37.	16.	0	37.	26.	25.	436.	660.
2001	5.	77.	39.	16.	0	38.	25.	25.	436.	660.
2002	5.	76.	40.	15.	0	39.	25.	25.	435.	660.
2003	4.	75.	41.	15.	0	41.	25.	25.	434.	660.
2004	4.	74.	43.	15.	0	42.	25.	25.	433.	660.
2005	4.	73.	44.	14.	0	44.	24.	24.	433.	660.
2006	3.	72.	46.	14.	0	45.	24.	24.	432.	660.
2007	3.	70.	48.	14.	0	47.	24.	24.	431.	660.
2008	3.	69.	49.	14.	0	48.	23.	24.	430.	660.
2009	0.	12.	9.	2.	0	9.	4.	4.	77.	119.
2010	0.	3.	2.	1.	0	2.	1.	1.	17.	26.
2011	0.	3.	2.	0.	0	2.	1.	1.	17.	26.
2012	0.	3.	2.	0.	0	2.	1.	1.	17.	26.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-12 Total Revenue Impacts

Year	Change in Revenue
1983	1986.
1984	2932.
1985	-415.
1986	-748.
1987	8811.
1988	4063.
1989	4063.
1990	4063.
1991	4063.
1992	4063.
1993	4063.
1994	4063.
1995	4063.
1996	4063.
1997	4063.
1998	4063.
1999	4063.
2000	4063.
2001	4063.
2002	4063.
2003	4063.
2004	4063.
2005	4063.
2006	4063.
2007	4063.
2008	4063.
2009	-100.
2010	-815.
2011	-815.
2012	-815.

Note: All figures are expressed in 1983 constant dollars

Table III-13 Employment Requirements and Population Change

Year	Total Labor Required	Unemployed Workers	Local Workers Hired	Imported Workers	Population Change
1983	23.8	430.	23.8	0	0
1984	21.4	448.	21.4	0	0
1985	4.7	466.	4.7	0	0
1986	2.1	485.	2.1	0	0
1987	66.8	505.	64.3	2.5	7.
1988	36.2	527.	32.2	4.0	12.
1989	36.1	549.	32.1	4.0	12.
1990	36.1	573.	32.1	4.0	12.
1991	36.1	598.	32.1	4.0	12.
1992	36.1	625.	32.1	4.0	12.
1993	36.0	653.	32.0	4.0	12.
1994	36.0	683.	32.0	4.0	12.
1995	36.0	714.	32.0	4.0	12.
1996	36.0	747.	32.0	4.0	12.
1997	35.9	782.	31.9	4.0	12.
1998	35.9	819.	31.9	4.0	12.
1999	35.9	858.	31.9	4.0	12.
2000	35.9	899.	31.9	4.0	12.
2001	35.8	943.	31.8	4.0	12.
2002	35.8	989.	31.8	4.0	12.
2003	35.8	1037.	31.8	4.0	12.
2004	35.7	1088.	31.7	4.0	12.
2005	35.7	1142.	31.7	4.0	12.
2006	35.7	1199.	31.7	4.0	12.
2007	35.6	1259.	31.6	4.0	12.
2008	35.6	1322.	31.6	4.0	12.
2009	5.6	1389.	5.6	0	0
2010	1.6	1459.	1.6	0	0
2011	1.6	1533.	1.6	0	0
2012	1.6	1612.	1.6	0	0

APPENDIX B

Impact Analysis for Hudspeth County

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 A. Baseline Profile

 B. Direct Impacts

 C. Indirect Impacts

 D. Total Impact

Executive Summary

This research estimates the economic impacts of a low-level radioactive waste disposal site in Hudspeth County, Texas.

Description of Methods Used

The analysis is divided into four steps. The baseline profile, showing significant economic and demographic characteristics of the area is followed by a description of the direct impacts of the site on employment, population, income, and local fiscal conditions. These direct impacts result from the immediate changes in economic activity of those persons directly involved in the waste disposal facility.

The indirect impacts of the facility, which result when those directly involved change the economic activity of others, are estimated in the third step of the analysis. The indirect changes in employment, population, income, and local fiscal conditions are derived through the use of the income-multiplier method. Summing the direct and indirect impacts gives the total impact.

Major Findings

As documented in this study, the economic impacts of the waste disposal site in Hudspeth County are rather small:

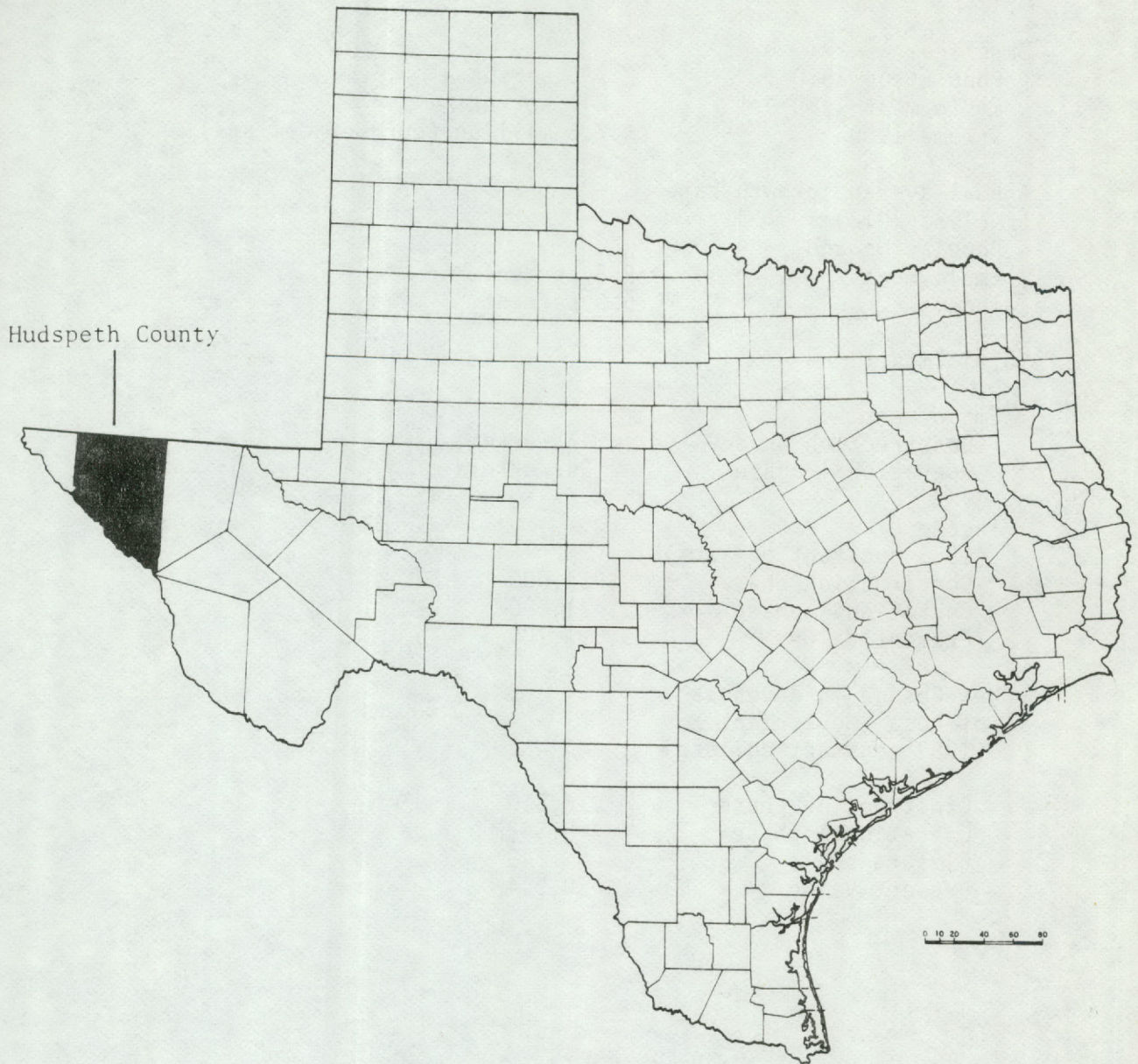
- 1) Population impacts will be minimal, as most of the individuals needed for the project will be recruited from the existing labor force.
- 2) The employment impacts are most significant during the construction and operational phases of the project. Most of the jobs during the later phases will be in the government sector, filled by those monitoring and maintaining the site.
- 3) In the first phase of the project, much of the additional income will be in the service sector. But in the operational phase income effects will occur in other sectors, such as manufacturing, agriculture, transportation, and government. The discounted present value of the stream of the additional income generated by the project is \$3,591,700.
- 4) Local fiscal conditions are improved by the presence of the facility in all four phases of the project because the small losses of tax revenue due to reductions in the value of property will be offset by increases in tax revenue induced by the increased income and wealth of the population. The discounted present value of the

net changes in local fiscal conditions over the 30 year period is a positive \$70,544.

Summary Table of Findings for Hudspeth County

Main industry	Agriculture
Multiplier	1.13
Baseline:	
Population-1980	2,728 persons
Employment-1980	841 workers
Income-1980	\$17.6 million (current dollars)
Annual average growth rate (1983-2012):	
Population and Employment	2.8 percent
Income	5.0 percent
Total Impact:	
Employment	
Construction phase	43 workers
Operational phase	24 workers
Income (1983 constant dollars)	
Construction phase	\$834,000
Operational phase	431,000
Present Value	3,591,700
Net Change in Revenues of Local Government (1983 constant dollars)	
Construction phase	\$16,810
Operational phase	8,542
Closure phase	49
Present Value	70,544

COUNTY OUTLINES



Bureau of Business Research
The University of Texas

ECONOMIC IMPACTS
OF A LOW-LEVEL RADIOACTIVE WASTE SITE
IN HUDSPETH COUNTY, TEXAS

I. Introduction

A. Background

The Texas Low-Level Radioactive Waste Disposal Authority is evaluating locations for potential low-level radioactive waste disposal sites in Texas. One of the most important considerations in determining the final site is the economic impact of the site on the local community. Many of the impacts of a disposal activity would be positive--creating jobs and improving economic conditions in the community; however, some may be negative.

B. Objective

The objective of this study is to implement the methodology developed in our earlier study¹ to produce quantitative estimates of the the economic impacts of proposed disposal sites, as an aid to selecting the

¹Olson, Jerry, and Goodman, Susan, Methodology for Projecting Economic Impacts of Low-Level Radioactive Waste Sites in Texas, University of Texas, Bureau of Business Research, Austin, Texas, (November 1983).

best site. The impacts which have been estimated are: (1) changes in employment, (2) changes in population, (3) changes in income, (4) changes in local government revenue.

II. Description of Methods Used

A. Baseline Profile of Hudspeth County

In order to learn a little about the community in which the disposal site will potentially be placed, a profile has been prepared, showing the area's significant economic and demographic characteristics. The profile is a collection of relevant data from the Bureau's files. It includes data from the Bureau of Economic Analysis, the Department of Labor, the Texas Department of Health, the Texas Department of Water Resources, the Texas Almanac, the Texas Fact Book, the City and County Data Book, and other sources.

B. Direct Impacts of the Proposed Waste Site

1. Employment

Direct employment impacts are based on data supplied by Texas Low-Level Radioactive Waste Disposal Authority. The data are primarily taken from Chapter II of EBASCO's economic analysis study dated June 30, 1983.² There are four distinct phases in the life of the project. In phase one, most of

² Texas Low-level Radioactive Waste Disposal Facility, Economic Analysis, Ebasco Services, Inc., New York (June 30, 1983).

the employment is related to site screening, site characterization, and related activities. Employment requirements during phase one have been estimated as one job for every \$15,300 of personal income generated in the county during this phase of the project. The \$15,300 per job is based on the statewide relation between personal income and employment in the service industry. Personal income is the sum of wages, interest, profit and rent earned in an industry.

In the construction phase of the project, the number of workers is estimated by taking the value of total construction, as tabulated in the EBASCO report, and multiplying these figures by coefficients relating man-hour requirements to construction costs.³ The coefficients are shown in table II-1.

Phase three of the project begins when the plant starts operation, and phase four is the closure phase. Employment requirements for phases three and four are taken directly from the appropriate tables in the EBASCO report. During phases three and four, the personnel requirements are classified under the "government" category, since government personnel are expected to operate the site.

2. Population

³"Labor Requirements for Federal Office Building Construction," Bureau of Labor Statistics Bulletin 1331, Government Printing Office, Washington, D.C., 1962. The coefficients in the original report have been adjusted for inflation.

Table 11.1 Direct Manyear Requirements per
Million Dollars of Construction Costs

Construction	10.98
Trade	1.22
Transportation and Public Utilities	1.22
Services	1.22

Population impacts in phase one of the project are expected to be minimal. The personnel who will do the site screening and related tasks will be transitory, since their tasks will last so short a time. In phase two, the construction personnel will be there for a somewhat longer period, but they also will leave when their work is completed.

Population impacts in the operational phase are based on the assumption that the site will have to "import" at least the following four personnel: the Site Manager, the Site Supervisor, the Health Physics Supervisor, and the Health Physics Technician. It is assumed that each of these four individuals will move themselves and their households to the county from some other place. We assume that the total number of individuals coming to the county will be 12, based on the average Texas family size of 2.91 persons per family. The other 17 individuals needed to operate the site will be recruited from the available labor force. If there are not enough unemployed, then additional individuals will migrate from outside the county, bringing their households.

In the closure phase of the project, the entire labor force (one employee) can be recruited from the existing labor force, and no population impact is anticipated.

3. Income

In phase one of the project, we assumed that one third of the site screening spending and one half of the contingency spending would become

income to the residents of the affected county. Land used for the site is assumed to be state owned.

Direct income impacts due to wage and salary employment have been determined by adding up the wages and salaries of the jobs directly created by the site. We used average wage rates for the appropriate industries for phases one and two of the life of the site, and we used the wage rates in the EBASCO report for phases three and four.

Unless otherwise specified, all dollar magnitudes, including personal income, are expressed in 1983 constant dollars. Constant or "real" dollars are used so that the importance of the impacts are related to an unchanging standard of economic value. If current dollars had been used, the magnitudes of the impacts would increase over time, with inflation. The tables depicting these changes could easily be misinterpreted as showing an increase in the economic impacts of the site over time.

4. Local Government Fiscal Impacts

Local government fiscal impacts will be both positive and negative. On the positive side, increases in personal income will increase the property holdings of the population, resulting in increases to the property taxes. The income increase will also increase consumption, inducing increases in sales tax collections in those counties which collect the one percent county sales tax. These tax increases were estimated by assuming that the tax bases would increase in proportion to the aggregate personal income of the county.

One fiscal impact which has not been dealt with quantitatively relates to provisions in the legislation for the state to assist local governments with payments of money, and/or assistance in kind. The Legislature may appropriate grant funds to subsidize the county as a result of needs that may arise from location of a site within the county. Similarly, equipment and/or personnel may be made available to the local government when possible.

Increases in personal income induced by the site tend to improve the county's fiscal condition by raising the amount of tax collected. However, there are three forces that will tend to work against the county's fiscal condition.

First, increases in population will tend to increase demands for services. If the number of individuals moving to a county were large, it is likely that the local governments would have to increase spending in order to keep the same quality of services. However, we do not believe that the few additional individuals projected to relocate in the county would induce a sufficient impact to warrant analysis.

The second negative fiscal impact on the counties results when the land used for the disposal site is removed from the property tax base, resulting in decreased tax collections. The property for the site will be owned by the state, and the state does not pay taxes to local government. We have estimated this loss to the tax base to be \$25,000, based on 200

acres of land valued at \$125 per acre.⁴ The loss of tax revenue is determined by multiplying the tax rate, 31¢ per hundred dollars of valuation, by the value of the land taken out of the base, to get a loss of \$77.50.

The third negative fiscal impact to be considered is the possibility that property near the site may lose value due to its proximity to a locally unwanted facility. In a 1977 case, a Texas landowner brought suit against the Texas Electric Service Company for two types of loss of property value due to a railroad the company put across his land.⁵ The first loss was due to a reduction in productive capacity caused by the route's placement across the property. This loss was claimed without regard to the type of freight transported by the railroad, but rather the negative impact on economic activity due to its construction and operation. The property owner claimed that this impact lowered the value of his land from \$800 to \$500 per acre. The second loss was attributed to the fear of nuclear danger from accidents or sabotage during transport of nuclear waste across the land. The second loss is based on loss of market value of the land due to fear that may be in the minds of the buying public. No actual physical damage is being claimed--the claim is based on the fear of possible future damage. The property owner claimed that damage from this cause lowered the value of his land from \$500 to \$350 per

⁴Texas Real Estate Research Center, Trend, College Station (1982). \$125 is the median price per acre of rural land in 1981.

⁵Texas Electric Service Company v. Helon, 546 S.W. 2d 864 (Tx. Ct. App. 1977), rehearing denied, March 4 1977; cited in Rhonda K. Hageman, "Nuclear Waste Disposal: Potential Property Value Impacts," Natural Resources Journal 2 (October, 1981):789-810.

acre. The court ruled that the second claim was justified, but the total damages awarded to the property owner happened to be exactly the amount he sued for on the grounds of the first loss--\$300 per acre. Had the court separately listed the amount of the total loss attributable to the two component parts, we would be able to use the court's judgement in assigning a quantitative value to the second loss in the counties under study.

The findings regarding the reduction of land values due to fear damage "... seem to support the theoretical view that property value loss due to the proximity of potential nuclear hazards may occur. However such losses may be overshadowed by impacts of proximity of nuclear facilities and waste transport routes on local economic activity. In those states where officials were able to point to claims of property value damage in legal records, only two plaintiffs actually purported to have suffered or expected to suffer losses because of fear of potential nuclear dangers "... Of these two (in Texas and North Carolina), only the suit in Texas provided expert testimony as to the actual monetary damage...." The plaintiff's claims in the North Carolina suit were not upheld because the evidence showed that land values in the area actually increased in the vicinity of the site.⁶

Hageman's observations regarding the overshadowing of property value reductions by property value increases is worth considering. Observations of radioactive waste sites currently in operation show that

⁶Hageman, p. 806.

firms in the radioactive waste disposal business frequently set up offices, vehicle maintenance facilities, and other activities near the disposal site. The demand for land by these firms would possibly cause land prices to go up in the vicinity of the site. Furthermore, the structures these firms build would become part of the property tax base, offsetting losses in the value of the land itself.

Based on the above considerations, we have estimated the property tax loss due to the fear argument by assuming that all land within one half mile of the site loses half of its value. We believe the assumption of a fifty percent loss of value will vastly overestimate the loss. The overstatement is not a great source of concern, however, inasmuch as the estimated loss is still quite small, compared to the county's total budget. The 200 acres for the site itself can be fit into a circle .315 miles in radius. All land within one half mile of the site is thus a circle .815 miles in radius. This outer circle covers 1336 acres, of which 200 are included in the site itself. The acreage subject to fear damage is thus 1136 acres. At \$125 per acre, the total value of the affected land is \$142,000. Half of this value is \$71,000, and the taxes collected on this value would be \$220.10, at the prevailing tax rate of 31¢ per \$100.

C. Indirect and Total Impacts

The direct impacts of locating a new facility in an area result from the immediate changes in economic activity of those directly involved--for example, the construction workers, and those who will man

the facility. Indirect impacts result when those directly involved change the economic activity of others. For example, when the construction worker buys something from a local store, an indirect impact has taken place. The store owner's income goes up, even though he is not directly involved in the waste facility. The indirect impacts on a community are often as important as the direct impacts.

The indirect impacts of the facility have been computed using a simple income-multiplier method.⁷ The multiplier is derived by dividing the total personal income of the area being considered by the personal income in the "export" industries. The export industries are those that primarily serve customers outside the area. We assumed that agriculture, mining, manufacturing, and federal government were export industries. All other industries, trade, services, local government and so forth, were domestic.

The multiplier relates the direct changes in community income to the indirect changes in the following way: for example, if the direct income change is \$100,000, and the multiplier is 1.5, then the indirect income change is \$50,000, and the total impact is \$150,000. This simple approach is widely used in this sort of application, because of its well-accepted theoretical underpinnings. More complex methods, such as input-output methods could have been used, but would have been beyond the scope of this study.

⁷Isard, Walter, Methods of Regional Analysis pp. 192ff, MIT Press, Cambridge (1960).

The multiplier computed for Hudspeth county is 1.13.

Given the total income changes from the multiplier analysis, we estimated indirect income changes by industry on the assumption that each industry gets a share of the indirect income that is equal to its share of income in the baseline forecast.

Indirect employment impacts by industry were assumed to be proportional to the indirect income impacts by industry. The total indirect employment impact was derived by adding the impacts of the industries. The workers who fill the new jobs are assumed to come from the available labor force. If there are not enough unemployed, then workers and their households are assumed to migrate to the county from other places.

Indirect population and local government fiscal impacts were based on the income and employment figures computed above, using the same assumptions described above for the direct impacts--namely that population changes are proportional to the number of "imported" workers, and tax revenues are proportional to personal income.

III. Economic Impacts for Hudspeth County

A. Baseline Profile

1. Introduction

Hudspeth County, located in west Texas, encompasses 4,554 square miles of land and had a population of 2,728 in 1980. Consisting mainly of gravelly calcaerous clay loams, Hudspeth County's chief industry is agriculture, which employed 31 percent of its employed labor force. Mining and tourism are the other main industries. There is little manufacturing or other highly developed industry.

2. Employment

As Table III-1 indicates, total employment in Hudspeth County is projected to increase by an annual average rate of 2.8 percent through 2012. The industries with the biggest growth rates are durable manufacturing, government, and mining. Employment in the construction and services sectors is projected to decline through 2012.

3. Population

Table III-2 details population projections for Hudspeth County, prepared by the Bureau of Business Research, the Texas Department of Health, and and Texas Department of Water Resources. The Bureau estimates are substantially smaller than those from the Texas Department of Health,

Table III-1 Baseline Employment Projections

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	492.	58.	9.	0	42.	41.	82.	37.	281.	1043.
1984	487.	60.	8.	0	47.	40.	83.	34.	294.	1053.
1985	481.	62.	7.	0	52.	39.	84.	32.	308.	1065.
1986	476.	64.	7.	0	57.	39.	84.	30.	322.	1078.
1987	471.	66.	6.	0	63.	38.	85.	27.	337.	1092.
1988	466.	68.	5.	0	69.	37.	86.	25.	353.	1108.
1989	461.	70.	5.	0	76.	36.	86.	24.	369.	1126.
1990	456.	73.	4.	0	84.	35.	87.	22.	386.	1146.
1991	451.	75.	4.	0	92.	35.	88.	20.	404.	1168.
1992	446.	78.	3.	0	101.	34.	88.	19.	423.	1191.
1993	441.	80.	3.	0	112.	33.	89.	17.	442.	1217.
1994	436.	83.	3.	0	123.	32.	90.	16.	463.	1245.
1995	431.	86.	2.	0	136.	32.	90.	15.	484.	1276.
1996	426.	89.	2.	0	149.	31.	91.	14.	506.	1309.
1997	422.	92.	2.	0	164.	30.	92.	13.	530.	1344.
1998	417.	95.	2.	0	181.	30.	93.	12.	554.	1383.
1999	413.	98.	1.	0	200.	29.	93.	11.	580.	1425.
2000	408.	101.	1.	0	220.	28.	94.	10.	607.	1470.
2001	404.	104.	1.	0	242.	28.	95.	10.	635.	1518.
2002	399.	108.	1.	0	267.	27.	96.	9.	664.	1570.
2003	395.	112.	1.	0	294.	27.	96.	8.	695.	1627.
2004	391.	115.	1.	0	324.	26.	97.	8.	727.	1688.
2005	386.	119.	1.	0	356.	25.	98.	7.	760.	1753.
2006	382.	123.	1.	0	393.	25.	99.	7.	796.	1824.
2007	378.	127.	1.	0	432.	24.	99.	6.	832.	1900.
2008	374.	132.	0.	0	476.	24.	100.	6.	871.	1983.
2009	370.	136.	0.	0	525.	23.	101.	5.	911.	2072.
2010	366.	141.	0.	0	578.	23.	102.	5.	953.	2167.
2011	362.	145.	0.	0	637.	22.	103.	4.	997.	2271.
2012	358.	150.	0.	0	701.	22.	103.	4.	1043.	2382.

Table III-3 Baseline Population Projections

Year	BBR	Health	Water
1983	2801.		
1984	2828.		
1985	2859.		
1986	2893.		
1987	2932.		
1988	2976.		
1989	3024.		
1990	3077.	4837.	3219.
1991	3135.		
1992	3199.		
1993	3268.		
1994	3343.		
1995	3425.		
1996	3514.		
1997	3610.		
1998	3713.		
1999	3825.		
2000	3946.	11244.	4268.
2001	4076.		
2002	4217.		
2003	4368.		
2004	4532.		
2005	4708.		
2006	4898.		
2007	5103.		
2008	5324.		
2009	5562.		
2010	5819.		
2011	6097.		
2012	6397.		

BBR- Bureau of Business Research
 Health- Texas Department of Health
 Water- Texas Department of Water Resources

but they are not too far different from the Texas Department of Water Resources.

4. Income

As shown in Table III-3, agriculture, government and mining are the largest industries in the county. In 1983, income in these sectors is projected to represent 86 percent of the county's total income.

B. Direct Impacts

1. Employment

As the site is scheduled to employ only 21 people in the operational phase, long-term employment impacts are minimal. In 1987, at the height of the construction phase, 20 people will be employed in the construction sector, 6 people will be employed in transportation, trade and service sectors, and 12 people will be employed in the government sector (see Table III-4). The government sector, which includes those people hired to maintain the site, will employ 21 workers through the operational phase of the project; after 2008, the direct employment impact of the site decreases substantially. Therefore, the direct impact will be felt most strongly in 1987, as 37 new jobs are created as a result of the waste disposal site.

2. Population

Table III-3 Baseline Income Projections

Year	Agriculture	Mining	Const.	Manufacturing Non-Dur	Durable	Transp.	Trade	Service	Gov't.	Total
1983	7894.	641.	219.	0	290.	615.	412.	160.	1825.	12054.
1984	8299.	670.	199.	0	315.	618.	412.	144.	1943.	12600.
1985	8724.	701.	180.	0	344.	621.	412.	130.	2068.	13181.
1986	9172.	733.	164.	0	374.	625.	412.	117.	2202.	13799.
1987	9642.	766.	149.	0	408.	628.	413.	106.	2344.	14455.
1988	10136.	801.	135.	0	444.	631.	413.	95.	2495.	15152.
1989	10656.	838.	123.	0	484.	635.	413.	86.	2657.	15891.
1990	11202.	876.	112.	0	527.	638.	414.	77.	2828.	16675.
1991	11777.	916.	101.	0	574.	642.	414.	70.	3011.	17505.
1992	12381.	958.	92.	0	626.	645.	414.	63.	3205.	18384.
1993	13015.	1002.	84.	0	682.	649.	414.	57.	3412.	19315.
1994	13683.	1048.	76.	0	742.	652.	415.	51.	3633.	20300.
1995	14384.	1096.	69.	0	809.	656.	415.	46.	3868.	21342.
1996	15122.	1146.	63.	0	881.	659.	415.	41.	4117.	22445.
1997	15897.	1198.	57.	0	960.	663.	416.	37.	4383.	23611.
1998	16712.	1253.	52.	0	1046.	666.	416.	34.	4667.	24845.
1999	17569.	1310.	47.	0	1139.	670.	416.	30.	4968.	26150.
2000	18470.	1370.	43.	0	1241.	674.	417.	27.	5289.	27530.
2001	19417.	1433.	39.	0	1352.	677.	417.	25.	5631.	28990.
2002	20412.	1498.	35.	0	1473.	681.	417.	22.	5994.	30533.
2003	21459.	1567.	32.	0	1604.	685.	417.	20.	6382.	32165.
2004	22559.	1638.	29.	0	1748.	688.	418.	18.	6794.	33892.
2005	23716.	1713.	26.	0	1904.	692.	418.	16.	7233.	35718.
2006	24932.	1792.	24.	0	2074.	696.	418.	15.	7700.	37650.
2007	26210.	1873.	22.	0	2259.	700.	419.	13.	8198.	39693.
2008	27554.	1959.	20.	0	2461.	703.	419.	12.	8727.	41855.
2009	28966.	2049.	18.	0	2681.	707.	419.	11.	9291.	44142.
2010	30451.	2142.	16.	0	2921.	711.	419.	10.	9891.	46562.
2011	32013.	2240.	15.	0	3182.	715.	420.	9.	10530.	49123.
2012	33654.	2343.	14.	0	3466.	719.	420.	8.	11210.	51833.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-4 Direct Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	0	0	0	0	0	0	0	15.	0	15.
1984	0	0	0	0	0	0	0	10.	0	10.
1985	0	0	0	0	0	0	0	3.	0	3.
1986	0	0	0	0	0	0	0	1.	0	1.
1987	0	0	20.	0	0	2.	2.	2.	12.	37.
1988	0	0	0	0	0	0	0	0	21.	21.
1989	0	0	0	0	0	0	0	0	21.	21.
1990	0	0	0	0	0	0	0	0	21.	21.
1991	0	0	0	0	0	0	0	0	21.	21.
1992	0	0	0	0	0	0	0	0	21.	21.
1993	0	0	0	0	0	0	0	0	21.	21.
1994	0	0	0	0	0	0	0	0	21.	21.
1995	0	0	0	0	0	0	0	0	21.	21.
1996	0	0	0	0	0	0	0	0	21.	21.
1997	0	0	0	0	0	0	0	0	21.	21.
1998	0	0	0	0	0	0	0	0	21.	21.
1999	0	0	0	0	0	0	0	0	21.	21.
2000	0	0	0	0	0	0	0	0	21.	21.
2001	0	0	0	0	0	0	0	0	21.	21.
2002	0	0	0	0	0	0	0	0	21.	21.
2003	0	0	0	0	0	0	0	0	21.	21.
2004	0	0	0	0	0	0	0	0	21.	21.
2005	0	0	0	0	0	0	0	0	21.	21.
2006	0	0	0	0	0	0	0	0	21.	21.
2007	0	0	0	0	0	0	0	0	21.	21.
2008	0	0	0	0	0	0	0	0	21.	21.
2009	0	0	0	0	0	0	0	0	3.	3.
2010	0	0	0	0	0	0	0	0	1.	1.
2011	0	0	0	0	0	0	0	0	1.	1.
2012	0	0	0	0	0	0	0	0	1.	1.

The direct population impact of the site is zero from 1983 to 1986. During this period, all of the employment needs can be met from the available work force. In 1987, the first of the "imported" workers arrive, and the direct population impact is an increase of seven people. During the operational phase, the population impact is an increase of twelve people, the four workers required to be imported, and their households. No other site workers will have to be imported, and thus there is no additional direct population impact (See detailed tabulation below under the discussion of total employment requirements and population change.).

3. Income

As with employment, income impacts will be most substantial in 1987, especially in the construction sector. In the first years of the project, income will be derived in the service sector; with construction of the site in progress, income will be generated in transportation, trade, and government sectors (see Table III-5). In the operational phase, all of the personal income directly induced by the project will be derived from the government sector.

4. Local Government Fiscal Conditions

The projected changes in tax revenue resulting from the existence of a waste site in Hudspeth County are detailed in Table III-6. Although net revenue is projected to increase by \$14,842 in 1987, revenue changes are expected to be only \$7,525 for most of the project's life.

Table III-5 Direct Income Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	0	0	0	0	0	0	0	225.	0	225.
1984	0	0	0	0	0	0	0	147.	0	147.
1985	0	0	0	0	0	0	0	45.	0	45.
1986	0	0	0	0	0	0	0	20.	0	20.
1987	0	0	413.	0	0	48.	28.	31.	218.	738.
1988	0	0	0	0	0	0	0	0	382.	382.
1989	0	0	0	0	0	0	0	0	382.	382.
1990	0	0	0	0	0	0	0	0	382.	382.
1991	0	0	0	0	0	0	0	0	382.	382.
1992	0	0	0	0	0	0	0	0	382.	382.
1993	0	0	0	0	0	0	0	0	382.	382.
1994	0	0	0	0	0	0	0	0	382.	382.
1995	0	0	0	0	0	0	0	0	382.	382.
1996	0	0	0	0	0	0	0	0	382.	382.
1997	0	0	0	0	0	0	0	0	382.	382.
1998	0	0	0	0	0	0	0	0	382.	382.
1999	0	0	0	0	0	0	0	0	382.	382.
2000	0	0	0	0	0	0	0	0	382.	382.
2001	0	0	0	0	0	0	0	0	382.	382.
2002	0	0	0	0	0	0	0	0	382.	382.
2003	0	0	0	0	0	0	0	0	382.	382.
2004	0	0	0	0	0	0	0	0	382.	382.
2005	0	0	0	0	0	0	0	0	382.	382.
2006	0	0	0	0	0	0	0	0	382.	382.
2007	0	0	0	0	0	0	0	0	382.	382.
2008	0	0	0	0	0	0	0	0	382.	382.
2009	0	0	0	0	0	0	0	0	69.	69.
2010	0	0	0	0	0	0	0	0	15.	15.
2011	0	0	0	0	0	0	0	0	15.	15.
2012	0	0	0	0	0	0	0	0	15.	15.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-6 Direct Revenue Impacts
(in Dollars)

Year	Change in Revenue
1983	4324.
1984	2708.
1985	625.
1986	112.
1987	14842.
1988	7525.
1989	7525.
1990	7525.
1991	7525.
1992	7525.
1993	7525.
1994	7525.
1995	7525.
1996	7525.
1997	7525.
1998	7525.
1999	7525.
2000	7525.
2001	7525.
2002	7525.
2003	7525.
2004	7525.
2005	7525.
2006	7525.
2007	7525.
2008	7525.
2009	1111.
2010	9.
2011	9.
2012	9.

Note: All figures are expressed in 1983 constant dollars

C. Indirect Impacts

Indirect impacts of the disposal site result when those directly involved change the economic activity of others within the county. These indirect impacts are computed for Hudspeth County by using an income multiplier of 1.13.

1. Employment

Indirect employment effects for Hudspeth County are small, since the multiplier is so small. In the construction phase, there is an increase of only six jobs. In the operational phase, there are only three jobs generated.

2. Income

The indirect income effect is also quite small, amounting to only \$96,000 during the construction phase, and only \$50,000 in the operational phase. (See Table III-8.)

3. Local Government Fiscal Conditions

Table III-9 indicates the new revenue generated as an indirect impact of the proposed waste site in Hudspeth County. The increase during the construction phase is \$1968, and during the operational phase it is \$1017.

Table III-7 Indirect Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	1.	0.	0.	0	0.	0.	0.	0.	0.	2.
1984	1.	0.	0.	0	0.	0.	0.	0.	0.	1.
1985	0.	0.	0.	0	0.	0.	0.	0.	0.	0.
1986	0.	0.	0.	0	0.	0.	0.	0.	0.	0.
1987	4.	0.	0.	0	0.	0.	0.	0.	1.	6.
1988	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1989	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1990	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1991	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1992	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1993	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1994	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1995	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1996	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1997	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1998	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
1999	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2000	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2001	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2002	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2003	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2004	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2005	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2006	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2007	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2008	2.	0.	0.	0	0.	0.	0.	0.	1.	3.
2009	0.	0.	0.	0	0.	0.	0.	0.	0.	0.
2010	0.	0.	0.	0	0.	0.	0.	0.	0.	0.
2011	0.	0.	0.	0	0.	0.	0.	0.	0.	0.
2012	0.	0.	0.	0	0.	0.	0.	0.	0.	0.

Table III-8 Indirect Income Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	19.	2.	1.	0	1.	1.	1.	0.	4.	29.
1984	13.	1.	0.	0	0.	1.	1.	0.	3.	19.
1985	4.	0.	0.	0	0.	0.	0.	0.	1.	6.
1986	2.	0.	0.	0	0.	0.	0.	0.	0.	3.
1987	64.	5.	1.	0	3.	4.	3.	1.	16.	96.
1988	33.	3.	0.	0	1.	2.	1.	0.	8.	50.
1989	33.	3.	0.	0	2.	2.	1.	0.	8.	50.
1990	33.	3.	0.	0	2.	2.	1.	0.	8.	50.
1991	33.	3.	0.	0	2.	2.	1.	0.	9.	50.
1992	33.	3.	0.	0	2.	2.	1.	0.	9.	50.
1993	33.	3.	0.	0	2.	2.	1.	0.	9.	50.
1994	33.	3.	0.	0	2.	2.	1.	0.	9.	50.
1995	33.	3.	0.	0	2.	2.	1.	0.	9.	50.
1996	33.	3.	0.	0	2.	1.	1.	0.	9.	50.
1997	33.	3.	0.	0	2.	1.	1.	0.	9.	50.
1998	33.	3.	0.	0	2.	1.	1.	0.	9.	50.
1999	33.	2.	0.	0	2.	1.	1.	0.	9.	50.
2000	33.	2.	0.	0	2.	1.	1.	0.	10.	50.
2001	33.	2.	0.	0	2.	1.	1.	0.	10.	50.
2002	33.	2.	0.	0	2.	1.	1.	0.	10.	50.
2003	33.	2.	0.	0	2.	1.	1.	0.	10.	50.
2004	33.	2.	0.	0	3.	1.	1.	0.	10.	50.
2005	33.	2.	0.	0	3.	1.	1.	0.	10.	50.
2006	33.	2.	0.	0	3.	1.	1.	0.	10.	50.
2007	33.	2.	0.	0	3.	1.	1.	0.	10.	50.
2008	33.	2.	0.	0	3.	1.	0.	0.	10.	50.
2009	6.	0.	0.	0	1.	0.	0.	0.	2.	9.
2010	1.	0.	0.	0	0.	0.	0.	0.	0.	2.
2011	1.	0.	0.	0	0.	0.	0.	0.	0.	2.
2012	1.	0.	0.	0	0.	0.	0.	0.	0.	2.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-9 Indirect Revenue Changes
(in Dollars)

Year	Change in Revenue
1983	601.
1984	391.
1985	120.
1986	53.
1987	1968.
1988	1017.
1989	1017.
1990	1017.
1991	1017.
1992	1017.
1993	1017.
1994	1017.
1995	1017.
1996	1017.
1997	1017.
1998	1017.
1999	1017.
2000	1017.
2001	1017.
2002	1017.
2003	1017.
2004	1017.
2005	1017.
2006	1017.
2007	1017.
2008	1017.
2009	183.
2010	40.
2011	40.
2012	40.

Note: All figures are expressed in 1983 constant dollars

D. Total Impact

In order to assess the total impact of the siting of a waste disposal facility in Hudspeth County, one must add the direct and indirect impacts generated by the disposal site. These total impacts are shown in Tables III-10 through III-12. These total impact tables do not look much different from the direct impact tables, since the indirect impacts are only 13 percent as large as the direct impacts.

Nonetheless, the discounted present value of the stream of total net revenue changes generated as a result of the waste disposal site in Hudspeth County is estimated as \$70,544, and the discounted present value of the stream of personal income for Hudspeth County is estimated to be \$3,591,700.

Table III-13 shows the total labor requirements relative to the number of unemployed, and shows how many workers will come from the available labor force and how many will come from the outside. The population impacts, based on the number of workers imported are shown in the last column. The number of unemployed is fixed at three percent of the labor force, based on recent experience.⁸ The labor force is estimated to be a constant 37 percent of the population. The labor requirements shown in table III-13 are the same as the last column of table III-10. The total labor requirement can be satisfied from the indigenous unemployed in all project years except the construction year. In the construction year,

⁸Average unemployment, annually from 1978 to 1982 has been 3.3, 3.2, 3.7, 2.7, and 2.5 percent.

there are 34 unemployed, and 43 total jobs, so that 9 workers must be "imported". Two and a half of these were supervisory level personnel who were to have been imported anyway. The population impact in that year is an increase of 27 persons. In the operational phase, only the direct population impact resulting from the importation of supervisory level personnel is operative.

Table III-10 Total Employment Impacts

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	1.	0.	0.	0	0.	0.	0.	15.	0.	16.
1984	1.	0.	0.	0	0.	0.	0.	10.	0.	11.
1985	0.	0.	0.	0	0.	0.	0.	3.	0.	3.
1986	0.	0.	0.	0	0.	0.	0.	1.	0.	1.
1987	4.	0.	20.	0	0.	2.	2.	2.	13.	43.
1988	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1989	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1990	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1991	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1992	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1993	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1994	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1995	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1996	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1997	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1998	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
1999	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2000	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2001	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2002	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2003	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2004	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2005	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2006	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2007	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2008	2.	0.	0.	0	0.	0.	0.	0.	22.	24.
2009	0.	0.	0.	0	0.	0.	0.	0.	3.	4.
2010	0.	0.	0.	0	0.	0.	0.	0.	1.	1.
2011	0.	0.	0.	0	0.	0.	0.	0.	1.	1.
2012	0.	0.	0.	0	0.	0.	0.	0.	1.	1.

Table III-11 Total Income Effects

Year	Agriculture	Mining	Const.	Manufacturing		Transp.	Trade	Service	Gov't.	Total
				Non-Dur	Durable					
1983	19.	2.	1.	0	1.	1.	1.	226.	4.	255.
1984	13.	1.	0.	0	0.	1.	1.	147.	3.	166.
1985	4.	0.	0.	0	0.	0.	0.	45.	1.	51.
1986	2.	0.	0.	0	0.	0.	0.	20.	0.	23.
1987	64.	5.	414.	0	3.	53.	31.	32.	233.	834.
1988	33.	3.	0.	0	1.	2.	1.	0.	390.	431.
1989	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1990	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1991	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1992	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1993	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1994	33.	3.	0.	0	2.	2.	1.	0.	390.	431.
1995	33.	3.	0.	0	2.	2.	1.	0.	391.	431.
1996	33.	3.	0.	0	2.	1.	1.	0.	391.	431.
1997	33.	3.	0.	0	2.	1.	1.	0.	391.	431.
1998	33.	3.	0.	0	2.	1.	1.	0.	391.	431.
1999	33.	2.	0.	0	2.	1.	1.	0.	391.	431.
2000	33.	2.	0.	0	2.	1.	1.	0.	391.	431.
2001	33.	2.	0.	0	2.	1.	1.	0.	391.	431.
2002	33.	2.	0.	0	2.	1.	1.	0.	391.	431.
2003	33.	2.	0.	0	2.	1.	1.	0.	391.	431.
2004	33.	2.	0.	0	3.	1.	1.	0.	392.	431.
2005	33.	2.	0.	0	3.	1.	1.	0.	392.	431.
2006	33.	2.	0.	0	3.	1.	1.	0.	392.	431.
2007	33.	2.	0.	0	3.	1.	1.	0.	392.	431.
2008	33.	2.	0.	0	3.	1.	0.	0.	392.	431.
2009	6.	0.	0.	0	1.	0.	0.	0.	71.	78.
2010	1.	0.	0.	0	0.	0.	0.	0.	15.	17.
2011	1.	0.	0.	0	0.	0.	0.	0.	15.	17.

Note: All figures are expressed in thousands of 1983 constant dollars

Table III-12 Total Revenue Impacts
(in Dollars)

Year	Change in Revenue
1983	4925.
1984	3098.
1985	745.
1986	166.
1987	16810.
1988	8542.
1989	8542.
1990	8542.
1991	8542.
1992	8542.
1993	8542.
1994	8542.
1995	8542.
1996	8542.
1997	8542.
1998	8542.
1999	8542.
2000	8542.
2001	8542.
2002	8542.
2003	8542.
2004	8542.
2005	8542.
2006	8542.
2007	8542.
2008	8542.
2009	1294.
2010	49.
2011	49.
2012	49.

Note: All figures are expressed in 1983 constant dollars

Table III-13 Employment Requirements and Population Change

Year	Total Labor Required	Unemployed Workers	Local Workers Hired	Imported Workers	Population Change
1983	16.5	32.	16.5	0	0
1984	10.7	33.	10.7	0	0
1985	3.3	33.	3.3	0	0
1986	1.5	33.	1.5	0	0
1987	43.2	34.	33.8	9.4	27.
1988	23.9	34.	19.9	4.0	12.
1989	23.9	35.	19.9	4.0	12.
1990	23.9	35.	19.9	4.0	12.
1991	23.9	36.	19.9	4.0	12.
1992	23.9	37.	19.9	4.0	12.
1993	23.9	38.	19.9	4.0	12.
1994	23.9	39.	19.9	4.0	12.
1995	23.9	39.	19.9	4.0	12.
1996	23.9	40.	19.9	4.0	12.
1997	23.9	42.	19.9	4.0	12.
1998	23.9	43.	19.9	4.0	12.
1999	23.9	44.	19.9	4.0	12.
2000	23.9	45.	19.9	4.0	12.
2001	23.9	47.	19.9	4.0	12.
2002	23.9	49.	19.9	4.0	12.
2003	23.9	50.	19.9	4.0	12.
2004	23.9	52.	19.9	4.0	12.
2005	23.9	54.	19.9	4.0	12.
2006	23.9	56.	19.9	4.0	12.
2007	23.9	59.	19.9	4.0	12.
2008	23.9	61.	19.9	4.0	12.
2009	3.5	64.	3.5	0	0
2010	1.1	67.	1.1	0	0
2011	1.1	70.	1.1	0	0
2012	1.1	74.	1.1	0	0

