

**FINAL REPORT ON USGS/AASG LANDSLIDE LOSS  
ESTIMATION PILOT PROJECT  
NEBRASKA GEOLOGICAL SURVEY  
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**Introduction:**

The Nebraska Geological Survey has worked on landslide issues in Nebraska since 1982 and is pleased to be a part of this pilot program. Nebraska is not known to the general public as a “landslide prone” state. However, since 1982 over 300 landslides have been identified and researched within the state. By involving a midwestern state in this pilot program, it would demonstrate that landslides are active in all states within the USA. The USGS continues to provide opportunities for interested landslide researchers to attend their landslide educational programs. In addition, they have led field trips that allow other professionals to work and research with their landslide experts at some of the prominent landslides sites in the USA.

**Nebraska Considerations:**

- A) **Landslide Occurrence.** The Nebraska Geological Survey (NGS) landslide study (1990) indicates potential landslides areas. The study included a Landslide Hazard Area Map of Nebraska. The study results and map narrow the search for jurisdictions impacted by landslides in Nebraska.
- B) **Agency Responsibility -** It is the responsibility of the Nebraska Geological Survey to document and report natural geological hazards within the state. Geological hazards such as landslides are included.

**Method and Scope:**

- A) **Criteria used for selecting jurisdictions.** The Landslide Hazard Area Map was used as a guide. Public transportation related entities were contacted, such as Nebraska Department of Roads (NDOR) and County Road Departments in the high potential hazardous areas. Additional jurisdictions were chosen if their work related in any way to landslides.
- B) **Jurisdictions contacted:** Twenty eight jurisdictions in Nebraska were contacted. These included: Nebraska Department of Roads Central Office, four NDOR District Offices, Nebraska Association of County Officials (NACO), Nine Counties, Three Natural Resources Districts (NRD’s), Nebraska Game and Parks Central Office and five State Parks, two Telephone Companies, and two Electric Power Companies.
- C) **Methods used to interview:** General meetings that were sponsored or attended with State and County Officials were not effective. The information needed was back in their offices and possibly within another department. Therefore, visits to each of the jurisdiction offices were made to obtain the landslide information. In some instances staff were able to find valuable information that was related to landslide hazards, but was hidden within regular maintenance or other costs.

**Data Sources Identified:**

- 1) **Governmental agency studies: Minimum Landslide Damage in the United States and Open-File Report # 84-486 published by the USGS was used as a reference when working with the jurisdictions.**
- 2) **Local agency/utility collections: Records from local agencies such as State Game and Parks Department, Natural Resource Districts and Counties were used whenever they contained pertinent landslide information.**
- 3) **Large company data files. Note: These produced minimal information.**

**Findings from Survey:**

All jurisdictions contacted do not track landslide losses. Four NDOR District Offices provided some information on previous landslides, mainly during what they determined were the “wet years”. Some of the jurisdictions indicated they were considering keeping a file for annual or individual landslide losses. Two of the counties provided landslide loss information for the so called “wet years”. Three of the State Parks also have loss information for those “wet years”. Most of the state, county and parks officials explained that landslide costs were included in their overall maintenance budgets. This was done because the cost of keeping the roads open and maintained was not kept separately. Some “individual” landslide loss figures and some estimates of costs during the “drier years” were received from a few of the jurisdictions.

**I) Urban landslide losses:**

1. **Omaha – Papio Creek at 106<sup>th</sup> and Pacific Streets. \$70,000 for bankment stabilization.**
2. **Omaha – Elkhorn river. Estimate \$100,000 for bankment stabilization.**
3. **Fremont – Platte River In early 1980’s landslides in the bluffs impacted four houses. They were removed before being damaged by landslides. The lots were filled in and planted to grasses. Estimates run from \$100,000 to \$500,000. A Sanitary Improvement District was installed for the development.**

**II) Rural landslides losses:**

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| 1. <b>Knox County Roads Dept.</b>                   | <b>\$24,000 for 2001-02</b>                     |
| 2. <b>Boyd County Roads Dept.</b>                   | <b>\$12,000 for 1997, \$6,800 for 1999</b>      |
| 3. <b>Lewis &amp; Clark Natural Resources Dist.</b> | <b>\$10,208 for 1986 - 1998</b>                 |
| 4. <b>State Park (estimates for one Park)</b>       | <b>\$ 5,000 for 1993, annual clean up \$500</b> |

**III) Highway loss estimates:**

<b>Nebraska Department of Roads (District 3)</b>	
<b>1981 – 1991</b>	<b>1992 - 2002</b>
<b>\$1,100,000</b>	<b>\$3,540,000</b>

**IV) Total Estimated Costs Related to Landslides:**

**1981- 1991 = \$1,100,000**

**1992 – 2002 =\$3,598,508 .**

**Total Estimated Landslides Related Costs:**

**1981 - 2002 = \$4,698,508**

**Limits and Opportunities:**

**Overall impression is that landslide loss awareness was raised for most of the jurisdictions that were contacted. A follow up survey will be made for all of the parties contacted/interviewed. Reviewing and implementing the results from this pilot study will be made in the near future. It is suggested that the Pilot Study States and the USGS develop landslide loss reports and forms that could be used by the jurisdictions.**

**Additional Information:**

**This report has provided the incentive to establish a landslide loss data base within the NGS. The data base will include information on initial repair costs in addition to continued maintenance costs that are incurred to prevent reoccurrence of landslides within Nebraska. The data base will also include geological and engineering field data obtained from each landslide site.**

**This study will provide information that will illustrate the need for future tracking of landslide losses not only in the jurisdictions that contributed but within others that were not involved in the initial reporting process. In addition, these reports will provide the essential information needed to develop educational materials about landslides losses and raise general landslide awareness to provide more effective control measures.**

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