2016-06-01

Reservoir Sedimentation: The Economics of Sustainability

Matthew William George
Brigham Young University

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Matthew William George

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Science

Rollin H. Hotchkiss, Chair
E. James Nelson
Gus Williams

Department of Civil and Environmental Engineering

Brigham Young University

June 2016

ABSTRACT

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Matthew William George
Department of Civil and Environmental Engineering, BYU
Master of Science

Despite mounting demand for a more sustainable worldwide water supply system, available reservoir capacity is relentlessly diminishing due to sedimentation. This fact, coupled with a decrease in the rate of dam construction, indicate an impending water supply dilemma. In the future, dams should be designed following a life cycle management approach rather than the typical short-sighted design life technique.

Neither sustainable reservoir lifespans nor intergenerational equity is achieved through conventional cost-benefit analyses (CBA), which render all benefits and costs projected to occur more than several decades into a project as negligible. Consequently, future expenditures, including dam decommissioning or retrofitting with sediment management facilities, are regarded as non-factors in an analysis. CBAs have also historically failed to account for the impacts of sedimentation on infrastructure and the environment over time.

Alternatives to the traditional application of the CBA do exist, however. These include dam owners establishing retirement funds or insurance policies, beneficiaries paying for rehabilitation or maintenance, and economists incorporating infrastructure damages and potentially declining discount rates into their analyses.

To analyze the disadvantages of not managing sediment, a case study of costs caused from sedimentation impacts at Gavins Point Dam was performed. Impacts from sedimentation at Gavins Point Dam include, among many others, upstream municipal flooding and downstream bank stabilization and sandbar construction. The financial analysis considered the time value of money and showed that the value of expenditures to resolve sedimentation impacts is equivalent to 70% of the original construction cost. Including the costs of additional impacts would amplify this result. Design and operations decisions at Gavins Point Dam could have been drastically different, leading to a more sustainable project, if these expenditures from sedimentation impacts had been included in the initial economic analyses.

It is recommended that multidisciplinary discussions occur at multiagency levels to consider changes to traditional CBAs for long-term water supply projects. These discussions should investigate the creation of funding to address sediment management at existing dams. The frequency of bathymetric surveys should also be increased, which would lead to a better understanding of the condition of our infrastructure. By pursuing these recommendations and integrating the aforementioned alternatives to the CBA, economic studies for reservoirs will be more accurate, reservoir lifespans will be more sustainable, profits will be extended indefinitely, and the economic burdens passed to future generations will be lessened.

Keywords: reservoir sedimentation, sustainability, economics, infrastructure

ACKNOWLEDGEMENTS

I would like to thank all those who supported and encouraged me during my time at Brigham Young University. This thesis exists in large part because of the help, support, and inspiration of others.

It has been an honor to work with my advisor, Dr. Rollin Hotchkiss. He has mentored me, as well as been an example for me, in technical, personal development, and leadership fields. I am sincerely grateful for his passion for research and his keen intellect.

Dr. James Nelson and Dr. Gus Williams also deserve special thanks as my thesis committee members.

Particular thanks go to the dedicated public servants at the United States Bureau of Reclamation and Army Corps of Engineers for accommodating my visits to their offices and for providing assistance in responding to my research inquiries. Among these, I would like to name Tim Randle, John Remus, Paul Boyd, Linda Burke, and Robert Padilla.

Lastly, I express profound gratitude to my wife, Emma, for her unfailing support and continuous encouragement while I was researching and writing this thesis. Thank you!

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1 INTRODUCTION

With an ever-increasing global population, mounting demand exists for a more sustainable water supply system. Despite this demand, worldwide water storage capacity is relentlessly diminishing due to reservoir sedimentation (Annandale 2013, Juracek 2014). Neither sustainable reservoir lifespans nor intergenerational equity is achieved by use of traditional economic analyses of reservoirs because of the application of conventional cost-benefit analyses (CBA). The CBA renders benefits more than a few decades into the future as negligible, causing future expenditures, including costly dam decommissioning or retrofitting with sediment management facilities, to be seen as non-factors in the design stage—despite the large cost that will be placed on the future generation. Furthermore, the CBA has traditionally overlooked infrastructure and environmental damages caused by reservoir sedimentation. By incorporating alternatives to the traditional CBA, such as declining discount rates and comprehensive studies of sedimentation impacts, economic analyses for reservoirs will be more accurate, reservoir lifespans will be more sustainable, profit horizons will be extended, and the economic burdens placed upon future generations will be lessened. The purpose of this paper is to demonstrate that current operational practices at dams in the United States are not sustainable and that sustainability will require a modified application of the CBA.

2 WHAT DOES SUSTAINABILITY MEAN FOR RESERVOIRS?

Dam construction creates a valuable resource of stored water but disturbs the natural sediment equilibrium present in typical streams and rivers. The reservoir upstream from the dam traps sediment transported as bedload as well as a portion of the suspended sediment, present due to the decreased flow-through velocity. Over time, the deposition of sediment extends upstream of the dam, resulting in decreased channel capacity and a loss of storage space within the reservoir (Hotchkiss and Bollman 1996). Stream reaches downstream from dams often incise into the existing channel or produce coarser grain size distributions due to a lack of sediment passing the dam. Figure 2-1 depicts a typical reservoir's sediment profile. Note that the coarser-grained material is deposited in the upper region of the reservoir, forming a delta. The finer-grained sediments are carried further and accumulate closer to the dam itself. Severe problems related to sedimentation can appear after only a small percentage of lost storage capacity due to the sediment imbalance on either side of the dam (Morris and Fan 1998). Other damages related to within-reservoir sedimentation, upstream sedimentation, and downstream scour will be identified and examined in more detail later.

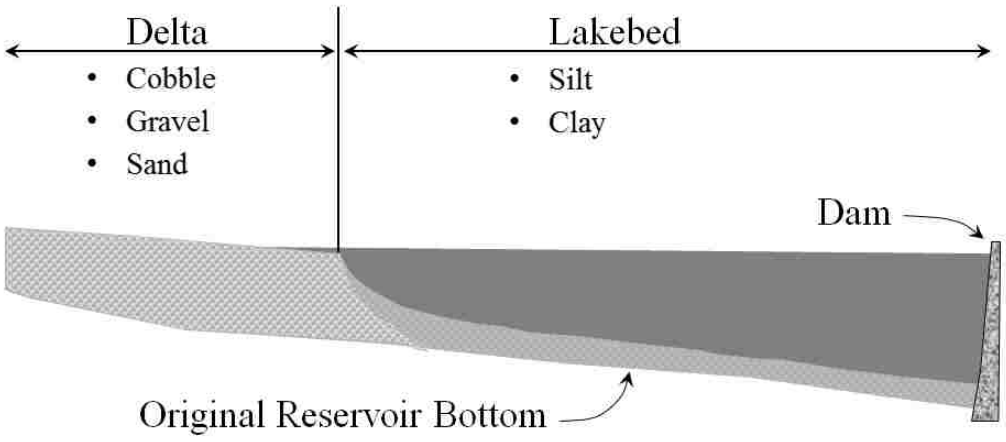

Figure 2-1: A typical reservoir's sediment profile (Randle and Ferrari 2010).

In light of the continual process of sediment transport in streams and rivers, it would seem logical to design dams to pass sediment downstream indefinitely. Such has not been the case, however, as dams have typically been designed to create a storage volume sufficiently large to contain estimated sediment deposits for 50 to 100 years. This period, known as the economic life of the project, is a result of the conventional application of the cost-benefit analysis (Morris and Fan 1998). The benefits of water projects, ranging from irrigation water and hydropower generation to flood control and recreation, are each linked to the reservoir's economic lifespan (Palmieri et al. 1998).

A sustainable approach must include a sediment management plan to either directly address the mitigation of sediment or provide a fund with sufficient money to do so later. Otherwise, a filled reservoir with minimal project benefits becomes an economic burden on the following generation. This burden entails the weighty decision to either abandon the dam, decommission it, or retrofit it for sediment management. The former, "do nothing" approach involves safety and legal concerns, while the latter two approaches will incur large costs (Thimmes et al. 2005, Engberg 2002, Palmieri et al. 2003). A sustainable reservoir would

theoretically have an indefinite design life. As is, most dams do not have the necessary facilities for such a task. In order to promote long-term economic viability, dam owners (e.g., hydropower companies) and legislative bodies are encouraged to reconsider the traditional, short-sighted reservoir design approach. See Appendix A for further discussion on sustainable design through a life cycle management approach.

3 IS THERE A SEDIMENTATION PROBLEM?

Because all rivers transport sediment, dams disrupt the sediment load equilibrium in natural waterways. Evaluating the extent of this disruption is important for predicting sedimentation rates and establishing sediment management plans.

3.1 Bathymetric Surveys

Determining the current capacity of a reservoir requires performing a bathymetric survey. Consistently performing subsequent surveys allows for comparisons between the results, which reveal the change of available storage capacity in the reservoir. The change in capacity over time can be used to predict regional sedimentation rates. Such rates are valuable for future operations and maintenance considerations. Unfortunately, a recent analysis of bathymetric surveys of reservoirs in the United States revealed that a reservoir's most recent survey is, on average, more than two decades old (Podolak and Doyle 2015). Nevertheless, certain reservoirs have been surveyed more consistently. Data from these reservoirs in conjunction with sedimentation rate predictions allow for generalized estimations regarding sedimentation conditions on worldwide and nationwide scales.

3.2 Worldwide Storage

The International Commission on Large Dams has estimated that there are more than 42,000 large (over 15 meters tall) dams on the planet and several times as many smaller structures (ICOLD 1988). The resulting worldwide storage capacity and rate of storage loss are approximately 7,000 cubic kilometers and between 0.5% and 1% annually, respectively. Combating this rate of loss corresponds to adding about 50 cubic kilometers of storage per year worldwide, with a replacement cost of approximately $13 billion each year in 2003 dollars, or nearly $18 billion in 2015 dollars (Palmieri et al. 2003). A continuously increasing global population exacerbates this situation further. As population rises, demand for water (and thus, water storage) also rises, despite the dwindling worldwide storage capacity (Annandale 2013, Juracek 2014). A decrease in the rate of dam construction coupled with reservoir sedimentation caused the global net reservoir storage capacity to begin declining in 1995 (Kondolf et al. 2014). If society continues allowing reservoirs to shrink, the demand for water will eventually overcome the supply, creating a worldwide water crisis (Annandale 2013).

Certain reservoirs are more susceptible to sedimentation than others. For example, the Welbedacht reservoir in South Africa lost 86% of its original storage volume between 1973 and 2005. The first three years of the reservoir's life resulted in a loss of one third of the storage capacity (Huffaker and Hotchkiss 2006). In addition, the Tarbela reservoir in Pakistan traps a significant amount of sediment from the Indus River. Its original volume was reduced by 20% in the first twenty years of operation (Palmieri and Dinar 2001). An extreme case occurred in Venezuela, when the Camaré reservoir lost all of its available storage space to sedimentation in less than 15 years (Morris and Fan 1998). It is obvious that the economic benefits of such projects were compromised as a result of sedimentation.

3.3 Storage in U.S. Reservoirs

This phenomenon occurs within the United States as well. The Zuni Dam in New Mexico lost 80% of its capacity in a period of about 25 years (Nordin 1991). The majority of the United States west of the Mississippi River experience sedimentation rates greater than 1.2% per year; many of these states suffer from an average storage loss rate even greater than 2% (Graf et al. 2010). This is particularly concerning, as the western states are highly dependent on reservoirs for their water supply.

The National Inventory of Dams, an online database maintained by the United States Army Corps of Engineers, estimates that there are more than 87,000 dams over 7.5 meters tall in the United States (NID 2015). These dams, which were primarily constructed between 1950 and 1980, have a resulting average age of 55 years. A prominent concern with old dams, besides safety, is that sediment will eventually fill the anticipated dead storage zone and begin to interfere with the lowest outlets on the structure. Most dams were designed with an intended lifespan of 50 to 100 years. Sedimentation rates typically vary from the estimates used during the design stage, causing some dams' lowest outlets to plug earlier than expected (Podolak and Doyle 2015). Tim Randle, group manager of the Bureau of Reclamation's (Reclamation) Sedimentation and River Hydraulics Group, has provided a spreadsheet documenting each Reclamation reservoir's age and other pertinent facts. A simple spreadsheet analysis showed that the average age of Reclamation dams is 67 years old and that within 25 years, one third of Reclamation dams are predicted to experience issues related to sediment reaching the lowest outlets (Tim Randle, personal communication, January 20, 2015). Decisions must be made in the near future regarding how to manage sediment trapped within these reservoirs.

3.4 Physical and Environmental Impacts

Besides the aforementioned concerns regarding lost storage space, sedimentation also damages infrastructure and the environment. The Aswan Dam in Egypt has reduced sediment flow down the Nile River by 98% (Schwartz 2005). This has caused the Nile Delta to erode at rates as high as 125 to 175 meters per year. The Mississippi River Delta also suffers significant erosion because of the many dams and locks upstream (Schwartz 2005). Of the 33 major deltas found worldwide, 24 are currently shrinking because of reservoir sedimentation processes trapping sediment behind dams. These coastal regions will be particularly vulnerable to disastrous flooding as the coastlines continue to erode and the sea level rises an expected 0.46 meters by 2100 due to climate change (Kondolf et al. 2014). There are also significant infrastructure and environmental concerns upstream of the coast due to reduced riverine sediment loads.

After the loss of only a small percentage of storage capacity, severe problems related to sedimentation can appear (Morris and Fan 1998). Hotchkiss and Bollman identified such impacts of sedimentation, which include main stem and tributary aggradation upstream and degradation downstream (1996). Secondary and tertiary impacts upstream of the reservoir include increased flood frequency and a rise in groundwater levels followed by concomitant crop failures. Downstream impacts include stream channel instability, loss of access to diversion works, undermining bridge piers and abutments, and altered fluvial geomorphology. Restoration of these non-storage related damages can be extremely costly and their effects are not included in economic analyses that justify initial construction. Appendix A contains additional information about these overlooked costs and the impacts of sedimentation.

It is understood that the total elimination of sedimentation is neither viable nor possible. As such, sediment must be managed and preventative measures must be taken in order to alleviate the continual loss of reservoir storage space. Nevertheless, many reservoirs have neglected implementing sediment management practices to counteract the previously mentioned consequences (Kondolf et al. 2014). A warning in the *Reservoir Sedimentation Handbook* states that the "sudden loss of the world's reservoir capacity would be a catastrophe of unprecedented magnitude, yet their gradual loss due to sedimentation receive little attention or corrective action" (Morris and Fan 1998). This is clearly a significant environmental problem.

4 THE COST-BENEFIT ANALYSIS

4.1 A History of the Cost-Benefit Analysis

The cost-benefit analysis (CBA) is a measure that determines the cost effectiveness of available options in order to evaluate whether the net benefits outweigh the costs. It is employed to balance society's interests as a whole, rather than just those of an individual (Turner et al. 1993). CBAs have undergone significant changes in the United States from their beginnings in the United States Army Corps of Engineers' Federal Navigation Act of 1936. This act specified that if the projected benefits outweighed the costs, then the project could be pursued (Crabb and Leroy 2008). By 1960, many guidelines were used amongst federal agencies regarding benefit and cost categorization and evaluation, including the Federal Interagency River Basin Committee's Green Book, the Bureau of Budget's Budget Circular A-47, and various organizations' internal standards and procedures (Hanley and Spash 1993, Hufschmidt 2000). Budget Circular A-47 was particularly conservative through its focus on national economic efficiency and the use of discount rates to emphasize a 50-year horizon for projects (Hufschmidt 2000).

Mounting academic concern led to the scrutiny of these techniques, resulting in the Bureau of Budget organizing a panel of consults to improve federal economic analyses (Hufschmidt 2000). The result was Senate Document No. 97, which was adopted in 1962 and ultimately retained several conservative aspects of the former techniques, including discount

rates (Hufschmidt 2000). Nevertheless, this document expanded its scope from national economic development to include the "preservation of aesthetic and cultural values" (Hufschmidt 2000). This expansion in scope was further developed in subsequent revisions to economic policy and is currently referred to as "environmental quality" in analyses (Hanley and Spash 1993). Prior to the 1970s, CBAs largely ignored the environmental impacts of projects (Hanley and Spash 1993).

The current policy guiding CBAs is Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, approved in 1983 (Hufschmidt 2000). Modifications and additional standards have been established since 1983, with the most applicable being the recent memorandum on "Incorporating Ecosystem Services into Federal Decision Making" (Donovan et al. 2015). This memorandum directs agencies to "incorporate the value of natural, or 'green,' infrastructure and ecosystem services into Federal planning and decision making" (Donovan et al. 2015).

4.2 Common Criticisms

The use of the CBA to evaluate long-term environmental projects has long been scrutinized (Lind 1995). Ackerman explains that the arbitrary assignment of monetary values for the "priceless" (e.g., human lives, environmental protection, etc.) does not represent reality and that biased groups can sway the results of an analysis (2008). He concludes that the CBA, despite meticulously identifying costs, fails to capture the complex relationships between our society, our economy, and our environment (Ackerman 2008).

The other prevailing criticism of the CBA, and a focus of this paper, is directly related to the use of constant discount rates. Discount rates account for the time value of money, which is the concept that a certain amount of money in the present is considered to be worth more than the

same amount in the future because it could have been invested and earned interest over time. As part of the CBA, present values are calculated for all future values using a standard discount rate. Nearly all future benefits and costs beyond 30 years are inconsequential. Consequently, the present-oriented focus of these analyses is referred to as "the tyranny of discounting," or intergenerational inequity (Pearce et al. 2003, Turner et al. 1993). This tyranny has three results: (1) damages to infrastructure and the environment occurring in the future have present values considerably smaller than the actual damage done, (2) projects with benefits that are beyond 50 years in the future are difficult to justify, and (3) exhaustible resources are more easily abused in the present (Turner et al. 1993). As such, discounting seems to be counter-intuitive with regard to achieving sustainable development (Pearce et al. 2003).

Some critics have purported that discounting should not be used at all. This, however, is essentially discounting with a zero percent rate and implies that our generation's needs are meaningless compared to those of people living hundreds or thousands of years in the future (Pearce et al. 2003). If this was true, and assuming a positive interest rate in the general economy, then society would save its resources and invest on behalf of the next generation. The following generation would act likewise for the ensuing generation, and so on and so forth (Pearce et al. 2003). Nevertheless, there are some cases where a zero percent rate could be justified. For example, federal government defense and intelligence operations oftentimes only consider inflation rates over time (Gus Williams, personal communication, May 23, 2016). In general, completely eliminating discounting is not a solution to the tyranny of discounting.

4.3 Sustainable Development

A common description of sustainable development comes from the Brundtland Commission (1987): "Humanity has the ability to make development sustainable to ensure that it

meets the needs of the present without compromising the ability of future generations to meet their own needs."

Resolving sustainability with discounting is difficult because the underlying rationale for discounting is to more highly value the present, without anticipating being fair to future generations (Turner et al. 1993). While sustainable development is not the principal purpose of discounting in the CBA, alternatives do exist to the traditional CBA approach that can lead to the sustainable development of resources. These alternatives will be detailed in the following chapter.

As is, many issues with detrimental long-term effects that require action in the present are largely ignored because of the economic results based on a certain discount rate (Guth 2009, Pearce et al. 2003). For example, both nuclear waste storage and climate change mitigation are long-term problems that will severely affect ensuing generations unless action is taken in the present. These concerns are all issues of intergenerational equity (Lind 1995). Reservoir sedimentation is also an intergenerational issue affected by economic analyses and legislation.

4.4 What Contributes to Short-Sighted Design?

The standard 50- to 100-year reservoir design life is a result of using the traditional CBA to determine present values in an economic study. As discussed previously, the policy guiding Congress during the 1950s and 1960s emphasized a short-term horizon for projects through the use of constant discount rates and was criticized by many water project proponents as severely limiting (Hufschmidt 2000). This time period was when the vast majority of dams in the United States were either built or designed (as illustrated by Figure 4-1), meaning that most of our presently functioning dams were approved based on a relatively short design life (NID 2015, Hufscmidt 2000). This type of economic analysis heavily favors projects that avoid large initial

costs while promising many short-term benefits, effectively eliminating long-term reservoir projects that require the installation of sediment management facilities as part of the capital cost (Hotchkiss and Bollman 1996).

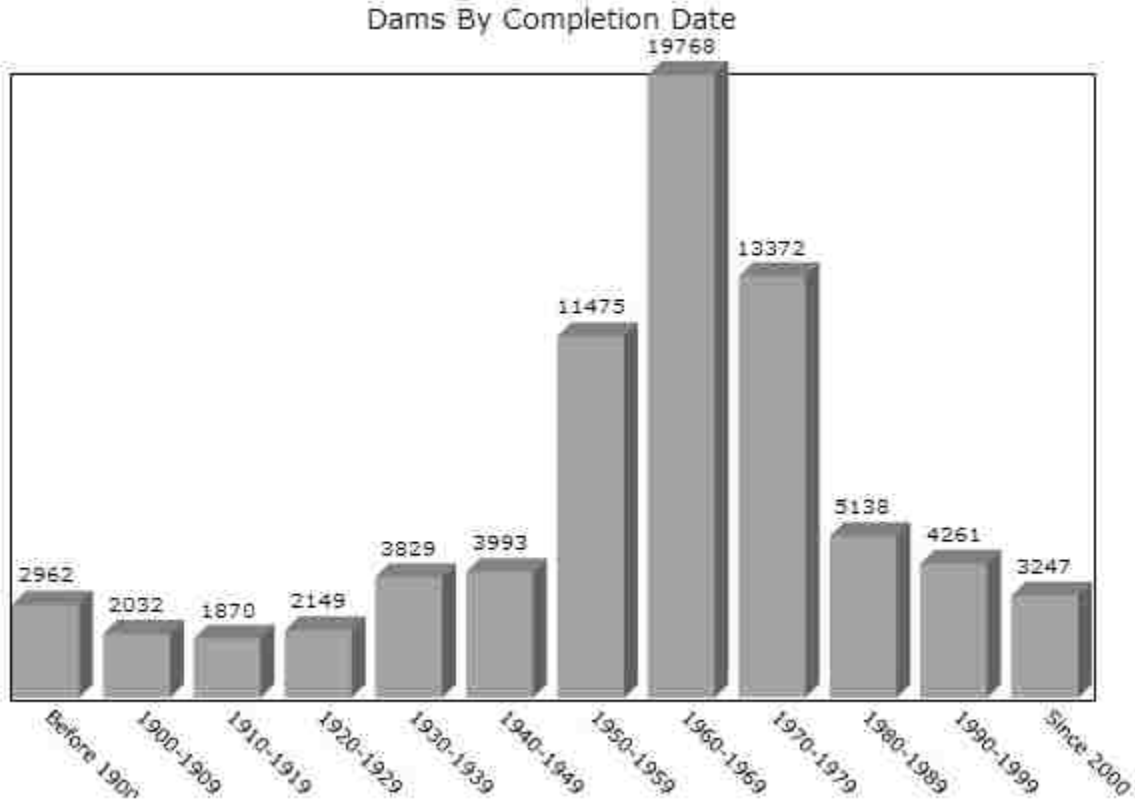

Figure 4-1: History of dam construction in the United States. Note: dam must meet at least one of the following criteria: (1) high or significant hazard classification; (2) equal or exceed 7.62 meters in height and 18,502 cubic meters in storage; or (3) equal or exceed 61,674 cubic meters in storage and exceed 1.83 meters in height (NID 2015).

5 ALTERNATIVES TO THE TRADITIONAL COST-BENEFIT ANALYSIS

There are several financial alternatives available to supplement or modify the traditional application of the cost-benefit analysis (CBA) that will either foster more sustainable reservoirs or mitigate the economic burden passed to future generations.

5.1 Retirement Fund and Insurance Policy

If sediment is not managed at a site, then once the economic benefits from the dam are diminished or exhausted (i.e., the reservoir has become silted in), a decision must be made regarding the structure. The available options are: (1) abandoning the dam, (2) decommissioning the dam, defined as removing a dam either completely or partially (Committee on Dam Decommissioning 2015), or (3) implementing a sediment management plan, which may require retrofitting the dam with sediment management facilities (Engberg 2002). The latter two options are very expensive, while the first option entails a higher degree of risk. Decommissioning dams has become more common in recent years, despite the many challenges unique to each dam site (Graf 2002). Unfortunately, most dams have been built without a plan to either manage the sediment or retire the facility (Engberg 2002).

Palmieri and Dinar suggest that a retirement fund be established throughout a dam's lifespan to eventually pay for decommissioning (2001). They argue that if the salvage value of a dam is expected to be negative (as most eventually will be if sediment management has not been

considered), then a certain amount of the net monetary benefits generated should be set aside on a consistent basis to pay for retirement or retrofitting for sediment management. As is, original dam owners are typically not held liable for such costs since they sell the project as benefits begin to decline. Retiring dams is not as sustainable as managing the sediment to promote an indefinite lifespan; nevertheless, a retirement fund would relieve economic stress on future generations.

A related suggestion encourages dam owners to invest in an insurance policy. The policy would provide the current owner protection against unexpectedly large costs associated with decommissioning (Palmieri and Dinar 2001).

5.2 User Fees

A recent report written by the United States Army Corps of Engineers' (Corps) Committee on Water Resources Science, Engineering, and Planning supports the beneficiary pays principle (2013). That is, the users of the resources generated by a dam should be contributing to the necessary costs for operation, maintenance, and rehabilitation. Payment for physical and environmental damages is a sensitive topic and is not always the solution for these issues. However, when natural resources are mismanaged and there are environmental impacts and damages to infrastructure that were unaccounted for in the preliminary economic analysis, there is increasing justification for user fees (Engel et al. 2008).

Implementing said user fees would require educating policymakers and citizens alike. By limiting government subsidies and passing costs to the users, the community would be able to help contribute to the sustainability of infrastructure, water supply, and energy production for their posterity.

5.3 Declining Discount Rates

Besides strictly monetary alternatives, modifying aspects of how the CBA itself is performed can affect the resulting policy decision. As previously mentioned, discount rates incorporate the time value of money into economic analyses. The traditional CBA uses a set discount rate, dependent on government regulations; discount rates can vary significantly from country to country (Evans and Sezer 2002). The higher the discount rate, the more quickly future benefits and costs become negligible in an economic analysis. For example, discounting $1.00 over 75 years at a typical 5% discount rate yields a present value of $0.03, while using a 2% rate gives a present value equal to $0.23, almost eight times larger than the 5% rate value. When these rates are applied to large-scale projects, the discount rate becomes critical in determining whether to pursue the project or not.

To avoid the present-oriented approach caused by constant discount rates, declining discount rates can be used (Arrow et al. 2013, Annandale et al. 2016). In a CBA, a declining discount rate causes the discount rate to decrease throughout the project's lifespan, resulting in more prominent future values in the analysis (Oxera 2002). This helps counter the present-oriented bias of standard discounting and promotes intergenerational equity (Annandale et al. 2016).

5.3.1 Hyperbolic Discounting

For example, a technique known as hyperbolic discounting, which advocates the use of a declining discount rate to better emulate the way in which humans discount the future, may have promise. A weight factor can be calculated for a discounted value in the future for any point in time of an economic analysis by dividing the future value by its original present value. This weight factor expresses how much the original value is discounted at a certain point in time.

Figure 5-1 shows the relative discount weight factors for hyperbolic discounting versus traditional exponential discounting over a 100-year timeframe. The weight factors for future values are higher for hyperbolic discounting, providing more weight to discounted values in a CBA. As might be expected, however, the use of hyperbolic discounting introduces new concerns, such as time inconsistency.

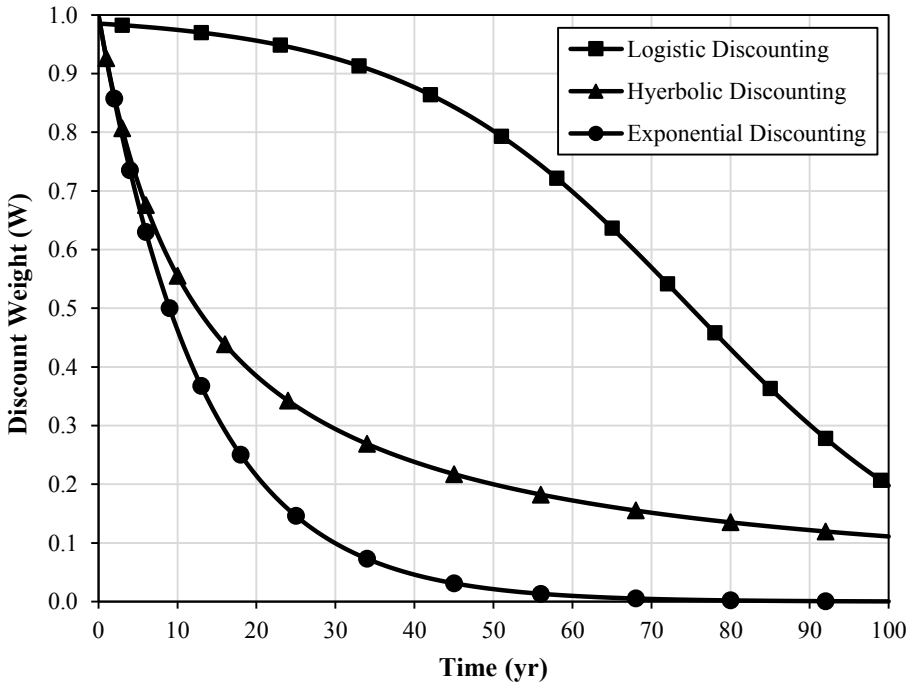

Figure 5-1: Weight factor comparison for hyperbolic, logistic, and exponential discounting.

5.3.2 Time Inconsistency

Time inconsistency occurs when behavior contradicts a previously made decision (Heal 1998, Pearce et al. 2003). For example, an operating entity or legislative body can designate money for sediment management, but the ensuing management group might reallocate those

funds for some other purpose. While time inconsistency is possible even when a decision is made based on a standard, exponential discount rate, it is less likely because the exponential discount rate focuses on the short-term results of a project, as discussed previously. The reason it becomes a problem with declining discount rates is because they increase the importance of future values in the financial assessment, resulting in decisions that span multiple generations.

By making a self-binding commitment to some decision, a management group would ensure time consistency (Pearce et al. 2003). This scenario is not plausible, however, because people continually assess and optimize their financial circumstances. It is actually an undesirable and unnatural requirement to expect a governing body to make time-consistent decisions when considering that the individuals composing it do not make such decisions themselves (Heal 1998).

A self-binding commitment that ensures time consistency may not even be optimal, as additional information could come to light regarding the state of sedimentation within a reservoir after performing bathymetric surveys. Because policy decisions are rarely optimal at first, it might even make sense to allow for flexibility in sediment management practices, as long as some plan is in place, such as a retirement fund, insurance policy, or user fees, to deal with the impacts of sedimentation.

According to Pearce et al., there is no easy resolution to this issue, but as a practical matter, time inconsistency is probably no more concerning than other political shifts and external shocks to the original policy (2003). Nevertheless, standard economic theory and legislative policy in the United States require that all decisions be made with a time-consistent discount rate.

5.3.3 Logistic Discounting

Logistic discounting employs a declining discount rate while potentially maintaining time consistent behavior compatible with standard economic theory (Harpman 2014). It has already been implemented in a variety of contexts including economics, statistics, population ecology, and medical research (Harpman 2014). Applying logistic discounting to long-term water resources projects' economic analyses may alter project objectives and lead to more sustainable designs. Figure 5-1 also shows the relative discount weight factors for logistic discounting versus traditional exponential discounting over a 100-year timeframe. As illustrated in the figure, logistic discounting assigns a higher discount weight to future values than hyperbolic discounting.

Figure 5-1 shows that exponential discounting assigns a discount factor of 0.025 as early as 50 years into the future. This means that a $1,000,000 project benefit or cost incurred 50 years in the future has a discounted present value of $25,000 in the CBA analysis. Such a discounted value will largely be ignored, despite the ramifications 50 years later. Logistic discounting, however, assigns a weight factor of 0.8 after 50 years. That same $1,000,000 value will have an equivalent $800,000 present value in the CBA, which could affect design and construction decisions related to that project.

Logistic discounting has the potential, if implemented properly, to limit the tyranny of exponential discounting and allow for more sustainable long-term water resources projects (Pearce et al. 2003, Harpman 2014). Additional research in this area is recommended to determine whether it would be beneficial to implement logistic discounting rates in future CBA analyses.

5.4 Complete Cost-Benefit Analyses

For new projects it is now possible to predict potential damages due to upstream sedimentation and downstream scour. If such expenditures from sediment-related damages were included in cost-benefit analyses, then it could be economically justifiable to sustainably manage sediment at dams; this would effectively extend the lifespans for dams indefinitely. Investigating this claim will require gathering and analyzing economic data regarding the costs of sedimentation from several projects around the world, as there is little published information regarding the economics of sediment-related impacts (Palmieri et al. 2003). By collecting these data, research with more concrete results will be available for consideration as new projects are designed. These results could sway dam owners or policymakers to proactively manage the sediment accumulating behind dams in order to avoid similar costs.

Through collaboration with the Corps, financial data was gathered for a project in an effort to calculate the amount of money spent remediating sedimentation impacts. The following section contains a case study for Gavins Point Dam that compares expenditures imposed by sedimentation impacts to the dam's original construction expenses.

5.4.1 Case Study: Gavins Point Dam

5.4.1.1 Background

Gavins Point Dam was built on the Missouri River by the Corps at the border of South Dakota and Nebraska, near Yankton, South Dakota. The dam's construction was approved based on anticipated benefits from hydropower generation, flood control, recreation, irrigation, navigation support, and fish and wildlife enhancement (Army Corps of Engineers Omaha District 2009). According to the Corps, the dam cost $50 million to build, with construction

beginning in 1952 and operations starting in 1957 (Army Corps of Engineers Omaha District 2009). Sediment management techniques were not considered during the project's design phase, as was typical of most dams designed in the United States (Vanoni 1975). The impounded reservoir, Lewis and Clark Lake, has lost more than 30% of its original storage capacity due to sedimentation. The construction cost and expenditures caused by sedimentation impacts have been gathered and converted to present values using economic formulae in order to compare construction cost to sediment-related damages at a consistent point in time.

Sedimentation impacts upstream of Lewis and Clark Lake have predominantly resulted in the clogging of municipal water intake structures, increased flood frequency, and heightened groundwater levels (Army Corps of Engineers Northwestern Division 2006, Carter 1991, Paul Boyd, personal communication, October 20, 2015). The deltaic deposits have led to clogged drinking water intakes at Springfield, South Dakota (see Figure 5-2) and have necessitated extensive redesign projects (Army Corps of Engineers Northwestern Division 2006). Drinking

Figure 5-2: Deltaic deposits in Lewis and Clark Lake near Springfield, South Dakota (Missouri Sedimentation Action Coalition 2012).

water has also recently been reported to be of poor quality (Missouri Sedimentation Action Coalition 2013). The channel aggradation has also caused typical bankfull discharges to spill onto the floodplain (Hotchkiss and Bollman 1996). As sedimentation continues, the average flood severity will only worsen, resulting in additional property damages. Decreased clearance under bridges and frequent roadway maintenance due to perennial flooding damages necessitated a roadway embankment raise for portions of Highway 12 in 1995 and is now requiring a complete redesign of Highway 12, which has yet to be completed (HDR Engineering 2015). As sediment migrated upstream of Lewis and Clark Lake, Niobrara, Nebraska suffered from heightened groundwater levels that eventually flooded most basements (Carter 1991). The entire town was relocated to a higher elevation in the 1970s, resulting in a $14.5 million expense that the Corps partially funded (Carter 1991). The Corps or other entities have also been required to continually dredge the channel to maintain clearance for watercraft (Army Corps of Engineers Northwestern Division 2006, Paul Boyd, personal communication, October 20, 2015).

The reservoir pool itself has also experienced sedimentation impacts. Because most project benefits are directly proportional to available storage capacity in the pool, as a reservoir's volume decreases due to sedimentation processes, many project benefits are adversely affected. As previously discussed, Lewis and Clark Lake's capacity to retain typical flood events has been reduced, resulting in a loss of averted flood damage benefits, or an increase in actual flood damages (Army Corps of Engineers Northwestern Division 2006). Having less storage available in general can also reduce benefits associated with hydropower generation and irrigation supply due to the inherent value of storage space. Recreational benefits have been impacted by the reduced storage capacity through a decreasing water surface area and the burial of boat ramps and other lake access points (Missouri Sedimentation Action Coalition 2013). After floods in

2011, the Corps was required to dredge and truck cattails (which were uprooted from the delta in the upper portion of the reservoir) for 4 months to prevent them from entering the penstocks and damaging the turbines and other hydromechanical equipment (Paul Boyd, personal communication, October 20, 2015).

Downstream from the dam, several impacts are apparent. Due to the sediment imbalance caused by a dam's obstruction of open channel flow, clear water discharged downstream is deemed "hungry water." This type of water tends to impact the downstream riparian habitat by scouring channel banks and bars and causing erosion. Bank stabilization and sandbar construction have both been required downstream of Gavins Point Dam (Army Corps of Engineers Northwestern Division 2006). The sandbar construction is referred to as the Emergent Sandbar Habitat (ESH) Program and its purpose is to mechanically create quality sandbar habitat for two endangered species of birds (Missouri River Recovery Program 2016). This requires a varying amount of annual maintenance dependent on how the sandbar responded to the prior year's flows. The Missouri River has also incised downstream of Gavins Point Dam, leading to undercut and abandoned water intake structures (Army Corps of Engineers Omaha District 1991, Alexander et al. 2013). The incision has extended into tributaries and has disconnected the Missouri river from its floodplain, effectively preventing the natural rejuvenation of the floodplain forest and wetland habitat (Alexander et al. 2013). These impacts have required the Corps, or some other entity, to continually spend money to mitigate the impacts of sedimentation. By incorporating sediment management into the project's initial design, these costs could have been avoided.

Despite the numerous impacts that sedimentation processes have triggered at Gavins Point Dam, costs for only a few of the damages were available. Other expenditures were excluded because of either lack of data availability or time constraints.

5.4.1.2 Economic Analysis

To compare monetary values over a long time horizon, the values need to be converted to their equivalent worth in a specific year. For this study, the year 2015 was selected; all values were converted to their 2015 values by taking into account the time value of money through discounting. The results of an economic analysis can be altered significantly depending on the choice of discount rate (Environmental Protection Agency 2014). As of 1974, Section 80 of Public Law 93-251 requires Congress to set a discount rate for use during each fiscal year (Water Resources Development Act 1974). However, because Gavins Point Dam's water project was approved prior to the enactment of this section of law, there was no congressionally fixed discount rate in use at that time. Nevertheless, it is known that most water resources projects in the 1950s used a discount rate between 3.25% and 3.50% (Weisbrod et al. 1978). A discount rate of 3.50% was used in this analysis as a conservative estimate.

Once the discount rate is selected, converting an expenditure to its corresponding 2015 value is a simple process, as seen in Equation 5-1. Note that in the equation the 2015 value is treated as a future value because 2015 is in the future when compared to the year of the expenditure.

$$FV = PV * (1 + d)^n \quad (5\text{-}1)$$

Where:
FV = future value (2015)
PV = past value (between 1957 and 2014)
d = discount rate
n = number of years between FV and PV

5.4.1.3 Discussion

Table 5-1 contains a summary of expenditures due to sedimentation impacts in 2015 dollars. Documentation regarding each expenditure can be found in Appendix B. It is recognized that there may be unforeseen benefits that could reduce the economic impact of damages incurred by sedimentation; these benefits are not quantified in this analysis. It is also worth noting that this analysis follows the traditional economic approach by considering a discount rate and not incorporating an inflation rate.

Table 5-1: Expenditures for Sedimentation Impacts at Gavins Point Dam

Expenditure	2015 Value
City of Niobrara Relocation	$ 20,328,000
Real Estate Acquisitions for Relocation	$ 17,987,000
Highway 12 Maintenance (2004 - 2014)	$ 1,659,000
Highway 12 Redesign (Minimum Estimate)	$ 161,800,000
ESH Construction / Maintenance	$ 56,171,000
SUM	$ 257,945,000

The aforementioned $50 million construction cost for Gavins Point Dam is equivalent to $367.7 million in 2015 dollars. The ratio of the sum of costs in Table 5-1 compared to the construction cost is 0.70. This ratio would likely increase to be greater than 1.0 if the analysis considered all of the other damages resulting from sedimentation. Design and operations decisions for Gavins Point Dam could have been drastically different if these future expenditures from sedimentation impacts had been included in the initial economic analyses.

Incorporating sediment management practices from the beginning of the dam's lifetime would have helped avoid substantial financial burdens that are currently present, even though they would have resulted in a higher upfront capital cost. Figure 5-3 presents a conceptual model

of this idea. The figure shows that profits can be sustained over a longer time horizon if sediment is managed, despite the decreased initial profit due to installing sediment management facilities. Not included in the model, but worth noting, is the fact that profits may even become negative for a project without sediment management once the reservoir silts in and other damages from sedimentation occur. Additional research regarding costs due to sedimentation impacts at other facilities would provide increasing justification for these claims.

Because each reservoir is highly unique based on its bathymetry, geology, hydrology, watershed characteristics, and hydraulic infrastructure, this report does not suggest certain sediment management techniques. Literature is available that discusses this topic in depth (Morris and Fan 1998, Palmieri et al. 2003).

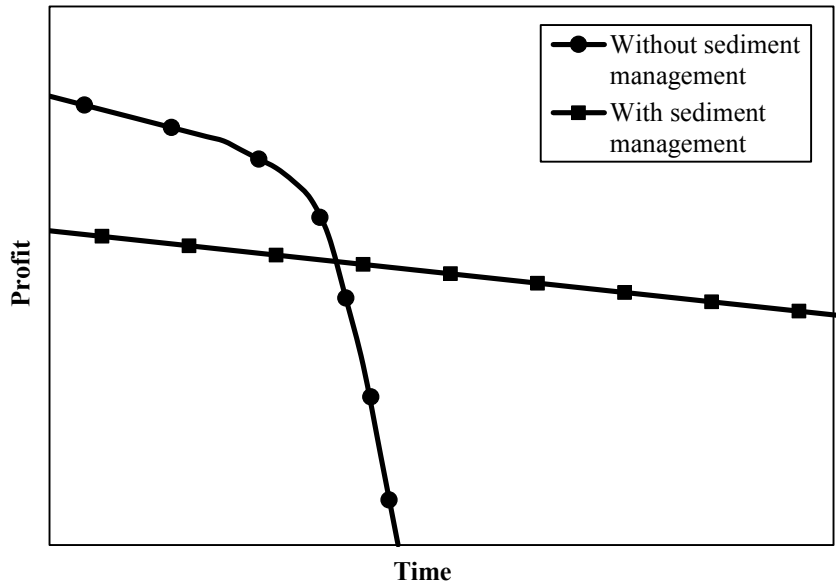

Figure 5-3: Conceptual model of profit over time for a dam project.

Damages due to upstream sedimentation and downstream scour should be incorporated into cost-benefit analyses for new projects. If such expenditures from sediment-related damages

were included in cost-benefit analyses, then it could be economically justifiable to sustainably manage sediment at dams. By considering these alternatives and modifications to the CBA, economic analyses for reservoirs will be more accurate, reservoir lifespans will be more sustainable, profit horizons will be extended, and the economic burdens placed upon future generations will be lessened.

6 RECOMMENDATIONS

In 1975, Bondurant warned of the inevitable filling of reservoirs and counseled that if society still relied on reservoirs in the future, then evaluating and managing the sediment would be necessary (Vanoni 1975). Bondurant's warning has largely been ignored; sediment management practices have not been adapted for the most part, and society still heavily relies on reservoirs for water supply more than four decades later.

Achieving reservoir sustainability requires a sediment management plan for each dam to either directly address the mitigation of sediment or provide a fund with sufficient money to respond to the facility's condition appropriately. Otherwise, a filled reservoir with minimal project benefits becomes an economic burden on the following generation. A sustainable reservoir would theoretically have an indefinite design life. As is, most dams do not have the necessary facilities for such a task. In order to promote long-term economic viability, dam owners (e.g., hydropower companies) and legislative bodies are encouraged to reconsider the traditional, short-sighted reservoir design approach in favor of a life cycle management plan that incorporates sediment management. The author makes the following recommendations:

- Increase the frequency of bathymetric surveys of state- and federally-owned dams to better track the rate of reservoir capacity loss.
- Discuss at multiagency levels changes to the traditional cost-benefit analysis for dams that would produce sustainable designs and include the costs of not managing reservoir

sedimentation and the means of averting those costs (inclusion of sediment management alternatives). This will require a multidisciplinary effort.

- Investigate logistic discounting's potentially time-consistent nature and the feasibility of incorporating declining discount rates into long-lived water resources projects.
- Consider the creation of funding to address sediment management issues at existing dams. Such funding could consist of user fees, a retirement fund, insurance policies, or similar financial practices.

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APPENDIX A. OVERLOOKED COSTS OF DAMS: BARRIER TO SUSTAINABILITY

Abstract

Despite an ever-increasing demand for a more sustainable water supply system, worldwide storage capacity is relentlessly diminishing due to reservoir sedimentation. Over time, the deposition of sediment promulgates significant infrastructure damages both upstream and downstream of the dam, in addition to loss of storage space within the reservoir. The true costs of such damages are often overlooked and, thus, not included in cost-benefit analyses when designing dams. In order to promote long-term economic viability, dam owners (e.g., hydropower companies) and legislative bodies are encouraged to reconsider the traditional, short-sighted reservoir design life approach in favor of a life cycle management plan that incorporates sediment management. By incorporating overlooked costs into economic analyses and implementing a life cycle management plan, reservoir lifespans will be more sustainable, profits will be extended indefinitely, and the economic burdens placed upon future generations will be lessened.

A.1 Introduction

With an ever-increasing global population, mounting demand exists for a more sustainable water supply system. Despite this demand, worldwide water storage capacity is relentlessly diminishing due to reservoir sedimentation (Annandale 2013, Juracek 2014). A

warning in the *Reservoir Sedimentation Handbook* states that "sudden loss of the world's reservoir capacity would be a catastrophe of unprecedented magnitude, yet their gradual loss due to sedimentation receive little attention or corrective action" (Morris and Fan 1998). Action must be taken to improve the sustainability of reservoirs and meet the increasing demand for water.

Neither sustainable lifespans nor intergenerational equity is achieved by use of traditional economic analyses of reservoirs because of the application of conventional cost-benefit analyses (CBA). The CBA renders any benefits more than a few decades into the future as negligible due to the use of discount rates when evaluating the time value of money. As a result, most future costs, including costly dam decommissioning or retrofitting with sediment management facilities, are seen as non-factors in the design stage—despite the large cost that will be placed on the future generation. Additionally, infrastructure damages caused by sedimentation in upstream reaches, downstream reaches, and within the reservoir have typically been excluded from economic studies. By considering these factors, reservoir lifespans will be more sustainable, profits will be extended indefinitely, and the economic burdens placed upon future generations will be lessened.

A.2 Sustainability

Dam construction creates a valuable resource of stored water but disturbs the natural sediment equilibrium present in typical streams and rivers. The reservoir upstream from the dam traps sediment transported as bedload, as well as a portion of the suspended sediment, present due to the decreased flow-through velocity. Over time, the deposition of sediment extends upstream of the dam resulting in decreased channel capacity and a loss of storage space within the reservoir (Hotchkiss and Bollman 1996). Stream reaches downstream from dams often incise into the existing channel or produce coarser grain size distributions due to a lack of sediment

passing the dam. Severe problems related to sedimentation can appear after only a small percentage of lost storage capacity due to the sediment imbalance on either side of the dam (Morris and Fan 1998). Damages associated with upstream deposition, reservoir deposition, and downstream scour will be identified and discussed in more detail later.

In light of the continual process of sediment transport in streams and rivers, it would seem logical to design dams to pass sediment downstream indefinitely. Such has not been the case, however, as dams have typically been designed to create a storage volume sufficiently large to contain estimated sediment deposits for 50 years. This 50-year period, known as the design life of the project, is a result of the conventional application of the CBA (Morris and Fan 1998). The benefits of dams, ranging from irrigation water and hydropower generation to flood control and recreation, are each linked to the reservoir's design life (Palmieri et al. 1998).

A common description of sustainability is from the Brundtland Commission Report (1987): "Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs." A sustainable approach for reservoirs would include a sediment management plan to either directly address the mitigation of sediment or provide a fund with sufficient money to do so later. Otherwise, a filled reservoir with minimal project benefits becomes an economic burden on the following generation. This burden entails the weighty decision to either abandon the dam, decommission it, or retrofit it for sediment management. The former, "do nothing" approach involves safety concerns, while the latter two approaches will incur large costs (Engberg 2002, Palmieri et al. 2003). A sustainable reservoir would theoretically have an indefinite design life. As is, most dams do not have the necessary facilities for such a task. An indefinite design life is

consistent with an approach known as the life cycle management plan, which will be outlined more thoroughly later.

A.3 Short-Sighted Design

Large infrastructure projects are commonly designed using a 50- or 100-year lifespan (Hotchkiss and Bollman 1996). Deciding whether to pursue the project is typically dependent on an economic analysis that weighs potential project benefits against predicted costs throughout the project's lifetime. If the net result is positive, the project is considered to be profitable. This type of study is known as the CBA.

Because the CBA compares monetary values over a prospective project's lifespan, future costs and benefits are discounted in order to express them in present value terms. Discounting applies a bias toward the present, particularly if a high rate is used, known as the "tyranny of discounting" (Hufschmidt 2000, Pearce et al. 2003). This renders any benefits more than a few decades into the future as negligible.

The CBA heavily favors projects that avoid large initial costs while promising many short-term benefits, effectively eliminating long-term reservoir projects that require the installation of sediment management facilities as part of the initial capital cost (Hotchkiss and Bollman 1996). These facilities would not be used extensively in the early years of a project's lifespan, causing their installation cost to appear unjustified in a CBA; their derived benefit would not occur until decades into the future, when project benefits have already been severely discounted.

Resolving sustainability with discounting is difficult because the underlying rationale for discounting is to more highly value the present, without anticipating being fair to future generations (Turner et al. 1993). While sustainable development is not the principal purpose of

discounting in the CBA, a more comprehensive analysis in conjunction with life cycle management can lead to the sustainable development of resources.

A.4 Sedimentation Impacts

Reservoir sedimentation is largely disregarded because of the slow rate at which it advances from one year to the next. Over several decades, however, these minor losses amass considerably. In addition to loss of storage space within a reservoir, the sediment imbalance caused by a dam operated without sediment management facilities can damage the environment and infrastructure both upstream and downstream of the reservoir. The upstream reach will suffer from aggradation, while the downstream channel will exhibit degradation. In this section, the damages caused by sedimentation will be presented as occurring in three distinct reaches: (1) upstream of the reservoir, (2) within the reservoir pool, and (3) downstream of the reservoir.

A.4.1 Upstream Deposition

As sediment deposits in the upper portion of a reservoir, it forms a delta, which will eventually begin to extend upstream into the channel and its tributaries. The aggradation experienced in these upstream reaches can cause a variety of problems.

One problem caused by aggradation is the clogging of water intake structures and other diversions (Hotchkiss and Bollman 1996). This clogging requires either frequent dredging or redesigning to resolve.

Another common issue upstream of reservoirs is the burial of boat ramps and other access points to the river. Additionally, deposition causes decreased clearance in the waterway, restricting boat navigation (Vanoni 1975). Decreased navigational clearance can also affect military and commercial boating operations and require regular dredging (Garcia 2008).

Flood frequency also increases as a result of channel aggradation. Typical river discharges that cause bankfull flow would now spill onto the floodplain (Hotchkiss and Bollman 1996). As sedimentation continues, the average flood severity will only worsen, likely resulting in property damage.

All of these impacts have occurred upstream of Lewis and Clark Lake, the reservoir impounded behind Gavins Point Dam on the Missouri River. The dam was built by the United States Army Corps of Engineers and began operating in 1957. As was typical of most dams designed in the United States, sediment management techniques were not considered (Vanoni 1975). Sedimentation impacts have resulted in the clogging of municipal water intake structures, increased flood frequency, and decreased clearance under bridges (Paul Boyd, personal communication, October 20, 2015). The increased flood frequency eventually required the complete relocation of the town of Niobrara and Niobrara State Park. Decreased clearance under bridges has necessitated a redesign of the highway, which has yet to be completed. These issues caused by unmanaged sediment will require over $160 million to remedy (HDR Engineering 2015).

A.4.2 Reservoir Deposition

The Sedimentation Engineering manual states that “in most storage reservoirs of modern design, more than 90% of the incoming load is usually trapped” (Vanoni 1975). By capturing almost all of the bedload and some of the suspended load, storage space within a reservoir relentlessly dwindles. This affects all benefits associated with the project.

Typical operations at a dam are eventually impacted by clogging of the dam’s intake structures, interference with gate operations, and, if applicable, abrasion of the hydromechanical equipment (Garcia 2008). These problems will likely not appear until a reservoir’s dead storage

has filled in, and the intake structure is at the same elevation as the reservoir's floor. As storage volume continues to diminish, available flood storage at the dam is also reduced (Garcia 2008).

As with the upstream reach, the delta in the upper portion of the reservoir can bury boat ramps and other access points. Recreational boating will be affected as well. Besides limiting access and boating, the deltaic deposits can negatively impact property values in the area by converting beach areas into mud flats (Vanoni 1975).

The International Commission on Large Dams has estimated that there are more than 42,000 large (over 15 meters tall) dams on the planet and several times as many smaller structures (ICOLD 1988). The resulting worldwide storage capacity and rate of storage loss are approximately 7,000 cubic kilometers and between 0.5% and 1% annually, respectively (Palmieri et al. 2003). Combating this rate of loss corresponds to adding about 50 cubic kilometers of storage per year worldwide, with a replacement cost of approximately $13 billion each year in 2003 dollars (Palmieri et al. 2003). A continuously increasing global population exacerbates this situation further. As population rises, demand for water (and thus, water storage) also rises, despite the dwindling worldwide storage capacity (Annandale 2013, Juracek 2014). A decrease in the rate of dam construction coupled with reservoir sedimentation caused the global net reservoir storage capacity to begin declining in 1995 (Kondolf et al. 2014). If we continue allowing our reservoirs to shrink, the demand for water will eventually overcome the supply, creating a worldwide water crisis (Annandale 2013).

Certain reservoirs are more susceptible to sedimentation than others. For example, the Welbedacht reservoir in South Africa lost 86% of its original storage volume between 1973 and 2005. The first three years of the reservoir's life resulted in a loss of one third of the storage capacity (Huffaker and Hotchkiss 2006). In addition, the Tarbela reservoir in Pakistan traps a

significant amount of sediment from the Indus River. Its original volume was reduced by 20% in the first twenty years of operation (Palmieri et al. 2001). An extreme case occurred in Venezuela, when the Camaré reservoir lost all of its available storage space to sedimentation in less than 15 years (Morris and Fan 1998). It is obvious that the economic benefits of such projects were compromised as a result of the sedimentation.

While not explicitly occurring within the reservoir, delta starvation is a major result of sediment being trapped behind dams along river systems. The Aswan Dam in Egypt has reduced sediment flow down the Nile River by 98% (Schwartz 2005). This has caused the Nile Delta to erode at rates as high as 125 to 175 meters per year. The Mississippi River Delta also suffers significant erosion due to the many dams and locks along the river (Schwartz 2005). Of the 33 major worldwide deltas, 24 are currently shrinking because of reservoir sedimentation. These coastal regions will be particularly vulnerable to disastrous flooding as the coastlines continue to erode and the sea level rises an expected 0.46 meters by 2100 due to climate change (Kondolf et al. 2014).

A.4.3 Downstream Scour

Because reservoirs trap the vast majority of transported sediment, water discharging from a dam is usually very clear. This sediment-starved water will cause scour in the channel downstream of the dam, unless downstream tributaries provide sufficient sediment to restore balance (Vanoni 1975).

Scour can cause environmental damages, but it also adversely affects infrastructure. For example, scour at bridge piers and abutments can lead to the necessity of an eventual bridge replacement (Hotchkiss and Bollman 1996). Sufficient scour along a channel's banks could lead

to a bank failure and collapse, severely damaging property. An extremely expensive repair could be required, depending on where the scour occurs.

General degradation of the channel bed impacts hydraulic structures. For example, gravity-fed diversions rely on a certain water surface elevation in the channel to convey water, but if degradation has caused the profile to lower, then the required amount of water can no longer be reliably supplied to that diversion (Vanoni 1975). This leads to either abandoning or redesigning affected water intake structures (Hotchkiss and Bollman 1996).

Channel stabilization of the Colorado River below Parker Dam, completed in 1938 by the Bureau of Reclamation, cost $16 million plus an additional $5 million to modify the diversion structure affected by degradation (Vanoni 1975).

All of these impacts, whether upstream, in-reservoir, or downstream, are not typical costs associated with a dam's operation. Rather, they represent infrastructure damages caused by a dam's operation that should have been considered during the design process.

A.5 Incomplete Nature of Cost-Benefit Analysis

Conventionally, these sedimentation impacts have been unaccounted for when performing a CBA for dam projects. Not only are the impacts ignored, but the costly decision to decommission is also excluded from economic analyses (Palmieri et al. 2003). By not factoring these costs into the decision, it becomes an obvious choice to neglect sediment management planning. Most dam owners would likely find it economically justifiable to install sediment management facilities, such as low level outlets for flushing, at the beginning of the project, rather than waiting for the inevitable expenses incurred by the impacts detailed in the previous section; larger long-term revenue would be achieved for dam owners as a result. Additionally,

our water supply would be more sustainable and future generations would not be required to bear the burden of short-sighted reservoir design lives and the resulting negative consequences.

For new projects it is now possible to project potential damages due to in-reservoir sedimentation, upstream sedimentation, and downstream scour. These costs should be included in the CBA to account for a lack of sediment management capability. A better understanding of the actual damages at existing projects would help justify this claim. Cost estimates for reservoir sedimentation-related damages will need to be gathered; there is little published information regarding the economics of such processes (Palmieri et al. 2003). By collecting these data, research with more concrete results will be available for consideration for new projects. These results could sway dam owners or policymakers to proactively manage the sediment accumulating behind dams in order to avoid similar costs.

Nevertheless, Turner et al. argue that the present-oriented nature of the CBA, or the tyranny of discounting, has three results: (1) damages to infrastructure and the environment occurring in the future have present values considerably smaller than the actual damage done, (2) projects with benefits that are beyond 50 years in the future are difficult to justify, and (3) exhaustible resources are more easily abused in the present (1993). As such, even when considering all future infrastructure damages, the discount rate may trivialize the future costs to such an extent that an unsustainable water supply project is still economically justified. In such cases, economic alternatives do exist that would stimulate intergenerational equality.

A.5.1 Retirement Fund or Insurance Policy

Palmieri et al. suggested that a retirement fund be established throughout a dam's lifespan to eventually pay for decommissioning (2001, 2003). They argue that if the salvage value of a dam is expected to be negative (as most eventually will be if sediment management has not been

considered), then a certain amount of the net monetary benefits generated should be set aside on a consistent basis to pay for retirement or retrofitting. As is, dam owners are typically not held liable for such costs. Retiring dams is not as sustainable as managing the sediment to promote an indefinite lifespan; nevertheless, a retirement fund would relieve economic stress on future generations.

A related suggestion encourages dam owners to invest in an insurance policy. The policy would provide the owner protection against unexpectedly large costs associated with decommissioning (Palmieri et al. 2001).

A.5.2 User Fees

The "beneficiary pays" principle purports that users of the resources generated by a dam should be contributing to the necessary costs for operation, maintenance, and rehabilitation (Committee 2013). Payment by users for infrastructure and environmental damages is a sensitive topic and is not always the solution for these issues. However, when natural resources are mismanaged and there are environmental impacts and damages to infrastructure that were unaccounted for in the preliminary economic analysis, there is increasing justification for user fees (Engel et al. 2008).

Implementing said user fees would require educating policymakers and citizens alike. By limiting government subsidies and passing costs to the users, the community would be able to help contribute to the sustainability of infrastructure, water supply, and energy production for their posterity.

A.6 Life Cycle Management

Achieving sustainability for reservoirs will require abandoning the traditional design life approach and focusing on life cycle management. Life cycle management promotes perpetual use of infrastructure, rather than designing for a set 50- or 100-year lifespan (Palmieri et al. 2003).

With a reduced number of suitable dam sites, augmenting worldwide reservoir storage by building new dams will only become more difficult. Maintaining the current storage volume is essential for existing projects. New dams should incorporate a sediment management plan in the initial design.

The *Reservoir Conservation Manual* explains that a design life approach assumes that a project has served its purpose once the design life period is over, while life cycle management encourages perpetual use (Palmieri et al. 2003). Life cycle management also allows for more flexibility during the project's lifespan through continually assessing the state of the investment and incorporating external concerns, such as environmental and social issues, as they arise (Palmieri et al. 2003).

Elected officials and policy-makers are often tempted to only focus on up-front costs associated with projects but would be prudent to begin thinking more strategically about maintaining and operating large infrastructure investments (ASCE and Eno 2014). These types of projects should include the impacts caused by sedimentation as well as potential decommissioning costs for the facility. Otherwise, water supply infrastructure investments will not be sustainable and will cost even more for future generations to remedy (ASCE and Eno 2014).

A.7 Conclusion

In 1975, Bondurant warned of the inevitable filling of reservoirs and counseled that if society still relied on reservoirs in the future, then managing sediment would be necessary (Vanoni 1975). Bondurant's warning has largely been ignored; sediment management practices have not been adapted for the most part, and society still heavily relies on reservoirs for water supply more than four decades later.

Sedimentation impacts are present inside of reservoirs as well as in the river reaches both upstream and downstream. Upstream aggradation can result in clogged intake structures, decreased navigational clearance, and increased flood frequency, while downstream scour can lead to abandoned intake structures, compromised channel stability, and damaged bridge piers and abutments. The loss of storage space within the reservoir itself contributes to a reduction in all project benefits as well as delta starvation at the coast. Severe problems related to sedimentation can appear after only a small percentage of lost storage capacity due to the sediment imbalance on either side of the dam. These types of costly impacts should have been incorporated in the economic analysis at the beginning of the project but unfortunately were not. Future projects ought to strive for more sustainable water supply infrastructure investments than those previously built.

A sustainable approach must include a sediment management plan to either directly address the mitigation of sediment or provide a fund with sufficient money to do so later. Otherwise, a filled reservoir with minimal project benefits becomes an economic burden on the following generation. A sustainable reservoir would theoretically have an indefinite design life. As is, most dams do not have the necessary facilities for such a task. In order to promote long-term economic viability, dam owners (e.g., hydropower companies) and legislative bodies are

encouraged to reconsider the traditional, short-sighted reservoir design approach in favor of a life cycle management plan that incorporates sediment management.

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APPENDIX B. GAVINS POINT DAM ECONOMIC ANALYSIS DOCUMENTATION

B.1 Sources of Expenditures for Sedimentation Impacts

Several of the costs that were gathered came as the result of a Freedom of Information Act (FOIA) request from the United States Army Corps of Engineers' Omaha District Office Counsel through the assistance of Linda Burke. These will indicate FOIA at the end of the section heading.

B.1.1 City of Niobrara Relocation

See the contract and its revisions on the following pages provided by John Remus of the United States Army Corps of Engineers. Note that the initial cost is $3 million, but the first contract amendment changes this value to $5.5 million.

Contract No. DACW45-73-C-0008

CONTRACT FOR RELOCATION
REARRANGEMENT OR ALTERATION OF FACILITIES
(COST REIMBURSABLE)

OWNER AND ADDRESS:	THE VILLAGE OF NIOBRARA, STATE OF NEBRASKA, ACTING THROUGH ITS VILLAGE PLANNING COMMISSION
CONTRACT FOR:	RELOCATION OF THE VILLAGE OF NIOBRARA, NEBRASKA
AMOUNT (ESTIMATED):	$3,000,000
PAYMENT: To be made by	DISBURSING OFFICER DEPARTMENT OF THE ARMY OMAHA DISTRICT, CORPS OF ENGINEERS 6014 U.S. POST OFFICE & COURT HOUSE 215 NORTH 17TH STREET OMAHA, NEBRASKA 68102

The supplies and services to be obtained by this instrument are authorized by, are for the purposes set forth in, and are chargeable to the appropriations below enumerated, the available balance of which is sufficient to cover the cost thereof:

96X3121 General Investigations (3117)

96X3122 Construction General ~~(3117)~~ 3132

The work provided for herein is authorized by Public Law 91-611, 91st Congress, approved 31 December 1970.

Funds Available
For W. S. Bishop
F&PO
28 NOV 1972
Chief Fin Sec

Contract No. DACW45-73-C-0008

CONTRACT FOR RELOCATION
REARRANGEMENT OR ALTERATION OF FACILITIES
(COST REIMBURSABLE)

THIS CONTRACT, entered into 72NOV28 between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented by the Contracting Officer executing this contract, and the VILLAGE OF NIOBRARA, NEBRASKA, a municipal corporation organized and existing under the laws of the State of Nebraska, with its principal office in the Village of Niobrara, State of Nebraska, acting by and through its Village Planning Commission (hereinafter called the "Owner"), WITNESSETH THAT:

WHEREAS, the Government has been authorized under Section 213 of Public Law 91-611, 91st Congress, approved 31 December 1970 to resolve the seepage and drainage problem in the vicinity of the Town of Niobrara, Nebraska (hereinafter called the "Project"); and

WHEREAS, the Owner is the holder of certain fee title and/or easement rights appurtenant thereto on which the Owner has constructed and operates and maintains facilities consisting of public streets and alleys, sidewalks, sanitary sewer system, water system, storm drainage system and public buildings which are being affected by the seepage and drainage problem; and

WHEREAS, it is necessary that the aforementioned title, rights and privileges of the Owner be acquired and that said facilities of the Owner be relocated and/or altered by the Owner at the expense of the Government under the terms of this contract; and

WHEREAS, the Owner is willing to convey to the Government all of its rights, title and interest in and to said lands and/or right of way, and to relocate and/or alter the facilities located thereon, in consideration of the payment by the Government of all reasonable and legitimate cost of relocating and/or altering said facilities at such location and in such a manner as to resolve the seepage and drainage problem in the existing Village of Niobrara; and the Owner agrees that said compensation constitutes full, just and complete compensation for the acquisition by the Government of the Owner's rights and property;

2

WHEREAS, it is understood and agreed that the provisions of previously executed Contract No. DACW45-72-C-0009 for the Owner's services in making studies and investigations relative to relocation and alteration of its facilities are superseded by the provisions herein;

NOW, THEREFORE, in consideration of the faithful performance of each party of the mutual covenants and agreements hereinafter set forth, it is mutually agreed as follows:

ARTICLE 1. Obligations of the Owner.

a. The Owner shall furnish or cause to be furnished all services, labor, materials, tools and equipment necessary to perform the relocation and/or alterations of its streets, sidewalks, sanitary sewer system, water system, storm drainage system, and public buildings and grounds at the place shown on the drawing designated as Exhibit 1 attached hereto and made a part hereof all in the manner prescribed by plans and specifications prepared by the Owner and approved by the Contracting Officer. Provisions will not be made at Government expense for municipal facilities in excess of the requirement determined for the number of lots to be occupied by residents of Niobrara or to accomodate future expansion.

b. The Owner may engage the services of an Architect-Engineer firm or firms, legal consultants and general manager in accomplishing any parts of the work provided for hereunder; provided, however, that any contractual agreement proposed between the Owner and said firm or firms, legal consultants and general manager shall be subject to the written approval of the Contracting Officer before final execution of any such agreements. The scope of services which may be provided by such agreements are listed as follows:

Services by Architect-Engineer:

(1) Serve as a consultant to the Owner on engineering matters in connection with coordination of the planning, design and construction of the municipal facilities provided for herein.

(2) Make necessary detailed field surveys and investigations.

(3) Develop final layout for plotting and zoning.

(4) Develop final design plans and specifications for site preparation and construction of streets, sidewalks, sanitary sewer system, water system, storm drainage system, and public buildings and grounds.

(5) Administer advertisements and contract awards.

(6) Administer and inspect construction work and materials used.

Services by Legal Consultants:

(1) Serve as legal consultant to the Owner with respect to contracts entered into by the Owner in connection with the project and with respect to Federal and State economic assistance and development programs.

(2) Prepare necessary documents for the Owner in connection with purchase and sale of lands, abandonments and conveyances of property and municipal facilities, annexation and de-annexation, zoning and ordinances, and applications for Federal and State economic assistance and development programs.

Services by General Manager:

(1) Serve as the Owner's general manager, coordinator and liaison for activities directly connected with relocation of the Owner's facilities during the planning and construction period including, but not limited to, necessary record keeping, administration of contract payments and submittal of bills to the Government for reimbursement of costs incurred by the Owner.

c. Owner's Subcontract Work. Any of the construction work provided for herein which is to be performed by lump sum or unit price subcontract will be publicly advertised for bids and awarded to the lowest responsible bidder, such award to the subject to be written approval of the Contracting Officer. The Owner shall not award any contracts nor execute any changes thereto for work provided therein without the written approval of the Contracting Officer.

d. Procure all necessary permits and licenses; obey and abide by all applicable laws, regulations, ordinances, and other rules of the United States of America, of the State, or political subdivisions thereof wherein the work is done, or of any other duly constituted public authority.

e. Make such necessary surveys and prepare such drawings, schedules and specifications in connection with the work to be performed hereunder as may be required by the Contracting Officer, all of which shall be subject to approval of the Contracting Officer. Any drawings, maps or specifications which may be furnished by the Government shall, if required by the Owner, be subject to approval by the Owner or his authorized representative, before any work to which they relate is performed.

f. Obtain all easements, rights of way, or other interests in real property necessary for the said relocation and/or alteration of its facilities and the performance of this contract, except as may otherwise be specifically provided herein.

g. Without additional consideration, convey to the Government by good and sufficient deed, all right, title and interest in and to the real property that it holds within that portion of the existing Village limits where private lands and property are to be acquired by the Government except as indicated in red on Exhibit 1 attached hereto and made a part hereof, and deliver to the Government releases from all liens and encumbranches on the Owner's right, title and interest conveyed to the Government.

ARTICLE 2. Obligations of the Government.

a. Subject to the availability of funds and except for payments under Contract No. DACW45-72-C-0009, the Government shall reimburse the Owner for all costs expended in connection with the relocation provided for in Article 1 hereof, such costs to include all items of expense properly chargeable thereto, including but not limited to costs for acquisition of any necessary right of way, easements or other interests in real property required for relocation of the Owner's facilities (exclusive of costs for lands to be re-sold to private property owners), costs for labor, materials, transportation, insurance, overhead charges properly allocable to the work, supervision, surveys, permits, rental of tools and equipment and machinery employed in the work, costs for services of Architect-Engineers firms, Legal Consultants and a General Manager together with such other items of expense (exclusive of profit to the Owner) as should in the opinion of the Contracting Officer, be included in the cost of the work. Also included are costs for preliminary planning, engineering and legal guidance services incurred by the Owner in connection with the work covered herein prior to the date of execution of this contract but subsequent to 31 December 1970 unless such costs have been previously reimbursed under Contract No. DACW45-72-C-0009. The total cost of such work is estimated at ~~$3,000,000~~. The Government shall reimburse the Owner for such costs upon receipt of properly certified invoices, in quadruplicate, supported by such evidence of payment made by the Owner as may be required by the Contracting Officer. Invoices and all items regarding payment shall be submitted to the Government at the following address:

Area Manager
Lake Francis Case, CE
Pickstown, South Dakota 57367

b. Invoices prepared by the Owner shall be itemized to show the type of labor, rates of pay, hours worked, period covered and amount. Materials furnished shall be itemized as to kind, quantity, unit price and amount. Other direct or indirect costs not herein specifically enumerated shall also be similarly detailed. All original time cards or payrolls, material records and accounts for all charges and expenditures for which reimbursement will be claimed from the Government shall be available at all reasonable times, to allow the Government to check and audit the invoices submitted by the Owner. So far as practicable,

separate records shall be maintained and kept by the Owner on all items and accounts which shall constitute the basis of information from which the invoices will be prepared. If the Contracting Officer has objections regarding the form of any invoice, the Owner shall be notified immediately of any required changes.

c. The Government shall, during the design and construction period, contact the owners and tenants living in the existing Village regarding their current intention to occupy lots at the relocation site in order to determine the amount of municipal facilities required. Provisions will not be made at Government expense for facilities in excess of the requirement determined or to accommodate future expansion. If at any time during the construction period, it is determined that a change is necessary in the amount of facilities required, the Contracting Officer will notify the Owner in order that the construction contract can be modified as necessary.

d. The Government shall convey to the Owner, subject to the approval of the Secretary of the Army, an easement or right of way on which to construct, operate and maintain the streets and utilities relocated over Government-owned lands as indicated in green on Exhibit 1, attached hereto and made a part hereof.

e. It is recognized that in the future it may be necessary or appropriate that additional facilities of the Owner be located on Government-owned lands. In view of such circumstances, the Government agrees that when and if occasion therefor shall arise, it will give appropriate consideration to the granting of easements to the Owner for such facilities. Charges therefor, if any, will be in accordance with the laws and regulations at the time such easements are granted.

f. Availability of Funds.

(1) Such work as may be done under this contract in excess of the amount of which funds are available for payment as herein set forth will be continuted with funds hereafter appropriated and allotted for this work.

(2) From funds heretofore appropriated by the Public Works Appropriation Act for Construction General, the sum of $2,500,000 is available for payments to the Owner for work performed under this contract.

(3) If at any time it becomes apparent to the Contracting Officer that the balance of this allocation is in excess of the amount required to meet all payments due and to become due the Owner because of work performed and to be performed pursuant to his approved progress schedule, the right is reserved after due notice to the Owner to reduce said allocation by the amount of each excess.

(4) If the rate of progress of the work is such that it becomes apparent to the Contracting Officer that the balance of this allocation and any allocation for this and any subsequent fiscal years during the period of this contract is less that that required to meet all payments due and to become due the Owner because of work performed or to be performed under this contract, the Contracting Officer may provide additional funds for such payments if there be funds available for such purpose. The Owner will be notified in writing of any additional funds so made available. However, it is distinctly understood and agreed that the amount of funds stated in (2) above is the maximum amount the Government insures will be available during the current fiscal year and the Government is in no case liable for payments to the Owner beyond this amount prior to having notified the Owner in writing of any additional funds that can be made available. Accordingly, no progress schedule will be approved which contemplates progress requiring funds in excess of the amount stated to be available in (2) above for the current fiscal year, and no progress schedule will be approved for any ensuing fiscal year which contemplates progress requiring funds in excess of the amount allocated by the Contracting Officer from funds subsequently made available.

(5) It is expected that, during subsequent fiscal years over the period of this contract, Congress will make additional appropriations for expenditures on work under this contract. The Contracting Officer will notify the Owner of any additional allocation of funds to this contract when such funds become available. It is understood and agreed that the Government is in no case liable for damages in connection with this contract on account of delay in payments to the Owner due to lack of available funds. Should it become apparent to the Contracting Officer that the available funds will be exhausted before additional funds can be made available, the Contracting Officer will give at least thirty (30) days written notice to the Owner that the work may be suspended. If the Owner so elects, after receipt of such notice, he may continue work under the conditions and restrictions under the specifications, so long as there are funds for inspection and superintendence, with the understanding, however, that no payment will be made for such work unless additional funds shall become available in sufficient amount. When funds again become available, the Owner will be notified accordingly. Should work be thus suspended, additional time for completion will be allowed equal to the period during which work is necessarily so suspended, as determined by the dates specified in the above-mentioned notices.

(6) So long as funds are available, payments will be made monthly in accordance with this Article.

(7) The procedure above described will be repeated as often as may be necessary on account of the exhaustion of available funds and the necessity of awaiting the appropriation of additional funds by Congress.

(8) Should Congress fail to provide additional funds, the contract may be terminated and considered to be completed, at the option of the Owner, without prejudice to him or liability to the Government, at any time subsequent to thirty (30) days after payments are discontinued, or at any time subsequent to thirty (30) days after the passage of the Act which would have but did not carry on appropriation for continuing the work or after the adjournment of the Congress which failed to make the necessary appropriations. However, if the funds cited in the contract are enough to extend the work beyond the end of the fiscal year and no new funds are allocated to this contract for the ensuing year, the Owner must first exhaust all the cited funds and thereafter he may, at his option, exercise the rights provided in this paragraph any time after payments are discontinued.

(9) It is expressly agreed that the Owner is not obligated to perform services hereunder where the Government has not provided funds for payment to the Owner for such services. The Government shall promptly notify the Owner regarding any lack of availability of funds.

ARTICLE 3. Requirements for Registration of Designers.

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work shall be accomplished and/or reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico or in the District of Columbia.

ARTICLE 4. Ownership of Drawings and Other Data.

a. All notes, designs, drawings, specifications and other technical data produced in the performance of this contract shall be the sole property of the Owner. To the extent desired and at the cost of the Government, the Owner will provide copies thereof to the Government for its use in connection with the project.

b. The Owner agrees that duly authorized representatives of the Government shall have access, at all reasonable times, to inspect and make copies of all notes, designs, drawings, specifications or other technical data pertaining to the work to be performed under this contract.

ARTICLE 5. Contracting Officer's Decisions.

The extent and character of the work and services to be performed by the Owner shall be subject to the general supervision, direction, control and approval of the Contracting Officer to whom the Owner shall report and be responsible. In the event that there shall be any dispute with regard to the extent and character of the work to be done, the decision of the Contracting Officer shall govern, but the Owner shall have the right of appeal as provided in Paragraph 5, Disputes, of the attached "Standard Clauses for Relocation Contracts".

ARTICLE 6. Salvage. The Owner shall use such materials, equipment and supplies from the facilities existing as of the date of this contract as can be placed in the facilities to be relocated, rearranged or altered hereunder; any materials, equipment and supplies which it is mutually agreed by the parties hereto cannot be so used shall be removed from their original location and shall remain the property of the Owner. The agreed salvage value of such removed materials, equipment and supplies shall be credited to the Government in the form of a deduction to be made from the cost properly chargeable to the work to be performed under Article 1 hereof. All items of materials shall be designated by the Owner as new, used, or salvaged materials, whether said items are retained, discarded or altered in the prosecution of the work. If the parties fail to agree as to such salvage value, the decision of the Contracting Officer thereon shall be final.

ARTICLE 7. Betterments. The Owner agrees that the relocation, rearrangement and/or alteration to be accomplished under this contract will provide the Owner with facilities equal in service and utility to those now in existence and that if the Owner desires any improvement in design, construction or capacity over and above what is required to provide facilities of equal service and utility, such improvement shall constitute a betterment and will be paid for by the Owner; provided, however, that the terms "Betterments" will not be deemed to include more costly construction or design necessitated solely as a result of the relocation.

ARTICLE 8. Completion. The Owner will commence the work hereunder as soon as possible after the date of this contract and continue the work on a timely basis to make final completion by 1 December 1975.

ARTICLE 9. Condemnation.

Should it be determined for any reason that the right, title and interest of the Owners in and to the lands referred to in Article 1g above shall be acquired by condemnation, or other judicial proceedings, the Owner shall cooperate in the prosecution of the proceedings and this agreement shall, without more, constitute a stipulation which may be filed in the proceedings and be final and conclusive evidence of the proper award to be made in such proceedings. In the event this contract is filed in such proceedings, it shall constitute an appearance and waiver of all rights to service or summons or other process, and the right to appointment of commissioners or a jury to determine the award.

ARTICLE 10. Definitions.

1. The term "Head of the Agency" or "Secretary" as used herein means the Secretary of the Army, and the term "his duly authorized representative" means the Chief of Engineers, Department of the Army, or an individual or board designated by him.

2. The term "Contracting Officer" as used herein means the person executing this contract on behalf of the Government and includes a duly appointed successor or authorized person.

ARTICLE 11. Authorized Representative of the Contracting Officer.

The Area Engineer is the authorized representative of the Contracting Officer for the purpose of issuing instructions and entering into modifications pursuant to requirements for changes in drawings, schedules and specifications previously approved by the Contracting Officer and the Owner; provided that such modification and changes do not involve a change in amount of the contract.

ARTICLE 12. Alterations.

The following alterations were made in this contract before it was signed by the parties hereto:

Clause 4 of the attached Standard Clauses is deleted in its entirety and the following clause is substituted in lieu thereof:

"Release. The Owner agrees, on completion of the relocation and/or alteration work provided herein, to accept the payment provided for in Article 2, above, as full and just compensation for any and all damages and injury that have been caused or that may be caused to the facilities relocated hereunder by reason of the construction and maintenance of the Project by the Government; and upon final payment as herein provided, the Owner agrees to and does hereby release and agree to save and hold the Government harmless from any and all causes of action, suits at law or equity, or claims or demands, or from any liability of any nature whatsoever for and on account of any damages to the lands conveyed and the utilities relocated hereunder, or in any way growing out of the construction, operation and maintenance of the project."

THE UNITED STATES OF AMERICA, represented by the Contracting Officer executing this contract, and the political subdivision named above, mutually agree to perform this contract in strict accordance with the above conditions and with the "Standard Clauses for Relocation Contracts, pages 1 through 4", which are attached hereto and made a part hereof.

Contract No. DACW45-73-C-0008

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written.

THE UNITED STATES OF AMERICA

By Alfred L. Griebling
ALFRED L. GRIEBLING
Colonel, Corps of Engineers
District Engineer
Contracting Officer

DATE: 11-22-72

THE VILLAGE OF NIOBRARA, NEBRASKA
(Village Planning Commission)

ATTEST:

By Harry Tichy

Title Chairman

C E R T I F I C A T E

I, Gail Peterson, certify that I am the Secretary of the Village Planning Commission of the Village of Niobrara, Nebraska named as Owner herein; that Harry Tichy who signed this contract on behalf of the Village Planning Commission was then Chairman of said Village Planning Commission; that said contract was duly signed for and on behalf of said Village by authority of its governing body and is within the scope of its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of said Village Planning Commission this 22nd day of November 1972.

(SEAL)

Gail Peterson

11

Standard Clauses for Relocation Contracts

1. Ownership and Conduct of the Work.

a. The facilities constructed and removed hereunder shall be the property of the Owner. The Owner shall be responsible for all materials furnished and all work performed by it.

b. The Government may award other contracts for additional or other work in connection with the same project or in the same vicinity. The Owner shall conduct operations so as to cooperate fully with any such work being performed by the Government and/or Government contractors and shall carefully fit its own work to that provided under other contracts as directed by the Contracting Officer. The Owner shall not commit or permit any act which may interfere with performance of any such work by the Government and/or any Government contractor.

2. Interference. The Owner agrees that so long as the Project is operated or maintained for the purpose as described herein that the facilities as relocated, rearranged or altered pursuant to this contract shall not be so further altered or modified nor other facilities constructed by the Owner, so as to interfere with the operation of the Project.

3. Inspection and Acceptance. The Government shall have the right to inspect the work to be performed hereunder at any time during its progress and to make final inspection upon completion thereof. Failure of the Government to object within twenty days after final inspection shall indicate satisfactory performance of the contract by the Owner.

~~4. Release. The Owner agrees, on completion of the alteration or relocation~~ work provided for herein, to accept said substitute facilities ~~and/or payment~~ of the consideration provided for herein as full and ~~just compensation~~ for any and all damages that have been caused ~~to the~~ facilities altered or relocated hereunder and does hereby ~~release the~~ Government from any and all causes of action, ~~suits-at-law or equity~~ or claims or demands, and from any liability of any ~~nature~~ whatsoever for and on account of any damages to said rights-of-way ~~and facilities relocated or altered hereunder.~~

5. Disputes. (June 1964)

a. Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Owner. The decision of the Contracting Officer shall be final and conclusive unless, within thirty days from the date of receipt of such copy, the Owner mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the head of the agency involved. The decision of the head of the agency or his duly authorized representative for the determination of such appeals shall

be final and conclusive. This provision shall not be pleaded in any suit involving a question of fact arising under this contract as limiting judicial review of any such decision to cases where fraud by such official or his representative or board is alleged: Provided, however, that any such decision shall be final and conclusive unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Owner shall be afforded an opportunity to be heard and to offer evidence in support of his appeal. Pending final decision of a dispute hereunder, the Owner shall proceed diligently with the performance of this contract and in accordance with the Contracting Officer's decision.

b. This Disputes clause does not preclude consideration of questions of law in connection with decisions provided for in paragraph a. above. Nothing in this contract, however, shall be construed as making final the decision of any administrative official, representative, or board on a question of law. (ASPR 7-602.6).

6. Covenant Against Contingent Fees. (January 1958) The Owner warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commisssion, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Owner for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee. (ASPR 7-103.20)

7. Officials Not To Benefit. (July 1949) No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit. (ASPR 7-103.19)

8. Gratuities. (March 1952)

a. The Government may, by written notice to the Owner, terminate the right of the Owner to proceed under this contract if it is found after notice and hearing, by the Secretary or his duly authorized representatives, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Owner or any agent or representative of the Owner, to any officer or employee of the Government with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such contract; provided, that the existence of the facts upon which the Secretary or his duly authorized representatives makes such finding shall be in issue and may be reviewed in any compentent court.

b. In the event this contract is terminated as provided in "a" hereof, the Government shall be entitled (I) to pursue the same remedies against the Owner as it could pursue in the event of a breach of the contract by the Owner, and (II) as a penalty, in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Owner in providing any such gratuities to any such officer or employee.

c. The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract. (ASPR 7-104.16)

9. Equal Opportunity. (1969 Jan)

During the performance of this contract, the Owner agrees as follows:

(1) The Owner will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Owner will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Owner agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Owner will, in all solicitations or advertisements for employees placed by or on behalf of the Owner, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Owner will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the Owner's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Owner will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Owner will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(6) In the event of the Owner's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part, and the Owner may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Owner will include the provisions of Paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Owner will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that in the event the Owner becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Owner may request the United States to enter into such litigation to protect the interests of the United States.

NDARD FORM 30, JULY 1966
ENERAL SERVICES ADMINISTRATION
FED PROC. REG. (41 CFR) 1-16.101

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

PAGE 1 OF 1

1. AMENDMENT/MODIFICATION NO	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO	4. PROJECT NO (If applicable)
P00001	75DEC22		Relocation(Lake Francis

5. ISSUED BY CODE A5920B
District Engineer, Dept. of the Army
Omaha District, Corps of Engineers
6014 U. S. Post Office & Court House
Omaha, Nebraska 68102

6. ADMINISTERED BY (If other than block 5) CODE

7. CONTRACTOR NAME AND ADDRESS (Street, city, county, state, and ZIP Code) CODE FACILITY CODE
The Village of Niobrara
State of Nebraska
Village Planning Commission
Niobrara, Nebraska

8.
☐ AMENDMENT OF SOLICITATION NO. _____
DATED _____ (See block 9)
☒ MODIFICATION OF CONTRACT/ORDER NO. DACW45-73-C-0008
DATED 72NOV28 (See block 11)
(Negotiated)

9 THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
☐ The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods: (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)
96x3122 Construction General (3232)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
(a) ☐ This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.
(b) ☐ The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
(c) ☒ This Supplemental Agreement is entered into pursuant to authority of 10 U.S.C. 2304 (a)(10).
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION
On the face sheet of the contract and in Article 2a, line 19, the amount of $3,000,000 is changed to $5,500,000.

In Article 8, Completion, line 3, the date of 1 December 1975 is changed to 1 December 1977.

It is understood and agreed that, pursuant to the above, the estimated contract price is increased $2,500,000.

Funds [redacted] reviewed
For W. W. Bame
F&AO
25 [illegible]
G. D. Golden
Accountant

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. ☐ CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT ☒ CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 copy TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR
BY Harry O. Tichy (Signature of person authorized to sign)

15. NAME AND TITLE OF SIGNER (Type or print)
Harry Tichy, Chairman
Niobrara Planning Commission

16. DATE SIGNED
3/25/76

17. UNITED STATES OF AMERICA
BY (Signature of Contracting Officer)

18. NAME OF CONTRACTING OFFICER (Type or print)
R. A. GLENN, Colonel, CE
District Engineer

19. DATE SIGNED
4/15/76

30-101-08

Signed copy to Contractor 4/17/76

*U.S. GOVERNMENT PRINTING OFFICE 1975-676-176

TO SF-30 APPROVED BY NARS 7-76

FORM 30, JULY 1966
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16. 101

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

PAGE 1 OF 2

1. AMENDMENT/MODIFICATION NO.	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO	4. PROJECT NO. (If applicable)
P00002	77 APR 28		Relocation (Jk Francis Cas

5. ISSUED BY CODE A5920B

District Engineer, Dept. of the Army
Omaha District, Corps of Engineers
6014 U. S. Post Office & Court House
Omaha, Nebraska 68102

6. ADMINISTERED BY (If other than block 5) CODE

Contract for:
Relocation of the Village of
Niobrara, Nebraska

7. CONTRACTOR NAME AND ADDRESS (Street, city, county, state, and ZIP Code) CODE FACILITY CODE

The Village of Niobrara
State of Nebraska
Village Planning Commission
Niobrara, Nebraska 68760

8.
☐ AMENDMENT OF SOLICITATION NO. _____
DATED _____ (See block 9)
☒ MODIFICATION OF CONTRACT/ORDER NO. DACW45-73-C-0008
DATED 72 Nov 28 (See block 11)
Negotiated

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, by or as amended, by one of the following methods:

(a) By segning and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submetted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) ☐ This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) ☐ The above numbered contract/order is modified to reflect the administrative changes (such as changes in pay office, appropriation data, etc.) set forth inblock 12.

(c) ☒ This Supplemental Agreement is entered into pursuant to authority of 10 U.S.C. 2304 (a)(10)
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

In Article I of the contract, paragraph g is deleted and the following paragraph g is substituted therefor:

g. Without additional consideration, convey to the Government by good and sufficient deed, all right, title and interest in and to the real property that it holds within that portion of the existing village limits where private lands and property are to be acquired by the Government except as indicated in red on Exhibit 2 attached hereto and made a part hereof, and further, without additional consideration, subordinate by separate instrument to the rights of the Government to subject to seepage and flooding permanently or intermittently its rights, title and interest in lands and facilities indicated in red on Exhibit 2, and further, deliver to the Government releases from all liens and encumbrances on the Owner's rights, title and interest conveyed and/or subordinated to the Government.

In Article 2, paragraph d, line 4, delete "Exhibit 1" and substitute "Exhibit 2".

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. ☐ CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT ☒ CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 COPY TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR

BY ★ Harry Tooley Chairman
(Signature of person authorized to sign)

15. NAME AND TITLE OF SIGNER (Type or print)
Chairman

16. DATE SIGNED
6-14-77

17. UNITED STATES OF AMERICA

BY _____
(Signature of Contracting Officer)

18. NAME OF CONTRACTING OFFICER (Type or print)
S. W. RAY, COLONEL, CE
District Engineer

19. DATE SIGNED
5/9/77

30-101-08

Signed Copy to Contractor 5/9/77

★ U.S. GOVERNMENT PRINTING OFFICE: 1976-216-138

Modification No. P00002
Change Order To:
Contract No. DACW45-73-C-0008

On Exhibit 1, all references to right-of-way are deleted. Exhibit 2, attached hereto and by this reference made a part hereof, is added to the contract.

It is understood and agreed that the time for performance and the contract price remain unchanged.

The foregoing modification of said contract is hereby accepted.

	District Engineer	7/7/77
Signed Copy to Contractor 5/9/77		

TION TO SF 30 APPROVED BY NARS 7-76
ARD FORM 30, JULY 1966
AL SERVICES ADMINISTRATION
ROC. REG (41 CFR) 1-16. 101

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

PAGE 1 OF 1

1. AMENDMENT/MODIFICATION NO.	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO	4. PROJECT NO. (If applicable)
0003	77 DEC 30		Reloc (Lake Francis Case)

5. ISSUED BY CODE W59XQG
strict Engineer, Dept. of the Army
aha District, Corps of Engineers
014 U.S. Post Office & Court House
aha, Nebraska 68102

6. ADMINISTERED BY (If other than block 5) XXXXXXXXXX CODE
Contract for:
Relocation of the Village of Niobrara, Nebraska

7. CONTRACTOR AME AND ADDRESS CODE FACILITY CODE

(Street, city, unty, state, d ZIP ode)
The Village of Niobrara
State of Nebraska
Attn: Mr. Harry Tichy, Chairman
Niobrara Planning Commission
Niobrara, Nebraska 68760

8.
☐ AMENDMENT OF SOLICITATION NO. _____
DATED _____ (See block 9)
☒ MODIFICATION OF CONTRACT/ORDER NO. ~~DACW45-73-C-0008~~
DATED 72 Nov 28 (See block 11)
Negotiated

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, by or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) ☐ This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) (The above numbered contract/order is modified to reflect the administrative changes (such as changes in pay office, appropriation data, etc.) set forth inblock 12.

(c) ☒ This Supplemental Agreement is entered into pursuant to authority of ~~10 U.S.C. 2304 (a)(10)~~
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

In Article 8, Completion, line 3, the date of 1 December 1977 is changed to 1 April 1978.

It is understood and agreed that, pursuant to the above, the contract price is unchanged.

The foregoing modification of said contract is hereby accepted.

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. ☐ CONTRACTOR/OFFEROR IS NOT REQUIRED SIGN THIS DOCUMENT ☐ CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN ~~1~~ Copy XXXX COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR	15. UNITED STATES OF AMERICA
BY (Signature of person authorized to sign)	BY (Signature of Contracting Officer)
15. NAME AND TITLE OF SIGNER (Type or print)	16. DATE SIGNED
	18. NAME OF CONTRACTING OFFICER (Type or print) W. RAY COLONEL CE
	19. DATE SIGNED 1/11/78

B.1.2 Real Estate Acquisitions for Relocation (FOIA)

The following pages contain tables representing the acquisition costs for real estate during the relocation of Niobrara.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

January 20, 2016

REPLY TO
ATTENTION OF

Office of Counsel

Mr. Matt George
368 Clyde Building
Brigham Young University
Provo, Utah 84602

Dear Mr. George:

This letter is in final response to your Freedom of Information Act (FOIA) request dated October 21, 2015 for the following information:

a. Relocation of the town of Niobrara

b. Cost of real estate acquisition due to sedimentation.

Enclosed is a spreadsheet of the Real Estate acquisitions for the town of Niobrara. At the end of the spreadsheet under Tract Nos. J and K are the costs of real estate acquisitions due to sedimentation.

Under the Freedom of Information Act (FOIA), your request is in the "educational or noncommercial scientific institution or new media" fee category. This category grants the requester the first 100 duplicated pages at no charge and there are no charges for search or review. Since the cost to process your request did not exceed the 100 duplicated pages, there will be no charge.

Sincerely,

Linda F. Burke
Supervisory Paralegal Specialist

Enclosure

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
2	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H100	PETERSON GAIL ET UX	13750	F	P	WARRANTY DEED DATED 15 NOV 1973
3	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H101	FOX JOHN S ESTATE OF	575	F	D/T	D/T FILED 2 JAN 1975, CIVIL 75-0-01
4	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H102	HIGGINS ET AL M	11800	F	P	WARRANTY DEED DATED 30 DEC 1974
5	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H103	KNUTSON HAROLD J	4150	F	P	WARRANTY DEED DATED 20 DEC 1973
6	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H104	OLSON FULTON R ET UX	1300	F	P	WARRANTY DEED DATED 18 NOV 1973
7	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H105	GODFREY JAMES ET AL	4400	F	D/T	D/T FILED 5 DEC 1974, CIVIL 74-O-336
8	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H106	DRYAK STANLEY ET AL	6650	F	P	WARRANTY DEED DATED 21 JAN 1974 (PRICE INCL H107)
9	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H107	DRYAK STANLEY ET AL	0	F	P	WARRANTY DEED DATED 21 JAN 1974 (ACQ W/TR H106)
10	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H108	RANDA EDWARD ET UX	7400	F	P	WARRANTY DEED DATED 31 MAY 1974
11	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H109	BROWN HELEN K ET AL	1900	F	P	WARRANTY DEED DATED 9 APR 1974
12	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H110	UHLIR RICHARD	1880	F	P	WARRANTY DEED DATED 7 FEB 1974 (PRICE INCL H329)
13	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H111	PEASE WOODROW ET UX	10600	F	P	WARRANTY DEED DATED 20 DEC 1973 (PRICE INCL H138)
14	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H112	DAHLEN MARIUS ET AL	4350	F	P	WARRANTY DEED DATED 10 DEC 1974
15	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H113	FRITZ STANLEY ET UX	5600	F	P	WARRANTY DEED DATED 21 FEB 1974 (PRICE INCL H-136)
16	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H114	BURNS LEON W ET UX	5175	F	P	WARRANTY DEED DATED 4 FEB 1978 (PRICE INCL H-118)
17	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H115	KALM DOLF ET UX	635	F	P	WARRANTY DEED DATED 17 JAN 1974
18	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H116	PEED GRACE	75	F	P	WARRANTY DEED DATED 13 FEB 1974
19	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H117	NELSON CLIFFORD A	975	F	P	WARRANTY DEED DATED 16 NOV 1973 (PRICE INCL H-202)
20	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H118	BURNS LEON W ET UX	0	F	P	WARRANTY DEED DATED 4 FEB 1974 (ACQ W/TR H-114)
21	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H119	GODFREY EDWARD	500	F	P	WARRANTY DEED DATED 31 JAN 1975
22	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H120	NELSON CLIFFORD A	460	F	P	WARRANTY DEED DATED 16 NOV 1973
23	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H121	NELSON HENRY	1150	F	P	WARRANTY DEED DATED 25 JAN 1974
24	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H122	TEADTKE C ET UX	2850	F	P	WARRANTY DEED DATED 29 MAY 1974
25	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H123	VALDEZ RUDY S ET UX	2750	F	P	WARRANTY DEED DATED 29 OCT 1974
26	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H124	TEADTKE C ET UX	225	F	P	WARRANTY DEED DATED 2 APR 1974
27	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H125	RANDA RICHARD ET UX	10800	F	P	WARRANTY DEED DATED 13 FEB 1974
28	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H126	RANDA MILDRED ET VIR	13000	F	P	WARRANTY DEED DATED 31 JAN 1974
29	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H127	ROUILLARD RUBY	900	F	P	WARRANTY DEED DATED 20 DEC 1973
30	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H128	RANDA RICHARD ET UX	115	F	P	WARRANTY DEED DATED 13 FEB 1974
31	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H129	RANDA RICHARD ET UX	112	F	P	WARRANTY DEED DATED 13 FEB 1974
32	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H130	NIOBRARA FULL GOSPEL	9400	F	P	WARRANTY DEED DATED 12 FEB 1974
33	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H131	DAVIS ROY ET AL	1950	F	D/T	D/T FILED 31 DEC 1974, CIVIL 74-0-358
34	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H132	RANDA EDWARD ET UX	440	F	P	WARRANTY DEED DATED 25 JAN 1974 (PRICE INCL H-141)
35	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H133	NELSON CLIFFORD A	4440	F	P	WARRANTY DEED DATED 16 NOV 1973
36	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H134	NELSON HARRY F ET UX	5000	F	P	WARRANTY DEED DATED 10 JUL 1974
37	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H135	CONKLIN CLYDE E	5600	F	P	WARRANTY DEED DATED 16 JAN 1974
38	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H136	FRITZ STANLEY ET UX	0	F	P	WARRANTY DEED DATED 21 FEB 1974 (ACQ W/TR H-113)
39	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H137	CONKLIN EF ET UX	6700	F	D/T	D/T FILED 17 NOV 1975, CIVIL 74-0-453
40	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H138	PEASE WOODROW ET UX	0	F	P	WARRANTY DEED DATED 20 DEC 1973 (ACQ W/TR H-111)
41	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H139	TEADTKE C ET UX	2400	F	P	WARRANTY DEED DATED 18 JAN 1974
42	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H140	RANDA EDWARD ET UX	380	F	P	WARRANTY DEED DATED 21 JUN 1974 (PRICE INCL H-143)
43	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H141	RANDA EDWARD ET UX	0	F	P	WARRANTY DEED DATED 25 JAN 1974 (ACQ W/TR H-132)
44	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H142	RANDA EDWARD ET UX	125	F	P	WARRANTY DEED DATED 15 JUL 1974
45	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H143	RANDA EDWARD ET UX	0	F	P	WARRANTY DEED DATED 21 JUN 1974 (ACQ W/TR H-140)
46	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H144	NIOBRARA DEVEL CORP	800	F	P	WARRANTY DEED DATED 19 OCT 1974
47	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H145	OMAN ROY H ET AL	7900	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO 75-O-336

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
48	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H146	OMAN ROY H ET AL	400	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO 75-0-336
49	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H147	NELSEN NIELS ET UX	38000	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
50	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H200	VOECKS MILDRED ET AL	66200	F	P	WARRANTY DEED DATED 5 MAY 1975
51	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H201	KIRBY VINCENT ET UX	1000	F	P	WARRANTY DEED DATED 13 MAY 1975
52	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H202	NELSON CLIFFORD A	0	F	P	WARRANTY DEED DATED 16 NOV 1975 (ACQ W/TR H-117)
53	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H203	NOYER ROLLIE E ET UX	10500	F	P	WARRANTY DEED DATED 1 APR 1974
54	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H204	WESLEYAN INDIAN MISS	11500	F	P	WARRANTY DEED DATED 22 NOV 1974
55	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H205	MARSHALL SL ET VIR	2100	F	P	WARRANTY DEED DATED 19 JUN 1974
56	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H206	JURACEK LOUIS ET UX	10000	F	P	WARRANTY DEED DATED 16 JAN 1974
57	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H207	MAY GLEN L ET UX	16700	F	P	WARRANTY DEED DATED 24 JAN 1974
58	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H208	NIELSEN CARL H ET UX	14500	F	P	WARRANTY DEED DATED 11 MAR 1974
59	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H209	MARSHALL IDA M ET AL	10450	F	P	WARRANTY DEED DATED 9 MAR 1974
60	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H210	DIOCESE OF NEB	13000	F	P	WARRANTY DEED DATED 28 MAY 1974
61	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H211	HIGGINS MARGARET	7500	F	P	WARRANTY DEED DATED 30 DEC 1974
62	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H212	STEPHENS LEONA ET AL	9200	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336
63	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H213	FARNIK HENRY ET UX	19500	F	P	WARRANTY DEED DATED 7 MAR 1974
64	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H214	VILLAGE OF NIOBRARA				
65	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H215	VARILEK MINOR ET UX	20400	F	P	WARRANTY DEED DATED 18 JAN 1974
66	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H216	HIGGINS MARGARET	6200	F	P	WARRANTY DEED DATED 30 DEC 1974
67	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H217	TISHENDORF EJ ET UX	10500	F	P	WARRANTY DEED DATED 16 JAN 1974
68	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H219	PEASE MARY E	280	F	P	WARRANTY DEED DATED 29 JAN 1974
69	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H220	MACKEY WILLARD ET UX	150	F	P	WARRANTY DEED DATED 2 MAR 1974
70	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H221	BARNHART WOODIE V	4000	F	P	WARRANTY DEED DATED 25 MAR 1974
71	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H222	PEASE WR				
72	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H223	FRITZ GARY J ET UX	3025	F	P	WARRANTY DEED DATED 17 JAN 1974
73	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H224	UHLIR EDWIN R ET UX	550	F	P	WARRANTY DEED DATED 21 JAN 1974
74	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H225	MACKEY WILLARD ET UX	6100	F	P	WARRANTY DEED DATED 18 DEC 1974
75	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H226	ROBINETTE ROBT ET UX	11000	F	P	WARRANTY DEED DATED 16 MAY 1974
76	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H227	KNUTSON ANDREW ET UX	13800	F	P	WARRANTY DEED DATED 17 JAN 1974 (PRICE INCLS H-228)
77	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H228	KNUTSON ANDREW ET UX	0	F	P	WARRANTY DEED DATED 17 JAN 1974 (ACQ W/TR H-227)
78	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H229	JORGENSEN EMMA L	5000	F	P	WARRANTY DEED DATED 18 JAN 1974
79	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H230	KUBE HELEN ET AL	750	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336
80	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H231	FRAZIER DANIEL ET UX	2000	F	P	WARRANTY DEED DATED 17 JAN 1974
81	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H232	COLWELL LYLE E ET UX	24000	F	P	WARRANTY DEED DATED 5 JUN 1974
82	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H233	DAHLEN MARIUS	2650	F	P	WARRANTY DEED DATED 26 JAN 1974
83	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H234	CAMERON A EVERITE	11550	F	P	WARRANTY DEED DATED 13 FEB 1974
84	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H235	SCHLOTE ALFRED ET UX	11000	F	P	WARRANTY DEED DATED 19 JAN 1974
85	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H236	BRANSTITER TA ET UX	15400	F	P	WARRANTY DEED DATED 18 APR 1974
86	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H237	HANZLIK IVAN J	23350	F	P	WARRANTY DEED DATED 4 FEB 1974
87	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H238	FONER EDA M	5500	F	P	WARRANTY DEED DATED 18 JAN 1974
88	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H239	KNUTSON CE ET UX	10000	F	P	WARRANTY DEED DATED 27 SEP 1974
89	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H240	DAVIS ROY ET AL	33000	F	D/T	D/T FILED 31 DEC 1974, CIVIL NO. 74-0-358 (PRICE INCLS $1,000 DEF)
90	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H241	PEED LARRY C ET UX	9000	F	P	WARRANTY DEED DATED 19 MAR 1974
91	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H242	HENGSTLER WM ET UX	11500	F	P	WARRANTY DEED DATED 11 MAR 1974
92	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H243	MORAVEC MARGARET I	14000	F	P	WARRANTY DEED DATED 13 FEB 1974

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
93	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H244	SCHINDLER FRANK ET UX	24000	F	P	WARRANTY DEED DATED 21 JAN 1974
94	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H245	HILL RHONDA W ET AL	1100	F	P	WARRANTY DEED DATED 16 SEP 1974
95	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H246	MORRISON EMMA ET AL	1120	F	P	WARRANTY DEED DATED 14 FEB 1975
96	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H247	PETERSON GAIL ET UX	34500	F	P	WARRANTY DEED DATED 16 APR 1974
97	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H248	SIMPSON JOHN ESTATE OF	7600	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336 (PRICE INCL H-271)
98	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H249	RANDA EDWARD ET UX	13000	F	P	WARRNATY DEED DATED 7 MAR 1974
99	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H250	PENISKA EDNA	2100	F	P	WARRANTY DEED DATED 15 APR 1974 (PRICE INCLS H-253)
100	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H251	CROSLEY EARL ET UX	14000	F	P	WARRANTY DEED DATED 21 FEB 1974
101	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H252	PETERSON EMIL ET AL	3000	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336
102	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H253	PENISKA EDNA	0	F	P	WARRANTY DEED DATED 15 APR 1974 (ACQ W/TR H-250)
103	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H254	KNORI DONALD W	6700	F	P	WARRANTY DEED DATED 12 JUN 1974
104	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H255	NOLAN WILLIAM ET UX	6500	F	P	WARRANTY DEED DATED 4 APR 1974
105	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H256	MOODY RALPH A ET UX	20000	F	P	WARRANTY DEED DATED 14 FEB 1974
106	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H257	TEADTKE KR ET UX	12100	F	P	WARRANTY DEED DATED 27 FEB 1974
107	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H258	HILL WALTER S ET UX	23000	F	P	WARRANTY DEED DATED 15 MAR 1974 (PRICE INCL H260 & H368)
108	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H259	KEMP MAURITZ ESTATE OF	600	F	D/T	D/T FILED 2 SEP 1975, CIVIL NO. 75-0-342 (PRICE INCLS H-262)
109	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H260	HILL WALTER S ET UX	0	F	P	WARRANTY DEED DATED 15 MAR 1974 (ACQ W/TR H-258)
110	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H261	SCHNIDER AE ET AL	1700	F	D/T	D/T FILED 5 NOV 1974, CIVIL NO. 74-0-305
111	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H262	KEMP MAURITZ ESTATE OF	0	F	D/T	D/T FILED 2 SEP 1975, CIVIL NO. 75-0-342 (ACQ W/TR H-259)
112	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H263	REDOWL LUCILLE T	300	F	P	WARRANTY DEED DATED 20 APR 1974
113	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H264	LAPATO OLIVE ET VIR	2300	F	P	WARRANTY DEED DATED 14 FEB 1974
114	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H265	MCDONALD JOHN ET UX	2500	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (PRICE INCL H-377)
115	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H266	MACKEY CD ET UX	5600	F	P	WARRANTY DEED DATED 26 MAR 1974 (PRICE INCLS H-353)
116	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H267	BROWN JEAN	325	F	P	WARRANTY DEED DATED 14 JAN 1974
117	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H268	MACKEY WILLARD ET UX	900	F	P	WARRANTY DEED DATED 11 MAR 1974
118	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H269	OLSON FULTON R ET AL	5500	F	P	WARRANTY DEED DATED 8 MAR 1974
119	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H270	SOLANO HENRY A ET UX	750	F	P	WARRANTY DEED DATED 7 MAR 1974
120	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H271	SIMPSON JOHN ESTATE OF	0	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336 (ACQ W/TR H-248)
121	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H272	FILIP FRANK JR ET AL	10000	F	P	WARRANTY DEED DATED 16 MAR 1974
122	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H273	MOODY GARY W ET UX	22000	F	P	WARRANTY DEED DATED 9 MAR 1974 (PRICE INCLS H-346)
123	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H274	EBERLY BEULAH E	21500	F	D/T	D/T FILED 11 FEB 1976, CIVIL NO. 76-0-46 (PRICE INCL $5,900 DEF; PRICE ALSO INCL H408 & H420)
124	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H275	SCHOOL DISTRICT I-R	5900	F	P	WARRANTY DEED DATED 22 AUG 1974 (RESERVING TO GRANTOR PERM INGRESS & EGRESS ON EXISTING RDS TO ADJACENT SCHOOL LANDS & BLDGS)
125	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H276	JONES FRANK E ET UX	12300	F	P	WARRANTY DEED DATED 29 JUL 1974
126	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H277	BARNHART WOODIE V	300	F	P	WARRANTY DEED DATED 3 JUN 1974
127	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H278	PEASE MARY E	5000	F	P	WARRANTY DEED DATED 28 JUN 1974
128	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H279	HILL WALTER S ET UX	280	F	P	WARRANTY DEED DATED 10 DEC 1974
129	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H280	HOFERER JOHN J ET UX	15400	F	P	WARRANTY DEED DATED 11 JUL 1974
130	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H281	UNKNOWN				

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
131	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H282	NIOBRARA VILLAGE OF	0	F	P	DEED DATED 13 DEC 1977 (PURSUANT TO RELOCATION CONTRACT DACW45-73-C-0008)
132	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H300	GREEN EARLE W ET UX	9400	F	P	WARRANTY DEED DATED 11 SEP 1974
133	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H301	JOHNSON MERLIN ET UX	8500	F	P	WARRANTY DEED DATED 13 FEB 1974
134	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H302	JERMAN ERVIN ET UX	12500	F	P	WARRANTY DEED DATED 20 DEC 1973
135	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H303	UHLIR RICHARD ET UX	9000	F	P	WARRANTY DEED DATED 13 FEB 1974
136	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H304	FONER ESTHER N	15500	F	P	WARRANTY DEED DATED 6 APR 1974
137	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H305	LISKA JOSEPH B	1600	F	P	WARRANTY DEED DATED 4 MAR 1974
138	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H306	PRINTZ GORDON ET UX	7400	F	P	WARRANTY DEED DATED 4 MAR 1974
139	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H307	RYAN ALBERT J	10250	F	P	WARRANTY DEED DATED 18 MAR 1974
140	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H308	FONER KENNETH ET UX	11200	F	P	WARRANTY DEED DATED 27 APR 1974
141	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H309	CUHEL ALICE J ET AL	5900	F	P	WARRANTY DEED DATED 19 APR 1974
142	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H310	KLUG STEPHEN B	5500	F	P	WARRANTY DEED DATED 1 MAR 1974
143	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H311	MAY WALTER C ET UX	8000	F	P	WARRANTY DEED DATED 5 MAR 1974
144	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H312	EVANGELICAL LUTH CH	23000	F	P	WARRANTY DEED DATED 27 AUG 1974
145	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H313	OLSON ROBERT L ET UX	10000	F	P	WARRANTY DEED DATED 9 MAR 1974
146	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H314	FITCH LESTER C ET UX	13000	F	P	WARRANTY DEED DATED 1 APR 1974
147	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H315	BARINGTON MARGERY E	5700	F	P	WARRANTY DEED DATED 1 MAR 1974
148	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H316	SNOWDON CURTIS W	14000	F	D/T	D/T FILED 2 SEP 1975, CIVIL NO. 75-0-342
149	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H317	KEMP LAVERNE	10400	F	P	WARRANTY DEED DATED 25 MAR 1974
150	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H318	BOURN JOHN ET AL	2200	F	P	WARRANTY DEED DATED 31 MAR 1974
151	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H319	KONKEN WENDELL ET UX	3800	F	P	WARRANTY DEED DATED 13 MAR 1974
152	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H320	FRITZ RUDOLPH ET AL	2400	F	P	WARRANTY DEED DATED 12 JUN 1974
153	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H321	SCHMIDT HENRY	8000	F	P	WARRANTY DEED DATED 1 MAR 1974
154	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H322	LARSEN MYRTLE ET AL	360	F	P	WARRANTY DEED DATED 11 MAY 1974
155	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H323	STUBBLEN DORIS L	1350	F	P	WARRANTY DEED DATED 11 JUL 1974
156	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H324	DAVIS ROY ET AL	1550	F	D/T	D/T FILED 31 DEC 1974, CIVIL NO. 74-0-358 (PRICE INCL $580 DEF)
157	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H325	SLECHTA DANIEL	1000	F	D/T	D/T FILED 2 SEP 1975, CIVIL NO. 75-0-342
158	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H326	LISKA HELEN S	18500	F	P	WARRANTY DEED DATED 6 MAY 1974
159	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H327	BURGARD DORA ET AL	1400	F	P	WARRANTY DEED DATED 25 APR 1974
160	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H328	FRITZ RICHARD ET AL	5400	F	P	WARRANTY DEED DATED 4 FEB 1975
161	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H329	UHLIR RICHARD	0	F	P	WARRANTY DEED DATED 7 FEB 1974 (ACQ W/TR H-110)
162	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H330	MULHAIR CHAS M ET UX	8000	F	P	WARRANTY DEED DATED 27 AUG 1974
163	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H331	FITCH ELLA M	11800	F	P	WARRANTY DEED DATED 28 MAR 1974
164	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H332	WILSON MAY ET AL	640	F	P	WARRANTY DEED DATED 5 APR 1974
165	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H333	SCHWACH MARIE ET AL	5500	F	P	WARRANTY DEED DATED 16 MAY 1974
166	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H334	BERNAT IONA ET AL	4700	F	P	WARRANTY DEED DATED 29 MAR 1974
167	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H335	HOLAN ANTONIA	6500	F	P	WARRANTY DEED DATED 27 APR 1974
168	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H336	BARNHART WOODIE V	7150	F	P	WARRANTY DEED DATED 11 MAR 1974
169	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H338	ROBINETTE J ET AL	10500	F	P	WARRANTY DEED DATED 19 AUG 1974
170	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H339	JUNGE GUSTAV	5000	F	P	WARRANTY DEED DATED 5 APR 1974
171	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H340	KOEHN WILLIAM ET UX	14850	F	P	WARRANTY DEED DATED 16 APR 1974
172	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H341	MAY FRED A ET UX	22000	F	P	WARRANTY DEED DATED 18 MAR 1974
173	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H342	ROBINETTE AGNES	7500	F	P	WARRANTY DEED DATED 27 AUG 1974
174	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H343	MAYBERRY WM J ET UX	22000	F	P	WARRANTY DEED DATED 3 MAR 1975

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
175	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H344	ST WILLIAMS CHURCH	85250	F	P	WARRANTY DEED DATED 3 FEB 1975
176	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H345	TUCH JOHN F ET UX	7100	F	P	WARRANTY DEED DATED 15 JUL 1974
177	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H346	MOODY GARY W ET UX	0	F	P	WARRANTY DEED DATED 9 MAR 1974 (ACQ W/TR H-273)
178	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H347	CRIPPEN SIDNEY ET UX	14000	F	P	WARRANTY DEED DATED 2 MAR 1974
179	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H348	TICHY HARRY ET UX	14000	F	P	WARRANTY DEED DATED 29 JUL 1974
180	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H349	TEADTKE C ET UX	3800	F	P	WARRANTY DEED DATED 18 JAN 1974
181	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H350	THIEROLF PAUL ET UX	20300	F	P	WARRANTY DEED DATED 13 AUG 1974
182	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H351	WEBER TILTON C ET AL	20000	F	P	WARRANTY DEED DATED 31 JUL 1973
183	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H352	MEIER JOHN C ET UX	5500	F	P	WARRANTY DEED DATED 20 DEC 1974
184	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H353	MACKEY CD ET UX	0	F	P	WARRANTY DEED DATED 25 MAR 1974 (ACQ W/TR H-266)
185	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H354	COLWELL THOMAS ET UX	17200	F	P	WARRANTY DEED DATED 16 MAY 1974
186	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H355	REINOEHL GALE ET UX	5300	F	P	WARRANTY DEED DATED 29 APR 1974
187	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H356	SOUCEK ELSIE E ET AL	6500	F	D/T	D/T FILED 10 FEB 1975, CIVIL NO. 75-0-41
188	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H357	SKOKAN GEORGE ET UX	550	F	P	WARRANTY DEED DATED 18 NOV 1974
189	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H358	MOELLER JACOB E	3200	F	D/T	D/T FILED 12 FEB 1976, CIVIL NO. 76-0-47
190	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H359	TICHY FRANK H	3700	F	P	WARRANTY DEED DATED 22 JUL 1974
191	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H360	BOURN MELVIN J ET UX	19200	F	P	WARRANTY DEED DATED 7 AUG 1974
192	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H361	SKOKAN LOUIS ET AL	2800	F	D/T	D/T FILED 5 NOV 1974, CIVIL NO. 74-0-305
193	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H362	SKANEK JACK L ET UX	5700	F	P	WARRANTY DEED DATED 31 MAY 1974
194	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H363	HOLAN ANNA ESTATE OF	1000	F	D/T	D/T FILED 5 DEC 1974, CIVIL NO. 74-0-336
195	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H364	EARLEY JAMES F ET UX	8000	F	P	WARRANTY DEED DATED 20 SEP 1974
196	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H365	SCHILDMILLER ET VIR	7700	F	P	WARRANTY DEED DATED 14 JUN 1974
197	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H366	FONER EDA M	4000	F	P	WARRANTY DEED DATED 4 MAY 1974
198	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H367	SIMPSON CHESTER ESTATE OF	820	F	D/T	D/T FILED 5 NOV 1974, CIVIL NO. 74-0-305
199	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H368	HILL WALTER S ET UX	0	F	P	WARRANTY DEED DATED 15 MAR 1974 (ACQ W/TR H-258)
200	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H369	EDWARDS B				
201	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H370	BURNS ELMA	9500	F	P	WARRANTY DEED DATED 17 APR 1974
202	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H371	TICHY HELEN ET VIR	1500	F	P	WARRANTY DEED DATED 17 APR 1974
203	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H372	TEWS FRED C ET UX	11000	F	P	WARRANTY DEED DATED 11 APR 1974
204	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H373	CUNNINGHAM T ET UX	16325	F	P	WARRANTY DEED DATED 25 MAR 1974 (PRICE INCL H-376)
205	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H374	SIMPSON FLOYD ET UX	800	F	P	WARRANTY DEED DATED 7 NOV 1974
206	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H375	SIMPSON FLOYD ET UX	3600	F	P	WARRANTY DEED DATED 7 NOV 1974
207	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H376	CUNNINGHAM T ET UX	0	F	P	WARRANTY DEED DATED 25 MAR 1974 (ACQ W/TR H-373)
208	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H377	MCDONALD JOHN ET UX	0	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (ACQ W/TR H-265)
209	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H378	MCDONALD JOHN ET UX	5900	F	P	WARRANTY DEED DATED 20 DEC 1974
210	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H379	SOMER MOLLIE ET AL	400	F	P	WARRANTY DEED DATED 26 JUL 1974
211	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H380	HUNT EDITH R	5100	F	P	WARRANTY DEED DATED 20 DEC 1974
212	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H381	FONER EDA M	6000	F	P	WARRANTY DEED DATED 13 FEB 1974
213	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H382	OLSON FULTON ET UX	24000	F	P	WARRANTY DEED DATED 7 MAY 1974 (NOT INCL IN PRICE IS $1,750 COST OF 1.69 AC, MERGED TR G-714E)
214	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H383	LISKA MARY ET AL	14800	F	P	WARRANTY DEED DATED 3 JUN 1974
215	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H384	TICHY EDWARD ET UX	13650	F	P	WARRANTY DEED DATED 14 NOV 1974
216	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H385	STUBBEN DAILYN ET AL	21500	F	P	WARRANTY DEED DATED 30 DEC 1974
217	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H386	HOUSING AUTHORITY	0	F	P	DEED DATED 5 MAY 1977 ACQ PURSUANT TO RELOCATION CONTRACT DACW45-76-C-0073.

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
218	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H387	HOUSMAN RN ET UX	300	F	P	WARRANTY DEED DATED 24 JAN 1975
219	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H388	JERMAN WILMA E ET AL	7200	F	P	WARRANTY DEED DATED 23 APR 1974
220	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H389	EDWARDS JACK ET UX	720	F	D/T	D/T FILED 26 JUN 1975, CIVIL NO. 75-0-336
221	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H400	HEIDMANN GUS ET UX	5000	F	P	WARRANTY DEED DATED 18 APR 1974
222	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H401	SKOKAN EVELYN A	13000	F	P	WARRANTY DEED DATED 26 SEP 1974
223	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H402	KNUTSON HILDA ET VIR	11400	F	P	WARRANTY DEED DATED 29 AUG 1974
224	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H403	LEUENHAGEN KATIE M	6000	F	P	WARRANTY DEED DATED 31 JUL 1974
225	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H404	HAUGEN CARL	7600	F	P	WARRANTY DEED DATED 18 APR 1974
226	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H405	FONER EDA M	9000	F	P	WARRANTY DEED DATED 24 APR 1974
227	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H405-2	FONER EDA M	5100	F	P	WARRANTY DEED DATED 24 APR 1974
228	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H406	BRAUN GEORGE F ET UX	5600	F	P	WARRANTY DEED DATED 2 AUG 1974
229	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H407	BARE WILLIAM J	16500	F	P	WARRANTY DEED DATED 20 DEC 1974
230	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H408	EBERLY HARLEY ET UX	0	F	D/T	D/T FILED 11 FEB 1976, CIVIL NO. 76-0-46 (ACQ W/TR H-274)
231	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H409	BARE WILLIAM J	900	F	P	WARRANTY DEED DATED 20 DEC 1974
232	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H410	FREIBURGHOUSE ROY S., ET UX	5700	F	P	WARRANTY DEED DATED 16 JUL 1974
233	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H411	SCHWARTZER WM ET UX	7400	F	P	WARRANTY DEED DATED 8 NOV 1974
234	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H412	KNUTSON ANDREW ET UX	5800	F	P	WARRANTY DEED DATED 9 JUL 1974
235	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H413	VOECKS MILDRED ET AL	14200	F	P	WARRANTY DEED DATED 5 MAY 1975
236	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H414	CROSLEY ROSE	8600	F	P	WARRANTY DEED DATED 19 DEC 1974
237	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H415	CROSLEY ROSE ET AL	6300	F	P	WARRANTY DEED DATED 19 DEC 1974
238	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H416	FARNIK HENRY ET UX	34500	F	P	WARRANTY DEED DATED 31 DEC 1974
239	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H417	REYNOLDS EARL ET UX	8300	F	P	WARRANTY DEED DATED 10 MAR 1975
240	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H418	MAY GLEN L ET UX	3900	F	P	WARRANTY DEED DATED 12 JUN 1974
241	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H420	EBERLY HARLEY ET UX	0	F	D/T	D/T FILED 11 FEB 1976, CIVIL NO. 76-0-46 (ACQ W/TR H-274)
242	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H421	BENNER AND LAWRENCE POST	9200	F	P	WARRANTY DEED DATED 28 FEB 1975
243	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H422	NORTHERN TELEPHONE	0	F	P	DEED DATED 6 JUN 1978, ACQ PURSUANT TO RELOCATION CONTRACT DACW45-75-C-0074
244	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H423	HILL WALTER S ET UX	3300	F	P	WARRANTY DEED DATED 7 MAR 1974
245	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H424	OPST JOSEPH ET UX	12000	F	P	WARRANTY DEED DATED 6 JUN 1974
246	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H425	GREENAMYRE GERALD H	5625	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (PRICE INCL $1125 DEF; PRICE DOES NOT INCL $300 FOR SALVAGE VALUE OF IMP)
247	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H426	KNUTSON CARL A	3000	F	P	WARRANTY DEED DATED 30 APR 1974
248	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H427	KONKEN WENDELL ET UX	7200	F	P	WARRANTY DEED DATED 10 APR 1974
249	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H428	DRAKE ROBERT F ET UX	14500	F	P	WARRANTY DEED DATED 8 JUL 1974
250	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H429	GATZ CHAS F JR ET UX	7500	F	P	WARRANTY DEED DATED 6 JUL 1974
251	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H430	EBERLY BEULAH E	38500	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (PRICE INCL $9500 DEF; PRICE ALSO INCL H-431)
252	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H431	EBERLY HARLEY ET UX	0	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (ACQ W/TR H-430)
253	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H432	TSCHIRREN W ET UX	5700	F	P	WARRANTY DEED DATED 22 AUG 1974
254	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H433	KNUTSON NINA A	6200	F	P	WARRANTY DEED DATED 3 MAY 1974
255	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H434	THOMPSON BM ET UX	7200	F	P	WARRANTY DEED DATED 12 SEP 1974
256	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H435	PRESBYTERIAN CHURCH	52000	F	P	WARRANTY DEED DATED 7 OCT 1974
257	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H436	THIEROLF PL ESTATE OF	15000	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
258	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H437	MINARIK ANNA P	6600	F	P	WARRANTY DEED DATED 6 MAY 1974

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
259	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H438	RAD VYSEHRAD NO 53	26000	F	P	WARRANTY DEED DATED 8 NOV 1974
260	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H439	IONIC LODGE #87	17200	F	P	WARRANTY DEED DATED 21 NOV 1974
261	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H440	CUNNINGHAM T ET UX	40000	F	P	WARRANTY DEED DATED 23 APR 1974
262	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H441	TEADTKE C ET UX	10450	F	P	WARRANTY DEED DATED 23 MAY 1974
263	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H442	BANK OF NIOBRARA	30000	F	D/T	D/T FILED 31 DEC 1974, CIVIL NO. 74-0-358 (PRICE INCL $12,000 DEF)
264	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H443	RIHANEK GLEN D ET UX	18500	F	D/T	D/T FILED 12 FEB 1975, CIVIL NO. 75-0-50 (PRICE INCL $3500 DEF)
265	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H444	GREEN EARLE W ET UX	1375	F	P	WARRANTY DEED DATED 24 APR 1974
266	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H445	MAY GLEN L ET UX	22900	F	P	WARRANTY DEED DATED 20 DEC 1974
267	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H446	LANE FLOYD E ET UX	11300	F	P	WARRANTY DEED DATED 10 JUL 1974
268	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H447	MARSHALL IDA M	1250	F	P	WARRANTY DEED DATED 28 MAY 1974
269	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H448	MOODY RALPH A ET UX	2500	F	P	WARRANTY DEED DATED 17 APR 1974
270	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H449	FREEMAN VALLEY ET UX	8700	F	P	WARRANTY DEED DATED 20 DEC 1974
271	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H450	SCOTT WALTER P ET UX	12000	F	P	WARRANTY DEED DATED 30 JUL 1974
272	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H451	TICHY HARRY ET UX	36000	F	P	WARRANTY DEED DATED 25 AUG 1975
273	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H452	MARSHALL IDA M ET AL	9500	F	P	WARRANTY DEED DATED 28 MAY 1974
274	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H453	THIEROLF ALVIN ET UX	2800	F	P	WARRANTY DEED DATED 23 OCT 1974
275	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H454	KNUTSON CARL A ET AL	16000	F	P	WARRANTY DEED DATED 28 JAN 1975
276	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H455	LISKA JOSEPH B	2650	F	P	WARRANTY DEED DATED 28 MAY 1974
277	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H456	OLSON FULTON ET UX	17100	F	P	WARRANTY DEED DATED 7 JUN 1974
278	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H457	TUCH JAMES A ET UX	13000	F	P	WARRANTY DEED DATED 12 NOV 1974
279	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H458	COLWELL JESSIE	21200	F	P	WARRANTY DEED DATED 20 DEC 1974
280	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H459	NIOBRARA EVAN LUTH	50000	F	P	WARRANTY DEED DATED 27 AUG 1974
281	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H460	TUCH LLOYD R ET UX	22500	F	P	WARRANTY DEED DATED 24 MAY 1974
282	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H461	JOHNSON ET VIR M	7500	F	P	WARRANTY DEED DATED 20 DEC 1974
283	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H462	KRUPICKA ELMER D ET UX	28500	F	P	WARRANTY DEED DATED 21 AUG 1974
284	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H463	TICHY VICTOR ET UX	8000	F	P	WARRANTY DEED DATED 25 MAR 1974 (PRICE INCLS H-465)
285	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H464	MC GRAW LELAND ET UX	5000	F	P	WARRANTY DEED DATED 8 JUN 1974
286	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H465	TICHY VICTOR ET UX	0	F	P	WARRANTY DEED DATED 25 MAR 1974 (ACQ W/TR H-463)
287	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H466	FISCHER CARL F ET UX	8500	F	P	WARRANTY DEED DATED 1 APR 1974
288	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H467	CROSLEY JOHN W ET AL	1400	F	P	WARRANTY DEED DATED 19 DEC 1974
289	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H468	CROSLEY JOHN W ET AL	15500	F	P	WARRANTY DEED DATED 19 DEC 1974
290	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H469	FRANK GREINER POST	4450	F	P	WARRANTY DEED DATED 13 JUN 1975
291	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H470	KEMP LAVERNE	22500	F	P	WARRANTY DEED DATED 25 APR 1974
292	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H471	KEMP LAVERNE F ET AL	2000	F	P	WARRANTY DEED DATED 12 NOV 1974
293	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H472	TUCH JAMES A ET UX	4300	F	P	WARRANTY DEED DATED 19 NOV 1974
294	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H473-1	FREEMAN VALLEY ET UX	5800	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (PRICE INCL $3300 DEF)
295	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H473-2	FREEMAN VALLEY ET UX	10400	F	P	WARRANTY DEED DATED 8 OCT 1974
296	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H474	LISKA ADOLPH O ET UX	1500	F	D/T	D/T FILED 10 FEB 1975, CIVIL NO. 75-0-41
297	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H475	GREENAMYRE GH ET UX	20000	F	P	WARRANTY DEED DATED 6 NOV 1974
298	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H476	DIEZ CLAYTON R ET UX	13700	F	P	WARRANTY DEED DATED 28 JAN 1975
299	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H477	GEORGE PETER	9300	F	P	WARRANTY DEED DATED 23 DEC 1974
300	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H478	FREEMAN ELLA ET AL	5600	F	P	WARRANTY DEED DATED 9 AUG 1974
301	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H479	BROWN GEORGE F ET UX	5000	F	P	WARRANTY DEED DATED 9 JUL 1974

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
302	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H480	GERTHS ROY A ET UX	6000	F	P	WARRANTY DEED DATED 8 OCT 1974
303	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H481	JANOVAC EDA M ET AL	8000	F	P	WARRANTY DEED DATED 20 DEC 1974
304	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H482	LIPPERT CS ET UX	17000	F	P	WARRANTY DEED DATED 9 JUL 1974
305	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H483	SCOTT WALTER P ET UX	1100	F	P	WARRANTY DEED DATED 10 JUN 1974
306	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H484	KEMP LAVERNE	23500	F	P	WARRANTY DEED DATED 25 JUL 1974
307	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H485	BOURN MELVIN J ET UX	1280	F	P	WARRANTY DEED DATED 25 APR 1974
308	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H486	PERSON CHARLES ET UX	18500	F	P	WARRANTY DEED DATED 12 JUN 1974
309	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H487	SCOTT WALTER P ET UX	12600	F	P	WARRANTY DEED DATED 28 MAY 1974
310	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H488	SKOKAN MARIE ET AL	17000	F	P	WARRANTY DEED DATED 24 OCT 1974
311	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H489	UNKNOWN				
312	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H490	UNKNOWN				
313	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H492	UNKNOWN				
314	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H493	NIOBRARA VILLAGE OF	0	F	P	DEED DATED 13 DEC 1977, ACQ PURSUANT TO RELOCATION CONTRACT DACW45-73-C-0008.
315	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H500	EBERLY JAY D ET UX	26564.49	F	D/T	D/T FILED 17 JUN 1974, CIVIL NO. 74-0-165 (PRICE INCL $5700 DEF AND $364.49 INT)
316	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H501	MAYBERRY HW ET UX	21000	F	P	WARRANTY DEED DATED 3 JUN 1974
317	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H502	WHITE VERA F ET VIR	1160	F	P	WARRANTY DEED DATED 8 AUG 1974
318	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H503	KONKEN WENDELL ET UX	4500	F	D/T	D/T FILED 17 NOV 1975, CIVIL NO. 75-0-453 (PRICE INCL $742 DEF)
319	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H504	WILSON ROBT R ET UX	17400	F	P	WARRANTY DEED DATED 12 JUN 1974
320	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H505	SPELTS JERRY B ET UX	1140	F	P	WARRANTY DEED DATED 11 JUN 1974
321	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H506	PEED ALBERT R ET UX	14000	F	P	WARRANTY DEED DATED 26 SEP 1974
322	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H507	NELSON CLIFF	3350	F	P	WARRANTY DEED DATED 12 JUN 1974
323	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H508	DANAHER THOMAS ET UX	5700	F	P	WARRANTY DEED DATED 15 JUL 1974
324	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H509	DIEZ CLAYTON W ET UX	6200	F	P	WARRANTY DEED DATED 16 AUG 1974
325	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H510	BATHKE JERRY D ET UX	8400	F	P	WARRANTY DEED DATED 9 JUL 1974
326	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H511	CLINE JAMES H ET UX	8280	F	P	WARRANTY DEED DATED 13 JUL 1974
327	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H512	TEADTKE C ET UX	17000	F	P	WARRANTY DEED DATED 23 JUL 1974
328	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H513	TEADTKE C				
329	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H514	VILLAGE OF NIOBRARA				
330	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H515	ROY VA				
331	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H516	SWANSON VERNER ET UX	5600	F	P	WARRANTY DEED DATED 15 NOV 1974
332	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H517	STEWART PAULINE M	5900	F	P	WARRANTY DEED DATED 21 NOV 1974
333	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H518	VILLAGE OF NIOBRARA				
334	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H519	NEBRASKA STATE OF	12500	F	P	DEED DATED 6 APR 1976
335	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H520	KNOX COUNTY NEBRASKA STATE OF	21000	F	P	DEED DATED 24 APR 1975
336	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H521	KEENE DAISY C ET AL	25700	F	P	WARRANTY DEED DATED 24 JUL 1974
337	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H522	KRUPICKA EJ ET UX	4300	F	P	WARRANTY DEED DATED 29 AUG 1974
338	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H523	BENSON ALVIN ET AL	4000	F	D/T	D/T FILED 10 FEB 1975, CIVIL NO. 75-0-41
339	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H524	JONES FRANK E ET UX	17100	F	P	WARRANTY DEED DATED 30 JUL 1974
340	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H525	JONES INGA	17200	F	P	WARRANTY DEED DATED 25 JUL 1974
341	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H526	KRUPICKA EJ ET UX	2700	F	P	WARRANTY DEED DATED 5 AUG 1974
342	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H527	KRUPICKA EJ				
343	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H528	KNOX COUNTY OF				
344	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H529	RENTZELL DUANE ET AL	6200	F	P	WARRANTY DEED DATED 5 NOV 1974

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
345	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H530	LOWELL IVONIE ESTATE OF	50	F	D/T	D/T FILED 10 FEB 1975, CIVIL NO. 75-0-41
346	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H531	SIMPSON RALPH ET UX	4400	F	P	WARRANTY DEED DATED 23 AUG 1974
347	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H532	KNUTSON ALVIN ET UX	6300	F	P	WARRANTY DEED DATED 26 SEP 1974
348	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H533	FRITZ HENRY ET AL	5100	F	P	WARRANTY DEED DATED 31 JUL 1974
349	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H534	STEINBACH DL ET UX	7200	F	P	WARRANTY DEED DATED 4 JUN 1974
350	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H535	BOURN HARVEY ET UX	12200	F	P	WARRANTY DEED DATED 25 OCT 1974
351	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H536	TEADTKE C ET UX	625	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
352	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H537	DIEZ CLAYTON R ET UX	16000	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
353	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H538	RAILWAY CO CHICAGO AND NORTH WESTER				
354	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H539	VILLAGE OF NIOBRARA				
355	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H540	SPELTS LUMBER COMPANY	19200	F	P	WARRANTY DEED DATED 14 AUG 1974
356	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H541	NIOBRARA OIL ET AL	46000	F	D/T	D/T FILED 2 JAN 1975, CIVIL NO. 75-0-01
357	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H543	VILLAGE OF NIOBRARA				
358	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H544	WALDMAN JIMMY ET UX	3350	F	P	WARRANTY DEED DATED 13 DEC 1974
359	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H545	TEADTKE C ET UX	22000	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
360	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H546	C + NW RR - ED GRAIN				LEASEHOLD
361	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H547	C + NW RR - DIEZ FERTI				LEASEHOLD
362	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H600	GREEN EARLE W ET UX	2600	F	P	WARRANTY DEED DATED 11 SEP 1974
363	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H601	KRUPICKA EJ ET UX	13800	F	P	WARRANTY DEED DATED 5 AUG 1974
364	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H602	HULLIHEN TG ESTATE OF	150	F	D/T	D/T FILED 2 FEB 1975, CIVIL NO. 75-0-01 (PRICE INCLS H604 & H638)
365	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H603	JOHNSON MERLIN ET UX	2400	F	P	WARRANTY DEED DATED 1 AUG 1974
366	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H604	HULLIHEN TG ESTATE OF	0	F	D/T	D/T FILED 2 JAN 1975, CIVIL NO. 75-0-01 (ACQ W/TR H-802)
367	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H605	MUMM DETLEF	700	F	P	WARRANTY DEED DATED 25 SEP 1974
368	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H606	GATZ JOHANNAH	3600	F	P	WARRANTY DEED DATED 8 JUL 1974
369	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H607	SCHRADER REX A ET AL	2580	F	D/T	D/T FILED 10 FEB 1975, CIVIL NO. 75-0-41
370	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H608	UNKNOWN				
371	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H609	UNKNOWN				
372	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H610	UNKNOWN				
373	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H611	UNKNOWN				
374	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H612	NEWSAM KAREEN ET VIR	4100	F	P	WARRANTY DEED DATED 2 OCT 1974
375	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H613	KRUPICKA EJ ET UX	430	F	P	WARRANTY DEED DATED 29 AUG 1974
376	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H614	NOLAN JAMES E ET UX	6300	F	P	WARRANTY DEED DATED 29 JUL 1974
377	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H615	BURNS ROGER E ET UX	5000	F	P	WARRANTY DEED DATED 3 AUG 1974
378	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H616	NEWSAM HERBERT ET AL	1900	F	P	WARRANTY DEED DATED 13 SEP 1974
379	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H617	UNKNOWN				
380	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H618	CONKLIN NORA ET AL	100	F	P	WARRANTY DEED DATED 7 MAR 1975
381	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H619	VILLAGE OF NIOBRARA				
382	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H620	NEWSAM ROBERT ET UX	3000	F	P	WARRANTY DEED DATED 3 JUN 1974
383	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H621	TEADTKE C ET UX	785	F	P	WARRANTY DEED DATED 1 AUG 1974
384	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H622	HARROM ROBERT ET UX	6300	F	P	WARRANTY DEED DATED 23 AUG 1974
385	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H623	TEADTKE C ET UX	360	F	P	WARRANTY DEED DATED 9 JUL 1974
386	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H624	UNKNOWN				
387	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H625	KRUPICKA EJ ET UX	2560	F	P	WARRANTY DEED DATED 5 AUG 1974
388	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H626	KRUPICKA EJ ET UX	3400	F	P	WARRANTY DEED DATED 5 AUG 1974
389	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H627	UNKNOWN				

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
390	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H628	BOURN HARVEY ET UX	9750	F	P	WARRANTY DEED DATED 25 OCT 1974
391	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H629	BOURN H				
392	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H630	BOURN H				
393	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H631	SMITH RAMONA ET AL	3320	F	P	WARRANTY DEED DATED 31 AUG 1974
394	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H632	MC GRAW LELAND ET UX	27150	F	D/T	D/T FILED 26 AUG 1975, CIVIL NO. 75-0-336
395	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H633	BOURN HARVEY ET UX	16050	F	P	WARRANTY DEED DATED 6 NOV 1974
396	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H634	UNKNOWN				
397	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H635	UNKNOWN				
398	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H636	UNKNOWN				
399	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H637	HARROM ROBERT ET UX	25	F	P	WARRANTY DEED DATED 20 AUG 1974
400	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H638	HULLIHEN TG ESTATE OF	0	F	D/T	D/T FILED 2 JAN 1975, CIVIL NO. 75-0-01 (ACQ W/TR H-602)
401	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H639	MC GRAW LELAND ET UX	10050	F	P	WARRANTY DEED DATED 9 OCT 1975
402	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H640	MC GRAW LELAND ET UX	7000	F	D/T	D/T FILED 2 SEP 1975, CIVIL NO. 75-0-342 (PRICE INCL $200 DEF)
403	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H641	NEWSAM ORVILLE ET UX	150	F	P	WARRANTY DEED DATED 12 APR 1978
404	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H700	NEBRASKA STATE OF	650000	F	P	WARRANTY DEED DATED 11 APR 1978 (EXC & EXCLUDING ANY RIGHTS, TITLE & INT OF GRANTOR/LEASSES PROHIBITED IN CONSTITUTION OF STATE OF NEBRASKA, ARTICLE 111, SECTION 20) (RESERVING A PERP EASE FOR EXISTING STATE HWY 12 RIGHT-OF-WAY)
405	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H701E	SAGE ERNEST ET UX	0	E	INV	SAGE VS U.S., CASE NO 91-73, ACQ BY INVERSE CONDEMNATION. PAID BY GAO; $46,800 COMPENSATION PLUS $28,025.70 INT/ETC. PERP FLOWAGE EASE FROM 30 NOV 1973 (FORMERLY KNOWN AS TR 107E, NIOBRARA WEST)
406	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H702E	NIELSEN GRAIN AND FARM	0	E	INV	CAMERON VS U.S., CASE NO. 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO: $8,894 COMPENSATION PLUS $14,709.75 INT/ETC. PERP FLOWAGE EASE FROM 30 NOV 1973
407	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H703E	NIELSON LARRY LEE	0	E	INV	CAMERON VS U.S., CASE NO. 537-79L ACQ BY INVERSE COND. PD BY GAO ($8,894 COMP &14,709.75 INT/ETC COST INCL IN FT RAND) EASE DTD 30 MAY 1984
408	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H704E-1	DELMAR E KRUPICKA	0	E	INV	CAMERON VS U.S., CASE NO 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO: $8,345.50 COMPENSATION PLUS $16,413.43 INT/ETC PERP FLOWAGE EASE FROM 30 NOV 1973 (PRICE INCLS TRS H704E-2 AND H704E-3)
409	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H704E-2	DELMAR E KRUPICKA		E	INV	CAMERON VS U.S., CASE NO 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO. PERP FLOWAGE EASE FROM 30 NOV 1973 (PRICE INCL IN TR H704E-1)
410	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H704E-3	DELMAR E KRUPICKA	0	E	INV	CAMERON VS U.S., CASE NO 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO, PERP FLOWAGE EASE FROM 30 NOV 1973 (PRICE INCL IN H704E-1)
411	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H705E	NEILSON GRAIN AND FARM INC	0	E	INV	CAMERON VS U.S., CASE NO 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO: $15,008 COMPENSATION PLUS $22,670.83 INT/ETC. PERP FLOWAGE EASE FROM 30 NOV 1973

	A	B	C	D	E	F	G	H
1	PROJ_ID	PROJ_NAME	TRACT_NO	ADDR_NAME	ACQUIRED_COST	US_ACQ_ESTATE_CAT	F_ACCOM	REMARKS
412	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H706E	NIELSEN ET UX	0	E	INV	NIELSEN VS. U.S., CASE NO. 90-73; ACQ BY INVERSE CONDEMNATION, PAID BY GAO: $10,000 COMP/INT. PERP FLOWAGE EASE FROM 30 NOV 1973 (FORMERLY KNOWN AS TRS 108E, NIOBRARA WEST AND G743E)
413	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H707E	ELMER KRUPICKA ET AL	0	E	INV	CAMERON VS U.S., CASE NO. 537-79L; ACQ BY INVERSE CONDEMNATION, PAID BY GAO: $9,340 COMPENSATION PLUS $13,275.06 INT/ETC. PERP FLOWAGE EASE FROM 30 NOV 1973
414	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H708E	KRUPICKA ELMER D ET AL	16360.53	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 7 MAR 1997
415	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H709E	KRUPICKA ELMER D ET UX	1384.91	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 7 MAR 1997
416	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H710E-1	KRUPICKA DELMAR E ET AL	84644.07	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 6 MAR 1997
417	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H710E-2	KRUPICKA DELMAR E ET AL	1630.93	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 6 MAR 1997
418	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H711E	KRUPICKA ELMER D ET AL	8302.85	E	P	PERMANENT FLOWAGE/SEEPAGE EASEMENT FROM 7 MAR 1997
419	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H712E	KRUPICKA DELMAR E AND ELMER D	5201.71	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 7 MAR 1997
420	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H713E	SCHREIER PHILIP L. AND LONA R.	36125	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 20 SEP 1997
421	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H714E	STRADLEY CYNTHIA M A/K/A CYNTHIA MARIE	101500	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 26 JAN 1999
422	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H715E	CLEVELAND JAMES SCOTT	97000	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 29 OCT 1999
423	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H716E	CLARK BOB G., ET AL	58000	E	P	PERM FLOWAGE-SEEPAGE EASE FROM 19 NOV 1999
424	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H717E-1	MALY JAMES R.	100000	E	P	PERM FLOWAGE-SATURATION EASE FROM 8 AUG 2000
425	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H717E-2	MALY JAMES R.	0			
426	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H718E	BOHEMIA TOWNSHIP				PERM FLOWAGE EASE FROM 14 AUG 2002 (AN ADD'L 1.79 AC INCL IN H714E) (CLAIM SETTLEMENT $150,000)
427	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H719E	MARLENE SCHECKLER, ET UX	0	E	P	
428	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H721E-1	RAYMOND TOWNSHIP	0	E	INV	RAYMOND TOWNSHIP, KNOX COUNTY, NEBRASKA VS U.S. CASE NO. 02-1516L, ACQ BY INVERSE CONDEMNATION, PAID BY GAO; GRANT OF EASEMENT DTD 31 DEC 2008
429	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H721E-2	RAYMOND TOWNSHIP	0	E	INV	RAYMOND TOWNSHIP, KNOX COUNTY, NEBRASKA VS U.S. CASE NO. 02-1516L, ACQ BY INVERSE CONDEMNATION, PAID BY GAO; GRANT OF EASEMENT DTD 31 DEC 2008
430	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	H800E	LUCILLE L. LASS	79000	E	P	FLOWAGE & SATURATION EASE DATED 15 OCT 2007
431	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	J1000E	CROSLEY MICHAEL W.	10000	E	P	PERM FLOWAGE-SATURATION EASE FROM 29 NOV 1999
432	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	J1009E	SCOTT P. FRAZIER & MARSHA D. FRAZIER	39000	E	P	FLOWAGE & SATURATION EASE DATED 16 OCT 2007
433	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	J1015E	FREIBURGHOUSE WILLIAM L	48275	E	P	PERM FLOWAGE-SATURATION EASE FROM 28 DEC 2000 (ACQ WITH K1103E)
434	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	J1016E	KNOX COUNTY OF NEBR	0	E	INV	COUNTY OF KNOX, NEBRASKA VS U.S. CASE NO. 02-1517L, ACQ BY INVERSE CONDEMNATION, PAID BY GAO; GRANT OF EASEMENT DTD 31 DEC 2008
435	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	K1100E-1	MEIER WILLIAM L AND JACQUELYN	45563	E	P	PERM FLOWAGE-SATURATION EASE FROM 17 MAY 1999
436	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	K1100E-2	MEIER WILLIAM L AND JACQUELYN	74437	E	P	PERM FLOWAGE-SATURATION EASE FROM 17 MAY 1999
437	GAVINS	GAVINS POINT DAM-LEWIS + CLARK	K1103E	FREIBURGHOUSE WILLIAM L	4225	E	P	PERM FLOWAGE-SATURATION EASE FROM 28 DEC 2000 (ACQ WITH J1015E)
438								
439								
440								

B.1.3 Highway 12 Maintenance (2004 – 2014) and Redesign (Minimum Estimate)

Costs related to the maintenance and redesign of Highway 12 are contained in an Environmental Impact Statement prepared by HDR Engineering. The citation is included in the References section as well as here:

HDR Engineering (2015). *Nebraska Highway 12 Niobrara East and West Draft Environmental Impact Statement.* United States Army Corps of Engineers, Omaha District.

B.1.4 Emergent Sandbar Habitat Construction / Maintenance, 1999 – 2015 (FOIA)

The FOIA request regarding costs to construct and maintain the Emergent Sandbar Habitat can be found on the following pages.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

March 21, 2016

REPLY TO
ATTENTION OF

Office of Counsel

Mr. Matt George
368 Clyde Building
Brigham Young University
Provo, Utah 84602

Dear Mr. George:

This letter is in response to your Freedom of Information Act (FOIA) request dated February 23, 2016 for "all cost (design, construction, real estate, etc.) for building ESH below Gavins Point Dam from 1999 to present." The following information is provided.

ESH Costs from 1999 to Present:

1999:	$ 0
2000:	$ 0
2001:	$ 0
2002:	$ 0
2003:	$ 0
2004:	$ 859,000
2005:	$ 3,251,000
2006:	$ 5,513,000
2007:	$ 15,448,000
2008:	$ 4,182,000
2009:	$ 4,710,000
2010:	$ 4,448,000
2011:	$ 2,161,000
2012:	$ 1,097,000
2013:	$ 1,015,000
2014:	$ 745,000
2015:	$ 528,000

Under the FOIA, your request is in the "educational or noncommercial scientific institution or news media" fee category. This category grants the requester the first 100 pages at no charge and there are no charges for search or review. Since the cost to process your request did not exceed the 100 duplicated pages, there will be no charge.

Sincerely,

Linda F. Burke
Supervisory Paralegal Specialist