Measuring Nonuse Values for Wilderness Designation in Utah-by Contingent Valuation Method

Van R. Johnson

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MEASURING NONUSE VALUES FOR WILDERNESS
DESIGNATION IN UTAH—BY CONTINGENT
VALUATION METHOD

by

Van R. Johnson

A thesis submitted in partial fulfillment
of the requirements for the degree
of
MASTER OF SCIENCE
in
Economics

Approved:

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Logan, Utah

1995
ABSTRACT

Measuring Nonuse Values for Wilderness
Designation in Utah—By Contingent
Valuation Method

by

Van R. Johnson, Master of Science
Utah State University, 1995

Major Professor: Dr. John E. Keith
Department: Economics

Since 1964, when Congress wrote the Wilderness Act, there has been an increasing amount of controversy between opponents and advocates of wilderness. Wilderness areas in Utah are not immune to this controversy. Public policy makers and land managers are in the middle of this debate. They have the responsibility to assess the resource and estimate the benefits and costs associated with creating policy.

This thesis focuses on helping policy makers and land managers recognize a benefit currently not being assessed. Nonuse values are values other than in situ use, where individuals have a value for existence of wilderness or a bequesting value for future generations. If these values exist, current policy would underestimate the benefits.

The results of this thesis revealed Utah citizens have a value for wilderness designation other than in situ use value, with estimation by contingent valuation.
ACKNOWLEDGMENTS

It has been a rewarding experience to study and write about wilderness issues. There are many people who have made this study possible, and I would like to thank them for their time, patience, and helping hand along the way.

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I owe more gratitude and thanks than I will ever know to my wife, my four children, and the rest of my immediate family. These are the "folks" who have really made the sacrifice so I could complete my schooling. I will be forever indebted to these people.

Van R. Johnson
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CHAPTER I
GENERAL INTRODUCTION

Introduction

The wilderness issue in Utah is a controversial and sensitive matter. Utah citizens have polarized themselves to opposite ends of the wilderness spectrum. Opposing calls come from camps who feel their livelihoods are in jeopardy. Advocating voices come from groups calling for preservation of additional wilderness acreage. It is difficult to find common ground for compromise.

Public policy makers find themselves in the middle of the controversy; trying to satisfy both coalitions is difficult. Making public policy generally involves trade-offs. Usually, it is difficult for individuals to recognize these trade-offs. While meeting the demands of society, policy makers constrain themselves within the parameters of the law.

The Wilderness Act of 1964 defines wilderness as

\[
\text{... an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. (Sec. 2, part c)}
\]

Often the legal definition is precise and hard to interpret. For example, the definition of "outstanding opportunities for solitude" is a narrow definition, but subjective in the interpretation. The other dimension is the sociological interpretation wherein the definition is whatever people believe it to be (Hendee, Stankey, and Lucas 1990). It is difficult for policy makers to meet both the legal and sociological extremities.
With the establishment of the National Wilderness Preservation System, Congress intended to preserve areas to retain their primeval character. Wilderness preservation allows the areas to have features for specified purposes, such as recreational, ecological, geological, or other features of scientific, educational, scenic, or historical value. Public policy, for wilderness designation, should reflect the value or benefit gained from these specified uses. These uses may be composed of a direct use and/or a "nonuse" component.

The value of the policy change depends on the ratio of cost to benefits. Policy makers could understate the value if they fail to consider all components of total value. To help policy makers, researchers conduct studies estimating total value. Published economic studies find individuals who may have a use and/or a "nonuse" value for wilderness. Nonuse value involves an indirect or nonconsumptive value. Several economic studies have estimated nonuse values for wilderness designation. Policy makers have these estimations at their disposal to help make policy reflecting an individual's true value for wilderness.

The succeeding pages have pertinent information on published research on nonuse values by economists. There is not a complete selection of all the literature, only a discussion of the work applicable to this project. The purpose of the theoretical background is to clearly define the foundation of nonuse theory. The discussion of theory begins with basic welfare economics and concludes with nonuse value theory. The application of theory to empirical study is important for any project. This study applies basic background information in order to derive nonuse values of wilderness for the general population of Utah.

Objectives of Study

The analysis of this study focuses on estimating nonuse value. An integral part of nonuse value is total value. The objectives of this study are to:
1. estimate total use value (Randall 1991);
2. estimate use and nonuse values by an allocation method;
3. test the allocation method of obtaining use and nonuse values with an alternative method.

**Objective One.** Completion of the first objective involves estimating the total use value for wilderness designation, where total use value is the value for establishment of additional wilderness. Several proposals for additional wilderness currently are under consideration. Only two proposals are considered here. The Bureau of Land Management (BLM) and Utah Wilderness Coalition (UWC) propose an additional 1.9 and 5.7 million acres, respectively, of land be set aside for wilderness. The BLM proposal is the result of an extensive environmental impact statement (EIS) inventory of possible wilderness areas (BLM 1991). The UWC proposal was put forth by a coalition of environmental groups, such as Southern Utah Wilderness Alliance (SUWA), Sierra Club, and Earthfirst, among others. These two proposals represent the "boundaries" of several proposals currently at the center of the wilderness issue.

**Objective Two.** The focus of objective two is threefold. First, examining to see if nonuse values for wilderness designation are positive. The survey instrument contains a question\(^1\) that allows the participant to allocate ten points to four different categories. Use means actual use and value, where option value is the option to use the resource in the future. Existence is a nonuse value and bequest is an extension of existence where individuals are willing to pay for use by future generations. A mean percent was obtained for each category and then applied to the total value for an allocation of use and nonuse values. Total value is a summation of the allocated percentages of use and nonuse values. The second part of objective two will be to extract the different levels of use by individuals.

---

\(^1\)Please see question 47 of the survey instrument listed in the appendix of this document.
Silberman, Gerlowski, and Williams (1992) suggested there may be some problems isolating nonuse values from resource users. Objective two involves stratifying each respondent into categories of ever, recently, or never uses the specific wilderness areas. Then one can test the stated hypothesis that there is no statistical difference between the stratified categories. The third part of objective two is studying how large nonuse values are compared to use value by a ratio of nonuse-to-use value. After allocation of percentages, a summation of use and nonuse values is compared as ratio (Brown 1993).

Objective Three. The third objective's focus is to test the allocation approach using two estimates: total value estimates from objective one and a direct estimation of use values using a double-bounded approach suggested by Hanemann, Loomis, and Kanninen (1991) to gain statistical accuracy.
CHAPTER II
THEORETICAL BACKGROUND OF CONTINGENT VALUATION
METHOD (CVM) AND NONUSE VALUES

Introduction

The theoretical background begins by discussing basic concepts of welfare economics. A theoretical framework for nonmarket valuation including contingent valuation method (CVM) follows this discussion. The importance of the proper elicitation questions follows the nonmarket section. The final section includes a discussion about the theoretical framework of nonuse values.

Welfare Economics

Individuals have economic value based on preferences. Brown (1984) wrote that "the value a person assigns to an object depends on: (1) the person's perception of the object and all other relevant objects, (2) the person's held values and associated preferences, and (3) the context of the valuation" (p. 235). For privately traded goods, preference ordering shows the marginal effect of an additional unit at an additional dollar amount. Goods traded privately clear the market at the point of equilibrium, where demand equals supply. Privately traded goods are allocated by a market system. Market systems allocate resources to individuals who value them most and exclude those who are not willing to pay the price. The efficiency of a market system depends on, among others, the exclusionary factor. The exclusionary factor results in resources being allocated to those who value them most. An individual's utility depends on the satisfaction gained from proper allocation. Individuals gain utility or satisfaction from consumption of private goods. Consumption of environmental goods or public goods also adds to the individual's satisfaction or utility.

Public goods are goods that are nonrival (Baumol and Blinder 1979; Randall 1981; Dorfman 1993), that is, one individual's consumption does not reduce the amount of the good
available to others. Moreover, individuals cannot be excluded from consumption. Such goods are also generally collectively owned. For example, designated wilderness areas are collectively owned. Except for rights to grazing, water, etc., there is no one individual having property rights to the land. Individuals gain value from the amenities of these areas, which are available for all to use. If one individual uses the wilderness area, other individuals can use the same area. Although collectively held ownership allows access to the good for all collective owners, "owners" in the collectivity cannot sell or transfer their ownership. Only when it is in the public interest can a collectivity grant an individual the right to use the public good. Even then the goods become quasiprivate because the government maintains an interest (Mitchell and Carson 1989). Wilderness use becomes a "congestive public good" when a sufficient number of individuals are granted rights to use an area.

Congestive public goods do not allow the pricing mechanism of markets to function properly. Malfunctioning of the pricing mechanism allows externalities to exist. Negative externalities involve a cost to one party while the perpetrating party is not held responsible. For example, consider two people living in the same neighborhood: Neighbor A likes rock music, neighbor B likes country music. A and B live next door to each other. B likes to work in the yard. A listens to rock music while B works in the yard. Sometimes A turns the volume up so loud B cannot enjoy the satisfaction gained from yardwork. A is affecting the utility of B. The loss of B's utility or satisfaction is a cost or loss of benefit. A is experiencing more satisfaction but is not considering the loss of benefits to B. There is a misallocation of resources. The satisfaction of B is nonpriced, so resources will not be allocated through a market mechanism. Therefore, a market failure exists and either public provisions or imposed corrective devices allocate the resources for public goods. This idea is shown graphically in Figure 1.
FIGURE 1
UTILITY MAXIMIZATION IN RELATION TO A SOCIAL WELFARE FUNCTION

A's utility is measured along the vertical axis while B's utility is on the horizontal axis. Point A shows a situation where A's utility is $A_u$ utils, or level of satisfaction, and B's level of utility is $B_u$. This may be where A is enjoying the level of rock music coming from her stereo. However, at this point B is not enjoying the level of satisfaction she would like. It is possible to increase B's level of satisfaction without diminishing the level of utility A is currently enjoying. Suppose B pays neighbor A $25 to use earphones to listen to her stereo. Now A is losing some utility by resorting to earphones, but she is also gaining utility with the $25 by purchasing more private goods. On the other hand, B is gaining utility by the increases in the levels of satisfaction of peace and quiet while working in her yard. However, she has a decrease in utility from losing $25. With the offsetting increase and the decrease of utility, the level of utility moves from the inefficient point C to point D on the utility possibility frontier. Point D corresponds to what is said to be pareto optimal. Pareto optimal
represents a point where there is no way to increase the level of utility of one without decreasing the utility of another. All of the points along the utility possibility frontier represent points of pareto efficiency.

The graphical analysis represents an economy with two people. Derivation of the social welfare function at D is the vertical summation of the individual welfare functions. Point D represents the socially optimal point on the utility-possibility frontier. It is difficult to measure the level of satisfaction of individuals. Only individuals themselves know what satisfies them. The difficulty extends to deriving a social welfare function. Economists resort to measuring goods and services output as a proxy of satisfaction levels. Included as goods and services is a nonmarket good such as environmental quality or amenity changes, and this is graphically shown in Figure 2.
Lumber represents a market good on the vertical axis. The market excludes anyone not able to purchase lumber at the market price. Wilderness acreage represents a nonmarket good on the horizontal axis. A basic economic principle teaches that consumers have unlimited wants but resources are limited. Individuals cannot have everything they want. For example, if society wants more wilderness acreage, such as moving from $W_1$ to $W_2$ along the horizontal axis, it gives up timber production by moving from $L_1$ to $L_2$ on the vertical axis. The movement from less wilderness to more wilderness comes at a cost. Economists call this the opportunity cost in terms of timber production. Since society cannot have everything it wants because resources are limited, to allocate more resources to wilderness means allocating fewer resources to timber. To create a social optimal situation requires producing at a point of pareto and productive efficiency. The goal in this two-good economy is to produce at $B$, where $B$ is a point of productive efficiency. Is the point pareto efficient? Productive efficiency is a necessary condition for pareto efficiency but it is not sufficient (Dorfman 1993). Dorfman (1993) suggested the point of social optimization is the point where private goods were valued at market prices and public goods at what the public would be willing to pay for them. If line $P$ represents the rate of monetary transfer between the two goods, point $C$ meets the criterion of the highest possible output where output is greater than any other point.

One might ask how to value the goods in this two-good economy. Market prices and quantity value timber. To study the market demand for timber production, one simply observes the market movement by price and quantity data. Individuals show their demand by preference ordering for lumber products through their reaction to prices. The same is not true for wilderness acreage. Wilderness is a pure public good; the exclusionary factor does not hold. Even if some individuals are able and willing to purchase, high prices cannot exclude others from purchasing them. Wilderness is also nonrival. One person using the wilderness area does not exclude another from using the same area unless congestion sets in.
Without the exclusion factor, market failure exists. In order to establish "prices," practitioners have relied on nonmarket procedures for pure public goods.

Nonmarket Valuation

Market failure restricts information about "prices" of consumers. Randall (1983) suggested finding economic value from the price the market needs to operate efficiently. The literature presents several ways of obtaining these values in a nonmarket setting. Using the correct measure is currently controversial among economists (Hausman and Diamond 1993).

CVM has become predominant in recent studies of nonuse value, particularly in studies such as this one in which the flexibility to create a hypothetical market is needed (for example, for designated and proposed wilderness areas in Utah). CVM allows the researcher the flexibility to estimate value for a variety of criteria. CVM was the chosen nonmarket mechanism for these reasons.

Theoretical Background of CVM

The primary purpose of a CVM survey is to obtain value estimates for changes in environmental amenities. Mitchell and Carson (1989) suggested the survey should meet the methodological imperatives of survey research and the requirements of economic theory. In this section a discussion of economic theory continues, while survey methods are discussed in Chapter III.

One important component of a CVM study is choosing the correct form of an elicitation question. Choosing between willingness to pay (WTP) and willingness to accept (WTA) depends on the implied property right. In the following section, we discuss the theoretical framework of WTP as it applies to this study. A discussion of the random utility difference model suggested by Hanemann (1984) follows. Then the section concludes with the framework of the single- and double-bounded model. The background on welfare
economics and the discussion on CVM theory provide a foundation to discuss nonuse value theory.

Willingness to Pay. The implied property right determines whether survey questions are WTP or WTA. Economic literature has many studies comparing the two forms of questions (Mitchell and Carson 1989). As explained above, wilderness is collectively owned with a nontransferable individual right. Because wilderness meets this criterion, WTP is the correct elicitation question for wilderness designation. The discussion below examines WTP for wilderness, since WTA questions are not considered in this study.

For wilderness proponents, WTP for establishment of the proposed increase in wilderness acreage is appropriate. For wilderness opponents, WTP to keep wilderness open for multiple use is the issue (where multiple use means open access, resource extraction, etc.).

Random Utility Difference Model. Choosing the correct benefit measurement can be a critical element of CVM. Traditionally, benefit estimating relies on consumer surplus. Consumer surplus means the amount that people are willing to pay for a good or service over and above what they do pay. Economic literature discusses the problems using consumer surplus to measure benefits (Samuelson 1947; Silverberg 1978). The major problem is that the Marshallian demand curve holds income constant while allowing utility or satisfaction levels to vary.

An alternative to using Marshallian consumer surplus is the Hicksian variation and surplus measures. Hicks (1943) suggested using a compensating variation or surplus and equivalence variation or surplus. The choice between variation and surplus depends on whether price or quantity is changed, respectively. Compensating measures hold utility constant at initial levels while equivalence measures hold utility constant at alternative levels, depending on whether the consumer has the right to the changed or existing condition. The method of surplus measurement depends on the point of reference in relation
to the good. For example, with wilderness designation we have a good that is collectively owned, nonexclusionary, and nonrival. The best surplus estimate would be compensating surplus. We have a loss in income that leaves consumers just as well off with the increase in quantity than they would be at the current income without the added quantity. The difference in the two expenditure functions can represent the surplus measurement.

Represent compensating surplus by:

$$\text{CS}_{\text{WTP}} = [*(p_0, q_0, U_0) - Y_0] - [*(p_0, q_1, U_0) - Y_1]$$

where $p_0$, $q_0$, and $U_0$ represent price, quantity, and utility in the initial period; and $q_1$ represents the change in quantity in subsequent periods. If [1] is positive, the consumer is willing to pay for the good $j$, and their utility level remains at least the same.

Theoretically, this concept is represented by a direct utility function:

$$u_1 = u(1, m - \text{CS}, s)$$

$$u_0 = u(0, m, s),$$

where the first argument is 1 or 0, depending if the individual is willing to pay for the good; $m$ is money income; and $s$ is a vector of other socioeconomic variables. Individuals know their level of satisfaction, or utility; however, the utility function is unobservable by the practitioner.

From Hanemann (1984) we know [2] and [2a] are treated as random utilities with some given probability of obtaining a yes or a no response. Equations [2] and [2a] can be written as probability distributions:

$$v_{\text{wild}}(1, m - P_{\text{bid}}; s) \cdot \epsilon_1$$

$$v_{\text{wild}}(0, m; s) \cdot \epsilon_0,$$

where $\epsilon_1$ and $\epsilon_0$ represent the unknown components of the utility function and are individually independent distributed variables. If the individual is willing to pay the bid price $P_{\text{bid}}$ for the good, [3] and [4] yield:

$$v_{\text{wild}}(1, m - P_{\text{bid}}; s) \cdot \epsilon_1 \geq v_{\text{wild}}(0, m; s) \cdot \epsilon_0,$$
The probability of an individual willing to pay is:

\[ P_{WTP} = \Pr \{ v_{\text{wild}}(l, m - P_{\text{bid}}; s) + \epsilon_i > v_{\text{wild}}(0, m; s) + \epsilon_i \} \]  

and the probability that an individual is not willing to pay is:

\[ P_{UWTP} = 1 - P_{WTP} \]

Define the utility difference function:

\[ \Delta v_{\text{wild}} = v_{\text{wild}}(l, m - P_{\text{bid}}; s) - v_{\text{wild}}(0, m; s) + \epsilon_i \]

where Loomis (1988) defined consistency with utility difference as follows:

The consistency with utility maximization can be presented via a simple example. The probability a visitor will say yes, they will pay $10 to have an improved recreation site is related to the probability that the utility from having access to the improved recreation site exceeds the utility lost from having $10 less to spend on other goods. This is in essence a comparison of utility in the existing situation (unimproved recreation but full income) and the new situation (improved recreation but $10 less income i.e., $10 less of other goods). If the difference in utility between the new situation and the existing situation is positive, they will say yes. (p. 50)

Hanemann (1984) interpreted the standard binary response model as:

\[ P_{WTP} = F_e(\Delta v_{\text{wild}}) \]

where \( F_e(\cdot) \) is the cumulative distribution function for \( \epsilon \), and \( \epsilon \) is the error term in the utility difference.

Hanemann explained that

\[ \ldots \text{if the statistical binary response model is to be interpreted as the outcome of a utility-maximizing choice, the argument of must take the form of } [9] \text{ as a utility difference. It provides a criterion for determining whether a given statistical model is compatible with the economic hypothesis of utility maximization (p. 334).} \]

The statistical estimation of the error term is estimated by maximum likelihood estimation (MLE) using a Logit estimation such as:

\[ \log \left( \frac{\text{Prob Yes}_{\text{bid}}}{1 - \text{Prob Yes}_{\text{bid}}} \right) \]

where \([10]\) represents the log-odds ratio of the probability of saying yes to the bid over the probability of a no response to the bid.
Single-Bounded Model. The probability of the individual responding for or against a given proposal is given by equations [6] and [7], respectively. Hanemann, Loomis, and Kanninen (1991) suggested these probabilities could also be represented by:

$$\pi_{f}(P_{bid}) = 1 - G(P_{bid}; \theta),$$  \hspace{1cm} [11]
$$\pi_{a}(P_{bid}) = G(P_{bid}; \theta),$$  \hspace{1cm} [12]

where $G(\cdot)$ is a logistic cumulative distribution function where

$$G(\cdot) = e^{\beta_{1} \cdot P_{bid} + \sum_{i=1}^{N} \beta_{i} \cdot S_{i}}$$

and $\theta$ is the vector of parameters $\alpha_{i}$, $\beta_{i}$, and $P_{bid}$ represent the initial bid amount, and $S_{i}$ is the rest of the socioeconomic variables. As explained above, the MLE is the logical estimator to use for the binary choice. Taken from Hanemann, Loomis, and Kanninen (1991), the log-likelihood function for the single-bound model is:

$$\ln L_{single-bound} (\alpha, \beta) = \sum_{i=1}^{N} \ln 1 - G(\alpha_{i}, \beta_{i}) - \beta_{i} \cdot \ln G(\alpha_{i}, \beta_{i})$$  \hspace{1cm} [13]

where $\beta_{i} < 0$ represent the initial bid of the $i$th individual, while $P_{bid_{i}}$ represents the initial bid for the single-bound model of the $i$th individual. The methodology to estimate the parameters is discussed below.

Double-Bounded Model. Hanemann, Loomis, and Kanninen (1991) suggested there may be a more advantageous alternative to the single-bound model: a "double-bounded model." The double-bounded model uses a single iteration of bids in which a second bid is presented to the respondent; a higher bid if the initial response is "yes"; or a lower bid if the initial response is "no" (see Figure 3).

There are four possible outcomes: (a) yes followed by a yes, (b) no followed by a no, (c) yes followed by a no, and (d) no followed by a yes. The probabilities of these outcomes are (Hanemann, Loomis, and Kanninen 1991):

$$\pi_{n}(P_{i}^{low}, P_{i}^{up}) = 1 - G(P_{i}^{up}; \theta),$$  \hspace{1cm} [14]
where [14] represents the probability of a yes followed by a yes, and $\theta$ represents a parameter vector $= (\alpha, \beta)$;

$$\pi_{yy}(P_{\text{int}}, P_{\text{upper}}) = G(P_{\text{lower}}; \theta),$$  \hspace{1cm} [15]

where [15] represents the probability of a no followed by a no;

$$\pi_{nn}(P_{\text{int}}, P_{\text{upper}}) = G(P_{\text{upper}}; \theta) - G(P_{\text{lower}}; \theta),$$  \hspace{1cm} [16]

representing the probability of a yes response followed by a no; and

$$\pi_{yn}(P_{\text{int}}, P_{\text{lower}}) = G(P_{\text{initial}}; \theta) - G(P_{\text{lower}}; \theta),$$  \hspace{1cm} [17]

representing the probability of a no response followed by a yes response.

The log-likelihood function takes the form:

$$\ln L_{\text{double-bound}}(\alpha, \beta) = \sum_{i=1}^{N} \left[ YY_i \cdot \ln 1 - G(P_{\text{upper}}; \alpha, \beta) + (NN_i \cdot \ln G(P_{\text{lower}}; \alpha, \beta)
- YN_i \cdot \ln G(P_{\text{upper}}; \alpha, \beta) - G(P_{\text{initial}}; \alpha, \beta) - NY_i \cdot \ln G(P_{\text{initial}}; \alpha, \beta)
- G(P_{\text{lower}}; \alpha, \beta)) \right].$$  \hspace{1cm} [18]

YY through NN represent the binary-valued indicator variables. Each $G(\cdot; \alpha, \beta)$ presents the probabilities shown in equations [14] through [17].
Considerable controversy exists among practitioners about the true definition of nonuse values and the separation of nonuse values from total value. Some practitioners separate total value into use and preservation values where preservation values are option, existence, and bequest (Walsh, Loomis, and Gillman 1984). Some define nonuse as existence and bequest values, while defining option values as use values (Weisbrod 1964). Nonuse values, such as existence values, have been separated into vicarious consumption and intrinsic values (Mitchell and Carson 1989).

Many definitions and various forms of theoretical frameworks exist for nonuse values. Freeman (1993b), in his weak complimentary framework, represented use value as the amount of expenditures on market goods used to create a nonmarket good. Recreation activity is one activity that involves purchasing market goods, such as travel, time, and food, to participate in the activity. Theoretically, assuming that no market goods are purchased, no utility is gained by use. Therefore, use value is zero or, in other words, the recreationist derives no utility from the activity. Mitchell and Carson (1989) suggested that this type of total value derivation was not suitable for CV studies. They said that

use of the weak complementary approach to obtain a separate estimate for existence value is cumbersome and methodologically problematic. Implementation of a second approach would require a CV study to obtain an estimate of the total value and a travel cost analysis to measure use value. (p. 69)

Randall (1991) suggested CV models use the following total value framework:

\[ e = e(p_e, p_b, p_o, p_m, p_s, Q^o, u^o), \]  

where \( e(\cdot) \) is the expenditure function with \( p_e \) and \( p_b \) representing the nonuse components or the expenditures for existence and bequest, respectively. The use components \( p_o \) and \( p_m \) represent the expenditures for option and site uses. The price of market goods, \( p_e \), is assumed to be determined outside the mode. Therefore, market prices are implicit to the expenditure function. If \( Q^o \) is the quantity of the resource in the initial period, and \( u^o \) is the
utility in the initial period, the Hicksian compensating measures, for total value, are defined as:


where $p^*$ is the highest price a respondent is willing to pay, and $p^0$ is the baseline price.

Expression [20] represents the total value or the total area under the WTP curve.

Obtaining total value allows one to isolate other values including use and nonuse:

$$TV = [e(p^*, p^*, p^*, p^*, q^*, u^*) - e(p^*, p^*, p^*, p^*, q^*, u^*)]$$ [21a]

$$\times [e(p^*, p^*, p^*, p^*, q^*, u^*) - e(p^*, p^*, p^*, p^*, q^*, u^*)]$$ [21b]

$$\times [e(p^*, p^*, p^*, p^*, q^*, u^*) - e(p^*, p^*, p^*, p^*, q^*, u^*)]$$ [21c]

$$\times [e(p^*, p^*, p^*, p^*, q^*, u^*) - e(p^*, p^*, p^*, p^*, q^*, u^*)]$$ [21d]

Expression [21a] represents the existence value component where the existence value is the value an individual has for simply the existence of the resource. Expression [21b] represents the bequest value or the value one puts on preserving the good for future generations. Expression [21c] represents an option value where the individual has the option of using the resource now or in the future. Expression [21d] represents actual in situ use. Together [21c] and [21d] comprise the use value component of total value suggested by Randall (1991).

Towards Welfare Measurement

The theoretical framework uses the utility difference model and postulates a functional form to estimate a change in welfare or compensating surplus. The functional form is a linear random utility model suggested by Hanemann (1984):

$$\Delta v_{WD} = \alpha - \alpha_0 - \beta P_{PD}$$  [22]

where $\alpha_1$ and $\alpha_0$ were associated with a positive and a negative response, respectively. Then the logistic discrete choice model becomes:
\[
Pr(y_i - 1) = \alpha \cdot \beta_1 \cdot P_{\text{bid}} + \sum \beta_i \cdot \text{SEC}_i
\]

where \( \alpha = \alpha_1 - \alpha_0 \), \( P_{\text{bid}} \) = bid amount, and \( \text{SEC}_i \) = vector of socioeconomic variables.

To estimate the compensation surplus, Hanemann (1984) suggested that [5] and [6] could be functionally represented by:

\[
v_{\text{wtd}}(1, m - P_{\text{bid}}; s) + \epsilon_1 - \alpha_1 - \beta M + \epsilon_1
\]

and

\[
v_{\text{wtd}}(0, m; s) + \epsilon_1 - \alpha_1 - \beta M + \epsilon_0
\]

Then, introducing the compensating surplus component as \( CS_{\text{WTP}} \), we had

\[
\alpha_1 - \beta (M - CS_{\text{WTP}}) + \epsilon_1 - \alpha_0 - \beta M + \epsilon_0.
\]

Solving for \( CS_{\text{WTP}} \):

\[
CS_{\text{WTP}} = \frac{\alpha_1 - \alpha_0 - \epsilon_1 - \epsilon_0}{\beta}
\]

with \( \alpha_1 - \alpha_0 - \beta M + \epsilon_0 \) and \( \text{E} \{\epsilon_1 - \epsilon_0\} = 0 \). Thus, the mean WTP is:

\[
WTP = -a/\beta. \quad (3)
\]

\[
\begin{align*}
\alpha_1 - \beta (M - CS_{\text{WTP}}) &+ \epsilon_1 - \alpha_0 - \beta M + \epsilon_0. \quad (1) \\
\alpha_1 - \beta M + \beta CS_{\text{WTP}} &+ \epsilon_1 - \alpha_0 - \beta M + \epsilon_0. \quad (2) \\
\alpha_1 - \alpha_0 + \epsilon_1 - \epsilon_0 - \beta M + \beta M - \beta CS_{\text{WTP}} &+ \{\alpha_1 - \alpha_0 - \beta CS_{\text{WTP}}\}. \quad (3) \\
\{\alpha_1 - \alpha_0 - \beta CS_{\text{WTP}}\} &+ \alpha_1 - \alpha_0 \beta - CS_{\text{WTP}}. \quad (4)
\end{align*}
\]

\( ^{\text{3}}\)The WTP calculation is \(-a/\beta\), where \( a = \alpha + \Sigma \beta_1 \cdot \text{mean SEC}_i \) and \( \beta = \beta_1 \).
CHAPTER III
PREVIOUS STUDIES OF NONUSE VALUES

Nonuse Value Concept

Current economic literature has an array of terms and definitions for nonuse values. Weisbrod (1964) and Krutilla (1967) suggested the idea that individuals may have a value in addition to actual use. Three terms commonly found in the literature are option, existence, and bequest values. Weisbrod (1964) recognized option value as a WTP for retaining an option to use an area or facility, which would be difficult or impossible to replace and for which there is no close substitute. Krutilla (1967) explained the concept of existence value this way:

There are many persons who obtain satisfaction from mere knowledge that part of wilderness North America remains even though they would be appalled by the prospect of being exposed to it. Subscriptions to World Wildlife Fund are of the same character. The funds are employed predominantly in an effort to save exotic species in remote areas of the world which few subscribers to the Fund ever hope to see. An option demand may exist therefore not only among persons currently and prospectively active in the market for the object of the demand, but among others who place a value on the mere existence of biological and/or geomorphological variety and its widespread distribution. (p. 781)

Walsh et al. (1990) extended the definition of existence value to include bequest value. They explained bequest value as the WTP for the personal satisfaction of endowing future generations with forest quality.

There are several other definitions and terms used for nonuse values. This study focused on the general idea suggested by Randall (1991) that total value consisted of use value and existence value, where use value comprised actual site use and option value. He explained existence value as the WTP for the mere existence of the good and having the good set aside for future generations.
Previous Work Using Contingent Valuation to Measure Nonuse Values

There are many studies published on nonuse values of public goods. The CVM is probably the only tool to estimate WTP for nonuse values (U.S. WRC 1983). The published studies discussed below are studies relevant to the estimation of wilderness preservation by a dichotomous choice method using CVM. Critical assessments of CVM are also discussed.

Brown (1993) compiled a summarization of 31 CVM studies published since 1980 that applied to nonuse values. Brown's work discussed the various methods of isolating nonuse from total value. In his discussion, Brown classified each study into several categories. The categories included: nature of the good, type of survey administration, elicitation method, and type of payment vehicle. The types of goods included: (1) wildlife and fish, (2) water quality, (3) water flow or lake level, (4) air quality, (5) wilderness preservation, (6) forest quality, (7) wetland preservation, and (8) beach restoration. Survey administration types included: (1) mail, (2) household interview, (3) telephone, (4) on-site interview, (5) on-site self-administration, and (6) on-site distribution and mail back. Elicitation methods included: (1) open ended, (2) dichotomous choice, (3) payment card, and (4) iterative bidding. Payment vehicles included: (1) contribution to a special fund, (2) increases in taxes and/or prices, (3) special tax, (4) increases in utility bill, and (5) payment to a special program. All these categories were important, but not all were applicable to our study, which applied CVM: (1) to wilderness preservation, (2) using a combination of mail and phone as an elicitation method, (3) with dichotomous choice questions, (4) to decreases or increases in household income with a payment vehicle.

Nonuse Values for Wilderness Preservation

This literature review includes a cross section of published work applicable to this study. The areas of focus are (1) increasing the quantity of wilderness acreage in Utah or
other areas, (2) a dichotomous choice elicitation method, and (3) a combination of mail and telephone survey administration.

The concept of nonuse value for wilderness preservation stems from ideas of option value (Weisbrod 1964) and existence value (Krutilla 1967). There are several definitions of this idea. Preservation values related to nonuse are separate from direct consumption such as recreation.

Studies available on wilderness preservation in Utah are few and virtually none isolate total value from nonuse value. Pope and Jones (1990) estimated the value of additional acreage designated for wilderness. They related marginal increases in the percentage of Utah land to current wilderness proposals. They found a mean WTP for wilderness designation increasing from $50 for 5 percent of the land areas to $92 for 20 percent of the land areas. This suggests a declining marginal WTP for wilderness. Pope and Jones also discussed the socioeconomic variables of Utah citizens related to their WTP for additional acreage. Nonuse values were not specifically considered.

Walsh, Loomis, and Gillman (1984) estimated the preservation values of additional wilderness in Colorado. They identified option, existence, and bequest values as public preservation benefits. Using the CVM approach, they asked respondents to make budget allocations to four hypothetical increases in wilderness acreage. After allocation, the individuals separated the highest amount to four different categories: use, option, existence, and bequest values. Wilderness users (i.e., direct consumptive use) isolated use and option values from total benefits, and then the remaining total value was allocated to existence and bequest values. The statistical analysis showed that the population of Colorado was willing to pay for preservation.

Walsh et al. (1990) used similar strategy for value estimates of a similar good, protecting forest quality. They explained the importance of giving respondents correct
amounts of information about the good in question in a hypothetical market. Respondents can make a decision based on preferences and not on behavior or emotions. They said:

Respondents who are asked willingness-to-pay questions should understand the resource to be valued, have prior experience valuing it and choosing how much to consume under conditions of little uncertainty. For the public to value preservation demands accurately, it is necessary that they possess sufficient information to understand the resource problem. (p. 177)

Walsh et al. (1990) found that Colorado citizens allocated $34 of the total $47 to preservation values, i.e., option, existence, and bequest values. Also, they stressed the importance of exploring the additional benefits preservation brings to citizens. Comparing Walsh's two studies suggests the flexibility of CVM. However, there are criticisms of CVM studies.

**Critical Assessment of CVM for Measuring Nonuse Values**

There are several practitioners critical of estimations from CVM studies. In a conference in 1986 (Cummings, Brookshire, and Schulze 1986), participants criticized CVM because they believed the WTP was a measurement of behavioral intention, not a direct action or observable fact.

Diamond and Hausman (1994) also have criticized the method. They examined the reliability of CVM estimates and substitution and income effects. The authors discussed an anomaly in the value of visibility in the Grand Canyon in the following way:

In 1980, a sample of Chicago residents responded to a CVM survey by expressing a WTP of $90 per year to preserve visibility level at the Grand Canyon. In 1981, another Chicago sample was asked the same question after first being asked for their WTP for visibility improvements in Chicago and the eastern United States. This time the mean WTP was only $16. This anomaly has become known as the sequence aggregation problem. (p. 41)

While CVM advocates argue that income and substitution effects explain the respondent's preference ordering, Diamond and Hausman focused on the inability of CVM to correctly explain the anomaly. They also asked the question, "If the people give answers not reflecting underlying economic preferences, what might they be doing when answering WTP
They explained "some value may be attributed to a 'warm glow' effect" (p. 48). The respondent might be receiving utility from giving, as a philanthropic effort. Attaching the "warm glow" effect to the WTP should make the sum of WTPs for each individual area larger than a WTP for several areas at a time. Diamond and Hausman (1994) tested this hypothesis in five settings. They failed to reject in all but one case and concluded that CVM studies failed to measure consumer preferences for environmental goods. Loomis (1988) found similar problems, e.g., two endangered species valued less in total than separately. Loomis labeled this the "embeddedness" problem.

**Dichotomous Choice for Nonuse Value Estimates**

Most studies of nonuse values use dichotomous choice as the elicitation method. The dichotomous choice technique was first used by Bishop and Heberlein (1979), and more recently by Boyle and Bishop (1988), Bowker and Stoll (1988), McCollum, Gilbert, and Peterson (1990), among others. Dichotomous elicitation gives the respondent a yes or no choice.

Boyle and Bishop (1987) studied total value of endangered species. The goods in question were the bald eagle and the striped shiner in Wisconsin. Their work focused on components of user and nonuser values for endangered species. They decomposed use value to include "consumptive" and "nonconsumptive" (p. 946) use values. They further decomposed use value to include "indirect use value" (p. 946), where consumptive value included such activities as hunting and fishing, and nonconsumptive value included visiting lakes and watching salmon runs. Indirect use included activities like viewing nature programs and reading wildlife books. Boyle and Bishop labeled nonuse values as intrinsic values, referring to Krutilla's (1967) existence value and Weisbrod's (1964) option value. Endangered species have significant implications for CV. For example, the bald eagle might have some nonconsumptive value but no consumptive value because of its place on the
endangered species list. One of many interesting ideas that came from this study was the idea of negative existence values for the good in question, such as a negative existence value for coyotes. This makes empirical sense in that respondents might have a dislike for coyotes and they might know someone or have relations in an occupation with a threat of coyotes. The WTP estimates showed a substantial difference between the bald eagle and the striped shiner. The authors attributed the difference to the obscurity of the striped shiner. They explained that if the good in question was not readily known to the respondent, he or she might fail to place the correct value on the good.

Gilbert, Glass, and More (1992) used dichotomous choice to estimate preservation values for the Lye Brook Wilderness Area and Eastern Wilderness. They studied the question: Do nonuse value estimates from western wilderness compare with eastern wilderness considering eastern wilderness is smaller and more accessible? The authors also compared values from dichotomous choice and open-ended responses. They used the logit and tobit models for the dichotomous choice and open-ended responses, respectively. Logit estimation provides a median maximum WTP of total value while tobit estimation provides a mean maximum WTP of total value. By apportioning total values by the mean percentage of nonuse value components, they estimated nonuse values. The results coincided with other nonuse studies, where aggregate preservation values exceeded actual use value.

Isolating Nonuse Values from Resource Users

Critics of nonuse estimations have expressed their concern about the separation of nonuse value by users and nonusers. When users give their WTP values for other than actual use, double-counting can occur. For example, suppose a user gives his/her WTP for nonuse, but the respondent has some preservation value. However, if the respondent also has use value, existence value would include a use component (wanting the resource to exist, with an option to use). Thus, total value might be subject to a carryover bias. Silberman,
Gerlowski, and Williams (1992) estimated the nonuse value for beach users and nonusers in New Jersey. They explained:

Respondents using a resource are subject to a carry-over bias in their existence value bid. Users include a recreation value component (current or future) in their existence value bid. The only valid measure of existence value is the WTP amount of nonusers. (p. 226)

They designed the CVM to collect data from users on-site by personal interview. On-site interviews separated questions for future users and nonusers. A telephone survey collected the data for current beach nonusers. Separate questions divided current nonusers into future users and nonusers. The hypothesis tested was that with an implicit budget constraint, existence value of users should be larger than existence value of nonusers, assuming the user’s bid contained a use component. The authors hypothesized that WTP of users was equal to WTP for nonusers. Interviewers asked on-site users if they were future users or nonusers. Each was asked separate questions for existence value. The WTP for on-site future nonusers was statistically smaller at the 0.05 percent level. They used the same procedure for individuals currently not at the site. Again, WTP for future nonusers was statistically smaller at the 0.05 percent level. The third hypothesis compared the WTP of on-site future nonusers and off-site future nonusers. Results of this comparison should present a true existence value. Results showed no statistical difference for the third hypothesis. They concluded that a significant carry-over bias was present in the existence value bids of respondents intending to use the environmental resources. Therefore, they suggested that the only valid measurements of existence value were the WTP measurements of nonusers.

In our study of wilderness designation, we attempted to examine two alternative methods of obtaining nonuse values from dichotomous choice, CV questions. The use and nonuse values are separated by an allocation method, where the individual is allotted ten points. The allocation may be assumed to be dollars. Each individual allocates the number of dollars (points) to each use and nonuse component. This procedure represents the
individual's expenditures for each category, thus comprising [20] by each subcomponent [21a] through [21d].
CHAPTER IV
STUDY DESCRIPTION

Introduction

The purpose of our study was to elicit the opinions of Utah residents and their willingness to pay for wilderness lands. The following sections explain the survey design, including the structure of the survey instrument, along with: (1) the random sample, (2) a review of the criteria for CVM surveys, (3) a discussion about various forms of bias, and (4) the structure of our survey instrument. A section on survey implementation will include: (1) QPL questionnaire design, (2) technician training, and (3) recordkeeping, including financial tabulation.

Random Sample

One important component of a survey is the random sample of respondents. An initial sample of 1,800 households was drawn to represent the general population of Utah. Because the initial sample was likely to have some rural areas not represented, an additional sample of 600 households from rural areas of Utah was implemented. Survey Sampling Inc. of Fairfield, Virginia, provided the random sample for the study from telephone lists. Table 1 shows the sampling distribution of the 1,800 general population households according to Utah counties. The sampling distribution corresponds with the actual distribution of households in Utah, where a majority live in urban areas along the Wasatch Front.

Survey Design

Freeman (1993a, p. 289) offered six characteristics for a reliable instrument to estimate total and nonuse values. Each characteristic is discussed as it applies to this study:
### Table 1
SAMPLE DISTRIBUTION OF UTAH COUNTIES FOR GENERAL POPULATION

<table>
<thead>
<tr>
<th>County</th>
<th>No. of Records</th>
<th>% County Records of Total</th>
<th>% of Total Population*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver</td>
<td>7</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Box Elder</td>
<td>36</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Cache</td>
<td>68</td>
<td>3.8</td>
<td>4.1</td>
</tr>
<tr>
<td>Carbon</td>
<td>23</td>
<td>1.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Davis</td>
<td>187</td>
<td>10.4</td>
<td>11.0</td>
</tr>
<tr>
<td>Duchesne</td>
<td>11</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Emery</td>
<td>9</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Garfield</td>
<td>5</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Grand</td>
<td>7</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Iron</td>
<td>20</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Juab</td>
<td>6</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Kane</td>
<td>5</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Millard</td>
<td>11</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Morgan</td>
<td>5</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Piute</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Salt Lake</td>
<td>813</td>
<td>45.1</td>
<td>42</td>
</tr>
<tr>
<td>San Juan</td>
<td>5</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>Sanpete</td>
<td>16</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Sevier</td>
<td>14</td>
<td>0.8</td>
<td>0.9</td>
</tr>
<tr>
<td>Summit</td>
<td>18</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Tooele</td>
<td>29</td>
<td>1.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Unitahe</td>
<td>20</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Utah</td>
<td>240</td>
<td>13.3</td>
<td>15.3</td>
</tr>
<tr>
<td>Wasatch</td>
<td>11</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Washington</td>
<td>54</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Wayne</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Weber</td>
<td>176</td>
<td>9.8</td>
<td>9.1</td>
</tr>
<tr>
<td>Total Records</td>
<td>1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


1. The instrument should clearly identify and accurately describe the specific resource to be valued.

2. The instrument should establish that the respondent is familiar with the resource in question.

3. The instrument should clearly and accurately describe the change in the quality or availability of the resource that is being valued.
4. To the extent possible, the change in the quality or availability of the resource being valued should be within the range of experience of respondent.

5. To the extent possible, the instrument should avoid questions framed in such a way as to link the survey instrument to current public controversies or political issues. So as to minimize the likelihood of strategic behavior, protest zeros, nonrespondents and the expression of what Daniel Kahneman has called, 'ideological values.'

6. The question format must be consistent with the theoretical framework being used to define use, nonuse, and existence values.

*Characteristic 1—Resource Specification:* In Utah, wilderness designation is a well-known issue. Citizens of Utah have strong opinions for and against designating more wilderness. However, they may fail to understand the implications of wilderness designation. To meet our objective of adequate information, we supplied respondents with:

1. information about the areas being considered for designation,
2. information about the purpose of the study, and
3. information about the implications of wilderness designation.

Mailing the information to each individual in the random sample took place about 10-14 days before the interview. The packet contained a letter on USU letterhead explaining the purpose of the study and procedures for the individual's participation in the survey. An explanation about the facts about the implication of wilderness designation accompanied the letter, in the following paragraph:

Existing mining and grazing practices will not be changed due solely to wilderness designation, although grazing could be reduced if conditions of the forage were deteriorating, and mining could be limited if the environment were being unreasonably damaged. In both cases, if the individuals have been using mechanized means to operate a mine or to service livestock, such as trucks or caterpillars, they may be allowed to continue to do so under the Arizona law, although this depends on the law which is passed at the state level. The Colorado law prohibits the use of mechanized maintenance in some areas. There have been some instances of restrictions being placed on existing uses, but this may depend on the local agency administering the wilderness area.
A colored map was included in the packet. The map clearly defined the existing wilderness areas, and both the BLM and UWC proposals. A color-coded legend defining each area was included in the instrument.\(^4\)

**Characteristic 2—Familiarity:** To estimate nonuse values, Freeman (1993a) explained:

If the respondent has no knowledge of the important features of the resource in question, it is hard to see how he or she could hold significant nonuse values or experience loss of these values due to an injury to the resource. However, prior use is not necessary for an individual to have nonuse values. (p. 288)

Mitchell and Carson (1989) said that "direct prior experience is not essential for familiarity" (p. 128). To determine familiarity, the survey technician asked each individual if he/she had received the information packet. Another packet was mailed if he/she had not received the packet. The 10- to 14-day period before the interview gave the individual time to get familiarized with the specific proposals and conditions.

Actual on-site experience and/or visual representation has been shown to be important for nonuse estimates. Actual use was determined by the question:\(^5\)

Have you ever visited the existing wilderness areas in Utah or any currently being proposed for wilderness designation by the BLM or Utah Wilderness Coalition (UWC) as indicated on the map which we sent?

There are three possible answers available.

1. refuse to participate,
2. no,
3. yes.

Questions about their visitation in the past year followed the ever-visited question. Referring to the map and map information, each individual was asked to identify the areas which he/she had visited from the 57 different sites listed on the map.

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\(^4\)Each of these articles is found in the appendix. However, because colored articles are not applicable for this document, the colored areas appear as light and dark gray.

\(^5\)Question 10 of the survey instrument in the appendix.
Characteristic 3—Description: Included in the packet was a letter containing information about the BLM and the UWC proposals. BLM and UWC proposals were considered because they were the only specifically defined proposals at the time of the survey. Information about the proposals said:

... you will be asked if you support or oppose the general concept of wilderness. Next, we will ask about your support for or opposition to the BLM proposed wilderness areas, followed by the UWC proposed wilderness areas. You will use the 0 (strongly opposed) to 10 (strongly support) scale to answer these questions. Once you indicate your support or opposition to each wilderness alternative, you will be asked a series of questions about your willingness to pay for or willingness [to] vote for or against each proposal. ...  

Within the questionnaire, respondents were directed to a specific area on the map. Technicians described the area, including the surrounding areas next to the wilderness area. For example, technicians described the BLM proposal in the following way:

Look at Area 55 on your map. It is next to the Uintah and Ouray Indian Reservation. The BLM proposed wilderness areas are the dark red cross-hatched areas. All BLM proposed wilderness areas look like this. Indicate whether or not you support the designation of the wilderness areas proposed by the BLM using the 0 - 10 score. ...  

The UWC proposal was described in the following way:

Look at Area 55 again. The Utah Wilderness Coalition (UWC) proposed wilderness areas include the BLM proposed areas plus the light red and light brown cross-hatched areas. All UWC proposed wilderness areas look like this. Indicate whether or not you support the designation of the UWC wilderness proposal using the 0 - 10 score. ...  

Instructions were given to the data technicians to determine whether the individual knew which proposal was in question and if he/she could identify the area on the map.

Characteristic 4—Range of Experience: If the respondent is unaware of the range of proposals, the response may be bias up or down, depending on feelings about the resource.

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6Letter found in appendix.

7Question 102 of the survey instrument found in appendix.

8Question 171 of the survey instrument found in appendix.
With respect to wilderness acreage, it is difficult to know if anyone comprehends the range of quantity changes for each wilderness proposal. Freeman (1993a) suggested increasing the sample size to control this problem.

**Characteristic 5—Controversy:** Where the wilderness issue is controversial in Utah, and elsewhere, we attempted to minimize its impact on responses. This objective was met in three ways: (1) careful review of the survey instrument by outside experts, (2) pretesting the survey, and (3) proper training for technicians. Over 100 individuals were contacted for the pretest. The pretest exposed several problems that were corrected in the final questionnaire. One important component to any data collection process is data technicians. Each technician was trained in areas such as telephone courtesy, avoiding possible confrontations, properly asking questions, and properly recording answers. The technicians were instructed to ask the questions written in the survey and wait for the answer. Under no circumstances were they to influence and/or persuade the individual towards an answer. All bid questions were in dichotomous form.

**Characteristic 6—Validity:** The instrument's validity means more than simply testing the questions by the individual's response. Kenneth Arrow said, "If you ask somebody a question, you will get an answer" (1986, p. 181). Freeman continued, "but will the answer you get convey the desired information on the respondent's preferences and values?" (1993b, p. 167). A major component of validity and reliability depends on the strategy to estimate total value. In some situations, WTP is naturally the best choice, depending on the type of good and reference point of property rights. In others, WTA may be theoretically preferred. This study applied WTP, for two reasons. First, because the property right is not held by an individual but is collectively owned. Second, the final decision regarding wilderness has not been made. Neither supporters nor opponents can, at this point, regard themselves as having the "rights" to these areas. Thus, the reference point is an individual's WTP for increasing the quantity of wilderness acreage or for public land.
use. Therefore, the less limited welfare measure is the Hicksian compensation surplus measure. For this study we used referendum questions to estimate total value. An establishment question gives the respondent the option of voting for or against the establishment of additional acreage of wilderness. The following is an establishment question from the survey:

If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $X per year from now on, would you vote for or against designation.\(^9\)

With an establishment bid, one can derive total value (Randall 1991). Following the establishment question, the individual answers a use question. Proponents of BLM or UWC proposals answer yes or no to a use question giving the value of wilderness use, and opponents answer a multiple-use question. With the estimate of total and use values, one can derive nonuse value. Randall's (1991) approach was to obtain a total value estimate, then a sequential estimate for nonuse values.

**Potential Bias**

The literature discusses three potential biases in CVM estimates: (1) starting point bias, (2) payment vehicle bias, and (3) information bias (Cummings, Brookshire, and Schulze 1986).

**Starting Point Bias.** Starting point bias occurs in two ways. First, the respondent may get confused when the initial bid is high or low, sending a wrong signal of an approximation. Consequently, the individual may respond differently if the starting bid is high or low. Second, if the opportunity cost of time is high, some individuals may become irritated and irrational in the iterative bidding process. For example, the interviewer asks the individual for the initial bid. If he or she accepts, the interviewer moves on to a higher bid until the individual refuses the bid. The highest bid is the choke price or the highest

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\(^9\)Question 173 of the survey instrument listed in appendix.
price the individual is willing to pay. Several studies have matched the problem of starting bias with the iterative bidding procedure (Cummings, Brookshire, and Schulze 1986). Other studies have explored alternative methods to avoid starting point bias, such as dichotomous choice.\textsuperscript{10}

In our study the initial bids for the use values started with a random number from a set consisting of $25, $50, $100, $250, $500, and $1,000. This set was determined from a previous study by Pope and Jones (1990), a study pretest, and other sources. The dichotomous choice bidding proceeded with the respondent being given an initial bid with an opportunity to answer yes or no. Depending on the response, the respondent moved to a different bid level, given the opportunity for an additional yes or no answer. At that point, the bidding procedure stopped. This type of bidding procedure gives the practitioner some control on the two problems of starting point bias, that is, giving the respondent a random number for the initial bid and giving him/her a dichotomous choice for each level of bids.

\textit{Payment Vehicle Bias.} The markets for CVM studies are hypothetically created. The simulated market has goods available either as market or nonmarket goods. To buy nonmarket goods, the method allows individuals several ways for payment. The mode of payment comes as a "payment vehicle." Payment may come as increased taxes, increased utility bills, or increased price on the goods or some other vehicle. The form of payment affects some individuals differently from others. For example, suppose one respondent is a property owner and the other is a renter. For a CVM question, with a payment vehicle of increased taxes, the WTP of the property owner may be lower than the person who rents. This creates a vehicle bias (Cummings, Brookshire, and Schulze 1986), where the property owner's bid may be biased downward because of the influence of increased taxes.

\textsuperscript{10}We did not use the double-bounded approach for establishment values due to the length of the questionnaire.
In Cummings, Brookshire, and Schulze (1986), they discussed an example of a study of the South Platte River Basin in Colorado done by Greenley, Walsh, and Young (1981), in which the authors used a general sales tax and a residential water sewer fee as payment vehicles. In that study, Greenley, Walsh, and Young suggested:

[The] willingness to pay for water quality was quite sensitive to the method of hypothetical payment. Residents' samples reported willingness to pay only about one-fourth as much as water-sewer fees as in sales tax for option value of water quality. Respondents were more reluctant to participate in the water-sewer bill estimation procedure and may have perceived inequities. Everyone, including tourists, pays sales taxes; whereas only property owners and indirectly renters, pay water-sewer bills. Moreover, recent experience and escalating water-sewer fees may have resulted in understatement of willingness to pay for water quality. (p. 671)

Statistically, one can test for vehicle bias with a stated hypothesis that one payment vehicle is equal to another. For example, one may test that WTP for increased taxes is equal to WTP for increased prices. Assuming we are measuring the same good and the same set of circumstances, if there is an influence of vehicle bias, we will reject the stated hypothesis.

The literature fails to offer any guidelines to prevent vehicle bias. We used changes in household income as a measure of total value, and a use permit for the use question.

Information Bias. The third form of bias for CVM is information bias. The previous theoretical section discusses creating hypothetical markets to obtain a preference ordering for nonmarket goods. Adequate information is important because if the respondent receives too much information or the wrong information, there exists a possibility of the individual making a decision based on the wrong information. In Cummings, Brookshire, and Schulze (1986), a water quality study by Cronin and Herzeg (1982) was cited that tested for information bias. Cronin and Herzeg concluded:

While it is difficult a priori to hypothesize the directional bias that additional information might induce on elicited bids, . . . comparisons involving the information-no-information situation all indicate substantial differences between respondents provided with cost estimates and those not provided with such estimates. (p. 6.11)
Survey Implementation

Different methods of administering survey instruments are personal interviews, mail, telephone, and an interactive computer program. This study combined mail and a telephone survey using the QPL computer program designed by the General Accounting Office of the Office of Budget and Management. Several people in the Economics, Sociology, Forest Resources Departments at USU participated in the creation and review of the questionnaire. An explanation of the structure of the questionnaire appears in a previous section. The focus of this section is to explain how the survey was implemented and how the interactive program functions.

A pretest was performed to evaluate the questionnaire and to test the accuracy of the computer program. Problems in the program, along with mistakes in the questionnaire and other information, such as survey completion time, were examined. Results from the pretest allowed us to modify the questionnaire.

The Department of Economics employed ten survey technicians. Each technician completed a preliminary training course on the QPL computer system and several other topics discussed above.

Data collection occurred between 5:00 p.m. and 10:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on weekends. Collection lasted from May 29, 1994 to July 7, 1994. Each technician received a calling log listing individuals who had received a packet 10-14 days earlier. After making the initial introduction, technicians went through the program with each question appearing on the screen as it appears in the survey instrument in the appendix. Respondents went through a series of questions based on the answer to the previous question. If the respondent did not support the wilderness concept, the technicians would skip over a series of questions concerning wilderness supporters. The technicians

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11 See p. 64 in appendix.
would begin a series of questions concerning opposition to the wilderness concept. The advantages of the program were, among others: (1) once the specific question was asked and answered, the program would record the response in a database, and (2) the probability of the technicians making an error was reduced. Each day the technicians turned in their diskette, and the results were combined with a large database of previous responses. The recorded information included the time of interview; record number; and information on visitation, nonuse, WTP, and socioeconomic status.

Table 2 shows the average survey completed per hour to be 1.42, which calculated at average time per completed survey to be 42.25 minutes, along with the average labor cost per hour of $5.63. The table also shows the number completed on the final day of collection (23), along with the final number of surveys completed for the project (927). A daily log like Table 2 kept us informed of the number of surveys completed, hours worked, surveys per hour, and labor costs per survey.

<table>
<thead>
<tr>
<th>Date</th>
<th>Wage Cost in $</th>
<th>Last Session Worked</th>
<th>Surveys Completed</th>
<th>Hours Worked</th>
<th>Surveys Per Hour</th>
<th>Labor Cost Per Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/13/94</td>
<td>8</td>
<td>7/12/94</td>
<td>6</td>
<td>5</td>
<td>1.20</td>
<td>$6.67</td>
</tr>
<tr>
<td>7/13/94</td>
<td>8</td>
<td>7/12/94</td>
<td>5</td>
<td>4.5</td>
<td>1.11</td>
<td>7.20</td>
</tr>
<tr>
<td>7/13/94</td>
<td>8</td>
<td>7/12/94</td>
<td>5</td>
<td>4.5</td>
<td>1.11</td>
<td>7.20</td>
</tr>
<tr>
<td>7/13/94</td>
<td>8</td>
<td>7/12/94</td>
<td>5</td>
<td>4.5</td>
<td>1.11</td>
<td>7.20</td>
</tr>
<tr>
<td>7/13/94</td>
<td>8</td>
<td>7/12/94</td>
<td>2</td>
<td>1</td>
<td>2.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Completed | Ave./hr. | Ave./hr. |
23        | 1.31     | $6.45    |
Total to date | 927 | 1.42 | $5.63 |
Table 3 shows that the survey is financially comparable to other data collection projects. Other projects of this nature use $10.00 per survey as a benchmark for collection cost, where the total cost per survey is $9.10.

Use and Nonuse Values

Each respondent was identified as supporting or opposing wilderness in general and for each of the two proposals, using the previously described ten-point scale. Use value questions were asked for existing wilderness areas, and establishment (total) value questions were asked about both the BLM and UWC proposals. Supporters of wilderness were asked to allocate a "budget" of ten points among use, option, existence, and bequest values as well as the WTP questions. The allocation question was as follows:

Now, suppose you have 10 points to allocate among reasons why you favor wilderness areas in general. You may allocate all 10 points to one reason, or divide them up according to your feelings about the relative importance of each reason. I will read the reasons, and then ask you to give me your allocation. Remember that the total must add up to 10.
A. I or members of my family will use these wilderness areas and want them for my continued use.
B. There is a chance that I or members of my family will use these areas, and I would like to have them available if and when I decide to use them.

TABLE 3
FINANCIAL ANALYSIS OF GENERAL POPULATION SURVEY

<table>
<thead>
<tr>
<th>Labor Cost Per Survey</th>
<th>Mailing Cost Per Survey</th>
<th>Printing Cost Per Survey</th>
<th>Telephone Cost Per Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5.63</td>
<td>$0.53</td>
<td>$0.31</td>
<td>$2.63</td>
</tr>
</tbody>
</table>

Total cost $9.10
C. I would like to have these areas available for others to use even if I or members of my family never use them.
D. I would like to have these areas available for future generations to use, even if I or members of my family never use them.

The methodology to estimate nonuse value incorporated estimating total value—the WTP for establishing additional wilderness according to BLM and UWC proposals, followed by use values.

The total value was estimated for each wilderness proposal. The theoretical framework has been discussed above. The following referendum question was asked for establishment of the BLM and UWC proposals.

If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $X per year from now on, would you vote for or against designation.\(^{12}\)

Individuals were given an opportunity to respond for or against the bid amount. The establishment bids ranged from $25 to $2,000. For the respondents who refused to pay for an alternative (single- or double-bounded), a check for protest responses was made. Each refusal was followed by the question:

Why not?
1. Not worth it, or can’t afford to
2. Shouldn’t have to pay
3. Other

The primary data set was stratified into some smaller sets. There were two reasons for this procedure: (1) it is a general assumption among Utahns that the feeling about wilderness designation varies from rural to urban citizens; and (2) according to Silberman, Gerlowski, and Williams (1992), there was a tendency for resource users to overstate their WTP because they might double-count existence value where users are including a use component. Our objective was to test these two hypotheses. The data set was categorized into sets of: (1) all proponents, (2) ever used, (3) recently used (in last year), or (4) never

\(^{12}\)Question 173 of the survey instrument found in appendix.
used the wilderness. Then each set was stratified as: (1) urban, (2) general population rural, and (3) rural sample.\footnote{\textsuperscript{13}} The WTP values for each of the stratified samples was estimated by logit estimation in LIMDEP (Greene 1992) from the following model:

$$ VR = \alpha \cdot \beta_1 \cdot V \cdot \beta_2 \cdot HHINC $$

[28]

where $VR$ is the total (establishment value of WTP for pending proposal) value response to the bid ($V$). $HHINC$ represents the household income where income is categorized (1 through 8), as follows:\footnote{\textsuperscript{14}}

1. $0 - 14,999$
2. $15,000 - 24,999$
3. $25,000 - 34,999$
4. $35,000 - 44,999$
5. $45,000 - 59,999$
6. $60,000 - 74,999$
7. $75,000 - 100,000$
8. Over $100,000$

The total value was allocated between nonuse and use values for wilderness supporters in two ways: first, each individual was allotted ten points to allocate among use and nonuse values, and among use, option, existence, and bequest values. These allocations were calculated into percentages, which were then applied to the total value.

The second approach was to obtain a use value from the CV and compare it to the total value. In order to obtain more accurate estimates of use, we used the double-bounded model suggested by Hanemann, Loomis, and Kanninen (1991).

The estimates of the coefficients by MLE were:

\footnote{\textsuperscript{13}}The additional rural sample was included only on the rural sample set, not on the general population set.

\footnote{\textsuperscript{14}}Several socioeconomic variables were tested in the estimation. Only household income was significant in a majority of cases.
\[- \sum_{i=1}^{N} D_{YY} \cdot \ln \left[ 1 - \frac{1}{1 + e^{\alpha_0 + \beta_1 \cdot BID_u + \beta_2 \cdot HHINC}} \right]\]
\[- D_{NN} \cdot \ln \left[ \frac{1}{1 + e^{\alpha_0 + \beta_1 \cdot BID_u + \beta_2 \cdot HHINC}} \right]\]
\[- D_{YN} \cdot \ln \left[ \frac{1}{1 + e^{\alpha_0 + \beta_1 \cdot BID_u + \beta_2 \cdot HHINC}} \right]\]
\[- D_{NY} \cdot \ln \left[ \frac{1}{1 + e^{\alpha_0 + \beta_1 \cdot BID_u + \beta_2 \cdot HHINC}} \right]\]

where: \( D_{YY} \) = the dummy variable for the yes, yes response; \( D_{NN} \) = the dummy variable for the no, no response; \( D_{YN} \) = the dummy variable for the yes, no response; \( D_{NY} \) = the dummy variable for the no, yes response; then, \( BID_u \) = the lower bid threshold; \( BID_d \) = the upper bid threshold; \( BID_i \) = the initial bid.
CHAPTER V
EMPIRICAL RESULTS

Survey Results

Table 4 indicates response rates for the telephone survey. This survey yielded similar success to other recent telephone surveys (56 percent). Often the success of a survey instrument is measured by how well the random sample represents the total population.

Table 5 shows the comparison of the sample to the Utah census data. The age, household income, and education were within a standard deviation of the census data. Having the 7 percent difference for the rural/urban split may reflect some more representativeness.

Statistical Results for Total Value (Designation)

Tables 6, 8, 10, 12, 14, 16, 18, and 20 show the estimated coefficients and t-statistics (in parentheses) for the establishment questions. These are the results for nonprotest,

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>WILDERNESS SURVEY EVALUATION FINAL NUMBERS FOR TELEPHONE SURVEY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Packet Sent?</td>
</tr>
<tr>
<td>General Population</td>
<td>1,800</td>
</tr>
<tr>
<td>Percentage</td>
<td>0.00%</td>
</tr>
<tr>
<td>Rural Population</td>
<td>600</td>
</tr>
<tr>
<td>Percentage</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Note: 56.2 percent represents the ratio of survey completed to the number packets sent minus those contacted with no interest. For example: $711/1800 - 537 = 56.2$ percent.
TABLE 5
HOW WELL DOES THE SAMPLE REPRESENT THE UTAH POPULATION?

<table>
<thead>
<tr>
<th>Population</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study</td>
<td>87.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Utah Census</td>
<td>80.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Age</td>
<td>Median</td>
<td>Largest Category</td>
</tr>
<tr>
<td>Study</td>
<td>44</td>
<td>40-64 year age group</td>
</tr>
<tr>
<td>Utah Census</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Income</td>
<td>Income Range</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>35,000-44,999</td>
<td></td>
</tr>
<tr>
<td>Utah Census</td>
<td>31,000-50,100</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Median School Years</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>14.39</td>
<td></td>
</tr>
<tr>
<td>Utah Census</td>
<td>12.8</td>
<td></td>
</tr>
</tbody>
</table>

wilderness supporters. Most of the bid coefficients were statistically significant at the 5 percent level and appeared to have the correct sign. The chi-square ($\chi^2$) distribution is a test of model significance, comparing the restricted and unrestricted log-likelihood ratio. All of the models were statistically significant at the 5 percent level. Several socioeconomic variables were included in the initial test. However, most proved to be consistently insignificant. The income variable showed insignificance in some cases but was left in the model because of economic importance (Walsh et al. 1990) and because logit models are particularly sensitive to omitted variables. Tables 7, 9, 11, 13, 15, 17, 19, and 21 are breakdowns of use and nonuse values using the ten-point allocation base. The allocation breakdowns for BLM mean percentages were 26, 16, 20, and 38 percent for use, option, existence, and bequest values, respectively. Mean percentages for the UWC proposal were 24, 16, 20, and 40 percent, respectively. Tables are presented in groups of two, with the first table showing the estimated coefficients and $t$-statistics, along with mean household income
TABLE 6
ESTABLISHMENT BID FOR TOTAL VALUE FOR BLM PROPOSAL

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>$\alpha_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>316</td>
<td>.3405</td>
<td>-.00119</td>
<td>-.00286</td>
<td>4.26</td>
<td>$275.10</td>
</tr>
<tr>
<td>Urban</td>
<td>289</td>
<td>(1.17)</td>
<td>(-.5.29)</td>
<td>(.05)</td>
<td>.5642</td>
<td>$361.27</td>
</tr>
<tr>
<td>Rural</td>
<td>95</td>
<td>-.3397</td>
<td>(.00089)</td>
<td>.13230</td>
<td>4.15</td>
<td>$220.03</td>
</tr>
</tbody>
</table>

TABLE 7
ISOLATION OF USE AND NONUSE VALUES AFTER OBTAINING TOTAL VALUE FOR BLM PROPOSAL

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>316</td>
<td>$74.08</td>
<td>$42.39</td>
<td>$53.68</td>
<td>$104.94</td>
<td>$158.62</td>
</tr>
<tr>
<td>Urban</td>
<td>289</td>
<td>$96.85</td>
<td>$53.12</td>
<td>$72.25</td>
<td>$139.04</td>
<td>$211.29</td>
</tr>
<tr>
<td>Rural</td>
<td>95</td>
<td>$55.40</td>
<td>$47.11</td>
<td>$37.79</td>
<td>$79.73</td>
<td>$117.52</td>
</tr>
</tbody>
</table>

TABLE 8
ESTABLISHMENT BID FOR TOTAL VALUE FOR UWC PROPOSAL

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>$\alpha_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>283</td>
<td>.2798</td>
<td>-.000209</td>
<td>.08103</td>
<td>4.19</td>
<td>$292.67</td>
</tr>
<tr>
<td>Urban</td>
<td>262</td>
<td>(.92)</td>
<td>(-.5.54)</td>
<td>(1.25)</td>
<td>.3804</td>
<td>$333.42</td>
</tr>
<tr>
<td>Rural</td>
<td>82</td>
<td>.2306</td>
<td>-.00265</td>
<td>.09072</td>
<td>(.41)</td>
<td>$232.67</td>
</tr>
</tbody>
</table>
### TABLE 9
**Isolation of Use and Nonuse Values After Obtaining Total Value for UWC Proposal**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>283</td>
<td>$73.59</td>
<td>$45.08</td>
<td>$57.89</td>
<td>$116.09</td>
<td>$173.98</td>
</tr>
<tr>
<td>Urban</td>
<td>262</td>
<td>$84.14</td>
<td>$48.44</td>
<td>$66.68</td>
<td>$134.16</td>
<td>$200.84</td>
</tr>
<tr>
<td>Rural</td>
<td>82</td>
<td>$50.16</td>
<td>$58.15</td>
<td>$53.97</td>
<td>$117.44</td>
<td>$171.41</td>
</tr>
</tbody>
</table>

### TABLE 10
**BLM Supporters Who Have Ever Visited an Existing or Proposed Wilderness Area**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>α0</th>
<th>β1</th>
<th>β2</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>292</td>
<td>.10693</td>
<td>-.00167</td>
<td>.04080</td>
<td>4.24</td>
<td>$238.60</td>
</tr>
<tr>
<td>Urban</td>
<td>269</td>
<td>.28258</td>
<td>-.001089</td>
<td>.014503</td>
<td>4.32</td>
<td>$317.00</td>
</tr>
<tr>
<td>Rural</td>
<td>65</td>
<td>.83621</td>
<td>-.0008099</td>
<td>.25199</td>
<td>3.95</td>
<td>$199.27</td>
</tr>
</tbody>
</table>

### TABLE 11
**Use and Nonuse Value of BLM Supporters Who Have Ever Visited Wilderness Area**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>292</td>
<td>$67.49</td>
<td>$35.63</td>
<td>$46.57</td>
<td>$88.90</td>
<td>$135.47</td>
</tr>
<tr>
<td>Urban</td>
<td>269</td>
<td>$89.56</td>
<td>$46.07</td>
<td>$63.16</td>
<td>$118.19</td>
<td>$181.35</td>
</tr>
<tr>
<td>Rural</td>
<td>65</td>
<td>$51.50</td>
<td>$38.01</td>
<td>$33.10</td>
<td>$76.64</td>
<td>$109.74</td>
</tr>
</tbody>
</table>

*This refers to existing or proposed areas and also includes visits before designation.*
TABLE 12
UWC SUPPORTERS WHO HAVE EVER VISITED AN EXISTING OR PROPOSED WILDERNESS AREA

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>( \alpha_0 )</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>241</td>
<td>0.14797</td>
<td>-0.00204</td>
<td>0.10676</td>
<td>4.09</td>
<td>$285.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.442)</td>
<td>(-5.067)</td>
<td>(1.506)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>225</td>
<td>0.23618</td>
<td>-0.0020190</td>
<td>0.10079</td>
<td>4.09</td>
<td>$312.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.679)</td>
<td>(-4.96)</td>
<td>(1.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>57</td>
<td>0.19731</td>
<td>-0.0019791</td>
<td>0.043835</td>
<td>4.37</td>
<td>$196.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.289)</td>
<td>(-2.55)</td>
<td>(3.15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 13
USE AND NONUSE VALUE OF UWC SUPPORTERS WHO EVER VISITED WILDERNESS AREAS

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>241</td>
<td>$75.56</td>
<td>$42.70</td>
<td>$57.29</td>
<td>$110.32</td>
<td>$167.61</td>
</tr>
<tr>
<td>Urban</td>
<td>225</td>
<td>$85.49</td>
<td>$46.39</td>
<td>$64.67</td>
<td>$124.60</td>
<td>$189.27</td>
</tr>
<tr>
<td>Rural</td>
<td>57</td>
<td>$42.74</td>
<td>$34.12</td>
<td>$36.54</td>
<td>$83.07</td>
<td>$119.61</td>
</tr>
</tbody>
</table>

TABLE 14
BLM SUPPORTERS WHO RECENTLY VISITED AN EXISTING OR PROPOSED WILDERNESS AREA* 

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>( \alpha_0 )</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>169</td>
<td>0.53409</td>
<td>-0.00123</td>
<td>0.03250</td>
<td>4.51</td>
<td>$315.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.1.52)</td>
<td>(-4.415)</td>
<td>(0.481)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>188</td>
<td>0.77409</td>
<td>-0.001159</td>
<td>0.06377</td>
<td>4.59</td>
<td>$415.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.05)</td>
<td>(-4.21)</td>
<td>(0.91)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>45</td>
<td>-0.35009</td>
<td>-0.006654</td>
<td>0.1044</td>
<td>4.38</td>
<td>$161.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-5.95)</td>
<td>(-1.63)</td>
<td>(.864)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Recently visited implies visited in the last year.
### TABLE 15
**USE AND NONUSE VALUE OF BLM SUPPORTERS WHO HAVE RECENTLY VISITED WILDERNESS AREAS**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>169</td>
<td>$98.86</td>
<td>$46.58</td>
<td>$56.29</td>
<td>$113.26</td>
<td>$169.55</td>
</tr>
<tr>
<td>Urban</td>
<td>188</td>
<td>$130.43</td>
<td>$58.21</td>
<td>$76.39</td>
<td>$150.08</td>
<td>$226.47</td>
</tr>
<tr>
<td>Rural</td>
<td>45</td>
<td>$45.89</td>
<td>$65.80</td>
<td>$44.80</td>
<td>$114.80</td>
<td>$159.60</td>
</tr>
</tbody>
</table>

*Recently visited implies visited in the last year.

### TABLE 16
**UWC SUPPORTERS WHO RECENTLY VISITED AN EXISTING OR PROPOSED WILDERNESS AREA**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>α0</th>
<th>β1</th>
<th>β2</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>160</td>
<td>.48680</td>
<td>-0.00226</td>
<td>.06011</td>
<td>4.31</td>
<td>$328.87</td>
</tr>
<tr>
<td>Urban</td>
<td>147</td>
<td>(1.34)</td>
<td>(-4.85)</td>
<td>(0.75)</td>
<td>4.33</td>
<td>$384.63</td>
</tr>
<tr>
<td>Rural</td>
<td>39</td>
<td>(.864)</td>
<td>(-2.80)</td>
<td>(.348)</td>
<td>4.25</td>
<td>$210.06</td>
</tr>
</tbody>
</table>

*Recently visited implies visited in the last year.

### TABLE 17
**USE AND NONUSE VALUE OF UWC SUPPORTERS WHO RECENTLY VISITED WILDERNESS AREAS**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>160</td>
<td>$94.34</td>
<td>$45.43</td>
<td>$62.89</td>
<td>$126.21</td>
<td>$189.10</td>
</tr>
<tr>
<td>Urban</td>
<td>147</td>
<td>$112.25</td>
<td>$49.19</td>
<td>$73.52</td>
<td>$149.66</td>
<td>$223.18</td>
</tr>
<tr>
<td>Rural</td>
<td>39</td>
<td>$46.32</td>
<td>$40.93</td>
<td>$36.08</td>
<td>$86.71</td>
<td>$122.79</td>
</tr>
</tbody>
</table>

*Recently visited implies visited in the last year.
### TABLE 18
**Proponents of BLM Proposal Nonusers (Never Used the Wilderness Areas)**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>$a_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>38</td>
<td>2.2815</td>
<td>-0.00194</td>
<td>-2.682</td>
<td>4.42</td>
<td>$562.92</td>
</tr>
<tr>
<td>Urban</td>
<td>36</td>
<td>2.99</td>
<td>-0.002328</td>
<td>-3.248</td>
<td>4.44</td>
<td>$626.32</td>
</tr>
<tr>
<td>Rural</td>
<td>22</td>
<td>1.0797</td>
<td>-0.00365</td>
<td>-0.281</td>
<td>4.36</td>
<td>$175.60</td>
</tr>
</tbody>
</table>

### TABLE 19
**Use and Nonuse Value of BLM Supporters Who Never Visited Wilderness Areas**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>38</td>
<td>$88.45</td>
<td>$90.07</td>
<td>$115.80</td>
<td>$268.59</td>
<td>$384.39</td>
</tr>
<tr>
<td>Urban</td>
<td>36</td>
<td>$101.56</td>
<td>$120.19</td>
<td>$121.87</td>
<td>$282.69</td>
<td>$404.56</td>
</tr>
<tr>
<td>Rural</td>
<td>22</td>
<td>$40.39</td>
<td>$50.92</td>
<td>$33.36</td>
<td>$50.92</td>
<td>$84.24</td>
</tr>
</tbody>
</table>

### TABLE 20
**Proponents of UWC Proposal Nonusers (Never Used the Wilderness Areas)**

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>$a_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>32</td>
<td>1.2084</td>
<td>-0.00249</td>
<td>-1.6149</td>
<td>4.15</td>
<td>$215.77</td>
</tr>
<tr>
<td>Urban</td>
<td>30</td>
<td>1.4677</td>
<td>-1.93</td>
<td>-0.92</td>
<td>4.16</td>
<td>$277.71</td>
</tr>
<tr>
<td>Rural</td>
<td>21</td>
<td>18.11</td>
<td>0.55008</td>
<td></td>
<td>3.57</td>
<td>$109.00</td>
</tr>
</tbody>
</table>
TABLE 21
USE AND NONUSE VALUE OF UWC SUPPORTERS WHO NEVER VISITED WILDERNESS AREAS

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Use</th>
<th>Option</th>
<th>Existence</th>
<th>Bequest</th>
<th>Total Nonuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>32</td>
<td>$31.24</td>
<td>$32.73</td>
<td>$40.92</td>
<td>$110.86</td>
<td>$151.78</td>
</tr>
<tr>
<td>Urban</td>
<td>30</td>
<td>$42.10</td>
<td>$41.06</td>
<td>$38.28</td>
<td>$103.70</td>
<td>$141.98</td>
</tr>
<tr>
<td>Rural</td>
<td>21</td>
<td>$22.89</td>
<td>$29.43</td>
<td>$19.62</td>
<td>$37.04</td>
<td>$56.66</td>
</tr>
</tbody>
</table>

and WTP estimates. The second table isolates the use and nonuse values. Each table is separated into general population, urban, and rural individuals, separated into different classes of users as explained above.

Tables 6 and 7 present the WTP bid estimates for which the bid coefficient appeared to be significant and have the right sign. When the income coefficient was not significant, it was still included to be consistent with the calculation. After obtaining the total value, use and nonuse values were isolated, where use value included use and option values and nonuse value included existence plus bequest values.

Tables 8 and 9 present the results for proponents of the UWC proposal. The income coefficient was insignificant. Urban individuals supporting the UWC proposal had higher values for all categories except option value.

Tables 10 and 11 present results for proponents who had ever used the wilderness or proposed areas. All WTP bid estimates ($\beta_1$) have the right signs and were statistically significant. All of the use and nonuse values for urban individuals were larger than those for individuals in rural areas.

Tables 12 and 13 present results for UWC supporters who had ever used the wilderness. The WTP bid estimates ($\beta_1$) were shown to be statistically significant and have the right signs. The isolation of use and nonuse values showed urban individuals with higher values than rural.
Tables 14 and 15 present results for BLM proponents who had recently visited the wilderness areas. All WTP bid estimates ($\beta_j$) have the right signs and were statistically significant except for the rural sample. All of the use and nonuse components, calculated according to [34] for urban individuals, were larger than for individuals in rural areas.

Tables 16 and 17 present results for UWC proponents who had recently visited the wilderness areas. All WTP bid estimates ($\beta_j$) have the right signs and were statistically significant. All of the use and nonuse components, calculated for urban individuals, were larger than for individuals in rural areas.

Tables 18 and 19 present results for BLM proponents who had never visited the wilderness areas. All WTP bid estimates ($\beta_j$) have the right signs. However, only the general population and urban coefficients were statistically significant. Urban nonusers had a high value for establishment of wilderness. The rural sample should be suspect because of the statistical insignificance. All of the calculated use and nonuse components for urban individuals were larger than for individuals in rural areas.

Tables 20 and 21 present the results for UWC proponents who had never visited the wilderness areas. All WTP bid estimates ($\beta_j$) have the right signs; however, none of the coefficients were statistically significant, probably because of the small number of responses. All the use and nonuse components for urban individuals were larger than for individuals in rural areas.

Each of the calculated use and nonuse values is presented in Table 22 along with a ratio of nonuse/use.

All categories showed nonuse value larger than use value with the exception of nonusers of BLM supporters. The rural component showed a smaller ratio throughout all categories. Rural respondents had a much lower establishment value, ranging from $109.00 to $232.67 for wilderness throughout all categories, while urban respondents ranged
### TABLE 22
**RATIO OF NONUSE/USE VALUES**

<table>
<thead>
<tr>
<th>General Population</th>
<th>Table</th>
<th>Use</th>
<th>Nonuse</th>
<th>Ratio NU/USE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Population:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLM All Responses</td>
<td>7</td>
<td>$116.47</td>
<td>$158.62</td>
<td>1.36</td>
</tr>
<tr>
<td>UWC All Responses</td>
<td>9</td>
<td>118.67</td>
<td>173.98</td>
<td>1.46</td>
</tr>
<tr>
<td>BLM Ever Used</td>
<td>11</td>
<td>103.12</td>
<td>135.47</td>
<td>1.31</td>
</tr>
<tr>
<td>UWC Ever Used</td>
<td>13</td>
<td>118.26</td>
<td>167.61</td>
<td>2.41</td>
</tr>
<tr>
<td>BLM Recent Used</td>
<td>15</td>
<td>145.44</td>
<td>169.55</td>
<td>1.16</td>
</tr>
<tr>
<td>UWC Recent Used</td>
<td>17</td>
<td>139.77</td>
<td>189.10</td>
<td>1.35</td>
</tr>
<tr>
<td>BLM Nonused</td>
<td>19</td>
<td>178.56</td>
<td>384.39</td>
<td>2.15</td>
</tr>
<tr>
<td>UWC Nonused</td>
<td>21</td>
<td>63.97</td>
<td>151.78</td>
<td>2.37</td>
</tr>
<tr>
<td><strong>Mean Ratio</strong></td>
<td></td>
<td></td>
<td></td>
<td>1.70</td>
</tr>
<tr>
<td><strong>Urban:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLM All Responses</td>
<td>7</td>
<td>149.97</td>
<td>211.29</td>
<td>1.40</td>
</tr>
<tr>
<td>UWC All Responses</td>
<td>9</td>
<td>132.58</td>
<td>200.84</td>
<td>1.51</td>
</tr>
<tr>
<td>BLM Ever Used</td>
<td>11</td>
<td>135.63</td>
<td>181.35</td>
<td>1.33</td>
</tr>
<tr>
<td>UWC Ever Used</td>
<td>13</td>
<td>131.88</td>
<td>189.27</td>
<td>1.43</td>
</tr>
<tr>
<td>BLM Recent Used</td>
<td>15</td>
<td>188.64</td>
<td>226.47</td>
<td>1.20</td>
</tr>
<tr>
<td>UWC Recent Used</td>
<td>17</td>
<td>161.44</td>
<td>223.18</td>
<td>1.38</td>
</tr>
<tr>
<td>BLM Nonused</td>
<td>19</td>
<td>221.75</td>
<td>404.56</td>
<td>1.82</td>
</tr>
<tr>
<td>UWC Nonused</td>
<td>21</td>
<td>83.16</td>
<td>141.98</td>
<td>1.70</td>
</tr>
<tr>
<td><strong>Mean Ratio</strong></td>
<td></td>
<td></td>
<td></td>
<td>1.47</td>
</tr>
<tr>
<td><strong>Rural:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLM All Responses</td>
<td>7</td>
<td>102.57</td>
<td>117.52</td>
<td>1.14</td>
</tr>
<tr>
<td>UWC All Responses</td>
<td>9</td>
<td>108.31</td>
<td>171.41</td>
<td>1.58</td>
</tr>
<tr>
<td>BLM Ever Used</td>
<td>11</td>
<td>89.51</td>
<td>109.74</td>
<td>1.22</td>
</tr>
<tr>
<td>UWC Ever Used</td>
<td>13</td>
<td>76.86</td>
<td>119.61</td>
<td>1.56</td>
</tr>
<tr>
<td>BLM Recent Used</td>
<td>15</td>
<td>111.69</td>
<td>159.60</td>
<td>1.42</td>
</tr>
<tr>
<td>UWC Recent Used</td>
<td>17</td>
<td>87.25</td>
<td>122.79</td>
<td>1.40</td>
</tr>
<tr>
<td>BLM Nonused</td>
<td>19</td>
<td>91.31</td>
<td>84.24</td>
<td>0.92</td>
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<tr>
<td>UWC Nonused</td>
<td>21</td>
<td>52.32</td>
<td>56.66</td>
<td>1.08</td>
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<tr>
<td><strong>Mean Ratio</strong></td>
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<tr>
<td><strong>Study Mean Ratio</strong></td>
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<td>1.49</td>
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</table>

Establishment value from $277.71 to $626.32. Rural respondents had a mean ratio of 1.29 in comparison to the mean ratio for the study of 1.49.

Silverman, Gerlowski, and Williams (1992) made the assumption that the only reliable test for nonuse values was with nonusers. If this is true, the nonuse category for recent and ever users would be significantly higher than for the nonusers. Results did not
show any consistent trend. The ratio for nonusers was higher than users for the general population and urban sample. However, for the rural sample, the ratio was smaller for the nonusers, contradicting Silberman, Gerlowski, and Williams (1992).

Compatibility of the Establishment Results with Demand

The law of diminishing marginal utility suggests that, as individuals obtain more of a good, they will be willing to pay less for an added unit. Figure 4 shows the relationship between the amount of wilderness acreage and the WTP bid amount for the single-bounded bid. All proposals have a downward-sloping curve, indicated the diminishing marginal WTP.

Use Values Results

The objective of using the double-bounded model was twofold: (1) to evaluate the use values with greater statistical efficiency than the single-bounded results, and (2) to use the more efficient estimate to measure nonuse values. The double-bounded results were stratified by urban and rural respondents. Tables 23 and 25 show the statistical results for the double-bounded model for BLM and UWC proposals. Generally, the double-bounded logit models were statistically significant at the 5 percent level according to the chi-square ($\chi^2$) distribution. Tables 24 and 26 show the calculated nonuse value (the difference from establishment and use values) for each allocation.

The estimated coefficients or bids were all negative, indicating a downward-sloping WTP curve for BLM proponents, which is consistent with theory. The $t$-statistics improved dramatically for the double-bounded model. Both the general population and urban sample had positive nonuse values; however, the rural sample showed negative nonuse values due to the low establishment value for wilderness. As explained above, generally rural individuals had a low value for establishment of the BLM and the UWC proposals.
FIGURE 4
Relationship of Responses to the Bid Amount for Existing, BLM, and UWC Proposals

TABLE 23
Use Value of BLM PropONENTS Using a Double-Bounded Model

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>α0</th>
<th>β1</th>
<th>β2</th>
<th>HHINC</th>
<th>WTP Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>General popul.</td>
<td>316</td>
<td>8.753</td>
<td>-.01995</td>
<td>-.6192</td>
<td>4.26</td>
<td>$274.65</td>
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<tr>
<td></td>
<td></td>
<td>(24.713)</td>
<td>(-36.37)</td>
<td>(-.32)</td>
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<tr>
<td>Urban</td>
<td>289</td>
<td>7.6152</td>
<td>-.020059</td>
<td>-.4698</td>
<td>3.95</td>
<td>$306.36</td>
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<td></td>
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<td>(23.639)</td>
<td>(-7.461)</td>
<td>(-6.768)</td>
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<tr>
<td>Rural</td>
<td>95</td>
<td>.21422</td>
<td>-.016952</td>
<td>.94575</td>
<td>4.15</td>
<td>$231.33</td>
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<td></td>
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<td>(.34)</td>
<td>(-12.43)</td>
<td>(8.809)</td>
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### TABLE 24
**CALCULATED NONUSE VALUE FOR BLM PROPONENTS USING A DOUBLE-BOUNDED MODEL**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Establishment Value</th>
<th>Use Value</th>
<th>Nonuse Value</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>$275.10</td>
<td>$274.65</td>
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<tr>
<td>Urban</td>
<td>361.27</td>
<td>306.36</td>
<td>54.91</td>
<td>289</td>
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<tr>
<td>Rural</td>
<td>220.03</td>
<td>231.33</td>
<td>-11.30</td>
<td>95</td>
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</table>
The estimated coefficients showed a downward-sloping WTP curve for UWC proponents. The \( t \)-statistics were much larger than for the single-bounded model. Again, all of the nonuse values were positive, but the nonuse value for rural individuals was dramatically smaller than those of urban individuals.

Figure 5 shows yes bids versus bid values with the double-bounded model. These bids are based on obtaining a positive second bid after obtaining a yes on the first bid. Again, the law of diminishing utility holds true for wilderness designation.

Comparison of Allocation and Double-Bounded Methodologies

The results showed individuals generally had a positive value for nonuse. All \( t \)-statistics were higher for the double-bounded estimations. For both BLM and UWC proposals, the use value for the allocation method was approximately $100 higher than the use value from the double-bounded model.

![Figure 5](image_url)

FIGURE 5
RELATIONSHIP OF RESPONSES TO THE BID AMOUNT FOR EXISTING, BLM, AND UWC PROPOSALS FOR THE DOUBLE-BOUNDED MODEL
Tables 27 and 28 show a comparison of nonuse values for the two methodologies for each proposal. Nonuse values for the allocation method are derived from the WTP estimates of the establishment value (total value estimated by the single bounded model) then applied to the mean percentages from the ten-point allocation.\textsuperscript{15} Nonuse values from the double-bounded model are derived from the WTP estimates of use value, with nonuse value coming from the difference of establishment value and use value.\textsuperscript{16}

In each case, the results from the double-bounded estimate show a substantially lower nonuse value. The substantial difference in the values may be attributed to the form of the questions. Questions for the allocation method may not be reflective of the respondent’s true value. The single-bounded questions may not have given the respondents an opportunity to reflex their true choke price for establishment. One may assume that the results from the double-bounded model provided a more reflective picture of the value for nonuse.

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Allocation Method &quot;Establishment Value&quot;</th>
<th>Double-Bounded Model &quot;Use Value&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>316</td>
<td>$158.62</td>
<td>$0.45</td>
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<tr>
<td>Urban</td>
<td>289</td>
<td>$211.29</td>
<td>$54.91</td>
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<tr>
<td>Rural</td>
<td>95</td>
<td>$117.52</td>
<td>-$11.30</td>
</tr>
</tbody>
</table>

\textsuperscript{15} These estimates are from Tables 6 and 8, which are the establishment bids for total value for BLM and UWC proposals.

\textsuperscript{16} These estimates are from Tables 23 and 25, which are the WTP values for the use question using the double-bounded model.
<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>&quot;Establishment Value&quot;</th>
<th>Double-Bounded Model &quot;Use Value&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>283</td>
<td>$173.98</td>
<td>$67.98</td>
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<td>Urban</td>
<td>262</td>
<td>$200.84</td>
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<td>Rural</td>
<td>82</td>
<td>$171.41</td>
<td>$23.42</td>
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CHAPTER VI
CONCLUSIONS

The purpose of this study was to estimate the nonuse values for wilderness of Utah citizens. All of this study's objectives revolved around this purpose. Total values for establishing additional wilderness according to the BLM proposal of 1.9 million acres and the UWC proposal of 5.7 million acres were obtained by estimating the WTP for each of these proposals.

Nonuse values were hypothesized to be (1) positive and (2) relative to the levels of use. Only the rural sample of the double-bounded model produced a negative nonuse value. This negative value could be attributed to the low establishment value of rural individuals. These negative values coincided with the polarization of opinion about wilderness designation. Keith, Fawson, and Johnson (1995) used this survey instrument to study the use value for the establishment of wilderness for wilderness proponents and opponents. The results showed a wide disparity of values, giving evidence of polarization on both sides of the issue and for urban and rural individuals, which appeared in this study as a negative value for nonuse. As discussed above, finding a true nonuse value might involve separating the use from the nonuse components. The results were not consistent with the assumption made by Silberman, Gerlowski, and Williams (1992). However, all of the ratios were greater than one, except rural BLM nonusers. The conclusion was that individuals, for the most part, had nonuse values, and the magnitude was high in some situations.

Finally, the results were tested by a different methodology. The double-bounded model generated increased t-statistics compared to a single-bounded estimate. The magnitude of difference of the nonuse values from the first methodology was larger with the allocation method estimated by the single-bound model.
One can draw a general conclusion that Utah citizens do have a positive value for nonuse. The different magnitudes of nonuse value for urban and rural individuals, with other findings using this survey instrument, show a polarization of opinions. When urban and rural samples were separated, urban individuals had a significantly higher magnitude of nonuse than rural individuals. It was hoped that the nonuse values from both methodologies would be more compatible. More research is needed in this area to enable practitioners to have a more consistent measurement of nonuse values.
REFERENCES


Keith, J.E., C. Fawson, and V.R. Johnson. 1995. "Preservation or Use: A Contingent Valuation Study of Wilderness Designation in Utah." Ecological Economics (accepted for publication)


APPENDIX
**Telephone Log Example**

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<th>Telephone Number</th>
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<th>Packet Sent?</th>
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</table>

**UPDATE 8/23/94**
May 16, 1994

Dear Utah Resident

Utah State University is studying the public's attitudes about and use of wilderness areas. Your household's telephone number has been selected at random to participate in a telephone survey about wilderness issues. When we call, we will ask to talk to the person in your household over 18 years old who had the most recent birthday. His or her responses will reflect the opinions of many Utah residents who will not be surveyed, so it is very important to the study that he or she participate. It is also important because any policy decisions which might be made as a result of this study should responsive to all of Utah residents' opinions.

During the next week or two we will be calling your household and other members of the sample to obtain your opinions about wilderness issues. The telephone interview should not take more than 15 or 20 minutes. Answers will be held in strictest confidence. After we complete the survey, names and addresses will not be associated with the data, so that no link can be made between responses and any name or telephone number.

On the inside two pages of this letter is a map indicating the current and proposed wilderness areas in Utah, identified by a number and in a legend. On the last page of this letter are some explanations about the regulations which apply to wilderness areas and a list of issues about which the respondent may be asked when you are contacted by someone from Utah State University. Please take a little time to study the material which is provided. It would speed up the interview if the information in the packet were available when we call so that the respondent can refer to the information.

Thank you for your help.

Sincerely,

John E. Keith
Professor
Below are some facts about the limits placed on the use of designated wilderness areas, based on the laws recently passed in some of the surrounding states (like Arizona).

No mechanized recreation is permitted (including bicycles) although wheelchairs may be permitted.

Existing mining and grazing practices will not be changed due solely to wilderness designation, although grazing could be reduced if conditions of the forage were deteriorating, and mining could be limited if the environment were being unreasonably damaged. In both cases, if the individuals have been using mechanized means to operate a mine or to service livestock, such as trucks or caterpillars, they may be allowed to continue to do so under the Arizona law, although this depends on the law which is passed at the state level. The Colorado law prohibits the use of mechanized maintenance in some areas. There have been some instances of restrictions being placed on existing uses, but this may depend on the local agency administering the wilderness area.

No mechanized equipment can be used to develop new structures (such as dams or roads) to increase grazing. Non-mechanized means can be used to develop water sources, fences, etc.

No mechanized equipment can be used to develop existing mining claims which have not been previously actively worked, although persons holding those claims can develop them using non-mechanized means for some period into the future (the Arizona law specified 10 years).

No new mining claims or other developments, such as dams, can be made on public land within the wilderness area, although developments can be made on any inholdings of private land as long as mechanized equipment is not used on public lands for that construction. Some developers have used helicopters, for example. Access to those in-holdings must be permitted by the administrative agency.

During the interview, you will be asked several questions dealing with your opinions about various issues involved in wilderness designation. Some of these questions will ask you to rank your attitudes or opinions on a 0 to 10 scale. The scale is:

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10

Strongly disagree Moderately disagree Don't care Moderately agree Strongly agree

OR

Very strongly opposed Moderately opposed Don't care Moderately support Very strongly support

You will also be asked some questions involving your past use of these areas and about possible fees for either using these areas as wilderness areas or for maintaining these areas as multiple use (more or less unrestricted access) areas. We appreciate greatly your help in this survey, and we will be calling you soon.
Utah Wilderness

Bureau of Land Management (BLM) Lands proposed for wilderness designation

- Proposed by both BLM and Utah Wilderness Coalition (UWC)
- BLM Wilderness Study Areas (WSAs) not recommended for wilderness by the BLM, but proposed by the UWC
- Lands outside WSAs proposed for wilderness by the UWC
- Designated BLM wilderness
- Other BLM lands (may be interspersed with state and private lands)
- National Park System (NPS) lands
- NPS lands administratively designated as "suitable" for wilderness

NOTE: There are 779,638 acres of National Forest designated wilderness in Utah and 22,551 acres of BLM wilderness. The Utah Wilderness Coalition is proposing the designation of 3,126,641 additional acres of BLM land as wilderness. Of these, 1,952,169 acres are outside the BLM’s established WSAs or ISAs. The BLM itself has recommended only 1,001,922 acres for wilderness designation, all of them on established WSAs or ISAs. Many of the BLM areas in the list of wilderness proposals below include several separate areas in a “cluster” of wildlands suggested by the faint red “border” around each on the map, opposite.

Existing Utah Wilderness

National Forest Areas
1. Mt. Naomi
2. Wellsville Mts.
3. Mt. Olympus
   4. Twin Peaks
   5. Lone Peak
   6. Mt. Timpanogos
   7. Deseret Peak
   8. High Uintas
   9. Mt. Nebo
11. Ashdown Gorge
12. Box-Death Hollow
13. Dark Canyon

BLM Areas
15. Paria Canyon-Vermilion Cliffs

Proposed BLM Wilderness Areas

West Desert (Basin and Range) Areas
10. Little Goose Creek (1,332 acres)
17. Newtownland Mts. (23,266 acres)
18. Silver Island Mts. (20,000 acres)
19. Cedar Mts. (55,000 acres)
20. Steens Mts. (14,073 acres)
21. Deep Creek Mts. (76,000 acres)
22. Fish Springs Range (52,500 acres)
23. Dugway Mts. (18,000 acres)
24. Rockwell (11,000 acres)
25. House Range (125,930 acres)
26. Gomper Mts. (20,400 acres)
27. King Top (84,770 acres)
28. Wah Wah Mts. (112,350 acres)
29. Granite Peak (9,600 acres)
30. White Rock Range (2,000 acres)
31. Cougar Canyon-Devil's Pass (19,528 acres)
32. Beaver Dam Slopes (37,180 acres)

Colorado Plateau Areas
33. Red Mts. (18,000 acres)
34. Cottonwood Canyon (11,000 acres)
35. Greater Zion (107,808 acres)
36. Moquith Mts. (14,850 acres)
37. Kanab Creek (25,750 acres)
38. Grand Staircase (263,617 acres)
39. Kaiparowits (556,747 acres)
40. Escalante (337,213 acres)
41. Henry Mts. (337,045 acres)
42. Dirty Devil (225,800 acres)
43. White Canyon (80,350 acres)
44. Glen Canyon (168,770 acres)
45. San Juan Anaazii (362,370 acres)
46. Squaw/Cross Canyons (7,580 acres)
47. Dark Canyon (123,800 acres)
48. Canarylands Basin (150,340 acres)
49. Behind-the-Rocks (46,390 acres)
50. LaSal Waters (71,670 acres)
51. Westwater Canyon (36,260 acres)
52. Arches/Lost Spring (11,600 acres)
53. Labyrinth Canyon (170,680 acres)
54. San Rafael Swell (674,205 acres)
55. Desolation Canyon (589,150 acres)
56. White River (12,000 acres)
57. Greater Dinosaur (21,820 acres)
Dear Respondent:

After field testing the questionnaire described in the attached letter, we found that some of the questions could be difficult to understand and answer. Included below are some explanations for you to review before we contact you for the telephone interview.

First, you will be asked questions about your use of any of the 57 existing or proposed wilderness areas in Utah. Your response should include use before and after these areas were designated or proposed for designation as wilderness. Please familiarize yourself with the map so that you can tell us the number(s) or the name(s) of the area or areas you have visited.

Second, you will be asked if you support or oppose the general concept of wilderness. Next, we will ask about your support for or opposition to the BLM proposed wilderness areas, followed by the UWC proposed wilderness areas. You will use the 0 (strongly opposed) to 10 (strongly support) scale to answer these questions. Once you indicate your support or opposition to each wilderness alternative, you will be asked a series of questions about your willingness to pay for or willingness for vote for or against each proposal. Note that the UWC proposal includes most of the areas proposed by the BLM. If you indicate that you oppose the BLM proposal but your opposition is based on a preference for the larger UWC proposal, you will be asked questions about your willingness to pay or vote for maintaining the BLM proposed areas in multiple use (relatively open access) management. Therefore, you should respond as opposing the BLM proposal only if you are opposed to those areas contained in it being included in designated wilderness areas.

Third, if you support wilderness designation in general, you will be asked to separate your reasons for support. You will be given 10 total points to allocate among four reasons for your support. Your total allocation must add to 10 points. The division of the points represents the relative importance you place on each reason. The four reasons are:

A. I or members of my family will use these recreation areas and want them for my continued use.

B. There is a chance I or members of my family will use these areas, and would like to have them available if and when I decide to use them.

C. I would like to have these areas available to others to use even if I or members of my family never use them.

D. I would like to have these areas available to future generations to use, even if I or members of my family never use them.

Thank you for your help.

[Signature]
**Survey Instrument**

1. Date questionnaire completed
   
   **INDATE 1:1-6**
   
   Year | Month | Day
   __________________________
   19 | 1 | 6

2. Setup questionnaire
   
   **TTL**
   
   Press ENTER to begin

3. Time questionnaire started
   
   **INTIME 1:7-11**
   
   __________________________
   
4. ENTER PACKET NUMBER FROM CALLING FORM BEGINNING WITH G FOR GENERAL FORM, R FOR RURAL FORM AT BEGINNING OF NUMBER
   
   **Q1A 1:12-16**
   
   __________________________

5/ Hello, my name is _____________. I'm calling as part of a study by Utah State University. I'm not selling anything or soliciting donations. We're calling randomly selected Utah households to help develop information about Utahn's attitudes toward wilderness areas, and your household was included in the sample. To make our study as accurate as possible, I'm supposed to talk with the person in your household who is 18 years old or older and whose birthday occurred most recently. Would that happen to be you? IF NO- Could I speak with him or her? IF NOT AVAILABLE-- When could I call back to speak with him or her? (RECORD RESPONSE) Who should I ask to speak with when I call back? (RECORD NAME)

   (CHECK ONLY ONE ANSWER)
   
   |____| 1. Not speaking with the respondent, terminate (GO TO QUESTION 255)
   |____| 2. Speaking with the respondent, continue.

**QPL WILDERNESS STUDY**

6. Did you receive our packet in the mail?
   
   **Q2A 1:18**
   
   (CHECK ONLY ONE ANSWER)
   
   |____| 1. YES (GO TO QUESTION 8)
   |____| 2. NO

7. We would like to send the information to you and contact you later. What is your current address? (ENTER NAME, ADDRESS)
   
   **Q2B 1:19-118**

   __________________________
   __________________________
   __________________________
   __________________________

   **SKIP TO QUESTION 255**

   __________________________
8. Do you still have the packet available?  
(Q3A 1:119)  
(CHECK ONLY ONE ANSWER)  
|___| 1. YES (GO TO QUESTION 10)  
|___| 2. NO  

9. We would like to send the information to you and contact you later. What is your current address? (ENTER NAME, ADDRESS)  
(Q3B 2:1-100)  

SKIP TO QUESTION 255  
========================================================================

QPL WILDERNESS STUDY  
Page 3  

10. Would you like to take a little time to get that packet for reference during this interview?  
(ALLOW TIME) Have you ever visited the existing wilderness areas in Utah or any currently being proposed for wilderness designation by the BLM or Utah Wilderness Coalition (UWC) as indicated on the map which we sent?  
(Q3C 2:101)  
(CHECK ONLY ONE ANSWER)  
|___| 1. REFUSE TO PARTICIPATE (GO TO QUESTION 242)  
|___| 2. NO (GO TO QUESTION 22)  
|___| 3. YES  

11. Which wilderness or proposed wilderness areas have you visited?  
(Q4A 2:102-119)  
(CHECK ALL THAT APPLY)  
|___| 1. 1  
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|___| 18. 18
12. areas continued

(CHECK ALL THAT APPLY)

1. 1. 19
2. 2.20
3. 3.21
4. 4.22
5. 5.23
6. 6.24
7. 7.25
8. 8.26
9. 9.27
10. 10.28

13. areas continued

(CHECK ALL THAT APPLY)

1. 1.38
2. 2.39
3. 3.40
4. 4.41
5. 5.42
6. 6.43
7. 7.44

14. areas continued

(CHECK ALL THAT APPLY)

1. 1.51
2. 2.52
3. 3.53
4. 4.54

15. On average, about how many days per trip do you spend in these wilderness areas?

16. Did you visit any of these areas during the last year?

(CHECK ONLY ONE ANSWER)

1. NO (GO TO QUESTION 22)
2. YES
17. Which wilderness or proposed wilderness areas?

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QPL WILDERNESS STUDY

18. areas continued

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QPL WILDERNESS STUDY

19. areas continued

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QPL WILDERNESS STUDY

20. areas continued

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21. About how many days per trip did you spend?  

Q8 3:102-105

22. Do you own any of the following:  

Q9 3:106-108

(CHECK ALL THAT APPLY)

| | 1. An off-road vehicle (ORV) - 4WD, a 3 or 4-wheeler, or motorcycle?  
| | 2. Camper on a pick-up?  
| | 3. Camping trailer?  

IF (#22 = 0) GO TO #28

23. Have you ever used your ORV, camper, or camp trailer inside the boundaries of any of the areas in Utah which are now wilderness or which have been proposed for wilderness designation?  

(CHECK ONLY ONE ANSWER)

| | 1. NO (GO TO QUESTION 28  
| | 2. YES

QPL WILDERNESS STUDY

Page 8

24. Which areas?  

Q11A 4:1-18

(CHECK ALL THAT APPLY)

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| | 9. 9 | | 18. 18

25. areas continued  

Q11B 4:19-37

(CHECK ALL THAT APPLY)

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26. areas continued  

(Q11C 4:38-50)  

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27. areas continued  

(Q11D 4:51-57)  

(CHECK ALL THAT APPLY)  

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28. Do you own a bicycle?  

(Q12 4:58)  

(CHECK ONLY ONE ANSWER)  

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29. Do you use your bicycle for off-road recreation (trails, paths, tracks, etc.)?  

(Q13 4:59)  

(CHECK ONLY ONE ANSWER)  

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30. Have you ever used your bicycle in the existing or the BLM or UWC proposed wilderness areas?  

(Q14 4:60)  

(CHECK ONLY ONE ANSWER)  

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31. Which areas?

(CHECK ALL THAT APPLY)

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QPL WILDERNESS STUDY

32. Areas continued

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33. Areas continued

(CHECK ALL THAT APPLY)

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QPL WILDERNESS STUDY

34. Areas continued

(CHECK ALL THAT APPLY)

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</table>
35. Did you know before reading the information we sent to you that you cannot use mechanical transport, including bicycles, for recreation in wilderness areas?

Q16 4:118

(CHECK ONLY ONE ANSWER)

|___| 1. NO
|___| 2. YES

36. Have you participated in any of the following outdoor activities in the past two years? Answer YES or NO.

Q17 5:1-4

(CHECK ALL THAT APPLY)

|___| 1. Camping
|___| 2. Hiking
|___| 3. Bicycling
|___| 4. Off-road vehicle use

QPL WILDERNESS STUDY Page 13

37. When you participate in outdoor recreation trips to wilderness areas or areas like wilderness areas (for ORV use, hiking, etc.) about how much per day do you spend for you and your family members? I will read some expenditure classes to you, and you can stop me when I read the right one.

Q18 5:5

(CHECK ONLY ONE ANSWER)

|___| 1. Don't participate
|___| 2. $ 0 - 10
|___| 3. $ 11 - 25
|___| 4. $ 26 - 50
|___| 5. $ 51 - 75
|___| 6. $ 76 - 100
|___| 7. $ 100 - 150
|___| 8. $ 150 - 200
|___| 9. More than $200

38. Please refer to the 0 to 10 scale on the information which was sent to you. Remember that a 0 means you strongly disagree; 2 to 3 means you moderately disagree; 5 means that you really don't care; 7 to 8 means that you moderately agree; and 10 means that you strongly agree. Use this 0 to 10 scale to indicate your feeling about the following statements:

Plants and animals exist primarily for human use.

W = 0
GH = 10

Q19A 5:6-8

|___| 1. 1. 1. 1.

39. Humans and nature can live together in productive harmony.

W = 0
GH = 10

Q19B 5:9-11

|___| 1. 1. 1.

40. The earth should have far fewer people on it.

W = 0
GH = 10

Q19C 5:12-14

|___| 1. 1. 1. 1.
41. Wildlife plants and humans have equal rights to live and develop on earth.
   W = 0
   GH = 10
   Q19D 5:15-17

42. The economic vitality of local communities should be given the highest priority by federal managers.
   W = 0
   GH = 10
   Q19E 5:18-20

43. Livestock grazing and mining should be allowed on federal lands.
   W = 0
   GH = 10
   Q19F 5:21-23

44. Greater protection should be given to plants and animals on federal lands.
   W = 0
   GH = 10
   Q19G 5:24-26

45. Livestock grazing and mining should not be permitted in wilderness areas.
   W = 0
   GH = 10
   Q19H 5:27-29

46. Using the 0 to 10 scale for support or opposition (0 means you strongly oppose, 5 means you really don't care, and 10 means you strongly support) indicate whether or not you support the concept of wilderness areas in general.
   W = 0
   GH = 10
   Q20 5:30-32

IF (#46 < 5) GO TO #77
47. **(RETURN FOR MORE OR LESS THAN 10 POINTS: REMIND OF TOTAL POINTS)**

Please refer to the last paragraph of the information sheet which was included in your packet. You have 10 points to allocate among reasons why you favor wilderness areas. You may allocate all 10 points to one reason, or divide them up according to your feelings about the relative importance of each reason. I will read the reasons, and then ask you to give me your allocation. Remember that the total must add up to 10. (READ A TO D, THEN CONTINUE)

A. I or members of my family will use these wilderness areas and want them for my continued use.
B. There is a chance that I or members of my family will use these areas, and I would like to have them available if and when I decide to use them.
C. I would like to have these areas available for others to use even if I or members of my family never use them.
D. I would like to have these areas available for future generations to use, even if I or members of my family never use them. (NOW READ THE NEXT STATEMENT FOR RESPONSE)

Q21
PRESS ENTER TO CONTINUE

48. I or members of my family will use these wilderness areas and want them for my continued use.

Q21A 5:33-34

49. There is a chance I or members of my family will use these areas, and I would like to have them available if and when I decide to use them.

Q21B 5:35-36

QPL WILDERNESS STUDY Page 16

50. I would like to have these areas available for others to use even if I or members of my family never use them.

Q21C 5:37-38

51. I would like to have these areas available for future generations to use, even if I or members of my family never use them.

Q21D 5:39-40

IF (#48 + #49 + #50 + #51 <= 10) GO TO #47

52. Random questions

R1 5:41

(CHECK ONLY ONE ANSWER)

1. Jump to path A (GO TO QUESTION 53)
2. Jump to path B (GO TO QUESTION 57)
3. Jump to path C (GO TO QUESTION 61)
4. Jump to path D (GO TO QUESTION 65)
5. Jump to path E (GO TO QUESTION 69)
6. Jump to path F (GO TO QUESTION 73)

SKIP TO QUESTION 102
53. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $1000?

Q22A 5:42

(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 56)
|__| 2. NO

54. Would you pay $500?

Q22B 5:43

(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 102)
|__| 2. NO

55. Why Not?

Q22C 5:44

(CHECK ONLY ONE ANSWER)

|__| 1. Not worth it.
|__| 2. Should not have to pay.
|__| 3. Other

SKIP TO QUESTION 102

56. Would you pay $2000?

Q22D 5:45

(CHECK ONLY ONE ANSWER)

|__| 1. YES
|__| 2. NO

SKIP TO QUESTION 102

57. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $500?

Q23A 5:46

(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 60)
|__| 2. NO
58. Would you pay $250?  

(Q23B 5:47)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 102)  
|   | 2. NO

59. Why Not?  

(Q23C 5:48)

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.  
|   | 2. Should not have to pay.  
|   | 3. Other

SKIP TO QUESTION 102

60. Would you pay $1000?  

(Q23D 5:49)

(CHECK ONLY ONE ANSWER)

|   | 1. NO  
|   | 2. YES

SKIP TO QUESTION 102

61. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $250?  

(Q24A 5:50)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 64)  
|   | 2. NO

62. Would you pay $100?  

(Q24B 5:51)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 102)  
|   | 2. NO

63. Why Not?  

(Q24C 5:52)

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.  
|   | 2. Should not have to pay.  
|   | 3. Other
64. Would you pay $500?  
(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES

65. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $100?  
(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 68)
|   | 2. NO

66. Would you pay $50?  
(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 102)
|   | 2. NO

67. Why Not?  
(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Should not have to pay.
|   | 3. Other

68. Would you pay $250?  
(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES
69. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $50?

Q26A 5:58

(CHECK ONLY ONE ANSWER)

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QPL WILDERNESS STUDY

Page 21

70. Would you pay $25?

Q26B 5:59

(CHECK ONLY ONE ANSWER)

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71. Why Not?

Q26C 5:60

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 102

72. Would you pay $100?

Q26D 5:61

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 102

73. If you were asked to purchase an annual permit to use the existing wilderness areas in Utah, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $25?

Q27A 5:62

(CHECK ONLY ONE ANSWER)

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</table>
74. Would you pay $10?  
(Q27B 5:63)  
(CHECK ONLY ONE ANSWER)  
|___| 1. YES (GO TO QUESTION 102)  
|___| 2. NO  

75. Why Not?  
(Q27C 5:64)  
(CHECK ONLY ONE ANSWER)  
  |___| 1. Not worth it.  
  |___| 2. Should not have to pay.  
  |___| 3. Other  
  SKIP TO QUESTION 102  

76. Would you pay $50?  
(Q27D 5:65)  
(CHECK ONLY ONE ANSWER)  
|___| 1. NO  
|___| 2. YES  
  SKIP TO QUESTION 102  

77. Random questions  
(R2 5:66)  
(CHECK ONLY ONE ANSWER)  
|___| 1. Jump to path A (GO TO QUESTION 78)  
|___| 2. Jump to path B (GO TO QUESTION 82)  
|___| 3. Jump to path C (GO TO QUESTION 86)  
|___| 4. Jump to path D (GO TO QUESTION 90)  
|___| 5. Jump to path E (GO TO QUESTION 94)  
|___| 6. Jump to path F (GO TO QUESTION 98)  
  SKIP TO QUESTION 102  

78. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $1000?  
(Q28A 5:67)  
(CHECK ONLY ONE ANSWER)  
|___| 1. YES (GO TO QUESTION 81)  
|___| 2. NO
79. Would you pay $500?

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 102)
|   | 2. NO

80. Why not?

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 102

81. Would you pay 2000?

(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES

SKIP TO QUESTION 102

QPL WILDERNESS STUDY Page 24

82. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $500?

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 85)
|   | 2. NO

83. Would you pay $250

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 102)
|   | 2. NO

84. Why not?

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 102
85. Would you pay $1000?  
(Q29D 5:74)
(CHECK ONLY ONE ANSWER)

|__| 1. NO  
|__| 2. YES  

SKIP TO QUESTION 102

86. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $250?  
(Q30A 5:75)
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 89)  
|__| 2. NO  

87. Would you pay $100?  
(Q30B 5:76)
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 102)  
|__| 2. NO  

88. Why not?  
(Q30C 5:77)
(CHECK ONLY ONE ANSWER)

|__| 1. Not worth it.  
|__| 2. Shouldn't have to pay.  
|__| 3. Other  

SKIP TO QUESTION 102

89. Would you pay $500?  
(Q30D 5:78)
(CHECK ONLY ONE ANSWER)

|__| 1. NO  
|__| 2. YES  

SKIP TO QUESTION 102
90. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $100?

Q31A 5:79

(CHECK ONLY ONE ANSWER)

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91. Would you pay $50?

Q31B 5:80

(CHECK ONLY ONE ANSWER)

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92. Why not?

Q31C 5:81

(CHECK ONLY ONE ANSWER)

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<td>2. Shouldn't have to pay.</td>
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SKIP TO QUESTION 102

93. Would you pay 250?

Q31D 5:82

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 102

QPL WILDERNESS STUDY

94. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $50?

Q32A 5:83

(CHECK ONLY ONE ANSWER)

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95. Would you pay $25?

Q32B 5:84

(CHECK ONLY ONE ANSWER)

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96. Why not? Q32C 5:85

(CHECK ONLY ONE ANSWER)

|__| 1. Not worth it.
|__| 2. Shouldn't have to pay.
|__| 3. Other

SKIP TO QUESTION 102

97. Would you pay 100? Q32D 5:86

(CHECK ONLY ONE ANSWER)

|__| 1. NO
|__| 2. YES

SKIP TO QUESTION 102

---

QPL WILDERNESS STUDY

98. If you could pay a fee to have the existing wilderness areas open to all types of use such as increased grazing or mining, or mechanized and non-mechanized recreation, would you be willing to pay $25? Q33A 5:87

(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 101)
|__| 2. NO

99. Would you pay $10? Q33B 5:88

(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 102)
|__| 2. NO

100. Why not? Q33C 5:89

(CHECK ONLY ONE ANSWER)

|__| 1. Not worth it.
|__| 2. Shouldn't have to pay.
|__| 3. Other

SKIP TO QUESTION 102

---
101. Would you pay $50?

(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES

QPL WILDERNESS STUDY

102. Look at Area 55 on your map. It is next to the Uintah and Ouray Indian Reservation. The BLM proposed wilderness areas are the dark red cross-hatched areas. All BLM proposed wilderness areas look like this. Indicate whether or not you support the designation of the wilderness areas proposed by the BLM using the 0 - 10 score (0 means you strongly oppose, 5 means you do not care, and 10 means you strongly support).

W = 0
GH = 10

(CHECK ONLY ONE ANSWER)

|   |   |   |

IF (#102 < 5) GO TO #137

103. Random questions

(CHECK ONLY ONE ANSWER)

|   |   |

1. Jump to path A (GO TO QUESTION 104)
2. Jump to path B (GO TO QUESTION 105)
3. Jump to path C (GO TO QUESTION 106)
4. Jump to path D (GO TO QUESTION 107)
5. Jump to path E (GO TO QUESTION 108)
6. Jump to path F (GO TO QUESTION 109)
7. Jump to path G (GO TO QUESTION 110)
8. Jump to path H (GO TO QUESTION 111)

SKIP TO QUESTION 112

104. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $2000 per year from now on, would you vote for or against designation?

(CHECK ONLY ONE ANSWER)

|   |   |

1. FOR
2. AGAINST

SKIP TO QUESTION 112
105. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $1000 per year from now on, would you vote for or against designation:

Q36 5:96
(CHECK ONLY ONE ANSWER)

|_| 1. FOR
|_| 2. AGAINST

SKIP TO QUESTION 112

106. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $500 per year from now on, would you vote for or against designation:

Q37 5:97
(CHECK ONLY ONE ANSWER)

|_| 1. FOR
|_| 2. AGAINST

SKIP TO QUESTION 112

107. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $250 per year from now on, would you vote for or against designation:

Q38 5:98
(CHECK ONLY ONE ANSWER)

|_| 1. FOR
|_| 2. AGAINST

SKIP TO QUESTION 112

108. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $100 per year from now on, would you vote for or against designation:

Q39 5:99
(CHECK ONLY ONE ANSWER)

|_| 1. FOR
|_| 2. AGAINST

SKIP TO QUESTION 112
109. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $50 per year from now on, would you vote for or against designation:

   Q40 5:100

   (CHECK ONLY ONE ANSWER)

   |___| 1. FOR
   |___| 2. AGAINST

   SKIP TO QUESTION 112

110. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $25 per year from now on, would you vote for or against designation:

   Q41 5:101

   (CHECK ONLY ONE ANSWER)

   |___| 1. FOR
   |___| 2. AGAINST

   SKIP TO QUESTION 112

QPL WILDERNESS STUDY  Page 32

111. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $25 per year from now on, would you vote for or against designation:

   Q42 5:102

   (CHECK ONLY ONE ANSWER)

   |___| 1. FOR
   |___| 2. AGAINST

112. Random questions

   R4 5:103

   (CHECK ONLY ONE ANSWER)

   |___| 1. Jump to path A (GO TO QUESTION 113)
   |___| 2. Jump to path B (GO TO QUESTION 117)
   |___| 3. Jump to path C (GO TO QUESTION 121)
   |___| 4. Jump to path D (GO TO QUESTION 125)
   |___| 5. Jump to path E (GO TO QUESTION 129)
   |___| 6. Jump to path F (GO TO QUESTION 133)

   SKIP TO QUESTION 171
113. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $1000?

Q43A 5:104

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 116)
|___| 2. NO

114. Would you pay $500?

Q43B 5:105

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 171)
|___| 2. NO

QPL WILDERNESS STUDY

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115. Why not?

Q43C 5:106

(CHECK ONLY ONE ANSWER)

|___| 1. Not worth it.
|___| 2. Shouldn't have to pay.
|___| 3. Other

SKIP TO QUESTION 171

116. Would you pay $2000?

Q43D 5:107

(CHECK ONLY ONE ANSWER)

|___| 1. YES
|___| 2. NO

SKIP TO QUESTION 171

117. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $500?

Q44A 5:108

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 120)
|___| 2. NO

118. Would you pay $250?

Q44B 5:109

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 171)
|___| 2. NO
119. Why not?

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it. |
|   | 2. Shouldn't have to pay. |
|   | 3. Other |

SKIP TO QUESTION 171

120. Would you pay $1000?

(CHECK ONLY ONE ANSWER)

|   | 1. YES |
|   | 2. NO |

SKIP TO QUESTION 171

121. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $250?

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 124) |
|   | 2. NO |

122. Would you pay $100?

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 171) |
|   | 2. NO |

123. Why not?

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it. |
|   | 2. Shouldn't have to pay. |
|   | 3. Other |

SKIP TO QUESTION 171
124. Would you pay $500?

(Q45D 5:115)

(CHECK ONLY ONE ANSWER)

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<td>2. YES</td>
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SKIP TO QUESTION 171

125. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $100?

(Q46A 5:116)

(CHECK ONLY ONE ANSWER)

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126. Would you pay $50?

(Q46B 5:117)

(CHECK ONLY ONE ANSWER)

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QPL WILDERNESS STUDY

Page 36

127. Why not?

(Q46C 5:118)

(CHECK ONLY ONE ANSWER)

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<td>2. Shouldn't have to pay.</td>
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<td>3. Other</td>
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SKIP TO QUESTION 171

128. Would you pay $250?

(Q46D 5:119)

(CHECK ONLY ONE ANSWER)

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<td>2. YES</td>
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SKIP TO QUESTION 171
129. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $50?

Q47A 5:120
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 132)
|__| 2. NO

130. Would you pay $25?

Q47B 6:1
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 171)
|__| 2. NO

QPL WILDERNESS STUDY

Page 37

131. Why not?

Q47C 6:2
(CHECK ONLY ONE ANSWER)

|__| 1. Not worth it.
|__| 2. Shouldn’t have to pay.
|__| 3. Other

SKIP TO QUESTION 171

132. Would you pay $100?

Q47D 6:3
(CHECK ONLY ONE ANSWER)

|__| 1. NO
|__| 2. YES

SKIP TO QUESTION 171

133. If you were asked to purchase an annual permit to use the BLM proposed wilderness areas in Utah, once they were designated wilderness areas, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $25?

Q48A 6:4
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 136)
|__| 2. NO

134. Would you pay $10?

Q48B 6:5
(CHECK ONLY ONE ANSWER)

|__| 1. YES (GO TO QUESTION 171)
|__| 2. NO
135. Why not?  

(Q48C 6:6  
(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.  
|   | 2. Shouldn't have to pay.  
|   | 3. Other  

SKIP TO QUESTION 171

136. Would you pay $50?  

(Q48D 6:7  
(CHECK ONLY ONE ANSWER)

|   | 1. YES  
|   | 2. NO  

SKIP TO QUESTION 171

137. Random Questions  

(R5 6:8  
(CHECK ONLY ONE ANSWER)

|   | 1. Jump to path A (GO TO QUESTION 138)  
|   | 2. Jump to path B (GO TO QUESTION 139)  
|   | 3. Jump to path C (GO TO QUESTION 140)  
|   | 4. Jump to path D (GO TO QUESTION 141)  
|   | 5. Jump to path E (GO TO QUESTION 142)  
|   | 6. Jump to path F (GO TO QUESTION 143)  
|   | 7. Jump to path G (GO TO QUESTION 144)  
|   | 8. Jump to path H (GO TO QUESTION 145)  

SKIP TO QUESTION 171

138. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $2000 per year. Would you vote for or against designation of these areas as wilderness?  

(Q49 6:9  
(CHECK ONLY ONE ANSWER)

|   | 1. FOR  
|   | 2. AGAINST  

SKIP TO QUESTION 146
139. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $1000 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 146

QPL WILDERNESS STUDY Page 40

140. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $500 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 146

141. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $250 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 146

QPL WILDERNESS STUDY Page 41

142. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $100 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 146
143. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $50 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

|   | 1. FOR
|   | 2. AGAINST

SKIP TO QUESTION 146

QPL WILDERNESS STUDY Page 42

144. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $25 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

|   | 1. FOR
|   | 2. AGAINST

SKIP TO QUESTION 146

145. Suppose you knew that if the BLM proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $10 per year. Would you vote for or against designation of these areas as wilderness?

(CHECK ONLY ONE ANSWER)

|   | 1. FOR
|   | 2. AGAINST

146. Random questions

R6 6:17

(CHECK ONLY ONE ANSWER)

|   | 1. Jump to path A (GO TO QUESTION 147)
|   | 2. Jump to path B (GO TO QUESTION 151)
|   | 3. Jump to path C (GO TO QUESTION 155)
|   | 4. Jump to path D (GO TO QUESTION 159)
|   | 5. Jump to path E (GO TO QUESTION 163)
|   | 6. Jump to path F (GO TO QUESTION 167)

SKIP TO QUESTION 171
147. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $1000?

(Q57A 6:18)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 150)
|   | 2. NO

148. Would you pay $500?

(Q57B 6:19)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 171)
|   | 2. NO

149. Why not?

(Q57C 6:20)

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Shouldn’t have to pay.
|   | 3. Other

SKIP TO QUESTION 171

150. Would you pay $2000?

(Q57D 6:21)

(CHECK ONLY ONE ANSWER)

|   | 1. YES
|   | 2. NO

SKIP TO QUESTION 171

151. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $500?

(Q58A 6:22)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 154)
|   | 2. NO

152. Would you pay $250?

(Q58B 6:23)

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 171)
|   | 2. NO
153. Why not? Q58C 6:24

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 171

154. Would you pay $1000? Q58D 6:25

(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES

SKIP TO QUESTION 171

155. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $250? Q59A 6:26

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 158)
|   | 2. NO

156. Would you pay $100? Q59B 6:27

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 171)
|   | 2. NO


(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 171

158. Would you pay $500? Q59D 6:29

(CHECK ONLY ONE ANSWER)

|   | 1. NO
|   | 2. YES
159. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $100?

Q60A 6:30
(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 162) |
|   | 2. NO |

160. Would you pay $50?

Q60B 6:31
(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 171) |
|   | 2. NO |

161. Why not?

Q60C 6:32
(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it. |
|   | 2. Shouldn't have to pay. |
|   | 3. Other |

SKIP TO QUESTION 171

162. Would you pay $250?

Q60D 6:33
(CHECK ONLY ONE ANSWER)

|   | 1. NO |
|   | 2. YES |

SKIP TO QUESTION 171

163. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $50?

Q61A 6:34
(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 166) |
|   | 2. NO |
164. Would you pay $25? (CHECK ONLY ONE ANSWER) 
|__| 1. YES (GO TO QUESTION 171)  
|__| 2. NO

165. Why not? (CHECK ONLY ONE ANSWER) 
|__| 1. Not worth it.  
|__| 2. Shouldn't have to pay.  
|__| 3. Other

SKIP TO QUESTION 171

166. Would you pay $100? (CHECK ONLY ONE ANSWER) 
|__| 1. NO  
|__| 2. YES

SKIP TO QUESTION 171

QPL WILDERNESS STUDY Page 48
167. If you could pay a fee to use the BLM proposed wilderness areas in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation would you be willing to pay $25? (CHECK ONLY ONE ANSWER) 
|__| 1. YES (GO TO QUESTION 170)  
|__| 2. NO

168. Would you pay $10? (CHECK ONLY ONE ANSWER) 
|__| 1. YES (GO TO QUESTION 171)  
|__| 2. NO

169. Why not? (CHECK ONLY ONE ANSWER) 
|__| 1. Not worth it.  
|__| 2. Shouldn't have to pay.  
|__| 3. Other

SKIP TO QUESTION 171
170. Would you pay $50?  

**Q62D 6:41**

(CHECK ONLY ONE ANSWER)

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171. Look at Area 55 again. The Utah Wilderness Coalition (UWC) proposed wilderness areas include the BLM proposed areas plus the light red and light brown cross-hatched areas. All UWC proposed wilderness areas look like this. Indicate whether or not you support the designation of the (UWC) wilderness proposal using the 0 - 10 score (0 means strongly opposed, 5 means you don't care, and 10 means you strongly support).  

W = 0  
GH = 10  

**Q63 6:42-44**

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IF (#171 < 5) GO TO #206

172. Random questions  

**R7 6:45**

(CHECK ONLY ONE ANSWER)

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<td>8. Jump to path H (GO TO QUESTION 180)</td>
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SKIP TO QUESTION 181

173. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $2000 per year from now on, would you vote for or against designation:  

**Q64 6:46**

(CHECK ONLY ONE ANSWER)

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SKIP TO QUESTION 181

QPL WILDERNESS STUDY Page 50
174. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $1000 per year from now on, would you vote for or against designation:

(Q65 6:47)

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 181

175. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $500 per year from now on, would you vote for or against designation:

(Q66 6:48)

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 181

176. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $250 per year from now on, would you vote for or against designation:

(Q67 6:49)

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 181

177. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $100 per year from now on, would you vote for or against designation:

(Q68 6:50)

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 181
178. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $50 per year from now on, would you vote for or against designation:

Q69 6:51

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

SKIP TO QUESTION 181

179. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $25 per year from now on, would you vote for or against designation:

Q70 6:52

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

SKIP TO QUESTION 181

QPL WILDERNESS STUDY  Page 52

180. If you could vote on whether these areas should be designated as wilderness, AND you knew that this designation would cost your family $10 per year from now on, would you vote for or against designation:

Q71 6:53

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

181. Random questions

R8 6:54

(CHECK ONLY ONE ANSWER)

|__| 1. Jump to path A (GO TO QUESTION 182)
|__| 2. Jump to path B (GO TO QUESTION 186)
|__| 3. Jump to path C (GO TO QUESTION 190)
|__| 4. Jump to path D (GO TO QUESTION 194)
|__| 5. Jump to path E (GO TO QUESTION 198)
|__| 6. Jump to path F (GO TO QUESTION 202)

SKIP TO QUESTION 240

========================================================================
182. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $1000?

(Q72A 6:55)

(CHECK ONLY ONE ANSWER)

| | 1. YES (GO TO QUESTION 185)
| | 2. NO

183. Would you pay $500?

(Q72B 6:56)

(CHECK ONLY ONE ANSWER)

| | 1. YES (GO TO QUESTION 240)
| | 2. NO

QPL WILDERNESS STUDY Page 53

184. Why not?

(Q72C 6:57)

(CHECK ONLY ONE ANSWER)

| | 1. Not worth it.
| | 2. Shouldn't have to pay.
| | 3. Other

SKIP TO QUESTION 240

185. Would you pay $2000?

(Q72D 6:58)

(CHECK ONLY ONE ANSWER)

| | 1. NO
| | 2. YES

SKIP TO QUESTION 240

186. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $500?

(Q73A 6:59)

(CHECK ONLY ONE ANSWER)

| | 1. YES (GO TO QUESTION 189)
| | 2. NO

187. Would you pay $250?

(Q73B 6:60)

(CHECK ONLY ONE ANSWER)

| | 1. YES (GO TO QUESTION 240)
| | 2. NO
188. Why not? Q73C 6:61
(CHECK ONLY ONE ANSWER)
|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 240

189. Would you pay $1000? Q73D 6:62
(CHECK ONLY ONE ANSWER)
|   | 1. NO
|   | 2. YES

SKIP TO QUESTION 240

190. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $250? Q74A 6:63
(CHECK ONLY ONE ANSWER)
|   | 1. YES (GO TO QUESTION 193)
|   | 2. NO

191. Would you pay $100? Q74B 6:64
(CHECK ONLY ONE ANSWER)
|   | 1. YES (GO TO QUESTION 240)
|   | 2. NO

192. Why not? Q74C 6:65
(CHECK ONLY ONE ANSWER)
|   | 1. Not worth it.
|   | 2. Shouldn't have to pay.
|   | 3. Other

SKIP TO QUESTION 240
193. Would you pay $500?

(CHECK ONLY ONE ANSWER)

|___| 1. NO
|___| 2. YES

SKIP TO QUESTION 240

194. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $100?

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 197)
|___| 2. NO

195. Would you pay $50?

(CHECK ONLY ONE ANSWER)

|___| 1. YES (GO TO QUESTION 240)
|___| 2. NO

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196. Why not?

(CHECK ONLY ONE ANSWER)

|___| 1. Not worth it.
|___| 2. Shouldn’t have to pay.
|___| 3. Other

SKIP TO QUESTION 240

197. Would you pay $250?

(CHECK ONLY ONE ANSWER)

|___| 1. NO
|___| 2. YES

SKIP TO QUESTION 240
198. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $50?

(Q76A 6:71)

|__| 1. YES (GO TO QUESTION 201)
|__| 2. NO

199. Would you pay $25?

(Q76B 6:72)

|__| 1. YES (GO TO QUESTION 240)
|__| 2. NO

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200. Why not?

(Q76C 6:73)

|__| 1. Not worth it.
|__| 2. Shouldn't have to pay.
|__| 3. Other

SKIP TO QUESTION 240

201. Would you pay $100?

(Q76D 6:74)

|__| 1. NO
|__| 2. YES

SKIP TO QUESTION 240

202. If you were asked to purchase an annual permit to use the wilderness areas proposed by UWC after their designation as wilderness, and if the money would be spent to maintain these areas, would you purchase this permit if it cost $25?

(Q77A 6:75)

|__| 1. YES (GO TO QUESTION 205)
|__| 2. NO

203. Would you pay $10?

(Q77B 6:76)

|__| 1. YES (GO TO QUESTION 240)
|__| 2. NO
204. Why not?

(Q77C 6:77)

(CHECK ONLY ONE ANSWER)

|    | 1. Not worth it.
|    | 2. Shouldn’t have to pay.
|    | 3. Other

SKIP TO QUESTION 240

205. Would you pay $50?

(Q77D 6:78)

(CHECK ONLY ONE ANSWER)

|    | 1. NO
|    | 2. YES

SKIP TO QUESTION 240

206. Random questions

(R9 6:79)

(CHECK ONLY ONE ANSWER)

|    | 1. Jump to path A (GO TO QUESTION 207)
|    | 2. Jump to path B (GO TO QUESTION 208)
|    | 3. Jump to path C (GO TO QUESTION 209)
|    | 4. Jump to path D (GO TO QUESTION 210)
|    | 5. Jump to path E (GO TO QUESTION 211)
|    | 6. Jump to path F (GO TO QUESTION 212)
|    | 7. Jump to path G (GO TO QUESTION 213)
|    | 8. Jump to path H (GO TO QUESTION 214)

SKIP TO QUESTION 215

207. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $2000 per year. Would you vote for or against designation of these areas as wilderness?

(Q78 6:80)

(CHECK ONLY ONE ANSWER)

|    | 1. FOR
|    | 2. AGAINST

SKIP TO QUESTION 215
208. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $1000 per year. Would you vote for or against designation of these areas as wilderness?

Q79 6:81

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 215

QPL WILDERNESS STUDY Page 60

209. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $500 per year. Would you vote for or against designation of these areas as wilderness?

Q80 6:82

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 215

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210. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $250 per year. Would you vote for or against designation of these areas as wilderness?

Q81 6:83

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 215

211. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $100 per year. Would you vote for or against designation of these areas as wilderness?

Q82 6:84

(CHECK ONLY ONE ANSWER)

|___| 1. FOR
|___| 2. AGAINST

SKIP TO QUESTION 215
212. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $50 per year. Would you vote for or against designation of these areas as wilderness?

(Q83 6:85)

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

SKIP TO QUESTION 215

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213. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $25 per year. Would you vote for or against designation of these areas as wilderness?

(Q84 6:86)

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

SKIP TO QUESTION 215

214. Suppose you knew that if the Utah Wilderness Coalition (UWC) proposed wilderness areas were not designated, and they remained open to all uses, such as increased grazing or mining or mechanized recreation, it would cost your family $10 per year. Would you vote for or against designation of these areas as wilderness?

(Q85 6:87)

(CHECK ONLY ONE ANSWER)

|__| 1. FOR
|__| 2. AGAINST

215. Random questions

(R10 6:88)

(CHECK ONLY ONE ANSWER)

|__| 1. Jump to path A (GO TO QUESTION 216)
|__| 2. Jump to path B (GO TO QUESTION 220)
|__| 3. Jump to path C (GO TO QUESTION 224)
|__| 4. Jump to path D (GO TO QUESTION 228)
|__| 5. Jump to path E (GO TO QUESTION 232)
|__| 6. Jump to path F (GO TO QUESTION 236)

SKIP TO QUESTION 240
216. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $1000?  

(Q86A 6:89)

(CHECK ONLY ONE ANSWER)

<table>
<thead>
<tr>
<th></th>
<th>1. YES (GO TO QUESTION 219)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>

217. Would you pay $500?  

(Q86B 6:90)

(CHECK ONLY ONE ANSWER)

<table>
<thead>
<tr>
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<th>1. YES (GO TO QUESTION 240)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
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</table>

218. Why not?  

(Q86C 6:91)

(CHECK ONLY ONE ANSWER)

<table>
<thead>
<tr>
<th></th>
<th>1. Not worth it.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Shouldn't have to pay.</td>
</tr>
<tr>
<td></td>
<td>3. Other</td>
</tr>
</tbody>
</table>

SKIP TO QUESTION 240

219. Would you pay $2000?  

(Q86D 6:92)

(CHECK ONLY ONE ANSWER)

<table>
<thead>
<tr>
<th></th>
<th>1. NO</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2. YES</td>
</tr>
</tbody>
</table>

SKIP TO QUESTION 240

220. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $500?  

(Q87A 6:93)

(CHECK ONLY ONE ANSWER)

<table>
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<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>

221. Would you pay $250?  

(Q87B 6:94)

(CHECK ONLY ONE ANSWER)

<table>
<thead>
<tr>
<th></th>
<th>1. YES (GO TO QUESTION 240)</th>
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<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>
222. Why not?  

(CHECK ONLY ONE ANSWER)  

|   | 1. Not worth it.  
|---| 2. Shouldn't have to pay.  
|---| 3. Other  

SKIP TO QUESTION 240  

---

223. Would you pay $1000?  

(CHECK ONLY ONE ANSWER)  

|   | 1. NO  
|---| 2. YES  

SKIP TO QUESTION 240  

---

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224. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $250?  

(CHECK ONLY ONE ANSWER)  

|   | 1. YES (GO TO QUESTION 227)  
|---| 2. NO  

225. Would you pay $100?  

(CHECK ONLY ONE ANSWER)  

|   | 1. YES (GO TO QUESTION 240)  
|---| 2. NO  

226. Why not?  

(CHECK ONLY ONE ANSWER)  

|   | 1. Not worth it.  
|---| 2. Shouldn't have to pay.  
|---| 3. Other  

SKIP TO QUESTION 240  

---

227. Would you pay $500?  

(CHECK ONLY ONE ANSWER)  

|   | 1. NO  
|---| 2. YES
228. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $100?

(Q89A 6:101)

<table>
<thead>
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<th>1. YES (GO TO QUESTION 240)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>

229. Would you pay $50?

(Q89B 6:102)

<table>
<thead>
<tr>
<th></th>
<th>1. YES (GO TO QUESTION 240)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>

230. Why not?

(Q89C 6:103)

<table>
<thead>
<tr>
<th></th>
<th>1. Not worth it.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2. Shouldn't have to pay.</td>
</tr>
<tr>
<td></td>
<td>3. Other</td>
</tr>
</tbody>
</table>

231. Would you pay $250?

(Q89D 6:104)

<table>
<thead>
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<th></th>
<th>1. NO</th>
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<tbody>
<tr>
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</table>

232. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $50?

(Q90A 6:105)

<table>
<thead>
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<th>1. YES (GO TO QUESTION 235)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. NO</td>
</tr>
</tbody>
</table>
233. Would you pay $25? 

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 240)  
|   | 2. NO  

234. Why not? 

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.  
|   | 2. Shouldn't have to pay.  
|   | 3. Other  

SKIP TO QUESTION 240

235. Would you pay $100? 

(CHECK ONLY ONE ANSWER)

|   | 1. NO  
|   | 2. YES  

SKIP TO QUESTION 240

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236. If you could pay a fee to use the wilderness areas proposed by the Utah Wilderness Coalition (UWC) in any way you wanted, such as increased grazing or mining or mechanized and non-mechanized recreation, would you be willing to pay $25? 

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 239)  
|   | 2. NO  

237. Would you pay $10? 

(CHECK ONLY ONE ANSWER)

|   | 1. YES (GO TO QUESTION 240)  
|   | 2. NO  

238. Why not? 

(CHECK ONLY ONE ANSWER)

|   | 1. Not worth it.  
|   | 2. Shouldn't have to pay.  
|   | 3. Other  

SKIP TO QUESTION 240
239. Would you pay $50? 

(Q91D 6:112)

<table>
<thead>
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<th></th>
<th>1. NO</th>
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<tbody>
<tr>
<td></td>
<td>2. YES</td>
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</tbody>
</table>

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240. If you were given a vote in the next election as to whether the BLM proposed wilderness areas were to be designated as actual wilderness areas, what would you do (READ ANSWERS FIRST)?

(Q92 6:113)

<table>
<thead>
<tr>
<th></th>
<th>1. VOTE NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. PROBABLY NOT VOTE</td>
</tr>
<tr>
<td></td>
<td>3. VOTE YES</td>
</tr>
</tbody>
</table>

241. If you were given a vote in the next election whether the wilderness areas proposed by UWC were to be designated as actual wilderness areas, what would you do (READ ANSWERS FIRST)?

(Q93 6:114)

<table>
<thead>
<tr>
<th></th>
<th>1. VOTE NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. PROBABLY NOT VOTE</td>
</tr>
<tr>
<td></td>
<td>3. VOTE YES</td>
</tr>
</tbody>
</table>

242. household data questions

V1

Now we need some information about you and your family.

243. confidential reminder

V2

Remember that this information will be strictly confidential.

244. What is your age?

(Q94 6:115-117)

|   |   |   |

245. How many persons over 18 live in your household?

(Q95 6:118-120)

|   |   |   |

246. How many persons 12-18 live in your household?

(Q96 7:1-3)

|   |   |   |

247. How many years of education have you completed (HS = 12; BS = 16)?

GH = 21
W = 0

(Q97 7:4-5)

|   |   |   |
248. Please identify your employment status from the list I will read.

Q98 7:6

(CHECK ONLY ONE ANSWER)

|   | 1. EMPLOYED FULL TIME  
|---|-------------------------
|   | 2. EMPLOYED PART TIME  
|   | 3. UNEMPLOYED SEEKING WORK  
|   | 4. NOT EMPLOYED BY CHOICE  
|   | 5. HOUSEWIFE OR HOUSEHUSBAND  
|   | 6. STUDENT  
|   | 7. RETIRED  
|   | 8. OTHER  

249. Are you:

Q99 7:7

(CHECK ONLY ONE ANSWER)

|   | 1. WHITE/NON-HISPANIC  
|---|-------------------------
|   | 2. HISPANIC  
|   | 3. NATIVE AMERICAN  
|   | 4. ASIAN  
|   | 5. AFRICAN AMERICAN  
|   | 6. OTHER  

250. Do you live with a spouse or partner?

Q100 7:8

(CHECK ONLY ONE ANSWER)

|   | 1. NO (GO TO QUESTION 254)  
|---|-------------------------
|   | 2. YES  

251. How many years of education has your spouse or partner completed?

Q101 7:9-10

|   |  

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252. Please identify your partner's employment status

Q102 7:11

(CHECK ONLY ONE ANSWER)

|   | 1. EMPLOYED FULL TIME  
|---|-------------------------
|   | 2. EMPLOYED PART TIME  
|   | 3. UNEMPLOYED SEEKING WORK  
|   | 4. NOT EMPLOYED BY CHOICE  
|   | 5. HOUSEWIFE OR HOUSEHUSBAND  
|   | 6. STUDENT  
|   | 7. RETIRED  
|   | 8. OTHER  

253. Is your partner:  
(Q103 7:12)  
(CHECK ONLY ONE ANSWER)  
|__| 1. WHITE/ NON-HISPANIC  
|__| 2. HISPANIC  
|__| 3. NATIVE AMERICAN  
|__| 4. ASIAN  
|__| 5. AFRICAN AMERICAN  
|__| 6. OTHER  

254. I will read some categories of incomes. Please stop me when I get to the category your 1993 total household (before tax) income (gross taxable income on your tax form) fell in. {IF THEY DON'T KNOW 1993 INCOME, USE 1992 INCOME} Remember that this information will be kept confidential and that your name will not be associated with your answer.  
(Q104 7:13)  
(CHECK ONLY ONE ANSWER)  
|__| 1. $0 - 14,999  
|__| 2. $15,000 - 24,999  
|__| 3. $25,000 - 34,999  
|__| 4. $35,000 - 44,999  
|__| 5. $45,000 - 59,999  
|__| 6. $60,000 - 74,999  
|__| 7. $75,000 - 100,000  
|__| 8. OVER $100,000  
|__| 9. NO RESPONSE  

255. end of interview  

Thank you for your help.  

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256. This is the end of the questionnaire. Please save your responses.  

(CHECK ONLY ONE ANSWER)  

|__| 1. SAVE ANSWERS  
|__| 2. ERASE ANSWERS  

257. Time questionnaire completed  

(ETIME 7:15-19)  

SAVE IF (#256 = 1)