

***Enhancing and Improving Designs for  
Auction Mechanisms that Can Be Used  
by the EPD for Irrigation Auctions***

Water Policy Working Paper #2002-012

**September, 2002**

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## OUTLINE

EXECUTIVE SUMMARY	3
1. INTRODUCTION	5
2. INITIAL EXPERIMENTS: REPLICATING THE 2001 AUCTION EXPERIENCE	8
3. ONE-SHOT AUCTIONS: SEALED OFFER AND POSTED PRICE	15
4. THE 2002 IRRIGATION AUCTION	20
5. FARMER REACTION TO THE 2002 IRRIGATION AUCTION	23
6. SUMMARY	26
APPENDIX 1 – EXPERIMENT INSTRUCTIONS AND ANNOUNCEMENTS	
A1.1 INSTRUCTIONS: REPLICATION OF 2001 IRRIGATION AUCTION	58
A1.2 INSTRUCTIONS: AUCTION WHERE ONLY REJECTED OFFERS CAN BE REVISED	62
A1.3 EXPERIMENT ANNOUNCEMENTS	64
A1.4 INSTRUCTIONS: POSTED OFFER AUCTION	67
A1.5 INSTRUCTIONS: ONE-SHOT SEALED OFFER AUCTION	71
A1.6 INSTRUCTIONS: SEALED OFFER AUCTION WITH ANNOUNCED RESERVATION PRICE (WITH TAKING)	76
A1.7 INSTRUCTIONS: SEALED OFFER AUCTION WITH ANNOUNCED RESERVATION PRICE (WITHOUT TAKING)	82
APPENDIX 2 – EXPERIMENT VALUES	
A2.1 VALUES USED IN EXPERIMENTS	86
APPENDIX 3 – 2002 SURVEY OF ELIGIBLE FARMERS	
A3.1 SURVEYS	97
A3.2 TRANSCRIPT OF COMMENTS: FACTORS AFFECTING OFFER PRICE/PARTICIPATION	103
A3.3 TRANSCRIPT OF COMMENTS: COMPARISON OF 2001/2002 AUCTIONS	109
A3.4 TRANSCRIPT OF COMMENTS: WILLINGNESS TO INSTALL A METER	115

## **EXECUTIVE SUMMARY**

In March, 2001 the first Flint River Drought Protection Act Auction was conducted. This iterative sealed offer auction was held at eight sites in the Flint River Basin. Several hundred farmers participated, and a total of 33,006 acres were taken out of irrigation at an average cost of \$136 per acre. This report describes some factors that led us to consider alternative auction institutions, the results of laboratory experiments that explore different auction rules, and the eventual outcome of the 2002 Irrigation Auction.

Our initial experiments explored the impact of the farmers' experience in the 2001 Irrigation Auction would have on the performance of an auction conducted in subsequent years. We found that the increase in prices and acres accepted in the final round of the 2001 auction was likely to result in a significant increase in offers in a future auction conducted with similar rules. Two iterative auctions, however, resulted in prices at about the level of the initial auction. An auction that replicated the rules of the 2001 Irrigation Auction, but with the final offer submission round announced in advance, and an iterative auction in which only rejected offers could be revised.

Despite the promise of these two auction institutions, our belief that a constraint on the maximum average price paid in the auction would be binding, combined with the high implementation costs of an iterative auction, led us to explore the possibility of conducting a one-shot auction.

As we suspected, a simple one-shot sealed offer auction resulted in offers far in excess of the opportunity cost of the land. This was true regardless of whether the involuntary takings provisions of the Flint River Drought Protection Act were implemented in the auction. In contrast, a posted price auction performed well: all participants with a value less than the posted price offered to sell, and those with higher values retained their vouchers. Average prices in this auction were almost identical to those obtained in a sealed offer auction that allowed rejected offers to be revised.

We were initially skeptical that any additional benefits would be obtained by using a hybrid of the sealed offer and posted price auctions: a sealed offer auction with announced reservation

price. We suspected that the announced reservation price would be an obvious focal point for offers, and that most offers would be at or slightly below this level. However, subsequent laboratory experiments and the offers submitted in the 2002 Irrigation Auction contradicted our intuition.

Very few offers were made at the reservation price, and many offers were significantly below it. In the 2002 Auction, offers ranged from \$74 to \$150 per acre, and offers were received covering more than 50,000 acres. For small numbers of acres (less than 30,000) the average offer price was about equal to that received in 2001. However, for larger numbers of acres, the average offer was substantially lower in the 2002 Irrigation Auction. Our experiments indicate that this was the result of the auction institution, and not due to the threat of involuntary taking.

## 1. INTRODUCTION

In March 2001, the first Flint River Drought Protection Act auction was conducted. This auction was conducted as an iterative sealed-offer auction. Farmers submitted offers (a per-acre price at which they were willing to suspend irrigation under a given permit for the remainder of the calendar year), which were ranked from lowest to highest-priced offer. A cutoff price was determined, and “provisional winners” were announced. No information was given about the magnitude of provisionally accepted or rejected offers. All farmers (whether provisional winners or losers) were then free to submit a revised offer. This process continued until no revised offers were submitted, or the EPD officials supervising the auction chose to end it.

Several hundred farmers participated in this auction, and a total of 33,006 acres were taken out of irrigation at an average cost of about \$136 per acre. Despite the declared successful outcome of this auction, two considerations led us to question the efficacy of repeating the procedures used in the 2001 Irrigation Auction.

In the final round of the 2001 Irrigation Auction, about twice as many offers were accepted as in any of the preliminary offer submission rounds. The maximum accepted offer increased from \$125 per acre in the fourth round to \$200 per acre in the fifth (final) round. We were concerned that if the same auction process was used, farmers would come into the auction with the expectation that relatively high offers would be accepted in the final round, and that they would therefore resist competitive pressures to decrease their offer prices. This could result in a much longer auction than was the case last year (in an effort to drive down offers through repeated offer-submission rounds) or retiring fewer acres from irrigation given the EPD’s budget constraint.

The second consideration was the result of laboratory experiments that we conducted. In an environment where collusion was possible<sup>1</sup> our experiments showed that the ratio of offers to

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<sup>1</sup> We observed efforts to share information and collude during the 2001 irrigation auction. Farmers brought cellular phones to the auction sites, and called friends and relatives at other sites in an effort to learn the maximum accepted offer price in each round. Other farmers made explicit efforts at collusion, encouraging others to submit offers at some fixed price.

value decreased over submission rounds; however, average offers were almost always 20 percent above the average value to participants. Moreover, the average price of provisionally accepted offers typically decreased for two or three rounds, but thereafter it tended to increase. We believe this was because participants gained information about the maximum accepted price in previous rounds, and those with provisionally accepted offers increased their offers. All of this raises the question of when (after how many rounds) the auction should end.

These concerns, combined with subsequent research (described in Section 2 below), caused us to dismiss the iterative discriminative auction that was used in 2001. Instead, we turned our attention away from discriminative auctions (where each farmer receives an amount equal to his or her own offer) to uniform price auctions (where each farmer receives the same price, regardless of the amount any given farmer actually offered). More specifically, we focused on the posted price auction: a price is specified at which the buyer is willing to purchase; sellers can either agree to offer at that price, or refuse. Any transactions that occur take place at this posted price.

Before conducting any experiments, we saw two advantages of the posted price auction. Our experience last year demonstrated the obvious incentive in a discriminative sealed offer auction for sellers to make offers at prices significantly above value. We expected this to be even more important in a one-shot auction without revisions (where competitive pressures to lower offers are muted), and after the observation that some farmers received up to \$200 an acre last year. Second, the possibility that the “involuntary taking” provision of the law would be implemented appeared more likely than last year. None of our previous research specifically addressed the question of how the possibility of a taking would affect incentives in either the discriminative-price sealed offer auction or in a uniform posted price auction.

We conducted experiments that compared the one-shot sealed offer auction with a posted price auction. We used identical values between sessions, and all experiments were held in an environment conducive to communication and collusion. We explained the involuntary takings provision to these subjects, and a taking did, in fact, occur.

The following section describes our initial experiments that focused on replicating the 2001 Irrigation Auction experience, and studying its effect on subsequent auctions. The third section lays out the experimental design for follow-up experiments that focused on the sealed bid and posted price auction mechanisms. Section 4 presents results from the 2002 Irrigation auction, and the final section summarizes our research and offers conclusions.

## 2. INITIAL EXPERIMENTS: REPLICATING THE 2001 AUCTION EXPERIENCE

Our initial interest was in replicating the 2001 Irrigation Auction, and determining the effect it would have on a subsequent auction using the same (or similar) rules. In order to accomplish this, subjects participated in two back-to-back auctions during the same session. The first implemented the rules of the 2001 Irrigation auction and the second either replicated this auction or was a modification of the original procedures. Below, we describe how these auctions were implemented in the lab, and the results that we obtained from our experiments.

### Replicating the 2001 Irrigation Auction

At the start of the experiment subjects were given two “vouchers” with a redemption value written on the front. Each voucher could be either kept or sold. If kept, the subject received the redemption value written on the voucher. If sold, the subject received the offer price at which he or she offered to sell the voucher. (The voucher corresponds to an auction certificate that covers one acre of land.) Appendix A1.1 contains instructions for this treatment. The vouchers ranged in value from \$3 to \$8; while voucher values differed between participants, the two vouchers held by any one participant had similar values (typically the same value or within \$1). Appendix A2.1 contains the values used in all of our sessions.<sup>2</sup>

Subjects submitted offers to sell the voucher, which were ranked in price from low to high. Provisional winners (those subjects who submitted offers at a price equal to or below our predetermined maximum) were announced, and subjects were allowed to revise offers. An important feature of this auction mechanism is that *all* participants (provisional winners and losers) were allowed to revise their offers. Therefore a participant whose offer was initially rejected could lower the offer, while a participant who submitted a low offer that was provisionally accepted could increase the offer. If accepted this would increase the earnings of the participant, but this comes at the risk of being left out of the final accepted vouchers. This replicates the incentives in the 2001 Irrigation Auction.

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<sup>2</sup> In pilot experiments (conducted in summer, 2001), an individual participant might have held vouchers with very low and very high values. Upon reflection, more homogeneous values for a single participant seemed a more reasonable representation of the value of irrigation to a farmer.

In the first three offer rounds, all offers at or below \$8 were provisionally accepted. This maximum price was not announced – only the voucher numbers associated with provisionally accepted offers. In Round 4, all offers below \$8 were provisionally accepted, but only half of those at \$8. After announcing the provisional winners from Round 4, we made the following (verbal) announcement: “Some of you may notice that when you offered both of your vouchers for \$8, one was accepted and the other was not accepted. This is because of the rule explained to you concerning ties. With more than one voucher offered at the maximum price we are accepting in a round, the winners are chosen randomly when we are unable to buy all vouchers offered at that price.” In Round 5, however, we accepted all offers at or below \$12.

This replicated the experience farmers had in the 2001 Irrigation Auction in several respects. During this auction the maximum accepted offer was roughly constant in the first three offer rounds (\$130 in Round 1 and \$127 in Rounds 2 and 3). In Round 4, all offers below \$125 per acre were accepted, but only some at this price. At several auction sites, there were farmers who had submitted more than one offer at \$125/acre, but had only some of these offers accepted. The tie-breaking rule had to be publicly explained, so we believe that many farmers knew the maximum accepted per-acre price in Round 4. In the final round, the maximum accepted offer (\$200) was about 50-percent higher than in the preceding offer submission rounds.

#### Implementing an Auction without Provisional Winners

In some sessions, the second auction was a slightly modified version of the iterative auction described above. All procedures remained unchanged, except that any acceptances were final and could not be revised in subsequent offer rounds. Subjects were told that we would accept at most three offers in each round, and that accepted offers could not be revised. They were also told that we had a maximum price that we could pay for vouchers, but we did not announce this price. This maximum price was set at \$8 for comparability with the first auction. Subjects also were not told the number of offer rounds that would be conducted. Appendix A1.2 contains instructions from this auction treatment.

### Replicating the Farmers' Experience

The experimental sessions were organized to replicate the experience that farmers participating in a new auction would have encountered. All sessions were held in an open area outside of the experimental laboratory. Chairs were arranged in a circle, and there was no prohibition on subjects talking to one another about the auction or anything else. In addition, we had no restrictions on friends or family members participating together. In fact, subjects often informed one another about the opportunity to participate in an experiment, and it was not unusual for several friends to sign up together to participate. While this is unusual in economics experiments, we believed this to be a more accurate reflection of an actual auction where farmers who know one other participate together.

All experiments started with a trial auction, in order to familiarize subjects with the rules, how earnings were calculated, and to give them some idea of the range of offers that might be made and considered. We had some concern about doing this given that most farmers had no experience with such an auction prior to the 2001 Irrigation Auction. However, there were several information sessions held, and farmers had ample opportunity prior to the auction to talk with one another about bidding strategies and expectations of others' behavior.<sup>3</sup> Our subjects did not have these opportunities, and so to reduce "noise" in initial offers we decided to conduct a three-round trial auction that had no impact on their earnings.

Table 2.1 shows the sequence of experiments in each of these sessions. The first experiment in each session was a replication of the 2001 Irrigation Auction, described above (and denoted "old" in Table 2.1). The range of accepted offers (maximum, minimum, and average accepted offer), and number of accepted offers, was publicly announced in order to provide subjects with similar information to that provided to the public in a press release after the 2001 Irrigation Auction.

In some sessions the second experiment was a replication of this; however, the maximum accepted price was \$8 in all rounds, and the tie rule was not imposed in the penultimate round.

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<sup>3</sup> In fact, at the auction site that Laury supervised in 2001 (Webster County), many participants were heard discussing just such factors during the registration period the day before the auction.

In the remaining sessions, the second experiment was an iterative auction with no provisional winners (all acceptances were final, denoted “new” in Table 2.1). In one of these sessions (September 24), the lowest three offers were accepted, regardless of the price. In two other sessions (October 3 and October 8), three offers were accepted in each round, subject to a maximum price of \$8. In one session, the price constraint of \$8 was imposed on the maximum *average accepted price* (including acceptances in all offer rounds). We tested this constraint because of our belief that the EPD’s decision of which offers to accept (in the event of a new irrigation auction in 2002) could be driven by a maximum average price rather than a simple maximum price constraint.

After the first three sessions, we became concerned that subjects were not fully aware of the change in decision rules between the fourth and fifth rounds of the first experiment, and did not discuss their experiences with one another sufficiently. Therefore, all remaining sessions included announcements made by the experimenter (“with announcements” in Table 2.1). The text that was read for these announcements is contained in Appendix A1.3. These announcements encouraged subjects to talk about their experiences in the prior auctions (the trial auction or initial auction for payment). After the replication of the 2001 Irrigation Auction their attention was called to the fact that “many more offers were accepted (and at higher prices) in the final round than were provisionally accepted in any earlier round of the auction.” Further, they were encouraged to think about and discuss the information we provided them about accepted offers in the initial auction.

### Results from Initial Experiments

We evaluate the performance of the auction mechanisms shown in Table 2.1 by comparing the average cost of obtaining a specified numbers of vouchers in the auction. In each session we conducted, the first auction utilized the 2001 procedures (sealed offer with revisions). In each figure (for example, see Figure 2.1) we show what the average cost would be (given the offers submitted in the auction) of obtaining the number of vouchers shown on the horizontal axis. The thick black line in each of the following figures shows the average cost of obtaining the vouchers over all nine (2001 replication) auctions that were conducted first in each of these sessions. Identical procedures were used in all nine auctions, and so we present these data in this

aggregated format. More vouchers were offered in some auctions than others (either because there were different numbers of participants – ranging from 12 to 15 – or because participants with high values dropped out of some auctions). Therefore, this line is not smooth for more than 20 vouchers because there are fewer observations in this range.

We are interested in seeing how their experience in the first auction (a dramatic increase in the maximum accepted price and number of vouchers purchased) affects performance of any subsequent auction (using old or new procedures). We will also compare the performance of each of these auction mechanisms when preceded by what we call the “2001 experience.” As in Table 2.1, the “old” auction refers to the sealed offer auction with revisions, and the “new” auction refers to a sealed offer auction where (up to) three vouchers are purchased in each round and accepted offers cannot be revised.

Recall that our first sessions did not use announcements that invited subjects to talk and called specific attention to their experience in the first auction. Even without such announcements, average prices were higher in a second auction conducted using the same procedures. Figure 2.1 shows the average cost in a second auction using the same rules (thin blue line) is higher for almost any number of vouchers offered in this auction. As shown in Figure 2.2, the new procedures result in even higher prices (red line), unless a maximum price constraint is imposed (orange line). In fact, when this constraint is imposed, the average cost using the new procedures is lower than in the initial auction (see Figure 2.3), despite the increase in prices they experienced in the first auction in the session.

As noted earlier, we were concerned that subjects weren’t fully aware of the increase in prices and acres that occurred in the last round of the first auction. As shown in Figure 2.4, making these announcements caused a dramatic increase in offers under both the old and new mechanisms. However, Figure 2.5 shows that the new auction with a maximum price constraint performs as well as the initial auction, even after the announcements (at least when about half or more of the vouchers are obtained).

With announcements, there is little difference in the performance of these auction mechanisms if only a few vouchers are purchased. Differences occur when more than about 25 percent of available vouchers are purchased. The new auction mechanism with a maximum price constraint does better than the old mechanism (see Figure 2.6). If a maximum *average* price constraint is used, prices are even lower; because this is a more strict constraint, however, prices could not be higher using this decision rule.

In one session using the old auction procedures (shown in Figure 2.6), we explored the effect of announcing the final offer submission round just before it occurred. This results in prices about equal to those observed using the new mechanism (with no provisional winners), and even lower if the majority of vouchers are obtained. We speculate that bidders' risk aversion may drive down offer prices if participants know that they will not have another chance to revise the offer price.

Although offer prices were almost uniformly higher in the second auction conducted in each session, we wanted to be sure that this was because of the increase in prices and acres that occurred in the first auction and not simply the result of experience. In order to address this, we conducted one session where the initial auction used a maximum price of \$8 in all rounds. Figure 2.7 compares two auctions using the old procedures: one was preceded by the 2001 experience (blue line) and the other was preceded by an auction with a fixed maximum price (red line). The effect is strong: the average cost of obtaining any number of vouchers is much higher following the 2001 experience. Without this experience, the cost of obtaining vouchers is almost identical to that in the first auction (even lower for the first few vouchers, as shown in Figure 2.8). However, fewer vouchers are offered in the second auction – only about 2/3 of the total number available in the auction. Those with higher values apparently learned in the first auction that it was unlikely their offers would be accepted and so they dropped out of the second auction after being excluded in the first two rounds.

### Conclusions

While a discriminative auction where some vouchers are accepted each round (subject to a price constraint) showed promise, two factors pulled us away from any of these auctions. First, we felt

that implementing the involuntary takings provision of the Flint River Drought Protection Act was increasingly likely. Second, the state had just over \$5 million remaining from the 2001 auction, and having the \$4.5 million spent in 2001 replenished was uncertain due to the economic climate in the state. If the state were to attempt to take more acreage out of irrigation in 2002 than the previous year, then it was quite likely that a maximum average price constraint would drive the auction. For example, if the state wanted to take 50,000 acres out of irrigation and could spend only \$5.5 million to do so, this implies that the average price paid in the auction cannot exceed \$110/acre.

The choice of institution may yield efficiency differences. However, in this situation the total cost to the EPD of obtaining the target acreage would be the same, regardless of the particular auction mechanism chosen.<sup>4</sup> Therefore, we focused on two other institutions that involved far lower implementation costs (both for the farmers and the EPD): a one-shot sealed offer auction and a posted price auction.

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<sup>4</sup> To the extent that the choice of auction affects offers, it could also determine the number of acres offered voluntarily in the auction and the number that would be taken on an involuntary basis.

### **3. ONE-SHOT AUCTIONS: SEALED OFFER AND POSTED PRICE**

When we turned our attention to these auctions, we recognized that they would be far easier to implement, and be more easily understood for the farmer, than the iterative procedures used earlier. The sealed offer auction is quite similar to that used in 2001. Farmers submit a per-acre offer price. After all have been submitted they are ranked from low to high, and the lowest priced offers are accepted. These acceptances are final – there is no chance to revise a rejected (or accepted) offer. We were, however, concerned that a sealed offer auction without iterations would lead to significant over-bidding relative to value, especially after the 2001 auction experience. Because of this concern we also tested a simple posted-price auction: a price is posted that specifies how much the EPD is willing to pay to take land out of irrigation. Farmers may then accept this price (in which case they receive this posted price for all acres taken out of irrigation) or reject it (in which case they receive nothing). This is a uniform price auction – all farmers are paid the same per-acre price, even those with values substantially below the posted price. However, this avoids the risk (inherent in the discriminative sealed offer auction) that farmers with values close to the posted price are left out due overbidding.

The new experimental sessions are listed in Table 3.1. In this series of experiments, subjects participated in a single auction during a session. Some subjects had participated in one of the sessions described above, and others had never participated in an auction experiment. This replicated the mix of participants we expected in an actual auction: some farmers would have participated previously, or talked with others who had, while some farmers would be relatively inexperienced. Because subjects participated in only one auction, voucher values were higher (ranging from \$15 to \$23), but the distribution was essentially unchanged from the experiments reported above.

Because we were concerned about the possibility of an involuntary taking (and had not previously conducted any experiments exploring the effect of it), we implemented these provisions in most of the sessions reported in this section. All posted price sessions included involuntary taking (see Appendix A1.4 for the instructions); we conducted the sealed offer auction with and without involuntary taking (Appendix A1.5 contains these instructions). The results from these experiments are described below.

### Results: Sealed Offer and Posted Price Auctions

The posted price auction is quite transparent: anyone with a value less than the posted price should agree to sell at this price, and those with values higher should not offer to sell. (Those with values equal to the posted price are indifferent between selling and not.) Ideally, in the sealed offer auction those with the lowest values will submit the lowest offer prices, but differences in expectations, experience, and risk aversion may lead to different results.

We consider three measures of performance for the sealed offer and posted price auctions. The first, which is most relevant to the EPD in choosing between institutions, is the average price paid in each auction. A lower average price translates as a lower total cost of obtaining a fixed number of vouchers. However, as noted above, if an average price constraint is binding a lower average price implies more vouchers obtained voluntarily in the auction (and therefore fewer vouchers taken on an involuntary basis).

Because the same price is paid for all units in a posted price auction, the average price is constant for all vouchers that are offered in the auction. Figure 3.1 shows the average price under both auctions. For comparison, the horizontal lines show the number of vouchers offered in a posted price auction with two different prices: \$18 and \$19.40. In these experiments the posted price was actually \$18, and the length of the line shows the number of vouchers actually offered in this treatment. Virtually all subjects made offers as expected. Therefore, we constructed the \$19.40 line, which shows the number of participants that should have made offers (those with values less than \$19.40) if the price had been \$19.40.<sup>5</sup>

In the sealed offer auction, very few vouchers were offered at a price less than \$18. Therefore, the average price in the sealed offer auction is lower only for a very small number of vouchers relative to the total number available in the auction. These experiments suggest that a posted price auction would be less expensive if a substantial number of vouchers are desired.

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<sup>5</sup> This will be used for comparison with another auction institution described below.

We define the opportunity cost of selling a voucher as the value that voucher. By comparing the total cost of obtaining a specified number of vouchers relative to the total value to the holder of these vouchers, we can measure over-bidding in the sealed offer auction. Notice that this measure generally decreases for the posted price auction because the average cost is constant but the values tend to increase as more vouchers are offered (see Figure 3.2). Notice that this ratio is quite small for the first few vouchers in the sealed offer auction. In one of these auctions there was some under-bidding relative to value (this could be the result of confusion or due to the involuntary takings provision). However, overbidding increases as more vouchers are offered, and offers are quite high (more than 20 percent over value) when a large number of vouchers are offered.

Finally, we can measure the efficiency of the auction (whether we obtained the lowest valued vouchers from the standpoint of those holding them) by tracking the cost of obtaining vouchers relative to the *minimum* opportunity cost. This is shown in Figure 3.3. The posted price auction is far more efficient: those vouchers with the lowest values are more often offered in this auction format.

We also examined the effect of involuntary taking in the sealed offer auction. The possibility of involuntary taking should not affect these choices in a posted price auction: if a voucher is taken the subject simply receives the posted price. Therefore, those with higher values cannot gain by offering to sell at the posted price. For this reason, we did not conduct additional experiments using a posted price auction without involuntary taking.

A priori, the effect of involuntary taking in the sealed offer auction was not as clear. Because those with taken vouchers receive the *average price* paid out in the voluntary auction, participants must consider the perceived likelihood that that his or her voucher will be taken and the expected average price. Someone with a high value who believes it likely that their voucher will be taken might offer to sell below value in the hope of selling at a price above the average price paid out in the auction. Alternatively, there may be a strategic reason for increasing offers if one believes that this will have a positive impact on the average price paid. This is particularly relevant given that subjects in our experiment had more than one voucher.

Figure 3.4 shows the cost of obtaining vouchers relative to the value of these vouchers in a sealed offer auction with and without taking. (There were more participants in the auction without taking, and so more vouchers were offered.) For almost any number of vouchers overbidding is higher in the auction without taking, indicating that subjects bid closer to value, on average, when there is a threat of implementing the involuntary takings procedures.

#### Comparison with Iterative Auction, with Taking

It is useful to compare an auction that allows those with rejected offers to revise them with our one-shot auctions. The auctions shown in Figure 3.5 each used the same values and implemented the involuntary takings provisions. The auction with revisions was quite similar to the “new” procedures described above; however we did not accept a fixed number of vouchers in each round. Instead, we imposed a maximum average price constraint and purchased as many vouchers as we could in each round, subject to the constraint that the average cost of vouchers purchased (over all rounds) not exceed \$18. By using this average price, we can directly compare the performance of this auction with our posted price experiments.

Whether the measure is the average price paid in the auction (Figure 3.5) or efficiency (Figure 3.6), the posted price and sealed offer auction with revisions have almost identical performance properties. Slightly more vouchers could be obtained voluntarily in the sealed offer with revisions, but certainly not enough to justify the additional implementation costs. The one-shot sealed offer auction had substantially higher prices and lower efficiency than either of the other auction institutions.

#### A Sealed Offer Auction with Announced Reservation Price

When the EPD announced their 2002 auction rules – a one-shot sealed offer auction with announced reservation price – we suspected that the reservation price would serve as a focal point for offers and therefore would yield few gains over a simple posted price auction. We then conducted a series of experiments to explore whether this was the case.

Our experiment instructions were quite close to those used before; we explained the “tie rule”<sup>6</sup> and takings provision using language from the letter the EPD sent to farmers prior to the March, 2002 Irrigation Auction. We conducted two sessions that included the possibility of involuntary taking and another two sessions that did not mention involuntary taking (instructions are in Appendices A1.6 and A1.7, respectively).

Much to our surprise, many participants made offers at prices below the \$19.40 reservation price. In the auction with taking, about 25 percent of offers were at \$19.40, while about 40 percent of all offers were at or below \$19.00; in the auction without taking, just over 10 percent of offers were at \$19.40, with almost 70 percent of all offers at or below \$19.00.

There was very little difference between average offers or efficiency in the auctions with and without taking (Figures 3.7 and 3.8, respectively). In addition, these auctions performed better than the posted price auction using either of these measures.

### Conclusions

The results of these experiments indicate that a one-shot auction can perform as well as the iterative auction procedures used in 2001. Although there is a strong incentive to over-bid, relative to value, in a sealed offer auction, announcing the reservation price that is to be used has a dramatic effect on offers. Figure 3.9 shows the average price paid in three one-shot auctions: posted price, sealed offer where no reservation price is announced, and sealed offer with an announced reservation price. Unless very few vouchers are obtained, the average price paid is much lower in either the posted price auction or the auction with an announced reservation price.

Next, we look at the offers that were made in the 2002 Irrigation Auction.

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<sup>6</sup> This refers to the provision that is implemented if more offers are made at the maximum accepted price than we are able to accept.

#### 4. THE 2002 IRRIGATION AUCTION

The 2002 Irrigation Auction implemented a sealed offer auction, with an announced reservation price of \$150. This maximum was lower than the maximum accepted price in 2001 (\$200 per acre); however it was also considerably higher than the *average price* paid in 2001 (\$136 per acre). We had two concerns going into this auction. First, in 2001 over 7,000 acres were offered at prices between \$151 and \$200 per acre. We felt that some of these participants might not offer to suspend irrigating this year, with a maximum price of \$150. In addition, as stated earlier, we believed that the announced reservation price would serve as a focal point for offers. If most offers were at this price, only about 35,000 acres could be taken out of irrigation by staying within the remaining (\$5.5 million) budget.

In 2002, there were more acres (13 percent) and more permits (20 percent) eligible to participate than in 2001. There were an additional 192 permits that were declared eligible for the 2002 auction that were not included in the 2001 auction. This increase was offset by 82 permits included in the 2001 Irrigation Auction that were subsequently declared ineligible for the 2002 auction. Of these 82 permits, more than half (49) were not offered in the 2001 auction. Of the remaining vouchers, 17 were “losers” in 2001 (the offers were not accepted) and 16 were “winners.” In all, a total of \$297,033 was paid in the 2001 Irrigation Auction to the winners whose certificates were not eligible in 2002.

Below we compare the performance of the 2001 and 2002 irrigation auctions. We first examine only those certificates eligible in both auctions. Next, we compare the overall performance of both auctions.

##### Certificates Eligible in Both the 2001 and 2002 Irrigation Auctions

Of the 686 permits eligible for the 2002 Irrigation Auction, 494 (72 percent) were also eligible in 2001. We first focus on these 494 permits so that we can directly compare behavior between the two auctions.

On average, offers for these permits were lower than in 2001. Of the 494 permits eligible in both auctions, 255 were offered in the 2002 Irrigation auction. The average offer made by those who

participated in both auctions decreased from \$186.63 in 2001 to \$133.45 in 2002. Of course, offers greater than \$150 per acre were prohibited this year; however, it is interesting to note the number of permits that were offered this year despite extremely high offer prices on those same permits in 2001. For example, over 30 percent of this year's offers (80 of 255) were for permits with offers greater than \$150 in the 2001 auction. Almost 25 percent (61 of 255) were for permits with offers greater than \$200 in the 2001 auction.

There were a total of 214 people that made offers in both the 2001 and 2002 Irrigation Auctions. Overall, 112 participants (52 percent) decreased their offer price from 2001 to 2002. This decrease in offers ranged from -\$862.50 to -\$0.05. Only 19 participants did not change their offer price. The remaining 83 participants increased their offers, from \$1 to \$70. Figure 4.1 shows the distribution of the change in offers between 2001 and 2002. Not only did more participants decrease their offer price than those who increased it, the absolute magnitude of the decrease in offer price was larger than the increase in offer price.

This provides us with some initial evidence that the 2002 Irrigation Auction outperformed the 2001 Auction. Next we look at all offers in both auctions.

#### Comparing the 2001 and 2002 Irrigation Auctions: All Offers

About 13 percent fewer acres were offered in 2002 than in 2001. However, this was not a surprise given the constraint on offer prices this year, and the fact that offers ranged from 1-cent to \$1,000 per acre in the 2001 Irrigation Auction.

Recall that we were concerned that some of the 2001 winners (who made offers between \$151 and \$200 per acre) would not participate in this year's auction. Taken as a whole, this did not happen. There were a total of 37 offers between \$151 and \$200 in the 2001 Irrigation Auction. Of these, only 2 permits were not offered in the 2002 auction. In fact, 23 of these permits were winners in the 2002 auction, with offers ranging from \$94 to \$145 per acre. The remaining 11 permits were losers in this year's auction.

Over half of this year's winners were also winners last year (52 percent), and only about 12 percent of this year's winners were losers last year. This year's losers were about equally divided between winners and losers last year (34 percent and 30 percent respectively; the remaining losers were ineligible or chose not to participate in 2001).

The average price paid was lower in 2002 than in 2001 (\$127.96 compared with \$135.70) and more acres were obtained (40,861 versus 33,006). Figure 4.2 presents what the average cost would be of obtaining a specified number of acres in both the 2001 and 2002 auctions. The range of acres represents the total number offered in each auction, and not the number of acres actually taken out of irrigation in each year. When fewer than 30,000 acres are targeted, the average price paid in 2001 was somewhat lower than what could be achieved this year. However the difference is small (the maximum difference is \$6.35). After this, the increase in average cost in the 2001 auction is dramatic. For example, to obtain about 40,000 acres (the number obtained in the 2002 Irrigation Auction) the average cost would have been \$154.44 in the 2001 auction, compared with \$127.55 in this year's auction. Figure 4.3 shows the difference in average cost between 2001 and 2002; the negative value for the highest number of acres shows that the average cost was lower in 2002.

Of those who were eligible in both years, over half (57 percent) of those whose offers were not accepted last year did not participate in the 2002 Irrigation Auction. Because those with the highest values did not participate in this year's auction (due to the upper limit on offers), the distribution of 2002 offers is truncated at \$150 per acre. However, using *all* submitted offers the distribution of acres offered below \$150 per acre is quite different between the 2001 and 2002 Irrigation Auctions, as shown in Figure 4.4. The number of acres offered is quite similar at offer prices below \$125 an acre (14,053 in 2001 compared with 12,786 in 2002). However, in 2002 almost four-times as many acres were offered at prices between \$125 and \$150 than in 2001 (11,571 in 2001 compared with 40,123 in 2002).

## 5. FARMER REACTION TO THE 2002 IRRIGATION AUCTION

In April, 2002, we sent a survey to all farmers who were eligible to participate in the 2002 irrigation auction. The goal was to obtain more information about these farmers, and to assess their reaction to the new auction procedures. A separate survey was sent for each eligible permit, so farmers with multiple permits received more than one copy of the survey. Appendix A3.1 contains copies of the three surveys sent to those with accepted offers, those with rejected offers, and those who did not participate in the auction. Combined, we mailed 686 surveys and received responses from 156 of these (a 23 percent response rate). Of those with accepted offers, we received responses from 67 of 276 surveys (24 percent). Of those with rejected offers, 22 of 70 surveys replied (31 percent), and for non-participants the response rate was 20 percent (67 of 340).

### Crops Planted in 2001 and 2002

Most eligible farmers planted on the land covered by their permit in 2001 (see Table 5.1). The table headings in this (and following) tables refers to the farmers' status in the 2002 auction. For example, the first column shows the percentage of farmers whose 2002 offers were accepted actually planted in 2001. There was little difference in the percentage planting among those with accepted offers, rejected offers, and non-participants in the 2002 auction. Table 5.2 shows the distribution of crops planted in 2001. Among those who planted in 2001, about 75 percent of all acreage was in corn, cotton, and peanuts.

Table 5.3 shows the same information, but for the crops planted in 2002. This table reflects both the acreage that had already been planted at the time the survey was conducted and also the acreage farmers stated they intended to plant during the 2002 growing season. As in 2001, about 75 percent of all acreage was in corn, cotton, and peanuts. There was little difference in the planting patterns between those whose offers were accepted and those who chose not to participate in the auction. However, those with rejected offers reported planting no corn (compared with 20 percent of the acreage for accepted offers), and almost half of their acreage in peanuts (43 percent, compared to 20 percent for those with accepted offers). Of those farmers with accepted offers, 90 percent stated that they intended to plant in 2002 even though they could

not irrigate (see Table 5.4). However, 20 percent of farmers whose offers were not accepted stated that they would not have planted if their offers had been accepted in the 2002 irrigation auction.

#### Factors Affecting Offer Prices and the Decision to Participate in the 2002 Irrigation Auction

About half of those who did not participate (55 percent) stated that they would have participated in the 2002 Irrigation Auction if offers above \$150 an acre had been considered. Of those who would have offered to suspend irrigation at a higher price, Table 5.5 reports the prices at which offers would have been made. About 38 percent of these non-participants would have made offers if the upper-limit had been set between \$150 and \$175 per acre. However 23 percent of these non-participants would have required a reservation price higher than \$300 an acre in order to participate in the auction.

Appendix A3.2 shows a transcript of farmers' comments about their decision to participate in the auction (for non-participants) and about considerations in setting an offer price (for those with accepted and rejected offers, respectively). Non-participants were asked what factors (other than the upper-limit on offer price) affected their decision not to submit an offer in the auction. The reasons most often listed were crop rotation and insurance eligibility. Several respondents also stated that they did not believe themselves to be eligible to participate. We asked auction participants what factors they considered in setting an offer price. The most common replies were the crops they would plant, yield, crop prices, and the rental value of their land. In addition, those with accepted offers cited as considerations the probability of their offer being accepted, uncertainty regarding the farm bill, and even the environmental impact of irrigation.

#### Comparison of the 2001 and 2002 Irrigation Auctions

In order to assess farmers' reaction to the new auction procedures, we specifically asked farmers whether they felt the procedures used in 2002 were better or worse than those used in 2001. The results are contained in Table 5.6. Surprisingly, there was little difference between the answers provided by those with accepted offers and those with rejected offers. Of those with accepted offers, 86 percent felt the 2002 procedures were an improvement over those used one year earlier, compared with 79 percent for those with unaccepted offers and 96 percent of those who

did not participate. Only 10 percent of those with accepted offers felt the procedures were worse, compared with 21 percent of those with rejected offers, and none for non-participants. (Remaining farmers did not prefer one auction mechanism over the other).

We asked all survey recipients to provide suggestions for improving the auction procedures. Appendix A3.3 contains a transcript of all comments received by those with accepted offers, rejected offers, and non-participants, respectively. Several suggested that the auction should be held earlier (for example in January or February). Some suggested that a higher offer limit be imposed, and other felt that accepting all offers at a single price (possibly posting a single take-it-or-leave-it price) would be an improvement. A few respondents commented that they received their auction packets too close to the deadline to reply. Another (non-participant) suggested sending a short initial mailing that would determine whether the farmer wanted to participate, and then sending the full auction packet only to interested farmers.

#### Willingness to Install a Meter on Irrigation Pumps

The final question that we posed to these farmers was whether they would be willing to have a sealed meter installed on the covered pumps, to be read annually by the EPD, if there was a 50-percent cost share by the state. Table 5.7 shows the results from this question. Very few farmers indicated a willingness to do so. Those with rejected offers showed the highest willingness to install such a pump. Of these respondents, 29 percent would agree, 67 percent would not, and the remainder was uncertain. Only 13 percent of those with accepted offers (and 12 percent of those with rejected offers) would be willing to install a meter at the specified 50-percent cost share. In all cases, at least 60 percent of the respondents said they would not be willing to install such a pump under these conditions.

We asked under what conditions these farmers would be willing to install a sealed meter. Transcripts of their responses are shown in Appendix A3.4. Many said that more information was needed, and a large number said that they would be willing to only if the state paid 100 percent of the costs. Others said that it depended on the total cost, and some wanted such a metering system to be voluntary.

## 6. SUMMARY

Using economics experiments to guide policy has been described as “whispering in the ears of princes” (Roth, *Handbook of Experimental Economics*, 1995, p.22). One could say that the experiments described in this report are the result of “princes whispering in our ears.” This was a case where policy clearly guided our research agenda, while at the same time our research helped to guide policy.

Our research showed the advantages of a simple posted price auction. It performed as well as an iterative auction that used a maximum average price constraint, and had far lower implementation costs. Moreover, its performance far exceeded a one-shot sealed offer auction.

We were frankly skeptical of what we initially called the “Reheis Posted Offer Auction” – a sealed offer auction with an announced reservation price. This auction captured the main features of the sealed offer and posted price auctions. We thought that participants would focus on the \$150 reservation price, and few (if any) offers would be made below this level. While we expected no significant improvement in performance, we also felt there was no harm in trying this auction. At worst, all submitted offer prices would be at the announced maximum; at best some offers would be less than this level.

We were pleasantly surprised by how well this auction performed, both in the laboratory and in the field. In the 2002 Irrigation Auction, only about 10 percent of the submitted offers were at the \$150 maximum price, and the majority of offers were more than \$10 below it. Offers ranged from \$74 to \$150, with an average offer price of \$132.74 (the average of the accepted offers was \$127.96). A total of 53,271 acres were offered in the auction, and in the end 40,861 acres were taken out of irrigation.

Subsequent lab experiments indicate that this result is robust to whether the threat of taking is on the table. In our experiments, the majority of offers were at prices below the announced maximum, and therefore average prices were lower than in a simple posted offer auction. There was very little difference in offers between auctions conducted with taking and those without.

A survey sent to all eligible farmers showed that most farmers whose offers were accepted intended to plant crops in 2002, even without irrigation. The vast majority of farmers - participants and non-participants alike - preferred the 2002 auction mechanism to that utilized in 2001. Very few farmers expressed a willingness to install a sealed meter on their pump, at least under the 50-percent cost-share conditions we specified in our survey.

**Table 2.1**  
**Sequence of Initial Experiments**

Date (all 2001)	Experiment 1	Experiment 2	Other Treatments
Sept. 24	Old	New (no max)	
Sept. 26	Old	Old	
Oct. 3	Old	New (\$8 max)	
Oct. 8	Old	New (\$8 max)	with announcement
Oct. 10 (#1)	Old	Old	with announcement
Oct. 10 (#2)	Old	Old (told final round)	with announcement
Nov. 5	Old	New (\$8 max average)	with announcement
Nov. 7	Old <sup>a</sup>	Old	with announcement
Nov. 8	Old	Old	with announcement

<sup>a</sup> In this auction, we used a maximum price constraint of \$8 in *all* rounds.

**Table 3.1**  
**One-Shot and Follow-Up Experiments**

Date	Treatment
Dec. 3, 2001	New (Max Average Price = \$18, Buy up to 3 per Round)
Dec. 4, 2001	One-Shot Posted Price Auction, with Taking
Dec. 5, 2001	One-Shot Sealed Offer Auction, with Taking
Dec. 7, 2001 (#1)	One-Shot Posted Price Auction, with Taking
Dec. 7, 2001 (#2)	One-Shot Sealed Offer Auction, with Taking
Feb. 28, 2002	New (Max Average Price = \$18, No Limit on Number Bought)
April 4, 2002	One-Shot Sealed Offer, Announced Reservation Price, with Taking
April 8, 2002	One-Shot Sealed Offer, Announced Reservation Price, with Taking
April 24, 2002	One-Shot Sealed Offer, Announced Reservation Price, No Taking
April 25, 2002	One-Shot Sealed Offer, Announced Reservation Price, No Taking

**Table 5.1**

**Survey Response: “Did you plant on this land last year?” (in 2001)**

	Accepted Offers	Rejected Offers	Non-Participants
yes	87 %	95 %	87 %
no	13 %	5 %	13 %
number of responses	63	22	63

**Table 5.2**

**Distribution of Crops Planted in 2001**

	Accepted Offers	Rejected Offers	Non-Participants
corn	6 %	8 %	24 %
cotton	44 %	66 %	29 %
peanuts	24 %	11 %	22 %
other crops	25 %	15 %	26 %
total acreage	7,887	2,598	9,653

**Table 5.3**

**Distribution of Crops Planted in 2002**

	Accepted Offers	Rejected Offers	Non-Participants
corn	20 %	0 %	24 %
cotton	31 %	33 %	28 %
peanuts	20 %	43 %	22 %
other crops	30 %	24 %	26 %
total acreage	8,515	2,262	10,253

**Table 5.4**  
**Effect of Auction Outcome on 2002 Farming Activity**

	yes	no	number of responses
Accepted Offers: Will they plant, even though they cannot irrigate?	90 %	10 %	58
Rejected Offers: If their offer had been accepted, would they have planted?	80 %	20 %	20

**Table 5.5**

**Effect of the \$150 Reservation Price**

---

Prices at which permits would have been offered in the auction.  
(This was asked of non-participants only.)

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Price	Proportion Offering
\$150.01 - \$175	38 %
\$175.01 - \$200	15 %
\$200.01 - \$300	23 %
\$300.01 and higher	23 %
number of responses	27

---

**Table 5.6**  
**Comparison of 2001, 2001 Irrigation Auctions**

“Do you consider the way that this year’s auction was carried out was better or worse than last year’s?”			
	Accepted Offers	Rejected Offers	Non-Participants
better	86 %	79 %	96 %
worse	10 %	21 %	0 %
same	4 %	7 %	4 %
number of responses	52	14	27

**Table 5.7**

**Willingness to Install a Meter**

---

“Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was 50% cost-share by the state?”

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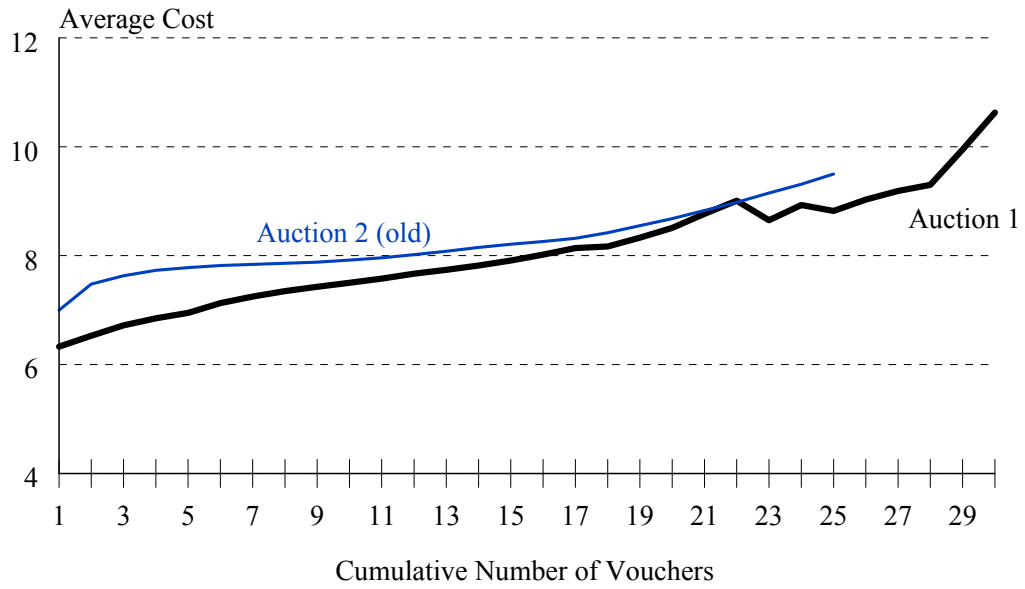
	Accepted Offers	Rejected Offers	Non-Participants
yes	13 %	29 %	12 %
no	60 %	67 %	67 %
unsure	27 %	5 %	20 %
number of responses	63	21	49

---

**Figure 2.1**

Average Cost of Obtaining Vouchers

(No Announcements)



**Figure 2.2**

Average Cost of Obtaining Vouchers

(No Announcement)

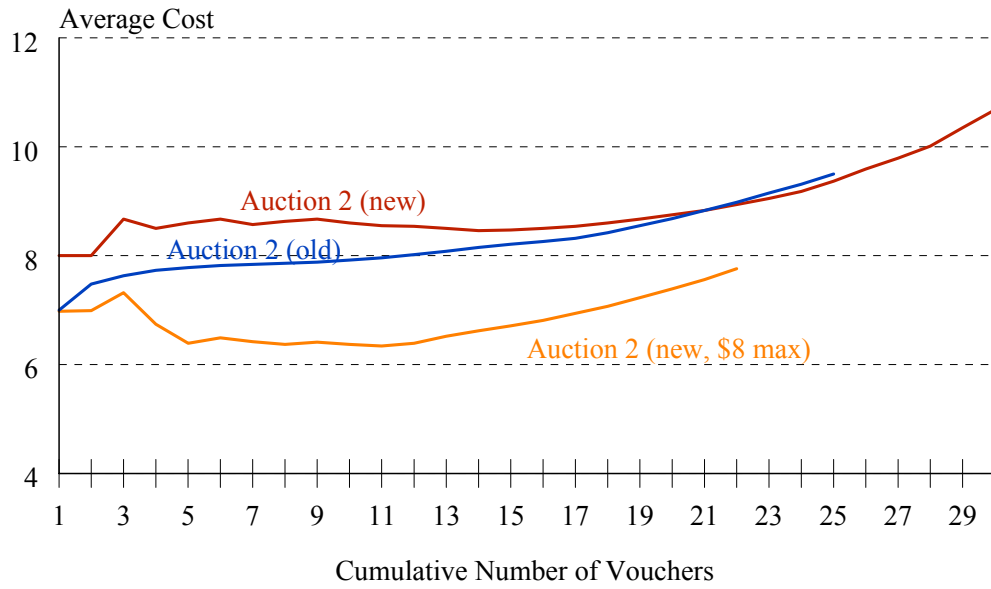
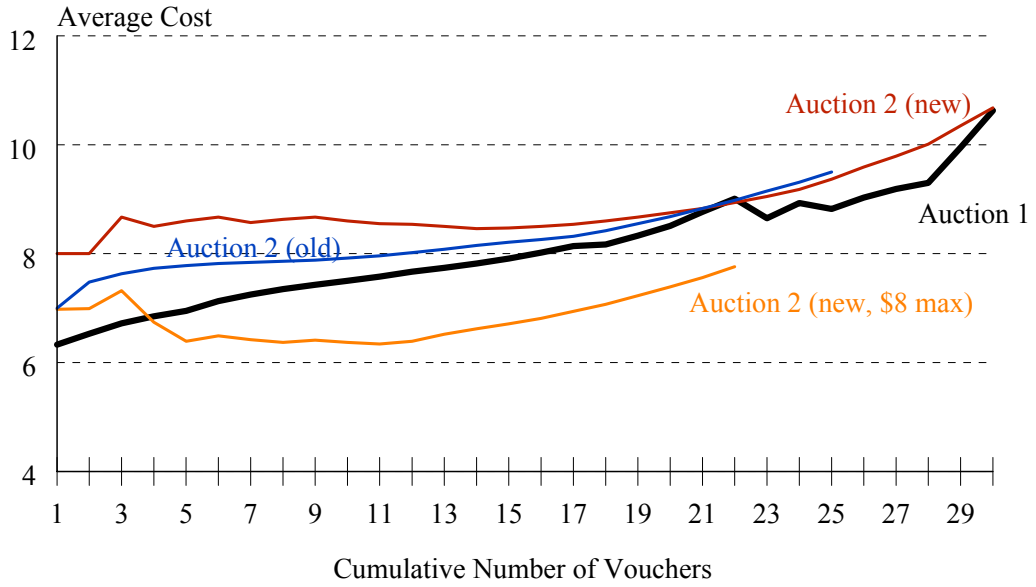


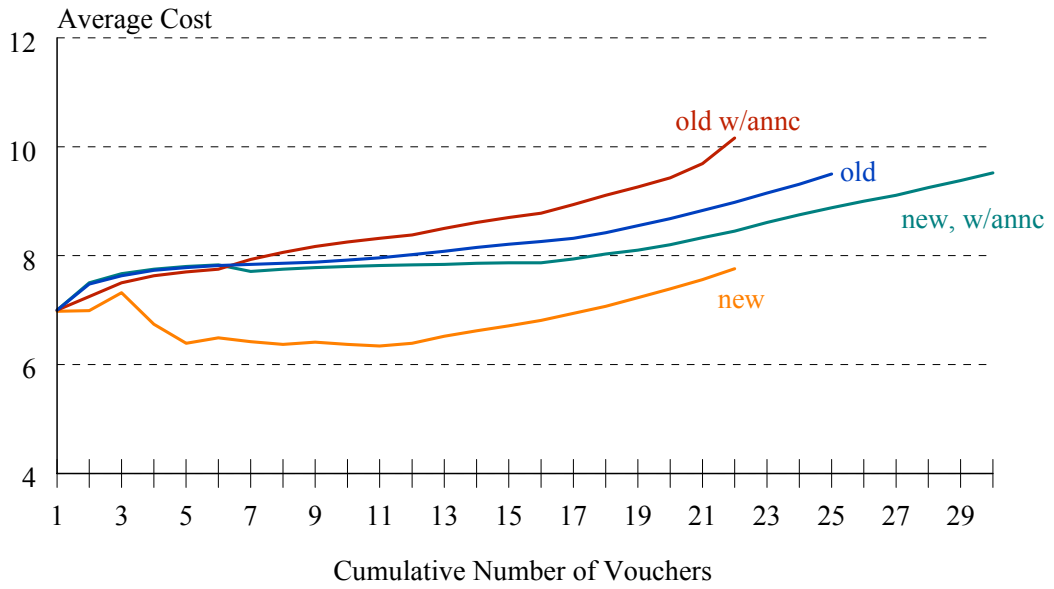
Figure 2.3

# Average Cost of Obtaining Vouchers

Auction 2: No Announcement



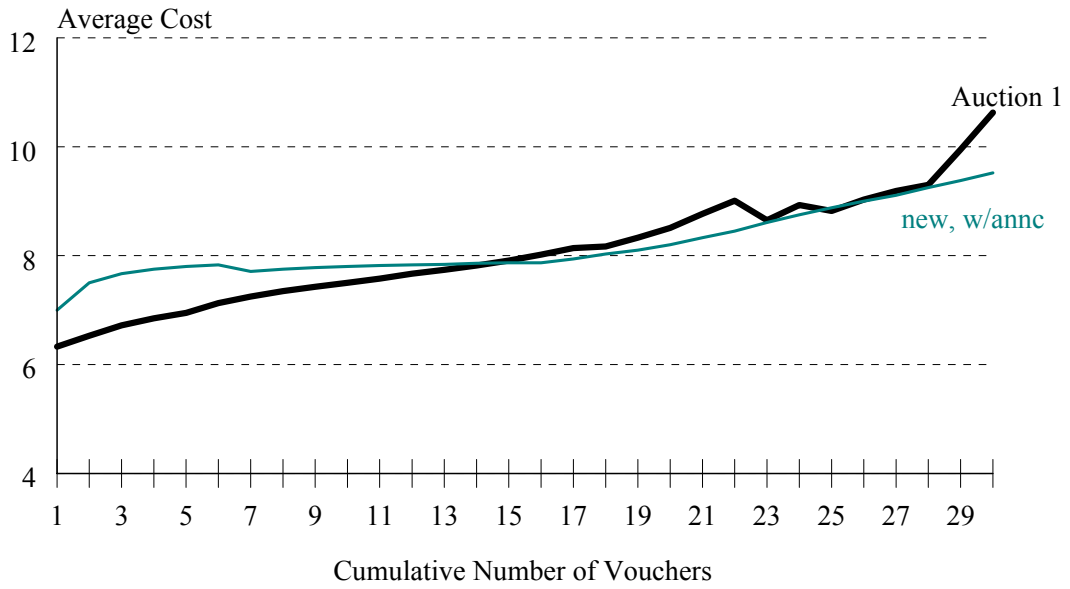
**Figure 2.4**  
Average Cost of Obtaining Vouchers  
Auction 2



**Figure 2.5**

Average Cost of Obtaining Vouchers

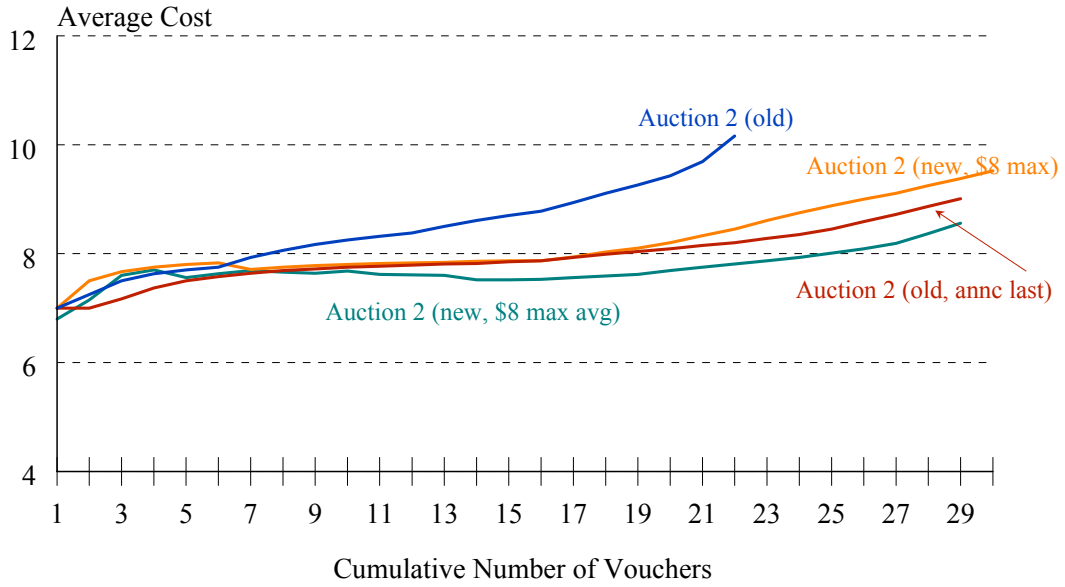
Auction 2: Effect of announcement



**Figure 2.6**

**Average Cost of Obtaining Vouchers**

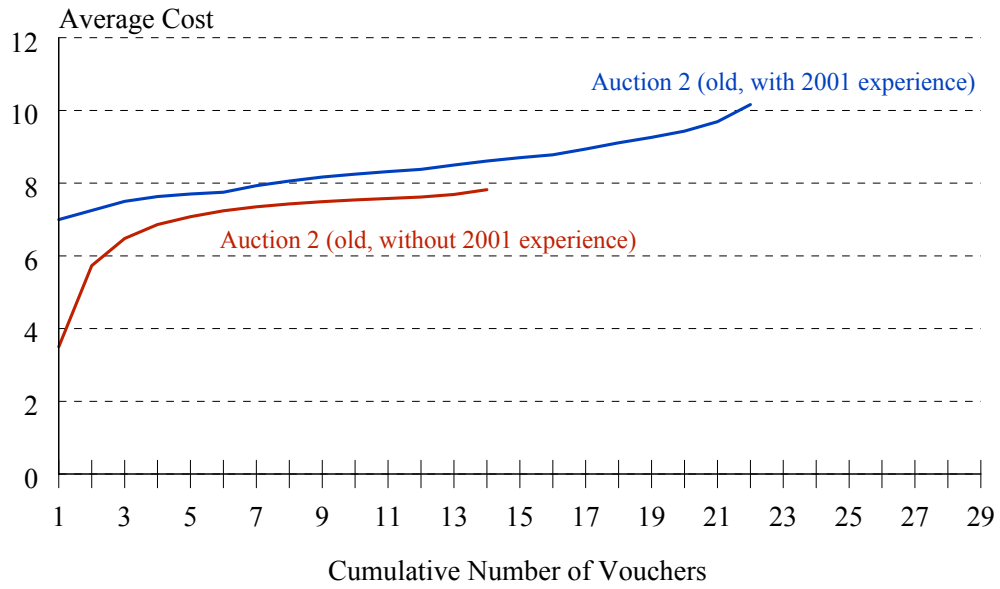
(with announcements)



**Figure 2.7**

**Average Cost of Obtaining Vouchers**

(with announcements)



**Figure 2.8**

Average Cost of Obtaining Vouchers

(with announcements)

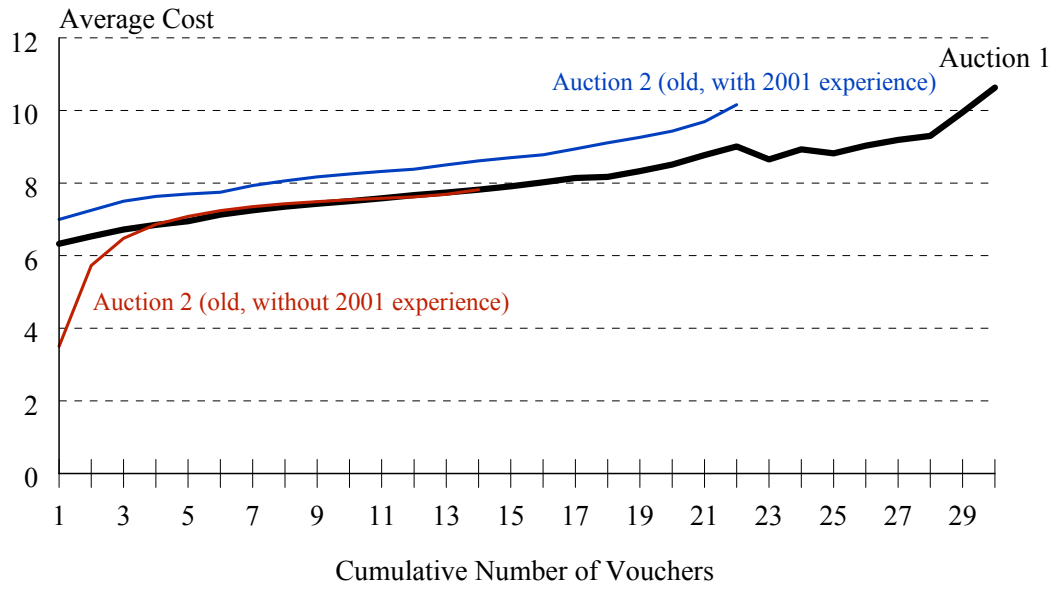


Figure 3.1

# Average Cost of Obtaining Vouchers

Posted Price versus Sealed Offer (with taking)

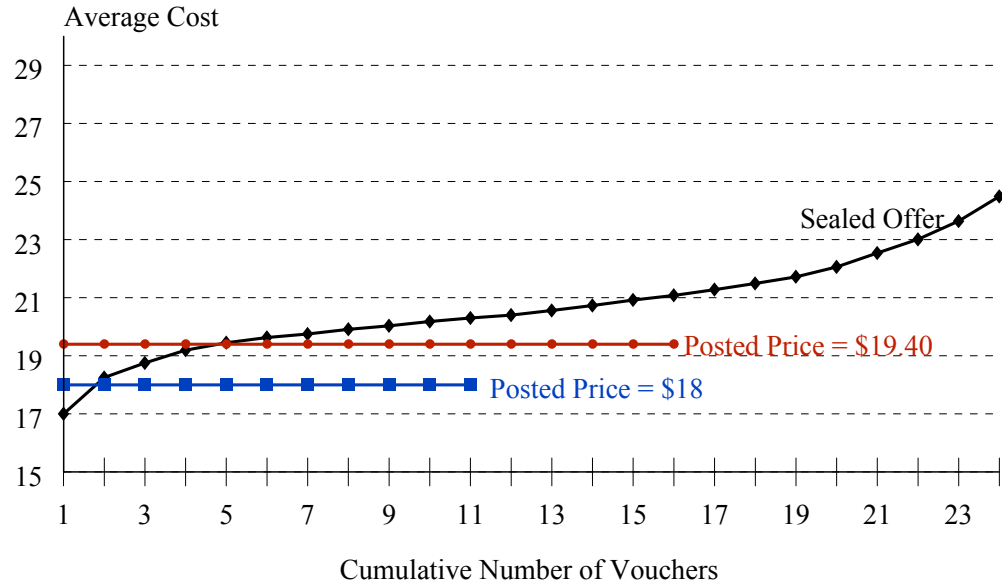


Figure 3.2

# Ratio of Cost to Value

Posted Price versus Sealed Offer (with Taking)

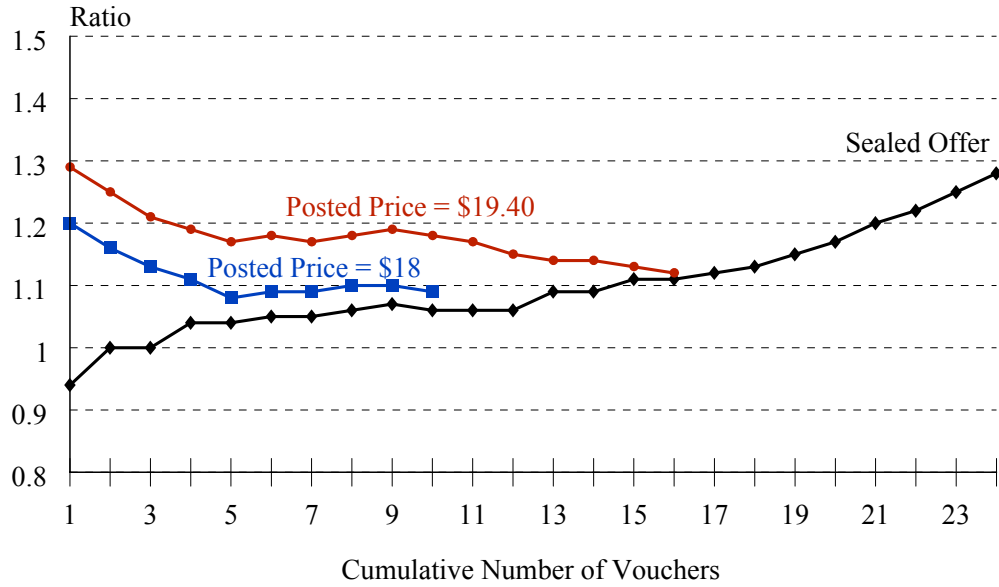


Figure 3.3

# Ratio: Cost to Min. Opp. Cost

Posted Price versus Sealed Offer (with taking)

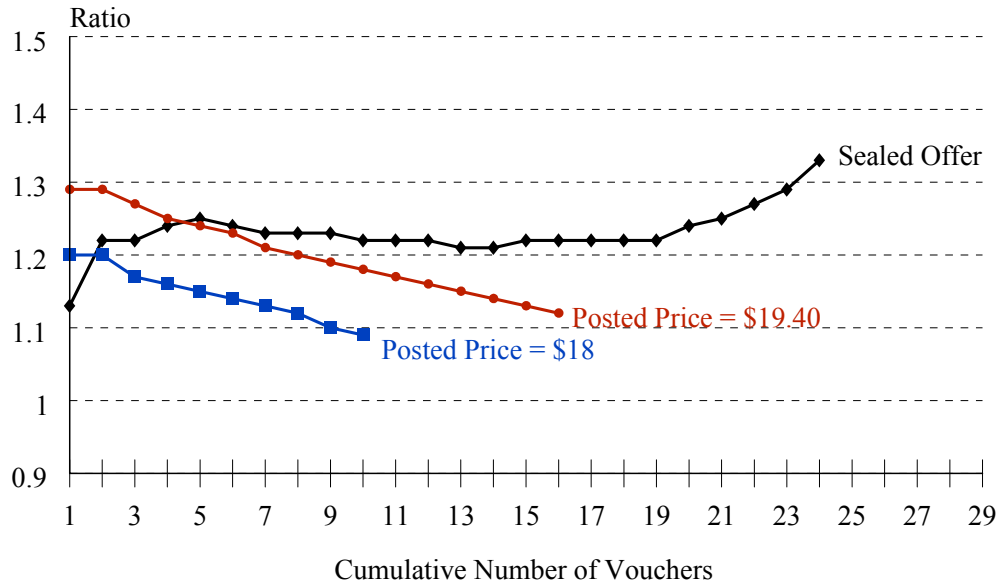


Figure 3.4

# Ratio of Cost to Value

Sealed Offer Auction: With and Without Taking

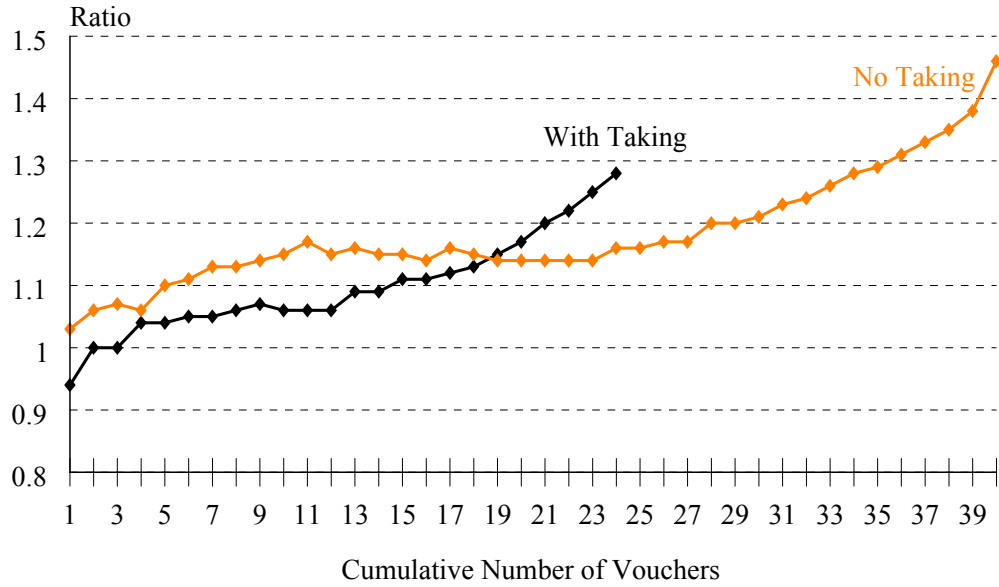


Figure 3.5

# Average Cost of Obtaining Vouchers

## Auctions with Taking

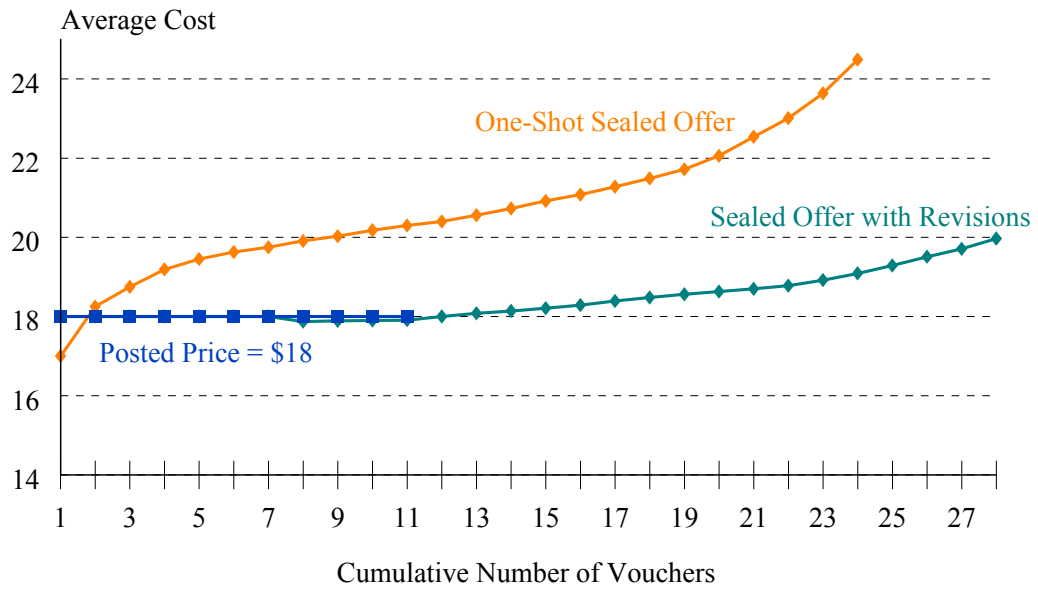


Figure 3.6

# Ratio: Cost to Min. Opp. Cost

Auctions with Taking

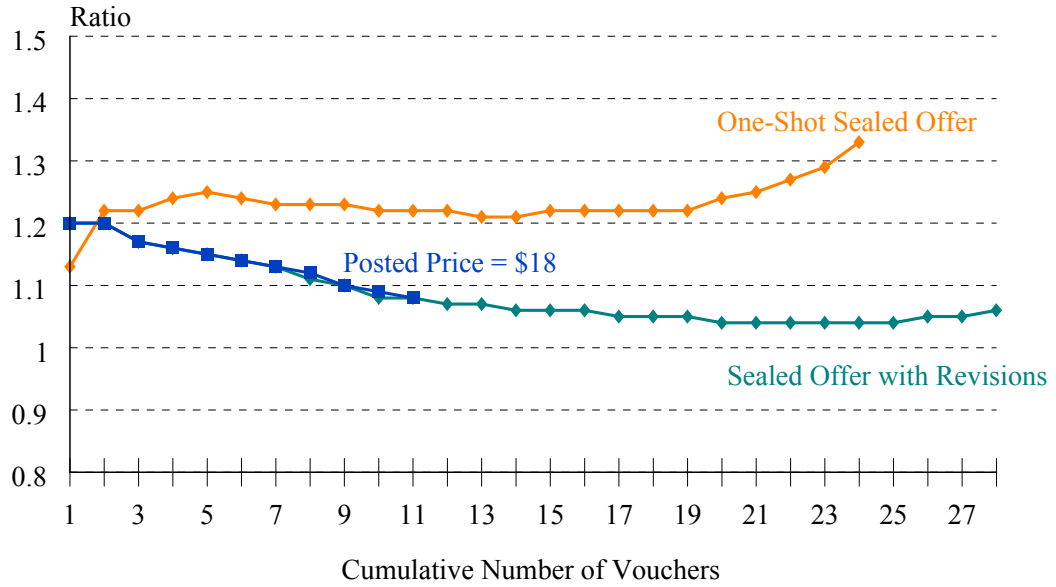


Figure 3.7

# Average Cost of Obtaining Vouchers

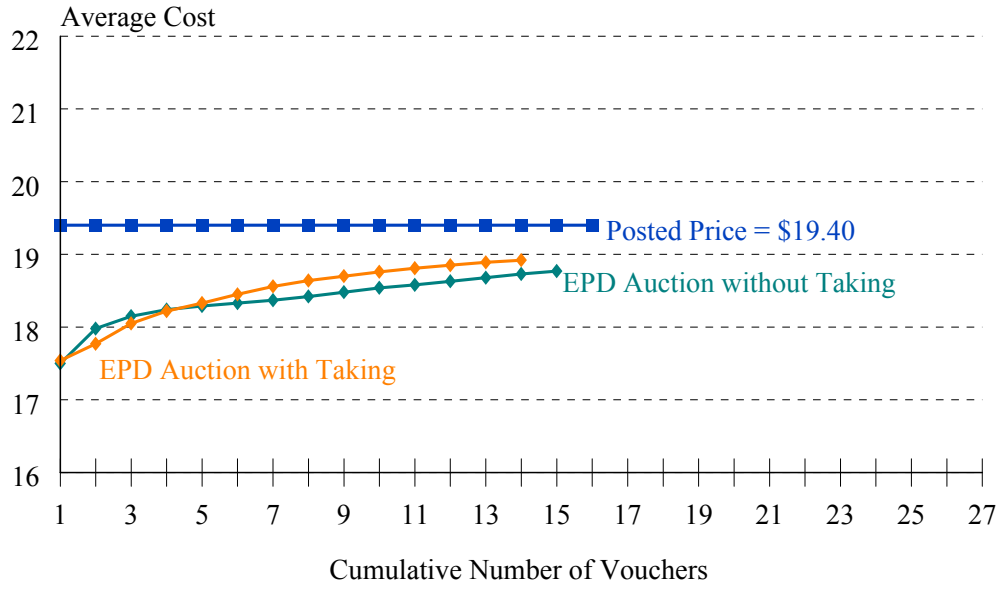


Figure 3.8

# Ratio: Cost to Min. Opp. Cost

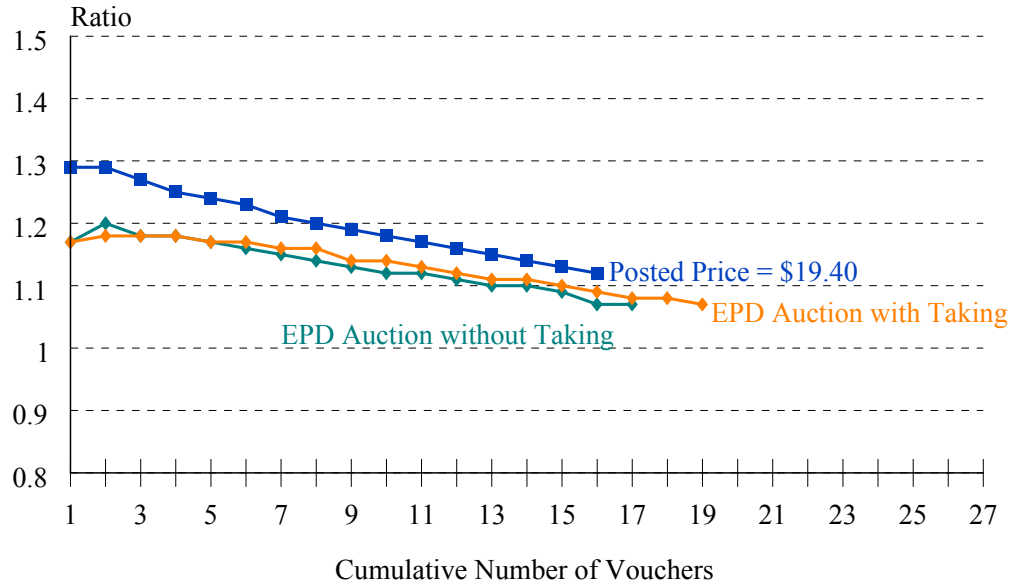


Figure 3.9

# Average Cost of Obtaining Vouchers

## Auctions with Taking

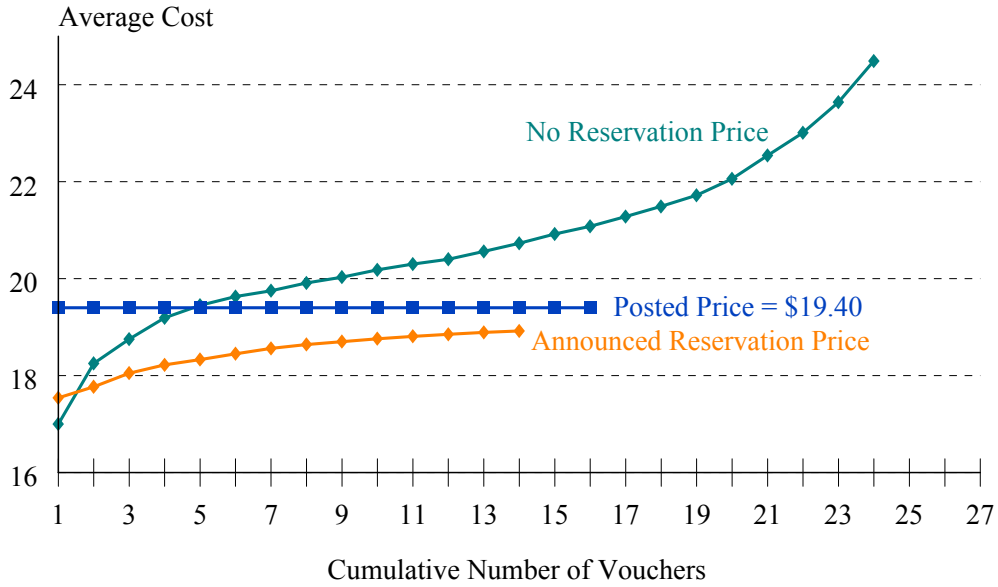
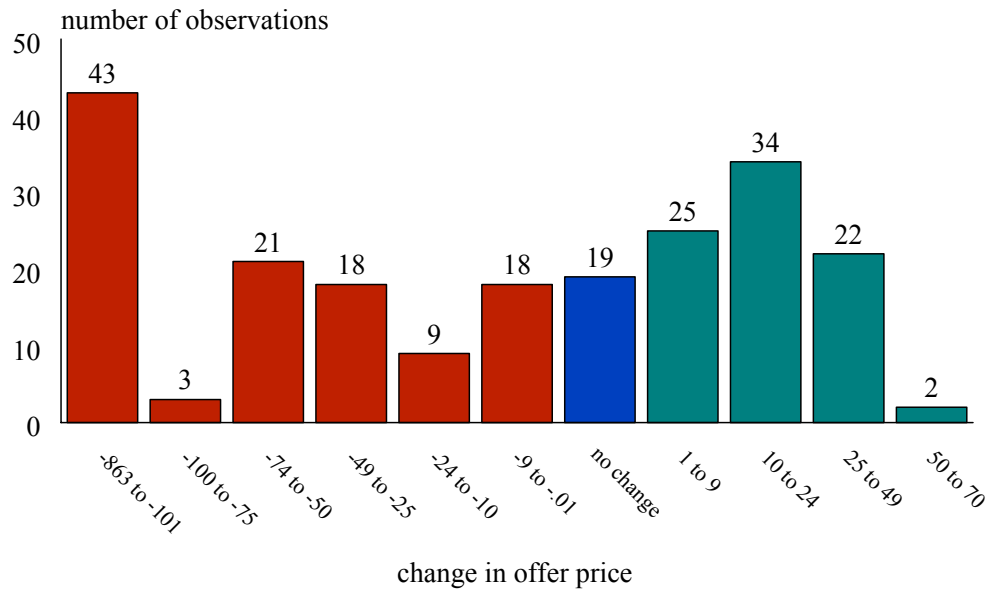


Figure 4.1

## Change in Offers from 2001 to 2002



a negative number implies the offered was lower in 2002 than in 2001

Figure 4.2

# Average Cost of Taking Acreage from Irrigation

2001 versus 2002 auctions

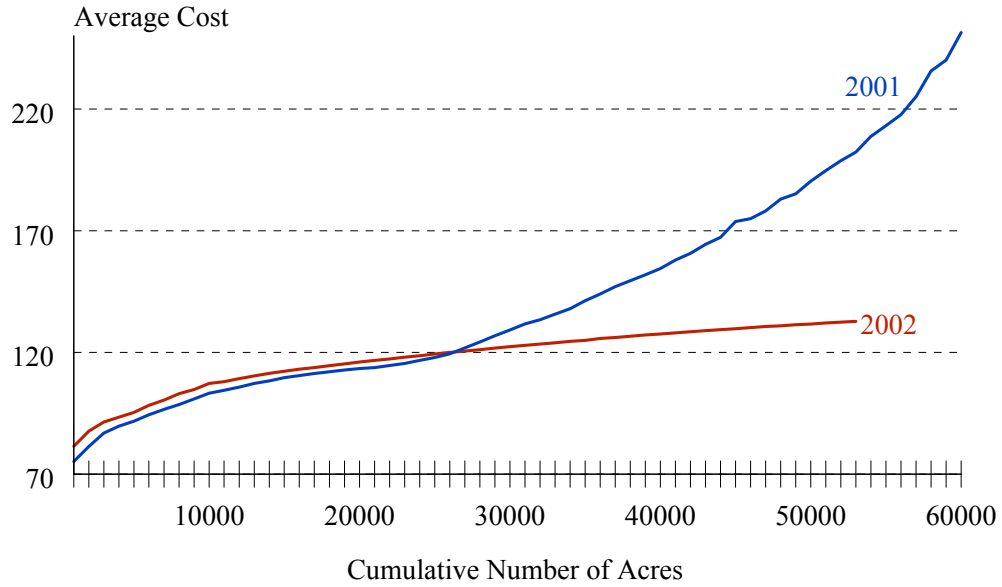


Figure 4.3

# Difference in Average Cost

2002 Cost - 2001 Cost

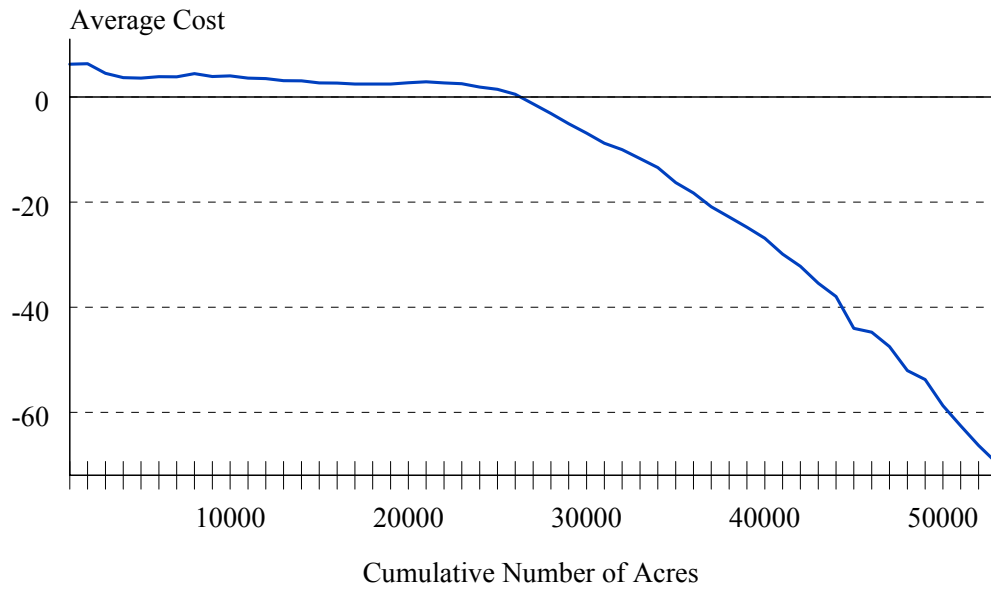
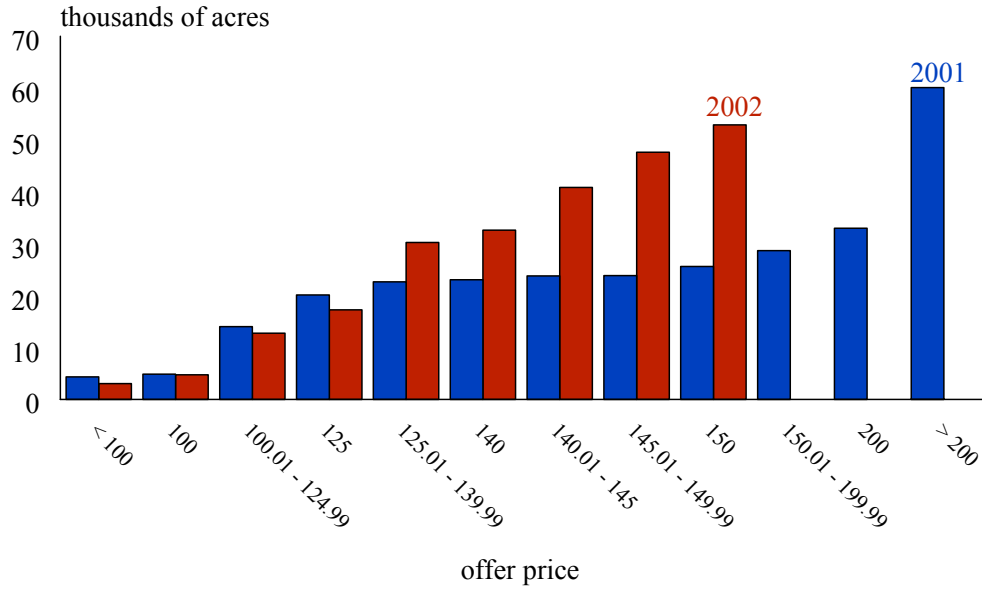


Figure 4.4

# Cumulative Number of Acres Offered

2001 versus 2002



# Appendix 1 – Experiment Instructions and Announcements

## A1.1 Experiment Instructions, Replication of 2001 Irrigation Auction

Welcome to our experiment. Today, you will participate in an auction in which you will definitely earn money. These instructions explain the rules of the auction and how your earnings will be determined.

Your envelope contained two vouchers—the two pink slips in your envelope. Please look at your vouchers now. Each voucher has an identification number that has been assigned to you. On each one **there is a value with a dollar sign**. This is the *redemption value* of the voucher. In other words, at the end of the auction, you will be able to turn your voucher in to us and we will pay you this amount of money in cash. It is possible that your two vouchers have different values written on them, and also that others in the auction may have different values than you do. We have enough cash with us to pay all of you for your vouchers.

However, you have a choice. You can keep your voucher and at the end of the auction we will pay you its redemption value. **OR**, you may sell one or both of your vouchers to us. If you sell a voucher to us, you will receive the agreed upon price **instead of** the voucher's redemption value. Thus, for each voucher, you will earn either (but not both):

\* the dollar amount on the voucher, if you have not sold it to us.

OR

\* the dollar amount that you have agreed to sell the voucher for.

There are \_\_\_\_\_ people participating in today's auction, and each person has 2 vouchers; therefore there are a total of \_\_\_\_\_ vouchers. We will try to buy a fixed number of vouchers, but we will not tell you how many this is. We can tell you, however, that we have a fixed amount of money that we can use for the purpose of buying your vouchers: **\$375**. This is the *most* that we will spend to buy your vouchers in the auction (and does not include the money we will use to pay you for any vouchers that you do not sell). It is possible that we will not spend this entire amount. We also have a maximum average price and a maximum price that we are willing to pay for vouchers. However, we cannot reveal this maximum price and maximum average price. We will determine how many vouchers we will buy, and the amount you will receive for any vouchers you sell, in the following manner.

1. Your envelope contains a packet of “offer” cards – see the slips of paper that are stapled together. The single sheet of paper is just something you can use to keep track of your offers. Look at your “offer cards.” The first card says ROUND 1, and has two columns and two rows. Under the first column are the identification numbers for your two vouchers. The second column is where you will enter your offer price for each one of your vouchers. If you do not wish to offer one or both vouchers for sale, just write “none” on that voucher's offer price line. If you wish to offer to sell one or both of your vouchers, on that voucher's line write the price we would have to pay you in order for you to sell your voucher to us. **Remember:** if you sell a voucher to us (that is, if we accept your offer price), you will not receive the voucher's redemption value.

2. When the auction begins, fill out your Round 1 offer card, writing down your offer price for any of your vouchers that you wish to sell in the auction. You may offer to sell one of them, both of them, or neither of them. It's your choice. When you have filled out your offer card, bring it into the computer room and hand the card to me or one of my assistants—just look for whoever is free. **STAY WITH US UNTIL WE HAVE ENTERED YOUR OFFER ON THE COMPUTER.** We'll show you what was entered, and we will ask you to verify that we have entered your offer correctly.

IT IS VERY IMPORTANT THAT YOU VERIFY THE OFFER THAT WE ENTER ON THE COMPUTER. If you find an error, tell one of us immediately. We will make the necessary corrections. **If a mistake has been made, and you have not had it corrected, the amount entered in the computer is the one that will “count” in the auction.**

3. When we have all of your offers, we will order them from the lowest cost offer to the highest cost offer. We will then *provisionally* accept the lowest offers until either: (1) we have reached the maximum average offer price (or maximum price) that we will accept, (2) we've bought the number of vouchers that we have decided to buy, or (3) we have exhausted our funds; whichever we reach first. If, at the maximum price that we can pay in a round, there is a “tie,” i.e., more than one voucher has been offered at that price, we will randomly choose which offers to accept. We will announce the identification numbers of the provisional winners.

Suppose, for example, that the following offers were submitted:

\$500, \$550, \$451, \$675, \$800, \$445, \$525, \$500

(We have intentionally chosen numbers for this example that are larger than any that will be used in this auction. With a budget of \$375 we could not accept any of these offers). First, we would sort these offers from lowest to highest:

\$445, \$451, \$500, \$500, \$525, \$550, \$675, \$800

We would start provisionally accepting the lowest priced offers (starting with \$445) and continue until one of the three criteria above has been reached. For example, if we had a budget of \$2000 we could provisionally accept the first four offers. However, if our budget was only \$1500, we could afford to buy only one of the two vouchers that were offered at \$500 (in addition to the two lowest offers). In this case, we would randomly choose one of the \$500 offers to provisionally accept. We would then announce the *voucher number* for each accepted offer.

4. After you have had a few minutes to think about whether any of your offers were provisionally accepted, we will announce the beginning of a **new** offer submission round. Everyone will have the opportunity to revise their offer prices. In other words, if you would like to change your offer price for any of your vouchers -- or if you now wish to not sell one or both of your vouchers, you may make these changes now. For one or both vouchers, if you want to change the offer price from the one that was used in the previous round, just write this amount in the Offer Price column for the appropriate voucher number. For any voucher you don't want to sell, just write “none” on the relevant line in the offer price column of your offer card.

IF THE DECISIONS THAT YOU MADE FOR THE LAST ROUND ARE THE SAME THAT YOU WANT TO MAKE FOR THE UPCOMING ROUND – I.E., YOU DON'T WANT TO MAKE ANY CHANGES FROM THE LAST ROUND'S OFFER – YOU DO **NOT** NEED TO SUBMIT A NEW "SUBMIT OFFERS" FORM. IF YOU DO NOT SUBMIT A "SUBMIT OFFERS" FORM IN ANY ROUND, THE LAST RECORDED DECISION THAT YOU SUBMITTED WILL APPLY TO THE UPCOMING ROUND.

5. When we have received all revised offers, once again we will rank the offer prices from lowest to highest price, choose the vouchers with the lowest price, and announce the provisional winners. We will continue this process until: (1) at the end of an auction round, no one revises an offer; OR, (2) at some point **we choose** to end the auction. When either of these events occurs, the auction is over, and the *last-announced* set of provisional winners will be the final winners. They will sell us their vouchers and will receive their offer prices. No results from any previous rounds will count.

6. If you do not sell one or both of your vouchers, you will receive the redemption value that is written on that voucher. At the end of the auction, you will receive a receipt form that shows your earnings from this auction. After this, you will participate in another decision-making experiment.

Before we begin the auction, we want to be sure that you understand how your earnings are determined in this auction. Please answer the following questions. When you are done, raise your hand and one of us will come by and check your answers.

1. Write the redemption value for your two vouchers in the spaces below:

Voucher 1: \_\_\_\_\_

Voucher 2: \_\_\_\_\_

2. For each of these two vouchers, write an offer price in the spaces below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Voucher 1: \_\_\_\_\_

Voucher 2: \_\_\_\_\_

Use your vouchers' redemption values and the offer prices that you wrote above to answer the following questions.

3. If neither of your offers are accepted (that is, if you don't sell either voucher), how much would you earn in this experiment?

4. If your offer for voucher 1 is accepted, but your offer for voucher 2 is not, how much would you earn in this experiment?

5. If your offer for voucher 2 is accepted, but your offer for voucher 1 is not, how much would

you earn in this experiment?

6. If both of your offers were accepted, how much would you earn in this experiment?

## **A1.2 Experiment Instructions, Auction Where Only Rejected Offers Can Be Revised**

This auction is exactly like the one you just completed with ONE DIFFERENCE: **THE WAY IN WHICH WE ACCEPT OFFER PRICES.**

In this auction, you will submit your offers just like you did in the last auction. However, after we have all of your offers, and have ordered them from the lowest cost offer to the highest cost offer, we will actually *buy the three vouchers with the lowest offer prices.* In other words, we no longer will have “provisional” winners. We buy the three vouchers with the lowest offer price at the end of each round. We will announce the identification numbers of the three vouchers that have been purchased. If there is a “tie” – more than one voucher has one of the three lowest offer prices - we will randomly choose which offers to accept. Also, we may buy fewer than three vouchers if the average offer price of the three lowest offers is greater than the maximum average offer price that we are willing to pay, or if offer prices exceed the maximum price that we can pay.

IF YOUR OFFER WAS ONE OF THE THREE ACCEPTED, YOU HAVE DEFINITELY SOLD THAT VOUCHER TO US. Therefore, you cannot make any further offers regarding this voucher. If your second voucher was not purchased, you can make offers to sell that one.

At the end of the first round, after you have had a chance to think about whether or not we have purchased one of your vouchers, we will announce the beginning of a **new** offer submission round. Everyone will have the opportunity to revise their offer prices (for any vouchers that were not purchased in an earlier round). In other words, if you would like to change your offer price for any of your vouchers -- or if you now wish to not sell one or both of your vouchers, you may make these changes now (again, this does not apply to vouchers that we purchased in an earlier round). For one or both vouchers, if you want to change the offer price from the one that was used in the previous round, just write this amount in the Offer Price column for the appropriate voucher number. For any voucher you don't want to sell, just write “none” on the relevant line in the offer price column of your offer card.

IF THE DECISIONS THAT YOU MADE FOR THE LAST ROUND ARE THE SAME THAT YOU WANT TO MAKE FOR THE UPCOMING ROUND – I.E., YOU DON'T WANT TO MAKE ANY CHANGES FROM THE LAST ROUND'S OFFER – YOU DO **NOT** NEED TO SUBMIT A NEW "SUBMIT OFFERS" FORM. IF YOU DO NOT SUBMIT A "SUBMIT OFFERS" FORM IN ANY ROUND, THE LAST RECORDED DECISION THAT YOU SUBMITTED WILL APPLY TO THE UPCOMING ROUND.

When we have received all revised offers, once again we will rank the offer prices from lowest to highest price, purchase the three vouchers with the lowest prices, and announce the identification numbers of the three vouchers that we have just purchased in the most recent round.

We will continue this process until: (1) at the end of an auction round, no one revises an offer; OR, (2) at some point **we choose** to end the auction. When either of these events occur, the auction is over. We will not purchase any more vouchers after this.

If you do not sell one or both of your vouchers, you will receive the redemption value that is written on that voucher. At the end of the auction, you will receive a receipt form that shows your earnings from this auction.

After this auction is completed, you will participate in another decision-making experiment.

## **A1.3 Experiment Announcements**

### **Announcement 1: Read After Instructions Have Been Finished (used in all sessions)**

To be sure that you understand the auction procedures, we will first run a trial auction. Everything will be done exactly as it will during the real auction (you will submit offers, we will announce provisional winners, you will be given a chance to submit revised offers, etc.). The only difference is that you will NOT earn any money in this trial auction.

Even though this trial auction will not affect your earnings, it may give you an idea of what to expect during the auction. Therefore, it is in your interest to take it seriously and to submit offers as you would during the actual auction. Just as during the real auction, this trial auction will end when no one submits a revised offer or when we decide to end the auction.

Before we get started, are there any questions?

### **Announcement 2: Read After the Trial Auction Has Finished (used in all sessions)**

We are about to start the auction in which you will be paid.

Before the auction starts we will give you a few minutes to discuss what happened during the trial auction, or to talk about anything else that you want to discuss. You can talk about strategies if you like. If you have any questions at all that you would like to ask us, please do so.

During the auction, feel free to talk with one another while you are submitting your offers or while you are waiting to obtain provisional results.

### **Announcement 3A: Read in After the First Experiment (2001 Replication) has Finished (used in sessions where the old procedures are followed by the “old” iterative auction where all offers can be revised)**

You have just received detailed information about those offers we accepted in the auction you just participated in. You might notice that we did not spend the entire budget of \$375. However, many more offers were accepted (and at higher prices) in the final round than were provisionally accepted in any earlier round of the auction.

You will receive a receipt showing your auction earnings in a moment.

In a few minutes, we will start another auction with the same rules as the auction you just participated in.

Before we start the next auction, please take about 5 minutes to discuss what happened during the last auction. You can talk about your own experiences and strategies. You might also want to think about the information we just gave you about the accepted offers in this auction.

As in the last auction, you can talk about strategies if you like. If you have any questions at all that you would like to ask us, please do so.

During the auction, feel free to talk with one another while you are submitting your offers or while you are waiting to obtain provisional results.

**Announcement 3B: Read in After the First Experiment (2001 Replication) has Finished (used in sessions where the old procedures are followed by the “new” iterative auction where only rejected offers can be revised)**

You have just received detailed information about those offers we accepted in the auction you just participated in. You might notice that we did not spend the entire budget of \$375. However, many more offers were accepted (and at higher prices) in the final round than were provisionally accepted in any earlier round of the auction.

You will receive a receipt showing your auction earnings in a moment.

In a few minutes, we will start another auction with somewhat different rules about which offers we accept. (We will give you the instructions for this shortly)

Before we start the next auction, please take about 5 minutes to discuss what happened during the last auction. You can talk about your own experiences and strategies. You might also want to think about the information we just gave you about the accepted offers in this auction.

As in the last auction, you can talk about strategies if you like. If you have any questions at all that you would like to ask us, please do so.

During the auction, feel free to talk with one another while you are submitting your offers or while you are waiting to obtain provisional results.

**Announcement 3C: Read in After the First Experiment (2001 Procedures, but with an \$8 maximum price used in all rounds) has Finished (used in sessions where the old procedures are followed by the “old” iterative auction where all offers can be revised)**

You have just received detailed information about those offers we accepted in the auction you just participated in.

You will receive a receipt showing your auction earnings in a moment.

In a few minutes, we will start another auction with the same rules as the auction you just participated in.

Before we start the next auction, please take about 5 minutes to discuss what happened during the last auction. You can talk about your own experiences and strategies. You might also want to think about the information we just gave you about the accepted offers in this auction.

As in the last auction, you can talk about strategies if you like. If you have any questions at all that you would like to ask us, please do so.

During the auction, feel free to talk with one another while you are submitting your offers or while you are waiting to obtain provisional results.

## A1.4 Experiment Instructions, Posted Offer Auction

Welcome to our experiment. Today, you will participate in an auction in which you will definitely earn money. These instructions explain the rules of the auction and how your earnings will be determined.

You have an envelope that contains two vouchers—the two pink slips in your envelope. Please look at your vouchers now. Each voucher has a 4-digit identification number. The first digit – number – identifies your voucher (you have two vouchers, which start with a 1 and a 2 respectively).

On each of your vouchers there is also a **value with a dollar sign**. This is the **redemption value** of the voucher. In other words, at the end of the auction, you can turn your voucher in to us and we will pay you this amount of money in cash. Is that clear? It is possible that your two vouchers have different values written on them, and also that others in the auction may have different values than you do. However, each voucher may be turned in to us at the end of the auction for the amount of money written on the front of it. We have enough cash with us to pay all of you for your vouchers.

However, you have a choice. You can keep your voucher and cash it in at the end of the auction for the amount of money that is written on it. **OR**, you may sell one or both of your vouchers to us. We will pay you **\$18.00** for each voucher that you sell to us. You can offer to sell us one or both of your vouchers for \$18.00. If you sell a voucher to us, you will receive \$18.00 **instead of** the dollar amount on the voucher – the voucher’s redemption value. Thus, for each voucher, you will earn either (but not both):

\* the dollar amount on the voucher, if you have not sold it to us.

OR

\*\$18.00 if you have sold your voucher to us.

There are \_\_\_\_\_ people participating in today's auction, and each person has 2 vouchers; therefore there are a total of \_\_\_\_\_ vouchers. We have a **target** for the number of vouchers that we want to purchase. For this purpose, we don't care anything about the voucher's redemption value, or who owns the voucher: we just have a target for the number of vouchers that we want to acquire. Sorry, but we cannot tell you this target number.

The auction will work in the following manner:

1. We will now give you a decision sheet that you will use to tell us what you want to do during the auction. If you wish to sell one or both of your vouchers for \$18.00, put an X in the box on the right side of this form (“Sell Voucher and Receive \$18.00”). If you do not wish to sell this voucher for \$18.00, put an X in the box on the left side of this form (“Keep Voucher and Receive Redemption Value of ...”). After you have made your decision as to which, if any, vouchers you wish to sell, we will collect these record sheets from you. **Remember:** if you sell a voucher to us for \$18.00 you will not receive the voucher’s redemption value.

2. When we have all of your record sheets, we will consider all of the vouchers that have been offered for sale at a price of \$18.00. For these people, we will buy vouchers until either: (1) we've reached our target number of vouchers that we want to buy, or (2) we have exhausted our funds; whichever happens first. If more vouchers are offered for sale that we need to meet our target number of vouchers, we will randomly choose vouchers to buy in order to meet our target.

3. We will then announce the identification numbers of the vouchers that we have purchased. If you do not sell one or both of your vouchers for \$18.00, you will receive the redemption value that is written on that voucher. At the end of the auction, you will receive a receipt form that shows your earnings from this auction.

### **Important Additional Information**

THERE IS ONE LAST THING THAT YOU NEED TO UNDERSTAND. If you do not sell one or both of your vouchers in the auction, we have said that you will receive its redemption value. THERE IS AN EXCEPTION to this rule that you must understand.

You were told earlier that we have a target number of vouchers that we must acquire. We will try to purchase our target number of vouchers during the auction. However, if we are unable to reach our target during the auction, we will involuntarily take enough vouchers from you to reach our target. Here is how this will work, and how you will be compensated if your voucher is involuntarily taken from you.

-- All sales made during the auction are final. In other words, if you sold a voucher to us during the auction you will definitely receive \$18.00 for your voucher. It cannot now be taken. Only vouchers NOT sold during the auction may be taken.

-- The number of vouchers we take will be the difference between our target and the number of vouchers that we bought during the auction. For example, if our target was 1,000 vouchers but we were able to purchase only 990 vouchers during the auction, we would have to take 10 vouchers.

-- If we take your voucher, you will **not** receive its redemption value. Instead, you will receive \$18.00 – the amount paid for vouchers during the auction. This amount, \$18.00, may be less than, the same as, or greater than your voucher's redemption value. Anyone who has an unsold voucher that is taken will receive \$18.00 for the voucher regardless of their unsold voucher's redemption value.

The vouchers that are taken will be determined in the following manner:

-- Look at your identification number that is given in the upper left-hand corner of your envelope. This is the same number as the last two digits on each of your vouchers. Among all of you, these digits start at 01 and increases to higher numbers. In other

words someone in the room has an ID number ending in 01, someone else has 02, then 03, 04, and so on.

-- We will start with the **lowest** ID number (01) on a voucher. If this voucher was not sold in the auction, we will take this voucher and pay the voucher's owner (participant #01) \$18.00 for the voucher. (Remember, any vouchers sold in the auction are **NOT** included in this) We then go to the next lowest voucher number (e.g., 02). If this voucher was sold in the auction, we go to the next lowest voucher number; if not, we take the voucher and pay the voucher's owner \$18.00 for the voucher. We continue this process, moving to higher and higher voucher ID numbers until we reach our target number of vouchers.

To summarize. You have two vouchers. Look at the top half of your decision sheet, at the information for your first voucher. Look at the redemption value (the amount of money you receive for this voucher if it is not sold or taken); this is shown on the left side of page. You will decide *whether or not* you wish to sell your Voucher #1 for \$18.00. If you want to sell it, put an X in the box on the right side of this form ("Sell Voucher and Receive \$18.00"). If you do not wish to sell this voucher for \$18.00, put an X in the box on the left side of this form ("Keep Voucher and Receive Redemption Value of ...").

Now look at the bottom half of your decision sheet, at the information for your Voucher #2. You'll do the same thing: do you want to sell it for \$18.00? If so, put an X in the box on the right side of this form ("Sell Voucher and Receive \$18.00"). If you do not wish to sell this voucher for \$18.00, put an X in the box on the left side of this form ("Keep Voucher and Receive Redemption Value of ..."). Remember, if we do not get our target number of vouchers in the auction, we will buy **UNSOLD** vouchers from you (and pay \$18.00 for the taken vouchers) beginning with the lowest ID number and working up to higher ID numbers until we hit our target. Before you turn in your decision sheet, we want you to initial the statement that tells you this.

Thus, you will receive one of the following amounts of money for each of your two vouchers.

- \$18.00 if your we buy your voucher from you.

OR

- \$18.00 IF you have not sold the voucher in the auction and it is "taken" (that is, if we have not reached our target number of vouchers by the time that we get to your voucher ID number).

OR

- The voucher's redemption value (the dollar amount on your voucher) IF you have not sold the voucher in the auction, and if we do not take your voucher.

Before we begin the auction, we want to be sure that you understand how your earnings are determined in this auction. Please answer the following questions. When you are done, raise your hand and one of us will come by and check your answers. **Nothing in this example will have any effect on your earnings.**

**Start with your Voucher 1.** Write the redemption value for this voucher in the space below:

Voucher 1: \_\_\_\_\_

(a) If you do not sell Voucher 1 in the auction, and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 1?

(b) If you do not sell Voucher #1 in the auction, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 1?

(c) If you **do** sell Voucher #1 in the auction, how much would you be paid for Voucher 1?

**Now look at your Voucher 2.** Write the redemption value for this voucher in the space below:

Voucher 2: \_\_\_\_\_

(a) If you do not sell Voucher 2 in the auction, and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 2?

(b) If you do not sell Voucher #2 in the auction, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 2?

(c) If you **do** sell Voucher #2 in the auction, how much would you be paid for Voucher 2?

## A1.5 Experiment Instructions, One-Shot Sealed Offer Auction

Welcome to our experiment. Today, you will participate in an auction in which you will definitely earn money. These instructions explain the rules of the auction and how your earnings will be determined.

You have an envelope that contains two vouchers—the two pink slips in your envelope. Please look at your vouchers now. Each voucher has a 4-digit identification number. The first digit – number – identifies your voucher (you have two vouchers, which start with a 1 and a 2 respectively).

On each of your vouchers there is also a **value with a dollar sign**. This is the **redemption value** of the voucher. In other words, at the end of the auction, you can turn your voucher in to us and we will pay you this amount of money in cash. Is that clear? It is possible that your two vouchers have different values written on them, and also that others in the auction may have different values than you do. However, each voucher may be turned in to us at the end of the auction for the amount of money written on the front of it. We have enough cash with us to pay all of you for your vouchers.

However, you have a choice. You can keep your voucher and cash it in at the end of the auction for the amount of money that is written on it. **OR**, you may sell one or both of your vouchers to us for some price. You can offer to sell us one or both of your vouchers for any price that you determine. The price at which you offer to sell a voucher is your OFFER PRICE for the voucher. Again, YOU determine the offer price for each voucher – you determine the amount of money we would have to pay you for you to give up your voucher. If you sell a voucher to us, you will receive your OFFER PRICE **instead of** the dollar amount on the voucher – the voucher’s redemption value. Thus, for each voucher, you will earn either (but not both):

\* the dollar amount on the voucher, if you have not sold it to us.

OR

\*your OFFER price – the dollar amount that you have agreed to sell the voucher for –  
if you have sold your voucher to us.

There are \_\_\_\_\_ people participating in today's auction, and each person has 2 vouchers; therefore there are a total of \_\_\_\_\_ vouchers. We have a **target** for the number of vouchers that we want to purchase. For this purpose, we don't care anything about the voucher's redemption value, or who owns the voucher: we just have a target for the number of vouchers that we want to acquire. Sorry, but we cannot tell you this target number. We can tell you, however, that we have a fixed amount of money that we can use for the purpose of buying your vouchers: **\$\_\_\_\_\_**. This is the *most* that we will spend to buy your vouchers in the auction (and does not include the money we will use to pay you for any vouchers that you do not sell). It is possible that we will not spend this entire amount.

We also have a **maximum average price** that we are willing to pay for vouchers. However, we cannot reveal this maximum average price.

We will determine how many vouchers we will buy, and the amount you will receive for any vouchers you sell, in the following manner.

1. If you wish to sell one or both of your vouchers, just write your offer price – the amount of money we would have to pay you for you to sell your voucher to us – on the front of the voucher(s) you wish to sell. If you do not wish to sell a voucher, write Not For Sale on the front of the voucher. After you have made your decision as to which, if any, vouchers you wish to sell and your offer price(s), put both vouchers back into your envelope. We will pick up all of your envelopes. **Remember:** if you sell a voucher to us (that is, if we accept your offer price), you will not receive the voucher’s redemption value.

2. When we have all of your vouchers, for all vouchers that are offered for sale (people have written an offer price on their voucher), we will order them from the lowest offer price to the highest offer price. Starting with the lowest offer price, we will buy that voucher, then the voucher with the next lowest offer price, and continue buying vouchers with the lowest offer prices until either: (1) we reach the maximum average offer price that we will accept, (2) we’ve reached our target number of vouchers that we want to buy, or (3) we have exhausted our funds; whichever happens first. If, at the highest offer price that we can pay in a round, there is a “tie,” i.e., more than one voucher has been offered at the highest accepted price, we will randomly choose which offers to accept.

We will then announce the identification numbers of the vouchers that we have purchased.

Suppose, for example, that the following offer prices were submitted:

\$500, \$550, \$451, \$675, \$800, \$445, \$525, \$500

(We have intentionally chosen numbers for this example that are larger than any that will be used in this auction. With a budget of \$\_\_\_\_\_ we could not accept any of these offers).

First, we would sort these offer prices from lowest to highest:

\$445, \$451, \$500, \$500, \$525, \$550, \$675, \$800

We would start accepting the voucher with the lowest offer price (starting with \$445) and continue until one of the three criteria above has been reached. For example, if we had a budget of \$2000 we could accept the first four offers. However, if our budget was only \$1500, we could afford to accept the \$445 offer, the \$451 offer, and **only one** of the two \$500 offers. In this case, we would randomly choose one of the two \$500 offers to accept.

As another example, if the maximum average offer price that we can accept was \$446, we would be able to accept only the first voucher with the \$445 offer price. If we accepted the second offer price of \$451, the average accepted offer price would be \$448 ( $[\$445+\$451]/2 = 448$ ), which is greater than our maximum acceptable offer price of \$446.

After we have determined the vouchers that we will buy, we will then announce the *voucher number* for each accepted offer price. If your offer price is one of the ones that we accept, you have definitely sold that voucher to us and will receive your offer price for the voucher.

If you do not sell one or both of your vouchers, you will receive the redemption value that is written on that voucher. At the end of the auction, you will receive a receipt form that shows your earnings from this auction.

### **Important Additional Information**

THERE IS ONE LAST THING THAT YOU NEED TO UNDERSTAND. If you do not sell one or both of your vouchers in the auction, we have said that you will receive its redemption value. THERE IS AN EXCEPTION to this rule that you must understand.

You were told earlier that we have a target number of vouchers that we must acquire. We will try to purchase our target number of vouchers during the auction. However, if we are unable to reach our target during the auction, we will involuntarily take enough vouchers from you to reach our target. Here is how this will work, and how you will be compensated if your voucher is involuntarily taken from you.

-- All sales made during the auction are final. In other words, if you sold a voucher to us during the auction you will definitely receive your offer price. It cannot now be taken. Only vouchers NOT sold during the auction may be taken.

-- The number of vouchers we take will be the difference between our target and the number of vouchers that we bought during the auction. For example, if our target was 1,000 vouchers but we were able to purchase only 990 vouchers during the auction (by staying within our budget and maximum average price restrictions), we would have to take 10 vouchers.

-- If we take your voucher, you will **not** receive its redemption value. Instead, you will receive the *average price paid* for vouchers in the auction. This average price may be less than, the same as, or greater than your voucher's redemption value. We will calculate this average price by adding up the price paid for each voucher sold in the auction, and then dividing by the number of vouchers sold. For example, if three vouchers were sold during the auction at prices of \$500, \$540, and \$460, the average price paid in the auction would be  $(\$500 + \$540 + \$460)/3 = \$500$ . The three people who sold their vouchers during the auction would receive their offer prices, \$500, \$540, and \$460 respectively. Anyone who has an unsold voucher that is taken would receive \$500, regardless of their unsold voucher's redemption value. (As before, we have chosen numbers that are higher than any that will be used in the auction)

-- The vouchers that are taken will be determined in the following manner:

-- Look at your identification number that is given in the upper left-hand corner of your envelope. This is the same number as the last two digits on each of your vouchers. Among all of you, these digits start at 01 and increases to higher numbers. In other

words someone in the room has an ID number ending in 01, someone else has 02, then 03, 04, and so on.

-- We will start with the **lowest** ID number (01) on a voucher. If this voucher was not sold in the auction, we will take this voucher and pay the voucher's owner (participant #01) the average price paid in the auction. (Remember, any vouchers sold in the auction are **NOT** included in this) We then go to the next lowest voucher number (e.g., 02). If this voucher was sold in the auction, we go to the next lowest voucher number; if not, we take the voucher and pay the voucher's owner the average price paid in the auction. We continue this process, moving to higher and higher voucher ID numbers until we reach our target number of vouchers.

To summarize, you have two vouchers. Everyone look at the first voucher, Voucher #1. You will decide whether or not you wish to sell your Voucher #1. If you want to sell it, you must determine your offer price for Voucher #1: how much would we have to pay you for you to sell us this voucher? You would write your offer price on the front of the voucher. If you do not want to sell Voucher #1, you write "Not For Sale" on the front of the voucher. Now look at your Voucher #2. You'll do the same thing: do you want to sell it, if so what is your offer price? Write the offer price on Voucher #2. If you don't want to sell it, write "Not for Sale" on the front of Voucher #2. When you've made these decisions for both of your vouchers, put them in your envelope. Remember, if we do not get our target number of vouchers in the auction, we will buy **UNSOLD** vouchers from you (and pay the average price paid in the auction) beginning with the lowest ID number and working up to higher ID numbers until we hit our target.

Thus, you will receive one of the following amounts of money for each of your two vouchers.

- Your offer price if your offer price is accepted and we buy your voucher from you.

OR

- The average price paid for vouchers in the auction IF you have not sold the voucher in the auction and it is "taken" (that is, if we have not reached our target number of vouchers by the time that we get to your voucher ID number).

OR

- The voucher's redemption value, the dollar amount on your voucher, IF you have not sold the voucher in the auction, and if we do not take your voucher.

Before we begin the auction, we want to be sure that you understand how your earnings are determined in this auction. Please answer the following questions. When you are done, raise your hand and one of us will come by and check your answers.

**Start with your Voucher 1.** Write the redemption value for this voucher in the space below:

Voucher 1: \_\_\_\_\_

Now write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 1: \_\_\_\_\_

Suppose that the average price paid in the auction was \$5.00 (we're using an arbitrarily chosen number that may be higher or lower than the redemption value for your voucher; again, this is just an example) Use your vouchers' redemption value, your offer price for the voucher, and information about the average price paid in the auction to answer the following questions.

(a) If your offer price is **not** accepted (that is, if you don't sell Voucher 1 in the auction), and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 1?

(b) If your offer for voucher 1 is **not** accepted, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 1?

( c ) If your offer for voucher 1 **is** accepted, how much would you be paid for Voucher 1?

**Now look at your Voucher 2.** Write the redemption value for this voucher in the space below:

Voucher 2: \_\_\_\_\_

Write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 2: \_\_\_\_\_

Suppose that the average price paid in the auction was \$5.00 (we're using an arbitrarily chosen number that may be higher or lower than the redemption value for your voucher; again, this is just an example) Use your vouchers' redemption value, your offer price for the voucher, and information about the average price paid in the auction to answer the following questions.

(a) If your offer price is **not** accepted (that is, if you don't sell Voucher 2 in the auction), and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 2?

(b) If your offer for Voucher 2 is **not** accepted, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 2?

( c ) If your offer for Voucher 2 **is** accepted, how much would you be paid for Voucher 2?

## **A1.6 Experiment Instructions, Sealed Offer Auction with Announced Reservation Price, with taking**

Welcome to our experiment. Today, you will participate in an auction in which you will definitely earn money. These instructions explain the rules of the auction and how your earnings will be determined.

### **Earning Money In This Experiment**

You have an envelope that contains two vouchers—the two pink slips in your envelope. Please look at your vouchers now. Each voucher has a 4-digit identification number. The first digit – number – identifies your voucher (you have two vouchers, which start with a 1 and a 2 respectively).

On each of your vouchers there is also a **value with a dollar sign**. This is the **redemption value** of the voucher. In other words, at the end of the auction, you can turn your voucher in to us and we will pay you this amount of money in cash. Is that clear? It is possible that your two vouchers have different values written on them, and also that others in the auction may have different values than you do. However, each voucher may be turned in to us at the end of the auction for the amount of money written on the front of it. We have enough cash with us to pay all of you for your vouchers.

However, you have a choice. You can keep your voucher and cash it in at the end of the auction for the amount of money that is written on it. **OR**, you may offer to sell one or both of your vouchers to us for some price. We will call the price at which you offer to sell your voucher is your OFFER PRICE.

If we accept your offer to sell a voucher to us, you will receive your OFFER PRICE. In this case, you will return the voucher to us in exchange for this offer price. In other words, you will receive the offer price instead of the dollar amount of the voucher (the voucher's redemption value).

If, on the other hand, we do not accept your offer to sell your voucher you will keep it and receive the REDEMPTION VALUE written on the voucher. Thus, for each voucher, you will earn either (but not both):

\* the dollar amount on the voucher, if you have not sold it to us (whether or not you offered to sell it).

OR

\*your OFFER PRICE if you have sold your voucher to us.

### **How We Choose Which Offers to Accept**

There are \_\_\_\_\_ people participating in today's auction, and each person has 2 vouchers; therefore there are a total of \_\_\_\_\_ vouchers. We have a **target** for the number of

vouchers that we want to purchase. For this purpose, we don't care anything about the voucher's redemption value, or who owns the voucher: we just have a target for the number of vouchers that we want to acquire, and also a fixed amount of money for buying your vouchers (in addition to the money we will use to pay you for any vouchers we do not sell). However, we cannot tell you either the voucher target or our budget available to buy vouchers.

We also have a **maximum price** that we are willing to pay for vouchers. We will entertain all offers up to a maximum price of **\$19.40**. Lower offers will be accepted first, followed by progressively higher offers until we obtain our target number of vouchers. Thus, low offers stand a greater chance of being accepted. If there are more offers to sell vouchers at the maximum accepted price than required to meet our target, the following procedures will be employed: All offers below the maximum accepted price will definitely be accepted. We will then obtain the additional vouchers required by randomly choosing among all offers at the maximum accepted price until we have met our target.

For example, suppose that we are unable to obtain our target number of vouchers if we accepted only those offers at prices *below* \$19.40; however if we accepted all offers *at or below* \$19.40 we would exceed our voucher target. In this case we would accept all offers below \$19.40 and then randomly choose among the \$19.40 offers until we meet our target. In other words, all offers below \$19.40 are accepted, but only some of those offers at \$19.40 will be accepted.

**Of course, the maximum accepted price might be less than \$19.40.** In this case, the same procedures would be followed: all offers below the maximum accepted price would be accepted and then we would randomly choose among those at the maximum price until we meet our voucher target.

### **Auction Procedures**

1. Please look at your Offer Form, which is the last page attached to these instructions. The top half of the form refers to your first voucher and the bottom refers to your second voucher. If you wish to offer a voucher for sale, just write your offer price – the amount of money we would have to pay you for you to sell your voucher to us – in the space indicated for any voucher(s) you wish to sell. If you do not wish to sell a voucher, write NS in the space indicated.
2. After you have made these decisions, bring your Offer Form to one of us in the lab. **Remember:** if we accept your offer, you will receive your offer price instead of the dollar amount written on the voucher. If your offer is NOT accepted (or if you do not offer your voucher for sale) you will receive its redemption value.
3. When we have all of your Offer Forms, we will enter all offers to sell vouchers. We will order them from the lowest offer price to the highest offer price. Starting with the lowest offer price, we will buy that voucher, then the voucher with the next lowest offer price, and continue buying vouchers with the lowest offer prices until either: (1) we've reached our target number of vouchers; or (2) we have exhausted our funds; whichever happens

first. If, at the highest offer price that we can pay in a round, there is a “tie,” i.e., more than one voucher has been offered at the highest accepted price, we will randomly choose which offers to accept. As we described above, in this case, all offers below this highest accepted price will be definitely accepted.

4. We will then announce the voucher numbers for those vouchers that we have purchased. Each person whose offer was accepted will receive the offer price for any voucher(s) accepted. All other vouchers will be exchanged for their redemption values.

### **Important Additional Information**

THERE IS ONE LAST THING THAT YOU NEED TO UNDERSTAND. If you do not sell one or both of your vouchers in the auction, we have said that you will receive its redemption value. THERE IS AN EXCEPTION to this rule that you must understand.

We told you earlier that we have a target number of vouchers that we must acquire. We will try to purchase our target number of vouchers during the auction. However, if we are unable to reach our target during the auction, we will involuntarily take enough vouchers from you to reach our target. Here is how this will work, and how you will be compensated if your voucher is involuntarily taken from you.

1. All sales made during the auction are final. In other words, if you sold a voucher to us during the auction you will definitely receive your offer price. It cannot now be taken. Only vouchers NOT sold during the auction may be taken.
2. If you did not sell your voucher in the auction and we take your voucher, you will **not** receive its redemption value. Instead, you will receive the *average price paid* for vouchers in the auction. This average price may be less than, the same as, or greater than your voucher’s redemption value. We will calculate this average price by adding up the price paid for each voucher sold in the auction, and then dividing by the number of vouchers sold.

For example, if three vouchers were sold during the auction at prices of \$500, \$540, and \$460, the average price paid in the auction would be  $(\$500 + \$540 + \$460)/3 = \$500$ . The three people who sold their vouchers during the auction would receive their offer prices, \$500, \$540, and \$460 respectively. Anyone who has an unsold voucher that is taken would receive \$500, regardless of their unsold voucher’s redemption value. (For this example, we have chosen numbers that are higher than any that will be used in the auction.)

3. The number of vouchers we take will be the difference between our target and the number of vouchers that we bought during the auction. For example, if our target was 1,000 vouchers but we were able to purchase only 990 vouchers during the auction, we would have to take 10 vouchers.
4. We will determine which vouchers to take based on the voucher number, starting with the

lowest voucher number and moving to progressively higher numbers until we meet our target

We will start with the lowest voucher number (1001). If this voucher was not sold in the auction, we will take this voucher and pay this voucher's owner the average price paid in the auction. (Remember, if this voucher was sold in the auction, we will simply go on to the next voucher; it cannot now be taken.) We then go to the next highest voucher number (1002). If this voucher was sold in the auction, we go on to the next lowest number. If not, we take voucher 1002 and pay the owner the average price paid in the auction.

We continue this process, moving to higher and higher voucher ID numbers until we reach our target number of vouchers.

It is our hope that we will obtain enough vouchers in the voluntary auction. However, if not enough vouchers are obtained we will implement these provisions.

### **Summary**

Everyone has two vouchers. You must decide for each voucher whether you wish to sell it (at a price at or below \$19.40). If you want to sell it, write your offer price in the appropriate part of your offer form. If you do not want to sell it, write NS on your offer form. When you've made your decisions for both vouchers, bring your offer form to us in the lab.

Remember, if we do not get our target number of vouchers in the auction, we will buy UNSOLD vouchers from you (and pay the average price paid in the auction) beginning with the lowest voucher ID number and working up to higher ID numbers until we hit our target.

Thus, you will receive one of the following amounts of money for each of your two vouchers.

- Your offer price if your offer price is accepted and we buy your voucher from you.

OR

- The average price paid for vouchers in the auction IF you have not sold the voucher in the auction and it is "taken" (that is, if we have not reached our target number of vouchers by the time that we get to your voucher ID number).

OR

- The voucher's redemption value, the dollar amount on your voucher, IF you have not sold the voucher in the auction, and if we do not take your voucher.

Before we begin the auction, we want to be sure that you understand how your earnings are determined in this auction. Please answer the following questions. When you are done, raise

your hand and one of us will come by and check your answers.

**Start with your Voucher 1.** Write the redemption value for this voucher in the space below:

Voucher 1: \_\_\_\_\_

Now write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 1: \_\_\_\_\_

Suppose that the average price paid in the auction was \$1.00 (we're using a number that is lower than anything that will be used in the auction; again, this is just an example) Use your voucher's redemption value, your offer price for the voucher, and information about the average price paid in the auction to answer the following questions.

- (a) If your offer price is **not** accepted (that is, if you don't sell Voucher 1 in the auction), and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 1?
- (b) If your offer for voucher 1 is **not** accepted, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 1?
- (c) If your offer for voucher 1 **is** accepted, how much would you be paid for Voucher 1?

**Now look at your Voucher 2.** Write the redemption value for this voucher in the space below:

Voucher 2: \_\_\_\_\_

Write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 2: \_\_\_\_\_

Suppose that the average price paid in the auction was \$1.00 (we're using a number that is lower than anything that will be used in the auction; again, this is just an example) Use your voucher's redemption value, your offer price for the voucher, and information about the average price paid in the auction to answer the following questions.

- (a) If your offer price is **not** accepted (that is, if you don't sell Voucher 2 in the auction), and if we **do not** take the voucher involuntarily, how much would you be paid for Voucher 2?
- (b) If your offer for Voucher 2 is **not** accepted, but we **do** take the voucher from you involuntarily, how much would you be paid for Voucher 2?

( c ) If your offer for Voucher 2 is accepted, how much would you be paid for Voucher 2?

## **A1.7 Experiment Instructions, Sealed Offer Auction with Announced Reservation Price, without taking**

Welcome to our experiment. Today, you will participate in an auction in which you will definitely earn money. These instructions explain the rules of the auction and how your earnings will be determined.

### **Earning Money In This Experiment**

You have an envelope that contains two vouchers—the two pink slips in your envelope. Please look at your vouchers now. Each voucher has a 4-digit identification number. The first digit – number – identifies your voucher (you have two vouchers, which start with a 1 and a 2 respectively).

On each of your vouchers there is also a **value with a dollar sign**. This is the **redemption value** of the voucher. In other words, at the end of the auction, you can turn your voucher in to us and we will pay you this amount of money in cash. Is that clear? It is possible that your two vouchers have different values written on them, and also that others in the auction may have different values than you do. However, each voucher may be turned in to us at the end of the auction for the amount of money written on the front of it. We have enough cash with us to pay all of you for your vouchers.

However, you have a choice. You can keep your voucher and cash it in at the end of the auction for the amount of money that is written on it. **OR**, you may offer to sell one or both of your vouchers to us for some price. We will call the price at which you offer to sell your voucher is your OFFER PRICE.

If we accept your offer to sell a voucher to us, you will receive your OFFER PRICE. In this case, you will return the voucher to us in exchange for this offer price. In other words, you will receive the offer price instead of the dollar amount of the voucher (the voucher's redemption value).

If, on the other hand, we do not accept your offer to sell your voucher you will keep it and receive the REDEMPTION VALUE written on the voucher. Thus, for each voucher, you will earn either (but not both):

\* the dollar amount on the voucher, if you have not sold it to us (whether or not you offered to sell it).

OR

\*your OFFER PRICE if you have sold your voucher to us.

### **How We Choose Which Offers to Accept**

There are \_\_\_\_\_ people participating in today's auction, and each person has 2 vouchers; therefore there are a total of \_\_\_\_\_ vouchers. We have a **target** for the number of

vouchers that we want to purchase. For this purpose, we don't care anything about the voucher's redemption value, or who owns the voucher: we just have a target for the number of vouchers that we want to acquire, and also a fixed amount of money for buying your vouchers (in addition to the money we will use to pay you for any vouchers we do not sell). However, we cannot tell you either the voucher target or our budget available to buy vouchers.

We also have a **maximum price** that we are willing to pay for vouchers. We will entertain all offers up to a maximum price of **\$19.40**. Lower offers will be accepted first, followed by progressively higher offers until we obtain our target number of vouchers. Thus, low offers stand a greater chance of being accepted. If there are more offers to sell vouchers at the maximum accepted price than required to meet our target, the following procedures will be employed: All offers below the maximum accepted price will definitely be accepted. We will then obtain the additional vouchers required by randomly choosing among all offers at the maximum accepted price until we have met our target.

For example, suppose that we are unable to obtain our target number of vouchers if we accepted only those offers at prices *below* \$19.40; however if we accepted all offers *at or below* \$19.40 we would exceed our voucher target. In this case we would accept all offers below \$19.40 and then randomly choose among the \$19.40 offers until we meet our target. In other words, all offers below \$19.40 are accepted, but only some of those offers at \$19.40 will be accepted.

**Of course, the maximum accepted price might be less than \$19.40.** In this case, the same procedures would be followed: all offers below the maximum accepted price would be accepted and then we would randomly choose among those at the maximum price until we meet our voucher target.

### **Auction Procedures**

1. Please look at your Offer Form, which is the last page attached to these instructions. The top half of the form refers to your first voucher and the bottom refers to your second voucher. If you wish to offer a voucher for sale, just write your offer price – the amount of money we would have to pay you for you to sell your voucher to us – in the space indicated for any voucher(s) you wish to sell. If you do not wish to sell a voucher, write NS in the space indicated.
2. After you have made these decisions, bring your Offer Form to one of us in the lab. **Remember:** if we accept your offer, you will receive your offer price instead of the dollar amount written on the voucher. If your offer is NOT accepted (or if you do not offer your voucher for sale) you will receive its redemption value.
3. When we have all of your Offer Forms, we will enter all offers to sell vouchers. We will order them from the lowest offer price to the highest offer price. Starting with the lowest offer price, we will buy that voucher, then the voucher with the next lowest offer price, and continue buying vouchers with the lowest offer prices until either: (1) we've reached our target number of vouchers; or (2) we have exhausted our funds; whichever happens

first. If, at the highest offer price that we can pay in a round, there is a “tie,” i.e., more than one voucher has been offered at the highest accepted price, we will randomly choose which offers to accept. As we described above, in this case, all offers below this highest accepted price will be definitely accepted.

4. We will then announce the voucher numbers for those vouchers that we have purchased. Each person whose offer was accepted will receive the offer price for any voucher(s) accepted. All other vouchers will be exchanged for their redemption values.

### **Summary**

Everyone has two vouchers. You must decide for each voucher whether you wish to sell it (at a price at or below \$19.40). If you want to sell it, write your offer price in the appropriate part of your offer form. If you do not want to sell it, write NS on your offer form. When you’ve made your decisions for both vouchers, bring your offer form to us in the lab.

Thus, you will receive one of the following amounts of money for each of your two vouchers.

- Your offer price if your offer price is accepted and we buy your voucher from you.

OR

- The voucher’s redemption value, the dollar amount on your voucher, IF you have not sold the voucher in the auction.

Before we begin the auction, we want to be sure that you understand how your earnings are determined in this auction. Please answer the following questions. When you are done, raise your hand and one of us will come by and check your answers.

**Start with your Voucher 1.** Write the redemption value for this voucher in the space below:

Voucher 1: \_\_\_\_\_

Now write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 1: \_\_\_\_\_

Use your voucher’s redemption value and your offer price for the voucher to answer the following questions.

- (a) If your offer price is **not** accepted (that is, if you don't sell Voucher 1 in the auction), how much would you be paid for Voucher 1?

(b) If your offer for voucher 1 **is** accepted, how much would you be paid for Voucher 1?

**Now look at your Voucher 2.** Write the redemption value for this voucher in the space below:

Voucher 2: \_\_\_\_\_

Write an offer price in the space below. You will use this offer price in order to calculate example earnings. In the actual auction you may choose a different offer price if you wish. **Nothing in this example will have any effect on your earnings.**

Your offer price for Voucher 2: \_\_\_\_\_

Use your voucher's redemption value and your offer price for the voucher to answer the following questions.

(a) If your offer price is **not** accepted (that is, if you don't sell Voucher 2 in the auction), how much would you be paid for Voucher 2?

(b) If your offer for Voucher 2 **is** accepted, how much would you be paid for Voucher 2?

## A2.1 Values Used in Experiments

<b>Pilot Experiments</b>		
<b>Subject ID</b>	<b>Voucher 1</b>	<b>Voucher 2</b>
1	3	11
2	4	10
3	5	9
4	6	8
5	7	7
6	8	6
7	9	5
8	10	4
9	11	3
10	3	11
11	4	10
12	5	9
13	6	8
14	7	7
15	8	6
16	9	5
17	10	4
18	11	3
19	3	11
20	4	10
21	5	9
22	6	8
23	7	7
24	8	6
25	9	5
26	10	4

**September 24, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11
14	6	7
15	8	9

**September 26, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11

**October 3, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9

**October 8, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11
14	6	7
15	8	9

**October 10, 2001 (Session 1)**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7

**October 10, 2001 (Session 2)**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11
14	6	7
15	8	9

**November 5, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11
14	6	7
15	8	9

**November 7, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7

**November 8, 2001**

Subject ID	Voucher 1	Voucher 2
1	3	4
2	3	4
3	5	5
4	6	7
5	6	7
6	8	9
7	8	9
8	10	11
9	10	11
10	4	5
11	6	7
12	8	9
13	10	11

**December 3, 2001**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**December 4, 2001**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**December 5, 2001**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**December 7, 2001 (Session 1)**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**December 7, 2001 (Session 2)**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**February 28, 2002**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**April 4, 2002**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**April 8, 2002**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**April 24, 2002**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19
15	20	21

**April 25, 2002**

Subject ID	Voucher 1	Voucher 2
1	15	16
2	22	23
3	18	19
4	20	21
5	17	17
6	22	23
7	18	19
8	20	21
9	16	17
10	20	21
11	18	19
12	15	16
13	22	23
14	18	19

### A3.1 Surveys

#### Survey: Farmers with Accepted Offers in 2002 Irrigation Auction

To: Southwest Georgia Farmer

From: Researchers at the Georgia Water Policy and Planning Center

Thank you for taking the time required to complete this short questionnaire. Your responses will be treated confidentially. No one will be able to associate a completed questionnaire with the person that completed it. Your responses will help us a great deal in our research focused on means by which the management of water resources in Southwest Georgia can be improved.

The questions given below apply to the land covered by permit #

---

A. Our initial questions refer to **last year's** (2001) planting season.

1. Did you plant on this land last year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, skip to 3)
2. What crops (acreage of each crop and irrigation water use) did you plant?

Crop	Acreage	Irr. Water use (inches)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

B. The following questions refer to **the current** (2002) planting season.

3. Have you already planted on this land this season? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what crops (and acreage in each crop) have you planted?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. If your offer in the EPD's acreage reduction auction had **NOT** been accepted, would you have planted on this land?

Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what would you have planted?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Do you intend to plant on this land this year even though you cannot irrigate?

Yes \_\_\_\_\_ No \_\_\_\_\_

C. Our final questions relate to your experience in the EPD's acreage reduction auction.

6. What factors did you considered in setting an offer price?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Do you consider the way that this year's auction was carried out was better or worse than last year's? Do you have suggestions for ways by which the auction process can be improved? Your comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50% cost-share by the state? Yes\_\_\_ No \_\_\_\_

Comments: (under what conditions would you agree to the above?)

\_\_\_\_\_  
\_\_\_\_\_

THANKS AGAIN FOR YOUR HELP

**Survey: Farmers with Rejected Offers in 2002 Irrigation Auction**

To: Southwest Georgia Farmer

From: Researchers at the Georgia Water Policy and Planning Center

Thank you for taking the time required to complete this short questionnaire. Your responses will be treated confidentially. No one will be able to associate a completed questionnaire with the person that completed it. Your responses will help us a great deal in our research focused on means by which the management of water resources in Southwest Georgia can be improved.

The questions given below apply to the land covered by permit #

---

A. Our initial questions refer to **last year's** (2001) planting season.

1. Did you plant on this land last year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, skip to 3)
2. What crops (acreage of each crop and irrigation water use) did you plant?

Crop	Acreage	Irr. Water use (inches)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

B. The following questions refer to **the current** (2002) planting season.

3. Have you already planted on this land this season? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what crops (and acreage in each crop) have you planted?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. If you have not already planted on this land, do you intend to plant on this land this year?  
Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what will you plant?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. If your offer in the EPD's acreage reduction auction **HAD** been accepted, would you have planted on this land even though you wouldn't have been able to irrigate?  
Yes \_\_\_\_\_ No \_\_\_\_\_

C. Our final questions relate to your experience in the EPD's acreage reduction auction.

6. What factors did you considered in setting an offer price?

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7. Do you consider the way that this year's auction was carried out was better or worse than last year's? Do you have suggestions for ways by which the auction process can be improved? Your comments:

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8. Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50% cost-share by the state? Yes \_\_\_ No \_\_\_

Comments: (under what conditions would you agree to the above?)

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THANKS AGAIN FOR YOUR HELP

**Survey: Farmers who Did Not Participate in 2002 Irrigation Auction**

To: Southwest Georgia Farmer

From: Researchers at the Georgia Water Policy and Planning Center

Thank you for taking the time required to complete this short questionnaire. Your responses will be treated confidentially. No one will be able to associate a completed questionnaire with the person that completed it. Your responses will help us a great deal in our research focused on means by which the management of water resources in Southwest Georgia can be improved.

The questions given below apply to the land covered by permit #

---

A. Our initial questions refer to **last year's** (2001) planting season.

1. Did you plant on this land last year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, skip to 3)
2. What crops (acreage of each crop and irrigation water use) did you plant?

Crop	Acreage	Irr. Water use (inches)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

B. The following questions refer to **the current** (2002) planting season.

3. Have you already planted on this land this season? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what crops (and acreage in each crop) have you planted?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. If you have not already planted on this land, do you intend to plant on this land this year?  
 Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, what will you plant?

Crop	Acreage	Date Planted?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

C. Our final questions relate to your experience in the EPD's acreage reduction auction.

5. If the EPD's acreage reduction auction had accepted offers above \$150/acre, would you have participated in the auction? \_\_\_ Yes \_\_\_ No

If Yes, what would have been the minimum offer price at which you would have participated? \$ \_\_\_\_\_

6. Were there factors other than the EPD's upper limit on an offer price that influenced your decision to not participate? If so, would you share those with us?

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7. Do you consider the way that this year's auction was carried out was better or worse than last year's? Do you have suggestions for ways by which the auction process can be improved? Your comments:

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8. Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50% cost-share by the state? \_\_\_ Yes \_\_\_ No

Comments: (under what conditions would you agree to the above?)

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THANKS AGAIN FOR YOUR HELP

### A3.2 Transcript of Comments: Factors Affecting Offer Price/Participation

#### Question for Those with Accepted Offers:

“What factors did you consider in setting an offer price?”

- *Yield and quality of crops grown without waste, plus the possibility of a near zero crop yield*
- *Crops grown and commodity prices*
- *Low cotton price*
- *-*
- *-*
- *What crop the rotation called for; what profit on a normal year could be expected and what payments were expected off this land*
- *Possible profit*
- *Irrigation's economic return*
- *Price offered per acre, crop planted*
- *The amount of money I would lose by not irrigating*
- *An average of the prior year's payment per acre*
- *Low enough to be accepted, should have bid more*
- *Irrigation's economic return*
- *-*
- *The potential value of the crop if irrigated versus the value of dry land crops*
- *Could not afford to go any lower on bid*
- *Average land/peanut rent prices*
- *Help conserve water usage*
- *Average land rent*
- *Uncertainty about the new farm bill with questions on commodity prices. However, if the present farm bill would have been implemented on a timely basis, then the \$150 cap would have kept us from participating.*
- *I tried to get accepted*
- *-*
- *Made sure I got in*
- *Peanuts and cotton are both my expensive crops to grow*
- *-*
- *What cost would have been to maintain irrigation equipment.*
- *As close to \$150/acre as possible, that's what my land rents for.*
- *-*
- *Since we had cancelled our farm rental agreement for 2002, we wanted at least as much as we would have gotten from the farm rent*
- *Difference in tonnage of peanuts or cotton or corn, with or without water*
- *I bid what I thought would be accepted*
- *Uncertainty of the new farm bill with questions of commodity prices led to our decision. However, if the present form of the discussed farm bill had been implemented on a timely basis, then the \$150.00 cap would not have been enough for us to participate.*

- *Uncertainty of the new farm bill with questions of commodity prices led to our decision. However, if the present form of the discussed farm bill had been implemented on a timely basis, then the \$150.00 ceiling placed on the auction would not have been enough money per acre for us to have participated in the auction.*
- *Uncertainty of the new farm bill with questions of commodity prices led to our decision. However, if the present form of the discussed farm bill had been implemented on a timely basis, then the \$150.00 cap would have been insufficient.*
- *Knowing what I needed to at least break even by not irrigating*
- -
- *Better than farming*
- *Comparison with the price of irrigated rent; drought*
- *I think it is a fair price*
- *Value of irrigation to crops, cost of replacing lost crop if no production and cash flow requirements of total farms*
- *To insure cost of production from insurance and bid price*
- -
- *What I could live with*
- *Value to me*
- *Cost of production and yield, irrigated and non-irrigated potential payment from acreage reduction auction*
- *Cost, prices and farm program*
- *Irrigation equipment payment and interest; rising fuel cost; water availability; insurance guarantee (dry vs. irrigated) and operational loan repayment*
- -
- *Environmental impact; pleasure in having flowing stream and quality of land*
- *Environmental impact; pleasure in having flowing stream and quality of land*
- *Environmental impact; pleasure in having flowing stream and quality of land*
- *Amount I would lose by not irrigating*
- *Current personal obligations and expenses*
- *Prices and supply of water*
- *Crop prices and water supply*
- *Prices and water supply*
- *Yield reduction; cost reduction; and equipment cost*
- *Yield reduction; land value (equipment cost) and cost reduction*
- *If price is high enough to offset loss of irrigation, reduce my risk when prices of commodities are as low as they are now.*
- -
- -
- *The low price of cotton*
- *Potential profit related to irrigated acreage vs. un-irrigated acreage*
- *Discussions with other farmers and then made a decision*
- *Target price and availability of water*
- *Cost of production and return*
- *Submitting a reasonable bid and being able to plant it or rent it out*

**Question for Those with Rejected Offers:**

“What factors did you consider in setting an offer price?”

- *Crops to be grown*
- *Rent*
- *My income out of the acreage vs. payment*
- *What I thought it would cost me if I did not irrigate, in lost yields and quality*
- *Their letter for maximum bid*
- *Their letter for maximum bid*
- *I had cover crop that might have been cut for grain to add to income*
- *Dollar return needed on land*
- *Land rental is \$150. No wear and tear on pivots or pumping unit.*
- *Land rental is \$150. No wear and tear on pivots or pumping unit.*
- *Dollar return needed on land*
- *Last year's average in everyone's offer*
- *Dollar return needed on land*
- *Dollar return needed on land*
- *Value to me*
- *-*
- *Production cost, commodity price*
- *-*
- *(Partly) the difference that could be made between watered and not watered cotton.*
- *Price received*
- *The price I received and if it would be less risk and more profit or at least as much profit*
- *Dollar return needed on land*

### Question for Those who Did Not Participate:

“Were there factors other than the EPD’s upper limit on an offer price that influenced your decision not to participate? If so, would you share those with us?”

- *My offer price for this year’s auction was determined by the fact that lack of irrigation cuts the yield of most crops by half during a drought. I had to justify how much I needed to make per acre to justify the loss in yield.*
- -
- -
- *All crop land is leased out*
- *I prefer to have the crops*
- *Muscadine vines are a long term investment and we must constantly keep the vine healthy or lose production in the following year or lose the vine entirely*
- *To not irrigate the corn and hay in a dry year could result in poor quality silage and hay. Our feed shortage that could cost more in milk production than is gained by not irrigating.*
- *Potentially, I can generate about \$10,000 per acre*
- -
- *Yes. This is the best land and some of the biggest fields we own are also the easiest and cheapest to irrigate*
- *Rotation of crops*
- *Yes, I have equipment and labor and overhead to cover on a set number of irrigated acres; I do not want dry land.*
- -
- *No*
- *No*
- *We have redundant systems surface and well water. We would consider selling one source but not at the expense of voiding the other source.*
- *We have redundant systems surface and well water. We would consider selling one source but not at the expense of voiding the other source.*
- -
- *Insurance*
- *Could not grow turf without water*
- *Due to our set-up and crop rotations, it is impossible for us to shut down one pump completely. We could leave some acreage out.*
- -
- -
- *No*
- *Auction time conflict with crop insurance - cover two crop season - fall seeded and spring seeded. Limitation on bids should be by acres and not by permit number*
- *We did not qualify - according to EPD’s maps*
- *We can’t let our peanuts burn up for \$150.00 per acre. There were more acres we could have idled but they were all under one pumping station*
- -

- -
- *Can not compete with high yielding crops*
- *We are farming for a profit. We think that we can make more farming our land*
- *I need to irrigate our crops*
- *I have to feed my cows all year, \$150.00/acre would not do this*
- *I have to feed my cows all year, \$150.00/acre would not do this*
- *Had rented land by the time EPD made their determination*
- -
- *I have a permitted well that also irrigates the same acreage as this surface permit. I had rather farm and try to make some crop than not*
- *Banker wanted crops irrigated in order to finance*
- *We grow feed for dairy, replacement cattle and beef*
- *Insurance on dry land is combined with irrigation crops, irrigation yields would cancel out dry land losses*
- -
- *Yes, this permit is watered by Circle while the other is run by Traveler*
- -
- -
- -
- *\$150.00 not high enough to cover costs and risk of not watering*
- *No longer farming*
- *\$150.00 was not sufficient to cover cost and risk of not watering*
- *I have two separate systems on this one permit which keeps me from offering a part of it for a bid and then plant crop on the other half.*
- -
- -
- *The corn I grow is needed for dairy cow feed*
- -
- *Yes, research needs*
- *No, this land had not been planted in a couple of years and it was the year to plant peanuts*
- *Did not irrigate, so I was not entitled to participate*
- *Rather have the use for irrigation*
- *Yes, research needs*
- -
- -
- *No*
- *My decision not to participate was that I did not want to let my watermelons and cantelope land go. They told me its all or nothing.*
- *Permit had not been used in the last three years. An unfair barometer used for auction acreage.*
- *Land had not been irrigated in last three years*
- -

- *I am co-owner of a farm supply business, peanut buying point and cotton gin, if I do not plant, then each of these businesses would suffer. Furthermore, the water supply is abundant which helps to insure a good crop*
- -
- *We are in the pine seedling business. A one year loss of growth to our customers can never be replaced. This loss would result in a harvest rotation differential that would cause significant financial loss to the forest landowner.*

### A3.3 Transcript of Comments: Comparison of 2001/2002 Auctions

#### Question for Those with Accepted Offers:

“Do you consider the way that this year’s auction was carried out was better or worse than last year’s? Do you have suggestions for ways by which the auction process can be improved?”

- *This year was somewhat better*
- *I prefer this year’s method*
- *Somewhat better*
- *Better*
- *Better*
- *Better*
- *Better than last year, should be held in February*
- *Better*
- *Worse, go back to last year’s auction*
- *Better*
- *Better, establish a price per acre - no bidding*
- *Better*
- *Better*
- *-*
- *I would prefer the 2001 auction method over the 2002 method, but I would like to have a limit on the number of rounds that would take place and know in advance the number of rounds*
- *Better than last year*
- *Better*
- *Worse, got papers every week for 4 weeks*
- *Better*
- *This year’s method was better, however, in a normal year the \$150 cap would have kept us from participating*
- *I did not participate last year*
- *Better*
- *Better*
- *I think it was a lot better than last year’s*
- *About the same. Price per acre should be a fixed amount (\$175.00) and the auction should be held in January so that we can make better plans*
- *About the same. The date of auction needs to be in January so we can make plans. Price needs to be a fixed amount (\$175.00) for every acre. Need to make sure acres taken are really irrigated. Do not pay for acres that would not be irrigated.*
- *Did not apply last year, so can not comment*
- *-*
- *It was better in 2002, because it involved the owners directly without the renters getting involved. Last year our farmer was able to steal the auction money from us*
- *Better and more simple*

- *I had surgery last year and could not participate. If it had been like this year (through the mail) I probably would have.*
- *This year's format was much better- however, as stated above, in a normal year the \$150 cap would have been insufficient*
- *We liked this year's sealed bids better – however in a normal year, I would not have liked the \$150.00 per acre cap*
- *This year was better, however, with the new farm bill implemented, the \$150.00 cap could have kept us from participating*
- *Better, because farmers know what they need not to irrigate*
- *-*
- *It was okay, but they were very slow in responding to anything*
- *N/A*
- *Better*
- *Better. This year was better and more equitable than last year's: there should be no restrictions on permits used on pasture; and pray for rain so we don't need to irrigate or have an auction*
- *Better*
- *-*
- *Better*
- *Worse, last year's was better – even though mine was not accepted*
- *Better*
- *Better*
- *Worse. Mail delivery not reliable or speedy; slow response by DNR*
- *Better*
- *Better this year*
- *Better this year*
- *Better this year*
- *Do not know. Was not in the auction last year*
- *N/A*
- *Better, last year's was terrible*
- *Better, last year's was terrible*
- *Better, last year's was terrible*
- *Better. I suggest an earlier starting date to allow farmers to make planting and planning decisions at the time crop loans are applied for. This will eliminate changes in projections. One mail out should request all needed information, whereas we received three*
- *Better. Let one mail out contain all needed information, get an early start as most farmers make decisions and projections before late March.*
- *Both have advantages and disadvantages to bidders*
- *Better this year*
- *Better this year*
- *Yes, price is way too low when cotton prices get better*
- *Better than last year*
- *A lot better*

- *Better*
- *The producer and not the landlord, should be the one doing this bidding*
- *I think the acres of land irrigated should be accurate. I know in my case it was not, I had 31 acres more. Some of my friends had auctioned for much more, I am sure the permitted acres are not accurate. I feel this should be cancelled.*

### Question for Those with Rejected Offers:

“Do you consider the way that this year’s auction was carried out was better or worse than last year’s? Do you have suggestions for ways by which the auction process can be improved?”

- *I don't agree with either process. A price should be set to pay and any grower willing to participate at that price should be accepted.*
- *Either way – what's missing is some of the acreage that was bid and accepted was not intended to be irrigated, so the money spent did not conserve any water. This needs to be checked on, that is why they could bid less.*
- *I was not asked to participate last year (2001)*
- *This year was better*
- *Better*
- *Better*
- *Yes. Cable tow should be cheaper than pivot.*
- *Better*
- *Worse. Give us a second chance to bid.*
- *Worse. Give us a second chance to bid.*
- *Better.*
- *Better. Less time consuming on my plot, was disappointed that my offer was not accepted.*
- *Better*
- *Better*
- *Worse*
- *Better. Set offer price, take it or leave it. Buy in surface permits and with exchange for deep well at owner's location choice.*
- *Ok*
- *Same*
- *I did not get my bidding material until the 14<sup>th</sup> March and the bid was to be in the Atlanta office the 15<sup>th</sup> of March – impossible.*
- *Same*
- *-*
- *Better*

**Question for Those who Did Not Participate:**

“Do you consider the way that this year’s auction was carried out was better or worse than last year’s? Do you have suggestions for ways by which the auction process can be improved?”

- *The way the auction was carried out this year was, by far, better than the process of 2001*
- -
- *Better, upper limits to compete with a high yielding farmer*
- -
- *Better this year, better organized*
- -
- *Unknown*
- *Didn't participate*
- *None*
- *Yes, definitely better*
- *Better, more organized this year*
- *Better*
- -
- *Better*
- *Better*
- *Take your money and buy water from the most active and/or destructive irrigation systems.*
- *Take your money and buy water from the most active and/or destructive irrigation systems.*
- *Better*
- *I did not get the offer till late*
- *Better*
- -
- -
- -
- *Better*
- *Impossible to worse than last year. Pay more and buy more water, not a bunch of systems that are not efficient enough to be used and therefore do not consume much water.*
- *Better*
- *Better*
- -
- -
- -
- *Yes. You should have higher limits for pivots*
- -
- *Do not know*
- *Do not know*
- *Better*
- -

- -
- *Liked this year better in some ways but last year was more of an auction*
- *No comment*
- *Better*
- -
- *Yes, because farmers know what they must get not to irrigate.*
- -
- *None*
- -
- *Better*
- *Better*
- *Better*
- *Same*
- *Better*
- -
- -
- -
- *Did not participate, so unable to comment*
- *Better. My bid information was received on March 14<sup>th</sup> and the bid was to be in the office March 15<sup>th</sup>, impossible.*
- *No comment other than that I think people have taken advantage of it. Greed.*
- *Had not participated in auction*
- *Did not participate, so unable to comment*
- -
- -
- *N/A*
- *I think you should put a meter on the pumps and let a person decide which part to plant or not plant any part of the permit..*
- *Make all peanuts eligible – we have not pumped in the past to try and conserve blue line streams*
- -
- -
- *I think it is better organized and much easier and less time consuming than the auction last year*
- *Better*
- *Send out an initial postcard requesting yes/no for participation. A YES response would require an auction packet and a NO would save time, money and auction material*
- *Better than last year*

### A3.4 Transcript of Comments: Willingness to Install a Meter

#### Question for Those with Accepted Offers:

“Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50 percent cost-share by the state? Under what conditions would you agree to the above?”

- *No. I would if State paid 100% of cost*
- *Yes*
- *No. State pays all*
- *Does not know*
- *Not sure*
- *Possibly. I am not sure of what 50% cost-share by the State means.*
- *-*
- *Needs more information*
- *No. Pumps not permanent, travelers used, multiple farms*
- *No. It should be no cost to me*
- *Yes*
- *No. Let ASCS office handle regulations*
- *Needs more information*
- *No*
- *No. I would agree for the meter if the State pays for 100% of the cost*
- *No*
- *Would need better explanation of criteria before deciding*
- *Yes. I would be present each time it was read*
- *No*
- *No. 100% cost to the State*
- *Yes*
- *Not sure*
- *Not sure*
- *No. I would like to know more about it*
- *No*
- *No*
- *Needs more information to make a decision*
- *-*
- *Yes. If we could be sure of obtaining some money from the Sate by this means*
- *No*
- *-*
- *No (100% cost to the State)*
- *No (100% cost to the State)*
- *No (100% cost to the State)*
- *No (I might/would agree if state paid 100% of cost)*
- *-*
- *Yes*

- *No*
- *No*
- *No. My experience with meters has not been good. They are expensive and unreliable. They are only slightly better than a SWAG. I do not have a problem with metering if a reliable meter is available. (The EPD bears the total cost of the meter and installation as well as replacement, and the program is voluntary – not mandated).*
- *No (only if state paid all cost)*
- *I would need to know more about the program*
- *I think this is giving to government too much control.*
- *No (100% cost share)*
- *No*
- *No (EPD or State should bear the cost)*
- *No (not sure about this, need further discussion)*
- *No*
- *Doesn't know*
- *Doesn't know*
- *Doesn't know*
- *Do not understand the question. 50% of what, the cost of irrigation or cost of the meter?*
- *Yes (if the cost share was based on actual costs that were obtained, e.g., fuel prices)*
- *No*
- *No*
- *No*
- *No*
- *No*
- *No*
- *Yes, but I would rather not.*
- *No*
- *No*
- *No (would not agree under any circumstances)*
- *No, under no conditions*
- *No, I would need to know more about it*
- *Undecided*
- *No. Need to deal with the actual farmer.*
- *Yes (provided everyone had to follow the same rules)*

**Question for Those with Rejected Offers:**

“Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50 percent cost-share by the state? Under what conditions would you agree to the above?”

- *No*
- *Yes. I rent it as irrigated [and intend to irrigate it unless compensated, if I accept money for not irrigating, I won't]. You can put any devise on it.*
- *Maybe. I don't know the cost, so I will not agree or disagree without that knowledge.*
- *No. Cost share needs to be 75% to 100% by State*
- *Yes*
- *Yes*
- *No*
- *No (100%)*
- *No*
- *No*
- *No. 100% cost share*
- *No. I think if there is abundant supply, it is not going to hurt the water supply*
- *No. (100%)*
- *No. (100% cost share)*
- *No. ( 100% EPD pay)*
- *No*
- *No*
- *Yes*
- *No. I use my pumping unit at more than one place, they are mobile*
- *Yes, but rather not*
- *Yes, but would rather not, because of cost and see little benefit to me or government.*
- *No (100%)*

**Question for Those who Did Not Participate:**

“Would you agree to have a sealed meter on your pumps, read annually by the EPD, under conditions where there was a 50 percent cost-share by the state? Under what conditions would you agree to the above?”

- *No. As I understand this program, the water I pump for 2002 would be measured, then I would be offered a cost-share the following year for not pumping over the amount pumped the year before. This is ridiculous because once the crop is in the ground, the farmer has made the commitment to see it through and can not restrict water in the middle of the growing season.*
- *No, never*
- *-*
- *-*
- *No, provided that all pumps in the State have meters, including those of government and industry.*
- *No*
- *Unknown. No restricted water usage.*
- *No. I do not know that I could.*
- *No*
- *Yes*
- *Possibly, depends on cost involved.*
- *Yes*
- *-*
- *Need more information before answer*
- *Need more information*
- *No. Permits were given with the understanding that older permits would have priority over newer permits – that is apparently not the case. Who knows where, when or how this information would be used, and whether it would help or hinder your farm.*
- *No. Permits were given with the understanding that older permits would have priority over newer permits – that is apparently not the case. Who knows where, when or how this information would be used, and whether it would help or hinder your farm (photocopy).*
- *No. At no cost to me.*
- *Yes*
- *No. Let local ASCS handle water regulations.*
- *Yes. As long as it would not be used in the future for allocations.*
- *-*
- *-*
- *Yes*
- *No. No cost, no inconvenience and removable if requested by landowner.*
- *No*
- *No*
- *-*
- *This permit was for rented land - I no longer rent the land covered by this permit.*
- *-*

- -
- *No. If they paid all and kept it repaired.*
- -
- *No. Would not cost me anything*
- *No. Would not cost me anything*
- *No. 100% cost share, voluntarily – data would have to be transmitted wireless (telephone), you would not have unknown people on your farm.*
- -
- *No*
- *Wants to know a lot more about it*
- *No. If it were mandated by law. Since our lakes cause springs below, there is more water running in the streams below dams, than would if there were no dams, during the dry periods of Summer and Fall. Otherwise the dams are overflowing.*
- -
- -
- *No. I might if State paid 100% of cost.*
- -
- *No (only at 100%)*
- *No*
- *No*
- *No*
- *No*
- *Not enough information. To start (agree); i) state pays the full cost, ii) this information would not be used in a harmful way to the farmer in the future, which some of the rules have been done on the water auction. We were all assured in 1988 this would not happen when we all had to sign up on our irrigation land.*
- *Do not know*
- *Needs to replace system*
- -
- -
- *No (mandatory)*
- *No. My pumps are mobile and I use them at different places.*
- *No. Would not like this at all, tired of being regulated by the Government, it should be an honor system.*
- *No*
- *No (mandatory)*
- -
- *No*
- *No*
- *Yes, but first needs to know the cost involved.*
- *No*
- *No*
- -
- *No. Would agree if State pays 100% of cost.*

- *Needs more information*
- *Not sure what 50% cost share means. We already have meters on our pumps.*
- *No*