MILFORD METERING PROGRAM

Over the past several years the State Engineer and his staff have worked with the water users in the Milford area to try to get accurate measurements of the amount of water used by each irrigation well.

Several different approaches have been tried to meet the challenges which came up and we have met with some success. However, there has been one challenge that has repeatedly limited our ability to obtain accurate measurements. It has been very difficult to keep the water meters in accurate operating condition.

There are several factors which contribute to this situation:

1. There are about 160 wells in the distribution system. Each well presents a separate measurement problem because of the many different types of meters in use and because each meter has been installed in a different way.

2. The commissioner does not have direct control over the maintenance of the meters. He must work through the individual water user when there is a problem with the meter. Some water users do not cooperate in getting their meters repaired.

3. It is difficult to get some meters repaired because the spare parts are not available. Some meters must be repaired by the manufacture and there is a long wait for service.

4. Some water users have incorrectly installed the meters so they do not give accurate readings.

5. The pitot tube has been used with some success. It provides accurate measurements but it useability is limited to wells with electric pumps.

6. There are some open ditch systems which cannot use meters. Also, some pipeline systems require special installations because the pipe does not flow full or the flow is too slow to turn a meter.

The division staff has expended a considerable amount of time trying to get the Milford distribution system to the point where the commissioner could make measurements with minimal assistance from our office. If we continue with the current system and continue our current level of effort, we may in time be able to accomplish that. However, our manpower is limited and there are other areas that need our attention.

Therefore, it is necessary that there be a basic change in how water measurement is handled in the Milford area. Attached are two alternative water measurement proposals which will be discussed at the annual meeting. A vote will be taken to determine which alternative will be used starting in 1996.

We have discussed these alternatives with the distribution system committee. We believe that either alternative will improve the accuracy of water measurement in the Milford area and will allow our staff to move on to review water measurement in other areas such as the Beryl-Enterprise area and the Beaver area.

ALTERNATIVE 1

REGULATE WATER USE BY WATER MEASUREMENT

METERS

1. Wherever meters are referred to in this proposal it means meters on pipeline systems, flumes or weirs on open ditch systems, or any other type of measuring device used by the irrigators to measure water.

2. The operation and maintenance of the existing meters will become the responsibility of the distribution committee and the commissioner. If a water user chooses not to allow the committee and the commissioner to operate and maintain the meter(s) on his or her system, the committee will install its own meter in the user's system.

3. Section 73-5-4 of the Utah Code authorizes the State Engineer or his appointed commissioner to determine the locations of measuring devices for obtaining accurate measurements. Therefore, the commissioner will decide where meter(s) need to be installed on each system. The commissioner will try to work with the water user in determining the location of any new meter or any meter which needs to be moved. However, the most important considerations will be that the location provides the information the commissioner needs and that the meter can be installed to measure accurately. On many systems, the correct location for the meter will require that it be installed in a manhole. The manhole will be lockable in case the commissioner needs to prevent tampering. Some meters are installed correctly now and if needed would be secured by a lockbox.

4. The meters will be installed in such a manner that the commissioner can remove and replace them without shutting down the well. If that is not possible, the water user will be responsible for shutting down the system whenever requested by the commissioner for replacement of a defective meter.

5. The committee will be responsible for selecting the types of meters used. The committee's goal will be to have only a couple of standard types of meters used in the valley. This will greatly simplify the maintenance of the meters for the commissioner. There will be a transition period of about five years during which time the committee will replace or move any existing meters which do not operate correctly. This will involve the installation of approximately 30 new meters each year. After the transition period, new meters will only be installed as needed to replace meters that don't work.

6. During the transition period, the commissioner will be responsible for determining which meters should be replaced each year. After the transition period the

commissioner will be responsible for deciding when a meter needs to be replaced.

7. The commissioner will continue to use the pitot tube to take water measurements where it is needed and where it can provide accurate measurement data. However, water users will not be charged a separate fee for the use of the pitot tube on their system.

REGULATION

1. The commissioner will monitor water use to ensure irrigation does not commence before or extend beyond the dates shown on the water rights. The commissioner will report any violations to the State Engineer. Water users desiring to begin irrigating earlier or continue irrigating later than the dates shown in their water right must send a written request to the Cedar City Regional Office. Approvals will be given only on a yearly basis.

2. The commissioner will visit each irrigation water meter at the beginning of the irrigation season and then at least every two weeks to record water use and monitor meter operation. Additional visits will be needed where it appears the meter is not operating correctly. Water meters used in commercial operations will be read every three months unless it appears there are problems with the meter. If the meter stops working, the commercial operators will be responsible for informing the commissioner immediately.

3. An adjudication order dated June 18, 1962 established an irrigation duty of four acre-feet per acre of land awarded a water right under the Proposed Determination. The acre-foot limit of a water right will be determined by multiplying the duty and the acreage limitation on the water right. Only water rights on record with the Division of Water Rights will be recognized in the distribution of water.

4. When water users have reached the acre-foot limit of their water right, they will be notified by the commissioner that they need to shut off the well. The State Engineer will also issue a notice to the water users who reach their limit ordering them to cease the use of water. After the order has been issued, water users found violating the irrigation duty in the 1962 adjudication order will be subject to contempt proceedings in District Court.

5. The commissioner will notify the State Engineer of any illegal water use that comes to his attention in the pursuit of his duties.

COSTS

1. Each of the water meters in the distribution system will be inspected by the commissioner. The purpose of the inspection will be to determine if the meter is in good operating condition, if it can be maintained in good operating condition, if it is

installed in the proper location, and if it is installed correctly. Any meter that does not meet these criteria will be replaced and/or relocated. The water users will pay the costs of purchasing and installing new meters and moving and reinstalling existing meters. All the meters may not be replaced at once, it is anticipated that 30 new meters will be installed each year so that within five years or less all the meters in the system will be in good operating condition, installed properly and in the right location. It is expected that meters will cost about $500 each. It will be necessary in many instances to install the meters in a manhole, which will cost about 200 per meter. Altogether, based on 30 meters a year, new meters will probably cost about $21,000 each year for five years. These costs may be paid by the individual water users or by the distribution system (all the water users) as explained below under the section on assessments.

2. The distribution system (all the water users) will pay the costs of maintaining the meters including the cost of spare parts, spare meters (so meters can be removed during the irrigation season if necessary for repair), and any factory repair costs that might be needed. The distribution system (all the water users) will also pay the cost of replacing water meters as the need arises. It is expected that these costs will be about $2,000 per year.

3. The distribution system will pay the cost of the commissioners salary. The amount of the commissioner's salary will be set by the water users. The amount of work involved will require that the commissioner be considered full time during the irrigation season (six months) and part time the rest of the year. It is reasonable to believe that the commissioner will spend, on the average, about ½ hour with each meter every two weeks. There are 160 meters in the system, so this equals 40 hours per week. If commissioner were paid $10 per hour over six months, it would be about $10,000. It may be necessary to offer a salary in the range of $10,000 to $15,000 to attract a person capable of doing the job and who would be willing to spend the time necessary.

4. The distribution system will pay the commissioners travel expenses and the other expenses required to operate the distribution system. The reimbursement for travel expenses and the rest of the budget will be set by the water users. Reimbursement of travel costs is usually in the range of $.30 to $.40 per mile depending on the condition of the roads traveled. Travel costs could be in the range of $1,000 to $1,500 per year.

5. The commissioner could receive retirement and health insurance benefits through the state retirement system, however, the cost of these benefits would have to be paid by the distribution system. Retirement costs are about 15% of the salary and health insurance for a family is about $4,600 per year.

6. The pitot tube may be used by the commissioner as a temporary means of measuring well flows in some situations and will be used as a means of checking the accuracy of the water meters. However, the water users will not be charged an extra fee for the use of the pitot tube on their wells.

ASSESSMENTS

Water users will be assessed for the installation, operation, & maintenance of the meters and the commissioner's salary and expenses. There are two ways the assessment could be handled:

1. The costs of installation, operation, and maintenance of the meters will be paid by all the water users regardless of whether they need a meter installed or not.

OR

2. During the transition period, the cost of installing a new meter would be charged to the water user who needed the new meter. All the other costs of operation and maintenance would be paid by all the water users. After the transition period, the costs of replacing any meters would be paid by all the water users.

The decision about which assessment method to use will be made by the water users at the annual meeting.

WATER COMMISSIONER

1. The extent of the commissioner's duties will require that the job be considered full time during the irrigation season.

2. The commissioner will maintain an inventory of meters, parts, equipment, etc. so that meters can be repaired or replaced quickly when needed.

3. The commissioner will assist in the budgeting process to help determine the equipment needs for the coming year.

4. If meters with battery operated display units are used, the commissioner will take the display units and batteries from each meter installation each fall after the irrigation season. He will clean the displays and batteries and prepare them for winter storage. Each spring before the irrigation season, the commissioner will reinstall display units and batteries.

5. The commissioner will make repairs and/or replace meters that are not operating correctly.

6. The commissioner will prepare the annual report.

ALTERNATIVE 2

REGULATE WATER USE BY CONTROLLING IRRIGATED LAND

BACKGROUND

1. Section 73-1-3 of the Utah Code Annotated, 1953, as amended states, "Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state." In the case of irrigation, this means that the water right is defined by the number of acres of irrigation allowed by the right, not by the amount of water described to meet the needs of the irrigated land.

2. Until recently, technology has not been available to the state engineer which would allow the measurement and evaluation of irrigated land in a timely manner. To compensate, state law (Section 73-5-4) requires each water user to install a measuring device and the state engineer establishes an irrigation duty for each area of the state. The irrigation duty is a calculation of the amount of water required by the crop plus an estimate of the water lost.

3. Technology and procedures now exist which could allow the state engineer in some situations to measure, evaluate, and regulate acreage each irrigation season.

4. Land irrigated solely from groundwater can be regulated without the need for water measuring devices. Distribution of water in areas irrigated from ground water differs from areas where land is irrigated from direct stream flows. The irrigation supply available from direct stream flow is variable and changes quickly with the changes of nature. It requires measuring devices to ensure it is divided equitably. The irrigation supply available from groundwater is more stable and depends more on the efforts of the water user than on the changes of nature.

REGULATION

1. The commissioner will monitor water use to ensure irrigation does not commence before or extend beyond the dates shown on the water rights. The commissioner will report any violations to the State Engineer. Water users desiring to begin irrigating earlier or continue irrigating later than the dates shown in their water right must send a written request to the Cedar City Regional Office. Approvals will be given only on a yearly basis.

2. Except in a few specific situations, water use will not be measured. Irrigators will be required to limit their irrigation to the amount of land allowed by their water right at the location described in their water right.

3. Each year, irrigated acreage will be checked against the acreage described in the irrigators water right. The land being irrigated will be determined from aerial

photos taken each year sometime in the first two or three months of the irrigation season. This will be the only basis of regulation for most of the irrigated land in the Milford area. The irrigated land will be checked against land ownership plats and the water rights of record in the State Engineer's Office.

4. An adjudication order dated June 18, 1962 limited irrigation to those lands which were awarded a water right under the Proposed Determination. Therefore irrigation will be allowed only on those lands which are described in the Proposed Determination unless the proper change applications have been approved. The water rights of record in the State Engineer's Office will be the only basis for determining land which can be legally irrigated.

5. Those water users found to be irrigating illegal acreage will be notified by the State Engineer and will be ordered to cease the illegal irrigation. It is anticipated that notices and orders will be issued within about three weeks of the aerial photography.

6. The State Engineer will notify the commissioner which parcels of land are being irrigated illegally. The commissioner will immediately visit each illegal parcel and take soil moisture readings. The commissioner will then visit each illegal parcel on a weekly basis through the remainder of the irrigation season to take measurements and record soil moisture levels.

7. If the soil moisture level in any illegal parcel increases without the benefit of precipitation, it will be considered evidence of irrigation. The commissioner will report to the State Engineer any illegal parcels which are irrigated after the order to cease irrigation. After the order has been issued, water users found irrigating illegal acreage will be subject to contempt proceedings in District Court under the 1962 adjudication order.

8. Commercial operations will continue to be regulated by measuring water use. Meters will be required on the wells and they will follow the regulation method described in Alternative 1.

9. Water users who irrigate using both surface water (from shares in Rocky Ford Irrigation Company) and groundwater, will be required to have water meters on their wells. The commissioner will be responsible for determining the location of the meter and to operate and maintain it. The distribution committee will be responsible for determining the type of meter installed. The irrigated acreage will be checked each year in the same way the other land is checked to ensure against expansion. The meters will be read to ensure groundwater use does not exceed the irrigation duty for the number of acres allowed under the groundwater rights. As in Alternative 1, these wells will be ordered shut off when the limit of the water right has been reached.

COSTS

1. The distribution system will pay the costs of the aerial photos which will be taken each year. The cost of these photos will be about $1,000 per year. The distribution system will pay the cost of a current set of land ownership plats each year to update the division's records. The cost of these plats will be about $50 per year. If Alternative 2 is selected, the State Engineer will pay these costs for the first two years. This will allow the state to perfect the regulation process before the water users are assessed.

2. The distribution system will purchase a soil moisture probe to allow the commissioner to take soil moisture readings as necessary. The cost of a probe is approximately $250.

3. The distribution system will pay the cost of the commissioners salary. The amount of the commissioner's salary will be set by the water users. The amount of work involved will require that the commissioner's be involved only on a part time basis during the irrigation season and the rest of the year. It is reasonable to believe the commissioner will spend, on the average, about 10 to 15 hours per week during the irrigation season to take the necessary soil moisture readings and to monitor and maintain the meters on irrigators using both surface and groundwater. If commissioner were paid $10 per hour over six months, it would be about $3,300. It may be necessary to offer a salary in the range of $3,000 to $4,000 to attract a person capable of doing the job and who would be willing to spend the time necessary.

4. The distribution system will pay the commissioners travel expenses and the other expenses required to operate the distribution system. The reimbursement for travel expenses and the rest of the budget will be set by the water users. Reimbursement of travel costs is usually in the range of $.30 to $.40 per mile depending on the condition of the roads traveled. Travel costs could be in the range of $500 to $700 per year.

5. Water users who use both surface and groundwater will pay the cost of installing a new meter or relocating their existing meter(s) if necessary to implement Alternative 2. The ongoing cost of operating and maintaining the meters (including replacement when necessary) will be paid by all the water users. This cost will probably be between $100 to $200 per year.

5. The pitot tube may be used by the commissioner as a temporary measure in some situations. However, the water users will not be charged an extra fee for the use of the pitot tube on their wells.

ASSESSMENTS

1. All the water users in the distribution system will be assessed for the costs of operating the distribution system as described above in the section on costs.

2. If Alternative 2 is selected, the water users will not be assessed for the cost of the aerial photos or the land ownership plats for the first two years. After two years the water users will be assessed for these costs.

3. Irrigators who use both surface and groundwater will be assessed for the initial cost of installing a meter on the well(s) if a new meter is needed. If the existing meter is adequate there will be no additional assessment. The commissioner will determine if a meter is suitable.

4. An assessment surcharge will be placed on the commercial water users because of the year around effort required by the commissioner on the commercial wells. The distribution committee will determine the amount of the surcharge.

WATER COMMISSIONER

1. The commissioner will be responsible for reporting to the State Engineer the types of crops irrigated on each parcel. This information will not be used for regulation but will assist the State Engineer in calculating the amount of groundwater used.

2. Although not used for regulation, the commissioner will be responsible for measuring and report the surface water used by any irrigators with surface rights. Surface irrigators will be responsible for the installation and maintenance of the flumes and weirs. This information will assist in tabulating the total water use for the irrigated lands in the Milford area.

3. Irrigation data will be collected by both the commissioner and the State Engineer's Office. Therefore, the commissioner will not be entirely responsible for the report but he will assist the State Engineer's Office in preparing it.