

OPERATING CRITERIA AND PROCEDURES
FOR THE NEWLANDS PROJECT

PREAMBLE

The development of Operating Criteria and Procedures (OCAP) for the Newlands Project (Project) in western Nevada was initiated in the late 1960's and has proven to be a divisive, contentious issue for the people in Nevada who rely on the waters of the Carson and Truckee Rivers. Competition for the water in the Project's desert environment is intense and growing. The conflicts among uses are clearly apparent in the effects forecast on various areas where the Department of the Interior (Department) has program responsibilities. The issue is complicated further by the requirements of the Endangered Species Act and the listing of the Cui-ui, a fish inhabiting the lower Truckee River and Pyramid Lake.

In order to proceed effectively and fairly, the Department had to have guiding principles for the OCAP. These are to:

- provide water deliveries sufficient to meet the water right entitlements of Project water users;
- meet the requirements of the Endangered Species Act as they specifically relate to the Truckee River/Pyramid Lake Cui-ui;
- fulfill Federal trust responsibilities to the Pyramid Lake Paiute Indian Tribe;
- fulfill Federal trust responsibilities to the Fallon Paiute-Shoshone Indian Tribe;
- conserve wetland and wildlife values in both the Truckee and Carson River basins;
- give cognizance to the State laws affecting water rights and uses;
- provide for stable economies and improve quality of life in the region to the extent it is influenced by Department-managed resources and facilities;
- allow local control and initiative to the maximum extent possible; and
- provide stability and predictability through straightforward operation based on actual versus forecast conditions.

The Department believes that the OCAP provided herein best satisfy these principles within the limits of the Department's legal authority.

Each of the competing uses for the water is critical in its own right. They are all essentially separable for decisionmaking purposes even though they clearly impact upon each other since the available supply is far less than the demand.

The OCAP deal with the operation and use of Federal facilities related to the Newlands Project. Therefore, their primary responsibility is supplying the water rights to the Project water users. To the extent this can be done effectively and efficiently, then the remaining water supply is available for other competing uses. The secondary impacts of the OCAP must, however, act to support or encourage results which benefit the other competing uses.

The basic structure of the OCAP relies on both rules and incentives which we believe will ensure reasonable, efficient water management through reliance on local control and initiatives. The direct consequences of the OCAP will be delivery of full water entitlements within the Newlands Project, protection of endangered species, fulfillment of trust responsibilities, and encouragement for the protection of other environmental and quality of life values.

INTRODUCTION

The OCAP shall govern the operation and use of federal facilities on the Project. When approved by the United States District Court for the District of Nevada (Court), the OCAP will supersede all OCAP previously issued by the Secretary of the Interior (Secretary) and the 1973 OCAP previously issued by the Court in Pyramid Lake Paiute Tribe of Indian v. Morton, 354 F. Supp. 252 (D.D.C. 1973). The OCAP are believed to be consistent with the decrees in United States v. Alpine Land and Reservoir Co., 503 F. Supp. 877 (D. Nev. 1980), substantially affirmed, 697 F. 2d 851 (9th Cir. 1983), cert. denied, 464 U.S. 863 (1983) and United States v. Orr Water Ditch Co., Equity No. A-3 (D. Nev.) (Orr Ditch and Alpine decrees, respectively). Implementation of the OCAP will ensure that the Secretary: (i) supplies the Project with water to meet all valid water rights; (ii) fulfills the federal trust responsibility to the Pyramid Lake Paiute Tribe of Indians; (iii) fulfills the federal trust responsibility to the Fallon Paiute-Shoshone Tribe of Indians; (iv) meets the requirements of the Endangered Species Act (16 U.S.C. 1531 et seq.); and (v) provides a framework for local decisionmaking which can contribute to the protection of wetlands, recreation, economic, and other regional values. Procedures are included to monitor water use and Project operations and to enforce these OCAP.

Fundamentally the OCAP are predicated on water being used on the water righted land in a similar manner as the past coupled with the Project operating at a reasonable efficiency. The Department believes that the OCAP efficiency targets are reasonable because they are at a level that can be shown to be achievable, can be obtained without significant capital expenditures and are within the range of efficiencies achieved in comparable systems.

The OCAP are designed to operate in a manner to produce a long term average effect recognizing that each year will necessarily be different as weather and actions by individual water users vary. It is also critical that OCAP compliance is measured based on facts which can be readily determined and reviewed, rather than on forecasts, theories, or models. In combination, the use of a factual base and a long-term average project efficiency, yields a methodology which will operate in a predictable fashion that minimizes disputes and allows the landowners and others to make knowing, rational decisions for themselves.

The OCAP assure proper water use and a reasonable efficiency by establishing a methodology consisting of three basic elements. First, it requires monitoring headgate deliveries against the acreage eligible to receive Project water multiplied by the court set water duty.

Second, the OCAP establish efficiency targets for the Project distribution system. The efficiency target varies with the actual valid headgate deliveries. Since many of the system losses are relatively constant, the system efficiency declines with smaller headgate deliveries and increase with larger deliveries. This also allows an automatic adjustment in efficiency for drought conditions. The OCAP provide for incentives if the District's operation is more efficient and for disincentives if it is less efficient than the OCAP target efficiency. Thus, through use of the incentive provisions, the District can offset deficiencies in time of drought or use the water saved for its desired purposes (e.g., wetlands, recreation, power, etc.) consistent with Nevada and Federal law.

Third, as a protection against the first two elements allowing the operation to become excessively out of balance, the OCAP establish a maximum allowable diversion (MAD) limit for irrigation and a maximum efficiency deficit (MED). No limit has been placed on the ability of the District to gain through the incentive feature.

The MAD and MED limits are set to provide an operating cushion approximately 6,000 acre-feet operating cushion above and below, respectively, the expected irrigation diversions, assuming the District's operation is at an average annual efficiency at the OCAP target level. Neither limit is expected to ever be encountered in actual operation.

The operating cushion size was chosen in relation to historic operations. Historically, not all water users have utilized their full entitlements in a given year. Either the season doesn't require it, the crops planted need less or the land cannot productively accommodate the full amount. Whatever the reason, the Project uses about 26,000 acre-feet less per year on average than its entitlement for actual irrigated acres. This provides a reasonable cushion, or insurance protection, above the normal expected use, yet does not in any way limit or impact on the water users' rights. It is also an important protection for other uses. Therefore, rather than trying to forecast the expected actual use each year and adding the operating cushion to get the MAD, it

is more direct and predictable to simply determine the anticipated acreage to be irrigated at its full water duty for the MAD.

The MED is a fixed number set equal to the operating cushion. It is the limit on how much accumulated storage can be borrowed from the future to satisfy a less efficient operation. The MED is for the protection of the water users against too severe an impact in the case of a low water year. Only the MAD can affect current operations within an irrigation season. The MED operates on the subsequent year only.

These OCAP will be enforced in cooperation with the Federal Water Master and the Nevada State Engineer and will govern delivery of all Project water. The OCAP are applicable to the Truckee-Carson Irrigation District or any other Project operating entity.

I. CONDITIONS OF WATER DELIVERY

Water from Project facilities may be delivered only for domestic and other uses and for irrigation of eligible land. Domestic and other uses of Project water are as defined by the Orr Ditch and Alpine decrees. Eligible land is defined as Project land which at the time of delivery has a valid water right and either: (i) is classified as irrigable pursuant to Bureau of Reclamation (Bureau) land classification standards (Reclamation Instruction Series 510); or (ii) has a paid out water right.

A. Irrigation Deliveries - Project irrigation water deliveries may be made only to eligible land to be irrigated. The District shall maintain records for each individual water right holder indicating the number of eligible acres irrigated and the amount of water ordered and delivered.

1. Eligible Land Actually Irrigated - During each year, the District shall identify and report to the Bureau the location and number of acres of eligible land irrigated in the Project. Possible irrigation of ineligible land will also be identified. The Bureau will review data to assure compliance with these OCAP. The District will be responsible for field checking potential violations and immediately stopping delivery of Project water to any ineligible land. The Bureau may also audit as appropriate.

2. Eligible Land with Transferred Water Rights - The District water rights maps dated August 1981 through January 1983 will be used as the basis for determining lands which have a valid water right. The original maps will be maintained by the District. The District shall provide copies of the maps to the Bureau. The District will alter the maps and the copies to account for water right transfers as they are approved by the Nevada State Engineer.

3. Other Eligible Land - The Bureau will also identify eligible land that was not irrigated during the prior irrigation season.

4. Notification and Review.

a. Eligible Land Anticipated to be Irrigated - Anticipated changes in irrigated eligible land from the prior year will be reported to the Bureau's Lahontan Basin Projects Office by the District by March 1 of each year. The District will adjust the acreage of the eligible land anticipated to be irrigated

to correct for inaccuracies and for water right transfers that have been approved by the Nevada State Engineer. As the adjustments are made, the District will provide updated information to the Bureau for review and approval. The District shall adjust anticipated water allocations to individual water users accordingly. The allocations will be based on a maximum annual entitlement of 3.5 acre-feet (AF) per acre of bottom land, 4.5 AF per acre of bench land, and 1.5 AF per acre of pasture land that is anticipated to be irrigated and not by the number of water righted acres.

The District will provide the individual water users with the approved data regarding the anticipated acreage to be irrigated and water allocations for each water user that year. Any adjustments based on changes in lands anticipated to be irrigated during the irrigation season must be reported by the individual water user to the District. The District will, in turn, notify the Bureau of any changes in irrigated acreage which must be accounted for. Each landowner's anticipated acreage must be less than or equal to the landowner's eligible acreage.

Should a landowner believe that the number of acres of eligible land he or she is entitled to irrigate is different from the number of acres as approved by the Bureau, the landowner is required to notify the District and present appropriate documentation regarding the subject acreage. The District shall record the information and represent the claim to the Bureau for further consideration. If the Bureau determines that there is sufficient support for the landowner's claim, then adjustments will be made to accommodate the changes requested by the landowner. If the Bureau disallows the landowner's claim, the Bureau shall notify the District in writing. The District will, in turn, inform the landowner of the disposition of the claim and the reasons therefor, and will further instruct the landowner that he or she may seek judicial review of the Bureau's determination pursuant to the Orr Ditch and Alpine decrees. If the dispute affects the current year, then the Bureau and the District will seek to expedite any court proceeding.

b. Changes in Domestic and Other Uses - By March 1 of each year, the District shall report to the Bureau all anticipated domestic and other uses. This notification shall include a detailed explanation of the criteria utilized in allowing the use and sufficient documentation on the type and amount of use by each water user to demonstrate to the satisfaction of the Bureau that each water user is in compliance with the

criteria. With adequate documentation, the District may notify the Bureau of any changes in domestic water requirements at any time during the year.

B. Water Duty - Eligible land may receive no more than the amount of water in acre-feet per year established as maximum farm headgate delivery allowances by the Orr Ditch and Alpine decrees. All water use is limited to that amount reasonably necessary for economical and beneficial use pursuant to the Orr Ditch and Alpine decrees.

The annual water duty as assigned by the Orr Ditch and Alpine decrees is a maximum of 4.5 AF per acre for bench lands and a maximum of 3.5 AF per acre for bottom lands. The water duty for fields with a mixture of bench and bottom lands shall be the water duty of the majority acreage. Bench and bottom land designations as finally approved by the United States District Court for the District of Nevada will be used in determining the maximum water duty for any parcel of eligible land. The annual water duty for pasture land established by contract is 1.5 AF per acre.

C. Deliveries, Efficiency, and Maximum Limits. The OCAP will constrain the operation of the Project on a long term average basis to achieve the full benefits for all the region's water users through three basic elements: 1) valid headgate deliveries; 2) Project efficiency with incentives and disincentives; and 3) maximum operating limits or cushions. Because the water conservation objective cannot be achieved immediately, elements (2) and (3) will be phased in over a 5-year period ending in 1992.

1. Valid Headgate Deliveries. The valid water deliveries at the headgate are set by the product of eligible land actually irrigated multiplied by the appropriate water duty in accordance with subsections I A and B above. The District will regularly monitor all water deliveries and report in accordance with subsection I A. No amount of water will be permitted to be delivered in excess of the individual water user's headgate entitlement. In the event it should occur, such amount will be automatically reflected in the efficiency deficit adjustment to the Lahontan storage. Water delivered in excess of entitlements shall not be considered valid for purposes of computing project efficiency.

2. Project Efficiency. The principal feature of the OCAP is to obtain a reasonable level of efficiency in supplying water to the headgate by the District. The efficiency targets established by these

OCAP are the cornerstone of the enforcement and the incentive provisions and when implemented will aid other competing uses.

The efficiency approach has the advantage of being readily calculable at the year's end, easily convertible to water appropriate to that year, able to be compared to other systems even though there may be many dissimilarities, appropriate for long term averaging, adjustable to any headgate delivery level including droughts or allocations, automatically adjusts to changes during the year and it accurately accounts for misappropriated water. It also can be achieved through any number of measures from operations to changes in the facilities and can be measured as an end product without regard to the approach. Thus it is flexible to allow local decisionmaking and yet is fact based to minimize disputes.

Assuming that the headgate deliveries are valid and enforceable, the efficiency is the only remaining variable in determining the water needed to be supplied to the District. Efficiency is a measure of how much water is required for system losses relative to actual headgate deliveries. Differences in efficiency, therefore, are directly convertible to acre-feet. The differences in efficiency, expressed as a quantity in acre-feet, may be added to or subtracted from the actual Lahontan Reservoir storage level before it is compared to the monthly storage objective. Thus the diversions from the Truckee River, operation of other facilities (e.g., Stampede Reservoir) and decisions related to Lahontan Reservoir are made after the efficiency storage adjustments have been made. Operating decisions are made as if the adjusted storage reflected actual conditions.

a. Efficiency Incentive Credits - In any year that the District's actual efficiency exceeds the target efficiency for the actual headgate delivery, two-thirds of the resultant savings, in water, will be credited to the District as storage in Lahontan. This storage amount will remain in Lahontan as water available to the District to use at its discretion consistent with Nevada and Federal law. Such uses may include wetlands (directly or incidentally), power production, recreation, a hedge against future shortages or whatever else the District determines. The storage is credited at the end of the irrigation season from which it was earned. This storage "floats" on top of the reservoir so that if it is unused it will be spilled first if the reservoir spills. The District may use all capacity of Lahontan Reservoir not needed for project purposes to store credits.

b. Efficiency Disincentive Debits - In any year that the District's actual efficiency falls short of the target appropriate to the actual headgate deliveries, then the resultant excess water that was used is considered borrowed from the future. Thus it becomes a storage debit adjustment to the actual Lahontan Reservoir storage level for determining all operational decisions. The debit may accumulate but may not exceed a maximum as defined in subsection 3.b. below. The debit must be offset by an existing incentive credit or, if none is available, by a subsequent incentive at a full credit (not a 2/3 credit) or finally by an allocation by the District to restrict actual headgate deliveries. This would only be done prospectively (a subsequent year) so the District and the water users can prepare accordingly. Since the debit does not impact immediately on other competing uses or the District (except in a real drought), it allows for planning ahead and averaging over time.

c. Efficiency Targets - The goal is to have the District operate at a reasonably efficient level. The OCAP establish reasonable efficiency targets. The key to the target efficiencies, therefore, is the application of "reasonable." To determine the efficiency target, the system delivery losses were divided into categories such as seepage, evaporation and operational losses. The "reasonable" level of savings for each category was then determined by starting with current operating experience and applying the added knowledge from several possible measures researched, identified and subjected to public comment. Not all of these measures were then utilized nor was their full potential savings claimed. The derivation, including the specific measures and amounts, is identified in Table 1. These measures and others currently available to the District are listed in Table 4. These measures are discretionary choices for the District and only seven were used to compute the efficiency targets established in the OCAP. The range of measures available to the District provides a level of assurance that the target efficiency is reasonably achievable. The resultant efficiency targets were also compared to the range of efficiencies actually experienced by other irrigation systems that were considered comparable in order to provide a further check on "reasonable." Most of the delivery losses are relatively constant regardless of the amount of deliveries. The efficiency will necessarily vary with the amount of headgate deliveries.

The target efficiency for any annual valid headgate delivery can be derived from Figure 1.

3. Maximum Allowable Limits

a. Maximum Allowable Diversions - The maximum allowable diversion (MAD) for each year shall be determined based on: acres of eligible land anticipated to actually be irrigated in that year (subsection A above); the water duties for those lands (subsection B above); and the established efficiency of the project water distribution system (Figure 1). The MAD will be calculated annually to assure an adequate water supply for all water right holders whose water use complies with their decreed entitlement and these OCAP. The MAD is the maximum amount of water permitted to be diverted for irrigation use on the Project in that year. It is calculated to ensure full entitlements can be fulfilled, but is expected to be significantly in excess of Project requirements. The MAD will be established by the Bureau at least two weeks prior to the start of each irrigation season. All releases of water from Lahontan Reservoir and diversions from the Truckee Canal and Rock Dam Ditch shall be charged to the MAD except as provided in Sections III and IX of these OCAP.

On the basis of the methodology adopted herein (i.e., actual irrigated acres multiplied by appropriate water duties divided by established project efficiency) an example of the MAD calculated for the projected irrigated acreage as shown in Table 1 would be: 371,055 acre-feet in 1988; 368,435 acre-feet in 1989; 355,485 acre-feet in 1990; 346,235 acre-feet in 1991; and 346,985 acre-feet in 1992 and beyond. The sample MADs correspond to the following system efficiencies for full deliveries: 61.0% in 1988; 62.8% in 1989; 65.6% in 1990; 67.6% in 1991; and 68.4% 1992 and beyond. Figure 1 shows the sliding scale for target efficiencies which will be used over the range of water supply conditions and headgate deliveries expected in the future.

Adjustments in the MAD shall be made by the Bureau each year based on changes in irrigated eligible land from the prior year and subsequent decisions concerning transfers of Project water rights, using the methodology established herein.

In the event the District concludes the MAD for a given year will not meet the water delivery requirements for the eligible land to be irrigated in that year due to weather conditions, canal breaks, or some other unusual or unforeseen condition, the District shall submit a written request to the Bureau for such additional water considered necessary to make up for the specified loss and supply decreed entitlements. The District shall set

forth a full detailed, factual statement of the reasons for the request. The Bureau shall promptly review the request and after consultation with the Federal Water Master, will determine if the request or any portion of it should be approved. The Bureau will make reasonable adjustments for unforeseen cause or events but will not make adjustments to accommodate waste or Project inefficiency. The Bureau will then notify the District of its determination. If the District does not agree with the Bureau's decision, it may seek judicial review. The Bureau and the District will seek to expedite the court proceeding in order to minimize any potential adverse impacts.

b. Maximum Allowable Efficiency Debits (MED) - The debits in at Lahontan Reservoir storage from the District's actual efficiency falling short of the target can accumulate over time. If these amounts of borrowed storage get too large they may not be offset later by increased efficiencies and may severely impact the District's water users by an added "drought" on top of a real one. Therefore, a limit was placed on how much could be borrowed or accumulated. The limit should also be large enough to allow reasonable opportunity to average out over time. This maximum efficiency debit cushion is 26,000 acre-feet. However, unlike the MAD, it only applies to the subsequent year's operation. The MED is approximately 10% of the headgate entitlements.

II. MONITORING DIVERSIONS

A. Operating - By the end of each month, the District shall submit to the Bureau's Lahontan Basin Projects Office reports for the previous month which document the daily and monthly inflow and outflow in acre-feet from the Truckee and Carson divisions of the Project for that month. Reports shall include a record of daily water orders, daily farm deliveries, and any other data the Bureau may reasonably require to monitor compliance with these OCAP.

Accounting for farm headgate deliveries shall be based on the amount of water actually delivered to the water user. Project operations shall provide for the amount of water ordered and the distribution system losses.

The District shall keep records of all domestic and other uses showing the purpose and amount of water usage for each entity. The District shall make the records available for review by the Bureau upon request. The Bureau shall have the right to audit all records kept by the District.

B. Operations Monitoring - The Bureau will work in cooperation with the District to monitor the operation of the Project. The Bureau's personnel shall perform field inspections of water distribution during the irrigation season. Staff members of the Bureau's Lahontan Basin Projects Office and the District will meet monthly during the irrigation season after each water distribution report has been prepared to examine the amounts of water used to that point in the season. On the basis of the information obtained from field observations, water use records, and consultations with District staff, the Bureau will determine at monthly intervals whether the rate of diversion is consistent with the OCAP for that year. The District will be informed in writing of suggested adjustments that may be made in management of diversions and releases as necessary to achieve target efficiencies and stay within the MAD.

Project operations will be monitored in part by measuring flows at key locations. Specifically, Project diversions (used in the calculations under Section I.C. above) will be determined by adding flows measured at:

- Truckee Canal near Wadsworth - U.S. Geological Survey (USGS) gauge number 10351300.
- Carson River below Lahontan Dam - USGS gauge number 10312150;
- Rock Dam Ditch near the end of the concrete lining;

and subtracting:

- Flows measured at the Truckee Canal near Hazen-USGS gauge number 10351400;
- The Carson River at Tarzyn Road near Fallon (below Sagsoupe Dam) for satisfying water rights outside of the Project boundaries as described in Section III I - USGS gauge number 10312275;
- Estimated losses in the Truckee Canal; and
- Spills, precautionary drawdown, and incentive water released at Lahontan Dam pursuant to Sections III and IX.

III. OPERATIONS AND MANAGEMENT

A. Power Generation - All use of water for power generation using Project water shall be incidental to releases charged against Project diversions, precautionary drawdown, incentive water (Section X), or spills.

B. Truckee and Carson River Water Use - Project water shall be managed so that maximum use will be made of Carson River water and diversions of Truckee River water through the Truckee Canal will be minimized in order to make available as much Truckee River water as possible for use in the lower Truckee River and Pyramid Lake.

C. Diversions at Derby Dam - Diversions of Truckee River water at Derby Dam shall be managed to the maximum extent practical with the objective of maintaining minimum terminal flow to Lahontan Reservoir or the Carson River except where these criteria specifically permit such diversions. Diversions to the Truckee Canal shall be managed to achieve an average terminal flow of 20 cubic feet per second (cfs) or less during times when diversions to Lahontan Reservoir are not allowed. Increases in canal diversions which would reduce river flows below Derby Dam, by more than 20% in a 24-hour period will not be allowed when Truckee River flow, as measured by the gauge below Derby Dam, is less than or equal to 100 cfs. Diversions to the Truckee Canal will be coordinated with releases from Stampede Reservoir, in cooperation with the Federal Water Master, to minimize fluctuations in the Truckee River below Derby Dam in order to meet annual flow regimes established by the United States Fish and Wildlife Service for listed species in the lower Truckee River.

D. Diversions from the Truckee River to the Truckee Division - Sufficient water, if available, shall be diverted from the Truckee River through the Truckee Canal to meet the direct irrigation, domestic and other entitlements of the Truckee Division.

E. Criteria for Diversions from the Truckee River to Lahontan Reservoir, January through June - Truckee River diversions through the Truckee Canal will be made to meet Lahontan Reservoir end-of-month storage objectives for the months of January through June. The current month storage objective will be based on the monthly United States Soil Conservation Service (SCS) April through July runoff forecast for the Carson River near Fort Churchill, to meet anticipated diversion requirements for the Carson Division, and target storage for Lahontan Reservoir. The January through June storage objective will be calculated using the following relationship:

$$LSOCM = TSM/J - (C1 * AJ) + L + (C2 * CDT)$$

where:

LSOCM = current end-of-month storage objective for Lahontan Reservoir.

TSM/J = current end-of-month May/June Lahontan Reservoir target storage.

C1 * AJ = forecasted Carson River inflow for the period from the end of the current month through May or June, with AJ being the SCS April through July runoff forecast for the Carson River at Fort Churchill and C1 being an adjustment coefficient.

L = an average Lahontan Reservoir seepage and evaporation loss from the end of the current month through May or June.

C2 * CDT = projected Carson Division demand from the end of the current month through May or June, with CDT being the total Carson Division diversion requirement based on eligible acres as defined in Section I of these OCAP, and C2 being the estimate of the portion of the total diversion requirement to be delivered during this period.

Values for TSM/J, C1, L and C2 are defined in Table 2.

For January through April, the Lahontan Reservoir storage objective for each month will be the lowest of the May calculation, the June calculation, or full reservoir (defined as 295,000 acre-feet using Truckee River diversions, but can fill above 295,000 acre-feet to 317,300 acre-feet with Carson River inflow and the use of flash boards).

For May, the Lahontan Reservoir storage objective will be the lower of the June calculation or full reservoir.

For June, the Lahontan Reservoir storage objective will be the June target storage.

Once the monthly Lahontan Reservoir storage objective has been determined, the monthly diversion to the Project from the Truckee River will be based upon water availability and Project demand as expressed in the following relationship:

$$\text{TRD} = \text{TDD} + \text{TCL} + \text{CDD} + \text{LRL} + \text{LSOCM} - \text{ALRS} - \text{CRI}$$

where:

TRD = current month Truckee River diversion in acre-feet to the Project

TDD = current month Truckee River Division demand.

TCL = current month Truckee Canal conveyance loss.

CDD = current month Carson Division demand.

LRL = current month Lahontan Reservoir seepage and evaporation losses.

LSOCM = current month end-of-month storage objective for Lahontan Reservoir.

ALRS = current month beginning-of-month storage in Lahontan Reservoir. (Includes accumulated Stampede credit described below and further adjusted for the net efficiency penalty or efficiency credit described in Sections I and IX).

CRI = current month anticipated Carson River inflow to Lahontan Reservoir.

The following procedure is intended to ensure that monthly storage objectives are not exceeded. It may be implemented only if the following conditions are met:

1. Diversions from the Truckee River are required to achieve the current month Lahontan Reservoir storage objective (LSOCM);
2. Truckee River runoff above Derby Dam is equal to or greater than the required diversion to Lahontan Reservoir;
3. Sufficient Stampede Reservoir storage capacity is available.

During April through June the Bureau, in consultation with the Federal Water Master, will determine whether the calculated current month Truckee River diversion to Lahontan Reservoir (TRD - TDD - TCL) may be reduced during the first two weeks of that month. The diversion to Lahontan Reservoir may be adjusted mid-month or as revised runoff forecasts become available. If a revised forecast indicates that LSOCM can be achieved with the reduced diversion, that reduction will be maintained. If the forecast indicates that LSOCM cannot be achieved, the diversion to Lahontan Reservoir may be increased. If LSOCM is not achieved because of the reduction in diversion, the amount of reduction and the shortfall in

current end-of-month Lahontan Reservoir storage will be calculated. The smaller of the reduction or the shortfall will be established as a credit for the Project in Stampede Reservoir. In succeeding months (May and/or June), credit may be accumulated. The accumulated credit will be added to current Lahontan Reservoir storage (ALRS) in calculating TRD. If the sum of accumulated credit and Lahontan Reservoir storage exceeds 295,000 acre-feet, credit will be reduced by the amount in excess of 295,000 acre-feet. Credit will also be reduced by the amount of precautionary drawdown or spills in that month. If the end of month storage in Lahontan Reservoir plus the accumulated credit in Stampede Reservoir for May or June exceeds the EOM storage objective for Lahontan, the credit will be reduced by the amount exceeding the EOM storage objective. Following consultation with the District and the Bureau, the Federal Water Master shall release credit water for Project purposes from July 1 through September 30 of the year in which the credit accrues. Conveyance of credit water in the Truckee Canal shall be in addition to regularly scheduled diversions for the Project as measured at the USGS gauge number 10351300 near Wadsworth.

Subject to the provisions of Section III C, diversions from the Truckee River to the Truckee Canal shall be adjusted daily or otherwise as frequently as necessary to meet the monthly storage objective.

F. Criteria for Diversion of Truckee River Water to Lahontan Reservoir, July through December - Truckee River diversions through the Truckee Canal to Lahontan Reservoir from July through December shall be made only in accordance with Table 3.

G. Rock Dam Ditch - Project water may be diverted directly to Rock Dam Ditch from the Truckee Canal only when diversions cannot be made from the outlet works of Lahontan Reservoir. Such diversions will require the prior written approval of the Bureau and be utilized in calculating Project diversions. During the period January through June in a given, the projected total delivery to Rock Dam Ditch from the end of the current month through May or June will be subtracted from the projected Carson Division demand ($C2 * CDT$) in calculating the current end-of-month storage objective for Lahontan Reservoir (LSOCM), in conformance with the procedures set forth in Section III E.

H. Precautionary Drawdown and Spills from Lahontan Reservoir - Even though flood control is not a specifically authorized purpose of the Project, at the request of the District and with the prior written

approval of the Bureau, precautionary drawdown of Lahontan Reservoir may be made only for the purpose of limiting potential flood damage along the Carson River. Criteria for precautionary drawdown will be formulated by the Bureau and furnished to the District. Requests to the Bureau from the District for authority to make a precautionary drawdown pursuant to those criteria shall be in writing and shall include all data possessed by the District required for the Bureau to make an informed decision. The drawdown shall be scheduled sufficiently in advance and at such a rate of flow in order to divert as much water as possible into the Project irrigation system for delivery to eligible land or storage in reregulating reservoirs for later use on eligible land. During periods of precautionary drawdown, or when water is spilled from Lahontan Reservoir, Project diversions will be impacted only by the predetermined schedule of irrigation releases to be passed at the gauging station below Lahontan reservoir, plus measured diversions from the Truckee Canal and Rock Dam Ditch. Other spills from Lahontan Reservoir and precautionary drawdown of the reservoir to create space for storing floodwaters from the Carson River Basin that are neither stored for irrigation use downstream in Project facilities nor used for irrigation of eligible lands during the irrigation season will not be used in calculating Project diversions.

If a precautionary drawdown in one month results in a failure to meet the Lahontan Reservoir storage objective for that month, the storage objective in subsequent months will be reduced by one-half of the difference between that month's storage objective and actual end-of-month storage. The Bureau shall not be liable for any damage or water shortage resulting from a precautionary drawdown.

I. Water Use for Other than Newlands Project Purposes - The District will release sufficient water to meet the vested water rights below Sagspe Dam as specified in the Alpine decree. These water rights are usually met by return flows. Releases for these water rights will in no case exceed the portion of 1,300 acre-feet per year not supplied by return flows. Releases for this purpose will not be considered in determining Project diversions since the lands to which the water is being delivered are not part of the Project (See Section II B).

J. Charges for Water Use - The District shall maintain a financing and accounting system which produces revenue sufficient to repay its operation and maintenance costs and to discharge its debt to the United States. The District should give consideration

to adopting a system which provides reasonable financial incentives for the economical and efficient use of water.

K. Distribution System Operation - The District shall permit only its authorized employees or agents to open and close individual turnouts and operate the distribution system facilities. After obtaining Bureau approval, the District may appoint agents to operate individual headgates on a specific lateral if it can be shown that the water introduced to the lateral by a District employee is completely scheduled and can be fully accounted for with a reasonable allowance for seepage and evaporation losses. If agents need to adjust the scheduled delivery of water to the lateral to accommodate variable field conditions, weather, etc., they must immediately notify the District so proper adjustments can be made in the distribution system. Each agent shall keep an accurate record of start and stop times for each delivery and the flow during delivery. This record will be given to the District for proper accounting of water delivered. The program of using agents to operate individual headgates will be reviewed on a regular basis by the District and the Bureau. If it is found that problems such as higher than normal losses, water not accounted for, etc. have developed on an individual lateral, the program will be suspended and the system operated by district employees until the problems are resolved.

IV. WATER RIGHTS

These OCAP govern water uses within existing rights. These OCAP do not in any way change, amend, modify, abandon, diminish, or extend existing rights.

Water rights transfers will be determined by the Nevada State Engineer pursuant to the provisions of the Alpine decree.

V. PROHIBITED DELIVERIES

The District shall not deliver project water or permit its use except as provided in these OCAP. No Project water will be permitted to be released in excess of the MAD or delivered to ineligible lands. Delivery of water to land in excess of established water duties is prohibited.

VI. VIOLATIONS

Violations of the terms and provisions of these OCAP shall be reported immediately to the Bureau. The District or individual water users will be responsible

for any shortages to water users occasioned by waste or excess delivery or delivery of water to ineligible land as provided in the OCAP.

VII. ENFORCEMENT

A. Conditions of Delivery. There are three basic elements for enforcement with all necessary quantities and review determined in accordance with the relevant sections of this OCAP.

1. Valid Headgate Deliveries - In the event it is determined that water was delivered to ineligible land or in excess of the appropriate water duty then:

a. The District will stop such illegal delivery immediately;

b. The District will notify the bureau of the particulars including location and amounts--known or estimated;

c. The amount will not be included as a valid headgate delivery for purposes of computing the Project efficiency and resultant incentive credit or debit to Lahontan storage; and

d. If the amount applies to a prior year, then the amount will be treated directly as a debit to Lahontan storage in the same manner as an efficiency debit.

2. District Efficiency. To the extent that the actual District efficiency determined for an irrigation season is greater or less than the OCAP established target efficiency as determined for the corresponding actual valid headgate deliveries, then the difference in efficiency, expressed as a quantity in acre-feet, may be added to or subtracted from the actual Lahontan Reservoir storage level before it is compared to the monthly storage objective as follows:

a. Greater Efficiency - Credited to the District as storage in Lahontan (subtracted) (1) from any accumulated debit, or (2) two-thirds as storage in Lahontan for their discretionary use in accordance with state law.

b. Less Efficient - Debited (added) to Lahontan storage as an adjustment to the actual storage level.

3. Maximum Allowable Diversion (MAD). The MAD shall be computed each year to deliver full entitlements at established Project efficiencies. Project diversions shall not exceed the MAD. Within the operating year, the Bureau will notify the District in writing of any expected imminent violations of the MAD. The District will take prompt action to avoid such violations. The Bureau will exercise reasonable latitude month-to-month to accommodate the District's efforts to avoid exceeding the MAD.

4. Maximum Efficiency Debit (MED). If the MED exceeds 26,000 AF at the end of any given year, the District shall prepare and submit to the Bureau for review and approval, a plan detailing the actions the District will take to either earn adequate incentive credits or to restrict deliveries to reduce the MED to less than 26,000 AF by the end of the next year. If the District fails to submit an approvable plan, project allocations will be reduced by an amount equal to the MED in excess of 26,000 plus 13,000 (one-half the allowable MED). Nominally this will mean a forced reduction of approximately five percent of entitlements. The Bureau will notify the District in writing of the specific allocation and method of derivation in sufficient time for the District to implement the allocation. Liabilities arising from shortages occasioned by operation of this provision shall be the responsibility of the District or individual water users.

B. Project Management. In addition to the provisions of Section VII A, in the event the District is found to be operating Project facilities or any part thereof in substantial violation of these OCAP, then, upon the determination by the Bureau, the Bureau may take over from the District the care, operation, maintenance, and management of the diversion and outlet works (Derby Dam and Lahontan Dam and Reservoir) or any or all of the transferred works by giving written notice to the District of such determination and the effective date thereof as provided in the Contract for Operation and Maintenance between the United States and the District dated February 14, 1984. Following written notification from the Bureau, the care, operation, and maintenance of the works may be retransferred to the District.

C. Future Contracts. The Bureau shall provide in new, amended, or replacement contracts for the operation and maintenance of project works, for the reservation by the Secretary of rights and options to enforce these OCAP.

VIII. WATER MANAGEMENT AND CONSERVATION

A. Conservation Measures. Specific conservation actions will be needed for the District and its members to achieve a reasonable efficiency of operation as required by the OCAP. The District is best able to determine the particular conservation measures that meet the needs of its water users. This assures that the measures reflect the priorities and collective judgment of the water users; and will be practical, understandable and supported. The District also has the discretion to make changes in the measures they adopt as conditions or results dictate.

The District will keep the Bureau informed of the measures they expect to utilize during each year. This will allow appropriate monitoring for information helpful to evolving other suggestions and for use by other Districts. The Bureau will work cooperatively in support of the District's selection of measures and methods of implementation.

B. Cooperative Programs. The Bureau and the District will work cooperatively to develop a water management and conservation program to promote efficient management of water in the Project. The Bureau will provide technical assistance to the District and cooperatively assist the District in their obligations and efforts to:

1. Document and evaluate existing water delivery and measurement practices;
2. Implement improvements to these practices;
and
3. Evaluate and, where practical, implement physical changes to Project facilities. The program will emphasize developing methods, including computerization and automation, to improve the District's operations and procedures for greater water delivery conservation.

IX. IMPLEMENTATION

The intent of the implementation strategy for these OCAP is to ensure that the Project delivers water within entitlements at a reasonable level of efficiency as a long term average. The incentives and disincentives provided herein are designed to encourage local officials with responsibilities for Project operations to select and implement through their discretionary actions, operating strategies which achieve the principles of the OCAP. The specified efficiencies (Figure 1) were developed considering implementation of reasonable

conservation measures, historic project operations, economics, and environmental effects. The efficiency target will be used as a performance standard to establish at the end of each year on the basis of actual operations, whether the District is entitled to a performance bonus in the form of incentive water or a reduction in storage for the amount borrowed ahead. The components of the implementation strategy are outlined below.

A. Valid Headgate Deliveries - Project water may be delivered to headgates only as provided in Section I A. Water delivered outside the entitled irrigable land and/or outside the court set water duty is difficult to quantify at best because it is not typically measured. Since it is not likely to be a part of the total actual headgate deliveries, yet is a part of the total deliveries to the Project, it will manifest itself directly as a lower efficiency. Thus, it will either reduce the District's incentive credit or increase the storage debit by the amount improperly diverted. All other users outside the Project are thereby held harmless but the District incurs the consequence. This approach should eliminate any potential disputes between the District and the Bureau over quantifying the amount of water misappropriated.

B. Efficiencies - The established target efficiencies pursuant to these OCAP are shown in Figure 1. The efficiency of the Project will vary with the amount of entitlement water actually delivered at the headgates. Since most of the distribution system losses such as evaporation and seepage do not change significantly with the amount of water delivered (i.e., these losses are principally a function of water surface area and the wetted perimeter of the canals), the Project efficiency requirement is higher as the percent of entitlement water actually delivered at the headgates increases. The actual efficiency is calculated each year after the close of the irrigation season based on actual measured amounts. The application of any adjustments to Lahontan Reservoir storage or Truckee River diversions resulting from the efficiency is always prospective.

C. Incentives for Additional Long Term Conservation - As an incentive for the District to increase the efficiency of the delivery system beyond the expected long term efficiency of 66.7% (68.4% with full delivery) as shown in the 1992 water budget (Table 1), the District will be allowed to store and use the Carson River portion of the saved water, at their discretion, in accordance with Nevada State Law. Thus, if the District is able to operate the project in such a manner that the expected efficiency is exceeded, the District may store in

Lahontan reservoir two-thirds (2/3) of the additional water saved. The remaining one-third (1/3) of the water saved will remain in the Truckee River through reduced diversions to Lahontan Reservoir. This water will be considered incentive water saved from the Carson River and will not be counted as storage in determining diversions from the Truckee River or computing the target storage levels for Lahontan Reservoir under these OCAP. For purposes of these OCAP, incentive water is no longer considered Project water. The District may use the water for any purpose (e.g., wetlands, storage for recreation, power generation, shortage reduction) that is consistent with Nevada State law and Federal Law. The water will be managed under the District's discretion and may be stored in Lahontan Reservoir until needed subject to the limitations outlined below.

The amount of incentive water stored in Lahontan Reservoir will be reduced under the following conditions:

- There is a deficit created and remaining in Lahontan Reservoir from operations penalties in a prior year;
- The District releases the water from the reservoir for its designated use;
- During a spill of the reservoir, the amount of incentive water shall be reduced by the amount of spill; and
- At the discretion of the District, incentive water may be used to offset the precautionary drawdown adjustment to the Lahontan storage objective.
- At the end of each year, the amount of incentive water will be reduced by the incremental amount of evaporation which occurs as a result of the increased surface area of the reservoir due to the additional storage. The evaporation rate used will be either the net evaporation measured or the net historical average after precipitation is taken into account. The method of calculation will be agreed to by the District and the Bureau in advance of any storage credit.

Examples of this concept are outlined below:

Example A. Incentive Operation - At the end of the 1992 irrigation season, the Bureau and the District audit the District's water records for 1992. The District's water delivery records show that 213,700 acre-feet of water were delivered to farm headgates. On the basis of their irrigated acreage that year (64,850) the farm

headgate entitlement would have been 237,485 acre-feet. On the basis of 90% deliveries for 64,850 acres ($213,700$ divided by $237,485 = .090$) the established Project efficiency requirement was 66.7%. On the basis of the established Project efficiency (66.7%), the Project diversion required to make the headgate deliveries would be expected to be 320,400 acre-feet ($213,700$ divided by $0.667 = 320,400$). An examination of Project records reveals that the District only diverted 314,400 acre-feet which demonstrated actual Project efficiency was 68% and exceeded requirements of these OCAP. The 6,000 acre-feet of savings ($320,000 - 314,400 = 6,000$) constitutes the savings achieved through efficiency improvements and the District would then be credited two-thirds ($4,000$ acre-feet = $6,000 \times 2/3$) of this water (deemed to be Carson River water savings) as incentive water. This incentive water may be stored in Lahontan Reservoir or otherwise used by the District in its discretion consistent with State and Federal law (e.g., power generation, recreation storage, wildlife, drought protection, etc.).

Example B. Incentive Operation - In 1992, District records demonstrate that the Project was operated in such a manner that diversions of 331,800 acre-feet of water were required to deliver 225,000 acre-feet at farm headgates. On the basis of 95% deliveries ($225,000$ divided by $237,485 = 0.95$) the required Project efficiency for that year would be 67.6% and expected diversions would have been 333,700 acre-feet ($225,000$ divided by $0.676 = 333,700$). Actual Project efficiency was 68% ($225,000$ divided by $331,800 = 0.68$) with a project efficiency savings of 1,900 acre feet ($333,700 - 331,800 = 1,900$). The District, through efficiency improvement, has earned 1,300 acre feet of incentive water ($1,900 \times 2/3 = 1,300$).

D. Disincentives for Lower Efficiency - If the District failed to meet the efficiencies established by these OCAP, then, in effect, the District has borrowed from a subsequent year. The amount borrowed will be accounted in the form of a deficit in Lahontan Reservoir storage. This deficit amount will be added to the actual Lahontan Reservoir storage quantity for the purpose of determining the Truckee River diversions to meet storage objectives as well as all other operating decisions.

The amount of the deficit will be cumulative from year to year but will not be allowed to exceed 26,000 acre feet (the expected variance between the MAD and actual water

use). This limit is expected to avoid increasing the severity of drought and yet still allow for variations in efficiency over time due to weather and other factors. This approach should allow the District to plan its operation to correct for any deficiencies.

The deficit can be reduced by crediting incentive water earned by the District or reducing the percentage of headgate entitlement delivered either through a natural drought or by the District and its water users administratively limiting deliveries while maintaining an efficiency greater than or equal to the target efficiency.

If the District has a deficit in Lahontan Reservoir and earns incentive water, the incentive water must be used to eliminate the deficit before it can be used for any other purpose. The deficit shall be credited on a 1 to 1 basis (i.e., actual efficiency savings rather than $1/3 - 2/3$ for incentive water).

An example of the penalty concept is outlined below:

Example - Penalty. In 1992 the District delivers 90% of the maximum headgate entitlement or 213,700 acre feet ($237,485 \times .90$) but they actually divert 326,900 acre feet. The efficiency of the Project is 65.4% (213,700 divided by 326,900). Since the established efficiency of 66.7% would have required a diversion of only 320,400 acre-feet (213,700 divided by .667) the District has operated the system with 6,500 acre feet of excess losses. Therefore, 6,500 acre-feet was borrowed and must be added to the actual storage quantities of Lahontan Reservoir for calculating target storage levels and Truckee river diversions.

Tables 5 and 6 show hypothetical examples that demonstrate conceptually how the system of efficiency credits and debits would work. Please note that incentive water accumulates on a $2/3$ to 1 basis and that deficits are reduced through greater efficiency on the basis of actual savings (1 to 1). Also note that evaporation and seepage losses have not been deducted. Table 5 shows the application of years where efficiencies are exceeded and years where efficiencies are not met.

Table 6 shows how the incentive water would accumulate for the benefit of the District if, during the 5 year phase-in period provided in the OCAP, the District implemented water conservation measures identified in the water budget a year ahead of the schedule shown on Table 1.

E. Maximum Allowable Diversion (MAD) - The MAD established in these OCAP is based on the premise that the Project should be operated to ensure that it is capable of delivering to the head gate of each water right holder the full water entitlement for irrigable eligible acres and includes distribution system losses. The MAD will be established (and is likely to vary) each year. Potentially, approximately 73,000 acres of Project land could be irrigated and included in the MAD. However, the maximum acreage has never been irrigated. The acreage projected to be irrigated in 1988 through 1992 is shown in Table 1. The sample calculated MAD, for 1988 through 1992 are based on the projected irrigated acreage. The annual MAD will be calculated each year based on the actual acreage to be irrigated that year.

Historically, Project water users have not ordered or used their full entitlement. Actual deliveries at farm headgates have been approximately 90 percent of entitlements and this practice is expected to continue. This variance between headgate deliveries and headgate entitlements is approximately 26,000 AF which under these OCAP is allowed to be diverted if needed and thereby provides an assurance that full headgate deliveries can be made. The expected diversion and associated efficiency target for the examples shown in Table 1 would be: 343,855 AF and 59.3% in 1988; 341,035 AF and 61.1% in 1989; 328,685 AF and 63.9% in 1990; 320,735 AF and 66.0% in 1991; 320,485 AF and 66.7% in 1992 and beyond. These are well below the MAD limits.

X. FALLON PAIUTE-SHOSHONE INDIAN RESERVATION

Nothing in these OCAP shall affect the authority of the Fallon Paiute-Shoshone Tribe to use water on the Tribe's reservation which was delivered to the Reservation in accordance with these OCAP, nor shall these OCAP operate to restrict the Secretary's trust responsibility with respect to the Fallon Paiute-Shoshone Tribe.

TABLE 1. NEWLANDS PROJECT WATER BUDGET¹

| | BASE A367 | 1988 | 1989 | 1990 | 1991 | 1992 | 1992 w/o Additional Acres |
|--|--------------|---------|---------|---------|---------|---------|---------------------------------|
| Irrigated Acreage (acres) ² | 60,900 | 61,630 | 63,150 | 63,650 | 64,150 | 64,850 | 61,630 |
| Maximum Headgate Entitlement ³ | 226,450 | 226,555 | 231,535 | 233,285 | 235,035 | 237,485 | 226,555 |
| Distribution System Losses | | | | | | | |
| Evaporation | | | | | | | |
| Canals/Laterals | 6,000 | 6,000 | 6,100 | 6,100 | 6,200 | 6,200 | 6,000 |
| Regulatory Reservoirs Seepage | 15,000 | 9,200 | 8,900 | 8,000 | 7,500 | 7,500 | 7,500 |
| Canals/Laterals | 50,000 | 50,500 | 51,000 | 49,600 | 50,200 | 51,000 | 48,500 |
| Regulatory Reservoirs | 7,000 | 5,000 | 4,800 | 4,500 | 4,000 | 4,000 | 4,000 |
| Operational Losses | 87,980 | 73,800 | 66,100 | 54,000 | 44,300 | 40,800 | 39,400 |
| Total Losses ⁴ | 165,980 | 144,500 | 136,900 | 122,200 | 112,200 | 109,500 | 105,400 |
| Maximum Allowable Diver- sion (MAD) ⁵ | 392,430 | 371,055 | 368,435 | 355,485 | 347,235 | 346,985 | 331,955 |
| Project Efficiency (%) Assuming 100% Water Use ⁶ | 58.4 | 61.0 | 62.8 | 65.6 | 67.6 | 68.4 | 68.2 |
| Expected Headgate Entitle- ment Unused ⁷ | 20,930 | 22,700 | 23,200 | 23,300 | 23,500 | 23,700 | 22,700 |
| Diversions Reduction for Unused Water ⁸ | 25,430 | 27,200 | 27,400 | 26,800 | 26,500 | 26,500 | 25,400 |
| Expected Irrigation Diversions ⁹ | 367,000 | 343,855 | 341,035 | 328,685 | 320,735 | 320,485 | 306,555 |
| Expected Efficiency ¹⁰ (%) | 56.0 | 59.3 | 61.1 | 63.9 | 66.0 | 66.7 | 66.5 |

NOTES:

1. All values are in acre feet (AF) except where noted.
2. See table next page.
3. Derived by multiplying the acreages by the appropriate water duty.
4. In deriving the above water budget, it was recognized that the District had reduced losses prior to 1988 by 7,400 AF, and the increased loss attributable to additional land coming into production was 5,000 AF. The following water conservation measures were assumed to be in place:

1988--(a) Regulatory reservoirs--reduce the maximum level of Sheckler Reservoir to 5 ft., 3 feet below the average 1987 level of 8 ft. This will result in an estimated savings of 3,800 AF (evaporation) and 1,000 AF (seepage).

(b) It is estimated operational losses can be reduced from the base level as follows:

-Adjust Lahontan Reservoir releases more frequently to meet demands - 5,000 AF

-Require a 48-hour notice for water orders - 1,000 AF

-Account for deliveries to nearest tenth of a cubic foot per second - 4,000 AF

1989--(a) Regulatory reservoirs--operate Sheckler Reservoir at a maximum 5 foot staff elevation all year. This will result in additional estimated savings of 300 AF (evaporation) and 200 (seepage).

(b) Operational losses will be reduced approximately 8,000 AF by accounting for deliveries to the nearest minute.

1990--(a) Regulatory reservoirs--reduce the maximum level of Sheckler Reservoir to 4 ft. staff gauge reading. This will result in an additional estimated savings of 900 AF (evaporation) and 300 AF (seepage).

(b) Shortening irrigation season by 2 weeks will result in estimated savings of 2,000 AF (seepage) and 2,000 AF (operational spills).

(c) It is estimated that an additional 10,500 AF can be saved from operational spills by increasing the control of the distribution system.

1991--(a) Regulating reservoirs--emptying the regulating reservoirs by the end of irrigation season will save approximately 500 AF (evaporation) and 500 AF (seepage).

(b) Operating losses can be reduced by adjusting releases from Lahontan Dam beyond that done in 1988 (5,000 AF) and by performing other miscellaneous activities (e.g., cleaning canals, fixing leaky gates, etc.) (5,000 AF).

1992--(a) It is estimated that additional adjustments and fine tuning of the distribution system will result in additional savings of 4,000 AF.

5. Maximum headgate entitlement plus total losses.

6. Maximum headgate entitlement divided by maximum allowable diversion multiplied by 100.

7. Water delivery records show that, historically, lands have been irrigated with less than their full entitlement. In this water budget, it is estimated that 90% of the maximum headgate entitlement will be delivered to the farms. Water not delivered to the farm is shown as water expected to remain unused and would remain in Lahontan Reservoir as provided in OCAP.

8. Unused water plus operational losses.

9. Maximum allowable diversion minus diversion reduction.

10. Maximum headgate entitlement minus unused water divided by expected irrigation diversion multiplied by 100.

NOTES TO OCAP WATER BUDGET

As part of development of OCAP, an estimate of land expected to be irrigated was developed. This estimate is based on historic use, pending and projected water right transfers, future irrigation of currently water righted land, and the expected phase-in of irrigation on the Fallon Indian Reservation (FIR) under PL 95-337. The estimate of irrigated Project acreage is as follows:

| | TRUCKEE DIVISION | CARSON DIVISION* | FIR | TOTAL PROJECT |
|---|---------------------|---------------------|-------|------------------|
| EXISTING 1987 | | | | |
| Bench | 4,300 | 13,300 | 0 | 17,600 |
| Bottom | 0 | 38,100 | 2,300 | 40,400 |
| Pasture | 0 | 2,300 | 0 | 2,300 |
| | | | | 60,300 |
| COURT ORDERED BENCH/BOTTOM SPLIT** | | | | |
| Bench | 4,300 | 11,470 | 0 | 15,770 |
| Bottom | 0 | 39,930 | 2,300 | 42,230 |
| Pasture | 0 | 2,300 | 0 | 2,300 |
| | | | | 60,300 |
| PENDING 1988*** | | | | |
| Bench | 40 | 140 | 0 | 15,950 |
| Bottom | 0 | 500 | 400 | 43,130 |
| Pasture | 0 | 250 | 0 | 2,550 |
| | | | | 61,630 |
| FUTURE (1989-1991)**** | | | | |
| Bench | 50 | 150 | 0 | 16,150 |
| Bottom | 0 | 550 | 1,500 | 45,180 |
| Pasture | 0 | 270 | 0 | 2,820 |
| | | | | 64,150 |
| FUTURE (1992) | | | | |
| Bench | 0 | 0 | 0 | 16,150 |
| Bottom | 0 | 0 | 700 | 45,880 |
| Pasture | 0 | 0 | 0 | 2,820 |
| | | | | 64,850 |
| TOTALS | | | | |
| Bench | 4,390 | 11,760 | 0 | |
| Bottom | 0 | 40,980 | 4,900 | |
| Pasture | 0 | 2,820 | 0 | |
| | 4,390 | 55,560 | 4,900 | 64,850 |

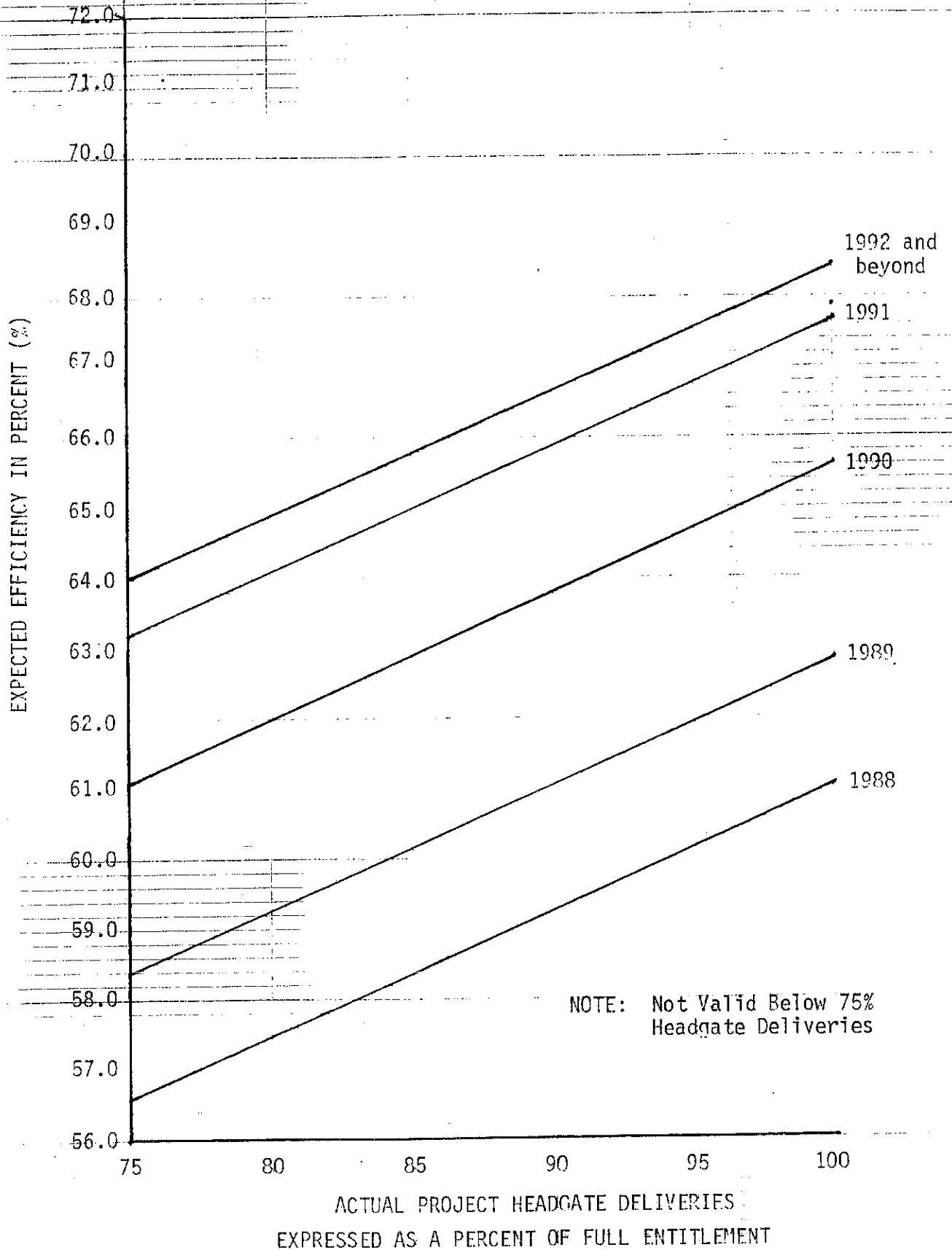
* Does not include Fallon Indian Reservation.

** This is how the acreage irrigated in 1987 would have been split under U.S. v. Alpine Land and Reservoir Co., U.S. District Court, District of Nevada, Civil D-185 BRT, Final Order, entered Feb. 12, 1988.

*** The 40-, 140-, and 500-acre figures are pending water right transfers (Proceedings #6 and #7). The 250- and 400-acre figures represent additional water righted land expected to be irrigated.

**** Additions that are contemplated under future water right transfers.

FIGURE 1: EXPECTED PROJECT DISTRIBUTION SYSTEM EFFICIENCY



NOTE: Not Valid Below 75% Headgate Deliveries

Table 2. MONTHLY VALUES FOR LAHONTAN STORAGE COMPUTATIONS

| | January | February | March | April | May | June |
|---------|---------|----------|-------|-------|-------|-------|
| TSM/J | 215.0 | 215.0 | 215.0 | 215.0 | 215.0 | 215.0 |
| C1/MAY | 0.836 | 0.716 | 0.584 | 0.392 | ----- | ----- |
| C1/JUNE | 1.166 | 1.046 | 0.915 | 0.723 | 0.33 | ----- |
| L/MAY | 22.8 | 21.8 | 17.6 | 10.4 | ----- | ----- |
| L/JUNE | 33.5 | 32.5 | 28.3 | 21.1 | 10.7 | ----- |
| C2/MAY | 0.30 | 0.30 | 0.28 | 0.18 | ----- | ----- |
| C2/JUNE | 0.47 | 0.47 | 0.45 | 0.35 | 0.17 | ----- |

Table 3. LIMITS OF DIVERSION FROM TRUCKEE CANAL INTO LAHONTAN RESERVOIR

| Operating Month | Lower Limit* | | Upper Limit* | |
|--------------------|--------------------------|----------------------|--------------------------|----------------------|
| | Elevation m.s.l. (ft) | Storage (1000 AF) | Elevation m.s.l. (ft) | Storage (1000 AF) |
| July | 4145.8 | 160.0 | 4146.2 | 162.4 |
| August | 4142.3 | 140.0 | 4142.7 | 142.2 |
| September | 4138.5 | 120.0 | 4138.9 | 122.0 |
| October | 4129.3 | 80.0 | 4129.7 | 81.5 |
| November | 4145.8 | 160.0 | 4146.2 | 162.4 |
| December | 4153.1 | 210.0 | 4153.5 | 213.6 |

* Diversions shall be started only when water surface elevation is forecast to fall below the lower limit, and will be discontinued when storage is forecast to meet or exceed the upper limit at the end of the month. The water surface elevation forecast may be adjusted by procedures provided in Section IX.

Table 4

POSSIBLE WATER CONSERVATION MEASURES FOR THE NEWLANDS PROJECT

| Conservation Measures | Expected Savings (AF/yr) | Notes |
|--|-----------------------------|--|
| 1. Water ordering | 1,000 | Require 48-hour advance notice |
| 2. Adjust Lahontan Dam releases more frequently | 10,000 | Match releases to demand at least daily |
| 3. Increase accuracy of delivery records | 12,000 | Account for deliveries to nearest cfs (rate) and to nearest 1-minute (duration) |
| 4. Change operation of regulating reservoirs | 7,500 | Operate reservoirs at minimum elevations and drain them at end of irrigation season |
| 5. Shorten irrigation season | 4,000 | Reduce by 2 weeks |
| 6. Control of delivery system | 14,500 | Eliminate spills, better scheduling, grouping deliveries, etc. |
| 7. System improvements | 5,000 | O&M activity—repair leaky gates, reshape canals, improve measuring devices, etc. |
| 8. Dike off 2/3 S-Line & Ole's Pond reservoirs | 3,400 | 500' dike. Larger savings considering canal losses and Ole's Pond. (5' evap; 3.4' seepage yr.) |
| 9. Dike off south 1/2 Harmon Reservoir | 1,200 | 5000' dike. Larger savings considering canal losses. (5' evap; 1.8' seepage yr.) |
| 10. Dike off west 1/2 Sheckler Reservoir | 4,300 | 6000' dike. Reduces spill capture potential. |
| 11. Eliminate Sheckler, reduce gauge from 4.0' to 0.0' | 3,100 | Use for Lahontan spill capture only, restore 200' of "E" canal. "A" canal is probably OK. |
| 12. Line Truckee Canal | 750 per mi. | Reduces O&M labor. Maximum lining of 20 miles and savings of 15,000 af. |
| 13. Line large canals | 30-400 per mi. | Line large net losers first. Reduces O&M costs. |
| 14. Line regulatory reservoirs | 1.5 per acre | |

Table 4 (continued)

| Conservation Measures | Expected Savings (AF/yr) | Notes |
|--|-----------------------------|--|
| 15. Drain water reuse for irrigation | 20,000 | Common in many projects; blended water quality would be adequate. |
| 16. Ditch rider training each year | | |
| 17. Canal automation | | Reduced labor. Reduced canal fluctuations. |
| 18. Community rotation system | | Grouping of deliveries. |
| 19. TCID RRA Water Conservation Plan a. weed and phreatophyte control b. fix gate leaks c. water measurement d. automation e. communication | | |
| 20. Pumps and wells for small diverters | | |
| 21. Water pricing by amount used | | Administrative costs to change system. |
| 22. Incentive programs | | For District personnel and/or water users. |

Note: The first seven conservation measures were used in computing the water budget in Table 1 because they provided the most identifiable savings at little or no cost to the District.