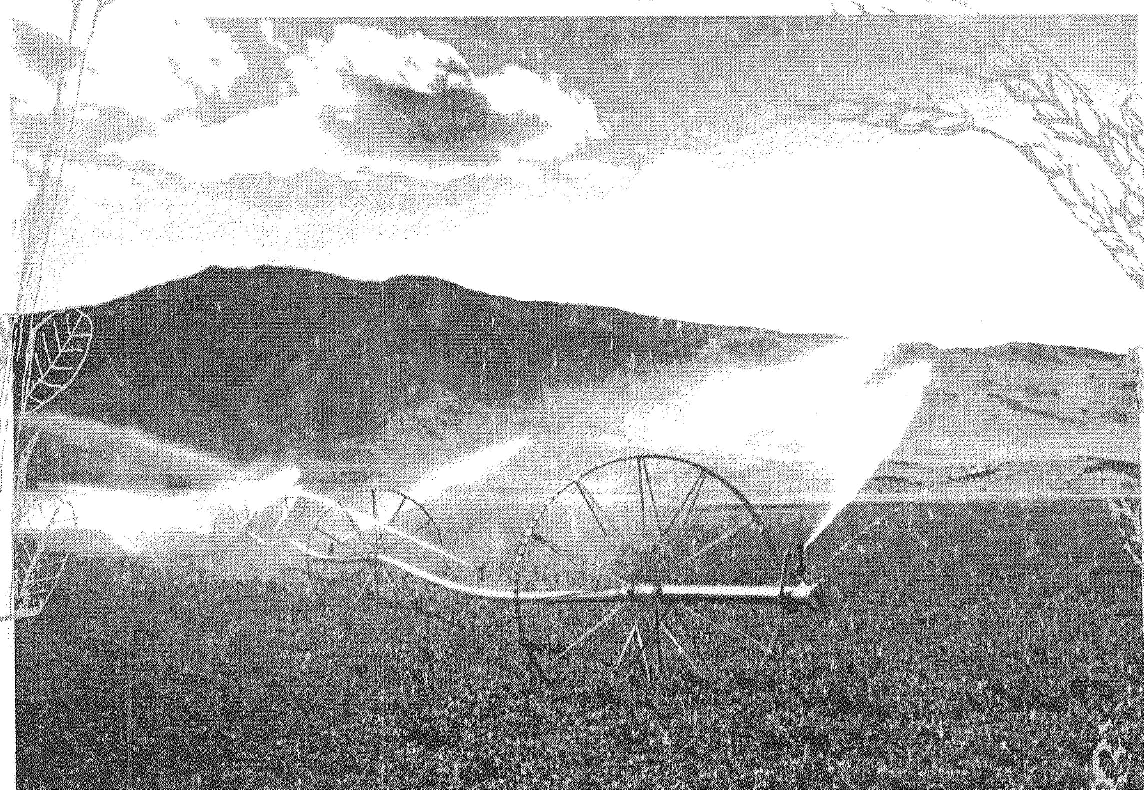
Consumptive Use of Irrigated Crops in Utah



Research Report 145

Utah Agricultural Experiment Station
Utah State University
Logan, Utah

CONSUMPTIVE USE OF IRRIGATED CROPS IN UTAH

FINAL REPORT

Submitted to

Utah Department of Natural Resources
Division of Water Resources
and
Division of Water Rights

A Cooperative Project
Sponsored by

Utah Department of Natural Resources
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and
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Utah Agricultural Experiment Station

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ABSTRACT

Crop water use was calculated with a calibrated Blaney-Criddle equation at 111 National Weather Station (NWS) sites throughout Utah for the 1961-1990 normal period. A modified Penman equation was used to calibrate the SCS modified Blaney-Criddle evapotranspiration (E_t) equation. Daily weather data (air temperature, solar radiation, humidity, wind and precipitation) were available at 34 Utah Climate Center Stations. Sufficient data from these electronic weather stations for using the Penman equation were generally available only for 1982-1991 (1992 and 1993 at two places). Thus, to complete the historical consumptive use calculations, equations based only on air temperature data could be considered. The modified Penman equation (Kimberly, Idaho calibration) was used to determine daily and monthly total crop E_t. This monthly crop E_t was then used to calibrate the Blaney-Criddle method to estimate historical monthly E_t.

Net irrigation water requirement was calculated as growing season E_t less the effective summer precipitation (80% of total rainfall). The Soil Conservation Service Blaney-Criddle equation was used with calibrated crop coefficients to estimate (E_t) and net irrigation requirements for the growing season in different places in the state. Estimates of E_t were made for principle irrigated crops in each area (i.e., alfalfa, pasture, spring grain, corn, etc.) and also for gardens and turf at many sites. Open water surface evaporation was estimated with an adaptation of the Penman equation based on the Kohler, Nordensen and Fox method. Monthly temperature and precipitation data at the NWS weather stations were used to develop average values of E_t, net irrigation and evaporation for the 1961-1990 normal period. The results are presented by months for evaporation and E_t of selected crops at each NWS station.

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KEYWORDS--crop water use / evapotranspiration / irrigated crops / water resource planning and management

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The significant contribution of many farmers and Utah State University county agricultural agents is gratefully recognized. They provided crop growth dates from their respective counties for specific years as well as estimates for a "typical" year (Appendices D and E herein). Those who provided such information are listed at the end of Appendix E.

Several Utah State University students were responsible for the data analysis during the course of this project. They were: Marvin Lewis, Erik Merkley, Bevan Lister, Brian Deeter, Neal A. Yancey, Georghios Vassiliades, Dane Kingston, and Jumah Amayreh. In addition, some of them performed special studies summarized in unpublished reports. These were prepared on the following topics: Lake Evaporation (G. Vassiliades), Verification of the Penman Equation Calculation Procedures (Dane Kingston) and Comparison of Lake Evaporation Calculation Procedures (Jumah Amayreh). Thanks are given to Eunice Hyden for her patient re-entry and modification of the draft manuscripts, and special acknowledgment is extended to Brenda Huber, who helped immensely in preparing for the final output, and to Angela Chartier for her word processing skills and considerable effort in completing the final publication. Appreciation is further extended to Becky Andrus for data analysis and to Linda John for her skillful corrections in the preparation of this reprinting.

Cover Photo: Courtesy of Utah Division of Water Resources

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STATE CLIMATOLOGIST: DON JENSEN

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PREFACE

Water resource management and planning require accurate estimates of crop consumptive use or evapotranspiration (E_t), which is an important component in a variety of water budget analyses. The increased emphasis on conservation and recent litigation further underscore the need for accurate E_t predictions. Three previous reports (Utah State Engineer, Technical Publication #8, #8 revised and #75) have presented consumptive use estimates for Utah. Quoting from the forward of Technical Publication #75 (1982):

> Studies on the meteorological determinants of evapotranspiration were initiated at least as long ago as the 1920's and by the late 1940's had produced the Blaney-Criddle method for estimating crop consumptive use. The resulting ability to estimate water requirements by both location and crop added a new scientific dimension to water rights administration that was first introduced into the courts of Utah during adjudication of water rights in the Escalante Valley in 1949.
>
> Application of the consumptive use concept to water rights administration and water resources planning, however, required a written reference. Technical Publication No. 8 entitled "Consumptive Use of Water and Irrigation Requirements of Crops in Utah" was published by the State Engineer in 1952.
>
> By 1962, methods had been developed for going beyond agriculture to estimate water requirements for municipal, industrial, and recreational uses. Technical Publication No. 8 was revised and published under the title "Consumptive Use and Water Requirements for Utah."
>
> Continuing advancements in water requirements estimation have occurred over the last 20 years. The present revision, Technical Publication No. 75, updates estimation of agricultural, municipal, recreational, and industrial water uses.

In the 15 years or so since the late 1970's when that work was performed, there have been significant technological advances in irrigated crop research, irrigation management programs and in weather data collection equipment. These advances are reflected in the establishment of over 50 electronic weather stations throughout Utah. This has provided a basis for using state-of-the-art crop water use calculation techniques to update Utah's consumptive use estimates. Additionally, recent Utah Agricultural Experiment Station research projects have utilized line source sprinkler, lysimeter and neutron probe techniques in many experiment station and farm field irrigation studies throughout the state. Crop response to variable amounts of irrigation water as determined in these studies now permit verification of E_t calculation equations to a degree not previously realized. Results of the crop water use and E_t equation development and calibration research being performed at the USDA-ARS Soil and Water Management Research Center at Kimberly, Idaho, have also made a significant contribution to this report.

INTRODUCTION

Water requirement information is essential in irrigation management and project planning. It is the basis for designing project and farm irrigation systems, and is used in quantifying equitable water rights. Crop water use estimates are also important in the analysis of operating projects or in basin-wide water utilization surveys. Increased competition for a limited resource and current emphasis on conservation and water quality require accuracy of water requirement estimates.

The State of Utah is located in the Western United States. It is composed of many mountain ranges and valleys. The valleys where irrigation is practiced range in elevation from 2,600 to 7,800 feet. The climate in these valleys varies considerably from an average growing season of about 30 frost-free days in the highest valleys to over 220 frost-free days in the lowest. Within the state there are about 1,700,000 acres of irrigated cropland. As shown in Table 1, forage crops predominate state wide. The crops vary from irrigated meadows in the higher valleys to vegetables and fruits in the lower valleys. Water resource management in Utah requires that water use be estimated for irrigated mountain meadows, cropland, rangelands, wetlands and open water. Equitable distribution of water depends upon accurate determination of consumptive use from these areas. Field data are generally not available throughout the state to verify equations used to estimate consumptive use.

State and Federal agencies have previously used equations based on temperature to estimate consumptive water use on cropland. Previous statewide consumptive use bulletins (Technical Publications #8, #8 revised, #75 and the SCS-Utah Irrigation Guide) have utilized the temperature based Blaney-Criddle equation for consumptive use estimates. The latter two publications used the Blaney-Criddle method as modified by the USDA-SCS (1970). Recently, electronic weather stations have been located at many representative agricultural sites throughout Utah, as shown in Figure 1 (also see Appendix A). Weather data collected with these stations allow the use of more complex methods, such as the modified Penman equation, for estimating evapotranspiration (E_t). Crop water use estimates with the latter approach are not always in agreement with those obtained from the Blaney-Criddle equation (either original or the SCS modification). A comparison of computation results is shown in Figures 2 and 3 for alfalfa and spring grain, respectively, for E_t estimates at various Utah sites. The temperature-based methods overestimate E_t at St. George, are about equal at Tooele and Spanish Fork but generally underestimate E_t at Cedar City, Snowville, LaSal, Monticello, Woodruff and other sites as compared to the USU (modified Penman) procedure. These variations among methods may be due to weather instrumentation siting with respect to proximity to irrigated land as well as to elevation effects. The USU (Penman equation) E_t values in Figures 2 and 3 are from 1988 data only, whereas the Utah SCS (see Appendix B) and Tech. Pub. #75 values are long term averages.

The modified Penman method is currently being used to provide irrigation scheduling advisory information in many counties. It has also been used in conjunction with neutron probe measured soil water levels in many field research studies of crop water use in Utah farm fields and experimental plots. Based on coefficients reported in the literature, the calculated consumptive crop water use by the SCS Blaney-Criddle generally does not agree with recent USU research and irrigation scheduling programs.

The major objective of this study was to update consumptive use estimates for Utah to better match results of current evapotranspiration technology. These estimates were to be made for significant crops (alfalfa, pasture, spring grain, corn, orchard, potatoes, etc.) in each area of the state and for gardens, turf and open water surfaces as well. Another objective was to provide planning agencies and consultants with crop water use information that is in agreement with current technologies.

Study Description

Much research has been directed at identifying the water requirements of plants, particularly irrigated crops. Past research involved precision lysimeters and experimental field studies where the water budget was closely monitored to determine the E_t (evapotranspiration). Much of this research was directed toward conditions where water was not a limiting factor or conditions were relatively conducive to high yields and high water use. Recently, research such as line source sprinkler experiments (Hanks et al., 1976) have been conducted under a range of water

Table 1. Distribution of Irrigated Area in Utah by County (Total in Acres and Crops as a Percent of Total).

County	Total Acres	Alfalfa %	Hay/ Pasture %	Grain %	Corn %	Pot-atoes %	Fruit %	Vege-tables %	Idle/ Fallow %	M&I %
Beaver	39,965	57.05	20.34	5.91	4.76	0.25	0.00	0.00	9.54	2.15
Box Elder	158,549	24.51	23.50	27.73	8.12	0.64	1.56	0.68	10.82	2.44
Cache	126,070	31.40	23.10	27.25	7.07	0.00	0.16	0.25	5.81	4.96
Carbon	16,343	36.06	31.48	1.83	1.58	0.00	0.59	0.00	16.21	12.25
Daggett	11,713	19.79	76.96	0.06	0.00	0.00	0.00	0.00	0.12	3.07
Davis	46,973	14.22	35.28	9.80	10.98	0.37	0.90	5.48	3.47	19.51
Duchesne	111,457	25.22	60.88	5.91	2.29	0.01	0.00	0.01	4.33	1.36
Emery	53,048	31.43	45.65	2.31	2.45	0.00	0.36	0.00	14.61	3.20
Garfield	29,759	33.53	54.86	5.81	0.00	0.03	0.17	0.04	3.45	2.12
Grand	6,506	32.75	17.52	1.20	3.00	0.00	3.06	0.05	20.60	21.83
Iron	73,045	59.50	8.56	8.53	0.89	4.45	0.02	0.13	14.46	3.47
Juab	44,680	27.78	31.94	9.71	1.83	0.00	0.07	0.15	26.44	2.08
Kane	8,832	25.23	38.47	1.65	0.10	0.00	0.80	0.00	20.35	13.40
Millard	144,109	38.68	11.97	25.85	6.35	1.06	0.03	0.02	14.32	1.73
Morgan	12,545	36.62	33.32	14.84	6.03	0.00	0.01	0.05	2.97	6.16
Piute	22,667	37.21	52.76	4.04	2.10	0.05	0.00	0.00	1.90	1.94
Rich	72,788	12.57	81.47	2.77	0.00	0.00	0.16	0.00	0.44	2.58
Salt Lake	62,694	13.21	19.84	6.73	2.34	0.03	0.32	0.54	4.49	52.50
San Juan	10,566	29.14	24.58	3.58	0.00	0.00	0.78	0.09	31.47	10.36
Sanpete	121,114	29.18	48.32	10.44	1.31	0.00	0.02	0.00	8.12	2.61
Sevier	72,735	34.09	31.72	10.50	6.33	0.00	0.00	0.00	13.03	4.34
Summit	42,600	11.17	79.36	2.06	0.00	0.00	0.00	0.00	1.16	6.24
Tooele	36,121	25.66	42.63	9.33	1.06	0.01	0.01	0.00	15.36	5.93
Uintah	88,503	35.04	48.05	3.79	3.41	0.00	0.03	0.00	6.75	2.92
Utah	128,266	18.96	29.10	17.66	9.46	0.01	7.75	0.16	10.90	5.99
Wasatch	24,105	25.23	60.10	5.56	0.00	0.00	0.00	0.33	5.48	3.29
Washington	25,146	23.53	24.65	4.16	0.26	0.76	2.90	2.89	17.48	23.37
Wayne	22,004	41.89	35.93	16.55	0.33	0.00	0.34	0.09	2.40	2.49
Weber	73,937	16.93	48.78	7.88	8.49	0.03	0.60	1.04	1.66	14.59
Totals	1,686,840	28.67	36.86	12.74	4.42	0.38	0.92	0.38	9.03	6.60

Notes: Totals include subirrigated areas, idle and fallow areas, lawns, gardens, trees, and shrubs in residential and industrial areas. This table consists of data collected by the Utah Division of Water Resources between 1981 and 1992.

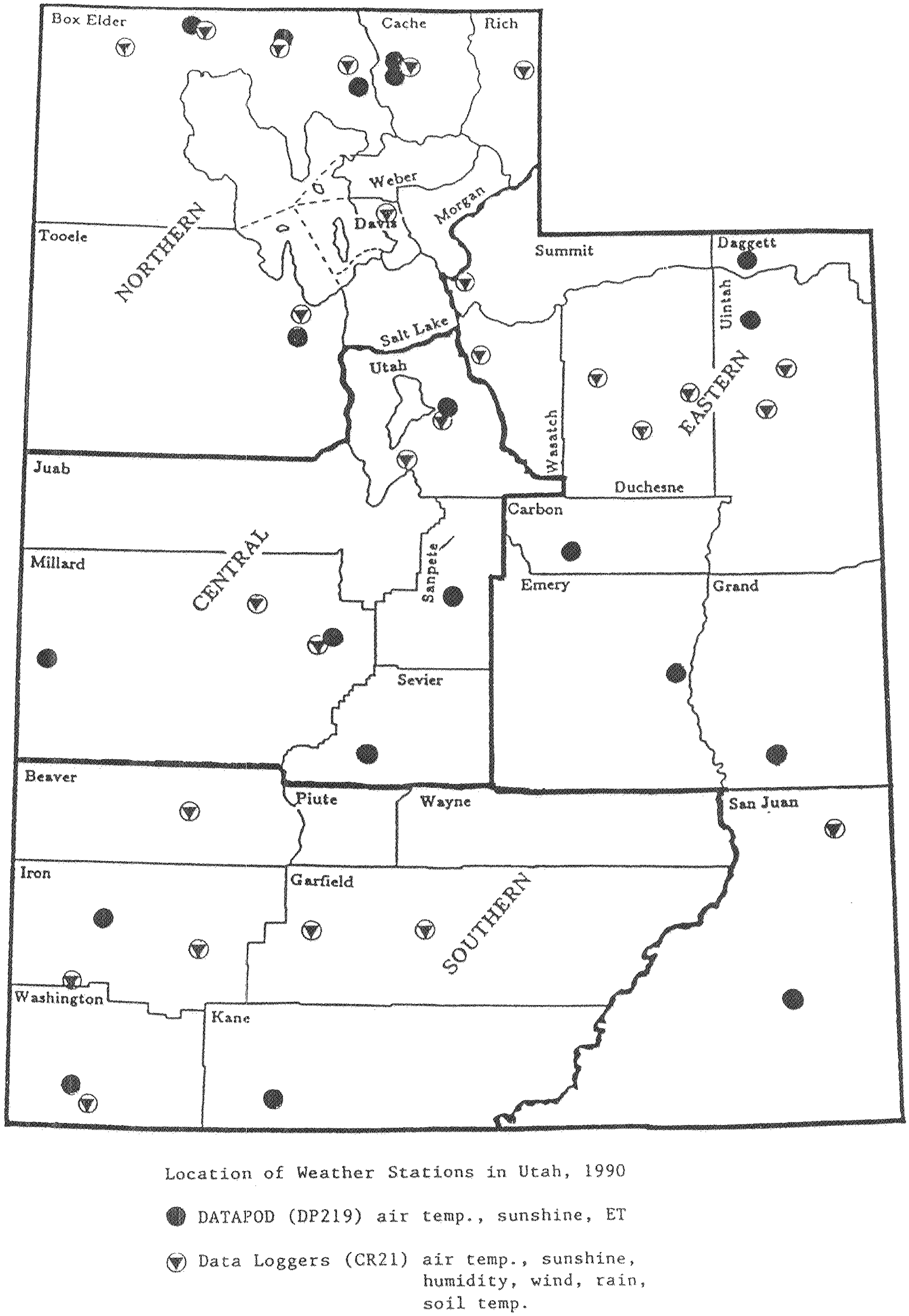


Figure 1. Location of Electronic Weather Stations in Utah, 1990.

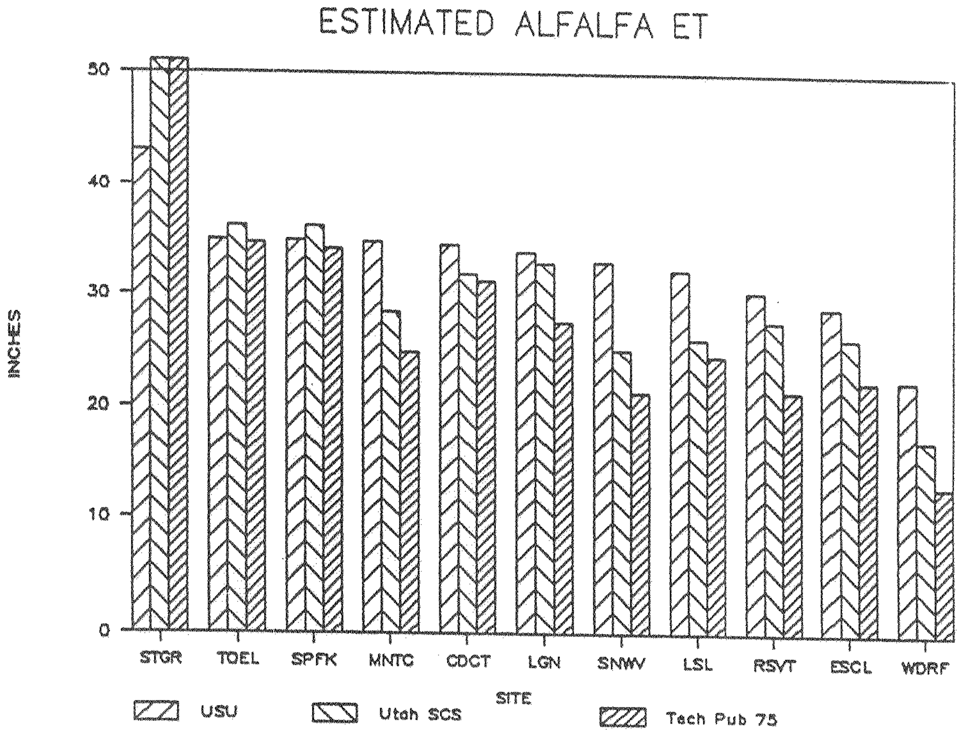


Figure 2. Comparisons of Three Methods of Calculating Alfalfa Water Use at Selected Utah Sites.

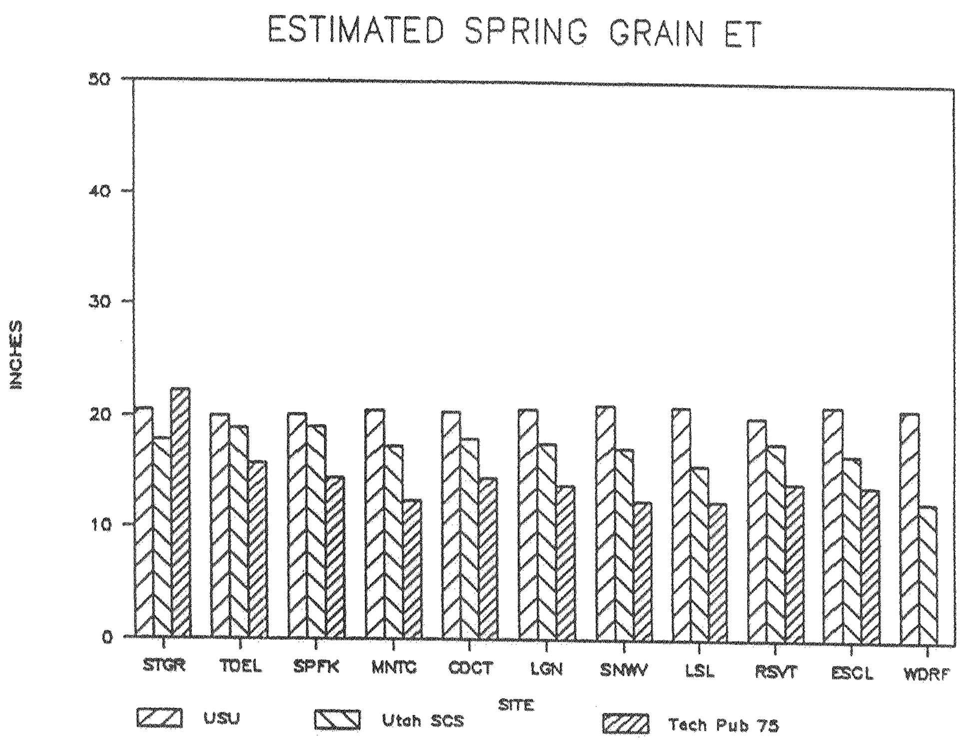


Figure 3. Comparison of Three Methods of Calculating Spring Grain Water Use at Selected Utah Sites.

supply conditions. This research opened the way for a new concept in determining water requirements as discussed in Hill, Johns and Frevert (1983).

Ideally, field research data should be utilized directly in estimating crop water requirements. Since this information is not available or may not be directly applicable in every locality, planners must rely on experience in neighboring projects or upon theoretical estimates. The principal factors influencing the amount of irrigation water required by plants are (1) climatic factors such as temperature, solar radiation, precipitation, humidity and wind; (2) plant characteristics, especially amount of leaf area; and (3) local farming practices. However, the principal techniques used to estimate water requirements are based on climatic data.

There are as many as 50 methods or variations advanced for the theoretical estimation of E_t. They vary from simple, temperature-based techniques to complex, data-intensive, physically based models. Often estimates vary widely among the various methods. There are always questions as to which method is "correct." The lack of climatological data may force the use of simpler techniques when other methods requiring additional data could be more accurate or more representative.

This report presents the results of an applied research effort that takes advantage of current state-of-the-art weather data networks combined with results from current E_t studies to update consumptive use estimates. Average monthly E_t values were calculated from a calibrated SCS Blaney-Criddle (SCS-BC) equation with monthly average temperatures for 1961-1990 available from NWS climate stations. The calibration was accomplished by using the modified Penman equation (Kimberly, Idaho parameters, 1982 version) with daily data available at selected USU Climate Center electronic weather stations.

This research effort involved the following procedures:

1. Analyze available weather data from electronic weather stations and nearby NWS stations and prepare consistent daily and monthly data sets for significant agricultural areas of the state.

2. Obtain historical cropping information such as typical planting and harvest dates of significant crops grown in an area. The main crops will be alfalfa, spring grain (barley and/or wheat) and pasture. Potatoes, corn, orchard and other crops may also be used where appropriate.

3. Develop a technique to estimate open water surface evaporation.

4. Use weather data sets and cropping dates to calibrate an empirical temperature based E_t equation (SCS Blaney-Criddle) to the modified Penman method for overlapping periods of record. Monthly average temperatures from the NWS data will be used in the SCS Blaney-Criddle method. The sites will include locations with two or more years of data from nearby electronic weather stations.

5. Develop longer term historical E_t estimates for significant crops and for open water evaporation using the calibrated SCS Blaney-Criddle equation for selected NWS sites throughout the state.

6. Verify the accuracy of calculated E_t values, where possible, with previous field research data.

Definitions of terms commonly used in this report are found in the Glossary of Terms.

PROCEDURES

General Methods for Estimating Consumptive Use Water Requirements for Crops

The consumptive use of water for particular crops can be estimated by empirical or theoretical methods.

Empirical Measurement

In a few areas, the water necessary to grow particular crops has been empirically determined by measurements -- through instrumented field research sites with weighing lysimeters or other soil water depletion field studies. Several such studies have been conducted by USU agricultural researchers in Utah and by others throughout the Western U.S. Whenever water use can be actually measured for a particular crop over a period of time, an equation could be calibrated and consumptive use could be calculated using weather data. This general procedure was employed, for example, by Wright and Jensen (1972) to calibrate the modified Penman equation to field conditions in Southern Idaho. It was also used to measure consumptive use of crops in the Bear River Basin 1983-1988 (Hill et al., 1989) and Farmington, New Mexico 1979-1982 (Boman, 1983). However, actual consumptive use has not been extensively measured empirically for crops in Utah. Recourse must therefore be made to the use of theoretical equations.

Theoretical Calculation

More commonly, a theoretical calculation of consumptive use is made, using an empirical based equation such as the SCS modified Blaney-Criddle, which various state and federal agencies in Utah have done. The SCS Utah Irrigation Guide reports crop water use for six different climate zones covering the state of Utah (see Appendix B).

Consumptive use or estimated crop evapotranspiration (E_t) for each crop is generally determined by relating the water consumed by each particular crop to the amount of water consumed by a "reference crop." One common "reference crop" used in these types of equations is alfalfa at 16 inches or more of top growth and adequately irrigated so that transpiration is not limited by available soil moisture. Another common reference crop is clipped grass, again with adequate water. However, the SCS Blaney-Criddle equation does not incorporate the "reference crop" concept as do the Kimberly Penman and other similar equations.

In evaluating the use of a theoretical estimate, it is preferable to have measured data for some crop in the vicinity. Lysimeter data are not, however, readily available for calibrating E_t equations in Utah except in USU studies in Cache Valley and from the Bear River Commission water use study (Hill et al., 1989). Other field crop water use experiments with the line source sprinkler technique (several USU studies by R.J. Hanks and associates) from various locations in Utah and neighboring states provide additional field estimates of E_t (see also Hill, Hanks and Wright, 1984). However, the applicability or correctness of an equation can be verified with other methods using data from similar regions.

Temperature-based consumptive use equations (like Blaney-Criddle type) are often used to estimate field crop water use in the Western United States. However, the use of such an equation, without reasonable adjustment for specific site conditions, can produce incorrect E_t estimates. The SCS-Blaney-Criddle method tends to underestimate crop water requirements at higher elevations in arid areas. This seems to be a function of the relationship between air temperature and solar radiation, wherein temperatures decrease, especially during nighttime, relative to solar radiation as elevation increases. This is why the appropriateness of using either the SCS Blaney-Criddle or any other similar equation should be verified with an independent check, either field data or a more physically based equation (such as the Penman), even if such verification is limited to one or two years.

Differences in E_t as calculated by various equations are a concern, as are estimates of field crop E_t from irrigation scheduling and research plots that differ from calculated values. In 1983 Hill, et al. completed a study in which they tested the consumptive use values as calculated by 10 different theoretical equations by comparing each equation (or its variation) with field research consumptive use as actually measured at selected sites in the Western United States. Considerable variation was found between calculated and field estimates of E_t. Field data on water use and yields of alfalfa (10 sites) and corn (8 sites) were included in the study. Generally, daily weather data were measured at these irrigated field research sites. The SCS-Blaney-Criddle equation (with SCS TR-21 crop coefficients, USDA-SCS, 1970) underestimated expected field crop water requirements for alfalfa by 2% at Grand Junction, CO; 14% at Kimberly, ID; 8% at Fallon, NV; and 19% at Farmington, N.M. Figure 4 illustrates this along with differences among the equations at Farmington, N.M. Thus the SCS-Blaney-Criddle equation should be calibrated to regional conditions. This will ensure more appropriate and accurate estimates of crop water use under well watered (adequate soil water) and good management conditions. The Kimberly Penman equation (1972 calibration) with the wind limit gave E_t values higher than attainable and expected water use of field alfalfa (as defined by Hill, et al., 1983) by 10% at Grand Junction, 12% at Kimberly, 2% at Fallon, and 3% at Farmington, N.M.

Crop Water Use (Evapotranspiration) Calculations and Calibration Procedures

Evapotranspiration Estimation

Consumptive use (E_t) or crop water use can be estimated by many different techniques depending on study objectives and financial and data resources. These techniques range from equations that use only monthly average temperatures to thoroughly instrumented field research sites with weighing lysimeters. Additional data on crop water use are available from irrigation scheduling, experimental plots and field research studies.

The general form of the reference E_t - crop coefficient approach to a consumptive use equations is:

$$E_t = K_c E_{tr} + E_{ws}$$

where E_t is the estimated crop evapotranspiration; K_c is an empirically determined crop coefficient relating crop E_t to reference crop E_{tr}; E_{tr} is calculated E_t for an alfalfa reference crop; and E_{ws} is estimated wet soil surface

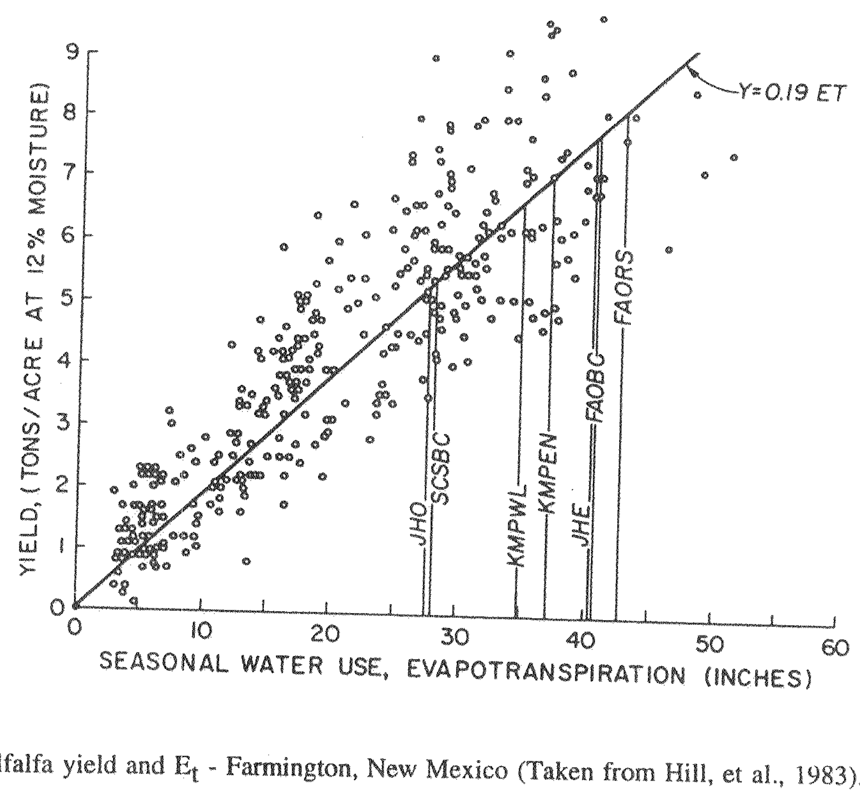


Figure 4. Alfalfa yield and E_t - Farmington, New Mexico (Taken from Hill, et al., 1983).

evaporation adjustment to account for conditions occurring following an irrigation or significant rain. This adjustment is made when the K_c value is less than 1.0, e.g., in the early growth stages of a row crop or following a cutting of alfalfa. E_{ws} should be ignored in situations where the K_c factor includes the effect of a wet soil surface on E_t. However, the user should verify that the anticipated irrigation schedule approximates that of the site where the K_c values were determined.

A reference crop of alfalfa is 16 inches tall and adequately irrigated so that transpiration is not limited by available soil moisture. Another common reference is that of clipped grass, water not limiting.

An alternate form of the crop water use equation is:

$$E_t = K_{cm} E_{tr} \tag{1}$$

where K_{cm} is a "mean" crop coefficient (Wright, 1981) that includes the effect of evaporation from a wet soil surface (E_{ws}) from a typical irrigation schedule for the given crop. Equation (1) was used herein for estimating E_t with the electronic weather data, as historical irrigation dates were not known.

The value of a crop coefficient (K_c or K_{cm}) at a particular growth stage depends on plant transpiration as well as evaporation from the soil surface. Care must be exercised in applying K_{cm} values from one research site to other sites with different conditions.

Evapotranspiration equations were developed to simulate E_t using readily available climatological measurements instead of having to directly measure crop water use. This did not completely model the actual physical behavior of the complex plant-environment interaction. However, proper local calibration and the selection of appropriate crop coefficients (K_c) mean that equations can provide reasonable estimates of E_t accurate enough for engineering purposes.

SCS Modified Blaney-Criddle Equation. - A commonly used consumptive use equation in which the only climatic variable is monthly temperature, as available at NWS stations, is the SCS Modified Blaney-Criddle equation (SCS TR #21, USDA, 1970):

$$u = k_c\, k_t\, (tp/100) \tag{2}$$

where u is monthly consumptive use, inches; t is mean monthly temperature, °F; p is percentage of daylight hours of the year occurring during a particular month; k_c is a monthly growth stage coefficient (not to be confused with K_{cm} of Eq [1]); and k_t is a climatic coefficient calculated by:

$$k_t = 0.0173t - 0.314, \text{ subject to } k_t \geq 0.30$$

Modified Penman Equation. - The physically based Penman combination method E_t equation is one of the more widely used methods to calculate reference crop evapotranspiration (E_{tr}) where sufficient weather data are available. The term "combination method" is derived from the combining of radiative energy balance and aerodynamic energy transfer effects on crop water use into one equation. In the Penman equation, daily E_{tr} estimates depend on air temperature, solar radiation, relative humidity and wind speed. A modified Penman equation similar to that used at Kimberly, Idaho [Wright and Jensen (1972), Jensen (1974), Jensen, Burman and Allen (1990) and Wright (1982)], was used in this study:

$$E_{tr} = \frac{\Delta}{\Delta+\gamma}(R_n + G) + \frac{\gamma}{\Delta+\gamma}(15.36)(W_1 + W_2 U_2)(\overline{e_s} - e_a) \tag{3}$$

where E_{tr} is reference E_t, alfalfa with 30 to 50 cm of top growth, (cal/cm^2)/d (langleys per day). The conversion factor 0.3937/λ is used to convert to inches per day. This equals 0.000673, if a λ value of 585 is used to represent typical conditions; λ is the latent heat of water in cal/cm^3:

$$\lambda = 595.9 - 0.305\,(T-32),\ T \text{ in } ^\circ F \quad (4)$$

Δ is the slope of the saturation vapor pressure-temperature curve (de/dt) and can be computed as $\Delta = 2.00\,(0.00738T_c + 0.8072)^7 - 0.00116$ for $T_c \geq -23$ °C, where Δ is in mb/°C and T_c is mean daily temperature in °C; γ is the psychrometric constant, mb/°C; R_n is net radiation, (cal/cm^2)/d; G is soil heat flux, (cal/cm^2)/d; W_i are wind term parameters. Values for W_1 and W_2 were 0.75 and 0.0185, respectively, at Kimberly, Idaho, as used in the 1972 version. The 1982 Kimberly Penman equation assumes a variable wind function with day of the year, D. W_1 is $0.4 + 1.4 \exp\{-[(D-173)/58]^2\}$ and $W_2 = 0.08 + 0.00643 \exp\{-[(D-243)/80]^2\}$ where D is calendar day (Jan 1 = 1, Dec 31 = 365, etc.); U_2 is wind movement, mi/d at 2-meter height; e_s is mean saturation vapor pressure, which is the mean of e_s values obtained at daily maximum and daily minimum temperatures, mb (this is a modification of the original Penman equation).

$$e_s = 1.23329 \exp\,[21.07 - 5336.0/(T_c + 273.1)] \quad (5)$$

where e_s is saturation vapor pressure over water, mb, at temperature T_c; and T_c is temperature, °C; and e_a is mean actual vapor pressure, mb, and is equivalent to the saturation vapor pressure, as defined in equation (5) obtained at the daily average dewpoint temperature. This is often approximated from a single early morning dewpoint determination.

The following equations are required to calculate individual terms in equation (3):

$$\gamma = c_p P/(0.622\lambda) \quad (6)$$

where c_p is specific heat of air at constant pressure, and is taken as 0.240 cal/gm°C.

$$P \text{ is } 1013 - 0.03216\ El, \text{ mb; } (El = \text{elevation in feet}) \quad (7)$$

$$R_n = 0.77\, R_s - R_b \quad (8)$$

where 0.77 is (1 - ∝), assuming an albedo (∝) of 0.23 (1972 Kimberly Penman calibration) for a green, actively growing crop at full cover. In the 1982 version, albedo is:

$$\propto = 0.29 + 0.06 \sin((D+96)/57.3) \quad (9)$$

and

$$R_b = R_{bo}\,(aR_s/R_{so} + b) \quad (10)$$

$$R_{bo} = (a_1 + b_1 \sqrt{e_a})\ 11.71 \times 10^{-8}\,(T_a^4 + T_b^4)/2 \quad (11)$$

where a, b, a_1, b_1 are empirical constants (see table 2-3 of Hill, Johns and Frevert, 1983). Calibrated values for Kimberly, Idaho, were 1.22, -0.18, 0.325 and -0.044, respectively, for the 1972 calibration. Whereas, values for the 1982 calibration were: $a_1 = 0.26 + 0.1 \exp(-(0.0154(D-180))^2)$; $b_1 = -0.044$; a = 1.126 and b = -0.07; if Rs/Rso is less than 0.7 then a = 1.017 and b = -0.06. R_b is estimated longwave outgoing radiation, (cal/cm^2)/d; R_{bo} is theoretical clear day longwave outgoing radiation, (cal/cm^2)/d; R_{so} is clear day solar radiation (cal/cm^2)/d; T_a is daily maximum temperature, °K; and T_b is daily minimum temperature, °K.

R_{so} is obtained from curve fitting to the highest values of observed daily R_s data for a given site. R_{so} could also be determined from theoretical considerations as a function of extraterrestrial or top of the atmosphere solar radiation (R_a) (Doorenbos and Pruitt, 1977, and Jensen, Burman and Allen, 1990). A value of $R_{so} = 0.75\ R_a$ was used herein in Equation (10) and to verify the solar radiation (pyranometer) calibration.

An empirical equation for estimating the soil heat flux is:

$$G = (\bar{T}_{pr} - \bar{T})\ 5 \tag{12}$$

where $\bar{T}_{pr}$ is the mean air temperature for a previous time period, usually the previous 3 days when daily estimates of E_{tr} are required, °F; and $\bar{T}$ is the mean air temperature for the current time period, i.e., mean air temperature of the particular day for which E_{tr} is required,°F.

The magnitude of G is usually small relative to other terms in Equation (3) and is sometimes ignored in calculations; however, it was used in this study.

In some locations, wind movement may be available from an instrument at a height different than two meters. The following relationship (Jensen, et al., 1990) provides a reasonable estimate of the wind movement at two meters when the anemometer is at height z: $U_2 = U_z\ (2/z)^{0.2}$ where U_2 is wind movement at two meters, U_z is wind movement at height z, and z is height of anemometer above ground in meters.

Equation (3) as calibrated at Kimberly, Idaho (Wright, 1982 and Jensen, Burman and Allen, 1990) with a 100 mile per day wind limit (at a height of 2m) was used as a standard herein for E_{tr}. The wind limit used for calculation purposes was adapted from the U. S. Bureau of Reclamation irrigation scheduling research program and was verified by other empirical experience. Over estimation of crop E_t by the Penman equation advection (wind function times vapor pressure deficit) term has been experienced when lysimeter E_t has been compared with calculated E_t values on windy days (Jamison, 1982). A cap of 134 miles of wind travel per day was used in Texas by Howell, Steiner and Schneider (1990). Average wind speed was reduced by 2.2 mph by Heerman, Shull and Mickelson (1974) in eastern Colorado.

Jensen-Haise Equation. - An empirical temperature-radiation equation which has been used in many locations is the Jensen-Haise equation (Jensen and Haise, 1963):

$$E_{tr} = C_t\ (T - T_x)\ R_s \tag{13}$$

where C_t is an empirical coefficient; T is temperature, °F; and T_x is the temperature axis intercept, °F. Equation (13) was used herein to estimate E_{tr} for the datapod sites (see Figure 1) where only temperature and solar radiation were available.

Initially, C_t and T_x were presented as constants, 0.014 and 26.4, respectively, for the Western United States. Later, these coefficients were defined (in English units) as: C_t is $1/(C_1 + C_2\ C_h)$; C_1 is 68 - (3.6) (El/1000); C_2 is 13; C_H is $50/(e_2 - e_1)$; and T_x is 27.5 - 0.25 (e_2 - e_1) - (El/1000); where e_2 and e_1 are saturation vapor pressures (e_s in mb) of water at the long-term (normal) mean maximum and mean minimum temperatures, respectively, for the warmest month of the year (or pertinent growing season) for the study area. An approximation for e_2 and e_1 can be obtained using Equation (5).

Considerable evidence exists from field studies to suggest caution in the use of C_t and T_x with full elevation correction for areas at elevations of 4500 feet and above, depending on the surroundings. This is shown as part of the results discussed in Hill, Johns and Frevert (1983). Equation (13) was calibrated against the modified Penman equation (Kimberly, Idaho parameters) at a few sites in northern Utah and southern Idaho, as described by Grabow (1984). The calibration was accomplished by identifying the values of C_t and T_x that minimized the sum of squared differences between Equation (13) and the Penman equation for consecutive 5-day E_{tr} totals. This resulted in a T_x value of 0.0°F with C_t equal to 0.009 for valleys with extensive irrigated or wetland area, and 0.011 in predominately arid lands.

Specific locally calibrated values of C_t and T_x may be used to override the default literature calculation described above. Crop coefficients with an alfalfa reference, such as those developed at the USDA-ARS (Agricultural Research Service) site at Kimberly, Idaho, should be used with Equation (13).

Hargreaves and Hargreaves Delta-Temperature Equation. - An empirical equation (Hargreaves, et.al., 1985) which uses only maximum and minimum air temperature (T in °F), if solar radiation is not available, was used by Ashcroft, Jensen and Brown (1992) at the NWS sites in Utah. This is:

$$E_{trg} = 0.0075\ T\ R_s \tag{14}$$

where E_{trg} (also denoted as E_{to}) is reference E_t of well-watered, clipped grass (multiply by 1.2 to obtain alfalfa reference value), langleys per day (multiply by 0.000673 to convert to inches).

Equation (14) is equivalent to setting $C_t = 0.009$ ($.009 = 1.2 \times 0.0075$) and $T_x = 0.0$ as local calibration default overrides in the Jensen-Haise equation.

If measured R_s is not available, R_s could be estimated by $R_s = c_1\,(Tmax - Tmin)^{1/2}\,R_a$, where Tmax and Tmin are maximum and minimum air temperatures, respectively, °F; R_a is the theoretical daily solar radiation at the top of the atmosphere, langleys; and c_1 is a calibration and units constant. This constitutes the "delta-temperature" version of the Hargreaves equation. A value of 0.127 for c_1 is typically used as an estimate. This could be revised to better match Jensen-Haise and Penman seasonal E_{tr} totals as necessary at various locations.

Calibration of Empirical E_t Equations

Two procedures are commonly used to calibrate theoretical E_t equations. If measured water use is available from lysimeter studies, then the monthly equation E_t could be calculated with a selected equation using weather data. The crop coefficient is assumed to be one (1.0). The E_t calculated from the equation is then divided into the measured water use value for the same time period to determine an estimated crop coefficient, thus:

Estimated crop coefficient (K_c) = Measured water use/Equation value.

This is the general procedure by which Wright and Jensen (1972) calibrated the modified Penman equation to field conditions in southeastern Idaho. When lysimeter data is not readily available for calibrating E_t equations (i.e., SCS Blaney-Criddle), such as in this study, then an alternate approach is used. In this second procedure (see also Hill et al., 1989), reliable estimates of consumptive use are used in place of measured values, thus:

Estimated crop coefficient = Estimated Crop E_t/Equation value.

The Penman method with appropriate crop coefficients as calibrated at Kimberly, Idaho was used as a standard in the second procedure to provide the estimated crop E_t value for each month. Whereas, the SCS Blaney-Criddle equation (with crop coefficient = 1.0) was the calculated equation value.

For a monthly crop coefficient calibration of the SCS Blaney-Criddle method:

$$k_c = E_{t\ crop}\ (\text{Penman})/(k_t\ tp/100) \tag{15}$$

where $E_{t\ crop}$ (Penman) is determined as the sum for a month of daily values from equations (1) and (3).

Adaptation of Modified Penman Equation to Lake Evaporation Estimates

The modified Penman equation (Eq.3) was adapted for estimating lake evaporation (see page 75, Appendix C) by changing the albedo to 6 percent ($\alpha = 0.06$) for an open water surface. Also, a value of 0.97 was assumed for the emissivity of longwave radiation (Brutsaert, 1982). Net radiation (R_{nl}) for a lake thus becomes:

$$R_{nl} = 0.94\ R_s - 0.97\ R_b,$$

where, R_s and R_b are as previously defined for Equation (3). Lake evaporation is estimated by the Penman-lake equation modification as:

$$E_{lake} = \frac{0.7}{\lambda}\left[\frac{\Delta}{\Delta+\gamma} R_{nl} + \frac{\gamma}{\Delta+\gamma} 15.36\,(1.0 + .01\,U_2)(e_{sa} - e_a)\right] \quad (16)$$

The wind function was adjusted to represent conditions similar to the Kohler, Nordensen and Fox (1955) equation, with no implied daily wind travel limit. The saturated vapor pressure term, e_{sa}, was taken as e_s at the average daily air temperature. The difference between γ_L and γ was negligible, thus γ was used as previously defined.

Estimates of open water surface (lake) evaporation as calculated herein do not account for water surface temperature. Water surface temperatures would improve the accuracy of the estimates. The effects of water inflow and outflow, subterranean thermal springs and the presence of ice patches or complete ice cover are also not included. Thus, evaporation values shown herein for the winter months may be in error by as much as the calculated value. A limit of 2.0 was imposed on the monthly lake k factor.

Consideration of Crop Specific Factors

Crop Coefficients. - In this study, water use by various crops (Equation 1) was estimated with crop coefficients from three sources: a) "mean" crop coefficients (K_{cm}) from Kimberly, Idaho (Wright, 1981, and personal communication, 1993); b) coefficients derived for other crops from other sites (see Hill, 1991) and, c) coefficients such as for orchards from FAO-24 (Doorenbos and Pruitt, 1977) adapted to an alfalfa reference condition. The Kimberly modified Penman equation as used herein and corresponding crop coefficients have reliably estimated crop water use in several USU farm field and experimental plot research studies.

The K_{cm} crop curves for several crops are represented in the model by polynomial equations:

$$K_{cm} = a_0 + a_1 r + a_2 r^2 + a_3 r^3 \quad (17)$$

or

$$K_{cm} = b_0 + b_1 d + b_2 d^2 + b_3 d^3 \quad (18)$$

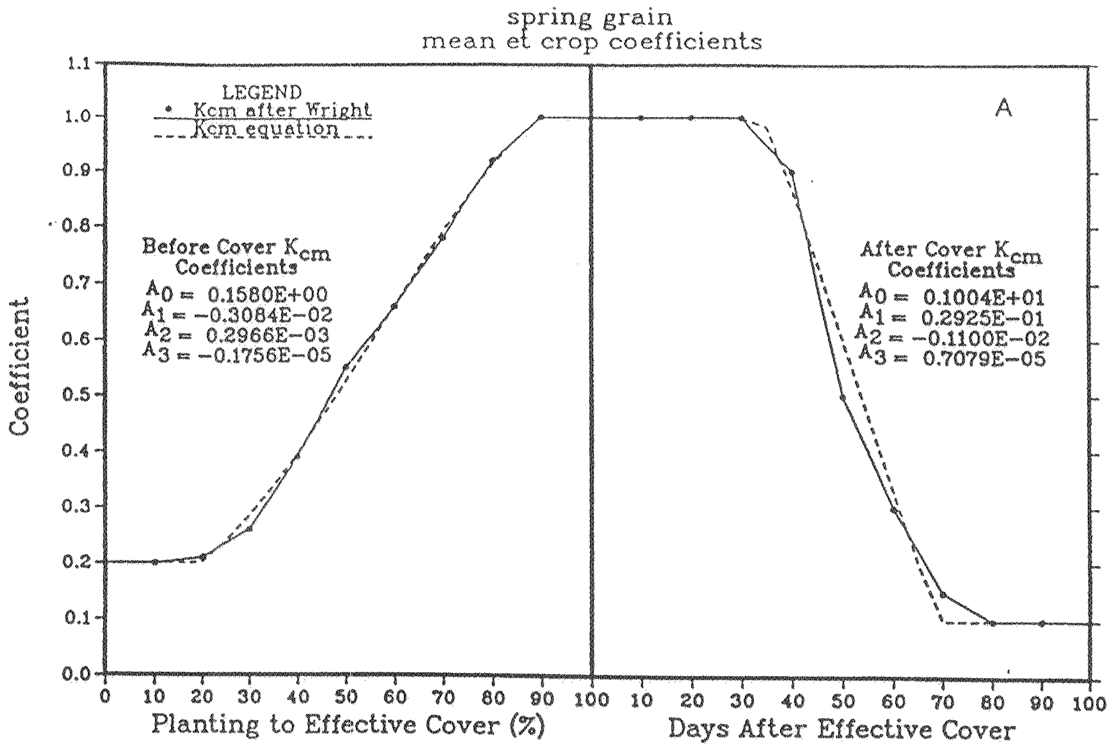
where K_{cm} is the estimated daily value of the mean crop coefficient, E_t/E_{tr}, and is generally constrained by maximum and minimum limits; a_0, a_1, a_2, a_3, and b_0, b_1, b_2, b_3 are polynomial coefficients determined by regression analysis; r is the fraction of time from planting to effective cover, (i.e., days from planting to the present divided by days from planting to effective cover, percent/100) for estimating K_{cm} before effective cover; and d is days after cover for estimating K_{cm} after effective cover. Sample K_{cm} curves are shown in Figure 5 for spring grain and field corn. Polynomial coefficients for other crops are given in Hill (1991).

Crop coefficients developed in FAO-24 style (Doorenbos and Pruitt, 1977) are represented in four growth periods: initial; (vegetative) crop development; mid-season and late (or maturation). Values of the crop coefficients for turf, pasture and pine (Christmas) trees are given in Table 2. The USU CRPSM (Cropwat version) computer model (1992 version modified from that of Hill, Hanks and Wright, 1984) calculated crop E_t (Equation 1) from Penman E_{tr} (Equation 3).

Crop Specific Considerations for Water Use Estimates

Forage Crops

Water requirements for forage crops have been considered of secondary importance because of the relatively low cash value of their production. However, in Utah, a significant proportion of the irrigated land area is in forage crops. As shown in Table 1, forage crops were 66 percent, or 1,105,000 acres of the total irrigated area of 1,687,000 acres in Utah.



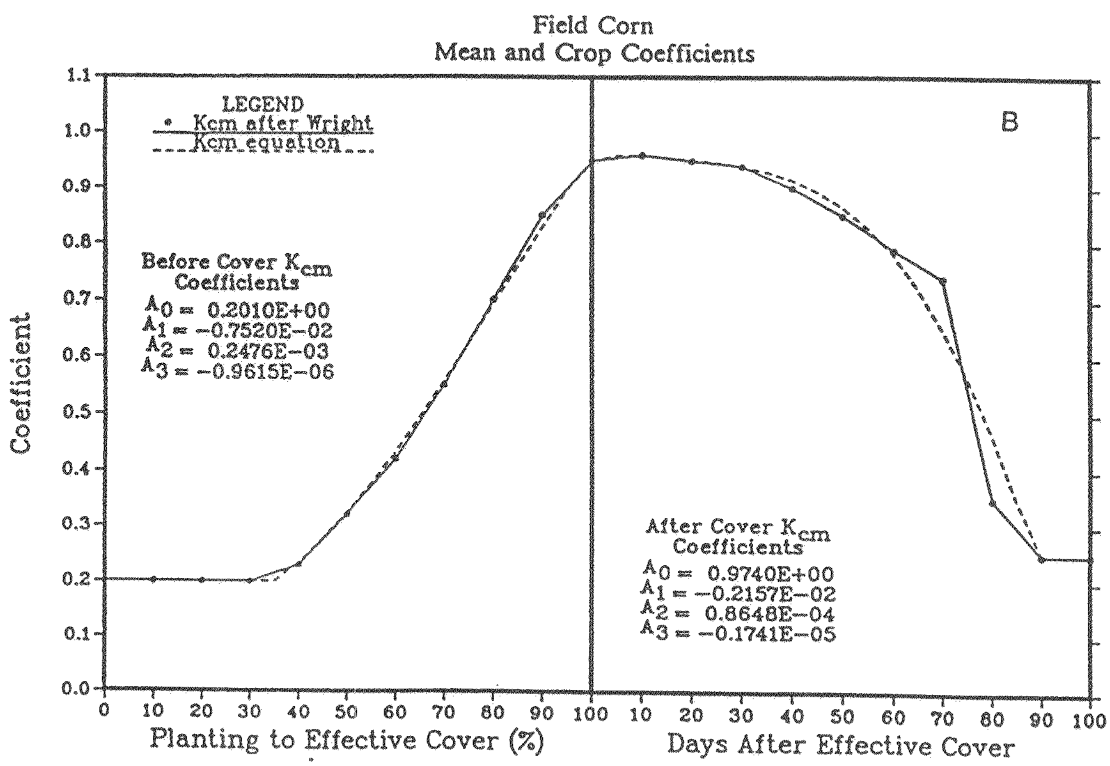


Figure 5. Crop Coefficient Curves for Spring Grain and Field Corn from Polynomial Equations Compared with Tabular Values of Wright (1981).

Table 2. Crop Coefficients (Alfalfa Reference, FAO-24 Style) Derived for Pasture from Kimberly, ID (Wright, personal communication, 1993) and for Pine Trees (Petersen and Hill, 1985) and Turf from Northern Utah.

	Coefficient			Days Duration of Stage				
Crop	Initial	Mid Season	Late	Days After[a]	Initial	Crop Devel.	Mid Season	Late
Turf	.35	.56	.56	210	2	8	150	60
Pasture[b]	.30	.68	.40	189	2	23	143	46
Pasture short [b]	.30	.68	.40	164	2	23	118	46
Pine Trees	.75	.90	.75					
Day/coef[c]	45, .75	61, .85	81, .85	101, .90	204, .90	224, .75	275, .75	

[a] Days after beginning of mid-season until end of cropping.
[b] Duration of mid-season reflects difference between sites.
[c] For pine trees (as Christmas trees about 6 ft. tall): pairs of days since beginning of initial growth stage (assumed to be the first of April) and end of current stage with crop coefficient value at end of current growth stage, i.e., 45 days in initial stage with K_c of 0.75 at end of initial stage.

Alfalfa. - Major differences in yield and water use of alfalfa have been noted between field and research yields. Factors that tend to result in lower yields from farm fields than from research sites include:

- Windrows covering up to one-third of the field area. The estimated yield suppression on subsequent cuttings if the windrows remained in place for 8 days of each cutting could amount to 20 percent over the field for a season with four cuttings. However, crop E_t is essentially negligible under the windrow and proportionate to growth after the windrow is removed.

- Infrequent irrigations on farms, especially waiting too long before irrigations after cuttings as a result of operation problems.

- Non-uniformity of irrigation water application due to system design, operation, or topography.

- Soil variability, including equipment compaction paths, which influences soil-water storage capacity and root depths.

Research yields were assumed to be 20 percent higher than field potential yields due to the combined effect of these factors which reduce both yield and E_t proportionately in the fields, but not in lysimeters or research plots (Hill et al. 1983). Thus, attainable field yields would be 83.3 percent (83.3 = 100/1.2) of the research yields with a corresponding reduction in E_t. Depending on the locality, this assumption may or may not represent better than average management conditions at some study locations. Further adjustments to obtain field-expected yield values derived from research studies were made by Hill, et al. (1983) for harvesting or other conditions which would decrease field-harvested yield but not E_t.

Pasture. - Water use of rotation grazed pastures in southern Idaho was about 83 percent of a clipped ryegrass reference (about 79 percent of clipped fescue) and 65 percent of an alfalfa reference, based on unpublished data from Southern Idaho (J. L. Wright, Kimberly, Idaho, personal communication 1990, 1991, 1992 and 1993). Most pastures are grazed moderately to heavily in Utah. Thus, their consumptive use may be 10 to 20 percent less than that assumed herein.

Meadow Hay. - Hay was assumed to be grass meadow which may be grazed in the spring and then allowed to grow until cut for hay in mid-August. The regrowth may be grazed in the late summer and fall. Empirical crop coefficients were used from the Bear River Commission field study of wet meadow hay water use in northern Utah, southeastern Idaho and northwestern Wyoming (Hill et al., 1989).

Improved Grass Hay. - Seasonal water use by improved varieties of grass hay, such as tall fescue, may be similar to field alfalfa E_t. An excellent stand of well-managed tall fescue was grown in a lysimeter study in southern Idaho (Wright, personal communication, 1993). It had more water use than field alfalfa prior to the first cutting. Whereas, the tall fescue only recovered to 85 to 90 and about 82 to 88 percent, respectively, of alfalfa water use prior to each of the two subsequent cuttings. Other varieties, such as orchard grass, would not recover as well relative to alfalfa after the first cutting. The recovery is further impaired if additional nitrogen fertilizer is not applied between cuttings. Seasonal water use of improved grass hay (i.e. well-managed tall fescue) was assumed to be the same as field alfalfa. This could exceed seasonal E_t of other multiple harvested grass hay varieties by 10 to 15 percent.

Turf. - Turf water use may be similar to continuous moderately grazed pasture being about 56 percent of alfalfa reference, as determined in current (unpublished) Utah State University field research from lysimeters in the Logan, Utah, Country Club Golf Course. The 56 percent is an average of two lysimeters for two years (1991 and 1992, see Table 3).

Other Crops

Spring Grain. - Seasonal evapotranspiration of spring wheat (Fieldwin) was about 23 inches at Kaysville and 21 inches at Logan in USU line source sprinkler field experiments during 1980 (Hill, Hanks and Wright, 1984). Water use was about the same across three planting dates ranging from early April to mid May. Earlier studies (Christensen et al., 1968) suggested that spring grain seasonal E_t was about 20 inches throughout Utah.

Corn. - Water use of field corn was less than 27 inches during 1980 at both Kaysville and Logan in the same experiment mentioned above. Seasonal E_t of corn planted in early June was less than that of corn planted in early May.

Potato. - Water Use of potatoes planted in early May, 1982 was about 27 and 22 inches, respectively at Kaysville and Logan (continuation of above-mentioned study). E_t of potatoes in line source experiments conducted in farm fields at Enterprise (1989-91) and McCornick (1990-91) was about 20 and 21 inches, respectively, for long season, well-watered varieties.

Christmas Trees. - Water use by pine trees can be higher in the winter season than usually anticipated, if the soil is wet, as suggested by a study in northern Utah (Petersen and Hill, 1985). In this study of Christmas trees (about 5 to 7 foot height), crop coefficients (alfalfa reference) were about 0.85 in June, 0.90 for July - October and about 0.75 for the remainder of the year. The size and spacing of trees also affect the crop coefficient value also. Actual water use in the field is strongly dependent on soil water levels. If the trees are not irrigated, then the consumptive use cannot exceed precipitation unless a water table is present. If irrigation water is applied for only a few months out of the year, then the actual consumptive use should be reduced during the winter months to better match precipitation. If all of the November through March precipitation was consumed by the trees, then annual E_t could be estimated by adding that amount.

Weather Station Site Environment Relative To Irrigated Fields

Previous water use studies in the western U.S. have recognized that temperatures measured at NWS weather stations located in communities or at airports are higher than temperatures measured in nearby irrigated fields. Average air temperatures were about 5.4°F lower in an irrigated area than in an adjacent sagebrush desert of Southern Idaho as reported by Burman, Wright, and Jensen (1975). Also, relative humidity was higher and wind speed was lower over the irrigated area. Allen, Brockway and Wright (1983) found that the FAO modified Blaney-Criddle (FAO-BC) equation E_t estimates in southern Idaho were 9 percent high with irrigated area temperatures and arid secondary data (relative humidity and wind speed). The FAO-BC estimates were 7 percent high with the reverse combination of data. Solar radiation was measured at the irrigated site. The FAO-BC equation E_t estimates were 16 percent high when arid site temperature and arid secondary data were used. They developed an aridity

Table 3. Turf Grass Water Use (E_t) and Crop Coefficients (K_{cm}) from Lysimeters[a] at the Logan, Utah Golf Course, 1991 and 1992.

Year	Time Period	Lysimeter	E_t, Inches	E_{tr}[b], Inches	K_{cm}	Seasonal Average
1991	May 3 - Oct 28	East	28.7	44.4	0.65	
		West	21.5	44.4	0.48	
				1991 - Both Lysimeters		0.57
1992	April 1 - Oct 27	East	29.3	51.1	0.57	
		West	27.1	51.1	0.53	
				1992 - Both Lysimeters		0.55
				Two Year Average		0.56

[a] The two lysimeters are located at the Logan Country Club in a rough adjacent to the nursery area of replacement grass for the greens. The electronic weather station (Campbell Scientific, CR 21) is about 30 feet to the north of the east lysimeter and west of the green nursery.
[b] Alfalfa reference E_t from modified Penman (1972, Kimberly, ID)

effect for use in reducing NWS air temperature data which varied from 5.4 to 8.1°F for the summer months. They concluded:

> If temperature data from a station in an arid region or with an arid local environment must be used, then temperatures should be adjusted downward, based on station aridity." ... and further ... "Secondary data, most notably wind and relative humidity, if used with the FAO-BC, should be measured at an irrigated site in the midst of an irrigated region.

Allen and Pruitt (1986) extended the previous study in using the FAO-BC equation for crop water use estimates. They limited the minimum relative humidity to be no less than 30 percent during all months. They also described the use of an aridity rating (AR) for adjusting NWS temperatures to better represent irrigated areas. The AR for a weather station was weighted 40 percent for the AR of the site environment (160 ft radius), 50 percent for the AR of the area (about 1 mile radius in the predominate upwind direction) and 10 percent for the AR of the region (30 mile radius in the predominate upwind direction). The AR values ranged from 0, completely irrigated, to 100, non-irrigated area or residential or urban setting with non-vegetated surrounding areas.

An air temperature decrease of more than 2°F was observed by Brakke, Verma and Rosenberg (1978) as air from non-irrigated alfalfa moved 180 feet across a downwind irrigated alfalfa field in Nebraska. Relative humidity increased from 33 percent to 37 percent in the same distance.

Empirical data from two southern Utah sites also show air temperature decreases from a small community or airport setting to adjacent agricultural fields. Monthly average air temperatures at the Cedar City FAA weather station (elev. 5600 ft. located in a vegetated area about 100 yards from the nearest runway) ranged from about 2 to 4°F higher than those at an electronic weather station two miles away in a pasture. The seasonal (April - October, 1989 and 1990) average temperature was 3°F warmer at the airport. At Panguitch (elev. 6600 ft.) NWS air temperatures in town averaged more than 2°F higher than over irrigated fields about 2½ miles to the NE.

Adjustments for weather station environments were made to data from electronic weather stations where non-irrigated conditions may have prevailed (such as at Milford) during part or all of the calibration period. They were not made to the NWS data used in the historical calculations. The nature of the calibration process accounted for any aridity effects at the NWS sites.

Growing Season Determination

A significant part of this analysis was the identification of typical planting, effective cover, and harvest dates for annual crops, and begin growth and cutting dates for alfalfa hay and other forages. Reliable estimation of E_t depends on the correct matching of this information with the K_c curve crop growth time base. Three different time bases for K_c curves are evident in the literature for K_{cm} and the SCS Blaney-Criddle k_c, as given previously.

These are:

1. Percent of time from planting to effective cover, or percent of time from planting to harvest

2. Days after effective cover

3. Calendar or Julian dates

Care must be exercised to get a correct match between the crop coefficient curves and the respective set of crop growth dates at the site in question.

Crop growth progress dates (growing season) have sometimes been estimated from spring and fall frost dates. The use of the frost-free period may be appropriate for some frost-sensitive crops such as corn and potatoes or some other vegetables. However, many perennial crops such as alfalfa, pasture, turf and meadow hay begin growing 30 to 40 days prior to the average last spring frost date. Generally, spring grain is also planted earlier. Thus, crop growing seasons used for water resources planning should be verified from local sources with experience in actual field conditions. Field-observable conditions relating crop growth state to effective cover and other equation needed dates are given in Table 4.

General state and county crop cultural practices that may affect water use are included in Appendix D. Growing seasons for different crops in each county were based on interviews with county agents and farmers. There is variability in actual crop growth from one farm to another and throughout a county. However, there is much less variability within a given climate area of when effective cover or maturity is achieved, which helps compensate for the early season variability. Some judgment was used to arrive at typical crop growth dates. The crop growth dates used in determining crop coefficient development during the season are given in Appendix E.

Growth dates used in calibration (Eq.15) assume adequate soil moisture for growth of perennial crops (alfalfa, grass hay and pasture) to begin growing in the spring as soil temperatures warm up. However, low soil water contents the previous fall and relatively dry winters may delay the growing season until irrigation is initiated. Spring grazing of alfalfa, which may be practiced on high elevation fields in Wayne, Rich and similar counties would also delay growth progress toward significant water use. The actual period of significant water use may thus correspond closely to the time period when adequate soil water is available for plant use. This is essentially the same as the irrigation season in areas where dry fall and winter conditions prevail.

Net Irrigation Requirements and Other Considerations

The monthly precipitation values were reduced to account for water losses from rainfall which are not available for crop water use. Net irrigation requirements (NIR) are calculated as crop water use (E_t) minus effective precipitation. This is more realistic for estimating seasonal irrigation requirements since there is usually some rainfall during the growing season.

Carry-over soil water from non-growing season (generally November - March) precipitation was ignored in the NIR calculations. This gives a higher NIR than if winter precipitation was included. If, for example, two-thirds of the average November through March precipitation was counted as contributing to subsequent crop water use, then the NIR would be reduced below the values determined herein. The degree of fill of the soil profile at the beginning of the cropping season (or planting time) should give an estimate of the effective winter precipitation. In the absence of a water table, effective winter precipitation will not exceed the field capacity of the root zone, but may be less than field capacity.

If annual water requirements are needed, non growing season precipitation and E_t should be accounted for through a soil-water budgeting process to identify beginning soil-water conditions. Normal irrigation losses which would be accounted for in the irrigation application efficiency, such as wind drift losses and deep percolation from non-uniform irrigation applications, must not be included in E_t water balance estimates.

Table 4. Observable Crop Growth States for Use in Determining Growing Season Crop Coefficient Development[a].

Crop	Planting or Beginning Growth	Effective Cover	Last Harvest
Spring Grain	Planting Date	At heading (when head escapes from sheath)	Crop is ready to harvest
Corn	Planting Date	Tassel emergence above leaves	Killing Frost or harvest
Alfalfa	When field looks green from pickup & new growth is at least 4 inches.	Crop is 16 in. high (about 20-25 days prior to 1st cutting)	After last Cutting (Oct 31 is default)
Potatoes	Planting	Inter leafing of rows, or no distinctive rows visible	Vine kill killing frost, early dieing, or ripening
Winter Grain	Out of dormancy, effective Emergence or Green up	At time of heading (when head escapes from sheath)	(when Crop is ready to harvest
Beans	Planting	Inter leafing of rows	Killing frost, plant is dead
Pasture	When growth is evident in spring	Grass is about 8 in. tall	Killing frost
Apples, Cherries and Peaches	Full bloom	Terminal bud set No further leaf or stem growth	Harvest of fruit
Garden[b]	Planting	Inter leafing of rows	Last harvest of garden

[a] The assistance of J.L. Wright, USDA-ARS, Kimberly, Idaho, and A.H. Hatch, USU Extension Horticulture Specialist, Provo, Utah is acknowledged.

[b] A "typical" garden is a composite of several crops. In Northern Utah "planting" is about 1 May, after actual planting of peas and carrots but prior to sweet corn and tomatoes. Effective cover is assumed when the mid-season sweet corn tassels near the end of July.

The crop water use estimates do not take into account reduction in E_t associated with frosty nights in the spring and fall. Significant reductions in alfalfa E_t are experienced in southern Idaho as a result of frosty nights in October (Jensen et al., 1990, Tables 6.6 and 6.9). Accounting for the frosty night effect would reduce the calculated E_t of alfalfa (particularly), grass hay and pasture below values herein. Reductions in calculated E_t from the effect of spring and fall grazing on alfalfa and from grazing pastures too early in the spring were also ignored.

Water use may vary from year to year and may be considerably less than calculated values due to irrigation management practices and water availability, especially in dry years, where less than full-level irrigation occurs. Moreover, even in years with average amounts of precipitation, local water shortages may be experienced in the late summer and early fall months.

If actual field soil water budgets are desired, then adjustment of the E_t value given in Equation (1) should be made for field situations where the soil water may drop to a level causing plant stress and subsequent reduction in consumptive use. Acceptable techniques for making this adjustment are presented in Hill, Hanks and Wright (1984) and Jensen et al., (1990).

Crop yields obtained by the growers may reflect this variability of management and shortages. If typical field alfalfa seasonal yields were known, then the relationship between yield and E_t shown in Figure 4 could be used to estimate field alfalfa consumptive water use. For example, the Figure 4 yield vs. E_t relationship ($Y = 0.19\ E_t$) suggests that 5.26 inches (5.26 = 1/0.19) of crop water use are needed to produce 1 ton of alfalfa hay. Thus, if attainable field alfalfa yields are in the 5 tons per acre per year range, then the consumptive use is suggested to be about 26 inches (26 = 5.26 x 5). Expected field yields would be about 4.3 tons/acre with the same water use. This is due to alfalfa production practices that reduce realized yield without a corresponding reduction in E_t (See Hill et al., 1983).

If alfalfa yields from fields with full irrigation supplies are lower than these expected values, then factors may be occurring which reduce both alfalfa yield and E_t. These factors include frost damage, insects, diseases, fertility deficiency (phosphate) and/or spring and fall grazing.

Crop Water Use Estimates for NWS Station Sites in Utah

Long-term average consumptive use was estimated using the calibrated modified SCS Blaney-Criddle equation (SCS-BC) at the NWS sites given in Table 5 following the procedure described above. The years with nearby electronic weather station data were used as the calibration base period. This data consisted of maximum and minimum temperatures, relative humidity, wind speed and precipitation. The temperatures and dew point were adjusted to represent irrigated field conditions where needed (e.g., Milford, etc.), using an aridity rating approach.

There were occasional missing data periods at the electronic weather stations. These data were estimated by correlation with other stations in the network and with nearby NWS stations.

The calibration of the solar radiation sensors (pyranometer) was questioned at all sites because of what appeared to be unreasonably high measured solar radiation (R_s) values in the most recent years. This calibration correction was accomplished by comparing the highest daily R_s values (assumed to be for "clear" days) with a theoretical clear day value of 75 percent of extraterrestrial (R_a, top of the atmosphere) solar radiation (Doorenbos and Pruitt, 1977, and Jensen et al., 1990) as shown in Figures 6a, b, c for Cedar City, 1985-1990. A year specific calibration correction was derived to give a better match with theoretical clear day solar radiation as shown for Cedar City (as an example) in Figures 7a, b, c.

Consideration of the weather station site environment aridity (see previous discussion based on empirical experience) led to adjustments in air and dewpoint temperatures. These adjustments were made for estimating Penman equation E_{tr} as if in a fully irrigated environment at the site. The dewpoint temperature was constrained to be no more than 8°F lower than the minimum daily temperature. Notice was taken of the predominant wind direction for aridity conditions. However, wind direction is not included in the daily E_t calculations. The wind

Table 5. Long-term Historical Weather Data Sites: Utah National Weather Service Stations with 1961-1990 Period of Record.

Station	Index No.	County	Elevation (Feet)	Latitude (Deg-Min)	Longitude (Deg-Min)	Years of Record Temp.	Years of Record Precip.
Altamont	0074	Duchesne	6375	40 22	110 17	53	51
Alton	0086	Kane	7040	37 26	112 29	74	75
Beaver	0519	Beaver	5940	38 18	112 39	61	74
Black Rock	0730	Millard	4896	38 42	112 58	51	57
Blanding	0738	San Juan	6040	37 37	109 29	79	83
Bluff	0788	San Juan	4315	37 17	109 33	61	67
Boulder	0849	Garfield	6700	37 55	111 25	37	37
Bryce Canyon N P Hdq	1008	Garfield	7915	37 39	112 10	32	32
Castle Dale	1214	Emery	5619	39 12	111 01	65	71
Cedar City FAA AP	1267	Iron	5610	37 42	113 06	46	46
Cedar Point	1308	San Juan	6760	37 43	109 05	40	45
Coalville	1588	Summit	5552	40 55	111 24	55	58
Corinne	1731	Box Elder	4220	41 33	112 07	92	113
Cottonwood Weir	1759	Salt Lake	4960	40 37	111 47	49	74
Deer Creek Dam	2057	Wasatch	5269	40 24	111 32	52	52
Delta	2090	Millard	4623	39 20	112 35	49	49
Deseret	2101	Millard	4590	39 17	112 39	91	94
Dinosaur Quarry Area	2173	Uintah	4770	40 26	109 18	32	33
Duchesne	2253	Duchesne	5520	40 10	110 24	75	79
Dugway	2257	Tooele	4340	40 11	112 55	41	41
Echo Dam	2385	Summit	5470	40 58	111 26	49	51
Elberta	2418	Utah	4680	39 57	111 57	83	89
Ephraim Sorensens Fld	2578	Sanpete	5670	39 21	111 35	41	42
Escalante	2592	Garfield	5814	37 46	111 36	63	66
Fairfield	2696	Utah	4880	40 16	112 05	43	46
Ferron	2798	Emery	5935	39 05	111 08	40	42
Fillmore	2828	Millard	5125	38 57	112 19	98	99
Fish Springs Refuge	2852	Juab	4336	39 50	113 24	31	31
Flaming Gorge	2864	Daggett	6270	40 56	109 25	34	34
Fort Duchesne	2996	Uintah	5050	40 17	109 52	82	91
Garfield	3097	Salt Lake	4330	40 43	112 12	43	45
Garrison	3138	Millard	5260	38 56	114 02	39	44
Green River Avn	3418	Emery	4070	39 00	110 10	75	85
Grouse Creek	3486	Box Elder	5320	41 43	113 53	31	32
Gunnison	3514	Sanpete	5146	39 09	111 49	35	35
Hanksville	3611	Wayne	4308	38 22	110 43	71	71
Hanna	3624	Duchesne	6745	40 24	110 46	34	35
Hardware Ranch	3671	Cache	5560	41 36	111 34	31	36
Heber	3809	Wasatch	5630	40 30	111 25	94	95

Table 5. Continued.

Station	Index No.	County	Elevation (Feet)	Latitude (Deg-Min)	Longitude (Deg-Min)	Years of Record Temp.	Years of Record Precip.
Hiawatha	3896	Carbon	7284	39 29	111 01	66	72
Hovenweep Natl Mon	4100	San Juan	5243	37 23	109 05	32	34
Ibapah	4174	Tooele	5282	40 02	113 59	60	74
Jensen	4342	Uintah	4751	40 22	109 21	54	59
Kamas	4467	Summit	6475	40 39	111 17	40	41
Kanab	4508	Kane	4950	37 03	112 32	64	77
Koosharem	4764	Sevier	6932	38 31	111 53	40	48
Laketown	4856	Rich	5980	41 49	111 19	90	87
LaVerkin	4968	Washington	3220	37 12	113 16	35	41
Loa	5148	Wayne	7082	38 24	111 39	75	72
Logan Radio KVNU	5182	Cache	4500	41 45	111 50	34	35
Logan Utah State Univ	5186	Cache	4790	41 45	111 48	96	96
Manila	5377	Daggett	6440	40 59	109 44	46	57
Manti	5402	Sanpete	5740	39 15	111 38	91	91
Mexican Hat	5582	San Juan	4130	37 09	109 52	43	44
Milford Wsmo	5654	Beaver	5010	38 24	113 01	74	84
Moab 4 NW	5733	Grand	4021	38 35	109 33	92	97
Modena	5752	Iron	5459	37 48	113 55	91	91
Monticello	5805	San Juan	6820	37 52	109 18	68	69
Morgan	5826	Morgan	5060	41 02	111 41	77	79
Moroni	5837	Sanpete	5560	39 32	111 35	73	78
Mountain Dell Dam	5892	Salt Lake	5420	40 45	111 43	50	72
Myton	5969	Duchesne	5082	40 12	111 04	63	73
Neola	6123	Duchesne	5950	40 25	110 03	37	37
Nephi	6135	Juab	5133	39 42	111 50	48	57
New Harmony	6181	Washington	5289	37 29	113 18	37	47
Oak City	6357	Millard	5069	39 23	112 20	74	77
Ogden Pioneer P H	6404	Weber	4350	41 15	111 57	99	110
Ogden Sugar Factory	6414	Weber	4280	41 14	112 02	62	65
Orderville	6534	Kane	5460	37 16	112 38	40	77
Orem Treatment Plant	6538	Utah	4510	40 17	111 44	31	31
Ouray 4 NE	6568	Uintah	4670	40 08	109 39	34	36
Panguitch	6601	Garfield	6610	37 49	112 26	60	63
Park City Radio	6648	Summit	7140	40 39	111 30	10	10
Park Valley	6660	Box Elder	5440	41 48	113 21	58	77
Parowan Power Plant	6686	Iron	6000	37 50	112 50	91	95
Partoun	6708	Juab	4780	39 38	113 53	39	40
Pine View Dam	6869	Weber	4940	41 15	111 50	50	56
Pleasant Grove	6919	Utah	4761	40 22	111 43	41	45

Table 5. Continued.

Station	Index No.	County	Elevation (Feet)	Latitude (Deg-Min)	Longitude (Deg-Min)	Years of Record Temp.	Years of Record Precip.
Richfield Radio KSVC	7260	Sevier	5300	38 46	112 05	72	73
Richmond	7271	Cache	4682	41 54	111 49	42	80
Riverdale	7318	Weber	4400	41 09	112 00	69	74
Roosevelt Radio	7395	Uintah	5010	40 17	109 58	48	51
Saint George	7516	Washington	2760	37 07	113 34	88	94
Salina	7557	Sevier	5131	38 58	111 52	40	65
Saltair Salt Plant	7578	Salt Lake	4210	40 46	112 07	30	35
Salt Lake City NWSFO AP R	7598	Salt Lake	4221	40 47	111 57	63	63
Santaquin Chlorinator	7686	Utah	5164	39 58	111 47	68	74
Scipio	7714	Millard	5300	39 15	112 06	88	91
Scofield Dam	7724	Carbon	7635	39 47	111 07	39	41
Silver Lake Brighton	7846	Salt Lake	8741	40 36	111 35	54	76
Snake Creek P H	7909	Wasatch	6010	40 33	111 30	78	78
Snowville	7931	Box Elder	4560	41 58	112 43	60	66
Spanish Fork Pwr House	8119	Utah	4720	40 05	111 36	74	79
Thompson	8705	Grand	5099	38 58	109 43	57	67
Timpanogos Cave	8733	Utah	5643	40 27	111 42	45	45
Tooele	8771	Tooele	5072	40 32	112 18	93	94
Tropic	8847	Garfield	6283	37 38	112 05	64	70
University of Utah	8922	Salt Lake	4800	40 46	111 50	48	51
Utah Lake Lehi	8973	Utah	4498	40 22	111 54	77	79
Vernal Airport	9111	Uintah	5260	40 27	109 31	65	71
Veyo Power House	9136	Washington	4600	37 21	113 40	34	34
Wah Wah Ranch	9152	Beaver	4882	38 29	113 25	36	36
Wanship Dam	9165	Summit	5940	40 47	111 24	36	36
Wendover Autob	9382	Tooele	4238	40 44	114 02	68	74
Woodruff	9595	Rich	6315	41 32	111 09	68	69
Zion National Park	9717	Washington	4050	37 13	112 59	71	73

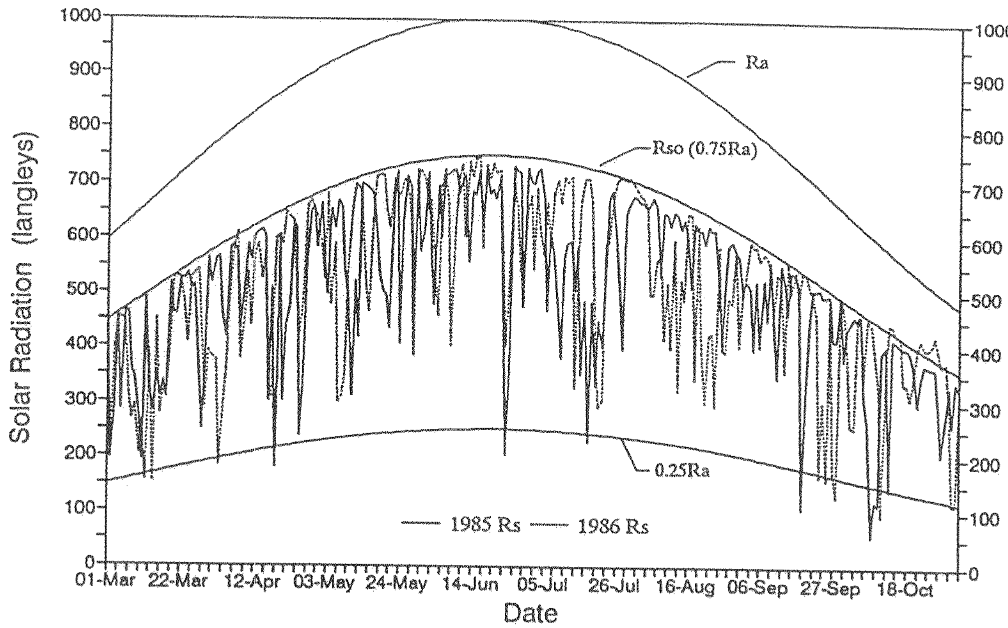


Figure 6a. Comparison of Reported Measured Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1985 and 1986.

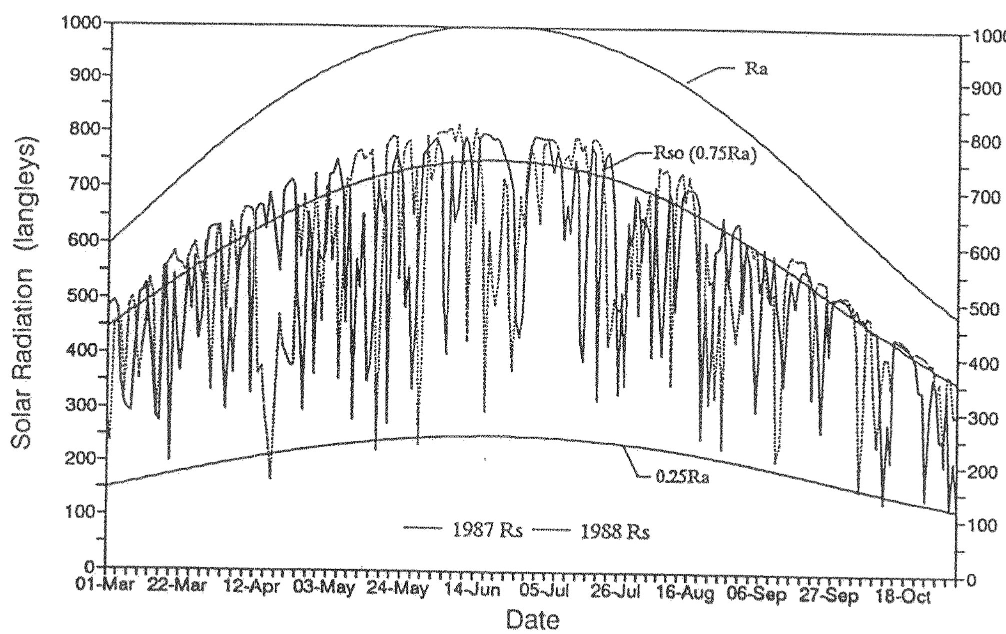


Figure 6b. Comparison of Reported Measured Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1987 and 1988.

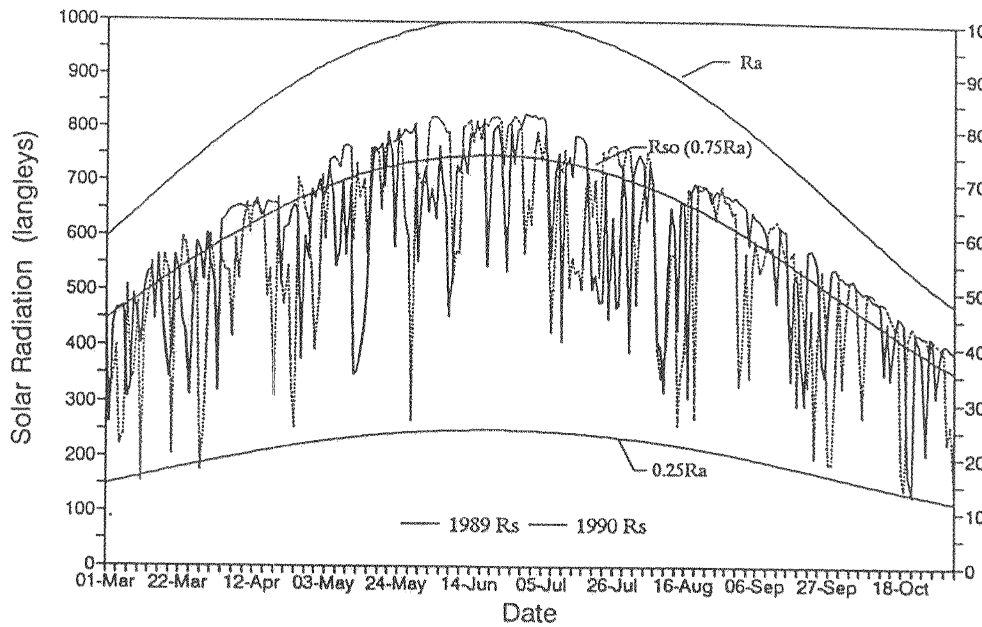


Figure 6c. Comparison of Reported Measured Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1989 and 1990.

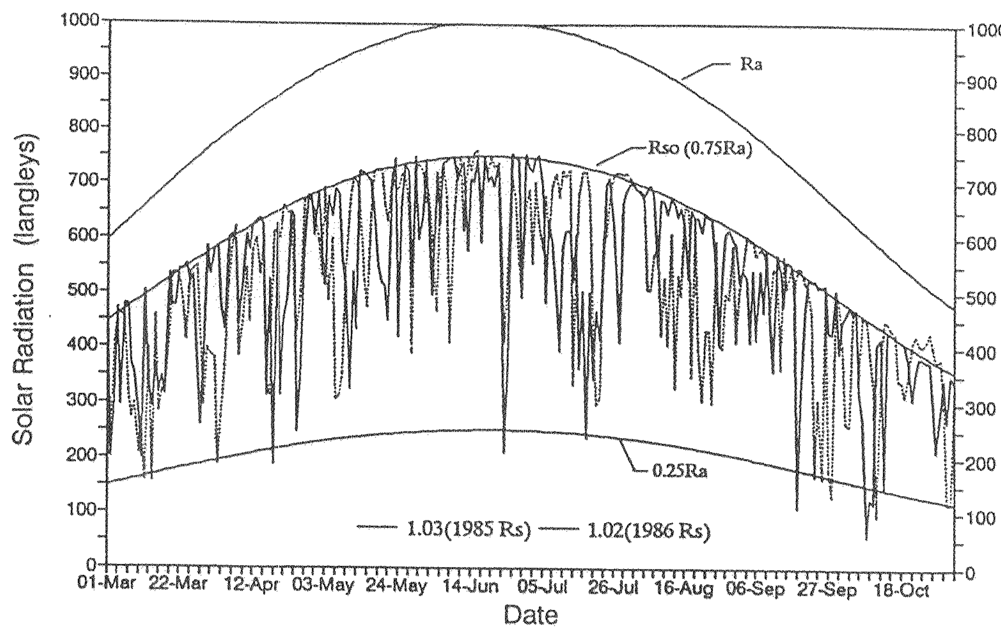


Figure 7a. Comparison of Calibration Corrected Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1985 and 1986.

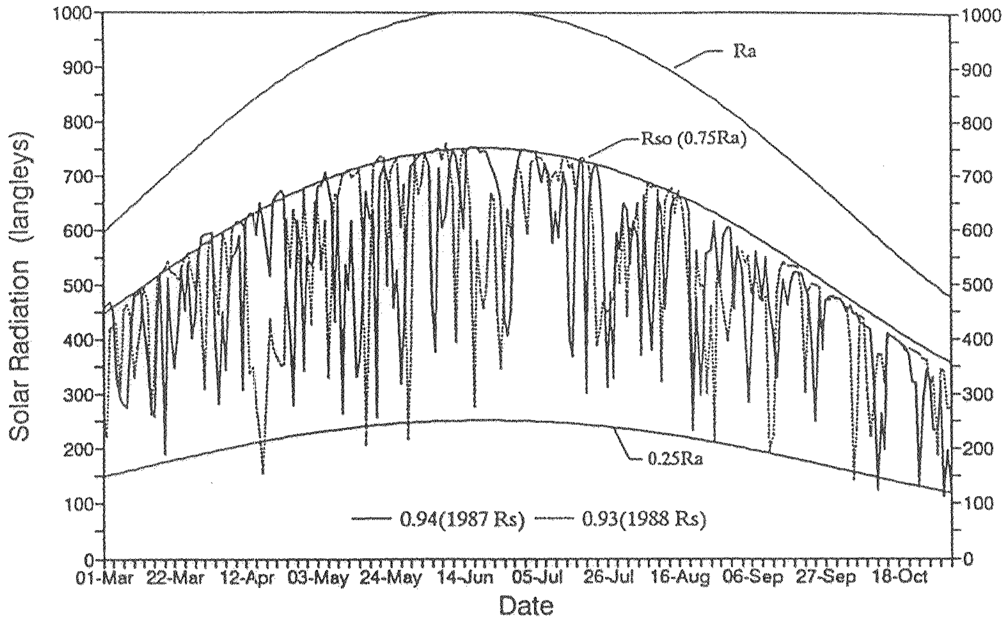


Figure 7b. Comparison of Calibration Corrected Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1987 and 1988.

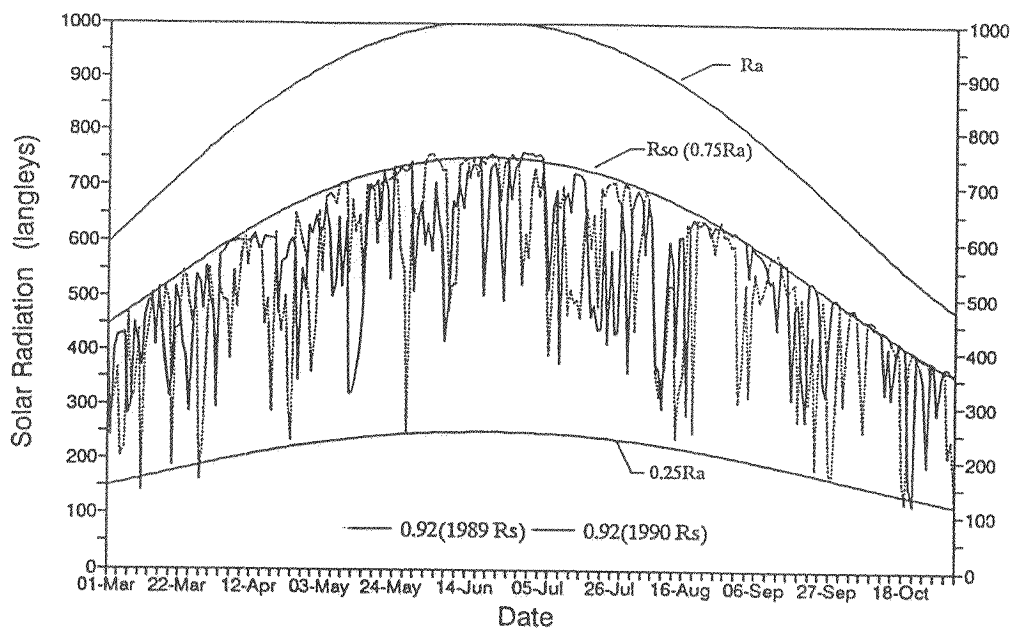


Figure 7c. Comparison of Calibration Corrected Daily Solar Radiation Totals with Theoretical Extraterrestrial (R_a) and Clear Day ($R_{so} = 0.75\ R_a$) Values at Cedar City Electronic Weather Station, 1989 and 1990.

generally comes from a south to southwest direction during the growing season months (as also indicated by the airport runway directions) throughout Utah.

Daily E_t crop values were estimated with Equations 1 and 3 using the corrected or adjusted recent weather data. These were totaled by month for use in Equation 15 month by month to calibrate the monthly SCS Blaney Criddle k_c value. Monthly SCS Blaney Criddle (k_t tp/100) values (Equations 2 and 15) were calculated using the long-term NWS temperature data. No adjustment was made to the NWS data, as the calibration process already included the site environment effects. The site average k_c values were used with the SCS Blaney Criddle equation (Equation 2) to calculate long-term average crop water use for the 30-year 1961-1990 period with NWS station monthly temperatures.

The analysis included calculation of E_t and effective precipitation month by month and year by year for the period of record. Effective monthly precipitation during April - October was estimated by assuming that 80 percent of growing season precipitation was effective. The monthly net irrigation water requirement (NIR) for the growing season was determined as E_t minus effective precipitation. The crop water use values herein represent estimated possible E_t under well-watered conditions throughout the growing season. The effects of irrigation water shortages in late summer resulting in reduced crop water use from the soil moisture stress are not included.

RESULTS

Example Calculation of Calibrated Crop Coefficients

Data from the Cedar City and Midway electronic weather stations were used in conjunction with NWS monthly average temperatures from Cedar City and Heber City, respectively, to calculate calibrated Blaney-Criddle crop coefficients. Sample calculations for alfalfa and spring grain are shown in Table 6 for Cedar City (1985) and in Table 7 for Midway (1986). The monthly average crop coefficient (k_c) for alfalfa in July 1986 at Midway is 1.20 [(1.20 = 6.63/(0.82 x 65.37 x 10.32/100)]. This is higher than the literature value of 1.11 for July as given in Curve No. 2 of SCS TR #21. Whereas, the July alfalfa k_c at Cedar City (1985) of 0.92 is lower than the TR #21 value. The difference may be attributed to the variation of cutting dates during the season from one location to another.

Weather data from electronic weather stations in Cedar City (1985-90), Garland (1984-90), Midway (1986, 88-90), Randolph (1983-88) and St. George (1984-88) were used to calculate monthly estimated E_{crop} or E_{lake} during the growing season for all years. These values were then used with corresponding calculated "f" factors (note: f in this context is k_t tp/100) for the SCS Blaney-Criddle method (see Equation 2 and Tables 6 and 7) to calibrate the k_c values.

The variation in monthly Blaney-Criddle crop coefficients across years is illustrated in Figures 8 and 9 for alfalfa and spring wheat, respectively, at Cedar City and Midway (Heber City). The variation in monthly k_c averaged for all years at each site is compared with other sites (Figure 10) for alfalfa and spring wheat. The influence of differences in crop growth dates from site to site on monthly k_c values is also evident in Figure 10.

Variability and Sensitivity of E_t Calculations

Because of the diverse weather conditions across Utah, crop water requirements vary greatly from one place to another. For example, at St. George (elevation 2600 ft.), the seasonal alfalfa water use with five or six cuttings is about 44 acre-inches per acre (equivalent to 44 inches). At Cedar City (elevation 5800 ft.), alfalfa use is about 34 inches with three cuttings in a season. At Randolph (elevation 6440 ft.), alfalfa uses about 27 inches with only two cuttings. Growing season evapotranspiration of spring grain is about 20-23 inches all across the state.

The sensitivity of estimated evapotranspiration to possible changes in weather data is illustrated with data from Cedar City (1985-1990). Alfalfa was assumed to "green up" on April 15 with cuttings on June 10, July 25 and September 10 each year. The possible individual changes in weather data for each and every day were: (a) decrease in air temperature of 4°F; (b) decrease in wind travel of 25 miles per day; (c) decrease in solar radiation of 10 percent; and (d) constraining the dewpoint to be no more than 8°F below the daily minimum temperature. The response of estimated alfalfa water use to these changes is given in Table 8. Water use was reduced 5 percent (5 = 100-95), 6 percent and 4 percent, respectively, for the assumed reductions in temperature, wind travel and solar radiation. Use was decreased by 5 percent with the constraint on dewpoint due to simulated wetter air conditions. All changes combined gave a reduction of 24 percent in seasonal alfalfa water use.

Consumptive Use and Irrigation

The amount and timing of irrigations are determined by crop water use, rooting depths and soil water holding capacities, rainfall and soil water storage. Larger irrigations with a longer interval between irrigations could be used on a loam soil than could be used on a sandy soil. The sandy soil would require more frequent and smaller irrigations, assuming the same rooting depth.

The interval between irrigations is also a function of the irrigation system capacity. To illustrate this, irrigation calendars were developed assuming either a 23-hour or an 11.5 hour set with hand-move or side-roll sprinklers. Four years of Cedar City weather data were used to estimate alfalfa crop water use assuming a 5-foot rooting depth. The loam soil was assumed to be at field capacity at the time of green up in mid-April.

Table 6. Sample Calibrated B-C Crop Coefficient (k_c) Calculations for Cedar City, 1985.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
p, %	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78
t, deg F.	39.8	52.2	59.3	69.6	75.2	73.1	58.8	49.9
k_t	0.37	0.59	0.71	0.89	0.99	0.95	0.70	0.55
f	1.23	2.72	4.19	6.18	7.53	6.60	3.46	2.14
Alfalfa								
E_{tcp}, in	0.00	2.47	7.50	6.53	6.92	8.07	4.37	0.00
B-C k_c	0.00	0.91	1.79	1.06	0.92	1.22	1.26	0.00
Spring Wheat								
E_{tcp}, in.	0.00	0.97	5.40	8.98	6.59	0.82	0.00	0.00
B-C k_c	0.00	0.36	1.29	1.45	0.88	0.12	0.00	0.00

Note: B-C $k_c = E_{tcp}/(k_t\ tp/100)$

Table 7. Sample Calibrated B-C Crop Coefficient (k_c) Calculations for Midway (Heber City), 1986.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
p, %	8.28	8.95	10.07	10.16	10.32	9.62	8.40	7.71
t, deg F.	42.7	44.1	52.0	63.3	65.4	67.4	53.0	46.6
k_t	0.42	0.45	0.59	0.78	0.82	0.85	0.60	0.49
f	1.50	1.77	3.06	5.03	5.51	5.52	2.68	1.77
Alfalfa								
E_{tcp}, in.	0.00	0.43	5.31	6.31	6.63	5.13	3.36	0.00
B-C k_c	0.00	0.24	1.73	1.25	1.20	0.93	1.25	0.00
Spring Wheat								
E_{tcp}, in.	0.00	0.65	4.06	7.65	6.30	1.32	0.00	0.00
B-C k_c	0.00	0.37	1.33	1.52	1.14	0.24	0.00	0.00

Note: B-C $k_c = E_{tcp}/(k_t\ tp/100)$ and $f = k_t\ tp/100$ in tables herein.

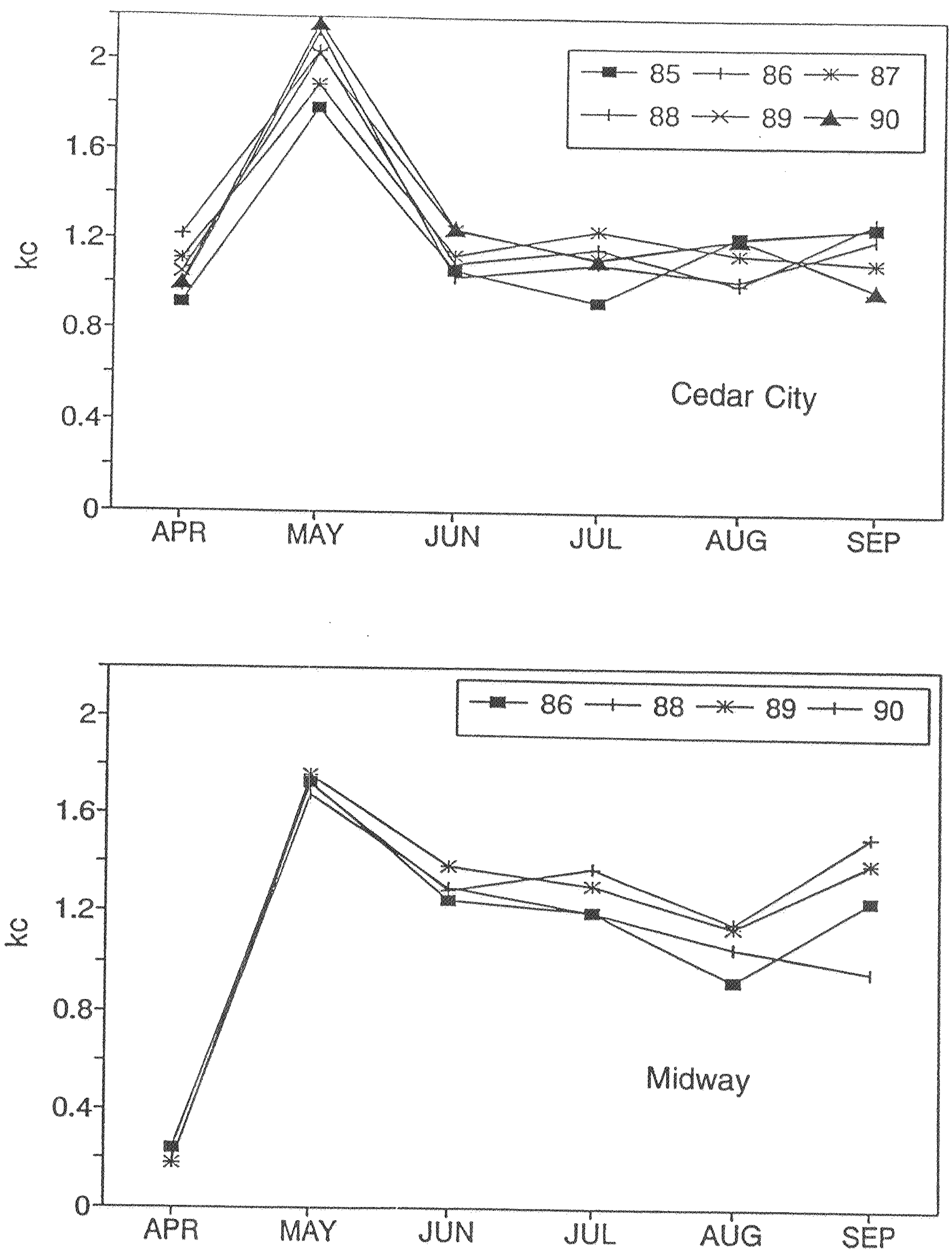
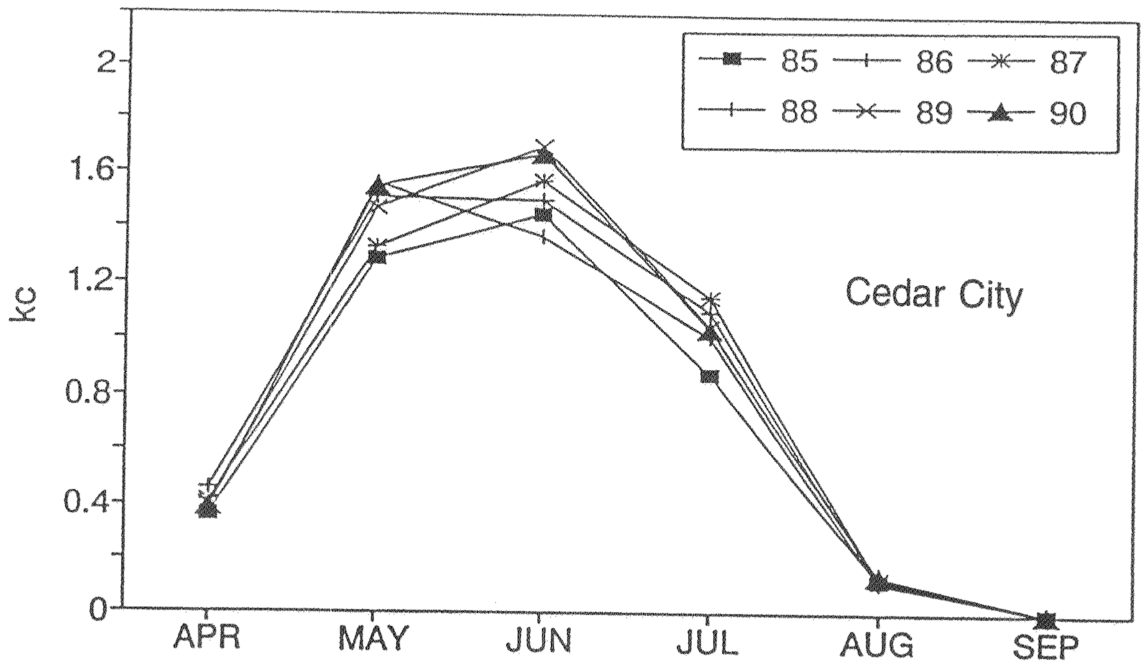


Figure 8. Calibrated SCS Blaney-Criddle Equation Monthly Crop Coefficients (k_c) for Alfalfa at Cedar City (1985-90) and Midway (Heber City) (1986,88-90).



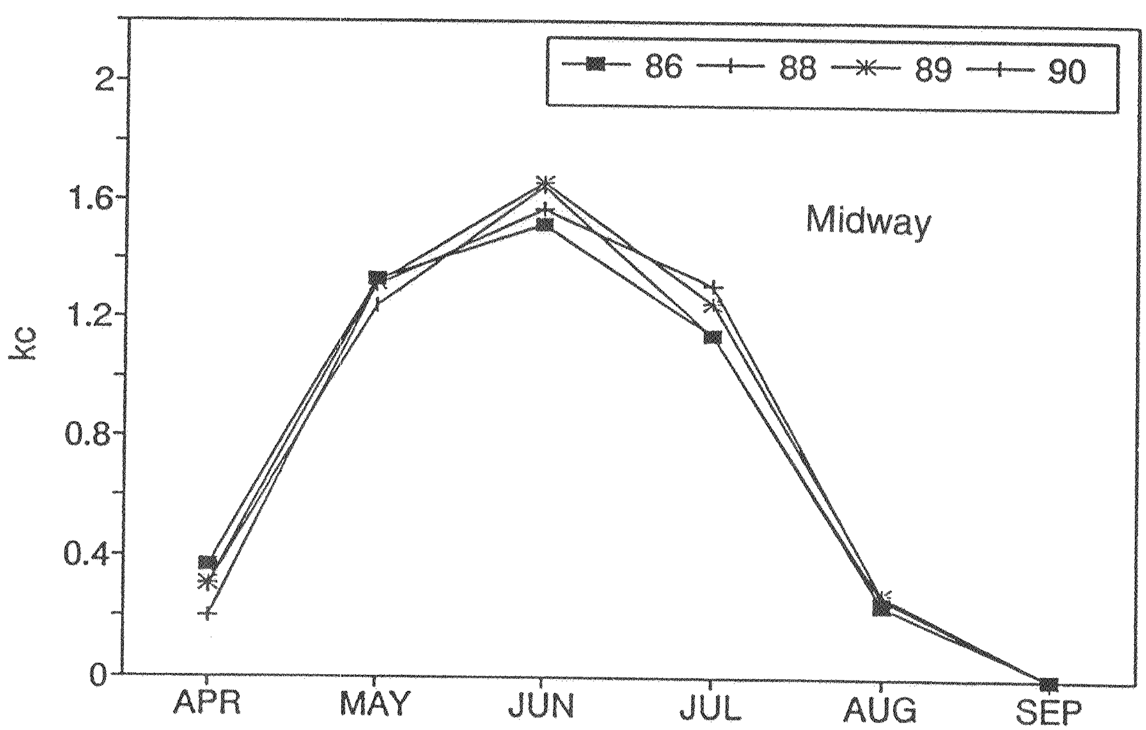


Figure 9. Calibrated SCS Blaney-Criddle Equation Monthly Crop Coefficients (k_c) for Spring Wheat at Cedar City (1985-90) and Midway (Heber City) (1986,88-90).

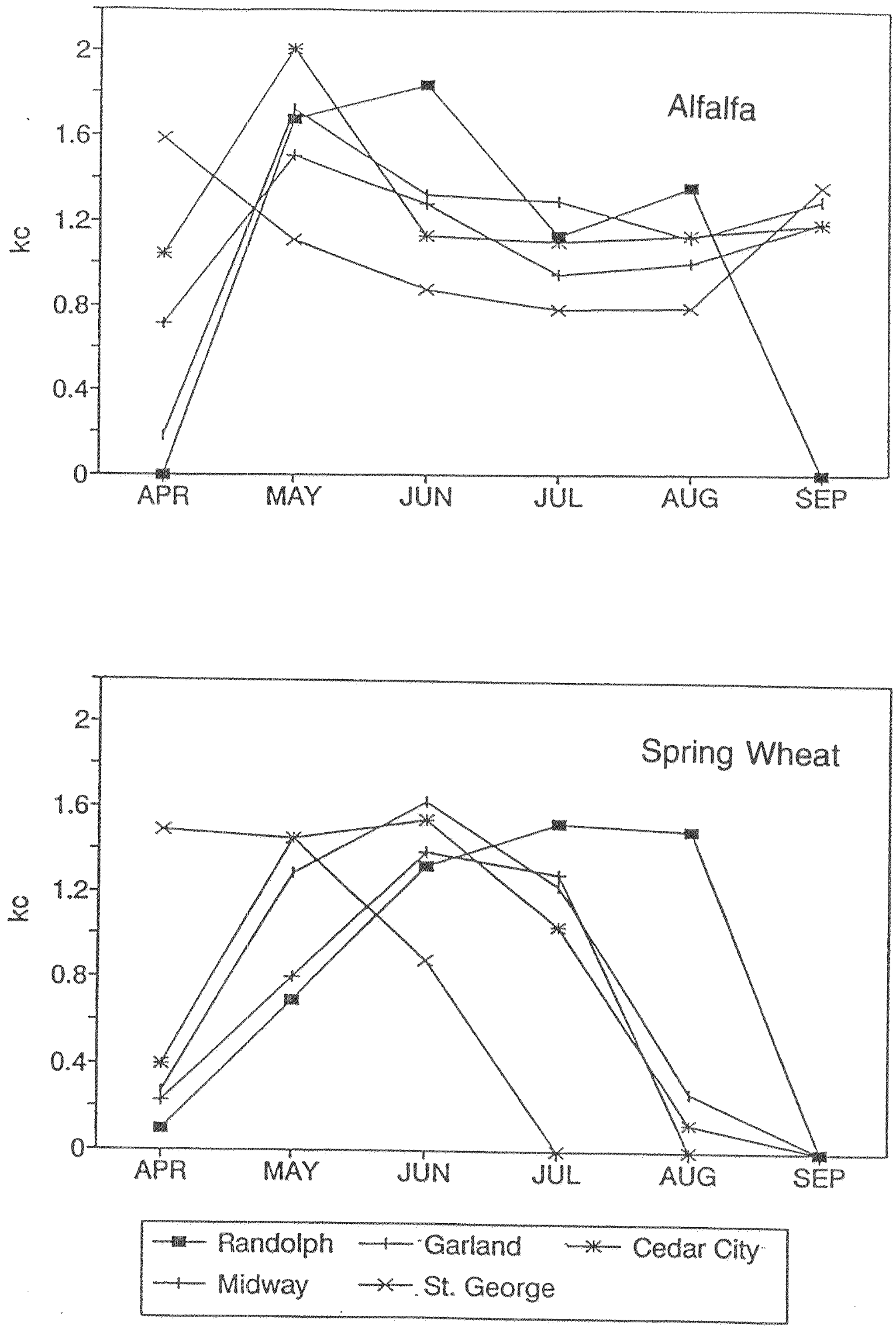


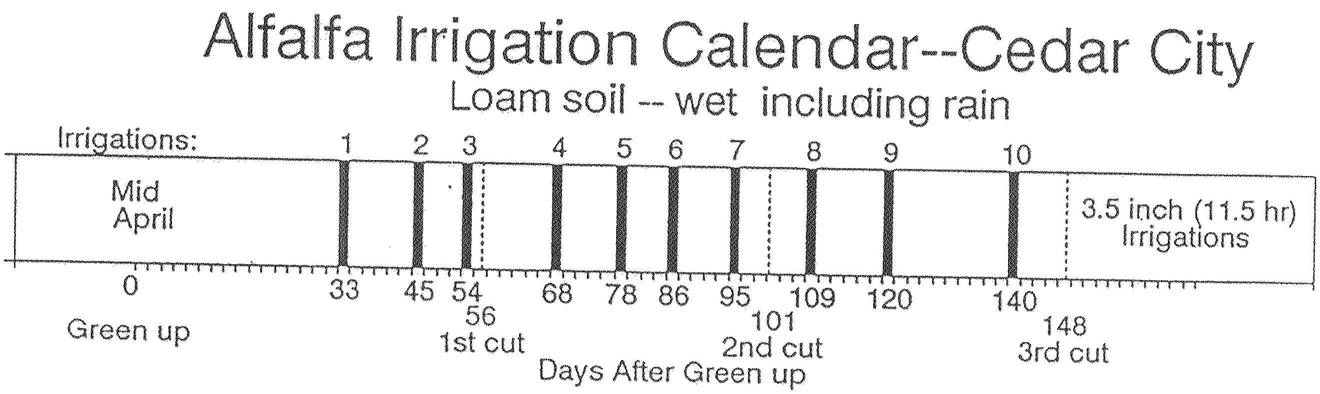
Figure 10. Calibrated SCS Blaney-Criddle Equation Monthly Crop Coefficients (k_c) Averaged for All Years for Alfalfa and Spring Wheat at Each Location.

Table 8. Possible Effect on Alfalfa Water Use from Assumed Changes in Weather Parameters at Cedar City, Utah, 1985-1990 Growing Seasons, Based on Modified Penman (equation 3) E_{tr}, 1982 Kimberly, Idaho Calibration.

	Alfalfa Water Use							
	1985	1986	1987	1988	1989	1990	6 Yr Avg	% of Orig
	Inches							
Recorded Data: No Change and No Wind Limit	38.8	40.7	38.9	36.4	41.7	41.1	39.6	100
Air Temperature: 4° F Reduction	37.0	38.8	37.1	34.7	39.7	39.2	37.7	95
Wind: a Reduction of 25 Miles/Day	36.2	38.4	36.6	34.2	39.1	38.7	37.2	94
b Limited to 100 Miles/day	36.8	36.0	35.6	33.7	37.6	36.6	36.0	91
c Both a) Reduction and b) Limit	35.0	35.2	34.5	32.3	36.3	35.5	34.8	88
Solar Radiation: 10% Reduction	37.1	39.1	37.2	34.7	39.9	39.4	37.9	96
Dewpoint Temp: No More than 8°F below Min Daily Temperature	37.6	37.8	36.6	34.5	39.9	39.4	37.6	95
Combination: All Changes	30.9	30.2	29.7	27.8	32.0	31.2	30.3	76

The two resulting irrigation calendars are shown in Figure 11 for alfalfa at Cedar City. Ten, 11.5 hour irrigations were required to meet the crop water use requirements throughout the season from mid-April into October. With the 23-hour set time only five irrigations were needed.

Results of evaluations of sprinkler irrigation systems in Utah fields suggest typical irrigation application efficiencies of about 70 percent with good management. This means that approximately 30 percent of the water that leaves the nozzle is not available for crop water use due to evaporation losses and over irrigation (deep percolation) in areas of heavy application. Thus, for the Cedar City example in Figure 11, about 2.4 inches (2.4 = 0.7 x 3.5) of water is stored in the root zone for crop use after each 11.5 hour irrigation, and 4.8 inches is stored from each 23 hour irrigation.



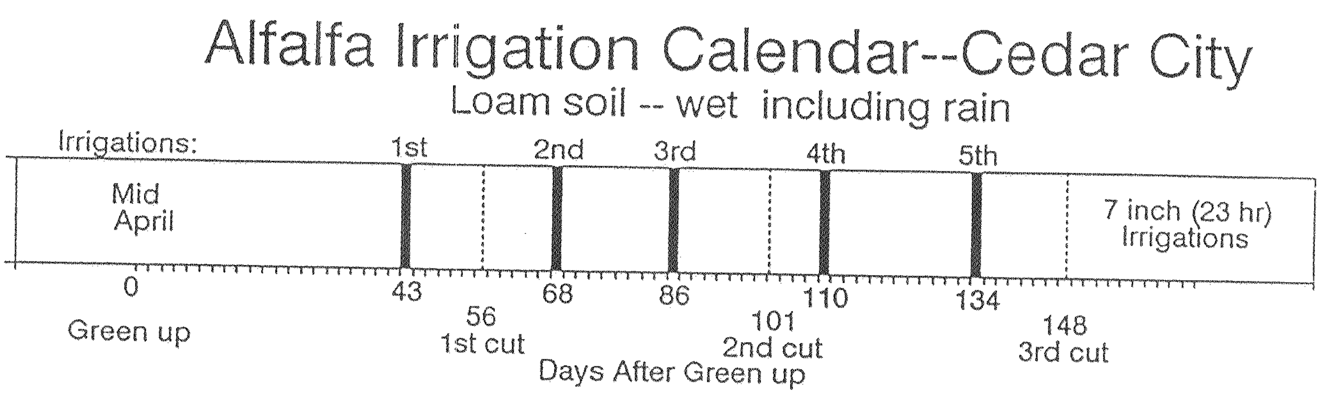


Figure 11. Alfalfa Irrigation Calendar, Cedar City, Utah for Sprinkle Irrigation Applying 3.5 or 7.0 Inches per Irrigation. Irrigation Dates were Averaged from 1985 - 1988.

Thirty-Year Period (1961-1990) Evapotranspiration Estimates

The site average B-C k_c values were used to calculate long term average crop water use for the 1961-1990 period based on NWS station monthly temperatures. Example results are given in Tables 9 - 13, respectively, for Cedar City, Corinne, Heber City, St. George and Woodruff. Estimated crop water use for the 111 Utah NWS sites used in this study are contained in Appendix F.

The crop water use values shown in Tables 9 - 13 represent estimated possible E_t under well-watered conditions throughout the growing season. The effects of irrigation water shortages in late summer resulting in reduced crop water use from the soil moisture stress are not included.

Table 9. Estimated Consumptive Use from Calibrated SCS Blaney-Criddle Equation for Cedar City NWS Station, 1961-1990.

Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994

Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 5620 ft., Lat. 37.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	29.54	34.60	40.08	47.53	56.52	66.68	74.12	72.00	63.04	51.69	39.73	30.68	50.52
Std Dev Temp	4.63	4.06	3.72	3.39	2.80	2.70	1.82	1.65	3.09	3.22	2.89	4.67	1.28
Avg Prec in.	0.69	0.89	1.36	1.10	0.84	0.43	1.09	1.47	0.98	0.95	1.00	0.70	11.49
Std Dev Prec	0.73	0.62	0.81	0.68	0.61	0.34	0.97	1.16	1.03	0.76	0.75	0.45	2.85
SCS-BC f in.	0.61	0.76	1.29	2.16	3.74	5.59	7.28	6.38	4.12	2.35	1.02	0.63	35.94
Std Dev f	0.10	0.16	0.33	0.40	0.46	0.53	0.42	0.33	0.48	0.37	0.20	0.13	1.75
ALFALFA													
Cal SCS-BC k				0.83	1.78	1.10	1.01	1.13	1.02	0.42			
Cal SCS-BC Et				1.79	6.66	6.13	7.39	7.23	4.19	0.99			34.39
Std Dev Et				0.33	0.83	0.58	0.42	0.38	0.49	0.16			1.80
Net Irr in.				0.91	5.99	5.78	6.52	6.05	3.41	0.23			28.90
PASTURE													
Cal SCS-BC k				0.95	1.21	0.97	0.81	0.79	0.92	0.51			
Cal SCS-BC Et				2.06	4.51	5.44	5.87	5.01	3.79	1.19			27.88
Std Dev Et				0.38	0.56	0.52	0.34	0.26	0.44	0.19			1.48
Net Irr in.				1.18	3.84	5.10	5.00	3.83	3.01	0.43			22.39
SP GRAIN													
Cal SCS-BC k				0.46	1.46	1.50	0.92						
Cal SCS-BC Et				0.99	5.45	8.37	6.72						21.52
Std Dev Et				0.18	0.68	0.80	0.38						1.41
Net Irr in.				0.11	4.77	8.03	5.85						18.75
CORN													
Cal SCS-BC k					0.22	0.43	0.90	1.14	0.46				
Cal SCS-BC Et					0.81	2.38	6.57	7.30	1.88				18.95
Std Dev Et					0.10	0.23	0.38	0.38	0.22				0.82
Net Irr in.					0.14	2.04	5.70	6.12	1.10				15.10

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 9. Continued.

Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994

Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 5620 ft., Lat. 37.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.25	1.09	1.05	0.84	0.69	0.68	0.79	0.58			
Cal SCS-BC Et			0.32	2.37	3.91	4.69	5.06	4.32	3.26	1.35			25.27
Std Dev Et			0.08	0.44	0.48	0.45	0.29	0.23	0.38	0.21			1.36
Net Irr in.				1.49	3.23	4.34	4.19	3.14	2.48	0.59			19.46
GARDEN													
Cal SCS-BC k					0.43	0.68	0.96	0.64	0.21				
Cal SCS-BC Et					1.61	3.81	6.98	4.05	0.85				17.30
Std Dev Et					0.20	0.36	0.40	0.21	0.10				0.81
Net Irr in.					0.94	3.46	6.11	2.87	0.07				13.46
E-LAKE													
Cal SCS-BC k	1.82	1.59	2.00	1.75	1.47	1.04	0.87	0.91	1.15	1.34	1.68	1.81	
Cal SCS-BC Evap	1.12	1.21	2.57	3.78	5.51	5.79	6.31	5.78	4.74	3.15	1.72	1.14	42.83
Std Dev Evap	0.19	0.25	0.65	0.70	0.68	0.55	0.36	0.30	0.55	0.49	0.34	0.23	2.26
Net Loss in.	0.43	0.33	1.22	2.68	4.67	5.37	5.23	4.31	3.76	2.20	0.72	0.44	31.34
ET Ref													
Cal SCS-BC k	2.03	1.77	2.38	1.97	1.87	1.50	1.24	1.21	1.42	1.53	1.86	2.02	
Estimated Etr	1.24	1.35	3.06	4.25	6.97	8.37	9.03	7.71	5.83	3.60	1.91	1.27	54.61
Std Dev Et	0.21	0.28	0.78	0.79	0.86	0.80	0.52	0.40	0.68	0.56	0.37	0.26	2.83

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 10. Estimated Consumptive Use from Calibrated SCS Blaney-Criddle Equation for Corinne NWS Station, 1961-1990.

Calibrated SCS Blaney-Criddle Equation using data from GARLAND 10-13-1994

Years of Data Available; NWS: 1961-1990 GARLAND: 1984-1990 Elev. 4230 ft., Lat. 41.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.62	6.62	8.27	8.98	10.14	10.24	10.39	9.66	8.41	7.68	6.61	6.40	100.00
Avg Temp F	23.99	30.38	38.97	47.43	56.92	65.90	73.72	71.77	61.40	49.95	37.01	26.84	48.69
Std Dev Temp	5.14	5.82	4.16	3.04	2.55	3.09	1.86	2.27	3.05	2.86	2.13	3.98	1.71
Avg Prec in.	1.42	1.56	1.54	1.79	1.91	1.34	0.77	0.89	1.63	1.64	1.59	1.55	17.63
Std Dev Prec	0.77	1.00	1.09	1.23	1.49	1.13	0.74	1.10	1.49	1.04	0.76	1.06	4.80
SCS-BC f in.	0.48	0.62	1.21	2.17	3.88	5.59	7.37	6.44	3.87	2.12	0.82	0.52	35.08
Std Dev f	0.10	0.14	0.30	0.36	0.43	0.63	0.43	0.47	0.47	0.31	0.11	0.08	2.11
ALFALFA													
Cal SCS-BC k			0.15	1.33	1.37	1.39	0.97	1.00	1.21	1.15			
Cal SCS-BC Et			0.19	2.89	5.33	7.78	7.12	6.46	4.70	2.43			36.89
Std Dev Et			0.05	0.48	0.59	0.88	0.41	0.47	0.58	0.36			2.29
Net Irr in.				1.46	3.80	6.70	6.50	5.74	3.39	1.12			28.73
PASTURE													
Cal SCS-BC k			0.04	0.86	1.08	0.99	0.85	0.86	0.95	0.82			
Cal SCS-BC Et			0.04	1.86	4.20	5.52	6.27	5.52	3.68	1.73			28.83
Std Dev Et			0.01	0.31	0.47	0.62	0.36	0.41	0.45	0.26			1.72
Net Irr in.				0.43	2.68	4.45	5.65	4.80	2.38	0.42			20.81
OTHR HAY													
Cal SCS-BC k				1.12	1.67	1.57	0.86	0.46	0.35				
Cal SCS-BC Et				2.43	6.49	8.79	6.30	2.94	1.35				28.30
Std Dev Et				0.40	0.72	0.99	0.37	0.22	0.16				1.88
Net Irr in.				1.00	4.96	7.72	5.69	2.22	0.04				21.64
SP GRAIN													
Cal SCS-BC k				0.46	1.37	1.52	0.87						
Cal SCS-BC Et				1.00	5.32	8.50	6.43						21.25
Std Dev Et				0.17	0.59	0.96	0.37						1.52
Net Irr in.					3.79	7.42	5.81						17.03
CORN													
Cal SCS-BC k				0.07	0.35	0.78	1.19	1.22	1.04	0.10			
Cal SCS-BC Et				0.15	1.37	4.34	8.77	7.84	4.03	0.21			26.72
Std Dev Et				0.02	0.15	0.49	0.51	0.58	0.49	0.03			1.38
Net Irr in.						3.27	8.15	7.13	2.73				21.28
ORCHARD													
Cal SCS-BC k				0.33	1.50	1.66	1.41	1.29	1.17	0.85			
Cal SCS-BC Et				0.72	5.81	9.25	10.41	8.31	4.53	1.80			40.84
Std Dev Et				0.12	0.64	1.04	0.60	0.61	0.56	0.27			2.33
Net Irr in.					4.28	8.18	9.79	7.60	3.23	0.49			33.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 10. Continued.

Calibrated SCS Blaney-Criddle Equation using data from GARLAND 10-13-1994

Years of Data Available; NWS: 1961-1990 GARLAND: 1984-1990 Elev. 4230 ft., Lat. 41.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BEANS													
Cal SCS-BC k						0.26	0.99	1.01	0.11				
Cal SCS-BC Et						1.44	7.28	6.50	0.43				15.65
Std Dev Et						0.16	0.42	0.48	0.05				0.76
Net Irr in.						0.37	6.67	5.79					12.82
POTATOES													
Cal SCS-BC k					0.23	0.75	1.01	0.96	0.76				
Cal SCS-BC Et					0.91	4.17	7.43	6.18	2.95				21.64
Std Dev Et					0.10	0.47	0.43	0.45	0.36				1.12
Net Irr in.						3.10	6.81	5.47	1.65				17.03
TURF													
Cal SCS-BC k			0.22	0.97	0.94	0.85	0.73	0.74	0.82	0.80			
Cal SCS-BC Et			0.27	2.10	3.63	4.76	5.40	4.76	3.17	1.69			25.78
Std Dev Et			0.07	0.35	0.40	0.54	0.31	0.35	0.39	0.25			1.58
Net Irr in.				0.67	2.11	3.68	4.79	4.04	1.87	0.38			17.54
GARDEN													
Cal SCS-BC k				0.07	0.55	1.11	0.81	0.30	0.20				
Cal SCS-BC Et				0.15	2.14	6.19	5.98	1.94	0.79				17.19
Std Dev Et				0.03	0.24	0.70	0.35	0.14	0.10				1.07
Net Irr in.					0.61	5.12	5.37	1.22					12.32
E-LAKE													
Cal SCS-BC k	1.47	1.77	1.55	1.55	1.31	1.06	0.90	0.98	1.17	1.26	1.58	1.41	
Cal SCS-BC Evap	0.70	1.10	1.88	3.36	5.07	5.93	6.65	6.30	4.55	2.67	1.29	0.72	40.23
Std Dev Evap	0.15	0.25	0.47	0.56	0.56	0.67	0.39	0.46	0.56	0.40	0.18	0.11	2.56
Net Loss in.			0.34	1.57	3.16	4.59	5.88	5.41	2.92	1.03			24.91
ET Ref													
Cal SCS-BC k	1.63	1.97	1.73	1.74	1.67	1.52	1.31	1.32	1.46	1.48	1.76	1.56	
Estimated Etr	0.78	1.22	2.09	3.78	6.49	8.50	9.65	8.49	5.66	3.13	1.44	0.81	52.03
Std Dev Et	0.17	0.28	0.52	0.63	0.72	0.96	0.56	0.62	0.69	0.46	0.20	0.12	3.23

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 11. Estimated Consumptive Use from Calibrated SCS Blaney-Criddle Equation for Heber NWS Station, 1961-1990.

Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994

Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5630 ft., Lat. 40.50

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.66	8.28	8.95	10.07	10.16	10.32	9.62	8.40	7.71	6.67	6.48	100.00
Avg Temp F	21.24	26.31	34.84	43.51	51.91	60.06	67.43	65.66	57.04	47.04	34.91	23.98	44.49
Std Dev Temp	4.58	5.01	3.84	3.11	2.33	2.44	1.43	2.10	2.76	2.84	2.95	4.48	1.34
Avg Prec in.	1.78	1.56	1.37	1.37	1.23	0.90	0.87	0.98	1.26	1.45	1.64	1.63	16.01
Std Dev Prec	1.67	1.16	0.70	0.80	0.81	0.83	0.72	0.73	1.08	1.09	0.96	1.23	4.18
SCS-BC f in.	0.43	0.53	0.93	1.72	3.06	4.44	5.94	5.20	3.23	1.82	0.74	0.47	28.50
Std Dev f	0.09	0.10	0.20	0.33	0.35	0.44	0.30	0.40	0.39	0.28	0.11	0.09	1.40
ALFALFA													
Cal SCS-BC k				0.08	1.66	1.47	1.28	1.07	1.32	0.18			
Cal SCS-BC Et				0.13	5.07	6.52	7.58	5.58	4.27	0.33			29.48
Std Dev Et				0.03	0.58	0.65	0.38	0.42	0.51	0.05			1.50
Net Irr in.					4.09	5.80	6.89	4.80	3.27				24.84
PASTURE													
Cal SCS-BC k				0.30	1.19	1.11	0.96	0.94	1.03	0.36			
Cal SCS-BC Et				0.51	3.65	4.94	5.70	4.87	3.34	0.65			23.66
Std Dev Et				0.10	0.41	0.49	0.28	0.37	0.40	0.10			1.19
Net Irr in.					2.67	4.22	5.01	4.09	2.33				18.32
OTHR HAY													
Cal SCS-BC k					1.42	1.78	1.24	0.54	0.44	0.05			
Cal SCS-BC Et					4.34	7.88	7.37	2.80	1.42	0.09			23.90
Std Dev Et					0.49	0.78	0.37	0.21	0.17	0.01			1.28
Net Irr in.					3.36	7.16	6.68	2.02	0.41				19.64
SP GRAIN													
Cal SCS-BC k				0.15	0.93	1.64	1.44	0.32					
Cal SCS-BC Et				0.25	2.85	7.28	8.56	1.64					20.58
Std Dev Et				0.05	0.32	0.72	0.43	0.12					1.14
Net Irr in.					1.87	6.56	7.86	0.86					17.16

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 11. Continued.

Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994

Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5630 ft., Lat. 40.50

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.51	1.12	0.96	0.83	0.81	0.89	0.31			
Cal SCS-BC Et				0.88	3.42	4.25	4.91	4.20	2.87	0.56			21.10
Std Dev Et				0.17	0.39	0.42	0.24	0.32	0.34	0.09			1.09
Net Irr in.					2.44	3.54	4.22	3.42	1.87				15.48
GARDEN													
Cal SCS-BC k					0.13	0.55	0.99	0.98	0.20				
Cal SCS-BC Et					0.40	2.45	5.88	5.09	0.64				14.45
Std Dev Et					0.05	0.24	0.29	0.39	0.08				0.69
Net Irr in.						1.73	5.18	4.31					11.22
E-LAKE													
Cal SCS-BC k	1.81	2.00	1.95	1.49	1.51	1.15	0.97	1.03	1.22	1.37	1.79	1.32	
Cal SCS-BC Evap	0.77	1.05	1.81	2.57	4.61	5.09	5.75	5.35	3.93	2.49	1.33	0.62	35.37
Std Dev Evap	0.17	0.20	0.39	0.50	0.52	0.50	0.29	0.41	0.47	0.39	0.20	0.12	1.85
Net Loss in.			0.44	1.21	3.38	4.19	4.88	4.38	2.68	1.04			22.20
ET Ref													
Cal SCS-BC k	2.01	2.34	2.16	1.74	2.00	1.71	1.48	1.44	1.59	1.63	1.99	1.47	
Estimated Etr	0.86	1.23	2.01	3.00	6.11	7.60	8.77	7.49	5.13	2.98	1.47	0.68	47.33
Std Dev Et	0.19	0.23	0.43	0.58	0.69	0.75	0.44	0.57	0.61	0.46	0.22	0.13	2.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 12. Estimated Consumptive Use from Calibrated SCS Blaney-Criddle Equation for St. George NWS Station, 1961-1990.

Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994

Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 2760 ft., Lat. 37.12

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.90	6.77	8.30	8.87	9.89	9.93	10.11	9.49	8.38	7.80	6.85	6.72	100.00
Avg Temp F	40.44	46.49	52.81	60.53	69.96	79.34	85.56	83.38	75.05	63.31	50.08	40.85	62.32
Std Dev Temp	3.11	3.05	3.10	3.41	2.83	2.58	1.62	2.09	2.83	2.89	2.15	2.91	1.16
Avg Prec in.	1.07	0.84	1.11	0.51	0.39	0.17	0.60	0.76	0.54	0.52	0.84	0.71	8.06
Std Dev Prec	0.98	0.75	1.07	0.63	0.49	0.22	0.45	0.66	0.58	0.66	0.71	0.70	2.69
SCS-BC f in.	1.09	1.55	2.64	3.95	6.21	8.35	10.09	8.93	6.20	3.87	1.90	1.09	55.88
Std Dev f	0.24	0.27	0.40	0.54	0.59	0.62	0.43	0.51	0.54	0.42	0.21	0.21	2.36
ALFALFA													
Cal SCS-BC k			0.93	1.18	1.16	0.97	0.82	0.81	0.88	0.83	0.20		
Cal SCS-BC Et			2.47	4.65	7.24	8.14	8.27	7.26	5.45	3.21	0.38		47.06
Std Dev Et			0.37	0.64	0.69	0.60	0.35	0.42	0.47	0.35	0.04		2.15
Net Irr in.			1.58	4.24	6.92	8.00	7.79	6.66	5.02	2.80			43.00
PASTURE													
Cal SCS-BC k		0.08	0.85	0.91	0.90	0.80	0.72	0.65	0.68	0.65	0.42		
Cal SCS-BC Et		0.12	2.26	3.59	5.61	6.68	7.28	5.82	4.25	2.50	0.80		38.89
Std Dev Et		0.02	0.34	0.49	0.53	0.50	0.31	0.33	0.37	0.27	0.09		1.75
Net Irr in.			1.37	3.18	5.29	6.54	6.80	5.21	3.81	2.08	0.13		34.42
SP GRAIN													
Cal SCS-BC k		0.32	0.95	1.36	1.35	0.34							
Cal SCS-BC Et		0.49	2.50	5.39	8.40	2.87							19.65
Std Dev Et		0.08	0.37	0.74	0.80	0.21							1.50
Net Irr in.			1.61	4.98	8.09	2.73							17.41
CORN													
Cal SCS-BC k				0.16	0.42	0.95	1.05	0.83	0.10				
Cal SCS-BC Et				0.62	2.58	7.95	10.58	7.45	0.65				29.83
Std Dev Et				0.08	0.24	0.59	0.45	0.43	0.06				1.27
Net Irr in.				0.21	2.27	7.81	10.10	6.84	0.22				27.45
ORCHARD													
Cal SCS-BC k			0.31	0.89	1.31	1.33	1.21	1.05	0.90				
Cal SCS-BC Et			0.81	3.50	8.13	11.09	12.19	9.38	5.56				50.65
Std Dev Et			0.12	0.48	0.77	0.82	0.52	0.54	0.48				2.31
Net Irr in.				3.09	7.82	10.95	11.71	8.77	5.13				47.46

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 12. Continued.

Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994

Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 2760 ft., Lat. 37.12

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k		0.08	0.84	0.78	0.78	0.69	0.62	0.56	0.59	0.56	0.36		
Cal SCS-BC Et		0.12	2.21	3.09	4.83	5.75	6.27	5.01	3.66	2.15	0.69		33.79
Std Dev Et		0.02	0.33	0.42	0.46	0.43	0.27	0.29	0.32	0.23	0.08		1.52
Net Irr in.			1.32	2.68	4.52	5.62	5.79	4.40	3.22	1.74	0.02		29.31
GARDEN													
Cal SCS-BC k			0.17	0.40	0.67	0.94	0.69	0.23	0.21	0.14			
Cal SCS-BC Et			0.45	1.57	4.15	7.85	6.95	2.03	1.31	0.54			24.84
Std Dev Et			0.07	0.22	0.39	0.58	0.30	0.12	0.11	0.06			1.19
Net Irr in.				1.16	3.84	7.71	6.47	1.42	0.87	0.13			21.60
E-LAKE													
Cal SCS-BC k	1.27	1.24	1.37	1.19	1.04	0.82	0.74	0.72	0.82	0.85	1.07	1.32	
Cal SCS-BC Evap	1.38	1.93	3.63	4.70	6.43	6.84	7.43	6.46	5.09	3.28	2.03	1.43	50.65
Std Dev Evap	0.30	0.33	0.54	0.65	0.61	0.51	0.32	0.37	0.44	0.36	0.22	0.27	2.25
Net Loss in.	0.31	1.09	2.52	4.19	6.04	6.67	6.83	5.70	4.55	2.76	1.20	0.72	42.58
ET Ref													
Cal SCS-BC k	1.41	1.38	1.53	1.40	1.39	1.23	1.11	1.00	1.05	0.99	1.19	1.46	
Estimated Etr	1.53	2.15	4.03	5.52	8.63	10.28	11.20	8.95	6.53	3.84	2.26	1.59	66.50
Std Dev Et	0.33	0.37	0.60	0.76	0.82	0.76	0.48	0.51	0.57	0.42	0.25	0.30	2.92

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 13. Estimated Consumptive Use from Calibrated SCS Blaney-Criddle Equation for Woodruff NWS Station, 1961-1990.

Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994

Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 6320 ft., Lat. 41.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.62	6.62	8.27	8.98	10.13	10.24	10.[illegible]9	9.66	8.41	7.68	6.61	6.40	100.00
Avg Temp F	15.46	19.05	28.59	38.83	47.51	55.87	62.84	60.58	51.72	41.39	28.58	17.24	38.97
Std Dev Temp	5.34	6.23	5.53	3.33	2.04	2.51	1.36	2.26	2.80	2.77	3.37	5.08	1.61
Avg Prec in.	0.43	0.45	0.57	0.92	0.89	1.05	0.72	0.69	1.16	0.93	0.65	0.58	9.04
Std Dev Prec	0.40	0.34	0.37	0.56	0.57	0.81	0.67	0.70	1.03	0.67	0.43	0.46	2.41
SCS-BC f in.	0.31	0.38	0.71	1.28	2.45	3.74	5.05	4.30	2.54	1.29	0.57	0.33	22.95
Std Dev f	0.11	0.12	0.15	0.29	0.27	0.42	0.26	0.39	0.35	0.24	0.07	0.10	1.30
ALFALFA													
Cal SCS-BC k					0.79	1.80	1.19	1.34	1.23				
Cal SCS-BC Et					1.93	6.73	6.00	5.77	3.13				23.56
Std Dev Et					0.22	0.76	0.31	0.52	0.43				1.36
Net Irr in.					1.22	5.89	5.43	5.22	2.20				19.95
PASTURE													
Cal SCS-BC k					1.04	1.23	1.03	1.08	1.22				
Cal SCS-BC Et					2.56	4.62	5.19	4.66	3.09				20.12
Std Dev Et					0.29	0.52	0.27	0.42	0.42				1.14
Net Irr in.					1.85	3.78	4.61	4.11	2.16				16.52
OTHR HAY													
Cal SCS-BC k					0.76	1.76	1.65	1.07	0.49				
Cal SCS-BC Et					1.87	6.60	8.32	4.63	1.23				22.65
Std Dev Et					0.21	0.75	0.44	0.42	0.17				1.25
Net Irr in.					1.16	5.76	7.74	4.08	0.30				19.04
SP GRAIN													
Cal SCS-BC k					0.29	1.07	1.55	1.54	0.37				
Cal SCS-BC Et					0.71	4.02	7.85	6.64	0.93				20.15
Std Dev Et					0.08	0.46	0.41	0.60	0.13				1.06
Net Irr in.						3.18	7.27	6.09	0.00				16.54

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 13. Continued.

Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994

Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 6320 ft., Lat. 41.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k					1.07	1.06	0.89	0.93	1.05				
Cal SCS-BC Et					2.62	3.98	4.47	4.02	2.66				17.75
Std Dev Et					0.29	0.45	0.23	0.36	0.37				1.01
Net Irr in.					1.91	3.14	3.89	3.47	1.73				14.14
GARDEN													
Cal SCS-BC k						0.54	0.92	1.25					
Cal SCS-BC Et						2.01	4.65	5.38					12.04
Std Dev Et						0.23	0.24	0.49					0.66
Net Irr in.						1.17	4.08	4.83					10.08
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.45	1.74	1.31	1.07	1.16	1.45	1.38	1.98	1.88	
Cal SCS-BC Evap	0.61	0.76	1.43	1.85	4.26	4.91	5.38	4.99	3.67	1.77	1.12	0.62	31.38
Std Dev Evap	0.21	0.25	0.29	0.42	0.48	0.56	0.28	0.45	0.50	0.33	0.13	0.18	1.86
Net Loss in.	0.18	0.31	0.85	0.93	3.36	3.87	4.66	4.31	2.51	0.85	0.47	0.04	22.34
ET Ref													
Cal SCS-BC k	2.49	3.62	2.90	1.68	2.28	1.90	1.58	1.67	1.93	1.73	2.20	2.09	
Estimated Etr	0.76	1.37	2.07	2.14	5.60	7.11	7.99	7.17	4.88	2.22	1.25	0.69	43.25
Std Dev Et	0.26	0.45	0.42	0.48	0.62	0.81	0.42	0.65	0.67	0.41	0.15	0.20	2.55

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

SUMMARY AND CONCLUSIONS

A methodology was developed to estimate historical crop water use throughout Utah. The SCS Blaney-Criddle equation (with calibrated coefficients) and historical weather data (NWS) were used to estimate evapotranspiration (E_t) of irrigated crops and turf and evaporation from open water surfaces. The SCS Blaney-Criddle monthly crop coefficients (k_c) were calibrated with the modified Penman equation.

Crop water use based on daily calculations of E_t with a modified Penman equation was used to calibrate the SCS Blaney-Criddle equation. Because the electronic weather stations provided only enough data to use the Penman equation for the 1983-1990 period (1986 or later at most sites), historical consumptive use was calculated with an equation that required only air temperature. The modified Penman equation (1982 Kimberly, Idaho, calibration) was used to calculate daily E_t, summed for monthly totals, for time periods when adequate data were available and was the basis for calibrating the simpler temperature based empirical method.

Net irrigation was calculated by subtracting effective summer precipitation from growing season E_t. In this study, effective summer precipitation was assumed to be 80% of any precipitation falling during months in which evapotranspiration occurred. Calibrated crop coefficients and monthly temperature and precipitation data available from the NWS weather stations were used in the SCS Blaney-Criddle equation to estimate historical E_t and net irrigation for the 1961-1990 normal period.

The long term historical average crop water use estimates calculated herein are generally higher (except at St. George) than those previously used in Utah. Reliance was placed on local information for growing seasons which differed from previous theoretical calculated values. The use of daily weather data (air temperature, solar radiation, relative humidity and wind) in the calibration process introduced a more complete physical basis into Utah's E_t estimates than was previously possible. Thus, the results presented herein reflect current technology and agree favorably with recent Utah State University field research and irrigation management programs.

RECOMMENDATIONS

1. The data base developed for this study should be maintained for future use. This would include updating both the National Weather Service and the Utah Climate Center Electronic Weather Station data. It is suggested that this should be done annually for the Utah Climate Center Network data and annually or not longer than every five years for the National Weather Service data. Perhaps a combined effort between state agencies and the University would be suitable.

2. The process as established for this study of collecting and using observed crop growth dates from the various counties throughout the state should be continued through at least 1995. This would permit the adaptation, modification and/or development of crop development models based on weather data. These are needed, particularly, for identifying the beginning growth dates for perennial crops such as alfalfa, pasture, turf and meadow hay. Existing similar models for annual crops incorporate growing degree days or some other phenology clock for growth stage occurance timing within the growing season. However, the beginning growth of perennial crops has not been well established in simulation models.

3. It is recommended that the calculations and calibrations presented herein be revised at least every 5 to 10 years. The National Weather Service identifies a new normal period every 10 years.

4. It is not known how long the Utah Climate Center Electronic Weather Station Network will be in operation. However, it should provide data for at least five years (1991-1995). These data could be used to confirm the calibrations, thereby improving the reliability of the estimates presented in this report.

GLOSSARY OF TERMS

Adiabatic Process. - A reversible thermodynamic change of state of a system without the addition or removal of heat or mass.

Advection. - Horizontal transfer of heat energy by large-scale movement of the atmosphere.

Albedo. - The ratio of electromagnetic radiation reflected from a soil and crop surface to the amount incident upon it. The value commonly is about 0.23 for a green growing crop.

Available Soil Moisture. - See Moisture (available).

Bulk Density. - The ratio of the mass of a given volume of dry soil, including air space, to the given volume. Expressed as grams per cubic centimeter.

Carryover Soil Moisture. - Non-growing season precipitation stored in the soil that may be used in meeting the crop's evapotranspiration requirement in the subsequent growing season. For example it could be 2/3 of the winter (October-April) precipitation after subtracting E_t but not to exceed 75% of the available soil moisture storage capacity for root zone.

Consumptive Use. - The amount of water used by plants in transpiration, retained in plant tissue, and the evaporation of water from plant and adjacent soil surfaces during a specified time period. Synonymous with evapotranspiration.

Crop Irrigation Requirement. - The quantity of water, exclusive of effective growing season precipitation, winter precipitation stored in the root zone, or (perhaps) upward water movement from shallow water table, that is required as an irrigation application to meet the evapotranspiration needs of the crop. It also may include water requirements for germination, frost protection, prevention of wind erosion, leaching of salts and plant cooling.

Crop Coefficient. - Relates E_t of a given crop at a specific time in its growth stage to a reference E_t condition. Incorporates effects of crop growth state, plant density, and other cultural factors affecting E_t, usually expressed or exhibited as a curve or polynomial. The reference condition has been termed "potential" or "reference crop" and relates to E_t of alfalfa or grass, depending upon the research that resulted in the crop coefficient. The respective "k" or "k_c" factor as used in the original and SCS Blaney-Criddle methods are not based on a reference condition and should only be used with those methods.

Depletion (Irrigation). - The amount of water lost from a river basin or other hydrologic system resulting from irrigation withdrawals from surface or subsurface sources. It is calculated as consumptive use (E_t) less the sum of effective precipitation and carryover soil moisture. It is intended to represent the net loss to the basin after return flows and/or excess irrigation water has returned to the stream or groundwater system.

Depletion; Crop Acreage Weighted. - Depletion estimated as an average for several crops for a large area such as a sub-basin of a river system. Calculated herein as the sum for all crops of the product of consumptive use for each crop times the crop's respective fraction of total area, less the sum of carry over soil moisture and effective precipitation.

Dew Point. - The temperature to which a given parcel of air must be cooled at constant pressure and at constant water vapor content until saturation occurs, or the temperature at which saturation vapor pressure of the parcel is equal to the actual vapor pressure of the contained water vapor.

Duty of Water. - The total volume of irrigation water required to mature a particular type of crop. It includes that portion of consumptive use not satisfied by precipitation, evaporation and seepage from ditches and canals and the water eventually returned to streams by percolation and surface runoff.

Effective Precipitation. - Precipitation occurring during the growing season that is available to meet the evapotranspiration requirements of crops. It does not include precipitation lost through deep percolation below the root zone or through surface runoff. Estimated in this report as 80% of May-April precipitation.

Empirical Equation. - An equation whose derivation and/or accuracy (calibration) is based upon observation.

Evaporation. - The physical process by which a liquid or solid is transformed to the gaseous state which in irrigation usually is restricted to the change of water from liquid to gas.

Evapotranspiration (E_t). - Synonymous with consumptive use.

Evapotranspiration (E_{tr}). - The reference condition has been termed "potential" or "reference crop" and relates to E_t of alfalfa or grass at specified growth conditions, soil water not limiting, depending upon the research that resulted in the crop coefficient.

Field Capacity. - The moisture content of a soil following an application of water and after the downward movement of excess water (from gravitational forces) has essentially ended. Usually it is assumed that this condition is reached about two days after a full irrigation or heavy rain.

Global Radiation.- See Radiation.

Growing Season. - The period that is warm enough for plants to transpire and grow. In the case of annual plants, it approximates the time interval between planting and crop maturity; for perennial crops, it is the period between certain temperature conditions that establish growth and dormancy. This growing season is sometimes restricted to the period between killing frosts.

Irrigation Efficiency. - The ratio of the volume of water required for a specific beneficial use as compared to the volume of water delivered for this purpose. It is commonly interpreted as the volume of water stored in the soil for evapotranspiration compared to the volume of water diverted for this purpose, but may be defined and used in different ways.

Langley. - A unit of energy per unit area commonly used in radiation measurements which is equal to gram calorie per square centimeter.

Lysimeter. - A device such as a tank or large barrel that contains a mass of soil and vegetation similar to that in the immediate vicinity, which is isolated hydrologically from its surroundings. It is commonly used in research to determine the water use of various crops in field conditions.

Net Irrigation Requirement. - See crop irrigation requirement.

Pan Evaporation. - Evaporation from a class A or similar pan. The U.S. Weather Bureau class A pan is a cylindrical container fabricated of galvanized iron or monel metal with a depth of ten inches and a diameter of forty-eight inches. The pan is accurately leveled at a site which is nearly flat, well sodded, and free from obstructions. The pan is filled with water to a depth of eight inches, and periodic measurements are made of the changes of the water level with the aid of a hook gage set in the stilling well. When the water level drops to seven inches, the pan is refilled.

Peak Irrigation Period. - The period of highest consumptive use that is used in irrigation design to size on-farm or project facilities such as pumping plants, pipelines, canals, distribution systems, etc. Peak period consumptive use is the average daily E_t rate of a crop at its maximum during the period between normal irrigations.

Potential Evapotranspiration. - The rate at which water, if available would be removed from the soil and plant surfaces. Expressed as the rate of latent heat transfer per square centimeter or depth of water. In this report potential evapotranspiration is the same as "reference crop E_t" and refers to E_t of a well-watered crop like alfalfa with 30 to 50 cm of top growth and about 100 m of fetch under given climatic conditions.

Pyranometer. - A general name for instruments which measure the combined intensity of incoming direct solar radiation and diffuse sky radiation.

Radiation. - Process by which electromagnetic radiation is propagated through space. Classified for agricultural purposes as:

Extraterrestrial radiation. - Incoming solar radiation above Earth's atmosphere (R_a).

Global Radiation. - Total of direct solar radiation and diffuse sky radiation received at Earth's surface by a unit horizontal surface (R_s).

Clear day radiation. - Theoretical incoming radiation at Earth's surface assuming complete absence of clouds (R_{so}).

Net back radiation. - The thermal or long wave radiation that is outgoing from Earth's surface (R_b).

Net clear day outgoing long wave radiation. - Theoretical outgoing long wave radiation at Earth's surface assuming complete absence of clouds (R_{bo}).

Net Radiation. - The difference of the downward and upward solar and long wave radiation flux passing through a horizontal plane just above the ground surface (R_n).

Reference Crop ET. - See potential evapotranspiration.

Relative Humidity. - The dimensionless ratio of actual vapor pressure of the air to saturation vapor pressure, commonly expressed in percent.

Root Zone. - The depth to which plant roots invade the soil and where water extraction occurs.

Saturation Deficit. - (also called vapor pressure deficit) The difference between the actual vapor pressure and the saturation vapor pressure at the existing temperature.

Soil Moisture (available). - Water in the root zone that can be extracted by plants. The available soil moisture is the difference between field capacity and wilting point.

Soil Moisture (unavailable). - Water in the root zone that is held so firmly by various forces that it usually cannot be absorbed by plants.

Solar Radiation. - Synonymous with global radiation (see radiation) in this report.

Soil Water. - Water present tin the soil pores (also called soil moisture which includes water vapor).

Specific Yield. - The ratio of the volume of water which will drain freely from a saturated soil under a water table condition to the total volume of soil dewatered with a given drop in the water table surface.

Transpiration. The process by which water in plants in transferred as water vapor to the atmosphere.

Wet Bulb Depression. - The difference in degrees between the dry bulb temperature and the psychrometric wet bulb temperature.

Wet Bulb Temperature. - The temperature an air parcel would have if cooled adiabatically to saturation at constant pressure by evaporation of water in it with all latent heat being supplied by the parcel.

Wilting Point. - The soil moisture content at which a plant can no longer obtain sufficient moisture to satisfy its requirements and, therefore, will wilt permanently.

Wind Run. - Accumulated wind travel past a given point during a 24-hour period. For use in the Penman Equation, the wind run data is for 2 meters above the ground.

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APPENDIX A

Location Map and Site Description of Selected Utah Climate Center (USU) Electronic Weather Station in Utah.

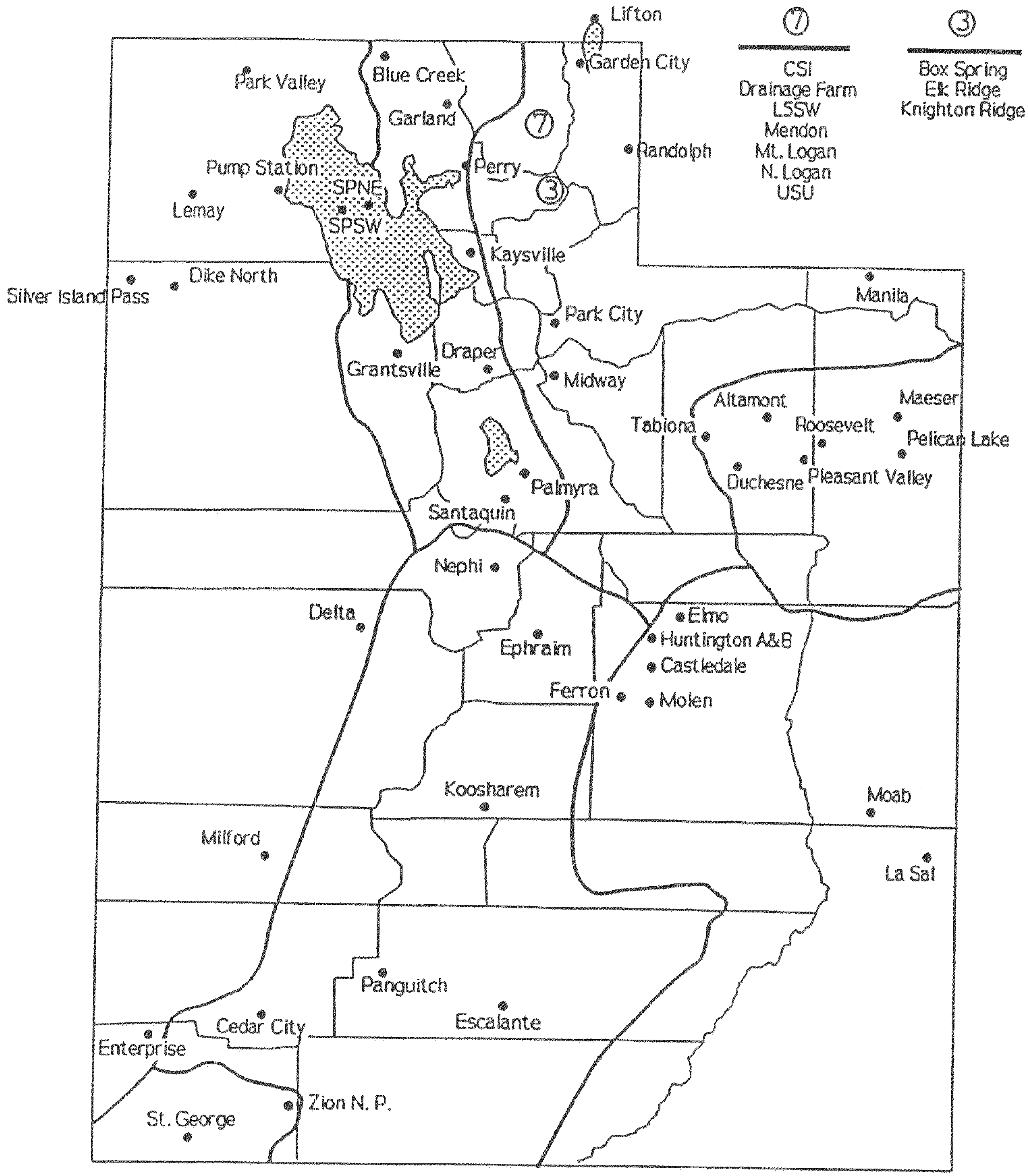

Figure 12. Location of Utah Climate Center (USU) Electronic Weather Stations in Utah, 1992.

Table 14. Site Descriptions of Selected Utah Climate Center (USU) Electronic Weather Stations in Utah. (Provided by Greg McCurdy)

Altamont Latitude: 40° 21' 00" Longitude: 110° 16' 00" Elevation: 6340 ft.

Site Description: Perennial grasses surround the immediate site. Thirty feet south of the station is an east-west paved road. Irrigated alfalfa fields predominate the extended area with some corn or small grains also.
Exposure: The road is elevated 1 to 2 feet above the reference of the station site. A single dwelling home south of the road 100 feet south, southwest of the site.
Site History: Station installed in March, 1989 at present location.
Sensor History:
Site Topography:

Blue Creek Latitude: 41° 56' 00" Longitude: 112° 26' 00" Elevation: 4495 ft.

Site Description: Site is on the south side of a wide grass strip running east to west. A gravel dirt road passes 20 feet north of the station. Nonirrigated test plot fields of native grasses and small grains lie to the north and south.
Exposure: Area slopes gently to southwest. No obstacles.
Site History: Installed Feb 1987 at current location.
Sensor History: Standard sensor set.
Site Topography: Site is at north end of a north-south valley. West Hills (1500 ft.) 2 mi. east. North Promontory Mountains (1000 ft.) 5 mi. west.

Cedar City Latitude: 37° 44' Longitude: 113° 05' Elevation: 5540 ft.

Site Description: Perennial grasses (nonirrigated) and pasture grass (irrigated) surround the immediate area. Pasture grass fields with scattered residences typify the extended are.
Exposure: 10 ft. tree 50 ft. to north. Single dwelling residence with small sheds 150 ft. north. Single dwelling residence 300 ft. south. 40 ft.+ trees - 300 ft. southwest. 20 ft. trees 500 ft. east.
Site History: Installed Feb. '86 at 37°45'N. 113°03'W. 5570 ft. Moved Feb. '89 to current location (~ 1 mile WSW).
Sensor History: Standard sensor set.
Site Topography: Flat Valley with Hurricane Cliffs 3 miles to southeast (7000 ft.+ elevation) with 9000 ft.+ peaks farther to east. City and 6000 ft. hills south. Mountains running southwest to northeast. Area open to west and north.

Delta Latitude: 39° 26' 00" Longitude: 112° 37' 00" Elevation: 4610 ft.

Site Description: Native grasses at site. Alfalfa fields to West and South. Small grass area 20 ft. to East and then larger graveled area. Native grass and lawn to North. Native grasses at site. Alfalfa fields to west and south. Small grass area 20 ft. to east and then larger graveled area. Native grass and lawn to north.
Exposure: Tree and bush 40 ft. North. Two-story residence 100 ft. NE. Large tree 200 ft. ENE.
Site History: Installed Feb. '86 at current location.
Sensor History: Standard sensor set
Site Topography: Delta is 6 mi to SE. Gunnison Bend Reservoir is 4 mi to South. DMAD Reservoir is 8 mi East. Canyon Mountain Range is 17 mi East.

Duchesne Latitude: 40° 11' 00" Longitude: 110° 20' 00" Elevation: 5514 ft.

Site Description: Nonirrigated grass at site. Trees to north. E-W paved road 15 ft. to south. Irrigated fields surround the area.
Exposure: A few large trees directly north of site. A single residence 50 ft. to NE.

Table 14. Continued.

Site History: Installed July 1987 at Lat 40 10' 00" Long. 110 22'00" Elev. 5514 ft. Moved to current location in Apr. 1989.
Sensor History: Standard Sensor Set
Site Topography: 300 ft. cliffs running E-W .5 mi to N. and 2 mi. to S. Terrain continues to rise to south and west. Area drainage is towards the east.

Enterprise Latitude: 37° 36' 00" Longitude: 113° 41' 00" Elevation: 5260 ft.

Site Description: Nonirrigated grasses and weeds at site. Extended area is irrigated.
Exposure: 15 foot high trees forming a wind break 100 feet to southeast. Wind break borders western edge of a small irrigation pond running 50 feet to south.
Site History: Installed September 1988 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Enterprise 4 mi. to SW. Mountains to East (10 mi.), South (5 mi.), and West (5 mi.) rising 1200 to 1800 ft. above valley floor. Large flat agriculture area to North.

Ephraim Latitude: 39° 22' 00" Longitude: 111° 35' 00" Elevation: 5510 ft.

Site Description: Nonirrigated grass at site. Test plots and experiment equipment to SE. Gravel and paved access roads 200 ft. to North.
Exposure: N-S turkey barn 150 ft. to W. Equipment shed 150 ft. to NE.
Site History: Site installed November 1988 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Ephraim is .5 mi. to South. Foothills of Wasatch Plateau (4000 ft.) 4 mi. to East. San Pitch Mountains (2000 ft.) 10 mi. to West. Valley slopes to SSW.

Escalante Latitude: 37° 45' 00" Longitude: 111° 36' 00" Elevation: 5830'

Site Description: Mixture of local grasses and vegetation at site. Agricultural fields to east. Paved north-south roadway 100 ft west of site. North-south fence 80 ft West of site lined with sage brush 4-6 ft in height.
Exposure: North-south fence 80 ft west of site lined with sage brush 4-6 ft in height.
Site History: Installed Sep. '88 at 37° 45'N 111° 35'W, 5790 ft. Moved to current position (~ 1/2 mi SW) in Mar. '90.
Sensor History: Standard sensor set
Site Topography: Narrow valley (3-5 mi) running from NW to SE. Escalante 1 1/2 mi to North. 1000 ft. cliffs 1 1/2 mi to SW. Valley widens significantly to SE.

Garden City Latitude: 41° 55' 00" Longitude: 111° 25' 00" Elevation: 5930 ft.

Site Description: Rocky ground with wetland brush north and south of the site. Nonirrigated grass and weeds to west. Bear Lake to East. As lake level changes shoreline may expose large areas of lake bottom to east.
Exposure: At low lake level, lake bottom surrounds the north, east and south sides of the station 5 to 10 feet below the station site. Lake shore buildings and trees 200 ft. to east.
Site History: Installed August 1991 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Bear Lake to East. Wasatch Range mountains 1 mi. to West.

Table 14. Continued.

Garland Latitude: 41° 45' Longitude: 112° 09' Elevation: 4340 ft.

Site Description: Station straddling east - west running ditch. Ditch intersects north - south running ditch 5 ft. west of site. Perennial grasses and other natural vegetation surround immediate site. Agricultural fields north, residences with large lawn and garden to south.
Exposure: Two-story residence 200 ft. south of site. East - west row of 30 ft. trees 300 ft. south of site. Other residences to east and west.
Site History: Installed Feb. '86.
Sensor History: Standard sensor set.
Site Topography: North - south valley (Bear River Valley) that widens to Great Salt Lake at southern end. Hills - 5 miles to northwest (2500 ft. rise). Bear River Bottoms - 1½ miles west (100 ft. drop). Wellsville mountains - 7 miles southeast (5000 ft. rise). Clarkston Mountains - 12 miles north-northeast. Great Salt Lake, north bay - 17 miles south-southwest.

Grantsville Latitude: 40° 36' 00" Longitude: 112° 28' 00" Elevation: 4360 ft.

Site Description: Well irrigated grass at site and to West. Pasture and alfalfa field to East.
Exposure: Site is at South end of Grantsville. Single dwelling home 50 ft. NW. A large storage shed was constructed 30 ft. to East of site in 1991.
Site History: Installed January 1989 at current location.
Sensor History: Standard Sensor Set
Site Topography: Stansbury Mountains (4500 ft.) 7 mi. to West. Great Salt Lake 10 mi. to north. Oquirrh Mountains (4500 ft.) 25 mi. to East.

Kaysville Latitude: 41° 01' 00" Longitude: 111° 56' 00" Elevation: 4380 ft.

Site Description: Infrequently irrigated grass. Gravel road 20 ft to West. Orchard and Agriculture experiment plots surround the site.
Exposure: Housing subdivision 1000 ft to South.
Site History: Installed July, 1986.
Sensor History: Standard set.
Site Topography: Wasatch Mountains (4500 ft) 3 mi to East. Great Salt Lake 3mi to SW.

Koosharem Latitude: 38° 30' 00" Longitude: 111° 52' 00" Elevation: 6800 ft.

Site Description: Irrigated grass and brush at site. Agriculture fields surround the site. Dirt road 150 ft south of site. Road is lined with large sagebrush.
Exposure: North-South fence 10 ft East of site sparsely lined with 3-4 ft high sagebrush. East-West fence 150 ft. south of site densely lined with 5-7 ft high sagebrush.
Site History: Installed February, 1990.
Sensor History: Standard set.
Site Topography: Site is at north end of a narrow (3mi) mountain Valley. Parker Mountains (1000 ft) 2 mi East. Foothills of Sevier Plateau (2000 ft) 2 mi West. Terrain slopes gently to East at site. Otter Creek Reservoir 30 mi to SSW.

La Sal Latitude: 38° 19' 00" Longitude: 109° 14' 00" Elevation: 7040 ft.

Site Description: Natural vegetation and bare ground at the site. Station is in the west corner of a UDOT yard. A paved road passes 100 ft Northwest of the station. The site slopes to the south and a drainage gully passes 30 ft East of the station. A dirt access road passes 100 ft to the West and 200 ft to South.
Exposure: The paved road Northwest of the site is about 1-2 ft above the station reference. Truck storage shed (20 ft) 200 ft to East.

Table 14. Continued.

Site History: Installed October, 1986.
Sensor History: Standard set.
Site Topography: Site is on north end of a Northwest-Southeast oriented valley. Site slopes to SW. La Sal Mountains (7000 ft) 4 mi to North. Steep terrain to Northeast. Valley bottom (400 ft) lower than site 2-3 mi to South.

Lifton, Idaho Latitude: 42° 06' 00" Longitude: 111° 22' 00" Elevation: 5930 ft.

Site Description: Irrigated grass at immediate site. Bare soil in extended area to south. Pumping plant waterway to west. Paved road and buildings to north.
Exposure: Pumping plant waterway 50 ft. to west. Paved Road 75 ft. to north. Pumping plant 200 ft to west. Trees and homes 200 ft to north and northwest. Lake north shore 300 ft south.
Site History: Installed August 1991 at current location.
Sensor History: Standard Sensor Set
Site Topography: Bear Lake to South. Mud Lake (Wildlife refuge) to North. Bear Lake Plateau (1000 ft.) 3 mi. to East. Bear River Range (2500 ft.) 5 mi. to West. Bear Lake Valley to North.

Logan 5 SW Latitude: 41° 40' 00" Longitude: 111° 54' 00" Elevation: 4490 ft.

Site Description: Nonirrigated native vegetation at immediate site (50 ft.). Surrounding areas are used to pasture animals. Surrounding area is irrigated, but may occasionally be very dry.
Exposure: Paved area and small buildings 200 ft. to North. Major Highway 300 ft. West. Small 5'x5' building at site.
Site History: Long term Climatological site.(1967) Electronic measurements installed June 1987.
Sensor History: Standard Sensor Set. Exception - Wind at 30 ft.
Site Topography: Bear River Range (5000 ft.) 5 mi. East. Wellsville Mountains (3000 ft.) 4 mi. West. Little Bear River wetlands 2 mi. NW. Rolling hills and mountains close off valley 5 mi. to south.

Logan Drainage Farm Latitude: 41° 46' 00" Longitude: 111° 53' 00" Elevation: 4430 ft.

Site Description: Irrigated grass and marsh surround the site. Station is inside a fenced marsh experiment site. A gravel road passes 100 ft to East.
Exposure: No obstacles. Gravel road to east is elevated 1-2 feet above station reference.
Site History: Installed April, 1991.
Sensor History: Standard set.
Site Topography: Logan 3 mi NW. Bear River Range (5000 ft) 5 mi to East. Cutler Reservoir 3 mi to West. Wellsville Mountains (3000 ft) 8 mi to Southwest.

Logan USU Latitude: 41° 42' 00" Longitude: 111° 49' 00" Elevation: 4800 ft.

Site Description: Site and area south is irrigated grass. North is a large gravel parking lot. Buildings surround the site to the north, east, and south.
Exposure: 2 story building 100 feet to south and west.
Site History: Installed April 1988
Sensor History: Standard Sensor Set. Exceptions: Wind and Solar Radiation instruments are located on the building immediately SW of site. (+60 ft.)
Site Topography: Bear River Range .5 mi. to east. Site at mouth of Logan Canyon.

Maeser Latitude: 40° 28' 00" Longitude: 109° 35' 00" Elevation: 5580 ft.

Site Description: Perennial grass at site. Grass and alfalfa fields immediately adjacent to site.
Exposure: Small shed 50 ft. south of site. N-S wind break 100 ft. south of site. House and small building 200 ft. to south.

Table 14. Continued.

Site History:	Installed November 1987
Sensor History:	Standard set.
Site Topography:	Valley drainage to SE. Steinaker Reservoir 3 mi. to NE. Asphalt Ridge (500 ft.) 5 mi. to S. Uinta Mountains (5000 ft.) 10 mi. to N.

Manila Latitude: 40° 59' 00" Longitude: 109° 43' 00" Elevation: 6345 ft.

Site Description:	Station located on top of Manila City Fire Department building. Surrounding area has scattered buildings and trees.
Exposure:	Trees (15 ft. high) 50 ft. to north. Building 100 ft. to east and west.
Site History:	Installed November 1989 at current location.
Sensor History:	Standard Sensor Set. Exception: All instruments at 30 feet.
Site Topography:	Station located in small east-west valley. 400 foot elevated plateau 0.5 mi. to NW. Flaming Gorge Reservoir 5 mi. to East. Uinta Mountains (3500 ft.) 15 mi. to south. Foothills 4 mi. to south.

Midway Latitude: 40° 31' Longitude: 111° 28' Elevation: 5550 ft.

Site Description:	Pasture grass and native vegetation surround the site. Horses occasionally graze the areas adjacent to the south and east of the site.
Exposure:	Site slopes gently downward to the southeast. Wooden fences run north-south and east-west from the site. A row of houses line the road 200 ft. to the west. A small group of trees stand 100 ft. to the west. There is a church 300 ft. to east and more residences 300 ft. to the north.
Site History:	Installed Jan. '89 at current location.
Sensor History:	Standard sensor set.
Site Topography:	Small mountain valley about 7 miles across with very narrow valleys to north and southwest 2500 - 3000 ft. mountains in all directions. Heber City 3 miles to the east. Foothills 1 mile to the west and 2½ miles to the north. Deer Creek Reservoir 2 miles to the south.

Milford Latitude: 38° 23' 00" Longitude: 113° 00' 00" Elevation: 4960 ft.

Site Description:	Native vegetation at immediate site. During '86, '87, '88 the extended area was farmed with the area north and west being irrigated. The area has since been abandoned and is slowly returning to native vegetation.
Exposure:	The entire area is very open and flat with natural ground vegetation.
Site History:	Installed Feb. '86 at current location.
Sensor History:	Standard sensor set.
Site Topography:	Mineral Mountains (4500 ft) 5 mi East. Shauntie Hills (1000 ft) 8 mi West. Black Mountains (2000 ft) 17 mi South. Escalante Desert opens to North and Southwest.

Moab Latitude: 38° 34' 00" Longitude: 109° 33' 00" Elevation: 4025 ft.

Site Description:	Site is mostly urban with small grass lot to NE. Buildings and blacktop to W and S. Residences to E and SE. Instruments are located on a communications and utility tower.
Exposure:	Small utility building on site. Building 50 ft. to S.; 75 ft. to W.; 100ft. to SW.; 150 ft. to NW. Residences 200 ft. to E.
Site History:	Installed November 1989 at current location
Sensor History:	Wind Sensors - 20 ft. Air Temp and Humidity - 15 ft. Precipitation - 10 ft. No Solar Radiation or Soil Temperature Sensors.
Site Topography:	Site is located in a closed valley on a tributary of the Colorado River. Valley is oriented SE to NW with the Colorado River at the NW end, 3 miles from the station. Valley width is 1 to 2 miles with 500 to 750 foot plateau surrounding the valley. The La Sal Mountains (8000 ft.) are 15 mi. to SE.

Table 14. Continued.

North Logan - Greenville Farm Latitude: 41° 46' 00" Longitude: 111° 49' 00" Elevation: 4608 ft.

Site Description: Well irrigated grass at site. Extended area is mostly agricultural experiment plots. Equipment shed 40 ft. North. Paved access road 20 ft North. More sheds (150 ft) and paved area (70 ft) to Northeast.
Exposure: Building and bushes 10-15 ft high 40 ft North. Trees 40 ft high 100 ft to Northwest.
Site History: Installed February, 1988.
Sensor History: Standard set. Except: wind at 30 ft.
Site Topography: Bear River Range (5000 ft) 2 mi to East. Logan 1 1/2 mi to SSW.

Palmyra Latitude: 40° 08' 00" Longitude: 111° 42' 00" Elevation: 4520 ft.

Site Description: Site is flood irrigated agriculture. Station straddles a cement irrigation ditch. Area immediately to east is a low grass area. Field to west is cultivated (usually corn or grain crops).
Exposure: No obstacles in area. North-south running cement ditch (5 ft. wide) passes underneath the station.
Site History: Installed March 1986 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Utah Lake 2.5 mi. to NW. Wasatch Mountains (4000 ft.) 6 mi. to East. West Mountain (2000 ft.) 7 mi. to SW.

Panguitch Latitude: 37° 51' Longitude: 112° 25' Elevation: 6580 ft.

Site Description: Grass pasture at immediate site with irrigated grass pasture and alfalfa fields surrounding.
Exposure: Area is flat with very gentle slope to west-southwest. East-west running fence to south of station.
Site History: Installed Jan. '89.
Sensor History: Standard sensor set.
Site Topography: Situated on the south end of a north-south running valley. 2 miles to west the mountains gently rise about 3000 ft. above the site. Eastern range, 5 miles away, is steeper but only 2000 - 2500 ft. high. Valley narrows 15 miles north of site. Panguitch is 1½ miles southwest. Sevier River runs by 1 mile to west. Western mountains narrow valley 2 miles to the south.

Park City Latitude: 40° 39' 00" Longitude: 111° 30' 00" Elevation: 7080 ft.

Site Description: Grassy site with paved parking area to SW.
Exposure: Small trees and bushes 20 ft to N, 30 ft to E, and 50 ft. to NW. Steep drop 50 ft. to SW. Municipal building (3 story) 100 ft. to SE.
Site History: Installed November 1986 at current location.
Sensor History: Standard Sensor Set
Site Topography: Site is on a small finger ridge that descends to the N and W. Peaks (2000 ft.) surround the area to the East, South, and West.

Pelican Lake Latitude: 40° 11' 00" Longitude: 109° 40' 00" Elevation: 4810 ft.

Site Description: Nonirrigated native grasses and weeds. Large irrigated field to west.
Exposure: Sheds and equipment storage area 300 feet to southeast.
Site History: Installed August 1987 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Pelican Lake 0.5 mi. to north.

Table 14. Continued.

Perry Latitude: 41° 27' 00" Longitude: 112° 02' 00" Elevation: 4370 ft.

Site Description: Nonirrigated grass at site. Irrigated lawn to West and South. Melon and fruit tree fields to North and East
Exposure: Single dwelling home 50 ft. to SE. Six to seven foot trees to South and West. Seven to ten foot fruit trees (150 ft.) to SE. Five to eight foot fruit trees (150 ft.) to North.
Site History: June, 1986
Sensor History: Standard set.
Site Topography: Wasatch Range 4500 ft. 5 mi East. Bear River Refuge 15 mi West. Willard Bay 5 mi SW.

Pleasant Valley Latitude: 40° 10' 00" Longitude: 110° 06' 00" Elevation: 5320 ft.

Site Description: Nonirrigated grass at immediate site. Adjacent areas have irrigated alfalfa and grass to the north and west. The area to the SE is nonirrigated and generally bare.
Exposure: Single tree 20 ft. to NNE. Group of pine and deciduous trees 150 ft. to NE.
Site History: Installed September 1987 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Located on the western side of the Uinta Basin, site is 3 mi. SW of Myton. Mountains 15 mi. to SW.

Randolph Latitude: 41° 45' Longitude: 111° 08' Elevation: 6240 ft.

Site Description: Irrigated grass fields surround the immediate and extended areas.
Exposure: A 5 ft. barbed wire fence surrounds the station and runs north and south from the station. Site is flat, and void of any structures or natural obstacles.
Site History: Installed November '86.
Sensor History: Standard sensor set.
Site Topography: A southwest - northeast running valley about 5 miles across. The station lies about 2 miles from the western foothills (1½ miles east of main road). The western mountains are rolling and climb gently (to 4500 ft.) while the eastern mountains rise steeply to about 3000 ft.+ above the valley floor. The Bear River meanders along the eastern side of the valley. The valley is lush with meadow grass during the summer months.

Roosevelt Latitude: 40° 17' 00" Longitude: 109° 59' 00" Elevation: 5020 ft.

Site Description: Rural farmyard. Nonirrigated native grasses, weeds, and bare soil.
Exposure: Above ground fuel storage tanks 10 feet North. Individual 10 ft. tree 5 feet to SE. Single home 20 ft. SE. Dirt road running east-west 10 ft. North. Animal corral 20 feet to north. Large pasture field to Southwest.
Site History: Installed July 1987 at current location.
Sensor History: Standard sensor set.
Site Topography: Surrounding area is traversed by a number of drainage channels. Foothills of Uinta Mountains are 15 mi. to North. Basin Terrain slopes gently to Southeast.

Santaquin Latitude: 39° 59' 00" Longitude: 111° 47' 00" Elevation: 4850 ft.

Site Description: Site is located on a 10 ft. wide (east to west) grassy strip between two 20 ft. wide dirt roads. Fruit orchards (10 ft. trees) surround the site.
Exposure: Orchard trees 30 ft. to south and north. Single residence 200 ft. to NE.
Site History: Installed June 1986 at current location.

Table 14. Continued.

Sensor History: Standard Sensor Set.
Site Topography: Local terrain slopes gently to north. Wasatch Mountain Range (3000+ ft.) 2 mi. to East and 5 mi. to South. Mt. Nebo (7000 ft.) 11 mi to South. West Mountain (2000 ft.) 5 mi. to NW. Open agriculture area to NE. Smaller hills (1000 ft.) to SW.

St. George 4ESE Latitude: 37° 05' Longitude: 113° 31' Elevation: 2610 ft.

Site Description: Station straddles concrete irrigation ditch. Irrigated agriculture fields surround the site.
Exposure: Station reference is elevated to 1 ft. above surrounding fields.
Site History: Installed March '86 at current location.
Sensor History: Standard sensor set.
Site Topography: Virgin river 1 mile west of station. Several 300 ft. hills and ridges surround the area to southwest and west (1 mile), southeast (3 miles) and northeast (2 miles). More ridges and hills surround the entire area (5 miles).

Tabiona Latitude: 40° 19' 00" Longitude: 110° 43' 00" Elevation: 6660 ft.

Site Description: Irrigated grass meadows and fields. Dirt road 30 ft. to north.
Exposure: Site has no significant obstacles.
Site History: Installed June 1989 at current location.
Sensor History: Standard Sensor Set.
Site Topography: Site is in a narrow NW to SE mountain valley (2-3 mi. wide). Drainage to SE. Tabby Mountain (3000 ft.) 4 mi. to W. Dry Mountain (2500 ft.) 6 mi. to NE.

APPENDIX B

Typical Consumptive Use and Growing Seasons for Crops in the Six Climatic Zones in Utah. Adapted From USDA - SCS Utah Irrigation Guide (1984) Table UT683-1.

Table 15. Typical Consumptive Use and Growing Seasons for Crops in the Six Climatic Zones in Utah. Adapted from USDA - SCS Utah Irrigation Guide (1984) Table UT683-1.

Climatic Zone	Growing Season			Monthly Consumptive Use in Inches (from SCS Calculations)										
	Beg	End	Lgth	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Annual
Alfalfa														
1	5/15	9/15	123	--	--	--	2.1	4.5	5.5	4.8	2.1	--	--	19.0
2	5/4	9/28	145	--	--	--	2.9	5.0	6.5	5.5	2.5	--	--	22.4
3	4/25	10/22	192	--	--	0.5	3.9	5.9	7.5	6.3	3.8	0.3	--	28.2
4	4/13	10/22	192	--	--	1.5	4.4	6.5	8.5	7.1	4.4	1.8	--	34.2
5	3/29	10/25	210	--	0.2	3.0	5.5	7.9	9.5	8.0	5.0	2.2	--	41.3
6	3/7	11/9	247	--	1.7	3.9	6.3	8.7	10.5	9.1	6.0	3.4	0.4	50.0
Grass Pasture														
1	4/25	10/15	174	--	--	0.7	2.5	3.6	4.8	4.1	2.6	1.0	--	19.3
2	4/15	10/21	189	--	--	0.8	2.8	4.1	5.4	4.7	2.9	1.1	--	21.8
3	4/6	10/27	204	--	--	1.5	3.2	4.8	6.2	5.4	3.4	1.6	--	26.1
4	3/28	11/1	218	--	--	2.1	3.7	5.3	7.0	6.1	3.9	1.9		30.0
5	3/14	11/6	237	--	0.8	2.7	4.6	6.4	8.0	7.0	4.4	2.3	0.1	36.3
6	2/17	11/27	283	0.3	1.8	3.4	5.3	7.1	8.8	7.8	5.3	2.9	1.0	43.7
Spring Grain														
1	4/25	8/28	125	--	--	0.4	1.7	4.5	5.3	1.5	--	--	--	13.4
2	4/15	8/15	130	--	--	0.4	2.4	5.4	5.8	1.2	--	--	--	15.2
3	4/6	8/14	130	--	--	0.8	3.4	6.5	5.1	0.7	--	--	--	16.5
4	3/28	8/5	130	--	--	1.4	4.4	6.8	4.6	0.3	--	--	--	17.5
5	3/14	7/22	130	--	0.4	2.6	6.2	6.5	1.8	--	--	--	--	17.5
6	2/17	6/27	130	0.2	1.8	4.7	6.3	2.3	--	--	--	--	--	15.3
Corn Silage														
2	5/24	9/15	114	--	--	--	0.3	2.5	5.1	5.4	1.6	--	--	14.9
3	5/12	9/23	134	--	--	--	1.1	3.1	6.2	6.3	3.1	--	--	19.8
4	5/1	9/18	140	--	--	--	2.0	3.9	6.4	7.1	2.7	--	--	22.1
5	4/14	8/28	140	--	--	0.8	2.9	6.0	9.2	7.5	0.3	--	--	26.7
6	3/26	8/13	140	--	0.2	2.0	4.4	7.9	10.1	3.5	--	--	--	28.1
Orchard														
4	4/13	11/1	202	--	--	1.5	4.5	6.5	8.5	7.1	4.4	2.2	--	34.7
5	3/29	11/6	222	--	0.2	2.9	5.6	7.9	9.5	8.0	5.0	2.6	0.2	41.9
6	3/7	11/27	265	--	1.7	3.9	6.4	8.7	10.5	9.1	6.0	3.3	1.2	50.8
Potatoes														
2	6/13	9/15	94	--	--	--	--	1.1	5.0	6.7	2.1	--	--	14.9
3	5/30	9/25	118	--	--	--	--	2.3	6.3	7.9	4.1	--	--	20.6
4	5/20	9/27	130	--	--	--	0.6	3.2	8.0	9.0	5.0	--	--	25.8
Tomatoes														
4	5/2	9/29	150	--	--	--	1.8	3.4	7.1	6.5	3.4	--	--	22.2
5	4/14	9/11	150	--	--	0.7	2.6	5.4	8.7	6.7	1.4	--	--	25.5
6	3/26	8/23	150	--	0.2	1.9	3.8	7.4	9.0	5.0	--	--	--	27.3

APPENDIX C

Lake Evaporation Estimation Methods and Comparisons

Estimation of Lake Evaporation

Estimation of the evaporation from large water bodies, although important in the simulation of the hydrology of an area, is not easy, because the readily available weather data cannot be directly used for this purpose. Since weather stations and evaporation pans are hard to maintain in the middle of a lake, data from nearby on-land stations are usually adapted to the estimation of lake evaporation.

Studies reported in the literature often calibrate an empirical based formula against actual evaporation from a certain lake. The results, however, are either too site specific to be used in other situations, or too generic for anything other than rough approximations. More accurate and transferable methods have also been reported which, however, require special data that are not normally recorded at an ordinary weather station. For example, to keep an accurate energy balance of a lake, the temperature and volume of inflow and outflow waters are required to calculate the advected energy into the lake.

A widely used approach is to treat evaporation as a diffusion process in which water vapor is transferred from the water surface into the atmosphere. The transfer takes place under a vapor pressure gradient established between the saturation vapor pressure at the water surface temperature and the ambient vapor pressure of the air. The prevailing wind over the water surface removes the water vapor which continuously maintains the gradient. Vassiliades (1991) evaluated different methods of estimating open water surface or lake evaporation. The following discussion is adapted from his work.

The "diffusion" approach for calculating evaporation is generally described by the Dalton equation which correlates the evaporation with the vapor pressure deficit through a wind function, as:

$$E = (es_0 - e_z)\, f(w) \tag{19}$$

where, E is evaporation; es_0 is saturation vapor pressure of the air at a given water surface temperature; e_z is actual vapor pressure of the air at the height z above the water level; and f(w) is a function of the wind (the wind factor).

The Penman Method

With the assumption that the transfer coefficients for moisture and heat are equal and that equation (19) is valid, Penman (1948) solved the problem of measuring the temperature of the water surface, and showed that the latent heat flux, λE, from an evaporating surface could be written as:

$$\lambda E = \frac{\Delta}{(\Delta + \gamma)}(Q_n - G_s) + \frac{\gamma}{(\Delta + \gamma)} f(w)(e_s - e_a) \tag{20}$$

where, Q_n is the net radiation; G_s is surface heat storage, assumed to be zero for lakes; e_a is actual vapor pressure (taken at 2m height); and the other terms are as previously defined.

The Kohler-Nordenson-Fox Method

Kohler, Nordenson and Fox (1955) adapted the Penman equation to estimate lake evaporation by using a different psychrometric constant (γ_L) and multiplying by 0.7. This is not the same as multiplying pan evaporation by 0.7 because the pan evaporation was calculated as a "theoretical" or "ideal" quantity.

$$E_{Lake} = \frac{0.7}{\lambda}\left[\frac{\Delta}{(\Delta + \gamma_L)} Q_n + \frac{\gamma_L}{(\Delta + \gamma_L)} (15.36)(0.5 + 0.01\,U_2)(es_a - es_d)\right] \tag{21}$$

where, E_{Lake} is estimated lake evaporation, cm/day; γ_L is 0.000661 P, mb/°C; P is 1013-0.03216 el, mb and el is elevation; es_a is saturation vapor pressure at average air temperature; es_d is saturation vapor pressure at dew point temperature; and U_2 is wind travel at 2m height, miles per day.

The Morton Method

Morton (1979) described a method to estimate monthly lake evaporation, but it was adapted for daily values. The method includes an energy weighting factor ψ, and an advection energy term M, so that lake evaporation (E_W) is:

$$E_w = \psi\,(R_w + M) \tag{22}$$

Net longwave was calculated based on the Stefan-Boltzman law and taking into consideration sunshine duration, albedo and transmittance of the atmosphere, as described in Morton (1979). R_W is the net radiation as if the water surface were at air temperature.

The Mass-Transfer Method

This approach, as modified by Lakshman (1972), considered the dimensions of the lake to adjust for advection, which could allow transferability of the equation from lake to lake. In equation form:

$$E = N\,U_2^{0.8}(es_{WS} - e_a) \tag{23}$$

where N is a mass transfer coefficient equal to:

$$N = \frac{(3.9E{-}4)\,m^{-0.2}}{(m+1)^{1.6}\,(2m+1)^{0.2}}\left(\frac{\delta}{2}\right)^{1.8m}\left(\frac{P}{A}\right)^{0.2} \tag{24}$$

and m is the exponent of a power-type wind law such as: $U_Z = a\,Z^m$. Brutsaert and Yeh (1970) found that m can be generally taken as 1/7. Numerous studies, however, report differing m values for other lakes. In Equation (22) δ is the turbulent boundary thickness (meters) estimated as:

$$\delta = 0.00078\left[\frac{(2m-1)(m+1)}{m}\right]^{0.8}\nu^{0.2}(m+1)^{-1.6}\,U^{-0.2}\,X^{0.8}$$

where ν is the kinematic viscosity of the air (ν = 0.15 cm^2/sec); U is average wind velocity in cm/sec and X is the fetch distance over the water surface, cm.

The fetch, X (ft) , is related to the surface area of the lake, A (ft^2), and its perimeter, P (ft), through:

$$\frac{A}{P} = \frac{X}{4}$$

for small reservoirs and assumed values for m = 1/8 and δ = 6meters, N is simplified to:

$$N = (2.62E-4)\left[\frac{P}{A}\right]^{0.2}$$

A problem with this method is that it requires water surface temperatures, which are generally not available. An attempt to approximate the water surface temperature with the last 3-day running average air temperature did not yield satisfactory results.

The Pan-Evaporation Method

Evaporation data, as observed in a standard 4-foot pan (commonly known as the Class A pan) do not directly represent evapotranspiration from adjacent lands or even evaporation from nearby lakes. Studies also show that the long practiced method of using a single multiplier to scale (usually down, taken as 0.7) the observed pan evaporation to estimate evaporation from a lake, may introduce significant errors. During winter months, the water temperature in large lakes is likely to be higher than that in a nearby evaporation pan if the pan is not frozen. Therefore, actual evaporation from the lake is higher than what the "single-multiplier" technique predicts. In summer, the condition reverses and a smaller coefficient is, therefore, expected. The following trigonometric function was used by Wang and Riley (1971) to fit actual evaporation data from Utah Lake and a nearby pan:

$$E_{lk} = 3.2177 + 2.9786 \sin\theta + 0.6271 \cos\theta$$

$$\theta = \frac{\pi}{10} E_{pan} - \frac{\pi}{2}$$

where, E_{lk} is estimated lake evaporation, inches; and E_{pan} is pan evaporation, inches.

This relationship gave reasonable results for Utah Lake but it has not been tested in other cases to determine its transferability. For a particular location, it could be compared with the "single-multiplier" method and the coefficients modified, if needed, to obtain reasonable results.

Adaptation of Modified Penman Equation to Lake Evaporation Estimates

The modified Penman equation (Eq.3) was adapted for estimating lake evaporation by changing the albedo to 6 percent ($\propto = 0.06$) for an open water surface. Also, a value of 0.97 was assumed for the emissivity of longwave radiation (Brutsaert, 1982). Net radiation (R_{nl}) for a lake thus becomes: $R_{nl} = 0.94\ R_s - 0.97\ R_b$, where, R_s and R_b are as previously defined for Equation (3). The wind function was adjusted to represent conditions similar to the Kohler, Nordensen and Fox (1955) equation, with no implied daily wind travel limit. The saturated vapor pressure term, $\bar{e}_s$, was taken as e_{sa} at the average daily air temperature. The difference between γ_L and γ was negligible, thus γ was used as previously defined. Lake evaporation is estimated by the Penman-lake equation modification as:

$$E_{lake} = \frac{0.7}{\lambda} \left[\frac{\Delta}{\Delta + \gamma} R_{nl} + \frac{\gamma}{\Delta + \gamma} 15.36 (1.0 + .01\ U_2)(es_a - es_d) \right] \qquad (25)$$

If water surface temperatures were available, improvement in accuracy of the estimates could be realized.

Estimates of open water surface (lake) evaporation as calculated herein do not account for water surface temperature. The effects of water inflow and outflow, subterranean thermal springs and the presence of ice patches or complete ice cover are not included. Thus, evaporation values shown herein for the winter months may be in error by as much as 100%.

Results of Lake Evaporation Estimates

Vassiliades (1991) developed computer program that used the same daily weather data as a Penman equation (maximum and minimum air temperatures, maximum and minimum relative humidities or dew point temperature, wind speed, and solar radiation), to calculate daily lake evaporation using equations 21, 22 and 23. The Morton method was adapted to estimate daily values. The Morton and Kohler methods agreed fairly well on day-to-day calculations of evaporation as shown in Figure 13 . The Kohler method is about 10% higher than the Morton equation during April - mid October at Utah Lake. Both methods demonstrated that using a constant pan multiplier (say 0.7) for daily calculations could introduce significant differences (Figures 14 and 15).

Amayreh (1993) compared the Penman-lake (Eq. 25) evaporation estimates with a Penman-Monteith equation (adapted to an open water surface). Daily evaporation estimates from the two methods agreed very well as shown in Figures 16 and 17. Seasonal evaporation from the Penman-Monteith equation was about 5% or so greater than from Equation 25. The majority of the difference occured from May to August. This independently confirmed the appropriateness of using Equation (25) for lake evaporation estimates herein.

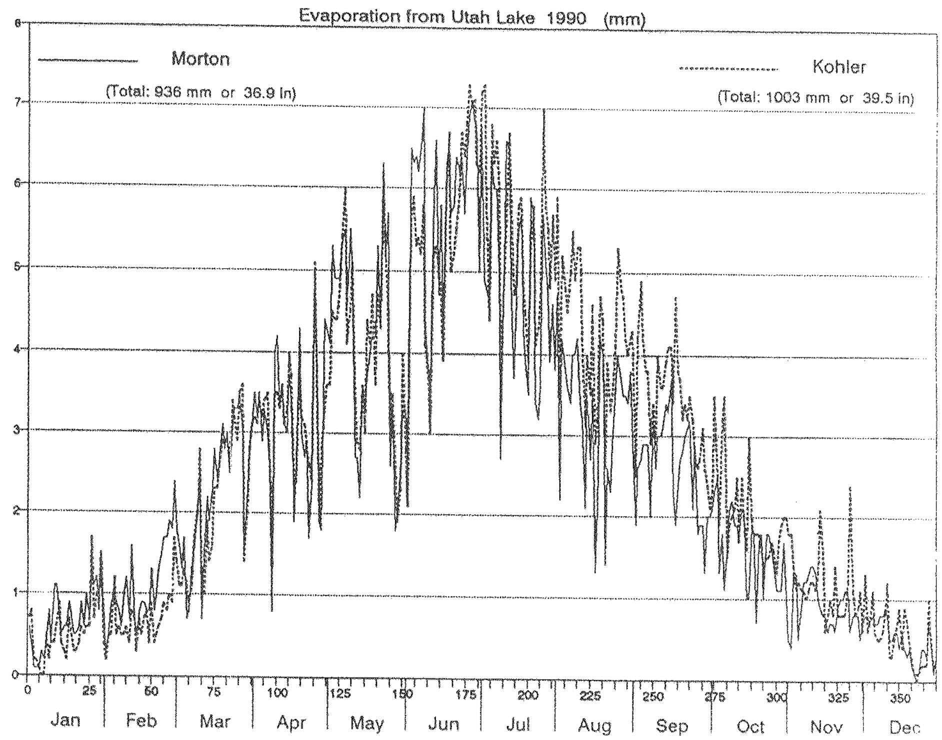

Figure 13. Estimated Evaporation at Utah Lake from the Morton and Kohler Methods Using 1990 Weather Data from the Palmyra Electronic Weather Station.

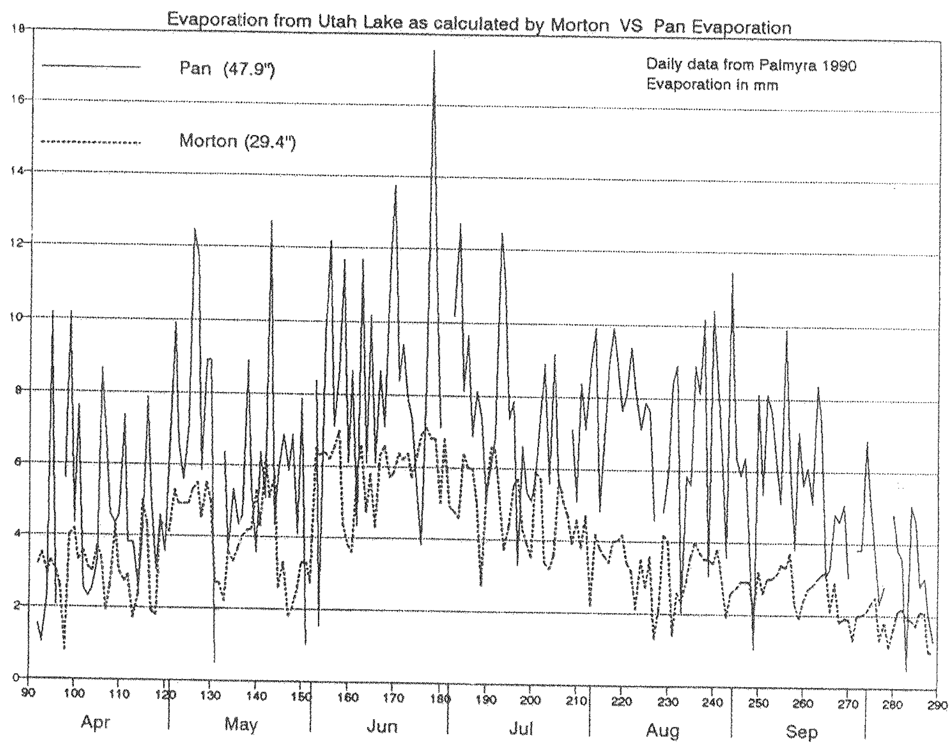

Figure 14. Comparison of Class A Pan Evaporation at Lehi, 1990, with Daily Calculated Evaporation from the Morton Method Using Palmyra Weather Data.

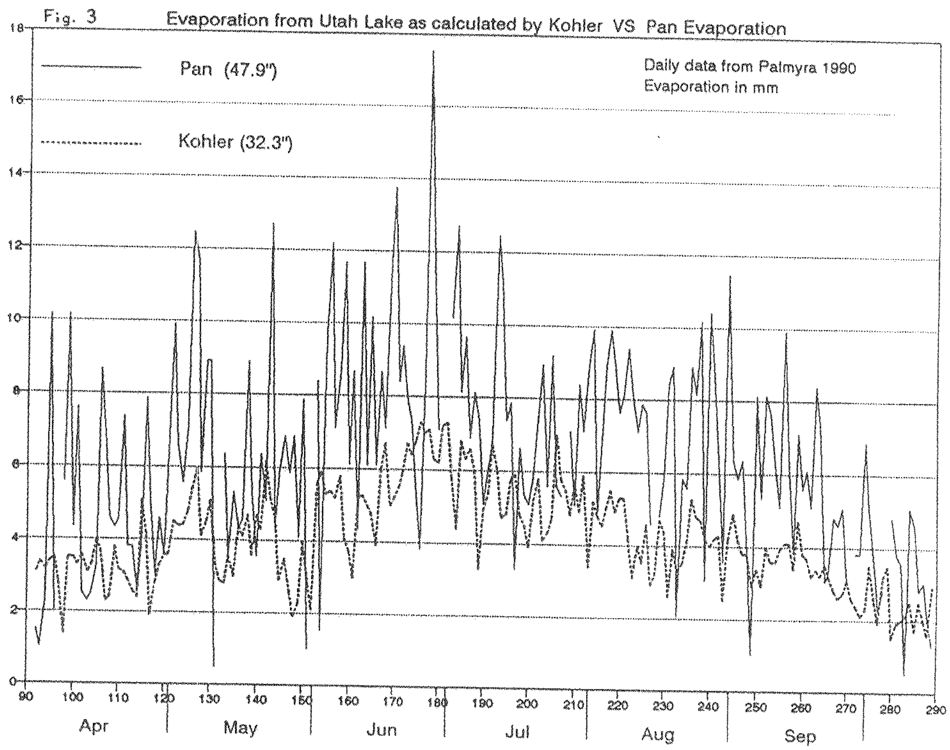

Figure 15. Comparison of Class A Pan Evaporation at Lehi, 1990, with Daily Calculated Evaporation from the Kohler Method Using Palmyra Weather Data.

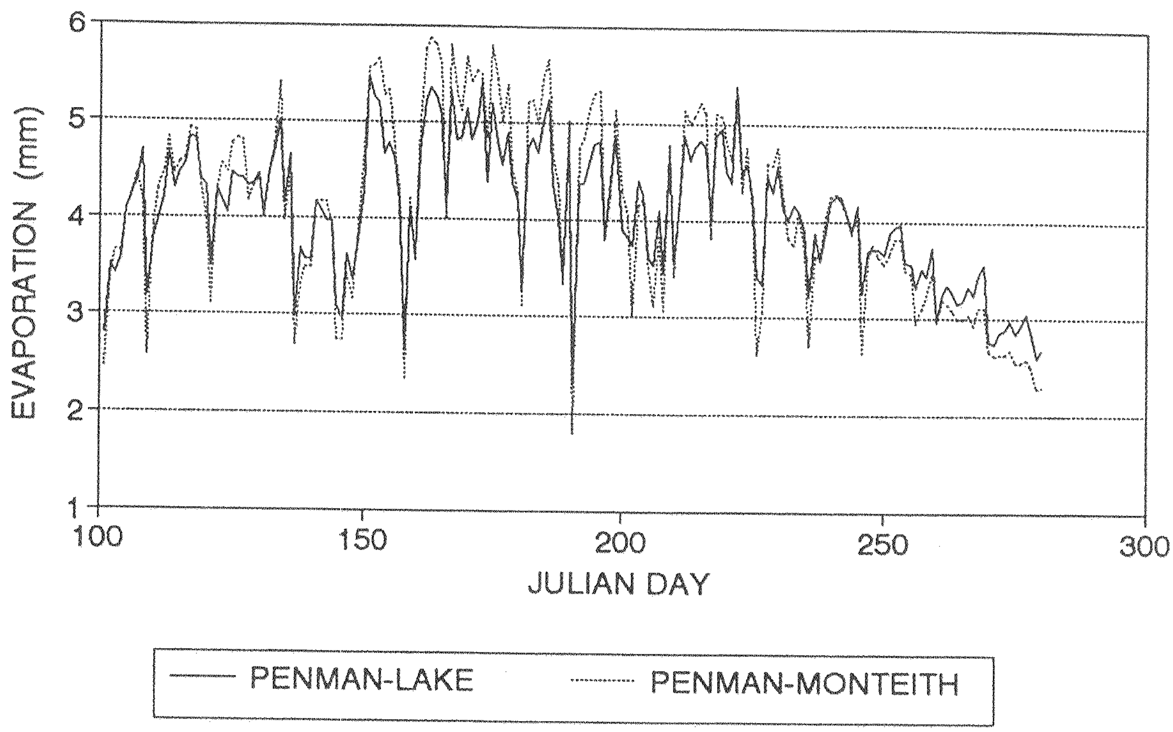

Figure 16. Comparison of Penman-Lake and Penman-Monteith Methods of Estimating Evaporation at Bear Lake, 1987. Daily Weather Data from North of the Lake as Reported by Hill, et. al. (1989).

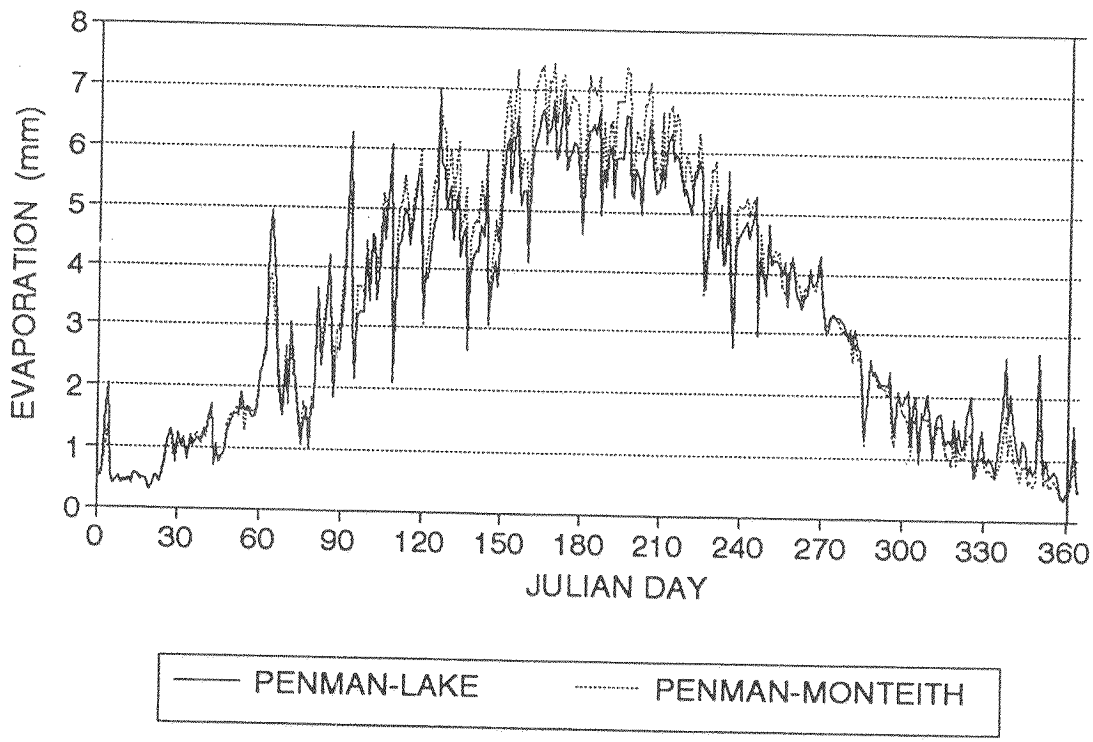

Figure 17. Comparison of Penman-Lake and Penman-Monteith Methods of Estimating Evaporation at Utah Lake, 1987. Daily Weather Data from the Utah Climate Network Station at Palmyra.

APPENDIX D

General and County Specific Considerations of Crop Growth Progress and Cultural Practices.

Forage Crop Spring Green-up

In Utah and other Intermountain States, perennial plants used for animal feed begin active growth at different times during the spring. An individual species will not demonstrate spring "green-up" at the same time in all regions of the state because environmental conditions are different from location to location throughout the state. Even when similar plants (such as different species of grass) are grown in the same area, they frequently demonstrate considerable variability in green-up. Within a species, different varieties exhibit variation in green-up as well. Forage species are very important in the production of livestock in Utah. When these species become green in the spring of the year is important in the management of the livestock program and may influence substantially the need to buy additional feed. Grass and alfalfa are the most important forages in Utah, and green-up characteristics of these species will be considered in this overview.

Alfalfa Green-up. - Although the environment plays an important role in the development of the alfalfa plant, for the purposes of this discussion, only differences among varieties of alfalfa will be considered. Alfalfa dormancy ratings are reported for commercial alfalfa varieties based on a scale of 1-9, where a rating of 1 represent the most dormant variety and 9 is least dormant. For many years the "FD" (Fall Dormancy) rating for alfalfa varieties has been used synonymously with winter hardiness. Recent genetic improvements in alfalfa varieties may mean that it is no longer valid to assume that a variety that is very dormant will also be very winter hardy. Likewise, it may mean that non-dormant varieties may have very good winter hardiness. While the relationship between winter hardiness and fall dormancy is in a state of re-evaluation, it still remains true that varieties of alfalfa that are most dormant green-later in the spring (also after each cutting) than do varieties that are not dormant.

In general, it can be said that alfalfa varieties will green-up in the spring based upon their "fall dormancy" ratings. The varieties that are least dormant will green-up earliest and those that are most dormant will green-up later. In replicated research plots, the variety Lahontan (fall dormancy rating 6) was easily identified 7 days after harvest when compared to Ranger alfalfa (fall dormancy rating 3). The Lahontan had already initiated regrowth while the Ranger was just beginning to show signs of new green growth. This difference is also true in the spring of the year as the varieties break winter dormancy and begin early spring growth. Although the number of days between dormancy and green growth may vary because of environment, the non-dormant and semi-dormant varieties of alfalfa will green-up more rapidly than will the dormant varieties.

Fall dormancy ratings also influence the time in the fall when alfalfa plants make the transition from active growth to dormancy. In fact, the term "fall dormancy" was originated to characterize the type of dormancy an alfalfa variety might experience as it prepared for winter. Varieties that have "FD" numbers in the 5-9 range generally have active regrowth until the weather is so cold that no further growth is possible. Varieties with "FD" scores of 4 and below have usually become dormant prior to the time that winter really becomes pronounced. In yield studies, alfalfa varieties that do not go dormant early in the fall almost always out-yield varieties that go dormant early. A late fall harvest will net almost no tonnage from dormant alfalfa, but can yield a substantial amount from semi- and non-dormant varieties.

When predicting the time to harvest alfalfa, the dormancy of the variety can have a significant impact. If a specific stage of growth is identified as the time for harvest, hay producers should expect to reach the correct stage more rapidly in the less dormant varieties because they will initiate growth more quickly in the spring. Hay producers should also anticipate the need to make a late harvest or graze regrowth late into the fall if they grow a semi-dormant variety.

Although the benefit of early and late harvest of semi-dormant varieties appears to have nothing but advantages, there is an important consideration when selecting a suitable alfalfa variety. Because non and semi-dormant varieties begin regrowth very rapidly after they have been clipped, it is essential that the hay producer be able to remove the previous cutting from the field as rapidly as possible after it has been cut. If weather or equipment makes it impossible for the windrow to be baled and the bales to be hauled in a reasonable amount of time, there may be so much regrowth that it will interfere with the processing of the previous crop. If the regrowth does not impede the baling and hauling operation, it may still be a problem to have too much regrowth because the equipment in the field will do much damage to the newly developing crop.

Selecting the right variety based on yield, pest resistance, and seed availability may not provide all the answers. Fall dormancy rating should also be used as a guideline to help produce harvest dates and the dormancy of the variety should correspond to the equipment available in the system.

Grass Green-up. - The green-up of grasses on the range or in the improved pasture is similar to the discussion about alfalfa. In general, however, the green-up of grasses is more dependent on the species than the variety that occurs within a species. Some grasses begin growth earlier in the spring and may go dormant in the summer during periods of drought or high temperatures. Other grass species green-up later in the spring, but afford more green forage later into the summer.

Hycrest crested wheatgrass, for example, begins growth early in the spring and is available for feed when intermediate wheatgrass is still dormant. As the season progresses, the Hycrest goes dormant and the intermediate wheatgrass becomes the forage of choice for the livestock because it is still green. When selecting species for range or pasture grass production, it is important to plant species that are complementary and extend the period grazing.

Grasses like Hycrest will grow and stay productive under very severe drought conditions They go dormant in the late spring or early summer as a mechanism to protect themselves against the period of time during the year when drought is likely to be most severe. When fall rains begin, the grasses green-up again and begin some fall growth to sustain them through the winter. As a general rule, the onset of the dormant period in grasses can be predicted by the development of the seed head. Once the grass has formed the seed, the remainder of the plant can senesce.

A combination of grasses adapted for the environment and with differences in dormancy characteristics make the most productive forage for grazing. When the grass is made into hay, it is often desirable to have all species in the mixture mature at the same time in order to make the most tonnage of uniform quality.

(Provided by Ralph Whitesides)

Growing Season for Spring Grain

Irrigated spring grain planting normally begins in early March in central Utah valleys when weather and soil moisture conditions permit. Planting continues into early May in higher elevation valleys of Northern Utah, such as near Randolph. Typical planting dates in Cache Valley are April 1 - 15. Planting dates are generally 10 days to two weeks earlier than this in Millard, Juab, Salt Lake and Utah counties. In most areas, spring grain is planted somewhat earlier than when the alfalfa greens-up.

Spring wheat heading is generally about 60 to 70 days after planting. Harvesting for grain takes place about 60 days after heading for a 120 - 125 day growing season. Barley heads sooner than wheat, 50 to 60 days after planting, giving about 110 to 115 days from planting to harvesting. Oats are similar to wheat in growth stage progression. Moving the planting dates 10 days earlier results in the heading date moving about 5 days earlier.

Spring grain may be planted in the 3rd week of January continuing into mid-February, in Hurricane and St. George areas of Washington County. Heading occurs in mid to late April for barley and harvesting takes place by the 3rd week of June.

Differences of 5 to 10 days in planting to heading are observed among varieties. Weather conditions may also account for additional variations of 5 to 10 days from year to year.

(Provided by Rulon Albrechtsen)

Fruit Tree Water Use During The Growing Season

1. Water consumptive use begins about the time the fruit trees are approaching full bloom. If the soil is at field capacity, irrigation should not begin until 50% of the soil moisture has been depleted. Root activity must be unrestricted during a period of 3 weeks following bloom. The soil must not be

saturated nor drier than 50% field capacity. Many of the nutrient elements must be assimilated in sufficient quantities to last the entire growing season before the roots become suberized. After the roots have become suberized, assimilation of some elements is essentially stopped.

2. Independent of the environmental conditions, water consumptive use increases as long as the shoots, leaves, and fruits increase in size and numbers. This generally occurs until the shoot terminal buds stop growing in late July or early August. Water consumptive use requirements remain about the same until the fruit are harvested, at which time, the leaves begin the senescence phase. Leaf transpiration is greatly reduced.

3. A little moisture stress needs to be applied to fruit trees in late summer or early fall to induce early acclimation. This is done to help fruit trees survive the cold winter temperatures. However, the soil profile needs to be at field capacity before the trees begin to grow in the spring. In irrigated regions, a late fall irrigation is recommended just in case there is a shortage of winter precipitation.

Approximate Tree Fruit Phenological Dates for Utah County

Cultivar	Green-tip	Full-bloom	Terminal Bud Set	Harvest	Leaf-drop
Apple					
Delicious	4/25	5/7	8/15	9/10	10/30
Rome	5/1	5/12	8/20	10/01	10/30
Peach					
Elberta	4/10	4/27	8/10	8/25	10/1
Redhaven	4/10	4/26	7/18	7/20	10/1
Pear					
Bartlett	4/18	4/28	8/10	8/25	10/15
Sweet Cherry					
Bing	4/8	4/28	8/4	6/16	10/10
Lambert	4/12	5/1	8/4	6/23	10/10
Tart Cherry					
Montmorency	4/12	5/2	7/30	7/14	10/01

Note: Actual dates in a given year may vary, plus or minus 10 days from dates shown.

(Provided by Tony Hatch)

Beaver

Beaver County has two major different climatic areas. The first is the Beaver area that is located at about 6000 ft. It is usually a week behind the Minersville/Milford Flat area that is located in Western Beaver county. The Milford Flat is located at about 5000 ft. and usually has more frost free days than the Beaver area. About 1/5 of the ground in Beaver County is irrigated crop ground.

Alfalfa. - Alfalfa is by far the number one crop raised in Beaver County (about 70% of the irrigated ground). Green up for alfalfa would average March 20 - April 1 for the whole county, with the Milford Flat being about one week ahead. Most farmers cut their hay three times a year with a few taking a light 4th crop if we have a long fall. In the Minersville/Milford Flat area, cutting of first crop will range from June 1-15. Second crop will begin from July - July 15 and third crop will go from August 10 - 20. The majority of the farmers graze their alfalfa in the fall from October 15 until December 15. About half of the hay on the flat is put up as hay cubes.

Since tonnage is more important than protein, their first crop would go from June 15 - 25, second from July 20 - August 1, and third crop September 20 - October 10 depending on the frost.

There are a lot of extremes in the Beaver area. The more quality farms concerned about protein (about 30%) would follow the same schedule as the early schedule on the flat. The rest follow about the same schedule as the cubers. The earlier farmers will harvest some fourth crop and most do fall grazing.

The irrigation schedule is about the same county wide with those that flood or use wheel lines watering twice between each crop and once more in the fall with a total of 6 - 7 irrigations. Those who run pivots (about 20%) will cover the field with 1 - 2 inches every week with a total of about 22 - 27 passes in the season. About 10% of farms in alfalfa run out of water after first crop so the fields are pastured after that time.

Small Grains. - Most of the grain raised in the county is barley and oats (5% of irrigated ground) and it varies little throughout the county. Most of the grain is planted from April 1 - May 15 depending on the spring. It's usually irrigated 4 - 5 times. About 3/4 of the grain is cut for silage and the cutting date varies from June 15 - July 30. The other 1/4 is combined from July 30 - August 15.

Corn. - Very little corn is raised in the Beaver area but quite a bit is on the Milford Flat (5% of irrigated ground). They plant May 1 - 15 and usually harvest for silage from September 15 - October 15, depending on the year. They irrigate the corn usually 3 - 4 times a month with a total of 12 - 15 irrigations on the pivots and 6 - 8 times on flood irrigation.

Pasture. - About 20% of the irrigated ground in the county is pasture. About 1/2 of the pasture is cut for hay from July 15 - August 15. The remainder of the pasture is grazed off and on throughout the growing season.

(Provided by Mark Nelson)

Box Elder

In Box Elder county there are approximately 110,000 acres of irrigated land. Most of it is located in the Bear River Valley. Small grains such as barley and wheat are planted in the fall with about 20 percent being planted in the spring, except for oats which is all spring planted. Other areas such as Grouse Creek, Howell, Mantua, Park Valley, and Snowville, have a growing season approximately 3 weeks shorter than the Bear River Valley.

In the Bear River Valley, the irrigation season usually begins May 1st when the canal company turns water to the canals and ends November 1st. In Snowville, most of the irrigation water comes from wells and the irrigation season begins May 1st and ends October 1st. In Park Valley and Grouse Creek, and other areas that depend upon run off water from the mountains for irrigation, the stream flow usually ends the middle of August.

Spring green up of established alfalfa occurs from late March to early April in the Bear River Valley and up to two weeks later in other areas. In east Box Elder farmers usually get four harvests of alfalfa and in some years may get a fifth harvest. Farmers usually harvest their fields the last week of May, second week of July, third week of August, and the first week of October. There are many different types of cropping practices that will vary the dates of harvest. In Howell, Mantua, and Snowville, farmers harvest alfalfa the first week of June, middle of July, and the first week of September. They may get a partial fourth harvest in some years. Grouse Creek and Park Valley usually harvest alfalfa twice. Approximately 60 percent of the fields are grazed by livestock in the fall after the last harvest is completed.

Irrigation on fruit trees in the Perry to Willard area usually starts around June 10th. Water will be withheld from the orchards during the periods of harvest. Harvesting dates for sweet cherries are June 20th, apricots July 5th, tart cherries July 10th, peaches July 20th, and apples the last week of August. With the varieties on the market today, the harvest period usually lasts from 2 to 3 weeks except for apples which the harvest will continue on into the last part of October. Most growers only irrigate tart cherries 2 times following harvest.

(Provided by Tom Reeves)

Cache County

Alfalfa. - Green-up by mid-April or so. The first cutting is from June 5 - 10. There is usually a 35 - 40 day period between cuttings. Those who go for the 4th cutting will cut on a 35 day schedule. There is possibly one or two percent of the alfalfa green chopped in the spring starting around May 15th.

Small Grains. - Wheat is planted from April 1 to May 15 (most first two weeks of April) with heading about June 10 - 15 and harvest starting August 1st and throughout August. Barley is about 10 days earlier at heading and harvest. Oats are usually planted later. Much of the oats are also harvested for hay in mid-July.

Corn. - Planted from May 1 - 10 with tassel around August 1st and harvest for silage September 10 - 15, harvest for grain October 15 - high moisture and harvest November 10 - 15 through dry down.

Pasture. - Beginning growth occurs March 15 - 25; green-up (2 - 3" high) by March 25 - April 1; full cover by April 15 - 20 and begin pasturing livestock about May 1.

These are the main crops being grown in Cache Valley under irrigation. We do have some acreage of Safflower and Canola. Most of this is being planted on dryland.

(Provided by Don Huber)

Carbon County

Alfalfa Hay. - Green-up of established alfalfa usually occurs at the end of April into the first part of May. Three cuttings of hay are harvested, first cutting about the 15th of June, second cutting July 24th and the third cutting when livestock comes off summer range and goes on winter range or in feed lot. Alfalfa is planted from the 1st of April through the first of May.

Farmers irrigate alfalfa hay one to five times depending on available water. Watering varies from farm to farm depending on watering schedule but generally watering will start April 15th, second irrigation on June 20th, third irrigation on July 30th and fourth about the 1st of October. Most irrigation is done with flood type although gated pipe is being used more each year.

Pasture. - Pasture land is usually grazed spring and fall with some being used throughout the summer. Green-up is about the first part of April. Some pasture is used just for grazing with a small percentage being cut for hay.

Corn. - Corn for silage is planted 1st of May and irrigated as soon as possible after planting. Some farmers pre-irrigate corn. The corn is harvested the 1st part of September.

Spring Grain. - Oats are planted as soon as fields can be prepared in the spring usually 1st part of April. Oats are irrigated after planting and again 1st part of May, a third irrigation is applied if needed. The majority of oats are cut for hay with some being combined for grain starting about the 1st of July.

(Provided by Jack Soper)

Dagget County

Dagget County is a high mountain area with a short growing season. Very little land is irrigated, most of the land irrigated is located in the valley surrounding the town of Manila.

Alfalfa. - Alfalfa hay is the major irrigated crop in Dagget County. Generally, two crops are taken. After the last crop, the aftermath is grazed. Alfalfa green-up is toward the end of April. The crops are generally cut on the last of June for first cutting and mid- to late August for the second cutting.

Pasture. - Pastures are mostly composed of native cool-season grasses, with green-up in late April. The more productive and irrigated pastures are cut once a year and grazed after that cutting. The remainder of pasture ground is grazed.

Small Grains and Corn. - No significant acreage of either crop is present in Dagget County.

(Provided by Chad Reid)

Davis County

Davis County is situated between the Great Salt Lake and the Wasatch mountains. Most of the county cropland is along the shore of the Great Salt Lake and does not vary greatly in elevation. All acreages and dates are approximate depending on weather and markets. Field crops are irrigated almost entirely by flood irrigation. A few hundred acres are irrigated by gravity flow sprinklers. (Dates shown are for 1992, which dates are 7 to 10 days earlier than typical).

Alfalfa. - Irrigated alfalfa is grown on 6,600 acres and greens up around April 1. Four cuttings were taken in 1992 - on May 10, July 4, August 8, and October 12. Alfalfa is irrigated 3 - 5 times during the year depending on rainfall, soil type, and management practices. The first irrigation is May 15.

Pasture. - Improved irrigated pasture covers 5,100 acres and greens up March 20 to April 1. Several harvesting practices are followed. Some farmers graze cattle summer on improved pasture with a rest-rotation system. Other farmers cut and bale grass for hay around July 10. Some farmers green crop the pastures in late summer for silage. Water practices vary from 2 - 3 times a summer to weekly watering May 10 through October 1.

Spring Grain. - Spring Grains include wheat, 1,000 acres; and barley, 1,700 acres. These are planted March 20 - April 25. Irrigation is done 3 - 4 times, starting May 10. Full heading occurs June 20. Harvest dates are August 5 - 20 for spring wheat, and July 25 - August 10 for spring barley.

Corn. - Corn is grown on 5, 200 acres and is planted April 3 - May 1. Watering occurs every 6 1/2 days starting May 15 through August 20. Tasseling occurs July 24 - 30. Grain corn is harvested September 25 - October 20, while silage corn is harvested September 10 - 25.

Onions. - Onions are grown on 1,000 acres and are planted March 1 - April 20. Watering starts May 15 - June 1 and is done every 6 1/2 days. Some growers will water every other row and then switch rows the next irrigation turn. Other growers will water every row but not allow the water to soak in excessively. Some growers try to irrigate twice a week in August if water is available. Watering stops August 20 for early varieties, September 1 for main season varieties, and ends September 10 - 15 for late season varieties. Harvest occurs September 10 - October 20. About 20 days are needed after the last irrigation before harvest can begin. This allows time for drying and curing.

Orchards. - Orchards, primarily cherry and peach, are grown on 350 acres. Watering starts April 15 and ends October 1 - 15. Many orchards have on-call pressure irrigation and water on a 10-day interval. Normal cherry harvest dates are June 15 - July 10. Normal peach harvest dates are August 15 - September 15.

(Provided by Shawn Olsen)

Duchesne County

Due to the elevation differences in Duchesne County, four areas will be reported on: Tabiona, Altamont, Duchesne, and Roosevelt - Pleasant Valley.

Tabiona

Alfalfa. - Alfalfa green-up occurs around the 10th of May. They get two cuttings. The first is around the end of June and the second is the end of August. New alfalfa is planted between the middle of May and the first of June.

Pasture. - Pasture shows green-up usually the first of May, but in 1992, green-up was around April 18th. Pastures are cut once during the year, usually on the first of July. Pastures are grazed from the first of October until the snow gets too deep for grazing.

Small Grains. - Small grains are planted the first of May; heading occurs the middle of July and they are harvested the end of August.

Altamont

Alfalfa. - Established fields show green-up the first of May. This area sometimes gets three cuttings of alfalfa depending on the year. First crop is harvested around the end of June, second crop the end of August and third crop, if harvested, around the middle of September. Alfalfa fields are then grazed after the feed has been frozen beginning the end of September. New alfalfa is planted late fall or early spring - around the last of April.

Pasture. - Pastures are showing green-up the first of May and cattle are turned in around the 10th of May; then go to the permits around the first of June. Pastures are cut once for hay about the end of July then grazed again starting the end of September.

Small Grain. - Small grains are planted the first of May. They head around the first of July and are harvested the middle of August.

Duchesne

Alfalfa. - Green-up occurs around the first of May. 1992 was earlier, around the middle of April. Alfalfa is planted between the middle of April and the first of May. Three cuttings of alfalfa are harvested with the first crop being harvested the middle of June, second crop the end of July and third crop the end of August.

Pasture. - Pastures start greening-up around the first to the 10th of May with pastures being cut for hay the middle of June and some cut again the end of August. Little spring grazing takes place; pastures are fall grazed along with the alfalfa fields around the first of October.

Small Grain. - Small grains are planted the middle of April with heading taking place the first of July and harvested the 10th of August.

Corn. - Corn is planted the first to the middle of May. Tasseling occurs the 1st of August and is harvested the middle of September throughout the end of October.

Roosevelt - Pleasant Valley

Alfalfa. - Green-up shows around the middle of April. This area is able to get four cuttings of alfalfa. First crop is harvested the end of May, second crop the first of July, third crop the end of July and fourth crop the first of September. Alfalfa is planted the first to the middle of April.

Small Grain. - Small grains are planted the first to the middle of April. Heading takes place in mid-June and harvest the end of July.

Corn. - Corn is planted the end of April with tasseling occurring the end of July. Harvesting starts the end of September and goes through October.

(Provided by Troy Cooper)

Garfield County

Garfield County has three major agricultural crop areas that differ substantially in plant seasonal development. These areas vary climatically and are broadly defined as Escalante Area, Bryce Valley Area and Panguitch Area. In general, cropland receives the first irrigation with crop green-up. Additional irrigations follow at 14-day intervals using sprinkle irrigation or 21-28 day intervals with flood irrigation. Irrigation continues until fall frost dry-down. Garfield County has about 13,275 acres under sprinkle irrigation and 18,075 acres under flood irrigation. Crop acreage is about: alfalfa 16,900, oats 700, wheat 400, pasture 13,310 and tree fruits 40 acres.

Orchard. - Apples are in full bloom by April 15 (Escalante) and April 25 (Bryce Valley), with the first irrigation by May 1. Harvest starts about October 1 at Escalante and October 10 for Bryce Valley.

Typical crop dates for other crops are given in Appendix E.

(Provided by Verl. B. Matthews)

Iron County

The climate for growing crops in Iron County is somewhat uniform across the county except for one location, the New Castle area where the growing season is somewhat longer. Planting and harvesting dates for most crops are fairly close in the Parowan-Paragonah area, the Cedar Valley and the Beryl area. Because of soil types and farmer disposition, additional crops (such as potatoes) are grown in the Beryl-New Castle area which are not normally grown in the rest of the county.

In most of the county alfalfa begins growth in about mid-April and most farmers are able to get three cuttings. The average yield for Iron County is 4.5 tons. On the other hand, New Castle is normally able to get four cuttings per year with active growth beginning in mid- to late March.

Late spring frosts often cause problems in crops in Iron County, but it is something farmers have learned to deal with and to handle. As an example, the last spring frost in 1987 was June 19th, one of the latest dates of a spring frost in recent years.

Very little pasture land is grown in Iron County in the irrigated areas, but there is a large expanse of rangeland which is leased by ranchers from the Forest Service and BLM. In addition, fairly large acreages of private range are also owned by local farmers and ranchers with the majority being on Cedar Mountain. Pastures usually green-up in mid-March and last until about the end of October, although they are not pastured during this entire time.

Spring grains are fairly important for Iron County farmers but play a much lesser role than other crops. There are very few fall grains that are planted and these are normally harvested for hay with very little being harvested for grain. Planting varies from the middle of March to the end of April for the spring grains and they are normally harvested from the first of July to the first of August.

Potatoes are a very important crop for Iron County with a value of sales at about $5 million dollars. Potatoes are normally planted between the first of April to the end of May and irrigation usually begins about the end of June and ends the first part of September. Yields in the county range from about 230 to about 275 cwt per acre. The 3,500 acres grown in Iron County represents about 60% of Utah's potato area.

(Provided by Allan Edwards)

Juab County

County Overview - Juab County has one main and several smaller crop production areas. The main crop production area is the eastern part of the county, which covers Mona, Nephi and Levan. The central and western part of the county, which includes Callao, Trout Creek, Eureka and Pleasant Valley has limited alfalfa hay meadow hay and small grain production. Due to the differences in the climate, available water, soil conditions and other variables, the western and central part of the county was not included in this survey.

The growing season in the eastern part of the county varies about 7 days with Mona being 3 days earlier than Nephi and Levan being 4 days later than Nephi.

The main crops produced in east Juab County are irrigated and non-irrigated alfalfa hay, spring grains including wheat, barley and oats, non-irrigated winter wheat, corn silage and grain corn and meadow grass hay.

Irrigated Alfalfa Hay. - Planting of irrigated alfalfa hay starts the middle of April. Green-up of established alfalfa fields occurs the middle of April. Most producers will cut their fields three times. The first cutting starts the first week in June, the second cutting starts the middle of July and their third cutting starts the second week in September.

Irrigation takes place three to four times a year. Sixty percent of the irrigating is done by sprinklers and the other 40% is done by flood irrigation. Average yield for irrigated alfalfa hay is 3.5 ton per acre.

Nonirrigated Alfalfa Hay. - Planting of nonirrigated alfalfa hay varies from late February to late March. Green-up of established fields occurs the first of April. Most producers will only cut their alfalfa one time. Cutting starts the last of May. About two out of every five years, some producers will cut a light second crop. Average yield for nonirrigated alfalfa hay is .5 ton per acre.

Irrigated Grains. - Planting of irrigated spring grain starts the middle of March. Heading out usually starts the middle of March. Heading out usually starts the middle of June. Combining starts the middle of August.

Irrigation takes place two times a year. Sixty percent of the irrigating is done by sprinklers and the other 40% is done by flood irrigation. Average yield for irrigated spring grains are: Wheat - 67 bushels per acre; Barley - 72.3 bushels per acre; and Oats - 70 bushels per acre.

Corn. - Planting of corn starts the end of April. Corn tasseling starts the end of July. Harvesting for corn silage starts the middle of September and for grain corn, the first of November.

Irrigation takes place seven to eight times a year. One hundred percent of the irrigating is done by flood irrigation. Average yield for corn silage is 18.3 tons per acre and grain corn is 98 bushel per acre.

Winter Wheat. - Planting of winter wheat starts the first of October. Heading out usually starts the end of May. Combining starts the end of July. Average yield for winter wheat is 27.8 bushels per acre.

Native Pasture. - Green-up of native pasture occurs the middle of April. Most producers will take one cutting of these native pastures. This cutting starts the first of July. After this cutting, the producers will then move their cattle onto the fields. This can vary from mid-July to the end of September. this depends on the type of their pasture rotation schedule. Average yield for native pastures is 1 ton per acre.

(Provided by Jeffrey E. Banks)

Kane County

Kane County has three major agricultural crop areas that differ substantially in plant seasonal development. These areas vary climatically and are broadly defined as Kanab Area, Glendale-Orderville Area and Alton Area. In general, cropland receives the first irrigation with crop green-up. Additional irrigations follow at 14 day intervals using sprinkle irrigation or 21-28 day intervals with flood irrigation. Irrigation patterns are often interrupted with harvesting activities and discontinued after fall frost dry-down. Kane County has about 2,775 acres under sprinkle irrigation and 2,940 acres under flood irrigation Crop acreage is allocated as follows: Alfalfa 2,835, Oats 200, Pasture 2,640 and Tree Fruits 40 acres. Typical crop dates are as follows:

	Kanab	Glendale-Ord	Alton
Alfalfa			
Green-up	Mar 20	Apr 20	May 1
Full Cover (10")	May 1	May 20	Jun 1
Cuttings	Jun 1, Jul 1 Aug 15, Sep 15 Oct 31	Jun 15, Aug 1 Sep 20	Jul 1, Sep 10
Oats			
Planted	Mar 10	Apr 10	Apr 20
Full Cover (10")	May 5	May 25	Jun 5
Harvested	Jul 24	Aug 1	Aug 15
Pasture (Improved)			
Green-up	Mar 10	Apr 10	Apr 20
Full Cover (10")	Apr 15	May 5	May 15
Fruit (Apples)			
First Irrigation	May 1	May 1	May 15
Full Bloom	Apr 5	Apr 25	May 5
Harvest	Sep 15	Oct 1	Oct 10

(Provided by Verl B. Matthews)

Morgan County

Morgan County is small in size and population. The small, agriculture based county, is driven primarily by the mink industry which is labor intense and suffering through a period of poor economic return.

The dairy industry would probably generate the next largest agriculture receipts in the county. There are 12 dairies with five of those dairies having more than 150 cows. Cattle on these 12 dairies consume a very large amount of the feed grown in Morgan County.

Alfalfa. - Alfalfa is grown in Morgan County in two distinct areas. The first area is rolling foothills that have been cleared of sagebrush and scrub oak, and then planted to dry land varieties of alfalfa. South-facing hills green up immediately upon snow melt. This green up is usually grazed by deer after a long hard winter. These dry farm plantings of alfalfa are subject to early frost, and without late spring rains are subject to drought loss. On a good year production is about 2 tons to the acre, with high protein and highly palatability to the cows.

Experience shows that production on dry farms is good about 5 out of 10 years. Frost and drought reduce production, as does encroachment by June grass and such other cheat grasses. About 1 year in 10 will provide a second cut on these dry farms. Fall grazing is usually allowed after October 1 of each year. Cropping usually occurs between June 15th and June 20th of each year. Because of steepness of some dry farms, hay gathering is usually by hand.

The second area of alfalfa growth is in irrigated fields. Green-up of established stands is usually about the 15th of April. Dairies with labor intense operation and bagging systems usually cut about the 10th of June. This early date and quick return of water allowed by bagging gives these dairymen four cuts, at about 30 to 35 day intervals. Smaller operators, with less intense operations usually crop twice--June 20 to July 1 and again August 1 to 10th. The growth after these dates is usually grazed off from September 15 to November 15 each year. Fields are usually planted to new alfalfa in early May, with the majority planted with a cover crop. Early May plantings are subject to late frosts.

Water needs for first cut are usually very small--often one watering or no water is needed before the first cut. Water is delivered primarily by flood irrigation. The second largest amount of water is by gravity flow sprinklers, fed by creeks that dry up in late July to early August. More of these gravity systems are being installed.

Second crop alfalfa is probably the largest water user, with 3 to 4 waterings needed to make crops. Many times one irrigation and a small amount of fall rain will be adequate for third crop alfalfa. The majority of intense farming of alfalfa does not allow cattle to take the aftermath.

Spring Grain. - Grain used for rotation from alfalfa is usually barley--although more farmers are choosing oat hay because of low return on grain and combine costs. Grains are usually planted the last week of April or first week of May. Two or three irrigations are needed in normal years. Oat hay is usually cut the middle of July, with barley harvested the first two weeks of August.

Much of the grain and alfalfa in Morgan is not watered of necessity but because of water turns. Many of these turns are on a 10-day rotation.

Field corn is grown in small acreages in Morgan County. Planting is usually done late May, with watering done about 4 times during the growing season. Corn is usually chopped early October or late September. Most corn is put in bags now instead of open pits. Late frost and early fall frost have damaged crops in recent years. All of the corn is flood irrigated.

(Provided by Randy Sessions)

Rich County

Improved Mountain Meadow Hay

Mountain Meadow Hay. - Improved meadow grasses account for about 20% of the meadow land in Rich county. Much of the improved meadow is planted in Garrison Creeping Meadow Foxtail. Generally, these meadows will begin growing in the spring by around April 25th to May 1st. Cattle graze approximately 2/3 of the meadows until May 15th when they are turned out on BLM grazing allotments. Irrigation generally begins on May 1st and continues until July 15th, or until water is no longer available. About 75% of the meadows are flood irrigated with the remainder being sprinkled. Harvesting begins just after the July 24th holiday and continues for approximately three weeks. Any aftermath is utilized for fall feed for cattle upon their return from grazing allotments after September 15th. Generally, the first 28° frost occurs around August 15-20th, but the grass continues to grow until about September 20th.

Dates vary somewhat for the area on the south end of Bear Lake. Generally, spring green-up occurs about one week earlier and growth is extended about 10 days to two weeks later in the fall. However, management is generally the same as the south end of the county.

High Mountain Native Meadow Hay

Native Meadow Hay. - Native meadow grasses account for approximately 50% of the meadow land in Rich County. Practices and growth progress are similar to the improved meadow above. About 85% of the native meadows are flood irrigated with the remainder being sprinkled.

Alfalfa. - Alfalfa for hay production accounts for about 20% of the crop ground in Rich County. High productivity is difficult due to the extreme climatic conditions which exist and the relatively short growing season compared to other areas of the state. Growth generally begins around the 1st of May, but growth is minimal because of late spring frosts until the middle of June.

Irrigation begins around May 25th to June 1st. Nearly 100% of the alfalfa ground is sprinkled. First crop harvesting begins on July 1st and continues for about two weeks. Second crop is harvested from August 10-20th.

The alfalfa generally goes into dormancy by about September 15-20th. Aftermath is utilized by both sheep and cattle from the middle of October until winter feeding begins in late November or early December.

Similar conditions exist for alfalfa grown on the south end of Bear Lake as were explained for the native and improved meadow hay production.

(Provided by C. Kim Chapman)

San Juan County

There are five areas in San Juan County where crops are being irrigated. These areas are Blanding, Bluff, Monticello, La Sal and Indian Creek. Because of the lower elevation green-up of alfalfa fields takes place in late March and early April for Bluff and Indian Creek. The first cutting of hay occurs around the end of May, with these areas getting four cuttings throughout the season. Irrigated pastures are not cut for hay every year, but are used for grazing each season. Irrigation by sprinkling is up and running by mid-April. In Monticello and La Sal green-up of alfalfa fields does not occur until the end of April or first part of May because of the high elevation. First crop cutting takes place at the end of June with a second crop being cut in August. There are some irrigated pastures and some small grains, but very little. Irrigation is mostly done by sprinkling and begins in mid-May.

Green-up in Blanding usually takes place in mid-April. First cutting of alfalfa usually begins in the first part of June. Blanding can get three crops on very good years. Irrigation is done almost entirely by sprinkling. Some grazing of alfalfa occurs in San Juan County, but mainly at the end of the season following a good freeze.

(Provided by Jim Keyes)

Sanpete County

The county consists of two valleys reflecting somewhat different climates when crops are considered. Gunnison Valley produces alfalfa hay, barley and corn grown for corn silage. Normally this valley has only 6 - 8 inches of rainfall per year and farmers are able to plant small grain in early to mid-March. Alfalfa greens-up around the 1st of April with the first cutting for dairy hay starting May 28th to June 1st. The successive cuttings have been on about 35 day-plus intervals; second crop July 10th, third crop August 25th to September 1st, with some producers cutting a fourth crop about October 1 if the season is long enough. Alfalfa hay producers who are producing hay forage for beef cattle harvest at the late end of these intervals being interested in just the three crops.

Corn is planted in the Gunnison Valley normally starting about April 25th and emerging after May 10th. Harvest of corn silage begins between September 15th and October 1st depending on the first fall frost. There is no corn grown for grain in Sanpete County.

In the Sanpete Valley, rainfall will average about 12" per year. There is more snowfall and the soils are wetter and heavier and are not able to be worked as early as in the Gunnison Valley. Small grains are normally planted in early to late March through April depending when the soil gets dry enough to work.

Alfalfa green-up normally occurs april 10 - 15th with the first cutting starting around June 5 - 15th depending on the purpose of hay. If the hay is harvested for dairy hay the second crop will be cut around July 10 - 15th whereas hay for beef will be cut about 10 days later. Third crop will be cut September 10 - 15th or earlier if a damaging frost occurs. Quite a number of producers will pasture third crop because if often becomes very difficult to get alfalfa dry enough to bale without it becoming very weathered.

Small grains will normally head out in the Gunnison Valley about June 1st. In the Sanpete Valley, heading occurs June 10th or later. Grain harvest starts in the Gunnison Valley about July 15th and in the Sanpete Valley about August 1st. However, probably one-third to one-half of the small grains grown in the Sanpete Valley is harvested for forage and this is cut starting about July 5 - 10th.

(Provided by Gary L. Anderson)

Sevier County

The elevation of the Sevier valley bottom varies only about 200 feet from one end of the county to the other. Consequently temperatures on the bottom do not vary greatly. The slopes and some hillsides will have greater variation in temperatures with south facing slopes being the warmest.

The climate in the valley of Sevier County could almost be considered High Desert. Average annual precipitation is about 8 inches. Nights are cool and days are warm and sunny in the summer. In the winter there are many clear cold nights and comparatively warm days. Because of the desert condition, there are great variations between years in spring and fall weather and it is a little bit difficult to say what is typical. Some generalities about crops follow, but variation has been great enough recently that memory of what is "normal" is a bit hazy. (See Appendix E for typical dates.)

"Green-up" of alfalfa occurs in the warmest areas about the end of March and may be as much as 2 weeks ahead of the coolest areas.

Barley planting begins in March and may extend for 3 or 5 weeks. The first plantings are usually up and green the first or second week of April. A dry open winter can delay this into mid-April if the soil is dry and the farmer can't get ditch water until the end of April.

Corn planting usually begins the first of May and continues for 3 weeks.

(Provided by Clyde Hurst)

Summit County

Due to the differences in mountain valley elevations, the start of the growing season in North Summit (Coalville) is about 2 - 3 weeks earlier than in South Summit (Kamas/Park City).

Alfalfa. - Most established alfalfa fields usually green-up the first part of April throughout most of the county. More farmers are starting to cut their alfalfa fields three times in the lower elevations; usually the middle of June, end of July/first of August and middle of September.

Farmers cutting their fields only twice usually wait until the end of June for their first cutting and the end of August for their second cutting. Most farmers will graze their alfalfa fields after the last cutting, from the first of October and until the first of November. New alfalfa planting usually occurs the last week of May in the North Summit area and the first couple of weeks in June for the South Summit/Park City areas.

Farmers either irrigate their fields by flooding or by sprinkler systems (more are installing sprinkler systems each year) and usually irrigate on the average of 4 - 5 times per growing season. The first alfalfa irrigation usually takes place the middle of May; second, middle of June; third, first of July; fourth, middle of August and fifth is optional depending on season and water supply.

Pasture/Meadow Hay. - Summit County has a lot of pasture land; therefore, it plays an important role with the livestock producers in the county. Green-up usually occurs the first part of April depending on the type of spring we have. Most of the pasture is cut at least once during the summer, usually occurring the end of July or first of August for the North Summit area and the middle of August for the South Summit/Park City areas. Some farmers with improved pastures are starting to cut their pasture twice during the growing season.

Livestock are moved off the summer ranges the first part of October and turned onto the pastures for fall grazing through the first part of November. Livestock are then moved to their winter range or fed baled hay in these same fields throughout the winter.

Irrigation of the pasture land usually occurs mid-May and continues every two-three weeks (depending on water turn) for the entire growing season or until their water supply has run out.

Spring Grain. - Acreage of small grains (barley/oats) grown for grain in Summit County is somewhat limited because of the type of livestock operations that exist here and the availability of combines in the county. Planting usually starts the end of April to the first part of May depending on the area you live in. Emergence occurs around the middle of May with grain heading out the end of June to first part of July again depending on the area. Since combines are busy harvesting grain in the lower valleys during July & August, not many are willing to come until the early part of September to harvest the grain in Summit County. Therefore, harvest usually occurs around the first to mid part of September. Most of the small grain fields are irrigated twice usually mid-June and mid-July.

Oats. - Most of the small grain grown in Summit County is oats and is cut for forage rather than being combined for the grain. Again, this is the result of the lack of combine availability and the importance of forage to the livestock operation. Planting and other dates are the same as for barley, mentioned above. Most farmers cut their oats once, usually the first to middle part of July and then graze off the regrowth. Some farmers will cut their oats twice, cutting it a little earlier than normal and then wait until regrowth heads to cut it again during late summer. Irrigation dates are similar to barley/oats above.

(Provided by Sterling Banks)

Tooele County

Alfalfa Hay/Pasture

Erda-Grantsville is the main and most productive of these areas. Green up occurs in the early part of March with full cover by April 15. Planting of new plots usually occurs in the middle of May to the end of May in this area depending on the moisture. First crop was cut in Grantsville in 1992 on April 28 and in Erda on May 8. The fields are primarily used for hay. Grazing in the spring is not a common practice throughout the area. However, there are some sheep producers and cattle producers that allow limited grazing before first crop. Cutting second crop began on June 18. The latest cutting of second crop was June 22. July 8 was the time winter grain was harvested. Third crop was started on Aug 3 and finished by Aug 24. Some 4th crop hay was cut on Aug 31 with a 5th crop cut on Oct 19. Most of the 4th crop and 5th crop were grazed by livestock because of the shortage of water last year. Some grass hay is cut from the meadows. However, this year due to the water shortage, there was less hay cut and more grazed. There are approximately 180 frost free days allowing 4 or 5 crops of alfalfa hay but there were 231 frost free days this year. Some haylage is cut depending on the weather. All of the hay in this area is irrigated by wheel line or hand-move sprinklers. There is only 1 irrigation required for each crop in Erda. Grantsville will utilize 1.5 irrigations on a normal year to produce their crops.

Rush Valley-Skull Valley area is characterized by 90-120 frost free days. Three crops are raised routinely and grazed early sometimes and always grazed late. Skull Valley is usually two to three weeks behind Erda cutting first crop; approximately May 25. Vernon will cut first crop by June 10th. Each crop will then be cut 30-35 days later. When there is water, some of the land is irrigated by furrow, but most is irrigated by sprinklers. Grass hay is also important, but limited by the lack of water. This hay is routinely cut about the 24th of July then the aftermath is grazed.

Ibapah is characterized by grass pasture only. Some of it is used for grazing only, but the standard practice is limited spring grazing, hay cut by July 25-Aug 1, followed by grazing. There is limited sprinkler irrigation with mostly flood in the meadows.

(Provided by Wade B. Bitner)

Uintah County

Uintah County has many different climate zones that effect cropping practices.

Alfalfa. - Alfalfa is the major crop in Uintah County. Generally, three crops are put up, however, a few producers are trying for four crops by cutting hay at earlier stages of growth, hoping to market hay to dairy producers that require high protein, low ADF hay. Only one of the farmers responded to green-up date and reported green-up on March 15, in Ballard. I believe this would be a good average date for Uintah County with the Jensen area being 7-10 days ahead of Ballard and the Whiterocks are being 7-10 days behind this estimate. In most cases, Alfalfa is not grazed except after the last cutting is taken.

Pasture. - Pasture green-up dates vary from March 1 to April 10. I believe this variability is due to the location and type of pasture. Improved pasture that is cut for hay consists mostly of cool season fescues and wheat grasses which would green-up early, probably March 15 on average. Pastures in low lying areas are typically mostly composed of Saltgrass which is a warm season grass that would not green-up until warm weather occurs toward mid April. Improved pastures are usually cut once and grazed after the first cutting until November in most cases. Native pastures are usually grazed from March until November.

Spring Grains. - Planting dates vary from March 1 to April 15 at the higher locations. Average planting date would be March 1-10, weather permitting. Heading date should average June 1 with grain being ripe from July 20 to August 10 in higher locations. the harvest usually begins the first of August.

Winter Grains. - Very little acreage is devoted to winter grain, some winter barley is planted in the Tridell area. Planting usually occurs in the end of September or early October, Jointing date is usually the first week in May, Heading date is May 20 and Ripe date is usually the last week of July. About 1000 acres of winter Wheat is planted on one farm on a high mountain plateau, however, it is not irrigated.

Corn. - Corn is planted from May 10 to May 20 with grain and silage crops planted at the same time. Tassel date usually occurs the last week of July to the first week of August. Corn is generally ripe the last of September to the first of October. Harvest starts the third week of September for silage with grain harvest starting the middle of October and continuing to the last of November.

These dates come from 1992, which was a week ahead to slightly earlier than normal as compared to the average year.

(Provided by Chad Reid)

Wasatch County

The Heber Valley is the main valley for Wasatch County. there are approximately 2,000 acres around the town of Wallsburg in Round Valley that is lower in elevation and has a couple of weeks longer growing season. Wasatch County has approximately 18,000 acres of irrigated land. (2/3 flood irrigated and 1/3 sprinkler irrigated)

Alfalfa. - Alfalfa is the main crop grown. It greens up earlier on a normal year by April 15, (1992 was approximately two weeks earlier on everything. For this effort I will talk in normal years). Most good farmers get three cuttings, they cut on June 15, July 30 and September 5-10. There are about 10,000 acres of alfalfa grown. Some of the farmers will graze the third crop or at least the growth after the third crop has been harvested. Average yield is 3.5 - 4.0 t/acre. Some areas only have water until 1st of July, others water into September. Irrigation starts approximately May 10th and continues every 15-20 days until the end of the irrigation season.

Pasture. - Pasture is the next most important crop (according to number of acres). There is a wide variation of the kinds of pasture, yields and practices that cause these variations. There are about 6,500 acres of pasture; half of which is cut once as a hay crop and then grazed the rest of the summer. Green up usually occurs the first part of April about two weeks before the alfalfa does. About 1,500 acres of pasture are sub-irrigated and requires little irrigation.

Small Grains (Barley or Oats). - This crop is mostly used just for a successful rotation with alfalfa. There is approximately 1,500 acres grown annually. Oats for hay is becoming a more common practice. The price received for raising barley has not made it very profitable.

(Provided by Val Warnick)

Washington County

Spring Green-up and Bloom Dates

Washington Fields/St. George Area. - This area is our base area. Some areas are earlier and some are later (all dates are for 1992, which were 10 days to 2 weeks earlier than typical).

Alfalfa (4-5 Cuttings). - Green-up starts about February 15th. Most varieties go dormant after the first frost in late November (20th).

Grain. - Planted in the spring, January 20th to March 15th. Cutting time for grain is June 10th to 20th. Some growers will cut or pasture one time during the early season.

Pasture. - Green up is February 15-20th, with dormancy starting around late October to early November. Hurricane area is 7-10 days later; Springdale area is 10-12 days later; Santa Clara area is 3-6 days earlier; Enterprize area is 3-5 weeks later and the New Harmony area is 2-4 weeks later.

Fruit Trees. - Apricots, plums and cherries bloom about February 25th. Peaches bloom about March 5th. Apples and pears bloom about March 20th.

Nut Trees. - Pecans, walnuts and pistachios bloom about April 5th.

(Provided by Adrian Hinton)

Wayne County

Alfalfa fields near Bicknell green-up about the last week of April or first of May. Grain is usually planted April 21st to May 1 and is headed about July 15. Grain is usually cut near September 1 for grain. First cutting of alfalfa is July 1, second cutting is August 25th. In 1992 Grain headed July 1, and alfalfa 1st crop was cut June 15, second cutting occurred August 10.

Near Loa, May 10 is the usual date for alfalfa fields to green-up. However, fields are grazed up to May 1. Grain is planted the last week of April until May 5. A usual starting date for cutting alfalfa is June 25. Most fields are cut after July 4. Grain is cut for silage about August 15. In 1992, the first crop alfalfa was cut June 15.

In the Torrey-Teasdale area the estimated dates could be as much as ten days earlier. The Caineville-Hanksville dates would vary with the year but green-up should occur between March 15 and April 1.

(Provided by Verl Bagley)

Weber County

Weber County has 31,523 acres of irrigated cropland according to the 1987 census. Approximately 7,500 of these acres are in the Ogden Valley. It has an elevation of 5,000 feet with a frost-free period of 105 days. The majority of cropland is in the lower county at an elevation of 4,250 feet and has a frost-free period of 160 days. The valley is generally two weeks behind the lower county in the spring. Vegetable crops, corn, and fall grains aren't generally grown in the valley.

Nearly all irrigation in the lower county is flood. In the Ogden valley, approximately 20% of the cropland is sprinkled.

Alfalfa Hay. - Spring green-up or beginning of significant growth occurs by late March to early April in the lower county and about three weeks later in Ogden valley. Four or five cuttings are taken in the lower county.

Average cutting dates are late May, early July, early August, and mid September. In the Ogden valley they only get two or three cuttings.

Due to spring precipitation variations, an irrigation is applied about half of the time before the first cutting. After each cutting is baled and removed from the field they irrigate again. The number of irrigations per year generally varies from four to six. New alfalfa planting is done in the early spring between March 10th and April 20th, or in the fall between August 15th and September 15th. It is not uncommon to irrigate either before or after planting to provide adequate moisture for seed germination.

Fall Grain. - Winter barley and wheat are planted from September 1st until the snow comes, although it should be in the ground by the 20th of October for best yields. It is irrigated about May 15th and again June 5th and 20th. Harvest usually takes place the end of July.

Spring Grain. - Spring barley, wheat and oats are generally planted between March 10th and April 20th. To avoid yellowing, the first irrigation is withheld until the grain is three inches tall. This is usually the latter part of May. Irrigations continue on a 10 to 14 day interval through July. Harvest occurs in mid August. In the valley, they plant from April 1st through May 10th. Harvest is in late August.

Corn. - There are 4,100 acres of silage corn and 1,100 acres of grain corn grown. They are planted in late April through May 15th. The first irrigation is the first part of June, with future irrigations occurring every 7 to 14 days through the summer. Silage corn is harvested September 5th through the 25th. Grain corn harvest usually starts about September 30th.

Green Beans. - Beans only take nine weeks from planting until harvest. Some growers will get two crops in a season. The spring beans are planted about May 5th. They are irrigated before planting, then watered at a shallow depth once a week for three weeks, starting in June and every five days for the last two weeks. Harvest occurs about July 10th.

Onions. - They are planted from February through March 20th. Irrigations are shallow and frequent. Usually they begin irrigating onions about the end of May and water once a week through mid August. During extremely hot weather, irrigations are moved to every five days. Harvest occurs in early September.

Orchard. - Irrigation begins about May 15th and continues at 7 to 10 day intervals through August. In September, irrigation intervals are lengthened to 12 to 18 days, with a late irrigation being applied in October if substantial fall rains have not occurred.

(Provided by James Barnhill)

APPENDIX E

Crop Growth Dates Used in Determining Seasonal E_t Crop Coefficient Development in Utah

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
BEAVER			
BEAVER			
ALFALFA	Apr 30	May 30	Sep 21
3 cuttings:	Jun 15 Jul 20 Aug 30		
PASTURE	Apr 10	May 15	Sep 25
CORN	May 15	Aug 4	Sep 1
SPRING GRAIN	Mar 30	May 30	Jul 25
TURF	Apr 10	Apr 25	Sep 25
GARDEN	May 15	Jun 25	Sep 5
MILFORD WSMO			
ALFALFA1	Apr 20	May 20	Oct 1
4 cuttings:	Jun 10 Jul 15 Aug 20 Sep 25		
ALFALFA2	Apr 20	May 20	Oct 1
3 cuttings:	Jun 15 Jul 28 Sep 10		
PASTURE	Apr 10	May 10	Oct 5
CORN	May 5	Jul 25	Sep 10
SPRING GRAIN	Mar 25	May 25	Jul 20
TURF	Apr 5	Apr 25	Oct 10
GARDEN	May 5	Jul 5	Sep 5
WAH WAH RANCH			
ALFALFA	Apr 25	May 25	Sep 28
3 cuttings:	Jun 20 Aug 1 Sep 20		
PASTURE	Apr 15	May 15	Oct 1
SPRING GRAIN	Apr 1	Jun 1	Jul 26
TURF	Apr 10	Apr 30	Oct 5
GARDEN	May 10	Jul 20	Sep 10
BOXELDER			
CORINNE			
ALFALFA	Mar 27	May 8	Oct 25
4 cuttings:	May 24 Jul 4 Aug 11 Sep 20		
PASTURE	Mar 31	May 5	Oct 25
OTHER HAY	Apr 1	Jul 16	Sep 30
SPRING GRAIN	Apr 3	Jun 1	Jul 28
CORN	Apr 26	Jul 13	Oct 5
ORCHARD	Apr 18	Jun 4	Oct 20
BEANS	Jun 12	Jul 23	Sep 7
POTATOES	May 12	Jul 12	Sep 28
TURF	Mar 25	Apr 15	Oct 30
GARDEN	Apr 27	Jun 20	Sep 20

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
BOX ELDER CONT.			
GROUSE CREEK			
ALFALFA	Apr 25	May 15	Oct 5
3 cuttings:	Jun 10 Jul 20 Aug 24		
PASTURE	Apr 20	May 15	Oct 5
OTHER HAY	Apr 25	Jul 20	Aug 31
SPRING GRAIN	Apr 22	Jun 20	Aug 15
TURF	Apr 15	May 5	Oct 5
GARDEN	May 20	Aug 1	Sep 20
PARK VALLEY			
ALFALFA	Apr 9	May 15	Oct 20
3 cuttings:	Jun 10 Jul 20 Aug 24		
PASTURE	Apr 4	May 17	Oct 20
OTHER HAY	Apr 4	Jul 20	Sep 15
SPRING GRAIN	Apr 10	Jun 5	Aug 12
TURF	Apr 1	Apr 22	Oct 20
GARDEN	May 9	Jul 24	Sep 25
SNOWVILLE			
ALFALFA	Apr 20	May 15	Oct 10
3 cuttings:	Jun 4 Jul 20 Sep 15		
PASTURE	Apr 10	May 17	Oct 10
OTHER HAY	Apr 4	Jul 20	Sep 15
SPRING GRAIN	Apr 15	Jun 13	Aug 10
TURF	Apr 5	Apr 27	Oct 10
GARDEN	May 9	Jul 24	Sep 20
CACHE			
HARDWARE RANCH			
PASTURE	May 5	Jun 5	Sep 15
OTHER HAY	May 5	Aug 15	Sep 15
TURF	Apr 20	May 10	Sep 20
GARDEN	Jun 15	Aug 10	Sep 1
LOGAN RADIO KVNU			
ALFALFA	Apr 5	May 17	Oct 10
4 cuttings:	Jun 9 Jul 18 Aug 27 Oct 1		
PASTURE	Apr 1	May 20	Oct 15
OTHER HAY	Apr 4	Jul 1	Oct 14
SPRING GRAIN	Apr 13	Jun 15	Aug 10
CORN	May 5	Jul 31	Sep 18
SWEET CORN	May 5	Jul 25	Aug 20

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
CACHE CONT.			
TURF	Mar 25	Apr 20	Oct 20
GARDEN	May 1	Jul 20	Sep 15
LOGAN UTAH ST U			
ALFALFA	Apr 5	May 17	Oct 10
4 cuttings: Jun 9 Jul 18 Aug 27 Oct 1			
PASTURE	Apr 1	May 20	Oct 15
OTHER HAY	Apr 4	Jul 1	Oct 14
SPRING GRAIN	Apr 13	Jun 15	Aug 10
CORN	May 5	Jul 31	Sep 18
SWEET CORN	May 5	Jul 25	Aug 20
TURF	Mar 25	Apr 20	Oct 20
GARDEN	May 1	Jul 20	Sep 15
RICHMOND			
ALFALFA	Apr 14	May 25	Oct 7
4 cuttings: Jun 15 Jul 24 Sep 1 Sep 30			
PASTURE	Apr 10	May 15	Oct 10
OTHER HAY	Apr 15	Jul 12	Oct 5
SPRING GRAIN	Apr 16	Jun 15	Aug 10
CORN	May 5	Jul 28	Sep 16
SWEET CORN	May 12	Aug 1	Aug 31
TURF	Apr 1	Apr 20	Oct 15
GARDEN	May 1	Jul 21	Sep 15
CARBON			
HIAWATHA			
ALFALFA	May 1	Jun 10	Oct 1
2 cuttings: Jul 10 Sep 1			
PASTURE	Apr 25	May 15	Oct 5
SPRING GRAIN	May 1	Jun 28	Aug 28
TURF	Apr 20	May 1	Oct 10
GARDEN	May 20	Aug 10	Sep 10
SCOFIELD DAM			
PASTURE	May 20	Jun 20	Sep 10
OTHER HAY	May 25	Aug 15	Sep 6
TURF	May 20	Jun 10	Sep 15
GARDEN	Jun 15	Aug 10	Sep 2

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
DAGGETT			
FLAMING GORGE			
ALFALFA	Apr 25	Jun 5	Sep 30
3 cuttings: Jun 25 Aug 10 Sep 21			
PASTURE	Apr 16	Jun 1	Sep 30
OTHER HAY	May 10	Jul 24	Sep 5
CORN	May 20	Jun 20	Sep 15
SPRING GRAIN	Apr 20	Jun 18	Aug 5
POTATOES	May 20	Jul 20	Sep 25
TURF	Apr 11	Apr 30	Oct 5
GARDEN	May 10	Jul 31	Sep 15
MANILA			
ALFALFA	Apr 20	Jun 1	Sep 30
2 cuttings: Jul 1 Aug 25			
PASTURE	Apr 10	May 10	Oct 7
OTHER HAY	Apr 15	Aug 5	Sep 30
SPRING GRAIN	Apr 15	Jun 13	Jul 31
TURF	Apr 10	Apr 30	Oct 7
GARDEN	May 5	Jul 20	Sep 15
DAVIS			
FARMINGTON/USU FLD S			
ALFALFA	Mar 25	May 1	Oct 20
4 cuttings: May 27 Jul 1 Aug 3 Sep 10			
PASTURE	Mar 17	Apr 25	Oct 25
SPRING GRAIN	Apr 1	May 30	Jul 30
CORN	Apr 28	Jul 28	Sep 30
PEACHES	Mar 28	Jun 30	Sep 30
ORCHARD	Apr 15	Jul 15	Oct 10
SWEET CORN	May 5	Jul 20	Aug 20
POTATOES	May 1	Jul 1	Sep 25
TURF	Mar 15	Apr 5	Oct 31
GARDEN	Apr 20	Jul 15	Oct 14
DUCHESNE			
ALTAMONT			
ALFALFA	Apr 25	Jun 5	Oct 15
3 cuttings: Jun 25 Aug 10 Sep 21			
PASTURE	Apr 16	Jun 1	Oct 15
OTHER HAY	May 5	Jul 24	Sep 5

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
DUCHESNE CONT.			
CORN	May 20	Jun 20	Sep 15
SPRING GRAIN	Apr 20	Jun 17	Aug 10
POTATOES	May 10	Jul 25	Sep 15
TURF	Apr 12	Apr 30	Oct 20
GARDEN	May 10	Jul 25	Sep 15
DUCHESNE			
ALFALFA	Apr 15	May 16	Oct 20
4 cuttings:	Jun 19 Jul 26	Sep 9 Oct 16	
PASTURE	Apr 10	Jun 1	Oct 20
OTHER HAY	May 1	Jul 20	Sep 15
SPRING GRAIN	Apr 12	Jun 11	Jul 31
CORN	May 15	Jul 25	Sep 20
TURF	Apr 10	Apr 15	Oct 20
GARDEN	May 10	Jul 15	Sep 20
HANNA			
ALFALFA	May 1	May 27	Oct 10
3 cuttings:	Jul 3 Aug 25	Oct 6	
PASTURE	Apr 20	Jun 1	Oct 10
SPRING GRAIN	Apr 25	Jun 23	Aug 20
CORN	May 22	Jul 30	Sep 15
POTATOES	May 20	Jul 30	Sep 30
TURF	Apr 20	May 5	Oct 10
GARDEN	May 10	Jul 20	Sep 15
MYTON			
ALFALFA	Apr 9	May 15	Oct 15
4 cuttings:	Jun 9 Jul 18	Aug 28 Sep 29	
PASTURE	Apr 1	May 1	Sep 15
SPRING GRAIN	Apr 5	Jun 4	Aug 5
CORN	May 6	Jul 20	Sep 25
TURF	Apr 1	Apr 20	Oct 15
GARDEN	Apr 25	Jul 12	Sep 15
NEOLA			
ALFALFA	May 1	Jun 1	Oct 15
3 cuttings:	Jul 1 Aug 20	Oct 6	
PASTURE	Apr 20	Jun 1	Oct 15
SPRING GRAIN	Apr 25	Jun 23	Aug 20
CORN	May 22	Jul 30	Sep 15
POTATOES	May 20	Jul 30	Sep 30
TURF	Apr 15	May 5	Oct 15
GARDEN	May 15	Jul 25	Sep 15

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
EMERY			
CASTLE DALE			
ALFALFA	Apr 25	May 22	Oct 10
3 cuttings:	Jun 16 Jul 25	Sep 5	
PASTURE	Apr 10	Jun 5	Oct 20
OTHER HAY	May 10	Jul 15	Oct 5
SPRING GRAIN	Apr 15	Jun 10	Aug 5
CORN	May 25	Aug 1	Sep 20
TURF	Apr 10	Apr 25	Oct 20
GARDEN	May 5	Jul 30	Oct 10
FERRON			
ALFALFA	Apr 25	May 22	Oct 10
3 cuttings:	Jun 16 Jul 25	Sep 5	
PASTURE	Apr 10	Jun 5	Oct 20
OTHER HAY	May 10	Jul 15	Oct 5
SPRING GRAIN	Apr 15	Jun 10	Aug 5
CORN	May 25	Aug 1	Sep 20
TURF	Apr 10	Apr 25	Oct 20
GARDEN	May 5	Jul 30	Oct 10
GREEN RIVER AVN			
ALFALFA	Apr 5	May 5	Oct 25
4 cuttings:	Jun 5 Jul 15	Aug 28 Sep 25	
PASTURE	Mar 25	Apr 25	Oct 31
SPRING GRAIN	Mar 28	May 25	Jul 25
CORN	May 5	Jul 20	Sep 15
ORCHARD	Apr 18	Jul 15	Oct 12
TURF	Mar 20	Apr 15	Oct 31
GARDEN	May 1	Jul 15	Oct 15
GARFIELD			
BOULDER			
ALFALFA	Apr 15	May 25	Oct 5
3 cuttings:	Jun 30 Aug 12	Sep 15	
PASTURE	Apr 10	May 20	Oct 8
OTHER HAY	Apr 15	Jul 25	Sep 25
SPRING GRAIN	Apr 15	Jun 10	Aug 12
TURF	Apr 8	Apr 22	Oct 10
GARDEN	May 1	Jun 20	Oct 5

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
GARFIELD CONT.			
BRYCE CANYON NP HQ			
ALFALFA	May 7	Jun 15	Sep 20
2 cuttings: Jul 20 Sep 1			
PASTURE	May 1	Jun 10	Sep 20
OTHER HAY	May 7	Aug 25	Sep 15
SPRING GRAIN	May 1	Jun 30	Aug 26
TURF	Apr 28	May 10	Sep 25
GARDEN	Jun 1	Jul 25	Sep 15
ESCALANTE			
ALFALFA	Apr 5	May 15	Oct 15
4 cuttings: Jun 15 Jul 18 Sep 2 Oct 12			
PASTURE	Mar 25	Apr 25	Oct 15
SPRING GRAIN	Apr 1	May 28	Jul 27
TURF	Mar 20	Apr 10	Oct 20
GARDEN	May 1	Jun 20	Oct 10
PANGUITCH			
ALFALFA	May 2	Jun 9	Sep 29
2 cuttings: Jul 10 Sep 5			
PASTURE	Apr 29	Jun 10	Sep 30
OTHER HAY	May 1	Sep 1	Sep 28
SPRING GRAIN	May 1	Jun 30	Aug 26
TURF	Apr 25	May 5	Oct 5
GARDEN	Jun 1	Jul 25	Sep 15
TROPIC			
ALFALFA	Apr 20	May 20	Sep 15
3 cuttings: Jun 20 Aug 1 Sep 15			
PASTURE	Apr 10	Jun 5	Sep 30
SPRING GRAIN	Apr 15	Jun 13	Aug 10
TURF	Apr 5	May 5	Sep 30
GARDEN	May 25	Jul 1	Sep 20
GRAND			
MOAB 4 NW			
ALFALFA1	Mar 15	May 1	Oct 31
5 cuttings: May 30 Jul 1 Aug 2 Sep 8 Oct 20			
ALFALFA2	Mar 10	May 5	Oct 30
4 cuttings: Jun 15 Jul 20 Sep 1 Oct 20			
PASTURE	Feb 25	Apr 25	Nov 10
SPRING GRAIN	Mar 28	May 26	Jul 25

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
GRAND CONT.			
CORN	May 20	Jul 25	Oct 10
SWEET CORN	May 15	Jun 29	Aug 10
ORCHARD	Apr 11	Jun 15	Oct 20
TURF	Feb 25	Mar 15	Nov 10
GARDEN	Apr 25	Jun 29	Oct 20
THOMPSON			
ALFALFA	Apr 8	May 15	Oct 20
4 cuttings: Jun 10 Jul 25 Sep 8 Oct 15			
PASTURE	Apr 1	Apr 30	Oct 25
SPRING GRAIN	Apr 5	May 30	Jul 30
ORCHARD	Apr 30	Jul 20	Oct 15
TURF	Apr 1	Apr 10	Oct 25
GARDEN	May 1	Jul 25	Oct 15
IRON			
CEDAR CITY FAA AP			
ALFALFA	Apr 10	May 20	Oct 8
3 cuttings: Jun 10 Jul 21 Sep 5			
PASTURE	Apr 1	May 5	Oct 15
SPRING GRAIN	Apr 5	Jun 3	Jul 31
CORN	May 15	Jul 28	Sep 10
TURF	Mar 25	Apr 10	Oct 20
GARDEN	May 5	Jul 15	Sep 20
ENTERPRISE / BERYL J			
ALFALFA	Apr 15	May 20	Oct 6
3 cuttings: Jun 15 Jul 29 Sep 13			
PASTURE	Apr 5	May 23	Oct 11
SPRING GRAIN	Apr 1	May 31	Jul 28
POTATOES	May 15	Jul 15	Sep 20
CORN	May 15	Jul 28	Sep 10
TURF	Apr 1	Apr 20	Oct 15
GARDEN	May 5	Jul 15	Sep 20
MODENA			
ALFALFA	Apr 10	May 15	Oct 10
3 cuttings: Jun 10 Jul 25 Sep 20			
PASTURE	Apr 1	May 19	Oct 15
SPRING GRAIN	Mar 27	May 23	Jul 23
POTATOES	May 10	Jul 12	Sep 23
CORN	May 10	Jul 23	Sep 14

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
IRON CONT.			
TURF	Mar 26	Apr 15	Oct 18
GARDEN	May 1	Jul 10	Sep 23
PAROWAN POWER PLANT			
ALFALFA	Apr 7	May 18	Oct 8
3 cuttings: Jun 8 Jul 20 Sep 5			
PASTURE	Mar 29	May 3	Oct 15
SPRING GRAIN	Apr 2	Jun 1	Jul 31
CORN	May 12	Jul 26	Sep 10
TURF	Mar 22	Apr 8	Oct 20
GARDEN	May 2	Jul 13	Sep 20
JUAB			
FISH SPRINGS REFUGE			
ALFALFA	Apr 1	May 15	Oct 20
3 cuttings: Jun 7 Jul 20 Sep 25			
PASTURE	Apr 15	Jun 5	Sep 30
OTHER HAY	Apr 15	Jul 15	Sep 30
SPRING GRAIN	Mar 20	May 20	Jul 18
CORN	May 10	Jul 25	Oct 1
TURF	Mar 20	Apr 10	Oct 20
LEVAN			
ALFALFA	Apr 25	May 20	Oct 12
3 cuttings: Jun 12 Jul 22 Sep 24			
PASTURE	Apr 15	May 15	Oct 15
SPRING GRAIN	Apr 10	Jun 5	Jul 31
CORN	May 10	Jul 31	Sep 26
ORCHARD	Apr 15	Jul 5	Oct 10
TURF	Apr 10	Apr 30	Oct 15
GARDEN	May 5	Jul 20	Sep 27
NEPHI			
ALFALFA	Apr 20	May 11	Oct 15
3 cuttings: Jun 5 Jul 20 Sep 20			
PASTURE	Apr 15	Jun 5	Oct 15
OTHER HAY	Apr 15	Jul 15	Sep 30
SPRING GRAIN	Apr 15	Jun 10	Aug 5
CORN	May 10	Jul 25	Sep 30
TURF	Apr 10	Apr 30	Oct 20
GARDEN	May 5	Jul 20	Sep 30

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
JUAB CONT.			
PARTOUN			
ALFALFA	Apr 25	May 1	Sep 30
3 cuttings: Jun 15 Jul 30 Sep 1			
PASTURE	Apr 15	May 25	Oct 5
OTHER HAY	Apr 25	Jul 24	Sep 30
SPRING GRAIN	Apr 15	Jun 10	Aug 5
CORN	May 15	Jul 25	Sep 20
TURF	Apr 10	Apr 30	Oct 10
KANE			
ALTON			
ALFALFA	May 1	Jun 1	Sep 10
2 cuttings: Jul 1 Sep 10			
PASTURE	Apr 20	May 17	Sep 25
OTHER HAY	Apr 30	Aug 1	Sep 15
SPRING GRAIN	Apr 20	Jun 18	Aug 15
TURF	Apr 15	May 5	Sep 30
GARDEN	Jun 1	Jul 31	Sep 1
KANAB			
ALFALFA	Mar 20	May 4	Oct 30
5 cuttings: May 29 Jul 7 Aug 23 Sep 24 Oct 18			
PASTURE	Mar 10	Apr 15	Oct 30
OTHER HAY	Mar 10	Jul 5	Oct 15
SPRING GRAIN	Mar 15	May 15	Jul 12
TURF	Mar 10	Apr 5	Nov 5
GARDEN	May 1	Jul 5	Oct 15
ORDERVILLE			
ALFALFA	Apr 20	May 20	Sep 30
3 cuttings: Jun 15 Aug 1 Sep 15			
PASTURE	Apr 10	May 5	Sep 30
OTHER HAY	Apr 10	Jul 25	Sep 24
SPRING GRAIN	Apr 15	Jun 10	Aug 10
TURF	Apr 10	May 5	Oct 5
GARDEN	May 15	Jul 20	Sep 15

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
MILLARD			
BLACK ROCK			
ALFALFA	Apr 20	May 20	Oct 1
4 cuttings:	Jun 1 Jul 5	Aug 10 Sep 15	
PASTURE	Apr 10	May 10	Oct 5
SPRING GRAIN	Apr 10	Jun 7	Jul 31
CORN	May 5	Jul 25	Sep 10
TURF	Apr 5	Apr 28	Oct 10
GARDEN	May 5	Jul 15	Sep 5
DELTA			
ALFALFA	Apr 5	May 4	Oct 12
4 cuttings:	May 28 Jul 8	Aug 17 Sep 26	
PASTURE	Mar 25	Apr 27	Oct 10
OTHER HAY	Apr 1	Jul 15	Oct 5
SPRING GRAIN	Mar 25	May 25	Jul 22
CORN	May 10	Jul 31	Sep 26
POTATOES	May 10	Jul 15	Oct 9
ORCHARD	May 5	Jul 10	Oct 15
TURF	Mar 20	Apr 10	Oct 15
GARDEN	May 5	Jul 15	Sep 27
DESERET			
ALFALFA	Apr 10	May 10	Oct 12
4 cuttings:	Jun 5 Jul 16	Aug 25 Sep 30	
PASTURE	Apr 1	Apr 27	Oct 10
OTHER HAY	Apr 10	Jul 15	Oct 5
SPRING GRAIN	Apr 1	May 30	Jul 25
CORN	May 15	Jul 31	Sep 26
POTATOES	May 15	Jul 20	Oct 9
ORCHARD	May 5	Jul 10	Oct 15
TURF	Apr 1	Apr 15	Oct 15
GARDEN	May 10	Jul 15	Sep 27
FILLMORE			
ALFALFA	Apr 4	May 1	Oct 15
4 cuttings:	May 27 Jul 7	Aug 14 Sep 22	
PASTURE	Mar 25	Apr 27	Oct 15
OTHER HAY	Apr 1	Jul 15	Oct 7
SPRING GRAIN	Mar 25	May 25	Jul 22
CORN	May 10	Jul 25	Sep 26
POTATOES	May 10	Jul 15	Oct 10
ORCHARD	May 5	Jul 10	Oct 15
TURF	Mar 25	Apr 15	Oct 20
GARDEN	May 5	Jul 15	Sep 27

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
MILLARD CONT.			
GARRISON			
ALFALFA	Apr 20	May 20	Oct 5
3 cuttings:	Jun 10 Jul 30	Sep 22	
PASTURE	Apr 15	May 7	Oct 10
OTHER HAY	Apr 20	Jul 25	Oct 5
SPRING GRAIN	Apr 15	Jun 10	Aug 1
CORN	May 20	Jul 25	Sep 15
ORCHARD	May 10	Jul 15	Sep 30
TURF	Apr 10	May 1	Oct 10
GARDEN	May 15	Jul 15	Sep 20
OAK CITY			
ALFALFA	Apr 4	May 1	Oct 15
4 cuttings:	May 28 Jul 8	Aug 17 Sep 26	
PASTURE	Mar 25	Apr 27	Oct 10
OTHER HAY	Apr 1	Jul 15	Oct 5
SPRING GRAIN	Mar 25	May 25	Jul 22
CORN	May 10	Jul 31	Sep 26
POTATOES	May 10	Jul 15	Oct 10
ORCHARD	May 5	Jul 10	Oct 15
TURF	Mar 25	Apr 15	Oct 20
GARDEN	May 5	Jul 15	Sep 27
SCIPIO			
ALFALFA	Apr 25	May 25	Sep 28
3 cuttings:	Jun 15 Jul 30	Sep 25	
PASTURE	Apr 22	May 7	Sep 30
OTHER HAY	Apr 22	Jul 15	Sep 28
SPRING GRAIN	Apr 20	Jun 15	Aug 12
CORN	May 22	Jul 28	Sep 20
ORCHARD	May 15	Jul 20	Sep 30
TURF	Apr 20	May 10	Sep 30
GARDEN	May 15	Jul 20	Sep 15
MORGAN			
MORGAN			
ALFALFA	Apr 25	May 20	Sep 30
3 cuttings:	Jun 15 Aug 1	Sep 15	
PASTURE	Apr 15	Jun 5	Oct 5
OTHER HAY	Apr 20	Jul 15	Sep 25
SPRING GRAIN	Apr 20	Jun 15	Aug 20
CORN	May 20	Jul 25	Sep 25
TURF	Apr 15	May 5	Oct 15
GARDEN	May 25	Jul 25	Sep 15

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
PIUTE			
CIRCLEVILLE			
ALFALFA	May 2	Jun 9	Sep 29
2 cuttings: Jul 10 Sep 5			
PASTURE	Apr 29	Jun 10	Sep 25
OTHER HAY	May 1	Aug 15	Sep 25
SPRING GRAIN	May 4	Jul 5	Aug 25
TURF	Apr 25	May 15	Sep 30
GARDEN	Jun 1	Jul 30	Sep 15
RICH			
LAKETOWN			
ALFALFA	May 1	Jun 10	Oct 10
3 cuttings: Jul 1 Aug 10 Sep 15			
PASTURE	Apr 25	May 26	Oct 15
OTHER HAY	May 1	Aug 1	Oct 10
SPRING GRAIN	Apr 25	Jun 25	Aug 20
ORCHARD	May 25	Jul 30	Oct 1
TURF	Apr 25	May 15	Oct 10
GARDEN	May 25	Jul 25	Sep 1
WOODRUFF			
ALFALFA	May 15	Jun 20	Sep 20
2 cuttings: Jul 10 Aug 20			
PASTURE	May 5	Jun 1	Sep 30
OTHER HAY	May 15	Aug 15	Sep 20
SPRING GRAIN	May 15	Jul 15	Sep 10
TURF	May 5	May 25	Sep 30
GARDEN	Jun 1	Jul 31	Sep 1
SALTLAKE			
SILVER LAKE BRIGHTON			
PASTURE	May 20	Jul 5	Sep 10
OTHER HAY	Jun 1	Aug 15	Sep 1
TURF	May 15	Jun 14	Sep 15
COTTONWOOD WEIR			
ALFALFA	Apr 01	May 02	Oct 27
5 cuttings: May 23 Jun 21 Jul 20 Aug 18 Oct 1			
PASTURE	Mar 22	Apr 20	Oct 30
SPRING GRAIN	Mar 25	Jun 01	Jul 28

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SALT LAKE CONT.			
CORN	Apr 23	Jul 20	Oct 1
ORCHARD	Apr 7	Jun 25	Oct 10
TURF	Mar 20	Apr 10	Oct 30
GARDEN	Apr 15	Jul 01	Oct 5
GARFIELD			
ALFALFA	Apr 01	May 02	Oct 27
5 cuttings: May 23 Jun 21 Jul 20 Aug 18 Oct 1			
PASTURE	Mar 22	Apr 20	Oct 30
SPRING GRAIN	Mar 25	Jun 01	Jul 28
CORN	Apr 23	Jul 20	Oct 1
ORCHARD	Apr 7	Jun 25	Oct 10
TURF	Mar 20	Apr 10	Oct 30
GARDEN	Apr 15	Jul 01	Oct 5
MOUNTAIN DELL DAM			
ALFALFA	Apr 25	May 30	Sep 25
2 cuttings: Jul 5 Aug 20			
PASTURE	Apr 20	May 20	Sep 30
OTHER HAY	Apr 26	Jul 25	Sep 20
SPRING GRAIN	Apr 25	Jun 30	Aug 31
TURF	Apr 10	Apr 30	Oct 5
SALTAIR SALT PLANT			
ALFALFA	Apr 01	May 02	Oct 27
5 cuttings: May 23 Jun 21 Jul 20 Aug 18 Oct 1			
PASTURE	Mar 22	Apr 20	Oct 30
SPRING GRAIN	Mar 25	Jun 01	Jul 28
CORN	Apr 23	Jul 20	Oct 1
POTATOES	Apr 27	Jul 10	Oct 5
ORCHARD	Apr 7	Jun 25	Oct 10
BEANS	May 11	Jun 28	Sep 5
TURF	Mar 23	Apr 15	Oct 30
GARDEN	Apr 15	Jul 1	Oct 10
SALT LAKE CITY NWSFO			
ALFALFA	Apr 01	May 02	Oct 27
5 cuttings: May 23 Jun 21 Jul 20 Aug 18 Oct 1			
PASTURE	Mar 22	Apr 20	Oct 30
SPRING GRAIN	Mar 25	Jun 01	Jul 28
CORN	Apr 23	Jul 20	Oct 1
POTATOES	Apr 27	Jul 10	Oct 5
ORCHARD	Apr 7	Jun 25	Oct 10
BEANS	May 11	Jun 28	Sep 5

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SALT LAKE CONT.			
TURF	Mar 23	Apr 15	Oct 30
GARDEN	Apr 15	Jul 1	Oct 10
UNIVERSITY OF UTAH			
ALFALFA	Apr 01	May 02	Oct 27
5 cuttings:	May 23 Jun 21 Jul 20 Aug 18 Oct 1		
PASTURE	Mar 22	Apr 20	Oct 30
SPRING GRAIN	Mar 25	Jun 01	Jul 28
CORN	Apr 23	Jul 20	Oct 1
POTATOES	Apr 27	Jul 10	Oct 5
ORCHARD	Apr 7	Jun 25	Oct 10
BEANS	May 11	Jun 28	Sep 5
TURF	Mar 20	Apr 10	Oct 30
GARDEN	Apr 15	Jul 01	Oct 5
SANJUAN			
BLANDING			
ALFALFA	Apr 1	May 8	Oct 15
3 cuttings:	Jun 10 Jul 25 Sep 10		
PASTURE	Mar 25	May 5	Oct 20
SPRING GRAIN	Apr 1	May 30	Jul 29
TURF	Mar 25	Apr 15	Oct 20
GARDEN	May 1	Jul 15	Sep 20
BLUFF			
ALFALFA	Mar 25	May 5	Oct 20
4 cuttings:	Jun 1 Jul 10 Aug 15 Sep 25		
PASTURE	Mar 18	Apr 25	Oct 25
SPRING GRAIN	Mar 23	May 25	Jul 20
CORN	May 15	Jul 25	Sep 25
TURF	Mar 18	Apr 5	Oct 25
GARDEN	Apr 25	Jul 15	Sep 25
CEDAR POINT			
ALFALFA	Apr 12	May 20	Oct 5
3 cuttings:	Jun 15 Aug 1 Sep 20		
PASTURE	Apr 1	May 20	Oct 15
SPRING GRAIN	Apr 10	Jun 10	Aug 10
TURF	Apr 1	Apr 21	Oct 15
GARDEN	May 10	Jul 25	Sep 30

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SAN JUAN CONT.			
HOVENWEEP N M			
ALFALFA	Apr 1	May 10	Oct 15
4 cuttings:	Jun 5 Jul 15 Aug 20 Sep 30		
PASTURE	Mar 25	May 5	Oct 20
SPRING GRAIN	Mar 27	May 26	Jul 24
CORN	May 20	Jul 30	Sep 30
TURF	Mar 25	Apr 15	Oct 20
GARDEN	May 1	Jul 15	Sep 25
MEXICAN HAT			
ALFALFA	Mar 18	May 1	Oct 28
4 cuttings:	May 25 Jul 1 Aug 12 Sep 25		
PASTURE	Mar 10	Apr 15	Oct 30
SPRING GRAIN	Mar 22	May 22	Jul 20
TURF	Mar 5	Apr 15	Oct 30
GARDEN	Apr 20	Jul 10	Sep 30
MONTICELLO			
ALFALFA	Apr 15	May 25	Oct 2
3 cuttings:	Jun 21 Jul 30 Sep 15		
PASTURE	Apr 5	May 15	Oct 8
SPRING GRAIN	Apr 20	Jun 18	Aug 15
BEANS	May 15	Jul 5	Sep 20
TURF	Apr 5	Apr 25	Oct 5
GARDEN	May 10	Jul 28	Sep 15
SANPETE			
EPHRAIM SORENSENS FI			
ALFALFA	Apr 15	May 15	Oct 10
3 cuttings:	Jun 7 Jul 21 Sep 10		
PASTURE	Apr 6	May 10	Oct 10
OTHER HAY	Apr 17	Jul 5	Oct 10
SPRING GRAIN	Apr 1	May 30	Jul 28
CORN	May 15	Jul 30	Sep 23
TURF	Apr 6	Apr 25	Oct 20
GARDEN	May 10	Jul 30	Sep 20
GUNNISON			
ALFALFA1	Apr 24	May 25	Oct 5
4 cuttings:	Jun 13 Jul 15 Aug 25 Sep 25		
ALFALFA2	Apr 24	May 25	Oct 5
3 cuttings:	Jun 25 Aug 10 Sep 25		

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SANPETE CONT.			
PASTURE	Apr 20	May 12	Oct 10
OTHER HAY	Apr 25	Jul 1	Sep 30
SPRING GRAIN	Apr 7	Jun 4	Jul 31
CORN	May 20	Aug 1	Sep 28
TURF	Apr 15	Apr 20	Oct 10
GARDEN	May 15	Jul 25	Sep 20
MANTI			
ALFALFA	Apr 15	May 15	Oct 10
3 cuttings:	Jun 7 Jul 21	Sep 10	
PASTURE	Apr 6	May 10	Oct 10
SPRING GRAIN	Apr 1	May 30	Jul 28
OTHER HAY	Apr 17	Jul 5	Oct 10
CORN	May 15	Jul 30	Sep 23
TURF	Apr 6	Apr 30	Oct 15
GARDEN	May 10	Jul 30	Sep 20
MORONI			
ALFALFA	Apr 15	May 15	Oct 10
3 cuttings:	Jun 7 Jul 21	Sep 10	
PASTURE	Apr 6	May 10	Oct 10
SPRING GRAIN	Apr 1	May 30	Jul 28
OTHER HAY	Apr 17	Jul 5	Oct 10
CORN	May 15	Jul 30	Sep 23
TURF	Apr 6	Apr 30	Oct 15
GARDEN	May 10	Jul 30	Sep 20
SEVIER			
KOOSHAREM			
ALFALFA	May 10	Jun 15	Sep 25
2 cuttings:	Jul 10 Aug 25		
PASTURE	May 1	May 30	Sep 30
OTHER HAY	May 10	Jul 25	Sep 20
SPRING GRAIN	May 15	Jul 25	Sep 15
TURF	Apr 25	May 15	Sep 30
GARDEN	May 25	Jul 25	Aug 31
RICHFIELD RADIO KSVC			
ALFALFA1	Apr 18	May 18	Oct 5
4 cuttings:	Jun 2 Jul 8	Aug 10 Sep 20	
ALFALFA2	Apr 18	May 18	Oct 5
3 cuttings:	Jun 12 Jul 25	Sep 15	

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SEVIER CONT.			
PASTURE	Apr 8	May 12	Oct 5
SPRING GRAIN	Apr 3	Jun 1	Jul 30
CORN	May 15	Aug 1	Sep 25
TURF	Apr 7	Apr 25	Oct 15
GARDEN	May 15	Jul 30	Sep 20
SALINA			
ALFALFA1	Apr 22	May 20	Oct 5
4 cuttings:	Jun 8 Jul 13	Aug 20 Sep 27	
ALFALFA2	Apr 25	May 25	Oct 5
3 cuttings:	Jun 17 Jul 30	Sep 20	
PASTURE	Apr 20	May 10	Oct 10
SPRING GRAIN	Apr 5	Jun 3	Jul 31
CORN	May 18	Aug 5	Sep 28
TURF	Apr 15	May 5	Oct 10
GARDEN	May 15	Jul 31	Sep 20
SUMMIT			
COALVILLE			
ALFALFA	Apr 27	May 25	Sep 30
3 cuttings:	Jun 18 Aug 2	Sep 15	
PASTURE	Apr 20	May 30	Sep 30
OTHER HAY	Apr 20	Jul 25	Sep 30
SPRING GRAIN	Apr 25	Jun 30	Aug 30
TURF	Apr 10	May 1	Oct 10
ECHO DAM			
ALFALFA	Apr 27	May 25	Sep 30
3 cuttings:	Jun 18 Aug 2	Sep 15	
PASTURE	Apr 20	May 30	Sep 30
OTHER HAY	Apr 20	Jul 25	Sep 30
SPRING GRAIN	Apr 25	Jun 30	Aug 30
TURF	Apr 10	May 1	Oct 5
KAMAS			
ALFALFA	May 5	Jun 9	Sep 15
2 cuttings:	Jul 10 Aug 30		
PASTURE	Apr 25	May 25	Sep 20
OTHER HAY	May 2	Jul 25	Sep 15
SPRING GRAIN	May 8	Jul 10	Sep 10
TURF	Apr 20	May 11	Sep 30

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
SUMMIT CONT.			
PARK CITY RADIO			
ALFALFA	May 1	Jun 5	Sep 25
2 cuttings: Jul 5 Aug 25			
PASTURE	Apr 25	May 25	Sep 30
OTHER HAY	May 2	Jul 25	Sep 15
SPRING GRAIN	May 1	Jul 5	Sep 10
TURF	Apr 20	May 10	Sep 30
WANSHIP DAM			
ALFALFA	Apr 27	May 25	Sep 30
3 cuttings: Jun 18 Aug 2 Sep 15			
PASTURE	Apr 20	May 30	Sep 30
OTHER HAY	Apr 20	Jul 25	Sep 30
SPRING GRAIN	Apr 25	Jun 30	Aug 30
TURF	Apr 10	May 1	Oct 5
TOOELE			
DUGWAY			
ALFALFA	Apr 10	May 10	Oct 10
3 cuttings: Jun 1 Jul 15 Sep 10			
PASTURE	Apr 5	May 15	Oct 15
OTHER HAY	Apr 10	Jul 20	Oct 1
SPRING GRAIN	Apr 5	Jun 3	Aug 2
CORN	May 10	Sep 5	Sep 30
TURF	Apr 5	Apr 25	Oct 15
IBAPAH			
ALFALFA	May 10	Jun 15	Sep 15
2 cuttings: Jul 4 Sep 1			
PASTURE	May 5	Jun 10	Sep 25
OTHER HAY	May 10	Jul 28	Sep 20
SPRING GRAIN	May 5	Jun 25	Sep 5
TURF	May 1	May 20	Sep 30
TOOELE			
ALFALFA	Apr 1	May 1	Oct 20
4 cuttings: May 25 Jul 7 Aug 20 Sep 30			
PASTURE	Mar 20	Apr 25	Oct 20
OTHER HAY	Apr 1	Jul 20	Oct 10
SPRING GRAIN	Mar 25	May 23	Jul 22
CORN	May 10	Aug 5	Sep 30
SWEET CORN	May 15	Jul 25	Sep 5

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
TOOELE CONT.			
ORCHARD	Apr 25	Jul 20	Oct 15
TURF	Mar 21	Apr 15	Oct 20
GARDEN	May 1	Jul 25	Sep 15
VERNON			
ALFALFA	Apr 20	May 20	Sep 30
3 cuttings: Jun 25 Aug 7 Sep 21			
PASTURE	Apr 10	May 20	Oct 5
OTHER HAY	Apr 20	Jul 30	Sep 30
SPRING GRAIN	Apr 10	Jun 8	Aug 8
TURF	Apr 5	Apr 25	Oct 10
GARDEN	May 15	Aug 5	Sep 20
WENDOVER AUTOB			
ALFALFA	Mar 20	Apr 25	Oct 25
4 cuttings: May 25 Jul 7 Aug 20 Sep 30			
OTHER HAY	Mar 25	Jul 24	Sep 30
PASTURE	Mar 18	Apr 20	Oct 25
SPRING GRAIN	Mar 20	May 17	Jul 15
TURF	Mar 15	Apr 5	Oct 30
UINTAH			
DINOSAUR QUARRY AREA			
ALFALFA	Apr 3	May 16	Oct 20
4 cuttings: Jun 5 Jul 20 Sep 3 Oct 21			
PASTURE	Apr 3	May 10	Oct 20
OTHER HAY	Apr 3	Jul 31	Oct 15
SPRING GRAIN	Apr 1	May 30	Jul 29
CORN	May 1	Jul 1	Sep 25
TURF	Mar 25	Apr 15	Oct 31
GARDEN	Apr 20	Jul 5	Sep 20
FORT DUCHESNE			
ALFALFA	Apr 15	May 25	Oct 10
3 cuttings: Jun 20 Jul 31 Sep 15			
PASTURE	Apr 5	May 28	Oct 20
OTHER HAY	Apr 21	Jul 25	Oct 10
SPRING GRAIN	Apr 15	Jun 13	Aug 12
CORN	May 10	Jul 30	Sep 20
ORCHARD	May 15	Jul 20	Sep 25
TURF	Apr 5	Apr 25	Oct 25
GARDEN	May 15	Jul 30	Sep 25

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
UINTAH CONT.			
JENSEN			
ALFALFA	Apr 3	May 16	Oct 15
4 cuttings: Jun 5 Jul 20 Sep 3 Oct 21			
PASTURE	Apr 5	May 21	Oct 20
OTHER HAY	Apr 21	Jul 25	Oct 15
SPRING GRAIN	Apr 5	Jun 3	Aug 2
CORN	May 1	Jun 21	Sep 20
TURF	Apr 1	Apr 20	Oct 20
GARDEN	Apr 20	Jul 1	Sep 15
OURAY 4 NE			
ALFALFA	Apr 3	May 16	Oct 25
4 cuttings: Jun 5 Jul 20 Sep 3 Oct 21			
PASTURE	Mar 29	May 5	Oct 31
OTHER HAY	Apr 5	Jul 25	Oct 15
SPRING GRAIN	Apr 1	May 30	Jul 29
CORN	May 1	Jul 15	Sep 25
TURF	Mar 27	Apr 15	Oct 31
GARDEN	Apr 17	Jul 15	Sep 15
ROOSEVELT			
ALFALFA	Apr 9	May 16	Oct 15
4 cuttings: Jun 5 Jul 18 Aug 28 Sep 29			
PASTURE	Apr 8	Jun 1	Oct 15
OTHER HAY	Apr 20	Jul 25	Oct 15
SPRING GRAIN	Apr 5	Jun 4	Aug 3
CORN	May 6	Jul 25	Sep 30
TURF	Apr 1	Apr 20	Oct 20
GARDEN	May 5	Jul 20	Sep 30
VERNAL AP			
ALFALFA	Apr 9	May 21	Oct 31
4 cuttings: Jun 13 Jul 26 Sep 9 Oct 21			
PASTURE	Apr 5	May 28	Nov 5
OTHER HAY	Apr 21	Jul 25	Oct 31
SPRING GRAIN	Apr 10	Jun 7	Aug 8
CORN	May 10	Jul 20	Sep 20
ORCHARD	May 15	Jul 20	Sep 25
TURF	Apr 1	Apr 20	Nov 5
GARDEN	May 1	Jul 20	Sep 15

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
UTAH			
ELBERTA			
ALFALFA	Apr 15	May 20	Sep 30
4 cuttings: Jun 7 Jul 12 Aug 16 Sep 24			
PASTURE	Apr 5	May 10	Oct 10
OTHER HAY	Apr 20	Jul 25	Sep 25
SPRING GRAIN	Apr 10	Jun 8	Aug 5
CORN	May 15	Jul 31	Sep 30
ORCHARD	Apr 25	Aug 15	Oct 5
TURF	Apr 1	Apr 20	Oct 15
GARDEN	May 10	Jul 15	Sep 15
FAIRFIELD			
ALFALFA	Apr 20	May 20	Sep 30
3 cuttings: Jun 15 Jul 30 Sep 10			
PASTURE	Apr 15	May 25	Oct 10
OTHER HAY	Apr 20	Jul 25	Sep 25
SPRING GRAIN	Apr 15	Jun 12	Aug 10
TURF	Apr 10	Apr 30	Oct 15
GARDEN	May 20	Jul 20	Sep 15
PLEASANT GROVE			
ALFALFA1	Apr 5	May 8	Oct 10
4 cuttings: May 28 Jul 2 Aug 6 Sep 15			
ALFALFA2	Apr 5	May 8	Oct 10
3 cuttings: Jun 10 Jul 21 Sep 5			
PASTURE	Mar 25	May 5	Oct 20
OTHER HAY	Apr 10	Jul 15	Sep 25
SPRING GRAIN	Mar 29	May 28	Jul 26
CORN	May 10	Jul 29	Sep 20
ORCHARD	Apr 15	Aug 10	Oct 15
TURF	Mar 25	Apr 15	Oct 25
GARDEN	May 1	Jul 1	Sep 25
SANTAQUIN CHLORINATO			
ALFALFA1	Apr 5	May 8	Oct 10
4 cuttings: May 28 Jul 2 Aug 6 Sep 15			
ALFALFA2	Apr 5	May 8	Oct 10
3 cuttings: Jun 10 Jul 21 Sep 5			
PASTURE	Mar 25	May 5	Oct 20
OTHER HAY	Apr 10	Jul 15	Sep 25
SPRING GRAIN	Mar 29	May 28	Jul 26
CORN	May 10	Jul 29	Sep 20
ORCHARD	Apr 15	Aug 10	Oct 15
TURF	Mar 25	Apr 15	Oct 25
GARDEN	May 1	Jul 1	Sep 25

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
UTAH CONT.			
SPANISH FORK P H			
ALFALFA1	Apr 1	May 5	Oct 15
4 cuttings:	May 25 Jul 1 Aug 5 Sep 15		
ALFALFA2	Apr 1	May 5	Oct 15
3 cuttings:	Jun 7 Jul 21 Sep 10		
PASTURE	Mar 20	May 5	Oct 20
OTHER HAY	Apr 5	Jul 15	Sep 30
SPRING GRAIN	Mar 25	May 24	Jul 23
CORN	May 5	Jul 29	Sep 25
ORCHARD	Apr 10	Aug 5	Oct 15
TURF	Mar 20	Apr 10	Oct 25
GARDEN	Apr 28	Jul 1	Sep 20
TIMPANOGAS CAVE			
ALFALFA	Apr 10	May 15	Oct 5
3 cuttings:	Jun 10 Jul 24 Sep 20		
PASTURE	Apr 5	May 10	Oct 10
OTHER HAY	Apr 10	Jul 30	Sep 30
SPRING GRAIN	Apr 5	Jun 3	Jul 31
TURF	Apr 5	Apr 25	Oct 15
GARDEN	May 10	Jul 25	Sep 30
UTAH LAKE LEHI			
ALFALFA	Apr 10	May 10	Oct 5
4 cuttings:	Jun 5 Jul 7 Aug 11 Sep 20		
PASTURE	Apr 1	May 15	Oct 15
OTHER HAY	Apr 10	Jul 20	Sep 30
SPRING GRAIN	Apr 5	Jun 3	Jul 31
CORN	May 15	Aug 1	Sep 25
ORCHARD	Apr 20	Aug 10	Oct 5
TURF	Apr 1	Apr 20	Oct 20
GARDEN	May 1	Jul 1	Sep 25
WASATCH			
DEER CREEK DAM			
ALFALFA	Apr 28	May 28	Sep 30
3 cuttings:	Jun 25 Aug 6 Sep 20		
OTHER HAY	May 1	Jul 17	Oct 5
PASTURE	Apr 24	May 20	Oct 10
SPRING GRAIN	Apr 20	Jun 18	Aug 10
TURF	Apr 15	May 5	Oct 10

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
WASATCH CONT.			
HEBER			
ALFALFA	Apr 28	May 28	Oct 5
3 cuttings:	Jun 25 Aug 6 Sep 20		
PASTURE	Apr 20	May 20	Oct 10
OTHER HAY	May 1	Jul 25	Oct 5
SPRING GRAIN	Apr 20	Jun 20	Aug 10
TURF	Apr 15	May 5	Oct 10
GARDEN	May 25	Jul 25	Sep 10
SNAKE CREEK PH			
ALFALFA	May 4	Jun 5	Oct 5
3 cuttings:	Jul 2 Aug 10 Sep 25		
PASTURE	Apr 25	May 20	Oct 10
OTHR HAY	May 1	Jul 25	Oct 5
SPRING GRAIN	Apr 25	Jun 25	Aug 22
TURF	Apr 20	May 10	Oct 10
GARDEN	May 25	Jul 25	Sep 10
WASHINGTON			
LA VERKIN			
ALFALFA	Mar 9	Apr 15	Oct 31
5 cuttings:	Apr 30 Jun 5 Jul 10 Aug 25 Sep 30		
PASTURE	Mar 1	Apr 5	Nov 5
SPRING GRAIN	Feb 1	Apr 20	Jun 15
CORN	Apr 15	Jun 25	Sep 5
ORCHARD	Mar 15	Jul 1	Oct 10
TURF	Mar 1	Mar 20	Nov 5
GARDEN	Apr 1	Jun 20	Oct 15
NEW HARMONY			
ALFALFA	Apr 5	May 10	Oct 15
4 cuttings:	Jun 1 Jul 10 Sep 1 Oct 5		
PASTURE	Mar 25	Apr 30	Oct 20
SPRING GRAIN	Apr 1	May 30	Jul 28
ORCHARD	Apr 15	Jul 20	Oct 10
TURF	Mar 20	Apr 5	Oct 30
GARDEN	May 1	Jul 1	Sep 25
ST GEORGE			
ALFALFA	Mar 5	Apr 10	Nov 5
5 cuttings:	Apr 25 May 30 Jul 5 Aug 20 Sep 25		

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
WASHINGTON CONT.			
PASTURE	Feb 25	Mar 25	Nov 15
SPRING GRAIN	Feb 1	Apr 20	Jun 15
CORN	Apr 15	Jun 25	Sep 5
ORCHARD	Mar 15	Jun 20	Sep 30
TURF	Feb 25	Mar 15	Nov 15
GARDEN	Mar 20	Jun 20	Oct 20
VEYO POWER HOUSE			
ALFALFA	Mar 25	Apr 30	Oct 20
4 cuttings: May 30 Jul 10 Aug 20 Sep 30			
PASTURE	Mar 20	Apr 10	Oct 25
SPRING GRAIN	Mar 23	May 20	Jul 15
ORCHARD	Apr 5	Jul 15	Oct 5
TURF	Mar 15	Apr 1	Oct 25
GARDEN	Apr 30	Jul 15	Oct 5
ZION NATL PARK			
ALFALFA	Mar 20	Apr 25	Oct 25
4 cuttings: May 20 Jul 1 Aug 12 Sep 25			
PASTURE	Mar 10	Apr 10	Oct 31
SPRING GRAIN	Feb 5	Apr 25	Jun 20
ORCHARD	Apr 1	Jul 5	Oct 5
TURF	Mar 5	Mar 25	Oct 31
GARDEN	Apr 10	Jul 1	Oct 5
WAYNE			
CAPITAL REEF NP			
ALFALFA	Apr 1	May 10	Oct 15
4 cuttings: Jun 5 Jul 15 Aug 30 Oct 10			
PASTURE	Mar 28	May 1	Oct 20
SPRING GRAIN	Apr 1	May 29	Jul 25
TURF	Mar 25	Apr 10	Oct 25
GARDEN	Apr 25	Jul 15	Oct 5
HANKSVILLE			
ALFALFA	Mar 25	May 5	Oct 20
4 cuttings: Jun 1 Jul 10 Aug 25 Oct 15			
PASTURE	Mar 20	Apr 15	Oct 25
SPRING GRAIN	Mar 25	May 25	Jul 24
TURF	Mar 20	Apr 10	Oct 25
GARDEN	Apr 25	Jul 15	Oct 10

Typical crop growth progress dates for given sites

County Site Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
WAYNE CONT.			
LOA			
ALFALFA	May 5	Jun 10	Sep 28
2 cuttings: Jul 3 Aug 22			
PASTURE	Apr 25	May 30	Sep 30
OTHER HAY	May 5	Jul 25	Sep 25
SPRING GRAIN	May 10	Jul 20	Sep 15
TURF	Apr 20	May 10	Sep 30
GARDEN	May 25	Jul 23	Sep 5
WEBER			
OGDEN PIONEER P H			
ALFALFA	Mar 25	May 1	Oct 20
4 cuttings: May 27 Jul 1 Aug 3 Sep 10			
PASTURE	Mar 17	Apr 25	Oct 25
SPRING GRAIN	Apr 1	May 30	Jul 29
CORN	Apr 28	Jul 28	Sep 30
PEACHES	Mar 28	Jun 30	Sep 30
ORCHARD	Apr 15	Jul 15	Oct 10
TURF	Mar 15	Apr 5	Oct 31
GARDEN	Apr 20	Jul 15	Oct 14
OGDEN SUGAR FACTORY			
ALFALFA	Mar 25	May 1	Oct 20
4 cuttings: May 27 Jul 1 Aug 3 Sep 10			
PASTURE	Mar 17	Apr 25	Oct 25
SPRING GRAIN	Apr 1	May 30	Jul 30
CORN	Apr 28	Jul 28	Sep 30
PEACHES	Mar 28	Jun 30	Sep 30
ORCHARD	Apr 15	Jul 15	Oct 10
TURF	Mar 15	Apr 5	Oct 31
GARDEN	Apr 20	Jul 15	Oct 14
PINE VIEW DAM			
ALFALFA	Apr 10	May 15	Sep 30
3 cuttings: Jun 15 Aug 1 Sep 25			
OTHER HAY	Apr 15	Jul 30	Sep 25
PASTURE	Apr 5	May 10	Oct 05
SPRING GRAIN	Apr 15	Jun 15	Aug 15
CORN	May 10	Jul 31	Sep 30
TURF	Apr 1	Apr 20	Oct 15
GARDEN	May 15	Jul 25	Sep 30

Typical crop growth progress dates for given sites

County / Site / Crop	Beginning Growth/ Planting	Full Cover/ Heading	Season End/ Harvest
WEBER CONT.			
RIVERDALE			
ALFALFA	Apr 1	May 6	Oct 20
4 cuttings: Jun 1 Jul 5 Aug 10 Sep 15			
PASTURE	Mar 20	Apr 30	Oct 25
SPRING GRAIN	Apr 5	Jun 3	Aug 2
CORN	May 1	Jul 31	Sep 30
PEACHES	Mar 28	Jun 30	Sep 30
ORCHARD	Apr 20	Jul 20	Oct 10
TURF	Mar 20	Apr 10	Oct 31
GARDEN	Apr 25	Jul 20	Oct 14

The preceding information provided by the following persons (listed by County with County Extension Agent first):

Beaver. - Mark Nelson, Lyle Wiseman and Gareth Spencer.

Box Elder. - Tom Reeve, Dave Styer, Tim Munns, Arthur Douglas, Gary Hamman, Chip Ritter and George A. Nielson, Jr.

Cache. - Don A. Huber, Regan Wheeler, Joe Larsen and Reed Jenkins.

Carbon. - Jack Soper, Smoke Clark, Lyle Bryner and Ervin Feichko.

Daggett. - Chad Reid and Albert Neff.

Davis. - Shawn Olsen, Glenn Manning, Roy Layton, Dale Fowers, Vince Hess, Glen Singleton and Bill Day.

Duchesne. - Troy Cooper, Boyd Kitchen (Area Agent), Dale Thomas, Ken Wilkinson, Owen VanTassell, Garth Sorensen, Roger Hicken, Ken Carter, LaMar Wilson and Craig Mitchell.

Emery. - Dennis Worwood.

Garfield. - Verl B. Matthews.

Grand. - Dan R. Nelson.

Iron. - Allan Edwards, Sam Lister, Brent Jones, Craig Laub, Steve Christensen and Terry Pedersen.

Juab. - Jeffrey E. Banks and Fred Barnes.

Kane. - Verl B. Matthews.

Millard. - Jody Gale.

Morgan. - Randy Sessions.

Piute. - Verl Bagley.

Rich. - C. Kim Chapman, Floyd Cornia and Fred Allen Feller.

Salt Lake. - Earl Jackson, Larry Sagers, Evan Harrison (County Agents), Mark Ruff and Kent Bateman.

San Juan. - Jim Keyes.

Sanpete. - Gary Andersen.

Sevier. - Clyde Hurst and Verl Bagley.

Summit. - Sterling Banks, Rulon Judd, Bruce Chappell, Lloyd Marchant and Lee Marsh.

Tooele. - Wade Bitner.

Uintah. - Chad Reid, Boyd Kitchen, Ron and Merlin Mckee, Mark Kettle, Gib Brough and Boyd Snow.

Utah. - Dean Miner and Richard Noble.

Wasatch. - Val Warnick.

Washington. -Adrian Hinton, Bud Scow, John Wadsworth, Mac J. Hall and Duane Beecher.

Wayne. - Verl Bagley, Milton Taft and Gary Hallows.

Weber. - James Barnhill, Lewis Patterson and John Patterson.

APPENDIX F

Estimated Consumptive Use at Selected National Weather Service Sites

Introduction

The details of the procedure used to develop the consumptive use tables herein are included in the main report. This appendix includes a description of how to estimate annual depletion and seasonal irrigation requirements, as well as the results of applying the procedure from the main report. This appendix also contains "Estimated Consumptive Use from the Calibrated SCS Blaney - Criddle Equation" tables for all of the NWS weather stations shown in Figure 18 and listed in Table 16. Some example calculations are included to illustrate the use of the estimated consumptive use tables.

Estimating Annual Depletion

Depletion (see glossary of terms) is the extraction of water from a basin by crop related evaporation and transpiration processes. Depletion is less than consumptive use by the amount of natural precipitation which is available for the crop to use. Depletion is the water year crop water use (E_t) less the sum of carry-over soil moisture (SM_{co}) and effective precipitation, ie.:

$$Dpl = E_t - SM_{co} - Pef \qquad (26)$$

where Dpl is estimated depletion for a given site or sub-basin; E_t is calculated crop water use; SM_{co} is moisture which is "carried over" from the previous non-growing season or winter as stored soil water in the root zone available for crop water use in the next growing season and Pef is an estimate of that portion of precipitation measured at an NWS station during the growing season which could be used by crops in a corresponding area. Estimated depletion, which accounts for the effect of winter and summer precipitation and evapotranspiration, thus represents a net irrigation requirement at 100% irrigation efficiency.

Growing season precipitation was considered to be 80% effective in contributing to crop water use. The effectiveness factor of 80% allows for precipitation depths over an area that might differ from NWS rain gage amounts. It also includes a reduction for mismatches in timing between rainfall events and irrigation scheduling.

The carry-over soil moisture (SM_{co}) was estimated in the Bear River Commission report (Hill, et. al. 1989) by assuming that 67% of October through April "adjusted" precipitation could be stored in the root zone. If this exceeded 75% of the available soil water-holding capacity of the average root zone in the sub-basin, the excess was considered as lost to drainage or runoff and not available for crop use. Adjusted precipitation was equal to total precipitation minus 1.25 times any calculated E_t occurring outside a set growing season (such as May - September). This adjustment (1.25 E_t) for crop water use during the "Non-growing" season was consistent with how effective precipitation was estimated in the growing season.

The net irrigation depth (Net Irr. in.) shown for each crop in the consumptive use tables (see Table 17, for example) is calculated assuming precipitation to be 80% effective during any months with non-zero E_t. However, the carry-over soil moisture was not included in Net Irrigation due to the wide variety of possible soil types and plant rooting depths.

Example Depletion Calculations

Estimated consumptive use values from Cedar City (see Table 17) will be used in this example.

Given: Irrigated alfalfa and pasture at Cedar City on a loam soil (assumed water holding capacity of 2 inches/foot depth) with root depths of 5 feet and 3 feet, respectively. Growth (non-zero E_t in Table 17) occurs in the months of April - October, inclusive. Seasonal consumptive use and net irrigation, respectively, are: 34.4 inches and 30.2 inches for alfalfa and 27.9 inches and 22.4 inches for pasture. The average November - March precipitation is 4.6 inches (4.6 = 1.00 + .70 + .69 + .89 + 1.36).

Calculation: The net irrigation value is consumptive use minus 80% of growing months precipitation. (this example continued on page 120)

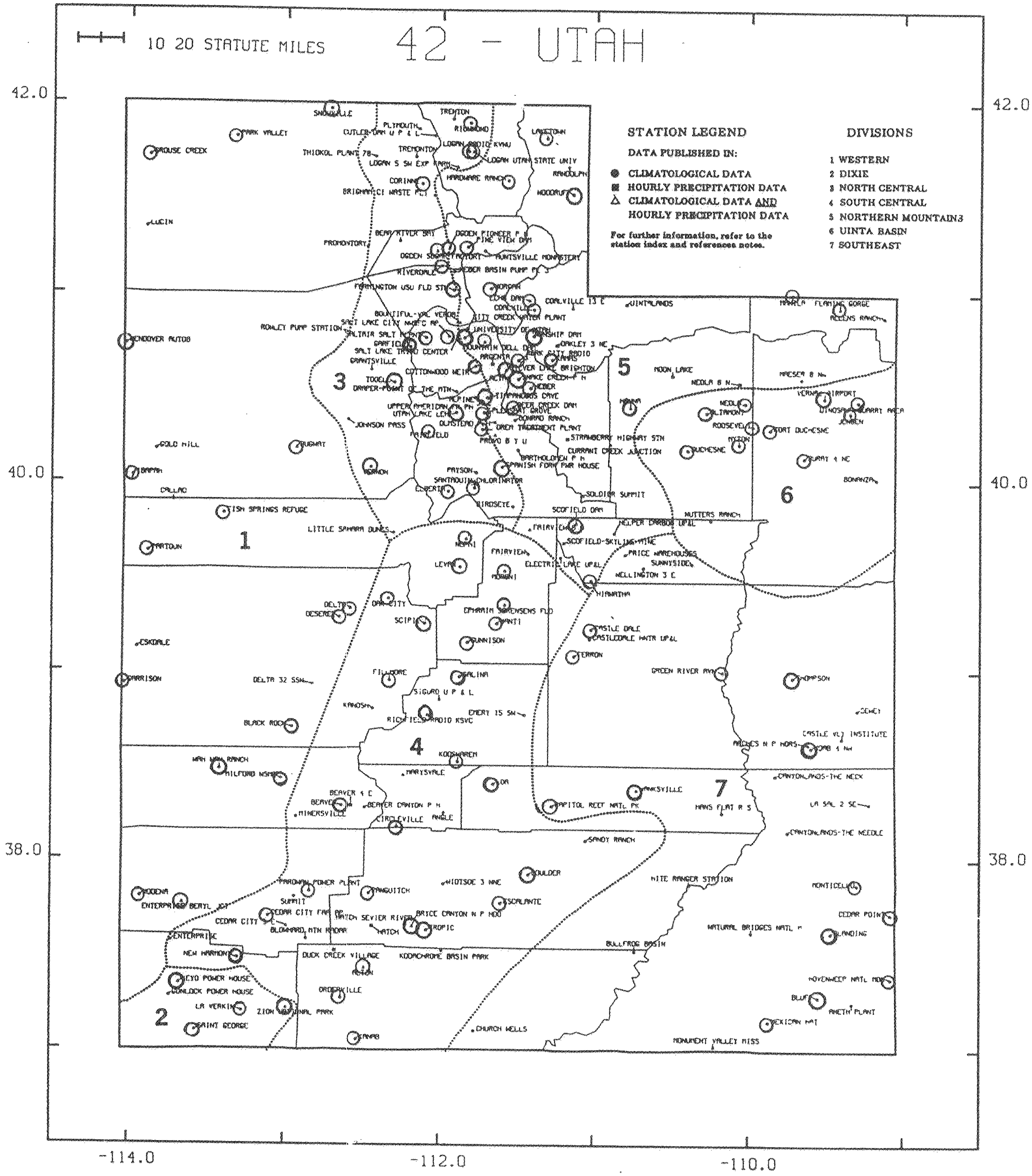

Figure 18. Locations of National Weather Service Sites Used in This Study (indicated by circled site).

Table 16. Long-term National Weather Service Sites with Corresponding Electronic Weather Stations Used for Calibration.

...National Weather Service Site...			...Calibration Weather Station...						
Site	Elev (Feet)	Lat[a]	Station	Year	Type[b]	Elev (Feet)	Lat[a]	Long[a]	Temperature Adjustment, °F
Altamont	6375	4022	Altamont	1989-91	L	6340	4021	11016	-1.5
Alton	7040	3726	Panguitch	1987-91	L	6580	3751	11225	0.0
Beaver	5940	3818	Milford	1986	L	4960	3823	11300	-4.8
				1990-91					-6.8
Black Rock	4896	3842	Milford	1986	L	4960	3823	11300	-2.0
				1990-91	L	4960	3823	11300	-4.0
Blanding	6040	3737	La Sal	1987-90	L	7040	3819	10914	3.5
Bluff	4315	3717	La Sal	1987-90	L	7040	3819	10914	6.9
Boulder	6700	3755	Escalante	1986-87	P	5830	3737	11136	-2.3
			Escalante	1988-90	L	5830	3737	11136	-2.3
			Panguitch	1991	L	6580	3751	11225	3.4
Bryce Canyon	7915	3739	Panguitch	1987-91	L	6580	3751	11225	-4.4
Capital Reef NP	5500	3817	Escalante	1989-90	L	5830	3737	11136	1.0
Castle Dale	5619	3912	Castle Dale	1993	L	5619	3912	11101	-1.5
Cedar City	5610	3742	Cedar City	1985-90	L	5540	3744	11305	-1.0
Cedar Point	6760	3743	La Sal	1987-90	L	7040	3819	10914	-0.9
Circleville	6070	3810	Panguitch	1987-91	L	6580	3751	11225	3.9
Coalville	5552	4055	Park City	1984-90	L	7080	4039	11130	-1.0
Corinne	4220	4133	Garland	1984-90	L	4340	4145	11209	0.0
Cottonwood Weir	4960	4037	Salt Lake Airport	1970-92	L	4221	4047	11157	-4.4
Deer Creek Dam	5269	4024	Midway	1986-90	L	5550	4031	11128	0.0
Delta	4623	3920	Delta	1986-91	L	4610	3926	11237	0.0
Deseret	4590	3917	Delta	1986-91	L	4610	3926	11237	-0.6
Dinosaur Quarry	4770	4026	Maeser	1988-90	L	5580	4028	10935	-0.5
Duchesne	5520	4010	Duchesne	1988-90	L	5514	4011	11020	-1.0
Dugway	4340	4011	Grantsville	1989-90	L	4360	4036	11228	0.0
Echo Dam	5470	4058	Park City	1987-90	L	7080	4039	11130	1.3
Elberta	4680	3957	Santaquin	1986-91	L	4850	3959	11147	0.8
Enterprise B J	5150	3746	Enterprise	1988-91	L	5260	3736	11341	-2.0
Ephraim S F	5670	3921	Ephraim	1989	L	5510	3922	11135	0.0
			Manti	1987-88	P	5740	3915	11138	0.0
Escalante	5814	3746	Escalante	1986-87	P	5830	3737	11136	0.0
			Escalante	1988-90	L	5830	3737	11136	0.0
Fairfield	4880	4016	Santaquin	1986-91	L	4850	3959	11147	-3.7
Farmington	4340	4101	Kaysville	1980-91	L	4380	4101	11156	0.0
Ferron	5935	3905	Ferron	1993	L	5935	3905	11108	-1.5
Fillmore	5125	3857	Delta	1986-91	L	4610	3926	11237	0.5
			Flowell	1979-81	L	4702	3857	11226	-4.0
Fish Springs	4336	3950	Delta	1986-91	L	4610	3926	11237	0.0
Flaming Gorge	6270	4056	Altamont	1989-91	L	6340	4021	11016	-3.4
Fort Duchesne	5050	4017	Roosevelt	1988-90	L	5020	4017	10959	-3.5

[a] Latitude and Longitude are in degrees and minutes (DDMM) and (DDDMM), respectively.
[b] L denotes datalogger and P datapod

Table 16. Continued.

...National Weather Service Site...			...Calibration Weather Station...						
Site	Elev (Feet)	Lat[a]	Station	Year	Type[b]	Elev (Feet)	Lat[a]	Long[a]	Temperature Adjustment, °F
Garfield	4330	4043	Salt Lake Airport	1970-92	L	4221	4047	11187	-4.1
Garrison	5260	3856	Delta	1986-91	L	4610	3943	11237	-0.2
Green River	4070	3900	Green River	1986-92	P	4070	3900	11010	-1.0
			La Sal	1988-89	L	7040	3819	10914	9.5
Grouse Creek	5320	4143	Snowville	1990	L	4560	4158	11243	-6.8
Gunnison	5146	3909	Manti	1987-88	P	5740	3915	11138	1.0
			Ephraim	1989	L	5510	3932	11135	0.6
Hanksville	4308	3822	Escalante	1989-90	L	5830	3737	11136	4.0
Hanna	6745	4024	Tabiona	1989-91	L	6660	4019	11043	0.0
Hardware Ranch	5560	4136	Logan 5 SW	1987-89	L	4490	4140	11154	-5.9
Heber	5630	4030	Midway	1986-90	L	5550	4031	11128	0.0
Hiawatha	7284	3929	Wellington	1986-90	P	5400	3933	11041	-9.1
Hovenweep	5243	3723	La Sal	1987-90	L	7040	3819	10914	5.7
Ibapah	5282	4002	Delta	1986-91	L	4610	3926	11237	-6.5
Jensen	4751	4022	Maeser	1988-90	L	5580	4028	10935	-2.0
Kamas	6475	4039	Park City	1984-90	L	7080	4039	11130	-0.7
Kanab	4950	3703	Cedar City	1987-89	L	5540	3744	11305	3.5
			Kanab	1990-91	P	4950	3703	11232	0.0
Koosharem	6932	3831	Koosharem	1990-91	L	6800	3830	11152	0.0
Laketown	5980	4149	Randolph	1983-89	L	6240	4145	11108	2.1
LaVerkin	3220	3712	St. George	1987-91	L	2610	3705	11331	-0.5
Levan	5300	3934	Delta	1987-91	L	4610	3926	11237	-1.8
Loa	7082	3824	Koosharem	1990-91	L	6800	3830	11152	-0.1
Logan Radio	4500	4145	USU North Farm	1980-82	L	4800	4142	11149	0.0
			Logan 5 SW	1988-89	L	4490	4140	11154	1.5
Logan USU	4790	4145	USU North Farm	1980-82	L	4800	4142	11149	1.0
			Logan 5 SW	1988-89	L	4490	4140	11154	2.5
Manila	6440	4059	Altamont	1989-90	L	6340	4021	11016	-0.5
			Manila	1991	L	6440	4059	10944	0.0
Manti	5740	3915	Manti	1987-88	P	5740	3915	11138	0.0
			Ephraim	1989	L	5510	3922	11135	-0.1
Mexican Hat	4130	3709	La Sal	1987-90	L	7040	3819	10914	11.0
Milford	5010	3824	Milford	1986	L	4960	3823	11300	-2.0
				1990-91	L	4960	3823	11300	-4.0
Moab	4021	3835	La Sal	1987-90	L	7040	3819	10914	12.0
Modena	5459	3748	Enterprise	1988-91	L	5260	3736	11341	-0.5
Monticello	6820	3752	La Sal	1987-90	L	7040	3819	10914	-4.4
Morgan	5060	4102	Park City	1987-90	L	7080	4039	11130	2.3
			Morgan	1988	P	5060	4102	11141	0.0
Moroni	5560	3932	Manti	1987-88	P	5740	3915	11138	-1.3
			Ephraim	1989	L	5510	3922	11135	-1.7
Mountain Dell D.	5420	4045	Park City	1987-90	L	7080	4039	11130	5.4
Myton	5082	4012	Duchesne	1988-90	L	5514	4011	11020	-1.5

[a] Latitude and Longitude are in degrees and minutes (DDMM) and DDDMM), respectively.
[b] L denotes datalogger and P datapod

Table 16. Continued.

...National Weather Service Site...			...Calibration Weather Station...						
Site	Elev (Feet)	Lat[a]	Station	Year	Type[b]	Elev (Feet)	Lat[a]	Long[a]	Temperature Adjustment, °F
Neola	5950	4025	Altamont	1989-91	L	6340	4021	11016	0.2
Nephi	5133	3942	Santaquin	1986-90	L	4850	3959	11147	0.5
New Harmony	5289	3729	Enterprise	1988-91	L	5260	3736	11341	0.5
Oak City	5069	3923	Delta	1986-91	L	4610	3936	11237	1.0
Ogden Pioneer	4350	4115	Kaysville	1980-90	L	4380	4101	11156	-0.5
Ogden S F	4280	4114	Kaysville	1980-90	L	4380	4101	11156	-1.3
Orderville	5460	3716	Cedar City	1987-89	L	5540	3744	11305	-0.5
			Kanab	1990-91	P	4950	3703	11232	-3.1
Ouray 4 NE	4670	4008	Pelican L	1988-90	L	4810	4011	10940	-3.0
Panguitch	6610	3749	Panguitch	1987-91	L	6580	3751	11225	0.0
Park City Radio	7140	4039	Park City	1984-90	L	7080	4039	11130	0.0
Park Valley	5440	4148	Snowville	1990	L	4560	4158	11243	-5.3
Parowan	6000	3750	Cedar City	1985-90	L	5540	3744	11305	-0.5
Partoun	4780	3938	Delta	1986-91	L	4610	3936	11237	-0.1
Pine View Dam	4940	4115	Park City	1987-90	L	7080	4039	11130	1.1
Pleasant Grove	4761	4022	Palmyra	1986-91	L	4520	4008	11142	0.0
Richfield	5300	3846	Monroe	1987-90	P	5400	3837	11208	0.0
			Sigurd	1989	L	5310	3851	11200	0.0
Richmond	4682	4154	USU North Farm	1980-82	L	4800	4142	11149	-1.0
			Logan 5 SW	1988-89	L	4490	4140	11154	0.5
Riverdale	4400	4109	Kaysville	1980-90	L	4380	4101	11156	-2.2
Roosevelt	5010	4017	Roosevelt	1988-90	L	5020	4017	10959	-2.5
St. George	2760	3707	St. George	1987-91	L	2610	3705	11331	0.0
Salina	5131	3858	Ephraim	1989-90	L	5510	3922	11135	0.0
			Monroe	1987-88	P	5400	3837	11208	0.0
Saltair	4210	4046	Salt Lake Airport	1970-92	L	4221	4047	11157	-5.8
Salt Lake Airport	4221	4047	Salt Lake Airport	1970-92	L	4221	4047	11157	-5.4
Santaquin	5164	3958	Santaquin	1986-91	L	4850	3959	11147	0.0
Scipio	5300	3915	Delta	1986-91	L	4610	3936	11237	-2.8
Scofield Dam	7635	3947	Wellington	1986-90	P	5400	3933	11041	-11.0
Silver Lake Brig.	8741	4036	Park City	1987-90	L	7080	4039	11130	-9.3
Snake Creek P H	6010	4033	Midway	1986-90	L	5550	4031	11128	-1.9
Snowville	4560	4158	Snowville	1990	L	4560	4158	11243	-5.0
Spanish Fork P H	4720	4005	Santaquin	1986-91	L	4850	3959	11147	1.7
Thompson	5099	3858	La Sal	1987-90	L	7040	3819	10914	8.0
Timpanogos	5643	4027	Midway	1986-90	L	5550	4031	11128	4.0
Tooele	5072	4032	Grantsville	1989-90	L	4360	4036	11228	0.0
Tropic	6283	3738	Panguitch	1987-91	L	6580	3751	11225	-2.1
U of U	4800	4046	Salt Lake Airport	1970-92	L	4221	4047	11157	-5.0

[a] Latitude and Longitude are in degrees and minutes (DDMM) and (DDDMM), respectively.
[b] L denotes datalogger and P datapod

Table 16. Continued.

...National Weather Service Site...			...Calibration Weather Station...						
Site	Elev (Feet)	Lat[a]	Station	Year	Type[b]	Elev (Feet)	Lat[a]	Long[a]	Temperature Adjustment, °F
Utah Lake Lehi	4498	4022	Palmyra	1986-91	L	4520	4013	11142	-2.0
Vernal A P	5260	4027	Vernal	1983-84	P	5260	4027	10931	-2.0
			Vernal	1988	L	5260	4027	10931	-2.0
			Maeser	1989-90	L	5580	4028	10935	-1.5
Vernon	5485	4005	Grantsville	1989-90	L	4360	4036	11228	-4.6
Veyo P H	4600	3721	St. George	1984-91	L	2610	3705	11331	-11.0
Wah Wah Ranch	4882	3829	Milford	1986	L	4960	3823	11300	0.2
				1990-91	L	4960	3823	11300	-1.8
Wanship Dam	5940	4047	Park City	1987-90	L	7080	4036	11130	-0.3
Wendover	4238	4044	Grantsville	1989-90	L	4360	4060	11228	3.3
Woodruff	6315	4132	Randolph	1983-89	L	6240	4145	11108	-0.2
Zion N P	4050	3713	St. George	1987-91	L	2610	3705	11331	-6.8

[a] Latitude and Longitude are in degrees and minutes (DDMM) and (DDDMM), respectively.
[b] L denotes datalogger and P datapod.

Table 17. Estimated Consumptive Use for the NWS Station at Cedar City, from a Calibrated SCS Blaney-Criddle Equation Using Data from Cedar City. (Adapted from Table 25).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	29.54	34.60	40.08	47.53	56.52	66.68	74.12	72.00	63.04	51.69	39.73	30.68	50.52
Std Dev Temp	4.63	4.06	3.72	3.39	2.80	2.70	1.82	1.65	3.09	3.22	2.89	4.67	1.28
Avg Prec in.	0.69	0.89	1.36	1.10	0.84	0.43	1.09	1.47	0.98	0.95	1.00	0.70	11.49
Std Dev Prec	0.73	0.62	0.81	0.68	0.61	0.34	0.97	1.16	1.03	0.76	0.75	0.45	2.85
SCS-BC f in.	0.61	0.76	1.29	2.16	3.74	5.59	7.28	6.38	4.12	2.35	1.02	0.63	35.94
Std Dev f	0.10	0.16	0.33	0.40	0.46	0.53	0.42	0.33	0.48	0.37	0.20	0.13	1.75
ALFALFA													
Cal SCS-BC k				0.83	1.78	1.10	1.01	1.13	1.02	0.42			
Cal SCS-BC E_t				1.79	6.66	6.13	7.39	7.23	4.19	0.99			34.39
Std Dev E_t				0.33	0.83	0.58	0.42	0.38	0.49	0.16			1.80
Net Irr in.				0.91	5.99	5.78	6.52	6.05	3.41	0.23			28.90
PASTURE													
Cal SCS-BC k				0.95	1.21	0.97	0.81	0.79	0.92	0.51			
Cal SCS-BC E_t				2.06	4.51	5.44	5.87	5.01	3.79	1.19			27.88
Std Dev E_t				0.38	0.56	0.52	0.34	0.26	0.44	0.19			1.48
Net Irr in.				1.18	3.84	5.10	5.00	3.83	3.01	0.43			22.39
SPRING GRAIN													
Cal SCS-BC k				0.46	1.46	1.50	0.92						
Cal SCS-BC E_t				0.99	5.45	8.37	6.72						21.52
Std Dev E_t				0.18	0.68	0.80	0.38						1.41
Net Irr in.				0.11	4.77	8.03	5.85						18.75
LAKE EVAP													
Cal SCS-BC k	1.82	1.59	2.00	1.75	1.47	1.04	0.87	.91	1.15	1.34	1.68	1.81	
Cal SCS-BC Evap	1.12	1.21	2.57	3.78	5.51	5.79	6.31	5.78	4.74	3.15	1.72	1.14	42.83
Std Dev Evap	0.19	0.25	0.65	0.70	0.68	0.55	0.36	0.30	0.55	0.49	0.34	0.23	2.26
Net Loss in.	0.43	0.33	1.22	2.68	4.67	5.37	5.23	4.31	3.76	2.20	0.72	0.44	31.34

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season.

For alfalfa, E_t - Pef = 28.9 inches and for pasture, E_t - Pef = 22.4 inches. The carry-over soil moisture (by preceding discussion) is the lesser of 67% of the non-growing season precipitation (3.1 inches; 3.1 = 0.67 x 4.6) or 75% of the available soil water holding capacity (AWC) of the root zone (7.5 inches; 7.5 = 5 ft. x 2 in./ft x 0.75). Thus, the estimated annual depletion for alfalfa by Eq. 26 is:

> Depl. = 28.9 - 3.1 = 25.8 inches; since 67% of the non-growing season precipitation (3.1 in.) was less than 75% of the available soil water capacity (7.5 inches). The SM_{co} value for pasture will be the lesser of 3.1 inches or 75% of AWC (4.5 inches; 4.5 = 3 ft x 2 in/ft x 0.75). Thus, the estimated annual pasture depletion is 19.3 inches (19.3 = 22.4 - 3.1).
>
> If 65% of the area were in alfalfa and the balance in pasture, then the area weighted average depletion would be 23.5 inches (23.5 = 0.65 x 25.8 + 0.35 x 19.3).

Estimating Irrigation Water Requirements

The irrigation requirement, while based on crop evapotranspiration (E_t or consumptive use), also includes allowances for the irrigation method and conveyance, water quality, special crop cultural practices, ground water and precipitation. These allowances may adjust the consumptive use upward and/or downward to determine the corresponding irrigation water requirements. Contribution of water to the crop from a shallow water table and from effective precipitation (see previous section) are examples of downward adjustments, whereas other factors generally result in an increase of irrigation requirement over E_t.

Upward Adjustments to Consumptive Use

Irrigation requirements that are greater than consumptive use would be realized from consideration of irrigation application and conveyance efficiencies and of soil and water salinity. Special needs in land preparation, seed germination, fruit tree bloom delay and frost protection, protection from wind erosion, crop cooling and soil reclamation also require water in addition to E_t. These may vary from year to year and site to site and should be considered as each situation indicates.

Irrigation Efficiencies. - Although a full discussion of the several defined irrigation efficiencies is beyond the scope of this report, three terms will be defined and their use illustrated. Recent discussions of concepts relating to irrigation efficiencies and water requirements are in Jensen, et. al. (1990), Keller and Bliesner (1990), Jensen (1983), and Hoffman, Howell and Solomon (1990). Keller and Bliesner give a particularly thorough presentation of distribution uniformity and efficiencies.

Conveyance efficiency (E_c):

$$E_c = 100 \times \frac{\text{Volume of Water Delivered to Farm or Field } (V_f)}{\text{Volume of Water Diverted From Source } (V_d)}$$

Typical values of E_c vary from 30% to 75 or 80% for open channels depending on lining material, flow rate and length. Pipeline systems are usually expected to have much lower losses with efficiencies in the 95 to 100% range.

Application Efficiency (E_a):

$$E_a = 100 \times \frac{\text{Volume of Water Stored in the Root Zone } (V_s)}{\text{Volume of Water Delivered to Farm or Field } (V_f)}$$

On-farm or field application efficiencies are dependent on the distribution uniformity (see below) and vary widely for both surface and sprinkler irrigation methods. This is largely due to difference in management practices, appropriateness of design in matching the site conditions (slope, soils, wind) and the degree of maintenance. Some values determined in recent Utah field evaluations are:

Method	High %	Low %	Typical %
Surface Irrigation			
E_a	72	24	50
Runoff Losses	55	5	20
Deep Percolation Losses	65	20	30
Sprinkler Irrigation			
E_a	84	52	70
Evaporation Losses	45	8	12
Deep Percolation Losses	37	8	18

The actual irrigation efficiency realized for several successive downstream fields where capture and reuse of return flows is experienced is higher than the E_a of an individual field. This notion of "Basin Irrigation Efficiency" is illustrated in Figure 19 for a simple example comparison of surface and sprinkle methods assuming four reuse cycles. In each of the five "fields" E_t is assumed to be 50 units. The surface runoff is captured for reuse on the next field. All of the irrigation-related evaporation is assumed "lost" as well as 5 units of deep percolation. After the fifth field, all surface and subsurface flows are lost. The basin efficiency for surface is 78% which is the same as for sprinkle. The surface irrigation basin efficiency increase is dependent upon the surface return flow reuse which is 20 units in this example.

The E_a for a particular field may vary greatly during the season. Cultivation practices, micro-consolidation of the soil surface and vegetation will alter surface irrigation efficiency both up and down from the seasonal average. Seasonal and diurnal variations in wind, humidity and temperature will also affect sprinkle application efficiencies.

Distribution Efficiency:

The distribution uniformity is a measure of how evenly the on-farm irrigation system distributes the water across the field. Two different, but related, coefficients are commonly used: distribution uniformity (DU) and the older Christiansen's Uniformity Coefficient (UC).

$$DU = 100 \times \frac{\text{Average of the Lowest 25\% of Infiltrated Water Depth}}{\text{Average of all Infiltrated Water Depths Across the Field}}$$

This definition of DU is related to the Average Efficiency of the Low Quarter (AELQ), (Merriam and Keller, 1978).

$$UC = 100\,[1 - (\Sigma\,|d_i - \bar{d}\,|)\,/\,\Sigma\,d_i]$$

where d_i is the depth infiltrated into the soil (or caught in a can from a sprinkler) at the ith observation point and d is the average of all d_i values. An approximate relationship between DU and UC was given by Hill and Keller (1980) as : DU = 1.6 UC - 60.

Sprinkle uniformities, as determined from selected Utah field tests are shown in Figures 20 and 21. The average depth applied by the two center pivots shown in Figure 20 varies by almost 4 to 1, from 3.07 inches to 0.76 inches. The associated irrigation scheduling would need to be quite different to prevent excessive drainage and runoff losses with the center pivot of Figure 20a compared to the one in Figure 20b. A field irrigated with the system shown in Figure 21a (CU = 87%) will need less water to adequately irrigate 65% of the field area than the system shown in Figure 21b (CU = 61%) and will have a higher application efficiency if evaporation losses are the same for both. Also, for a given system uniformity, the higher the proportion of the field that is adequately irrigated (i.e. infiltrated water refills the soil water deficit) the lower will be the application efficiency. This is due to greater deep percolation losses in the over-irrigated portions of the distribution pattern. The relationship between crop yield, irrigation uniformity and application efficiency was presented by Hart and Reynolds (1965) and further used by Hill and Keller (1980) to illustrate the economics of uniformity in irrigation systems design. The uniformity with sprinkle irrigation for a field is influenced by pressure differences and field edges (where there is no overlap). A "second level" CU value to account for these effects was used by Hill and Keller. Summary results of Utah field irrigation evaluations during 1989 and 1990 are shown in Table 18. The 24 systems included surface, side roll (wheel line), solid set turf sprinklers (8) and center pivots. The CU values shown illustrate the use of the 2nd level CU in conjunction with the "spot" evaluation uniformity. In the agricultural systems, the delivery loss of most of the sprinklers was essentially zero. However, in two systems delivery loss was 15%, mainly as a result of gasket leaks. Sprinkler evaporation losses varied from 5 to 50% depending on wind velocity and the height of the sprinkler nozzles above the ground. The higher evaporation losses were associated with center pivots with nozzles at the top of the pipe. Deep percolation losses varied from 5 to 56%. With the sprinkler systems runoff was zero. The Christiansen uniformity coefficient (CU) varied from 73 to 91% for agricultural sprinklers. Values of CU in the mid to higher 80's are acceptable for most farm field crops. However, the irrigation efficiency did not respond with uniformity, largely as a result of evaporation and deep percolation losses. For example, the center

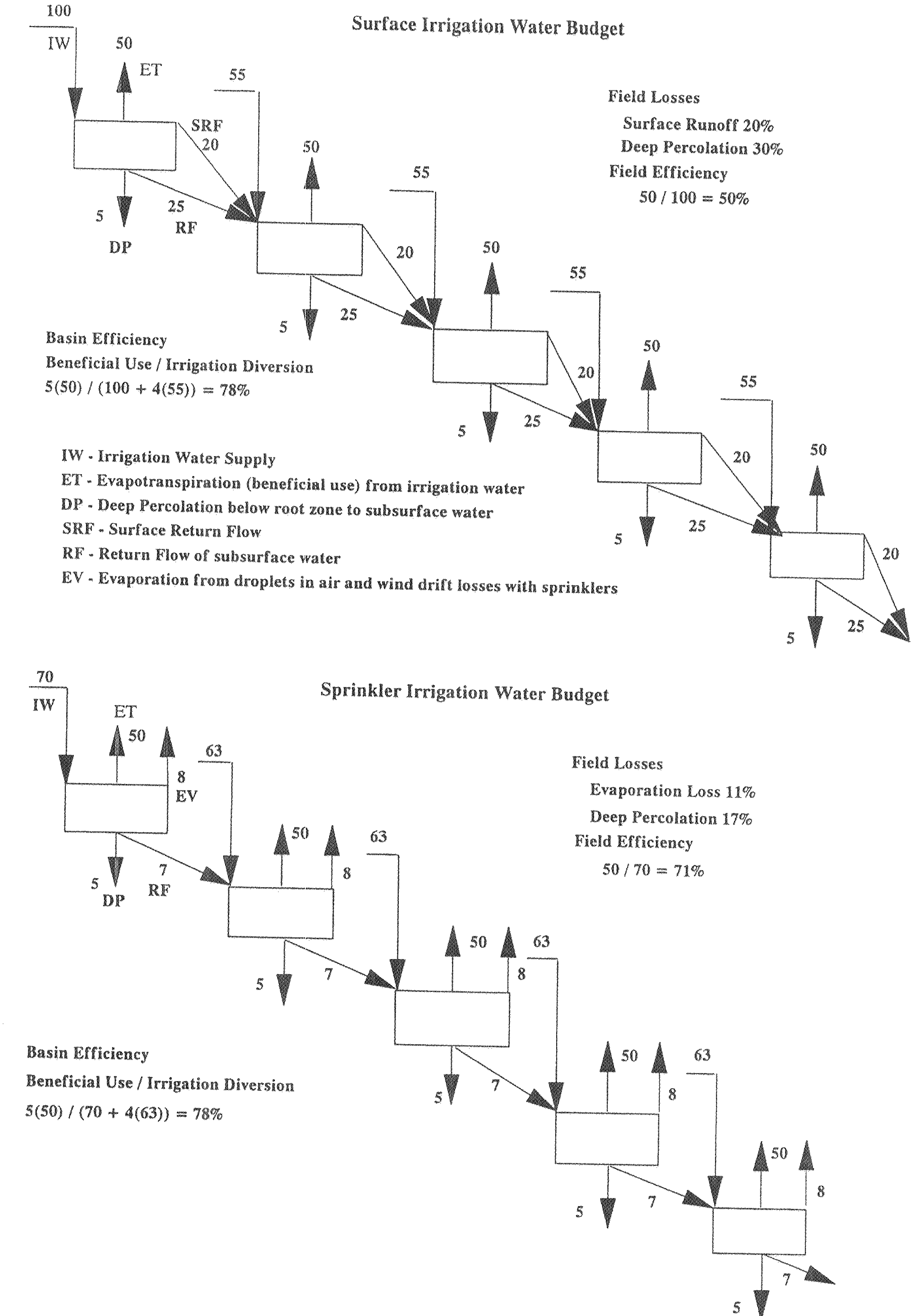

Figure 19. Comparison of Basin Efficiencies Between Surface and Sprinkle Irrigation Methods with Four Return Flow Reuse Cycles.

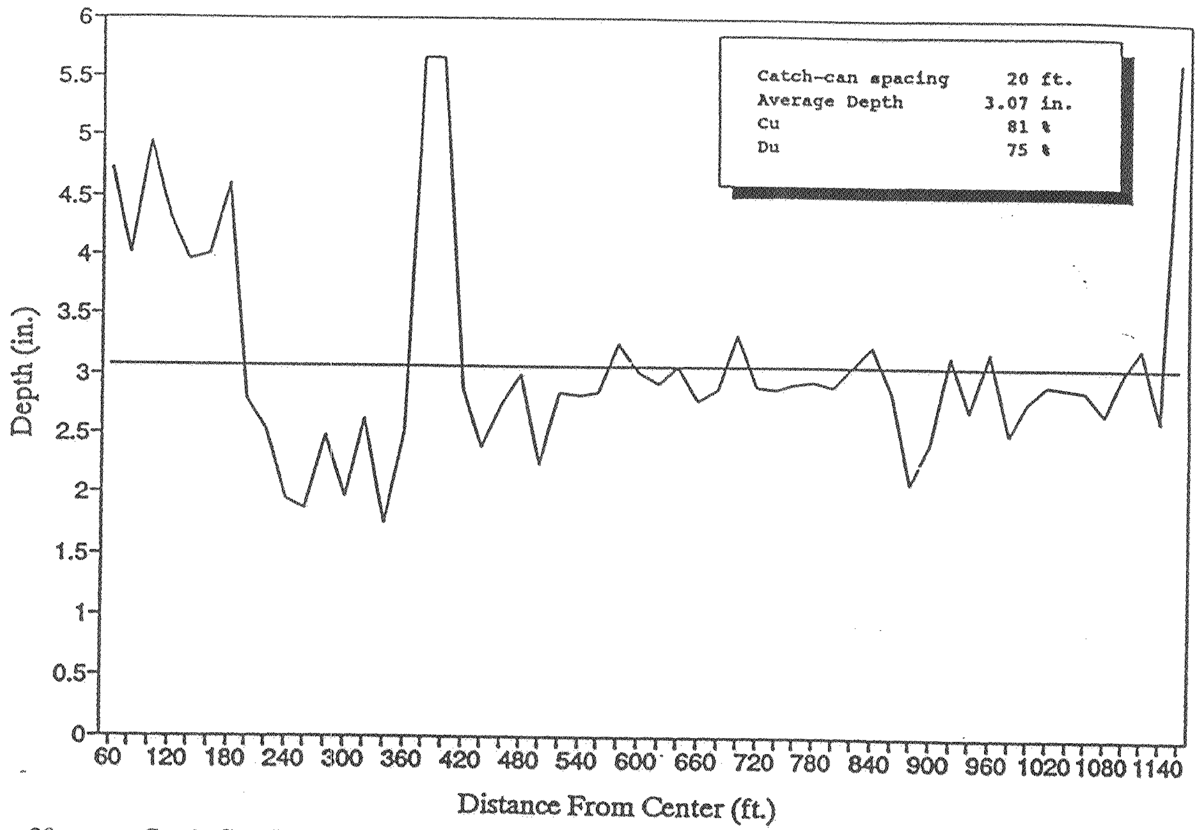

Figure 20a. Catch Can Data from Center Pivot Test in Millard County, Utah, July, 1993. Coefficient of Uniformity (CU) was 81% and Average Catch Depth was 3.07 Inches.

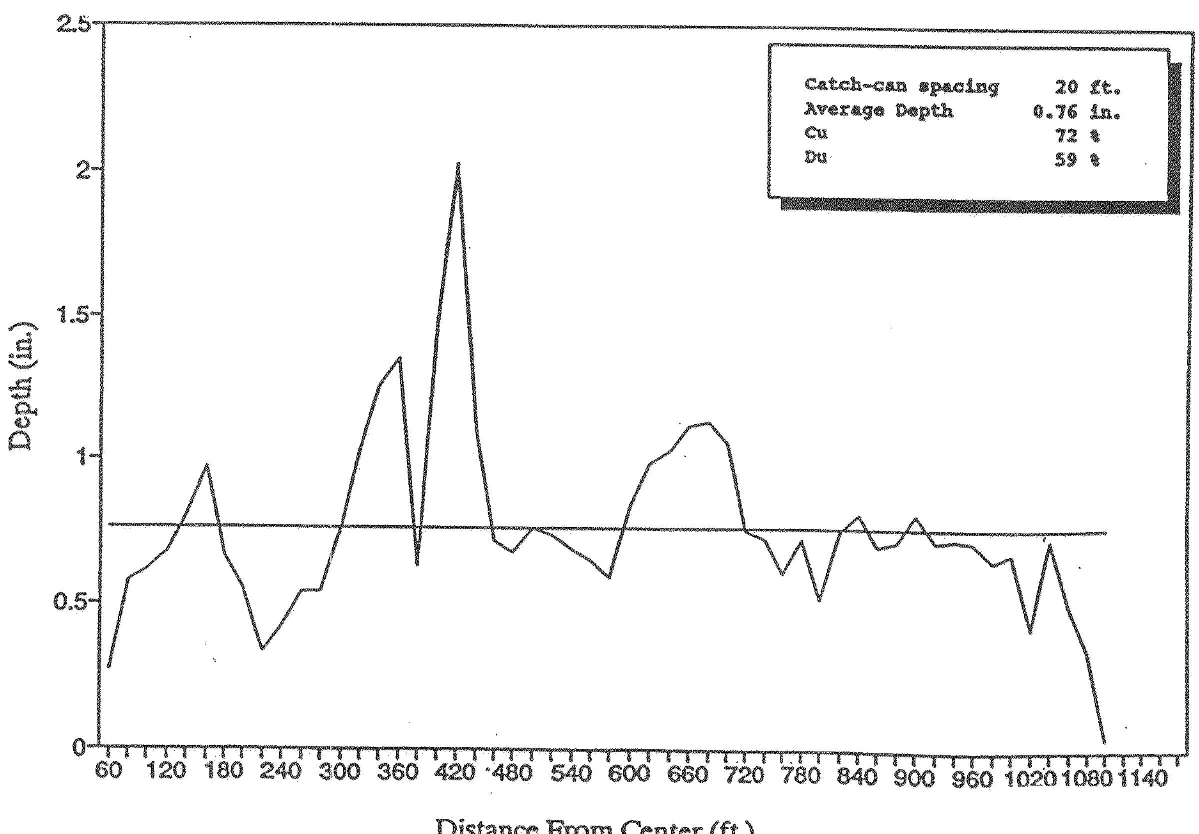

Figure 20b. Catch Can Data from Center Pivot Test in Millard County Utah, July, 1993. Coefficient of Uniformity (CU) was 72% and Average Catch Depth was 0.76 Inches.

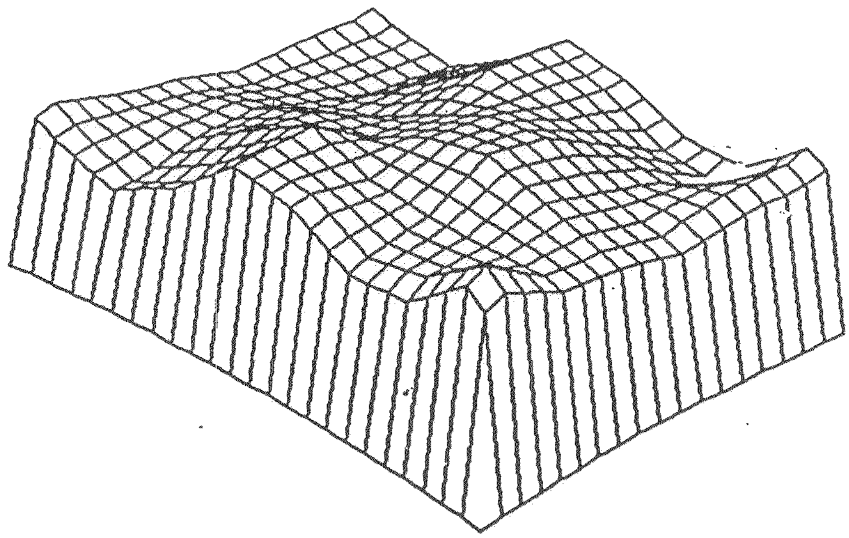

Figure 21a. Catch Can Data from Side-roll in Cache County, Utah, August, 1993. Coefficient of Uniformity (CU) was 87.2%

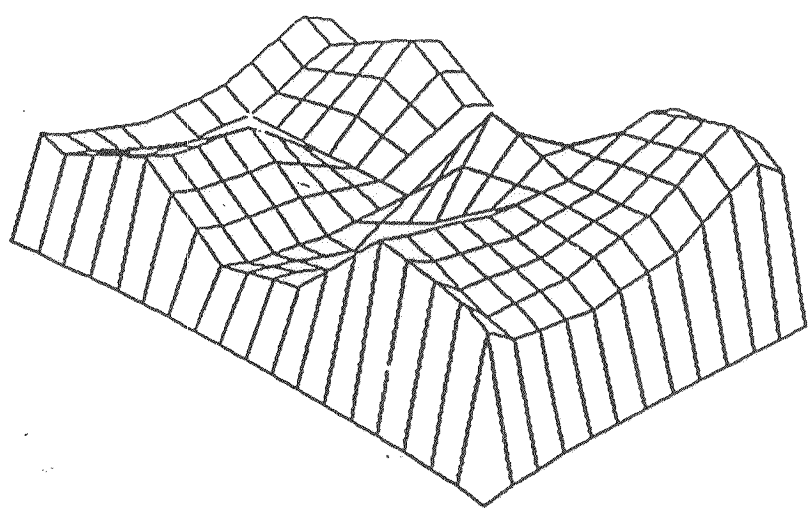

Figure 21b. Catch Can Data from Hand Line in Utah County, Utah, September, 1993. Coefficient of Uniformity (CU) was 60.5%.

Table 18. Summary of Irrigation System Evaluations in Box Elder, Cache, Duchesne, Emery, Juab, Millard, Utah and Washington Counties of Utah.

Irrigation System		Delivery Loss (%)	Runoff Loss (%)	Evap. (%)	Deep Percolation[a] %)	UC [b]	Irrigation Efficiency
1989 Tests							
Low Profile Pivot	W1	0	0	21	13.5	78	65.5
High Pivot	W2	0	0	18.5	13	79	68.5
Pivot	B1	0	0	50	5	88	45
Pivot - Drop Nozzle	B2	0	0	17.5	13.2	79	69
Wheel Line	B3	0	0	22.8	20.7	76.3	56.5
Wheel Line	B4	15	0	26	13.8	85	45.2
Wheel Line	B5	15	0	31	15	80	39
Wheel Line	M1	0	0	27	12.5	87.1	60.5
Border	M2	0	5	5	55.6	--	34.4
Border	M3	8	0	5	28	--	67
1990 Tests							
Low Pressure Pivot (reg)	B6			8	8	91 x 100 = 91	84
Low Pressure Pivot (reg)	B7			13	16	81 x 100 = 81	71
21 Wheel lines	U1			10	20	83 x 93 = 77	70
2 Wheel lines	J1			8	29	73 x 90 = 66	63
4 Wheel lines	D1			7	24	80 x 91 = 73	69
Wheel lines	U2			6	9	87 x 90 = 78	75
1990 Turf Tests							
Turf Sprinkler-wind, night	C1			12	37	53 x 100 = 53	51
Turf Sprinkler-no wind,day	C2			11	18	79 x 100 = 79	71
Turf Sprinkler-wind, night	C3			12	20	43 x 100 = 43	68
Turf Sprinkler	E1			10	15	82 x 100 = 82	75
Turf Sprinkler	E2			10	20	76 x 100 = 76	70
Turf Sprinkler	E3			10	15	82 x 100 = 82	75
Turf Sprinkler	U3			9	28	71 x 90 = 64	63
Turf (spray heads)	U4			14	36	63 x 100 - 63	50

a Deep percolation is calculated assuming 65 percent of the area is being adequately irrigated.

b First number is sprinkler coefficient of uniformity, second number is second level coefficient of uniformity caused by pressure differences in system. The 100% values are because of pressure regulated heads.

pivot with a CU of 88% had only 45% E_a. The center pivot with drop tubes and nozzles at 79% CU had a higher E_a of 69%.

The field distribution uniformity with sprinklers increases with successive irrigations since no point gets the same amount of water each time. Thus, with deeper-rooted crops, such as alfalfa, the effect of 2 or 3 irrigations could be averaged together for an improved uniformity. Such practices as using "swing lines" or offsets with side roll and hand move systems on alternating irrigation cycle sets can markedly improve uniformity above the one-time CU evaluation such as shown in Table 18.

There are practical limits to the field irrigation efficiencies that can be attained. Some factors to consider in adapting a system to a specific site are shown in Table 19. Table 19 also includes some possible E_a values for the various systems with good design and above average management practices. A wider variety of E_a values are given in Table 20 for several surface and sprinkle methods for various conditions. Values of E_a higher than shown in Table 20 are achievable with recent technology. With the use of precision (laser) land leveling, level basin field irrigation efficiencies may approach 90% or so. Field E_a values of 80% may be realized with surge flow techniques in furrow irrigation and with suitable soil conditions. Properly designed and maintained center pivots with drop tubes and spray bars will deliver a greater proportion of the water to the soil surface and thus, have a higher E_a than with impact sprinklers on the top of the pivot. This may be even more true with the low energy, precision application (LEPA) center pivot systems.

Irrigation Water Quality

Irrigated agriculture in Utah is dependent upon adequate high quality water supplies. Since all irrigation waters contain a mixture of natural salt, irrigated soils will contain a similar mix to that in the applied water, but generally at a higher concentration. As the level of salt increases in an irrigation source, the quality of water for plant growth decreases. In many areas, good quality (low salt and low sodium) water is not available for irrigation, consequently, waters containing high salts must be used. Considerable study relating crop response to water of varying quality has been summarized by Ayers and Westcot (1985; denoted as FAO29). General guidelines for reviewing the suitability of a water source for irrigation are given in Table 21. Further information is contained in FAO29 which should be referred to if the water quality is in the moderate to severe use restriction categories. Irrigation water analysis should include electrical conductivity, calcium, magnesium, sodium, chloride, carbonate, bicarbonate, sulfate and occasionally potassium. In some parts of Utah known for boron toxicity, boron should be analyzed. The results should be reported in a usable form, related to standard recommendations.

Crop Yield Response to Salinity

A measure of water salinity that is important in crop yield is Electrical Conductivity (EC). EC is measured in units of deci-siemens per meter or dS/m (dS/m are equivalent to mmhos/cm). Hereafter EC will be assumed to be in dS/m but the units may or may not be expressed. The higher the salinity, as measured by EC, the more difficult it becomes for plants to develop at optimum levels, because of the plants' inability to absorb moisture. Expected relative crop yields are shown in Figure 22 (adapted from FAO29) for general categories of crop sensitivity to salinity for different saturated soil water extract salinity levels (EC_e), and for the irrigation water (EC_w). The relative salt tolerance ratings shown in Figure 22 are divided into five major areas: unsuitable for crops; tolerant; moderately tolerant; moderately sensitive; and sensitive.

Relative salinity tolerance categories for crops typical to Utah are (listed in order of decreasing tolerance):

Tolerant	Barley, Sugar Beet, Wildrye, Asparagus
Moderately Tolerant	Wheat, Wheat Grass, Zucchini, Beet (red)
Moderately Sensitive	Tomato, Cucumber, Alfalfa, Clover, Corn, Muskmelon, Potato
Sensitive	Onion, Carrot, Bean, Apple, Cherry, Raspberry, Strawberry

Table 19. Comparison of Irrigation Systems in Relation to Site and Situation Factors (adapted from Tech Pub #75).

Site and Situation Factors	Improved Surface Systems		Sprinkler Systems			Trickle System
	Redesigned Surface Systems	Level Basins	Intermittent Mechanical Move	Continuous Mechanical Move	Solid Set and Permanent	Emitters and Porous Tubes
Infiltration rate	Moderate to low	Moderate	All	Medium to high	All	All
Topography	Moderate slopes	Small slopes	Level to rolling	Level to rolling	Level to rolling	All
Crops	All	All	Generally shorter crops	All but trees and vineyards	All	High value required
Water supply	Large Streams	Very large streams	Small streams nearly continuous	Small streams nearly continuous	Small streams	Small streams, continuous and clean
Water quality	All but very high salts	All	Salty water may harm plants	Salty water may harm plants	Salty water may harm plants	All-can potentially use high salt waters
Efficiency	Average 60-70%	Average 80%	Average 70-80%	Average 80%	Average 70-80%	Average 80-90%
Labor requirement	High, training required	Low, some training	Moderate, some training	Low, some training	Low to seasonal high, little training	Low to high, some training
Capital requirement	Low to moderate	Moderate	Moderate	Moderate	High	High
Energy requirement	Low	Low	Moderate to high	Moderate to high	Moderate	Low to moderate
Management skill	Moderate	Moderate	Moderate	Moderate to high	Moderate	High
Machinery operations	Medium to long fields	Short fields	Medium field length, small interference	Some interference, circular fields	Some interference	May have considerable interference
Duration of use	Short to long	Long	Short to medium	Short to medium	Long term	Long term, but durability unknown
Weather	All	All	Poor in windy conditions	Better in windy conditions than other sprinklers	Windy conditions reduce performance; good for cooling	All
Chemical application		Good	Good	Good	Good	Very good

Table 20. Average Irrigation Water Application Efficiency (E_a) for Surface and Sprinkle Irrigation Methods.

a. E_a for Surface

Site Condition	Borders	Furrows or corrugations	Flooding with control grade ditches	Basins
1. Sandy Soils				
(a) Well graded to optimum grade	60%	40-50%	45%	70%
(b) Insufficient grade	40-50%	35%	30%	----
(c) Rolling or steep	----	20-30%	20%	
2. Medium textures deep				
(a) Well graded to optimum grade	70-75%	65%	55%	70%
(b) Insufficient grade	50-60%	55%	45%	----
(c) Rolling or steep	----	35%	35%	----
3. Medium textures shallow				
(a) Well graded to optimum grade	65%	50%	45%	60%
(b) Insufficient grade	40-50%	35%	35%	----
(c) Rolling or steep	----	30%	30%	----
4. Heavy Soils				
(a) Well graded to optimum grade	60%	65%	50%	60%
(b) Insufficient grade	40-50%	55%	45%	----
(c) Rolling or steep	----	35-45%	30%	----

b. E_a for Properly designed sprinkler

Depth of water applied per irrigation (ac in/acre)	Peak Use, Inches per day 0.20 or Less	0.20-0.30	0.30 or More
	Average Wind Movement, 0-4 mph		
1"	68%	65%	62%
2"	70	68	65
4"	75	70	68
6"	80	75	70
	Average Wind Movement, 4-10 mph		
1"	65%	62%	60%
2"	68	65	62
4"	70	68	65
6"	75	70	68
	Average Wind Movement, 10-15 mph		
1"	62%	60%	58%
2"	65	62	60
4"	68	65	62
6"	70	68	65

From Ames Irrigation Handbook

Table 21. Guidelines for Interpretations of Water Quality for Irrigation [a]

Potential Irrigation Problem	Units	Degree of Restriction on Use		
		None	Slight to Moderate	Severe
Salinity (affects crop water availability)[b]				
EC_w	dS/m	<0.7	0.7 - 3.0	> 3.0
(or)				
TDS	mg/l	< 450	450-2000	>2000
Infiltration (affects infiltration rate of water into the soil. Evaluate using EC_w and SAR together) [c]				
SAR = 0 - 3 and EC_w =		> 0.7	0.7 - 0.2	< 0.2
= 3 - 6		> 1.2	1.2 - 0.3	< 0.3
= 6 - 12		> 1.9	1.9 - 0.5	< 0.5
= 12 - 20		> 2.9	2.9 - 1.3	< 1.3
= 20 - 40		> 5.0	5.0 - 2.9	< 2.9
Specific Ion Toxicity (affects sensitive crops)				
Sodium (Na)[d]				
surface irrigation	SAR	< 3	3 - 9	> 9
sprinkler irrigation	me/l	< 3	> 3	
Chloride (Cl) [d]				
surface irrigation	me/l	< 4	4 - 10	> 10
sprinkler irrigation	me/l	< 3	> 3	
Boron (B)[e]	mb/l	< 0.7	0.7 - 3.0	> 3.0
Trace Elements				
Miscellaneous Effects (affects susceptible crops)				
Nitrogen (NO_3 - N)[f]	mg/l	< 5	5 - 30	> 30
Bicarbonate (HCO_3) (overhead sprinkling only)				
pH		Normal Range 6.5 - 8.4		

[a] Taken from FAO 29 which was adapted from University of California Committee of Consultants, 1974.

[b] EC_w means electrical conductivity, a measure of the water salinity, reported in units of deci Siemens per meter at 25° (dS/m) or in millimhos per centimeter (mmhos/cm). Both are equivalent. TDS means total dissolved solids, reported in milligrams per liter (mg/l).

[c] SAR means sodium absorption ratio. SAR is sometimes reported by the symbol RNa. At a given SAR, infiltration rate increases as water salinity increases. Evaluate the potential infiltration problem by SAR as modified by EC_w. Adapted from Rhoades, 1977, and Oster and Schroer, 1979.

[d] For surface irrigation, most tree crops and woody plants are sensitive to sodium and chloride; use the values shown. Most annual crops are not sensitive; use the salinity tolerance. For chloride tolerance of selected fruit crops, see FAO 29, Table 14. With overhead sprinkler irrigation and low humidity (< 30%), sodium and chloride may be absorbed through the leaves of sensitive crops. For crop sensitivity to absorption, see FAO 29, Tables 18, 19 and 20.

[e] For boron tolerances, see FAO 29, Tables 16 and 17.

[f] NO_3 - N means nitrate nitrogen reported in terms of elemental nitrogen (NH_4 - N and Organic - N should be included when waste water is being tested).

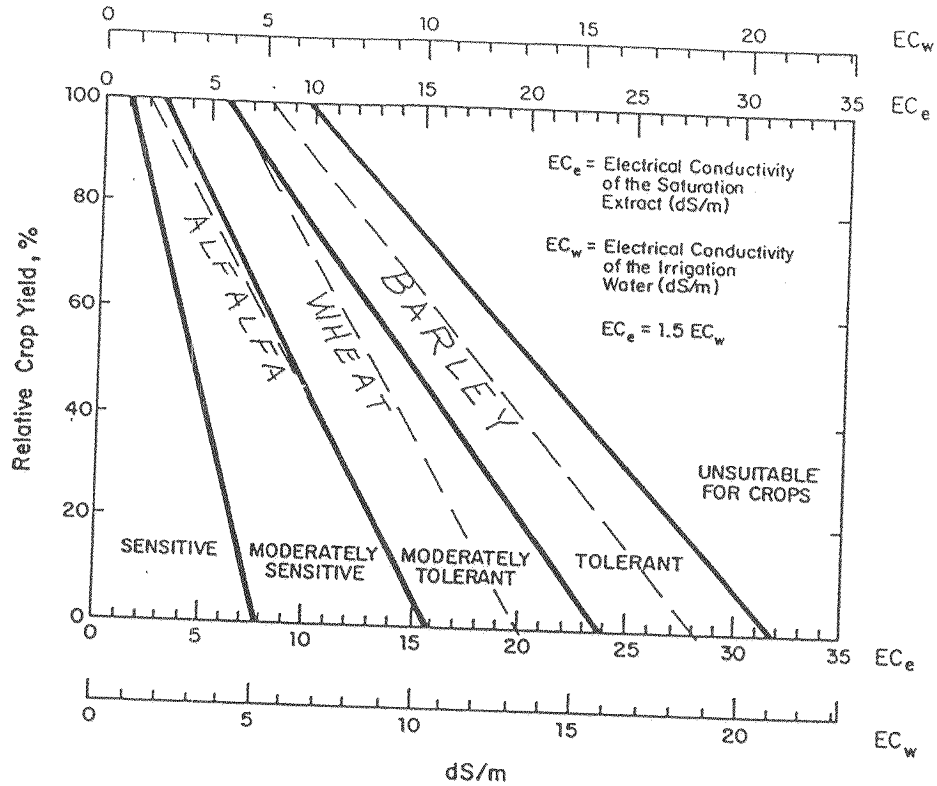

Figure 22. Division for Relative Salt Tolerance Ratings of Agricultural crops, adapted from Fig. 10, FAO #29. An Assumed 15% of Infiltrated Water is Leaching. Yield will be Reduced More than Graph Shows if Leaching is Insufficient. Relative Yield Response of Alfalfa, Wheat and Barley to Salinity is Shown by Dashed Lines.

The salt tolerance of alfalfa falls approximately on the dividing line between moderately sensitive and moderately tolerant crops. The salt tolerance of wheat is in the moderately tolerant zone, whereas barley is in the tolerant area.

The dashed lines in Figure 22 represent the yield response of alfalfa, barley and wheat to salinity. The relationships in Figure 22 are valid when 15% of the applied water percolates through the root zone (i. e. leaching fraction is 0.15). This deep percolation of water through the root zone is necessary to continue leaching of salts out of the active root areas. As an example, if the EC_W were 5 dS/m, then the expected yield of alfalfa with 15% leaching would only be 60% of what it could possibly be with better water. If the irrigation system design or operation is such that the application rate just barely meets the plant requirements and there was no leaching, the expected yield would be less than shown on the graph.

The EC_W scale of Figure 22 is based on standard guidelines which assume the electrical conductivity of the saturated soil extract (EC_e) is 1.5 times as great as that of the irrigation water and that the leaching fraction is about 0.15 (15%). In actuality, the relationship between the salinity of the irrigation water and saturated soil water extract is dependent upon the extra water added for leaching purposes. The leaching fraction (or requirement) is the amount of water, in excess of consumptive use, which is necessary to wash the accumulated soil salts below the root zone.

$$\text{Leaching Fraction (LF)} = \frac{\text{Depth of Water Leached Below the Root Zone}}{\text{Depth of Water Applied at the Surface}} \tag{27}$$

Over a long period of time with many irrigations, the accumulated soil salt will approach an equilibrium concentration consistent with the applied irrigation water EC and the leaching fraction. For this situation the drainage water salinity (EC_{dw}) is:

$$EC_{dw} = EC_w / LF.$$

An estimate of the leaching fraction to maintain a desired crop yield can be made if the irrigation water salinity (EC_w) and the soil salinity (EC_e) at the desired crop tolerance level are known. This can be done from using Figure 21 for general situations. For more specific estimates, Equation 28 (adapted from eq. 9 of FAO 29) should be used:

$$LF = EC_w \ / (5\ EC_e - EC_w) \tag{28}$$

where LF is the minimum leaching fraction necessary for maintaining the salts within the crop tolerance (EC_e) with above ground irrigation methods; EC_w is the salinity of the applied irrigation water (dS/m) and EC_e is the average saturated soil extract salinity (dS/m) tolerated by the crop. The actual soil water salinity (EC_{sw}) is about twice the EC_e due to the sampling technique.

The total annual applied water depth (assuming no precipitation) required to satisfy both ET and leaching is:

$$D_{aw} = ET / (1 - LF) \tag{29}$$

where D_{aw} is the depth of applied water (inches/year) and ET is the consumptive use (inches/year). Any excess natural precipitation that goes to deep percolation can significantly reduce the leaching requirement from irrigation depending on the timing and the amount. Since the crop senses the soil water salinity as opposed to the irrigation water salinity, if extra leaching water is applied, higher salinity irrigation water can be utilized with limited crop losses.

Figure 23 shows the relationship between EC_w and EC_e for different leaching fractions. These relationships were derived by assuming that the crop water use pattern withdrew 40% from the top 1/4 of the root zone and 30%, 20% and 10% from the second, third and fourth quarters, respectively. This is typical of infrequent surface or sprinkle irrigation. As an example, assume that <u>sensitive crops</u> were to be grown with water of EC_w = 2.0 (mmhos/cm and dS/m are equivalent). To maintain high yields, EC_e should be maintained at 1.5 or less (see Figure 22). From Figure 23 this indicates a needed leaching fraction of 0.80, i.e., 80% of the applied water should become drainage. Thus, the gross irrigation application should be 500% [500 = 100/(1 - .8)] of crop water requirements (ET). Under these conditions, the actual soil water salinity will be slightly higher than the irrigation water salinity, even though the EC_e = 1.2 (1.2 = 0.6 x 2.0) from Figure 23.

Short-term (one season) drought conditions may impose water resource quantity and quality limitations such that it may not be possible or desirable to maintain high yields. Perhaps a relative yield of 50% would be reasonable under these conditions, in which case, an average root zone EC_e of about 4 (Figure 22) would be allowable, with a corresponding leaching fraction (LF) of 0.10 (from Figure 23). Thus, the gross irrigation application should be 111% [111 = 100/(1 - .10)] of crop water requirements.

Concentration factors (CF) for average root zone EC_e to EC_w for several leaching fractions (including those in Figure 23) are given in Table 22 for two different crop water use patterns. The first pattern (40-30-20-10) is the same as used in Figure 23 and represents equilibrium conditions achieved under infrequent, 10-15 days interval, surface or sprinkle irrigation. The second pattern (60-30-7-3) represents root development under frequent (less than 5 days interval) irrigation. Also shown in Table 22 are the CF values averaged for that portion of the root zone containing 90% of the roots, which is 3 and 2 layers, respectively, for the first and second extraction patterns.

Actual soil salinity levels are approximately twice EC_e and approach the irrigation water quality with more frequent irrigations where the majority of the roots are located closer to the surface (the second pattern). For example, at LF = 0.10 the CF is 1.4 averaged for 90% of the roots (Table 22) for crop water use pattern 60-30-7-3. Thus, with an EC_w of 2.0, the average EC_e is 2.8 (2.8 = 1.4 x 2.0) in the upper portion of the root zone. The corresponding relative yield for a sensitive crop is 75% (from Figure 22).

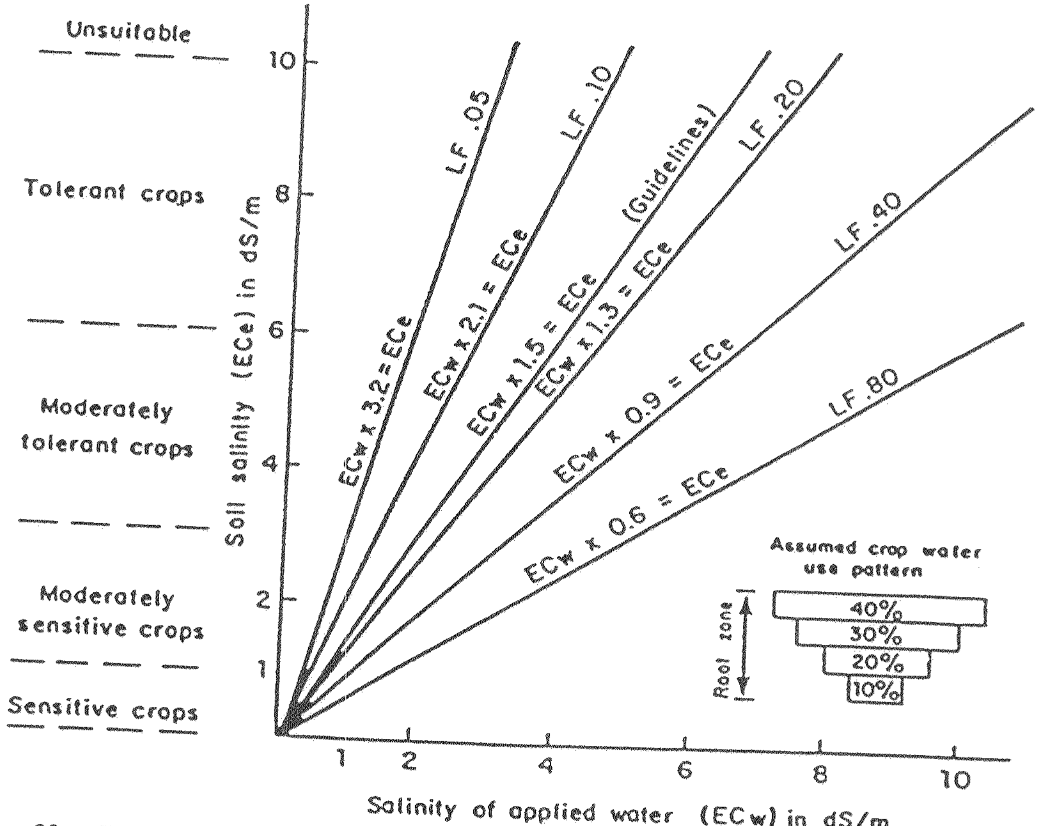

Figure 23. Effect of Applied Water Salinity (EC_w) Upon Root Zone Soil Salinity (EC_e) at Various Leaching Fractions (LF). (Adapted from Fig. 7 of FAO 29).

Table 22. Concentration Factors (CF) for Predicting Salinity of the Saturated Soil Extract (EC_e) [a].

Leaching Fraction (LF)	Applied Water Needed (Percent of ET)	Crop Water Use Patterns: 40-30-20-10, Concentration Factor [b] (CF): Root Zone Ave	40-30-20-10: 90% of Roots	60-30-7-3, Concentration Factor [b] (CF): Root Zone Ave	60-30-7-3: 90% of Roots
0.05	105.3	3.2	1.6	4.3	1.7
0.10	111.1	2.1	1.3	2.6	1.4
0.15	117.6	1.6	1.2	2.0	1.2
0.20	125.0	1.3	1.0	1.6	1.1
0.25	133.3	1.2	1.0	1.4	1.0
0.30	142.9	1.0	0.9	1.2	0.9
0.40	166.7	0.9	0.8	1.0	0.8
0.50	200.0	0.8	0.7	0.8	0.7
0.60	250.0	0.7	0.7	0.7	0.7
0.70	333.3	0.6	0.6	0.7	0.6
0.80	500.0	0.6	0.6	0.6	0.6

a The equation for predicting the soil salinity expected after several years of irrigation with water of salinity EC_w is: EC_e (dS/m) = EC_w (dS/m) x CF

b The concentration factor is found by using the indicated crop water use pattern and the calculation procedure of Example 2 from FAO I&D Paper 29 assuming that $EC_e = 0.5\ EC_{sw}$.

Typical Utah Irrigation Water Salinities

Water quality samples have been taken at different sites throughout Utah in the past. James and Jurinak (1986) summarized many of these for various drainage and river systems in Utah. An extract of their data, for EC only, is given in Table 23. Also included in Table 23 are the expected yields of alfalfa, barley and wheat if irrigated by waters of that quality as determined from Figure 22. There is a fair amount of variability in water salinities around the State. Most of the streams in Cache Valley are high quality having EC values of 0.3 to 0.5 dS/m. The Bear River in the downstream reaches, particularly, has a little higher salinity. Generally, the rivers have conductivities less than 2 dS/m as they first come out of the mountains in the Wasatch Front, Uintah Basin and other areas of the State.

The Virgin River at LaVerkin, in Southern Utah, has EC values which vary from 2.7 to 9.1 depending on the time of year in which the sample was taken. LaVerkin Creek, near LaVerkin, has the highest EC_w of any stream included in the data. With an EC_w of 11.4 dS/m, alfalfa could not grow. Wheat yield would be reduced to about 20% and barley to 55% of their potential yields for well-managed conditions in that area.

Also included in Table 23 are some spot samples of wells in Western Box Elder County. The well at Howell, which is used for center pivot irrigation, has an EC of 4.6. This level reduces yields of alfalfa to 66% and wheat to 97% of possible, but does not affect barley yield (assuming 15% leaching).

As a general rule, surface water supplies affected by irrigation return flows will have higher conductivity levels later in the summer and early fall. Lower values of EC will be experienced during the spring, because of dilution.

Downward Adjustments to Consumptive Use

The contribution of carry-over soil moisture towards crop water use has been discussed in a previous section as part of the depletion calculation. It represents one downward adjustment, others include ground water contribution and effective growing season precipitation (also mentioned earlier).

Groundwater Contribution. - If a shallow water table is relatively close to the ground surface, roots could obtain part or all of the crop water needs from the capillary fringe. This was realized in alfalfa research plots at the USU Kaysville Branch Agricultural Experiment Station (Hill et al, 1984). In that study, variable amounts of irrigation water were applied to alfalfa by sprinklers. The deficit irrigated plots obtained an estimated 17 to 39% of the 33 inches seasonal consumptive use from a 10 ft. deep water table in the third year of growth. The ground water contribution decreased with increasing depth of applied irrigation water. There are many wet meadow and similar other high water table areas in Utah which could receive significant proportions of the annual irrigation need from ground water. Accurate estimation of irrigation requirements depends on correct accounting of such water supply sources.

Effective Precipitation. - The 80% of growing season precipitation considered to be effective in crop water use mentioned in the previous depletion discussion was based on generalizations made in the Bear River Commission study (Hill et. al., 1989). If a more detailed determination of monthly effective precipitation is desired, then additional factors should be considered. The method presented by the USDA Soil Conservation Service (1970) includes factors for monthly precipitation (Mp), consumptive use (Mu) and net depth of applied irrigation water (Md). These factors are given in Table 24 for average monthly precipitation varying from 0.11 to 8.0 inches, monthly consumptive use varying from 0 to 10 inches and net irrigation amounts of 0.75 to 7.0 inches. The monthly effective precipitation, Pef, is determined by multiplying the Table 24 factors together: Pef = Mp x Mu x Md. As an example, consider alfalfa at Cedar City (Table 17) for average July conditions of 1.09 inches precipitation and 7.4 inches E_t. Assuming that in each irrigation the side roll sprinkler system applies a gross depth of 3.5 inches, with an average wind movement of 4-10 mph, the E_a is about 68% (Table 20) for ET rates of 0.2 - 0.3 inches/day. Thus, the net irrigation is 2.4 inches (2.4 = 0.68 x 3.5). From Table 23: (using values from nearest round number in table) Mp = 0.594; Mu = 1.48 and Md = 0.97.

The effective precipitation is: Pef = 0.594 x 1.48 x 0.97 = 0.85 inches. This is about 78% (78 = 100 x 0.85 / 1.09) of the average monthly value.

Table 23. Water Quality Samples Taken in Various Utah Locations and Estimated Effect on Relative Crop Yield.

Location	Date	Electrical Conductivity[a]	%Estimated Relative Yield[b]		
		dS/m	Alfalfa	Barley	Wheat
Surface Streams					
Great Salt Lake Drainage,					
B.R. Sage Creek Junction	9-81	.79	100	100	100
B.R. Cutler Dam	9-81	.91	100	100	100
B.R. Corinne	9-81	4.01	71	100	100
Logan River, Logan	9-81	.40	100	100	100
Little Bear River, Hyrum Reservoir	8-81	.47	100	100	100
Malad River, Bear River City	8-81	2.01	93	100	100
Ogden River	9-81	.67	100	100	100
Weber River	9-81	.55	100	100	100
Strawberry Reservoir	9-81	.59	100	100	100
Spanish Fork River, Spanish Fork	9-81	.40	100	100	100
Provo River, Provo	9-81	.40	100	100	100
Jordan River, Riverton	9-81	1.74	80	100	100
Sevier River, below Panguitch	9-81	.40	100	100	100
Sevier River, Gunnison	9-81	2.30	90	100	100
Delta Reservoir	9-81	2.14	91	100	100
Chalk Creek, Fillmore	9-81	.40	100	100	100
Beaver River, Beaver	9-81	.29	100	100	100
Parowan Creek	9-81	.41	100	100	100
La Verkin Creek	9-81	11.40	0	55	21
Virgin River, La Verkin	7-81	9.13	16	72	45
	9-81	2.73	85	100	100
Uintah River Whiterocks	9-81	.06	100	100	100
Uintah River, Randlett	9-81	2.12	92	100	100
Duchesne River, N. Fork, Tabiona	9-81	.47	100	100	100
Strawberry River, Duchesne	9-81	.74	100	100	100
Duchesne River, Ouray	9-81	1.07	100	100	100
Ashley Creek, Vernal	9-81	2.79	84	100	100
Snowville Creek	9-88	1.84	95	100	100
Fremont River, Bicknell	9-81	.48	100	100	100
Wells in Western Box Elder County					
Ranch SNVL1 P9	9-88	3.6	81	100	100
Ranch P7	6-88	5.6	52	97	80
Howell SNVL1	9-88	4.5	66	100	95
Ranch SNVL2	9-88	3.1	81	100	100

a Conductivity of irrigation water (EC_w) expressed as dS/m. All data prior to 1988 from James and Jurinak (1986).

b Estimated possible yields are shown as a percentage of potential. These estimated yields assume that 15% of infiltrated water is leaching. Yield reduction is (100 - relative yield); example: if the relative yield is 52% then the yield reduction is 48% (48 = 100 - 52).

Table 24. Multipliers to Use in Calculating Effective Precipitation. (Adapted from Technical Publication #75).

(a)

Average Monthly Precipitation (inches)	Mp Precipitation Factor
0.1106	0
0.15	1.0329
0.20	0.0727
0.25	0.1107
0.30	0.1474
0.35	0.1830
0.40	0.2177
0.45	0.2517
0.50	0.2850
0.60	0.3499
0.70	0.4130
0.80	0.4745
0.90	0.5346
1.00	0.5936
1.50	0.8750
2.00	1.140
2.50	1.394
3.00	1.638
3.50	1.876
4.00	2.107
5.00	2.556
6.00	2.990
7.00	3.410
8.00	3.820

(b)

Monthly Consumptive Use (inches)	Mu Consumptive Use Factor
0	1.000
1	1.057
2	1.118
3	1.182
4	1.250
5	1.322
6	1.398
7	1.478
8	1.563
9	1.653
10	1.748

(c)

Net Depth of Water Applied (inches)	Md: Depth of Water Applied Factor
0.75	0.72
1.00	0.77
1.50	0.86
2.00	0.93
2.50	0.97
3.00	1.00
4.00	1.02
5.00	1.04
6.00	1.06
7.00	1.07

Calculation of Irrigation Water Requirement

The irrigation requirement provides for crop water use and satisfies the site efficiency and water quality conditions. The adjustments described in previous sections are included, as applicable, to accomplish this. The following example is based on data in Table 17.

Given: Alfalfa irrigated near Cedar City, Utah, by side roll (intermittent mechanical move) sprinkler system in average winds of 4-10 mph. The water source is a deep well which tests at a conductivity (EC_w) of 1.5 dS/m. The system is operated on a 12-hour set (moved twice per day) and has a nozzle discharge of 3.5 inches, average depth. The water table (if any) is at great depth.

Seasonal consumptive use (Table 17)	34.4 inches
Average Growing season (April - October) rainfall	6.9 inches
Average growing season effective rainfall (80%) (see previous example effective precipitation calculation)	5.5 inches
Net irrigation (Table 17, or 34.4 - 5.5)	28.9 inches
Field irrigation application efficiency, E_a (Table 20)	68%

Calculation: The EC_w of 1.5 suggests an EC_e of 2.3 (2.3 = 1.5 x 1.5) with about 15% leaching. This may lead to a slight yield loss (Figure 19) without additional leaching. However, if the carry-over soil moisture is ignored in the calculation, it combined with the usual drainage losses from non-uniform application should give sufficient leaching. The field delivery irrigation requirement is 42.5 inches (42.5 = 28.9 / 0.68) ignoring any on-farm conveyance losses. Since the water supply is a well, assume no other conveyance losses.

Some idea of the variation in estimated monthly E_t from year to year can be gained by considering the standard error(s) of the E_t values in Table 17, shown as Std Dev E_t. The Std Dev E_t (s) for July alfalfa E_t at Cedar City is 0.42 inches. About 67% of all the monthly E_t values will fall between the limits of monthly E_t + or - s. Thus, for alfalfa in July, 20 out of the 30 individual year E_t values will be less than 7.8 inches and more than 7.0 inches.

Using the Estimated Consumptive Use Tables

The results of applying the procedures described previously are presented in Table 25, in alphabetical order by site, at the end of this appendix. No water loss is shown for the non-growing season, as any would be accounted for in the carry-over soil moisture estimation.

The alfalfa E_t values should not be used for determining system capacity if the irrigation interval is much less than a month. Rather, the ET ref value for the given month would better represent alfalfa water use for shorter periods (say, 10 to 20 days) without the effect of cuttings. In this case, ET ref should be converted to inches per day as an average or for a specified peak E_t period.

Ninety-nine out of the 111 sites had three or more years of calibration data overlap between the NWS station and the electronic station. However, there were seven sites (Dugway, Hanksville, Koosharem, Loa, Tooele, Vernon and Wendover) with two calibration years and five sites (Castle Dale, Ferron, Grouse Creek, Park Valley and Snowville) with only one calibration year. Caution should be exercised when using E_t values from those sites with only one calibration year, as the calibration may not be sufficiently representative of longer term conditions.

The lake evaporation estimates assume open water year around, which doesn't occur in most Utah locations. Thus, the winter time values should be set to zero for ice-covered surfaces, unless an estimate of water vapor sublimation from ice is made. As a practical matter, the calibrated monthly SCS-BC coefficient (k) for evaporation was limited to a maximum value of 2.0 to reflect the uncertainty of winter time estimates.

ESTIMATED CONSUMPTIVE USE TABLES

Estimated Consumptive Use From Calibrated SCS Blaney - Criddle Equation
at Various NWS sites throughout Utah.

Table 25. Estimated Consumptive Use for the NWS Station at ALTAMONT
From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994
Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 6370 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.15	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	18.31	23.97	32.97	42.71	51.71	60.71	67.77	65.79	56.96	45.63	32.29	20.99	43.32
Std Dev Temp	4.58	5.06	3.69	3.53	2.22	2.77	1.38	2.10	2.55	3.20	3.01	4.52	1.33
Avg Prec in.	0.70	0.69	0.78	0.64	0.81	0.80	0.80	0.81	0.95	0.94	0.59	0.82	9.34
Std Dev Prec	0.57	0.58	0.42	0.56	0.57	0.85	0.59	0.48	0.69	0.80	0.54	0.87	2.45
SCS-BC f in.	0.37	0.48	0.85	1.64	3.03	4.55	6.00	5.22	3.22	1.69	0.65	0.41	28.11
Std Dev f	0.09	0.10	0.16	0.37	0.33	0.50	0.29	0.39	0.35	0.31	0.07	0.09	1.27
ALFALFA													
Cal SCS-BC k				0.18	1.72	1.57	1.30	1.14	1.32	0.96			
Cal SCS-BC Et				0.30	5.21	7.12	7.78	5.93	4.26	1.63			32.23
Std Dev Et				0.07	0.57	0.79	0.37	0.45	0.47	0.30			1.35
Net Irr in.					4.56	6.49	7.14	5.28	3.50	0.87			27.83
PASTURE													
Cal SCS-BC k				0.52	1.20	1.18	0.97	0.97	1.03	0.74			
Cal SCS-BC Et				0.85	3.64	5.39	5.85	5.08	3.33	1.25			25.39
Std Dev Et				0.19	0.40	0.60	0.28	0.38	0.37	0.23			1.11
Net Irr in.				0.34	2.99	4.75	5.21	4.43	2.57	0.50			20.78
OTHR HAY													
Cal SCS-BC k					1.30	1.88	1.24	0.55	0.08				
Cal SCS-BC Et					3.94	8.56	7.45	2.89	0.26				23.11
Std Dev Et					0.43	0.95	0.36	0.22	0.03				1.16
Net Irr in.					3.29	7.92	6.81	2.24					20.27
CORN													
Cal SCS-BC k					0.18	1.31	1.41	1.18	0.37				
Cal SCS-BC Et					0.55	5.98	8.46	6.14	1.20				22.33
Std Dev Et					0.06	0.66	0.41	0.46	0.13				0.86
Net Irr in.						5.34	7.81	5.49	0.44				19.09
SP GRAIN													
Cal SCS-BC k				0.19	1.05	1.78	1.43	0.29					
Cal SCS-BC Et				0.30	3.18	8.09	8.59	1.49					21.66
Std Dev Et				0.07	0.35	0.90	0.41	0.11					1.13
Net Irr in.					2.53	7.45	7.94	0.84					18.77
POTATOES													
Cal SCS-BC k					0.32	0.74	1.09	1.14	0.57				
Cal SCS-BC Et					0.96	3.35	6.53	5.96	1.84				18.65
Std Dev Et					0.11	0.37	0.31	0.45	0.20				0.66
Net Irr in.					0.31	2.71	5.89	5.31	1.08				15.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ALTAMONT

From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994

Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 6370 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.80	1.23	1.02	0.84	0.84	0.89	0.83			
Cal SCS-BC Et				1.31	3.72	4.65	5.04	4.38	2.87	1.40			23.37
Std Dev Et				0.29	0.41	0.51	0.24	0.33	0.32	0.26			1.11
Net Irr in.				0.80	3.07	4.01	4.40	3.73	2.11	0.65			18.77
GARDEN													
Cal SCS-BC k					0.40	0.70	1.05	1.01	0.26				
Cal SCS-BC Et					1.20	3.21	6.29	5.29	0.82				16.81
Std Dev Et					0.13	0.35	0.30	0.40	0.09				0.62
Net Irr in.					0.55	2.57	5.64	4.64	0.06				13.46
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	1.74	1.27	0.99	1.08	1.25	1.76	2.00	2.00	
Cal SCS-BC Evap	0.74	0.96	1.70	3.28	5.26	5.78	5.95	5.61	4.04	2.97	1.31	0.82	38.41
Std Dev Evap	0.18	0.20	0.32	0.73	0.57	0.64	0.29	0.42	0.44	0.55	0.15	0.18	2.01
Net Loss in.	0.04	0.27	0.92	2.65	4.45	4.99	5.15	4.80	3.09	2.02	0.71		29.07
ET Ref													
Cal SCS-BC k	2.73	2.96	2.91	2.52	2.19	1.82	1.50	1.50	1.59	2.04	2.35	2.45	
Estimated Etr	1.00	1.42	2.47	4.13	6.65	8.30	9.00	7.81	5.12	3.44	1.53	1.00	51.88
Std Dev Et	0.25	0.30	0.47	0.92	0.73	0.92	0.43	0.59	0.56	0.64	0.18	0.22	2.65

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ALTON

From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994

Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 7040 ft., Lat. 37.43

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.88	6.76	8.30	8.87	9.91	9.95	10.12	9.50	8.38	7.79	6.83	6.70	100.00
Avg Temp F	27.59	30.58	34.61	42.30	50.86	59.69	66.43	64.41	57.11	48.07	36.48	28.79	45.58
Std Dev Temp	3.31	3.62	3.84	3.77	2.53	2.41	1.58	1.67	2.36	3.20	2.61	4.03	0.97
Avg Prec in.	1.71	1.68	1.75	1.15	0.88	0.44	1.61	1.80	1.51	1.20	1.68	1.52	16.93
Std Dev Prec	1.88	1.68	1.15	0.99	0.68	0.46	0.92	1.11	1.16	1.16	1.64	1.54	4.03
SCS-BC f in.	0.57	0.62	0.93	1.59	2.86	4.28	5.62	4.90	3.23	1.95	0.82	0.58	27.96
Std Dev f	0.07	0.08	0.21	0.38	0.36	0.42	0.32	0.30	0.33	0.34	0.13	0.09	1.10
ALFALFA													
Cal SCS-BC k					1.73	1.94	1.11	1.45	0.16				
Cal SCS-BC Et					4.96	8.31	6.26	7.11	0.51				27.16
Std Dev Et					0.63	0.81	0.35	0.44	0.05				1.37
Net Irr in.					4.26	7.95	4.97	5.68					22.86
PASTURE													
Cal SCS-BC k				0.38	1.40	1.26	0.99	0.99	0.88				
Cal SCS-BC Et				0.61	4.01	5.40	5.59	4.85	2.85				23.31
Std Dev Et				0.15	0.51	0.53	0.31	0.30	0.29				1.09
Net Irr in.					3.30	5.05	4.31	3.41	1.64				17.71
OTHR HAY													
Cal SCS-BC k				0.03	1.60	2.00	1.49	0.60	0.26				
Cal SCS-BC Et				0.05	4.58	8.56	8.36	2.94	0.85				25.35
Std Dev Et				0.01	0.58	0.83	0.47	0.18	0.09				1.33
Net Irr in.					3.88	8.21	7.07	1.50					20.66
SP GRAIN													
Cal SCS-BC k				0.19	1.09	1.88	1.47	0.40					
Cal SCS-BC Et				0.30	3.13	8.05	8.28	1.97					21.73
Std Dev Et				0.07	0.40	0.78	0.47	0.12					1.20
Net Irr in.					2.42	7.69	7.00	0.53					17.64

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ALTON

From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994

Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 7040 ft., Lat. 37.43

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.67	1.30	1.09	0.86	0.85	0.89				
Cal SCS-BC Et				1.06	3.72	4.65	4.82	4.18	2.89				21.32
Std Dev Et				0.25	0.47	0.45	0.27	0.26	0.29				1.03
Net Irr in.				0.14	3.01	4.30	3.53	2.74	1.68				15.41
GARDEN													
Cal SCS-BC k						0.55	0.89	1.14					
Cal SCS-BC Et						2.34	4.99	5.57					12.91
Std Dev Et						0.23	0.28	0.34					0.56
Net Irr in.						1.99	3.71	4.13					9.83
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	1.90	1.37	1.00	1.07	1.26	1.47	1.97	2.00	
Cal SCS-BC Evap	1.14	1.25	1.86	3.18	5.44	5.84	5.60	5.23	4.09	2.87	1.63	1.17	39.28
Std Dev Evap	0.14	0.16	0.42	0.76	0.69	0.57	0.32	0.32	0.41	0.50	0.26	0.18	1.76
Net Loss in.			0.10	2.03	4.56	5.40	4.00	3.43	2.58	1.68			23.77
ET Ref													
Cal SCS-BC k	2.65	2.95	2.35	2.53	2.32	1.94	1.53	1.52	1.65	1.80	2.24	2.86	
Estimated Etr	1.51	1.84	2.18	4.03	6.64	8.31	8.60	7.46	5.33	3.51	1.84	1.67	52.92
Std Dev Et	0.19	0.23	0.50	0.97	0.85	0.81	0.48	0.46	0.54	0.61	0.30	0.26	2.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BEAVER
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 5940 ft., Lat. 38.30

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.83	6.73	8.29	8.89	9.95	10.01	10.18	9.53	8.39	7.77	6.79	6.64	100.00
Avg Temp F	27.95	32.48	37.72	44.79	53.58	62.79	69.88	67.60	59.17	48.56	37.28	29.41	47.60
Std Dev Temp	3.52	3.39	3.59	3.36	2.72	2.55	1.94	1.79	2.54	3.19	2.60	3.38	1.19
Avg Prec in.	0.75	0.82	1.10	1.16	1.04	0.65	1.11	1.52	1.17	0.83	0.89	0.85	11.89
Std Dev Prec	0.65	0.59	0.68	0.67	0.72	0.59	0.77	1.00	0.95	0.71	0.57	0.61	2.49
SCS-BC f in.	0.57	0.67	1.10	1.85	3.28	4.86	6.37	5.52	3.53	2.00	0.86	0.59	31.21
Std Dev f	0.08	0.10	0.28	0.37	0.42	0.47	0.42	0.35	0.36	0.34	0.15	0.07	1.61
ALFALFA													
Cal SCS-BC k				0.03	1.61	1.27	1.18	1.22	0.77				
Cal SCS-BC Et				0.05	5.29	6.17	7.50	6.73	2.71				28.44
Std Dev Et				0.01	0.68	0.60	0.49	0.42	0.28				1.56
Net Irr in.					4.46	5.65	6.61	5.51	1.77				24.01
PASTURE													
Cal SCS-BC k				0.65	1.28	1.11	0.97	0.88	0.87				
Cal SCS-BC Et				1.20	4.21	5.42	6.16	4.83	3.06				24.87
Std Dev Et				0.24	0.54	0.53	0.40	0.30	0.32				1.41
Net Irr in.				0.27	3.37	4.91	5.27	3.61	2.12				19.55
CORN													
Cal SCS-BC k					0.24	0.44	0.95	1.28					
Cal SCS-BC Et					0.78	2.16	6.07	7.04					16.05
Std Dev Et					0.10	0.21	0.40	0.44					0.79
Net Irr in.						1.64	5.19	5.82					12.65
SP GRAIN													
Cal SCS-BC k			0.04	0.63	1.76	1.71	0.88						
Cal SCS-BC Et			0.04	1.16	5.78	8.34	5.58						20.90
Std Dev Et			0.01	0.23	0.74	0.81	0.37						1.48
Net Irr in.				0.23	4.94	7.82	4.70						17.69

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BEAVER
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 5940 ft., Lat. 38.30

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.73	1.15	0.96	0.83	0.75	0.75				
Cal SCS-BC Et				1.35	3.77	4.67	5.31	4.16	2.64				21.90
Std Dev Et				0.27	0.48	0.46	0.35	0.26	0.27				1.27
Net Irr in.				0.42	2.94	4.16	4.42	2.94	1.70				16.58
GARDEN													
Cal SCS-BC k					0.32	1.05	1.03	0.35	0.05				
Cal SCS-BC Et					1.04	5.12	6.55	1.94	0.18				14.83
Std Dev Et					0.13	0.50	0.43	0.12	0.02				0.87
Net Irr in.					0.21	4.61	5.66	0.72					11.19
E-LAKE													
Cal SCS-BC k	1.52	1.83	2.00	1.77	1.63	1.19	1.05	1.00	1.26	1.41	1.83	1.55	
Cal SCS-BC Evap	0.87	1.23	2.20	3.27	5.34	5.79	6.67	5.51	4.46	2.81	1.58	0.91	40.65
Std Dev Evap	0.12	0.17	0.56	0.65	0.68	0.56	0.44	0.35	0.46	0.48	0.27	0.11	2.25
Net Loss in.	0.12	0.41	1.10	2.11	4.30	5.14	5.56	3.99	3.30	1.98	0.69	0.06	28.76
ET Ref													
Cal SCS-BC k	1.69	2.04	2.52	2.01	2.05	1.71	1.49	1.35	1.59	1.65	2.04	1.72	
Estimated Etr	0.97	1.37	2.77	3.72	6.74	8.34	9.47	7.43	5.61	3.31	1.76	1.01	52.49
Std Dev Et	0.13	0.19	0.70	0.74	0.86	0.81	0.62	0.47	0.58	0.56	0.30	0.12	2.87

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLACK ROCK
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 4900 ft., Lat. 38.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.81	6.72	8.29	8.90	9.97	10.04	10.20	9.55	8.39	7.76	6.77	6.61	100.00
Avg Temp F	26.57	33.28	40.41	47.97	56.56	65.43	73.06	70.87	61.30	49.99	38.13	28.15	49.31
Std Dev Temp	5.58	4.35	3.56	2.97	2.53	2.35	1.40	1.85	2.68	2.85	3.01	4.53	1.02
Avg Prec in.	0.50	0.48	1.12	0.98	0.78	0.54	0.86	0.83	0.86	0.78	0.77	0.57	9.07
Std Dev Prec	0.41	0.41	0.63	0.57	0.63	0.59	0.82	0.69	0.89	0.56	0.58	0.37	1.99
SCS-BC f in.	0.54	0.71	1.31	2.22	3.76	5.38	7.08	6.18	3.85	2.15	0.91	0.56	34.65
Std Dev f	0.11	0.14	0.32	0.35	0.42	0.46	0.32	0.38	0.41	0.31	0.18	0.09	1.29
ALFALFA													
Cal SCS-BC k				0.39	1.76	1.24	1.01	0.99	1.19				
Cal SCS-BC Et				0.86	6.62	6.68	7.13	6.10	4.60				31.98
Std Dev Et				0.14	0.73	0.57	0.32	0.37	0.48				1.42
Net Irr in.				0.07	6.00	6.25	6.44	5.44	3.91				28.10
PASTURE													
Cal SCS-BC k				0.61	1.20	1.07	0.88	0.85	1.01	0.17			
Cal SCS-BC Et				1.36	4.52	5.76	6.26	5.26	3.88	0.37			27.42
Std Dev Et				0.22	0.50	0.49	0.28	0.32	0.41	0.05			1.17
Net Irr in.				0.57	3.90	5.33	5.58	4.60	3.19				23.16
SP GRAIN													
Cal SCS-BC k				0.31	1.32	1.65	1.12						
Cal SCS-BC Et				0.69	4.97	8.86	7.90						22.43
Std Dev Et				0.11	0.55	0.76	0.35						1.20
Net Irr in.					4.34	8.43	7.22						19.99
CORN													
Cal SCS-BC k					0.34	0.58	1.07	1.24	0.49				
Cal SCS-BC Et					1.26	3.14	7.60	7.64	1.90				21.54
Std Dev Et					0.14	0.27	0.34	0.47	0.20				0.76
Net Irr in.					0.64	2.70	6.92	6.98	1.21				18.44

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLACK ROCK
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 4900 ft., Lat. 38.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.85	1.06	0.92	0.76	0.73	0.87	0.33			
Cal SCS-BC Et				1.87	3.98	4.96	5.40	4.53	3.34	0.71			24.78
Std Dev Et				0.30	0.44	0.43	0.24	0.28	0.35	0.10			1.08
Net Irr in.				1.09	3.35	4.53	4.71	3.87	2.65	0.08			20.28
GARDEN													
Cal SCS-BC k					0.44	0.75	1.05	0.69	0.06				
Cal SCS-BC Et					1.65	4.05	7.47	4.25	0.23				17.65
Std Dev Et					0.18	0.35	0.33	0.26	0.02				0.66
Net Irr in.					1.03	3.61	6.78	3.59					15.01
E-LAKE													
Cal SCS-BC k	1.92	2.00	1.96	1.56	1.48	1.12	0.97	0.97	1.23	1.43	1.83	2.00	
Cal SCS-BC Evap	1.04	1.42	2.57	3.46	5.56	6.02	6.89	5.96	4.72	3.07	1.68	1.12	43.52
Std Dev Evap	0.22	0.28	0.63	0.55	0.62	0.52	0.31	0.36	0.50	0.45	0.34	0.19	1.72
Net Loss in.	0.54	0.93	1.45	2.48	4.78	5.48	6.04	5.13	3.86	2.29	0.91	0.56	34.45
ET Ref													
Cal SCS-BC k	2.14	2.48	2.15	1.87	1.89	1.65	1.36	1.31	1.55	1.69	2.04	2.42	
Estimated Etr	1.16	1.76	2.82	4.15	7.10	8.86	9.64	8.09	5.96	3.63	1.86	1.36	56.39
Std Dev Et	0.25	0.35	0.69	0.66	0.79	0.76	0.43	0.49	0.63	0.53	0.37	0.23	2.18

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLANDING
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 6130 ft., Lat. 37.62

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.76	8.30	8.88	9.92	9.96	10.14	9.50	8.38	7.79	6.82	6.69	100.00
Avg Temp F	27.34	33.65	39.60	47.44	57.11	67.22	73.23	70.91	62.75	51.65	39.06	29.82	49.98
Std Dev Temp	4.17	3.38	3.12	3.28	2.36	2.81	1.33	1.61	2.74	3.34	2.47	3.85	1.14
Avg Prec in.	1.25	0.91	0.95	0.75	0.62	0.46	1.32	1.43	1.28	1.36	1.08	1.18	12.60
Std Dev Prec	1.21	0.80	0.77	0.50	0.45	0.51	0.87	1.27	1.00	1.33	0.70	1.13	3.44
SCS-BC f in.	0.56	0.71	1.23	2.15	3.83	5.70	7.08	6.16	4.07	2.34	0.97	0.60	35.40
Std Dev f	0.09	0.10	0.28	0.39	0.39	0.57	0.30	0.32	0.43	0.38	0.17	0.10	1.66
ALFALFA													
Cal SCS-BC k				1.30	1.65	0.98	1.07	1.05	0.95	0.73			
Cal SCS-BC Et				2.80	6.31	5.61	7.54	6.49	3.86	1.70			34.30
Std Dev Et				0.50	0.65	0.56	0.32	0.34	0.40	0.28			1.71
Net Irr in.				2.19	5.82	5.24	6.49	5.34	2.83	0.61			28.52
PASTURE													
Cal SCS-BC k			0.23	0.95	1.07	0.87	0.79	0.78	0.82	0.62			
Cal SCS-BC Et			0.29	2.05	4.11	4.97	5.62	4.79	3.33	1.44			26.59
Std Dev Et			0.07	0.37	0.42	0.49	0.24	0.25	0.35	0.23			1.33
Net Irr in.				1.45	3.61	4.60	4.56	3.64	2.30	0.35			20.52
SP GRAIN													
Cal SCS-BC k				0.54	1.40	1.34	0.78						
Cal SCS-BC Et				1.17	5.37	7.64	5.54						19.72
Std Dev Et				0.21	0.55	0.76	0.23						1.23
Net Irr in.				0.56	4.88	7.27	4.48						17.20

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLANDING

From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994

Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 6130 ft., Lat. 37.62

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.24	1.03	0.93	0.75	0.68	0.67	0.71	0.53			
Cal SCS-BC Et			0.30	2.22	3.55	4.28	4.85	4.12	2.87	1.24			23.43
Std Dev Et			0.07	0.40	0.36	0.42	0.21	0.22	0.30	0.20			1.21
Net Irr in.				1.62	3.05	3.91	3.79	2.98	1.84	0.16			17.35
GARDEN													
Cal SCS-BC k					0.44	0.63	0.95	0.63	0.18				
Cal SCS-BC Et					1.70	3.60	6.74	3.86	0.72				16.62
Std Dev Et					0.17	0.36	0.29	0.20	0.08				0.69
Net Irr in.					1.20	3.23	5.69	2.71					12.83
E-LAKE													
Cal SCS-BC k	1.77	2.00	2.00	1.68	1.40	1.04	0.91	0.96	1.10	1.24	1.54	1.74	
Cal SCS-BC Evap	1.00	1.41	2.47	3.60	5.36	5.91	6.47	5.92	4.47	2.92	1.50	1.05	42.08
Std Dev Evap	0.16	0.20	0.56	0.65	0.55	0.59	0.27	0.31	0.47	0.47	0.26	0.17	2.13
Net Loss in.		0.50	1.51	2.85	4.74	5.45	5.15	4.48	3.19	1.56	0.42		29.85
ET Ref													
Cal SCS-BC k	1.97	2.25	2.38	1.86	1.66	1.34	1.22	1.20	1.26	1.38	1.71	1.94	
Estimated Etr	1.11	1.59	2.94	4.00	6.34	7.64	8.65	7.36	5.12	3.24	1.66	1.17	50.83
Std Dev Et	0.17	0.23	0.67	0.72	0.65	0.76	0.37	0.39	0.54	0.52	0.29	0.19	2.53

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLUFF
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 4320 ft., Lat. 37.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.89	6.77	8.30	8.87	9.90	9.94	10.12	9.49	8.38	7.79	6.84	6.71	100.00
Avg Temp F	28.73	37.29	44.89	53.21	61.96	70.68	77.56	75.25	66.24	53.47	41.01	30.50	53.40
Std Dev Temp	4.85	3.70	2.74	2.72	2.09	2.10	1.40	1.80	2.06	2.14	2.12	4.49	1.11
Avg Prec in.	0.72	0.67	0.67	0.48	0.41	0.23	0.92	0.78	0.73	1.06	0.75	0.75	8.17
Std Dev Prec	0.72	0.60	0.58	0.33	0.34	0.28	0.95	0.77	0.68	1.20	0.60	0.62	2.57
SCS-BC f in.	0.60	0.88	1.73	2.87	4.66	6.39	8.07	7.06	4.62	2.55	1.11	0.62	41.17
Std Dev f	0.11	0.20	0.29	0.37	0.38	0.45	0.33	0.39	0.34	0.26	0.16	0.10	1.66
ALFALFA													
Cal SCS-BC k			0.18	1.19	1.44	1.00	0.84	0.84	1.11	0.79			
Cal SCS-BC Et			0.31	3.43	6.70	6.41	6.78	5.96	5.13	2.01			36.71
Std Dev Et			0.05	0.44	0.55	0.45	0.28	0.33	0.38	0.20			1.60
Net Irr in.				3.04	6.37	6.22	6.05	5.33	4.54	1.16			32.72
PASTURE													
Cal SCS-BC k			0.36	0.86	0.94	0.87	0.74	0.71	0.82	0.79			
Cal SCS-BC Et			0.62	2.47	4.36	5.55	5.94	5.03	3.81	2.03			29.81
Std Dev Et			0.10	0.32	0.36	0.39	0.25	0.28	0.28	0.20			1.26
Net Irr in.			0.09	2.09	4.03	5.37	5.21	4.40	3.23	1.18			25.59
SP GRAIN													
Cal SCS-BC k			0.12	0.59	1.33	1.33	0.49						
Cal SCS-BC Et			0.21	1.70	6.18	8.51	3.98						20.57
Std Dev Et			0.03	0.22	0.51	0.59	0.17						1.12
Net Irr in.				1.31	5.85	8.33	3.24						18.73
CORN													
Cal SCS-BC k					0.16	0.40	0.87	1.03	0.89				
Cal SCS-BC Et					0.77	2.56	7.03	7.30	4.11				21.77
Std Dev Et					0.06	0.18	0.29	0.40	0.30				0.87
Net Irr in.					0.44	2.38	6.29	6.68	3.53				19.32

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BLUFF

From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994

Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 4320 ft., Lat. 37.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.41	0.84	0.81	0.75	0.63	0.61	0.71	0.69			
Cal SCS-BC Et			0.72	2.41	3.75	4.78	5.12	4.33	3.29	1.75			26.15
Std Dev Et			0.12	0.31	0.31	0.33	0.21	0.24	0.24	0.18			1.12
Net Irr in.			0.18	2.02	3.43	4.60	4.39	3.71	2.71	0.90			21.93
GARDEN													
Cal SCS-BC k				0.08	0.40	0.66	0.89	0.57	0.22				
Cal SCS-BC Et				0.23	1.88	4.21	7.16	4.05	1.00				18.53
Std Dev Et				0.03	0.15	0.29	0.30	0.22	0.07				0.75
Net Irr in.					1.55	4.02	6.43	3.43	0.42				15.84
E-LAKE													
Cal SCS-BC k	1.87	1.82	1.55	1.35	1.21	1.02	0.84	0.87	1.10	1.34	1.66	2.00	
Cal SCS-BC Evap	1.11	1.60	2.69	3.87	5.63	6.55	6.77	6.15	5.08	3.43	1.85	1.23	45.97
Std Dev Evap	0.20	0.36	0.44	0.50	0.46	0.46	0.28	0.34	0.38	0.35	0.27	0.19	1.93
Net Loss in.	0.39	0.93	2.02	3.39	5.22	6.32	5.85	5.38	4.35	2.37	1.11	0.48	37.80
ET Ref													
Cal SCS-BC k	2.07	2.02	1.72	1.50	1.44	1.34	1.13	1.10	1.27	1.49	1.85	2.32	
Estimated Etr	1.24	1.78	2.99	4.30	6.70	8.54	9.14	7.73	5.87	3.81	2.06	1.43	55.59
Std Dev Et	0.22	0.40	0.49	0.55	0.55	0.60	0.38	0.43	0.43	0.38	0.30	0.22	2.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BOULDER
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE/PANGUITCH 10-26-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE/PANGUITCH: 1986-1991 Elev. 6700 ft., Lat. 37.92

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.85	6.75	8.29	8.88	9.93	9.98	10.15	9.52	8.38	7.78	6.81	6.67	100.00
Avg Temp F	27.25	32.22	38.04	45.74	54.69	64.81	71.24	68.87	61.17	50.99	38.10	29.21	48.53
Std Dev Temp	3.87	3.58	3.74	3.73	2.74	2.93	1.56	1.67	2.77	3.61	2.82	3.95	1.02
Avg Prec in.	0.86	0.73	1.01	0.60	0.80	0.41	1.16	1.52	1.11	1.00	0.78	0.76	10.73
Std Dev Prec	0.78	0.70	0.86	0.62	0.65	0.49	0.99	0.85	0.87	1.14	0.97	0.75	3.04
SCS-BC f in.	0.56	0.67	1.12	1.96	3.45	5.24	6.65	5.75	3.83	2.27	0.91	0.59	32.99
Std Dev f	0.08	0.09	0.31	0.42	0.43	0.57	0.34	0.33	0.41	0.41	0.18	0.09	1.38
ALFALFA													
Cal SCS-BC k				0.72	1.99	1.57	0.99	0.96	1.03	0.25			
Cal SCS-BC Et				1.41	6.86	8.22	6.56	5.50	3.95	0.57			33.06
Std Dev Et				0.30	0.86	0.89	0.33	0.31	0.43	0.10			1.60
Net Irr in.				0.93	6.22	7.89	5.63	4.28	3.07				28.02
PASTURE													
Cal SCS-BC k				0.76	1.32	1.04	0.85	0.82	0.89	0.31			
Cal SCS-BC Et				1.49	4.53	5.46	5.66	4.74	3.39	0.70			25.97
Std Dev Et				0.32	0.57	0.59	0.29	0.27	0.37	0.12			1.19
Net Irr in.				1.01	3.90	5.13	4.73	3.52	2.51				20.80
OTHR HAY													
Cal SCS-BC k				0.71	1.93	1.68	1.09	0.47	0.31				
Cal SCS-BC Et				1.38	6.64	8.82	7.24	2.72	1.20				28.01
Std Dev Et				0.30	0.83	0.95	0.37	0.15	0.13				1.54
Net Irr in.				0.91	6.00	8.49	6.31	1.50	0.32				23.53
SP GRAIN													
Cal SCS-BC k				0.29	1.32	1.60	1.15	0.18					
Cal SCS-BC Et				0.56	4.54	8.37	7.64	1.06					22.18
Std Dev Et				0.12	0.57	0.90	0.39	0.06					1.24
Net Irr in.				0.08	3.90	8.05	6.71						18.74

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BOULDER
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE/PANGUITCH 10-26-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE/PANGUITCH: 1986-1991 Elev. 6700 ft., Lat. 37.92

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.98	1.22	0.90	0.73	0.71	0.76	0.33			
Cal SCS-BC Et				1.93	4.19	4.71	4.88	4.08	2.93	0.76			23.47
Std Dev Et				0.41	0.53	0.51	0.25	0.23	0.32	0.14			1.14
Net Irr in.				1.45	3.55	4.38	3.95	2.87	2.04				18.24
GARDEN													
Cal SCS-BC k					0.67	1.14	0.81	0.29	0.27	0.06			
Cal SCS-BC Et					2.32	5.99	5.42	1.66	1.04	0.13			16.56
Std Dev Et					0.29	0.65	0.28	0.09	0.11	0.02			0.80
Net Irr in.					1.68	5.66	4.49	0.44	0.16				12.44
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	1.69	1.15	0.85	0.94	1.12	1.41	1.79	2.00	
Cal SCS-BC Evap	1.12	1.33	2.25	3.92	5.82	6.01	5.63	5.41	4.30	3.20	1.64	1.18	41.79
Std Dev Evap	0.16	0.19	0.61	0.84	0.73	0.65	0.29	0.31	0.46	0.57	0.32	0.19	2.06
Net Loss in.	0.26	0.60	1.23	3.32	5.02	5.60	4.46	3.89	3.19	2.20	0.86	0.42	31.06
ET Ref													
Cal SCS-BC k	2.67	2.83	2.63	2.47	2.17	1.60	1.31	1.27	1.37	1.49	1.99	2.47	
Estimated Etr	1.50	1.89	2.96	4.84	7.49	8.40	8.71	7.29	5.22	3.39	1.82	1.45	54.95
Std Dev Et	0.22	0.27	0.81	1.04	0.94	0.91	0.44	0.41	0.56	0.61	0.36	0.23	2.65

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BRYCE CANYON NP HQ
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH

Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 10-26-1994
Elev. 7920 ft., Lat. 37.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.79	6.82	6.69	100.00
Avg Temp F	22.60	25.32	30.57	38.21	46.97	56.40	62.77	60.60	52.98	43.15	31.56	23.84	41.25
Std Dev Temp	3.41	3.42	3.90	3.54	2.40	2.57	1.34	1.54	2.18	3.03	2.70	4.00	1.04
Avg Prec in.	1.16	1.35	1.52	0.95	1.03	0.57	1.51	2.20	1.69	1.20	1.20	1.10	15.47
Std Dev Prec	1.05	1.39	1.12	1.15	0.80	0.67	1.07	1.53	1.37	1.17	1.24	1.01	3.89
SCS-BC f in.	0.47	0.51	0.77	1.22	2.33	3.73	4.92	4.23	2.68	1.47	0.65	0.48	23.46
Std Dev f	0.07	0.07	0.12	0.28	0.32	0.42	0.25	0.26	0.27	0.28	0.06	0.08	1.06
ALFALFA													
Cal SCS-BC k					1.36	2.05	1.34	1.52	0.73				
Cal SCS-BC Et					3.16	7.66	6.59	6.45	1.95				25.82
Std Dev Et					0.43	0.87	0.34	0.39	0.20				1.31
Net Irr in.					2.34	7.20	5.39	4.69	0.60				20.21
PASTURE													
Cal SCS-BC k					1.22	1.34	1.08	1.04	0.81				
Cal SCS-BC Et					2.86	5.01	5.33	4.41	2.17				19.78
Std Dev Et					0.39	0.57	0.27	0.27	0.22				0.98
Net Irr in.					2.03	4.55	4.12	2.65	0.82				14.17
OTHR HAY													
Cal SCS-BC k					1.25	1.99	1.75	1.30	0.37				
Cal SCS-BC Et					2.92	7.44	8.60	5.53	0.99				25.47
Std Dev Et					0.40	0.84	0.44	0.34	0.10				1.29
Net Irr in.					2.10	6.98	7.39	3.76					20.23
SP GRAIN													
Cal SCS-BC k					0.78	1.77	1.67	0.96					
Cal SCS-BC Et					1.81	6.62	8.20	4.05					20.67
Std Dev Et					0.25	0.75	0.42	0.25					1.07
Net Irr in.					0.99	6.16	6.99	2.28					16.42

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at BRYCE CANYON NP HQ
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-26-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 7920 ft., Lat. 37.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.11	1.42	1.18	0.93	0.90	0.86				
Cal SCS-BC Et				0.14	3.30	4.39	4.59	3.80	2.31				18.53
Std Dev Et				0.03	0.45	0.50	0.24	0.23	0.24				0.96
Net Irr in.					2.48	3.93	3.39	2.04	0.96				12.79
GARDEN													
Cal SCS-BC k						0.62	1.08	1.08	0.28				
Cal SCS-BC Et						2.30	5.31	4.58	0.76				12.96
Std Dev Et						0.26	0.27	0.28	0.08				0.55
Net Irr in.						1.85	4.10	2.82					8.77
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	2.00	1.51	1.11	1.15	1.47	1.87	2.00	2.00	
Cal SCS-BC Evap	0.93	1.03	1.55	2.43	4.67	5.63	5.47	4.86	3.95	2.74	1.29	0.96	35.49
Std Dev Evap	0.14	0.14	0.25	0.57	0.63	0.64	0.28	0.30	0.40	0.52	0.11	0.16	1.71
Net Loss in.			0.03	1.49	3.63	5.05	3.96	2.65	2.25	1.54	0.09		20.71
ET Ref													
Cal SCS-BC k	3.11	3.38	2.61	3.15	2.63	2.10	1.67	1.60	1.88	2.26	2.62	3.35	
Estimated Etr	1.45	1.73	2.02	3.84	6.13	7.83	8.20	6.78	5.03	3.31	1.69	1.60	49.61
Std Dev Et	0.22	0.23	0.33	0.89	0.83	0.89	0.42	0.41	0.52	0.62	0.15	0.27	2.42

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CAPITAL REEF NP
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE 10-31-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE: 1989-1990 Elev. 5500 ft., Lat. 38.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.83	6.73	8.29	8.89	9.95	10.01	10.18	9.53	8.39	7.77	6.79	6.64	100.00
Avg Temp F	29.28	36.12	44.56	52.36	61.87	72.21	77.84	75.69	67.68	55.43	41.60	31.41	53.84
Std Dev Temp	4.13	3.51	3.39	3.38	2.43	2.44	1.27	1.54	2.04	3.19	2.36	3.74	0.96
Avg Prec in.	0.40	0.35	0.66	0.44	0.65	0.43	1.08	1.14	0.74	0.70	0.60	0.21	7.40
Std Dev Prec	0.46	0.30	0.55	0.38	0.45	0.49	0.61	0.72	0.58	0.61	0.66	0.28	2.00
SCS-BC f in.	0.61	0.81	1.70	2.77	4.67	6.77	8.18	7.18	4.87	2.79	1.15	0.64	42.15
Std Dev f	0.10	0.17	0.36	0.45	0.45	0.53	0.31	0.33	0.35	0.40	0.18	0.12	1.41
ALFALFA													
Cal SCS-BC k				1.03	1.60	1.05	0.85	1.15	0.88	0.64			
Cal SCS-BC Et				2.86	7.46	7.12	6.97	8.27	4.29	1.79			38.77
Std Dev Et				0.46	0.72	0.56	0.26	0.39	0.31	0.25			1.40
Net Irr in.				2.52	6.94	6.77	6.11	7.36	3.70	1.23			34.63
PASTURE													
Cal SCS-BC k			0.09	0.79	1.05	0.91	0.73	0.79	0.76	0.70			
Cal SCS-BC Et			0.16	2.18	4.89	6.17	6.01	5.67	3.70	1.96			30.74
Std Dev Et			0.03	0.35	0.47	0.48	0.22	0.26	0.26	0.28			1.09
Net Irr in.				1.83	4.37	5.82	5.15	4.76	3.11	1.40			26.44
SP GRAIN													
Cal SCS-BC k				0.44	1.38	1.40	0.64						
Cal SCS-BC Et				1.23	6.44	9.49	5.25						22.40
Std Dev Et				0.20	0.62	0.75	0.20						1.12
Net Irr in.				0.88	5.92	9.14	4.39						20.33

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CAPITAL REEF NP
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE 10-31-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE: 1989-1990 Elev. 5500 ft., Lat. 38.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.17	0.85	0.90	0.78	0.63	0.68	0.65	0.71			
Cal SCS-BC Et			0.30	2.35	4.21	5.31	5.18	4.89	3.19	1.97			27.39
Std Dev Et			0.06	0.38	0.40	0.42	0.19	0.23	0.23	0.28			1.01
Net Irr in.				2.01	3.69	4.97	4.32	3.98	2.59	1.41			22.96
GARDEN													
Cal SCS-BC k				0.07	0.45	0.70	0.88	0.64	0.24	0.05			
Cal SCS-BC Et				0.20	2.10	4.71	7.24	4.56	1.18	0.14			20.13
Std Dev Et				0.03	0.20	0.37	0.27	0.21	0.08	0.02			0.58
Net Irr in.					1.58	4.37	6.37	3.65	0.59				16.57
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.66	1.37	1.22	0.98	0.76	0.89	0.93	1.35	1.70	2.00	
Cal SCS-BC Evap	1.21	1.62	2.83	3.81	5.71	6.61	6.21	6.38	4.53	3.76	1.95	1.28	45.91
Std Dev Evap	0.20	0.33	0.59	0.62	0.55	0.52	0.23	0.30	0.32	0.53	0.30	0.23	1.75
Net Loss in.	0.81	1.27	2.17	3.37	5.06	6.18	5.13	5.24	3.80	3.06	1.35	1.07	38.51
ET Ref													
Cal SCS-BC k	2.62	2.59	1.85	1.53	1.61	1.40	1.13	1.22	1.17	1.55	1.89	2.35	
Estimated Etr	1.58	2.10	3.15	4.23	7.51	9.49	9.25	8.73	5.69	4.33	2.17	1.50	59.74
Std Dev Et	0.26	0.43	0.66	0.69	0.72	0.75	0.35	0.41	0.40	0.61	0.34	0.27	2.15

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CEDAR CITY FAA AP
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 5620 ft., Lat. 37.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	29.54	34.60	40.08	47.53	56.52	66.68	74.12	72.00	63.04	51.69	39.73	30.68	50.52
Std Dev Temp	4.63	4.06	3.72	3.39	2.80	2.70	1.82	1.65	3.09	3.22	2.89	4.67	1.28
Avg Prec in.	0.69	0.89	1.36	1.10	0.84	0.43	1.09	1.47	0.98	0.95	1.00	0.70	11.49
Std Dev Prec	0.73	0.62	0.81	0.68	0.61	0.34	0.97	1.16	1.03	0.76	0.75	0.45	2.85
SCS-BC f in.	0.61	0.76	1.29	2.16	3.74	5.59	7.28	6.38	4.12	2.35	1.02	0.63	35.94
Std Dev f	0.10	0.16	0.33	0.40	0.46	0.53	0.42	0.33	0.48	0.37	0.20	0.13	1.75
ALFALFA													
Cal SCS-BC k				0.83	1.78	1.10	1.01	1.13	1.02	0.42			
Cal SCS-BC Et				1.79	6.66	6.13	7.39	7.23	4.19	0.99			34.39
Std Dev Et				0.33	0.83	0.58	0.42	0.38	0.49	0.16			1.80
Net Irr in.				0.91	5.99	5.78	6.52	6.05	3.41	0.23			28.90
PASTURE													
Cal SCS-BC k				0.95	1.21	0.97	0.81	0.79	0.92	0.51			
Cal SCS-BC Et				2.06	4.51	5.44	5.87	5.01	3.79	1.19			27.88
Std Dev Et				0.38	0.56	0.52	0.34	0.26	0.44	0.19			1.48
Net Irr in.				1.18	3.84	5.10	5.00	3.83	3.01	0.43			22.39
SP GRAIN													
Cal SCS-BC k				0.46	1.46	1.50	0.92						
Cal SCS-BC Et				0.99	5.45	8.37	6.72						21.52
Std Dev Et				0.18	0.68	0.80	0.38						1.41
Net Irr in.				0.11	4.77	8.03	5.85						18.75
CORN													
Cal SCS-BC k					0.22	0.43	0.90	1.14	0.46				
Cal SCS-BC Et					0.81	2.38	6.57	7.30	1.88				18.95
Std Dev Et					0.10	0.23	0.38	0.38	0.22				0.82
Net Irr in.					0.14	2.04	5.70	6.12	1.10				15.10

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CEDAR CITY FAA AP
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 5620 ft., Lat. 37.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.25	1.09	1.05	0.84	0.69	0.68	0.79	0.58			
Cal SCS-BC Et			0.32	2.37	3.91	4.69	5.06	4.32	3.26	1.35			25.27
Std Dev Et			0.08	0.44	0.48	0.45	0.29	0.23	0.38	0.21			1.36
Net Irr in.				1.49	3.23	4.34	4.19	3.14	2.48	0.59			19.46
GARDEN													
Cal SCS-BC k					0.43	0.68	0.96	0.64	0.21				
Cal SCS-BC Et					1.61	3.81	6.98	4.05	0.85				17.30
Std Dev Et					0.20	0.36	0.40	0.21	0.10				0.81
Net Irr in.					0.94	3.46	6.11	2.87	0.07				13.46
E-LAKE													
Cal SCS-BC k	1.82	1.59	2.00	1.75	1.47	1.04	0.87	0.91	1.15	1.34	1.68	1.81	
Cal SCS-BC Evap	1.12	1.21	2.57	3.78	5.51	5.79	6.31	5.78	4.74	3.15	1.72	1.14	42.83
Std Dev Evap	0.19	0.25	0.65	0.70	0.68	0.55	0.36	0.30	0.55	0.49	0.34	0.23	2.26
Net Loss in.	0.43	0.33	1.22	2.68	4.67	5.37	5.23	4.31	3.76	2.20	0.72	0.44	31.34
ET Ref													
Cal SCS-BC k	2.03	1.77	2.38	1.97	1.87	1.50	1.24	1.21	1.42	1.53	1.86	2.02	
Estimated Etr	1.24	1.35	3.06	4.25	6.97	8.37	9.03	7.71	5.83	3.60	1.91	1.27	54.61
Std Dev Et	0.21	0.28	0.78	0.79	0.86	0.80	0.52	0.40	0.68	0.56	0.37	0.26	2.83

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CEDAR POINT
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 6760 ft., Lat. 37.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	24.80	29.22	35.73	44.22	53.67	63.74	70.03	67.44	59.49	48.61	36.22	27.02	46.68
Std Dev Temp	3.54	3.47	3.52	3.03	2.40	2.54	1.33	1.74	2.53	2.93	2.70	3.78	0.98
Avg Prec in.	1.17	1.02	1.27	0.92	0.84	0.44	1.43	1.48	1.56	1.78	1.46	1.33	14.69
Std Dev Prec	1.05	0.98	0.98	0.62	0.66	0.58	0.81	0.96	1.24	1.68	1.03	1.09	3.80
SCS-BC f in.	0.51	0.59	0.98	1.78	3.28	5.02	6.38	5.47	3.57	2.00	0.81	0.54	30.95
Std Dev f	0.07	0.07	0.22	0.33	0.37	0.48	0.28	0.34	0.36	0.31	0.13	0.08	1.22
ALFALFA													
Cal SCS-BC k				0.76	1.80	1.14	1.29	0.97	1.19	0.19			
Cal SCS-BC Et				1.36	5.90	5.72	8.21	5.28	4.26	0.38			31.12
Std Dev Et				0.25	0.67	0.55	0.36	0.33	0.43	0.06			1.41
Net Irr in.				0.62	5.23	5.37	7.07	4.10	3.01				25.40
PASTURE													
Cal SCS-BC k				0.90	1.16	1.00	0.85	0.86	0.95	0.55			
Cal SCS-BC Et				1.60	3.81	5.03	5.41	4.70	3.39	1.11			25.04
Std Dev Et				0.29	0.43	0.48	0.24	0.29	0.34	0.17			1.09
Net Irr in.				0.86	3.14	4.68	4.26	3.52	2.14				18.60
SP GRAIN													
Cal SCS-BC k				0.33	1.24	1.54	1.14	0.17					
Cal SCS-BC Et				0.60	4.08	7.72	7.30	0.94					20.63
Std Dev Et				0.11	0.46	0.74	0.32	0.06					1.10
Net Irr in.					3.41	7.37	6.16						16.93

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CEDAR POINT
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 6760 ft., Lat. 37.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.06	1.06	0.86	0.73	0.74	0.82	0.48			
Cal SCS-BC Et				1.88	3.46	4.33	4.66	4.05	2.92	0.95			22.26
Std Dev Et				0.35	0.39	0.41	0.21	0.25	0.30	0.15			1.00
Net Irr in.				1.15	2.79	3.98	3.52	2.87	1.67				15.98
GARDEN													
Cal SCS-BC k					0.35	0.59	0.91	0.90	0.37				
Cal SCS-BC Et					1.15	2.96	5.80	4.91	1.31				16.13
Std Dev Et					0.13	0.28	0.26	0.30	0.13				0.64
Net Irr in.					0.48	2.61	4.66	3.73	0.06				11.53
E-LAKE													
Cal SCS-BC k	1.90	2.00	2.00	1.83	1.60	1.20	0.98	1.07	1.28	1.45	1.90	1.85	
Cal SCS-BC Evap	0.97	1.19	1.95	3.26	5.25	6.02	6.26	5.84	4.57	2.91	1.54	1.01	40.77
Std Dev Evap	0.14	0.15	0.44	0.60	0.59	0.58	0.28	0.36	0.47	0.45	0.25	0.15	1.73
Net Loss in.		0.17	0.68	2.33	4.41	5.58	4.83	4.37	3.01	1.14	0.07		26.59
ET Ref													
Cal SCS-BC k	2.12	2.48	2.70	2.03	1.88	1.54	1.30	1.32	1.46	1.61	2.11	2.06	
Estimated Etr	1.08	1.47	2.63	3.62	6.18	7.74	8.32	7.24	5.22	3.24	1.71	1.12	49.56
Std Dev Et	0.15	0.18	0.60	0.66	0.70	0.74	0.37	0.45	0.53	0.50	0.27	0.16	2.10

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CIRCLEVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6070 ft., Lat. 38.17

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.84	6.74	8.29	8.89	9.94	10.00	10.17	9.53	8.38	7.77	6.79	6.65	100.00
Avg Temp F	26.94	31.80	37.07	44.51	53.57	63.05	70.26	67.82	59.19	48.36	36.99	28.25	47.32
Std Dev Temp	3.81	3.23	3.61	3.24	2.62	2.52	1.37	1.66	2.37	3.00	2.74	3.61	0.94
Avg Prec in.	0.50	0.46	0.72	0.63	0.88	0.52	0.93	1.32	0.98	0.69	0.58	0.59	8.81
Std Dev Prec	0.46	0.41	0.52	0.48	0.72	0.44	0.71	0.87	0.85	0.67	0.47	0.56	2.17
SCS-BC f in.	0.55	0.65	1.06	1.82	3.28	4.91	6.44	5.56	3.53	1.98	0.85	0.56	31.18
Std Dev f	0.08	0.08	0.26	0.35	0.41	0.47	0.29	0.32	0.34	0.31	0.15	0.07	1.24
ALFALFA													
Cal SCS-BC k					1.38	1.77	1.09	1.43	1.11				
Cal SCS-BC Et					4.53	8.67	7.00	7.93	3.92				32.05
Std Dev Et					0.56	0.83	0.32	0.46	0.38				1.39
Net Irr in.					3.83	8.25	6.26	6.87	3.13				28.34
PASTURE													
Cal SCS-BC k				0.05	0.99	1.14	0.94	0.93	0.89				
Cal SCS-BC Et				0.08	3.23	5.59	6.07	5.15	3.14				23.26
Std Dev Et				0.02	0.40	0.54	0.28	0.30	0.30				0.99
Net Irr in.					2.52	5.17	5.33	4.10	2.36				19.47
OTHR HAY													
Cal SCS-BC k					1.33	1.78	1.50	0.90	0.48				
Cal SCS-BC Et					4.34	8.75	9.67	4.99	1.71				29.46
Std Dev Et					0.54	0.84	0.44	0.29	0.17				1.30
Net Irr in.					3.64	8.33	8.92	3.93	0.93				25.75
SP GRAIN													
Cal SCS-BC k					0.50	1.38	1.45	0.95					
Cal SCS-BC Et					1.63	6.75	9.33	5.27					22.99
Std Dev Et					0.20	0.65	0.43	0.31					0.94
Net Irr in.					0.93	6.33	8.59	4.22					20.07

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CIRCLEVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6070 ft., Lat. 38.17

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.17	1.15	1.00	0.81	0.80	0.91				
Cal SCS-BC Et				0.31	3.78	4.89	5.23	4.44	3.20				21.85
Std Dev Et				0.06	0.47	0.47	0.24	0.26	0.31				0.98
Net Irr in.					3.08	4.47	4.48	3.38	2.42				17.83
GARDEN													
Cal SCS-BC k						0.51	0.86	1.05	0.33				
Cal SCS-BC Et						2.48	5.52	5.84	1.15				15.00
Std Dev Et						0.24	0.25	0.34	0.11				0.55
Net Irr in.						2.06	4.78	4.79	0.37				12.00
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.77	1.91	1.65	1.22	0.93	0.99	1.26	1.44	2.00	2.00	
Cal SCS-BC Evap	1.11	1.30	1.87	3.47	5.41	5.99	6.00	5.49	4.46	2.85	1.69	1.13	40.77
Std Dev Evap	0.16	0.16	0.46	0.67	0.67	0.57	0.27	0.32	0.43	0.45	0.30	0.15	1.77
Net Loss in.	0.60	0.84	1.15	2.83	4.53	5.47	5.07	4.17	3.48	2.16	1.11	0.54	31.96
ET Ref													
Cal SCS-BC k	3.16	3.06	1.97	2.16	2.08	1.78	1.45	1.43	1.67	1.79	3.01	3.27	
Estimated Etr	1.75	1.99	2.08	3.93	6.83	8.72	9.33	7.93	5.91	3.53	2.54	1.85	56.38
Std Dev Et	0.25	0.24	0.52	0.76	0.85	0.84	0.43	0.46	0.57	0.56	0.45	0.24	2.32

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at COALVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 5550 ft., Lat. 40.92

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.19	10.35	9.63	8.40	7.70	6.64	6.45	100.00
Avg Temp F	23.70	28.07	35.47	43.93	51.89	59.70	66.31	64.47	56.01	46.84	35.44	25.66	44.79
Std Dev Temp	4.27	4.31	4.02	2.82	2.07	1.99	1.19	1.74	2.15	2.43	2.85	3.76	1.13
Avg Prec in.	1.08	1.12	1.52	1.96	1.79	1.24	0.93	1.05	1.38	1.54	1.58	1.27	16.48
Std Dev Prec	0.86	0.71	0.71	1.07	1.02	1.01	0.58	1.11	1.22	0.96	0.86	1.01	3.92
SCS-BC f in.	0.47	0.56	0.96	1.77	3.07	4.38	5.72	4.98	3.09	1.80	0.75	0.50	28.04
Std Dev f	0.09	0.09	0.21	0.30	0.31	0.36	0.25	0.32	0.29	0.24	0.13	0.07	1.08
ALFALFA													
Cal SCS-BC k				0.09	1.53	1.23	1.28	0.99	1.14				
Cal SCS-BC Et				0.16	4.69	5.38	7.34	4.95	3.51				26.04
Std Dev Et				0.03	0.48	0.44	0.31	0.32	0.33				0.97
Net Irr in.					3.26	4.39	6.59	4.11	2.41				20.76
PASTURE													
Cal SCS-BC k				0.27	0.98	1.06	0.87	0.88	0.95				
Cal SCS-BC Et				0.48	3.01	4.64	4.97	4.40	2.94				20.43
Std Dev Et				0.08	0.31	0.38	0.21	0.28	0.28				0.78
Net Irr in.					1.57	3.64	4.22	3.55	1.84				14.83
OTHR HAY													
Cal SCS-BC k				0.32	1.51	1.71	1.12	0.51	0.41				
Cal SCS-BC Et				0.57	4.63	7.48	6.42	2.53	1.25				22.88
Std Dev Et				0.10	0.47	0.61	0.28	0.16	0.12				0.99
Net Irr in.					3.20	6.49	5.67	1.69	0.15				17.19
SP GRAIN													
Cal SCS-BC k				0.07	0.61	1.42	1.34	0.88					
Cal SCS-BC Et				0.13	1.88	6.21	7.64	4.37					20.23
Std Dev Et				0.02	0.19	0.51	0.33	0.28					0.80
Net Irr in.					0.44	5.22	6.90	3.53					16.09

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at COALVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 5550 ft., Lat. 40.92

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.68	1.00	0.91	0.75	0.76	0.84	0.30			
Cal SCS-BC Et				1.19	3.05	3.99	4.28	3.79	2.60	0.53			19.44
Std Dev Et				0.20	0.31	0.33	0.18	0.25	0.25	0.07			0.79
Net Irr in.					1.62	3.00	3.53	2.94	1.50				12.60
E-LAKE													
Cal SCS-BC k	1.63	1.90	1.80	1.62	1.37	1.11	0.92	1.00	1.20	1.31	1.65	1.37	
Cal SCS-BC Evap	0.77	1.06	1.73	2.87	4.19	4.88	5.27	4.99	3.70	2.35	1.24	0.68	33.71
Std Dev Evap	0.14	0.17	0.37	0.49	0.43	0.40	0.23	0.32	0.35	0.32	0.21	0.10	1.44
Net Loss in.			0.21	0.91	2.39	3.64	4.34	3.93	2.32	0.81			18.54
ET Ref													
Cal SCS-BC k	1.81	2.11	2.00	1.82	1.78	1.63	1.34	1.36	1.51	1.46	1.83	1.52	
Estimated Etr	0.86	1.18	1.92	3.22	5.45	7.13	7.64	6.76	4.65	2.63	1.37	0.75	43.58
Std Dev Et	0.15	0.18	0.42	0.55	0.55	0.58	0.33	0.44	0.44	0.36	0.24	0.11	1.78

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CORINNE
From a Calibrated SCS Blaney-Criddle Equation using data from GARLAND 10-13-1994
Years of Data Available; NWS: 1961-1990 GARLAND: 1984-1990 Elev. 4230 ft., Lat. 41.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.62	6.62	8.27	8.98	10.14	10.24	10.39	9.66	8.41	7.68	6.61	6.40	100.00
Avg Temp F	23.99	30.38	38.97	47.43	56.92	65.90	73.72	71.77	61.40	49.95	37.01	26.84	48.69
Std Dev Temp	5.14	5.82	4.16	3.04	2.55	3.09	1.86	2.27	3.05	2.86	2.13	3.98	1.71
Avg Prec in.	1.42	1.56	1.54	1.79	1.91	1.34	0.77	0.89	1.63	1.64	1.59	1.55	17.63
Std Dev Prec	0.77	1.00	1.09	1.23	1.49	1.13	0.74	1.10	1.49	1.04	0.76	1.06	4.80
SCS-BC f in.	0.48	0.62	1.21	2.17	3.88	5.59	7.37	6.44	3.87	2.12	0.82	0.52	35.08
Std Dev f	0.10	0.14	0.30	0.36	0.43	0.63	0.43	0.47	0.47	0.31	0.11	0.08	2.11
ALFALFA													
Cal SCS-BC k			0.15	1.33	1.37	1.39	0.97	1.00	1.21	1.15			
Cal SCS-BC Et			0.19	2.89	5.33	7.78	7.12	6.46	4.70	2.43			36.89
Std Dev Et			0.05	0.48	0.59	0.88	0.41	0.47	0.58	0.36			2.29
Net Irr in.				1.46	3.80	6.70	6.50	5.74	3.39	1.12			28.73
PASTURE													
Cal SCS-BC k			0.04	0.86	1.08	0.99	0.85	0.86	0.95	0.82			
Cal SCS-BC Et			0.04	1.86	4.20	5.52	6.27	5.52	3.68	1.73			28.83
Std Dev Et			0.01	0.31	0.47	0.62	0.36	0.41	0.45	0.26			1.72
Net Irr in.				0.43	2.68	4.45	5.65	4.80	2.38	0.42			20.81
OTHR HAY													
Cal SCS-BC k				1.12	1.67	1.57	0.86	0.46	0.35				
Cal SCS-BC Et				2.43	6.49	8.79	6.30	2.94	1.35				28.30
Std Dev Et				0.40	0.72	0.99	0.37	0.22	0.16				1.88
Net Irr in.				1.00	4.96	7.72	5.69	2.22	0.04				21.64
SP GRAIN													
Cal SCS-BC k				0.46	1.37	1.52	0.87						
Cal SCS-BC Et				1.00	5.32	8.50	6.43						21.25
Std Dev Et				0.17	0.59	0.96	0.37						1.52
Net Irr in.					3.79	7.42	5.81						17.03
CORN													
Cal SCS-BC k				0.07	0.35	0.78	1.19	1.22	1.04	0.10			
Cal SCS-BC Et				0.15	1.37	4.34	8.77	7.84	4.03	0.21			26.72
Std Dev Et				0.02	0.15	0.49	0.51	0.58	0.49	0.03			1.38
Net Irr in.						3.27	8.15	7.13	2.73				21.28
ORCHARD													
Cal SCS-BC k				0.33	1.50	1.66	1.41	1.29	1.17	0.85			
Cal SCS-BC Et				0.72	5.81	9.25	10.41	8.31	4.53	1.80			40.84
Std Dev Et				0.12	0.64	1.04	0.60	0.61	0.56	0.27			2.33
Net Irr in.					4.28	8.18	9.79	7.60	3.23	0.49			33.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at CORINNE
From a Calibrated SCS Blaney-Criddle Equation using data from GARLAND 10-13-1994
Years of Data Available; NWS: 1961-1990 GARLAND: 1984-1990 Elev. 4230 ft., Lat. 41.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BEANS													
Cal SCS-BC k						0.26	0.99	1.01	0.11				
Cal SCS-BC Et						1.44	7.28	6.50	0.43				15.65
Std Dev Et						0.16	0.42	0.48	0.05				0.76
Net Irr in.						0.37	6.67	5.79					12.82
POTATOES													
Cal SCS-BC k					0.23	0.75	1.01	0.96	0.76				
Cal SCS-BC Et					0.91	4.17	7.43	6.18	2.95				21.64
Std Dev Et					0.10	0.47	0.43	0.45	0.36				1.12
Net Irr in.						3.10	6.81	5.47	1.65				17.03
TURF													
Cal SCS-BC k			0.22	0.97	0.94	0.85	0.73	0.74	0.82	0.80			
Cal SCS-BC Et			0.27	2.10	3.63	4.76	5.40	4.76	3.17	1.69			25.78
Std Dev Et			0.07	0.35	0.40	0.54	0.31	0.35	0.39	0.25			1.58
Net Irr in.				0.67	2.11	3.68	4.79	4.04	1.87	0.38			17.54
GARDEN													
Cal SCS-BC k				0.07	0.55	1.11	0.81	0.30	0.20				
Cal SCS-BC Et				0.15	2.14	6.19	5.98	1.94	0.79				17.19
Std Dev Et				0.03	0.24	0.70	0.35	0.14	0.10				1.07
Net Irr in.					0.61	5.12	5.37	1.22					12.32
E-LAKE													
Cal SCS-BC k	1.47	1.77	1.55	1.55	1.31	1.06	0.90	0.98	1.17	1.26	1.58	1.41	
Cal SCS-BC Evap	0.70	1.10	1.88	3.36	5.07	5.93	6.65	6.30	4.55	2.67	1.29	0.72	40.23
Std Dev Evap	0.15	0.25	0.47	0.56	0.56	0.67	0.39	0.46	0.56	0.40	0.18	0.11	2.56
Net Loss in.			0.34	1.57	3.16	4.59	5.88	5.41	2.92	1.03			24.91
ET Ref													
Cal SCS-BC k	1.63	1.97	1.73	1.74	1.67	1.52	1.31	1.32	1.46	1.48	1.76	1.56	
Estimated Etr	0.78	1.22	2.09	3.78	6.49	8.50	9.65	8.49	5.66	3.13	1.44	0.81	52.03
Std Dev Et	0.17	0.28	0.52	0.63	0.72	0.96	0.56	0.62	0.69	0.46	0.20	0.12	3.23

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at COTTONWOOD WEIR
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4960 ft., Lat. 40.62

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.68	6.65	8.27	8.95	10.08	10.17	10.33	9.62	8.40	7.71	6.66	6.47	100.00
Avg Temp F	29.80	35.75	42.60	50.24	60.07	69.86	78.76	76.60	66.52	54.53	41.30	31.29	53.11
Std Dev Temp	4.11	3.89	3.19	4.22	2.97	3.39	1.99	2.31	3.49	4.05	3.09	3.40	1.28
Avg Prec in.	1.58	1.80	2.99	2.99	2.63	1.30	1.00	1.19	2.10	2.47	2.19	2.06	24.30
Std Dev Prec	0.82	0.65	1.12	1.45	1.91	1.08	0.85	1.07	2.28	1.53	1.17	1.30	6.45
SCS-BC f in.	0.60	0.78	1.51	2.52	4.41	6.38	8.54	7.46	4.69	2.67	1.11	0.62	41.28
Std Dev f	0.09	0.16	0.31	0.54	0.53	0.73	0.50	0.51	0.58	0.49	0.23	0.08	2.05
ALFALFA													
Cal SCS-BC k				1.14	1.13	0.89	0.84	0.82	0.67	0.44			
Cal SCS-BC Et				2.88	4.98	5.68	7.17	6.11	3.13	1.16			31.11
Std Dev Et				0.62	0.60	0.65	0.42	0.42	0.39	0.21			1.74
Net Irr in.				0.49	2.88	4.64	6.37	5.15	1.45				20.98
PASTURE													
Cal SCS-BC k			0.23	0.90	0.90	0.82	0.75	0.72	0.46	0.52			
Cal SCS-BC Et			0.34	2.28	3.96	5.24	6.40	5.36	2.14	1.40			27.13
Std Dev Et			0.07	0.49	0.48	0.60	0.37	0.37	0.27	0.26			1.47
Net Irr in.					1.85	4.20	5.60	4.40	0.47				16.53
SP GRAIN													
Cal SCS-BC k			0.08	0.52	1.17	1.27	0.75						
Cal SCS-BC Et			0.12	1.30	5.17	8.07	6.39						21.06
Std Dev Et			0.03	0.28	0.63	0.92	0.37						1.40
Net Irr in.					3.07	7.03	5.59						15.68
CORN													
Cal SCS-BC k				0.10	0.29	0.58	1.00	1.04	0.56				
Cal SCS-BC Et				0.24	1.27	3.71	8.52	7.73	2.64				24.11
Std Dev Et				0.05	0.15	0.43	0.49	0.53	0.33				1.00
Net Irr in.						2.67	7.71	6.78	0.96				18.12
ORCHARD													
Cal SCS-BC k				0.52	1.12	1.34	1.26	1.17	0.65	0.33			
Cal SCS-BC Et				1.32	4.94	8.56	10.73	8.75	3.05	0.88			38.23
Std Dev Et				0.28	0.60	0.98	0.62	0.60	0.38	0.16			1.84
Net Irr in.					2.84	7.52	9.93	7.80	1.37				29.45

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at COTTONWOOD WEIR
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4960 ft., Lat. 40.62

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.30	0.82	0.77	0.71	0.65	0.62	0.39	0.45			
Cal SCS-BC Et			0.45	2.08	3.41	4.52	5.52	4.61	1.85	1.20			23.64
Std Dev Et			0.09	0.44	0.41	0.52	0.32	0.32	0.23	0.22			1.29
Net Irr in.					1.30	3.48	4.71	3.66	0.17				13.32
GARDEN													
Cal SCS-BC k				0.21	0.47	0.81	0.87	0.36	0.14	0.06			
Cal SCS-BC Et				0.53	2.05	5.14	7.42	2.66	0.66	0.16			18.64
Std Dev Et				0.11	0.25	0.59	0.43	0.18	0.08	0.03			0.93
Net Irr in.						4.10	6.62	1.71					12.43
E-LAKE													
Cal SCS-BC k	1.78	2.00	0.99	1.38	1.14	0.94	0.87	0.87	0.61	0.75	1.80	1.58	
Cal SCS-BC Evap	1.07	1.57	1.49	3.49	5.03	5.97	7.42	6.51	2.85	1.99	2.00	0.97	40.36
Std Dev Evap	0.15	0.32	0.31	0.75	0.61	0.68	0.43	0.45	0.35	0.37	0.42	0.13	2.10
Net Loss in.				0.50	2.40	4.66	6.42	5.31	0.75				20.05
ET Ref													
Cal SCS-BC k			1.10	1.54	1.38	1.27	1.15	1.10	0.70	0.83			
Estimated Etr			1.66	3.88	6.08	8.07	9.85	8.24	3.30	2.22			43.29
Std Dev Et			0.34	0.83	0.74	0.92	0.57	0.57	0.41	0.41			2.36

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DEER CREEK DAM
From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994
Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5270 ft., Lat. 40.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.16	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	19.78	23.58	33.17	42.59	51.16	59.46	66.81	64.77	56.05	46.18	34.95	24.56	43.59
Std Dev Temp	5.50	6.05	4.29	2.99	2.30	2.19	1.22	1.99	2.57	2.76	2.59	4.11	1.37
Avg Prec in.	2.60	2.64	2.24	1.88	1.61	1.11	0.90	1.04	1.52	1.99	2.49	2.53	22.56
Std Dev Prec	2.70	2.49	1.60	1.12	1.15	0.95	0.80	0.69	1.36	1.42	1.68	1.81	6.75
SCS-BC f in.	0.40	0.47	0.86	1.62	2.95	4.32	5.80	5.03	3.10	1.74	0.73	0.48	27.51
Std Dev f	0.11	0.12	0.18	0.31	0.34	0.39	0.25	0.37	0.35	0.27	0.11	0.08	1.11
ALFALFA													
Cal SCS-BC k				0.08	1.83	1.56	1.34	1.13	1.40				
Cal SCS-BC Et				0.13	5.41	6.73	7.78	5.69	4.35				30.09
Std Dev Et				0.03	0.62	0.61	0.34	0.42	0.49				1.22
Net Irr in.					4.12	5.84	7.06	4.85	3.13				25.01
OTHR HAY													
Cal SCS-BC k					1.63	1.90	1.07	0.53	0.43	0.06			
Cal SCS-BC Et					4.80	8.19	6.18	2.66	1.32	0.10			23.26
Std Dev Et					0.55	0.74	0.27	0.20	0.15	0.02			1.07
Net Irr in.					3.51	7.31	5.46	1.83	0.10				18.21
PASTURE													
Cal SCS-BC k				0.19	1.30	1.18	1.01	0.99	1.12	0.40			
Cal SCS-BC Et				0.31	3.83	5.10	5.85	4.96	3.46	0.69			24.20
Std Dev Et				0.06	0.44	0.46	0.25	0.36	0.39	0.11			0.95
Net Irr in.					2.54	4.21	5.13	4.13	2.24				18.25
SP GRAIN													
Cal SCS-BC k				0.16	1.07	1.76	1.49	0.31					
Cal SCS-BC Et				0.26	3.17	7.60	8.66	1.54					21.22
Std Dev Et				0.05	0.36	0.69	0.37	0.11					0.97
Net Irr in.					1.88	6.71	7.94	0.70					17.23

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DEER CREEK DAM
From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994
Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5270 ft., Lat. 40.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.56	1.24	1.02	0.87	0.85	0.96	0.34			
Cal SCS-BC Et				0.90	3.65	4.40	5.04	4.28	2.98	0.60			21.85
Std Dev Et				0.17	0.42	0.40	0.22	0.31	0.34	0.09			0.90
Net Irr in.					2.36	3.51	4.32	3.44	1.76				15.39
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.62	1.66	1.21	1.01	1.08	1.31	1.52	1.97	1.34	
Cal SCS-BC Evap	0.79	0.94	1.73	2.62	4.91	5.24	5.88	5.44	4.07	2.64	1.45	0.64	36.36
Std Dev Evap	0.22	0.24	0.36	0.50	0.56	0.48	0.25	0.40	0.46	0.41	0.21	0.11	1.64
Net Loss in.				0.74	3.30	4.13	4.98	4.39	2.55	0.65			20.74
ET Ref													
Cal SCS-BC k	2.42	3.00	2.60	1.89	2.21	1.82	1.55	1.52	1.72	1.82	2.19	1.49	
Estimated Etr	0.96	1.41	2.25	3.07	6.52	7.85	9.01	7.64	5.32	3.16	1.61	0.71	49.51
Std Dev Et	0.27	0.36	0.48	0.58	0.75	0.71	0.39	0.56	0.60	0.49	0.23	0.12	2.17

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DELTA
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4620 ft., Lat. 39.33

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.77	6.70	8.28	8.92	10.01	10.08	10.24	9.57	8.39	7.74	6.73	6.57	100.00
Avg Temp F	24.35	32.22	40.21	47.96	57.47	67.28	75.15	72.79	62.51	50.91	37.63	26.42	49.58
Std Dev Temp	5.77	5.04	3.61	3.16	2.60	2.79	1.76	1.94	3.02	3.03	2.93	4.50	1.12
Avg Prec in.	0.50	0.56	0.85	0.79	0.90	0.47	0.53	0.57	0.81	0.81	0.71	0.62	8.11
Std Dev Prec	0.35	0.57	0.56	0.52	0.72	0.47	0.51	0.55	0.83	0.58	0.51	0.52	2.35
SCS-BC f in.	0.49	0.67	1.30	2.22	3.92	5.78	7.60	6.59	4.04	2.25	0.88	0.52	36.26
Std Dev f	0.12	0.14	0.32	0.38	0.44	0.57	0.41	0.41	0.47	0.34	0.17	0.09	1.50
ALFALFA													
Cal SCS-BC k				1.22	1.66	1.29	0.99	0.99	1.24	0.43			
Cal SCS-BC Et				2.72	6.53	7.43	7.52	6.55	5.02	0.96			36.72
Std Dev Et				0.47	0.73	0.74	0.41	0.40	0.58	0.15			1.79
Net Irr in.				2.09	5.81	7.05	7.09	6.09	4.37	0.31			32.82
PASTURE													
Cal SCS-BC k			0.23	1.05	1.19	0.99	0.85	0.83	0.92	0.37			
Cal SCS-BC Et			0.29	2.34	4.66	5.71	6.49	5.44	3.71	0.84			29.48
Std Dev Et			0.07	0.40	0.52	0.57	0.35	0.34	0.43	0.13			1.39
Net Irr in.				1.71	3.94	5.33	6.07	4.99	3.06	0.19			25.29
OTHR HAY													
Cal SCS-BC k				1.23	1.83	1.57	0.83	0.44	0.34	0.05			
Cal SCS-BC Et				2.72	7.18	9.08	6.27	2.87	1.36	0.12			29.60
Std Dev Et				0.47	0.80	0.90	0.34	0.18	0.16	0.02			1.74
Net Irr in.				2.09	6.46	8.70	5.85	2.41	0.71				26.22
SP GRAIN													
Cal SCS-BC k			0.12	0.73	1.67	1.51	0.59						
Cal SCS-BC Et			0.16	1.61	6.57	8.75	4.50						21.58
Std Dev Et			0.04	0.28	0.73	0.87	0.24						1.49
Net Irr in.				0.99	5.84	8.37	4.08						19.28
CORN													
Cal SCS-BC k					0.27	0.45	0.94	1.20	1.07				
Cal SCS-BC Et					1.05	2.60	7.11	7.94	4.33				23.03
Std Dev Et					0.12	0.26	0.39	0.49	0.50				0.95
Net Irr in.					0.33	2.22	6.69	7.48	3.68				20.41
POTATOES													
Cal SCS-BC k					0.27	0.72	1.01	0.94	0.82	0.20			
Cal SCS-BC Et					1.07	4.16	7.64	6.19	3.30	0.45			22.80
Std Dev Et					0.12	0.41	0.41	0.38	0.38	0.07			0.92
Net Irr in.					0.35	3.78	7.21	5.73	2.65				19.72

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DELTA

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4620 ft., Lat. 39.33

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k					0.78	1.41	1.43	1.38	1.43	0.72			
Cal SCS-BC Et					3.05	8.16	10.85	9.08	5.76	1.61			38.52
Std Dev Et					0.34	0.81	0.59	0.56	0.67	0.24			1.62
Net Irr in.					2.33	7.78	10.43	8.63	5.11	0.96			35.24
TURF													
Cal SCS-BC k			0.45	1.07	1.02	0.85	0.74	0.71	0.79	0.47			
Cal SCS-BC Et			0.59	2.39	4.01	4.92	5.59	4.69	3.20	1.07			26.45
Std Dev Et			0.14	0.41	0.45	0.49	0.30	0.29	0.37	0.16			1.26
Net Irr in.				1.76	3.29	4.54	5.17	4.23	2.55	0.42			21.96
GARDEN													
Cal SCS-BC k					0.42	0.70	1.02	0.67	0.26				
Cal SCS-BC Et					1.66	4.02	7.76	4.41	1.05				18.90
Std Dev Et					0.18	0.40	0.42	0.27	0.12				0.81
Net Irr in.					0.94	3.64	7.34	3.95	0.40				16.27
E-LAKE													
Cal SCS-BC k	1.93	2.00	1.96	1.68	1.41	1.05	0.89	0.92	1.10	1.33	1.82	1.93	
Cal SCS-BC Evap	0.95	1.35	2.53	3.72	5.52	6.04	6.72	6.06	4.46	2.99	1.60	1.00	42.95
Std Dev Evap	0.23	0.29	0.62	0.64	0.61	0.60	0.36	0.37	0.52	0.45	0.30	0.17	1.91
Net Loss in.	0.46	0.79	1.69	2.94	4.62	5.56	6.20	5.49	3.65	2.17	0.90	0.39	34.85
ET Ref													
Cal SCS-BC k	2.14	2.51	2.17	1.92	1.83	1.52	1.31	1.27	1.41	1.57	2.02	2.14	
Estimated Etr	1.06	1.69	2.82	4.26	7.17	8.78	9.99	8.37	5.70	3.52	1.78	1.11	56.27
Std Dev Et	0.25	0.36	0.69	0.73	0.80	0.87	0.54	0.52	0.66	0.53	0.34	0.19	2.44

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DESERET
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4590 ft., Lat. 39.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.77	6.70	8.28	8.92	10.00	10.08	10.24	9.57	8.39	7.74	6.73	6.57	100.00
Avg Temp F	24.37	31.98	39.89	47.71	57.14	66.70	74.70	71.82	61.38	49.52	36.96	26.28	49.04
Std Dev Temp	6.11	5.09	3.69	3.24	2.59	3.11	1.80	2.17	3.20	2.77	3.02	4.02	1.33
Avg Prec in.	0.58	0.50	0.75	0.81	0.95	0.47	0.55	0.69	0.79	0.87	0.80	0.61	8.37
Std Dev Prec	0.45	0.52	0.59	0.59	0.93	0.47	0.55	0.64	0.91	0.75	0.66	0.44	2.68
SCS-BC f in.	0.49	0.67	1.27	2.19	3.87	5.66	7.49	6.39	3.87	2.09	0.84	0.52	35.34
Std Dev f	0.12	0.14	0.33	0.39	0.43	0.62	0.42	0.45	0.48	0.30	0.15	0.08	1.87
ALFALFA													
Cal SCS-BC k				0.88	1.72	1.09	0.98	1.08	1.21	0.33			
Cal SCS-BC Et				1.93	6.67	6.19	7.36	6.89	4.67	0.68			34.39
Std Dev Et				0.34	0.75	0.68	0.41	0.48	0.58	0.10			1.97
Net Irr in.				1.28	5.91	5.81	6.92	6.34	4.04				30.30
PASTURE													
Cal SCS-BC k				0.98	1.13	0.96	0.84	0.82	0.92	0.38			
Cal SCS-BC Et				2.14	4.38	5.42	6.26	5.22	3.57	0.79			27.79
Std Dev Et				0.38	0.49	0.60	0.35	0.37	0.45	0.11			1.61
Net Irr in.				1.49	3.62	5.05	5.82	4.67	2.94	0.09			23.68
OTHR HAY													
Cal SCS-BC k				0.78	1.67	1.53	0.81	0.43	0.34	0.05			
Cal SCS-BC Et				1.70	6.47	8.67	6.09	2.75	1.31	0.11			27.10
Std Dev Et				0.30	0.72	0.96	0.34	0.19	0.16	0.02			1.72
Net Irr in.				1.06	5.71	8.29	5.65	2.20	0.68				23.58
SP GRAIN													
Cal SCS-BC k				0.55	1.48	1.47	0.75						
Cal SCS-BC Et				1.20	5.71	8.35	5.60						20.86
Std Dev Et				0.21	0.64	0.92	0.31						1.45
Net Irr in.				0.55	4.95	7.97	5.16						18.63
CORN													
Cal SCS-BC k					0.20	0.40	0.90	1.19	1.08				
Cal SCS-BC Et					0.78	2.28	6.71	7.62	4.17				21.57
Std Dev Et					0.09	0.25	0.37	0.53	0.52				1.16
Net Irr in.					0.02	1.91	6.27	7.06	3.54				18.80
POTATOES													
Cal SCS-BC k					0.20	0.59	0.96	0.95	0.87	0.23			
Cal SCS-BC Et					0.78	3.34	7.16	6.05	3.38	0.49			21.20
Std Dev Et					0.09	0.37	0.40	0.42	0.42	0.07			1.10
Net Irr in.					0.02	2.97	6.72	5.50	2.74				17.95

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DESERET
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4590 ft., Lat. 39.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k					0.74	1.37	1.40	1.36	1.44	0.72			
Cal SCS-BC Et					2.86	7.76	10.46	8.71	5.55	1.51			36.86
Std Dev Et					0.32	0.85	0.58	0.61	0.69	0.22			1.95
Net Irr in.					2.11	7.38	10.03	8.16	4.92	0.81			33.39
TURF													
Cal SCS-BC k				0.97	0.98	0.83	0.72	0.70	0.80	0.48			
Cal SCS-BC Et				2.13	3.78	4.67	5.39	4.50	3.08	1.00			24.55
Std Dev Et				0.38	0.42	0.52	0.30	0.32	0.38	0.14			1.43
Net Irr in.				1.48	3.02	4.30	4.95	3.94	2.44	0.30			20.44
GARDEN													
Cal SCS-BC k					0.33	0.64	0.99	0.66	0.26				
Cal SCS-BC Et					1.26	3.65	7.45	4.23	1.01				17.59
Std Dev Et					0.14	0.40	0.42	0.30	0.13				0.89
Net Irr in.					0.50	3.27	7.01	3.68	0.38				14.83
E-LAKE													
Cal SCS-BC k	1.93	2.00	1.93	1.63	1.34	1.01	0.87	0.91	1.11	1.34	1.80	1.73	
Cal SCS-BC Evap	0.96	1.33	2.44	3.58	5.19	5.74	6.48	5.81	4.30	2.80	1.52	0.90	41.04
Std Dev Evap	0.24	0.27	0.63	0.64	0.58	0.63	0.36	0.41	0.54	0.40	0.27	0.14	2.28
Net Loss in.	0.38	0.83	1.69	2.77	4.25	5.26	5.93	5.12	3.50	1.92	0.72	0.29	32.67
ET Ref													
Cal SCS-BC k	2.15	2.53	2.14	1.87	1.74	1.47	1.29	1.26	1.42	1.58	2.00	1.93	
Estimated Etr	1.06	1.68	2.71	4.10	6.75	8.35	9.63	8.04	5.50	3.30	1.69	1.00	53.80
Std Dev Et	0.27	0.35	0.70	0.73	0.75	0.92	0.54	0.56	0.69	0.48	0.30	0.15	2.93

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DINOSAUR QUARRY AREA
From a Calibrated SCS Blaney-Criddle Equation using data from MAESER 10-31-1994
Years of Data Available; NWS: 1961-1990 MAESER: 1988-1990 Elev. 4770 ft., Lat. 40.43

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.66	8.28	8.95	10.07	10.16	10.32	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	15.84	24.10	37.87	48.72	58.45	67.79	74.96	72.30	62.55	49.69	35.06	21.11	47.37
Std Dev Temp	7.40	7.49	4.28	3.30	2.36	2.85	1.66	1.81	2.69	2.85	3.34	5.21	1.89
Avg Prec in.	0.54	0.57	0.72	0.80	0.87	0.62	0.56	0.57	0.92	0.97	0.65	0.67	8.47
Std Dev Prec	0.50	0.55	0.56	0.55	0.73	0.66	0.56	0.41	0.77	0.82	0.47	0.53	2.40
SCS-BC f in.	0.32	0.48	1.14	2.32	4.11	5.93	7.60	6.52	4.05	2.10	0.75	0.41	35.72
Std Dev f	0.15	0.15	0.29	0.41	0.41	0.59	0.39	0.38	0.41	0.31	0.13	0.10	1.89
ALFALFA													
Cal SCS-BC k				1.01	1.57	1.02	0.94	1.17	0.91	1.07			
Cal SCS-BC Et				2.35	6.47	6.06	7.16	7.60	3.70	2.24			35.57
Std Dev Et				0.41	0.64	0.61	0.37	0.44	0.38	0.33			1.83
Net Irr in.				1.71	5.77	5.56	6.71	7.15	2.96	1.46			31.32
PASTURE													
Cal SCS-BC k				0.74	1.03	0.89	0.77	0.80	0.83	0.69			
Cal SCS-BC Et				1.71	4.23	5.29	5.82	5.19	3.37	1.46			27.06
Std Dev Et				0.30	0.42	0.53	0.30	0.30	0.35	0.21			1.41
Net Irr in.				1.07	3.53	4.79	5.37	4.74	2.63	0.68			22.81
OTHR HAY													
Cal SCS-BC k				0.94	1.53	1.44	1.09	0.48	0.38	0.18			
Cal SCS-BC Et				2.18	6.31	8.54	8.29	3.13	1.53	0.37			30.35
Std Dev Et				0.38	0.62	0.85	0.42	0.18	0.16	0.05			1.73
Net Irr in.				1.54	5.61	8.05	7.85	2.67	0.80				26.51
SP GRAIN													
Cal SCS-BC k				0.49	1.37	1.37	0.74						
Cal SCS-BC Et				1.13	5.62	8.13	5.66						20.55
Std Dev Et				0.20	0.56	0.81	0.29						1.33
Net Irr in.				0.49	4.92	7.64	5.22						18.27
CORN													
Cal SCS-BC k					0.35	0.88	1.12	1.07	0.61				
Cal SCS-BC Et					1.44	5.19	8.48	6.97	2.46				24.54
Std Dev Et					0.14	0.52	0.43	0.40	0.25				1.05
Net Irr in.					0.74	4.69	8.04	6.51	1.72				21.70

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DINOSAUR QUARRY AREA
From a Calibrated SCS Blaney-Criddle Equation using data from MAESER 10-31-1994
Years of Data Available; NWS: 1961-1990 MAESER: 1988-1990 Elev. 4770 ft., Lat. 40.43

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.24	0.94	0.90	0.77	0.66	0.69	0.72	0.84			
Cal SCS-BC Et			0.27	2.18	3.70	4.55	5.01	4.47	2.91	1.77			24.86
Std Dev Et			0.07	0.38	0.36	0.46	0.26	0.26	0.30	0.26			1.35
Net Irr in.				1.53	3.00	4.06	4.57	4.02	2.17	0.99			20.33
GARDEN													
Cal SCS-BC k				0.16	0.50	0.80	0.92	0.45	0.17				
Cal SCS-BC Et				0.37	2.06	4.77	7.01	2.93	0.70				17.84
Std Dev Et				0.06	0.20	0.48	0.36	0.17	0.07				0.84
Net Irr in.					1.37	4.27	6.57	2.47					14.68
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.93	1.52	1.45	1.24	1.06	1.10	1.15	1.38	1.86	2.00	
Cal SCS-BC Evap	0.64	0.96	2.19	3.52	5.94	7.32	8.05	7.19	4.67	2.91	1.39	0.82	45.62
Std Dev Evap	0.30	0.30	0.56	0.62	0.59	0.73	0.41	0.42	0.48	0.42	0.24	0.20	2.62
Net Loss in.	0.10	0.39	1.47	2.72	5.07	6.70	7.50	6.62	3.75	1.94	0.74	0.16	37.15
ET Ref													
Cal SCS-BC k	3.55	3.04	2.15	1.69	1.61	1.37	1.18	1.23	1.28	1.54	2.06	2.44	
Estimated Etr	1.13	1.47	2.44	3.91	6.60	8.13	8.95	7.99	5.19	3.23	1.54	1.00	51.59
Std Dev Et	0.53	0.46	0.62	0.69	0.65	0.81	0.46	0.46	0.53	0.47	0.27	0.25	3.06

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DUCHESNE
From a Calibrated SCS Blaney-Criddle Equation using data from DUCHESNE 10-13-1994
Years of Data Available; NWS: 1961-1990 DUCHESNE: 1988-1990 Elev. 5510 ft., Lat. 40.17

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.71	6.67	8.28	8.94	10.05	10.14	10.30	9.60	8.40	7.72	6.69	6.51	100.00
Avg Temp F	18.31	25.31	36.47	46.63	55.78	64.77	71.24	69.12	59.76	48.24	34.05	21.25	45.91
Std Dev Temp	5.75	6.28	4.30	3.43	2.23	2.73	1.17	2.00	2.52	2.69	3.11	4.60	1.50
Avg Prec in.	0.53	0.55	0.66	0.81	0.95	0.82	0.95	0.93	1.09	0.89	0.53	0.67	9.38
Std Dev Prec	0.54	0.53	0.47	0.66	0.75	0.75	0.62	0.49	0.84	0.78	0.47	0.60	2.38
SCS-BC f in.	0.37	0.51	1.04	2.07	3.66	5.31	6.74	5.86	3.62	1.95	0.71	0.41	32.24
Std Dev f	0.12	0.13	0.28	0.40	0.36	0.53	0.26	0.40	0.36	0.28	0.10	0.09	1.42
ALFALFA													
Cal SCS-BC k				0.58	1.79	1.17	1.07	1.10	1.05	0.99			
Cal SCS-BC Et				1.20	6.56	6.19	7.21	6.43	3.79	1.93			33.31
Std Dev Et				0.23	0.65	0.62	0.28	0.44	0.38	0.28			1.43
Net Irr in.				0.56	5.80	5.54	6.45	5.68	2.92	1.22			28.17
PASTURE													
Cal SCS-BC k				0.55	1.04	0.98	0.83	0.83	0.92	0.74			
Cal SCS-BC Et				1.13	3.81	5.22	5.61	4.84	3.32	1.44			25.37
Std Dev Et				0.22	0.38	0.53	0.22	0.33	0.33	0.21			1.08
Net Irr in.				0.48	3.06	4.56	4.85	4.10	2.45	0.72			20.22
OTHR HAY													
Cal SCS-BC k					1.33	1.58	0.95	0.46	0.22				
Cal SCS-BC Et					4.86	8.37	6.43	2.67	0.78				23.10
Std Dev Et					0.48	0.84	0.25	0.18	0.08				1.14
Net Irr in.					4.10	7.71	5.67	1.93					19.40
SP GRAIN													
Cal SCS-BC k				0.26	1.17	1.51	1.12						
Cal SCS-BC Et				0.54	4.27	8.00	7.52						20.32
Std Dev Et				0.10	0.42	0.81	0.29						1.08
Net Irr in.					3.51	7.34	6.76						17.61
CORN													
Cal SCS-BC k					0.21	0.46	0.99	1.20	0.86				
Cal SCS-BC Et					0.78	2.43	6.66	7.03	3.12				20.02
Std Dev Et					0.08	0.24	0.26	0.48	0.31				0.76
Net Irr in.					0.02	1.77	5.90	6.29	2.24				16.23

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DUCHESNE

From a Calibrated SCS Blaney-Criddle Equation using data from DUCHESNE 10-13-1994

Years of Data Available; NWS: 1961-1990 DUCHESNE: 1988-1990 Elev. 5510 ft., Lat. 40.17

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.69	1.04	0.85	0.72	0.71	0.79	0.64			
Cal SCS-BC Et				1.42	3.81	4.49	4.83	4.18	2.86	1.24			22.83
Std Dev Et				0.28	0.38	0.45	0.19	0.28	0.29	0.18			1.02
Net Irr in.				0.78	3.05	3.84	4.07	3.43	1.98	0.52			17.68
GARDEN													
Cal SCS-BC k					0.35	0.66	0.99	0.66	0.21				
Cal SCS-BC Et					1.27	3.50	6.68	3.88	0.74				16.08
Std Dev Et					0.13	0.35	0.26	0.26	0.08				0.60
Net Irr in.					0.51	2.84	5.92	3.14					12.42
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.64	1.44	1.02	0.85	0.92	1.12	1.48	2.00	2.00	
Cal SCS-BC Evap	0.74	1.01	2.08	3.39	5.27	5.44	5.71	5.41	4.07	2.89	1.41	0.83	38.24
Std Dev Evap	0.23	0.25	0.55	0.66	0.52	0.55	0.22	0.37	0.41	0.42	0.19	0.18	1.94
Net Loss in.	0.21	0.46	1.41	2.59	4.32	4.62	4.76	4.48	2.98	1.99	0.88	0.16	28.87
ET Ref													
Cal SCS-BC k	2.56	3.03	2.55	1.84	1.86	1.51	1.28	1.27	1.41	1.67	2.28	2.31	
Estimated Etr	0.94	1.53	2.65	3.81	6.80	8.02	8.63	7.45	5.10	3.25	1.60	0.96	50.76
Std Dev Et	0.30	0.38	0.70	0.74	0.68	0.81	0.33	0.51	0.51	0.47	0.22	0.21	2.51

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DUGWAY
From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 4340 ft., Lat. 40.18

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.71	6.67	8.28	8.94	10.06	10.14	10.30	9.60	8.40	7.72	6.69	6.51	100.00
Avg Temp F	25.69	33.85	40.87	48.96	58.56	68.97	78.18	75.31	63.97	51.03	38.62	27.73	50.98
Std Dev Temp	5.68	4.70	3.54	3.59	2.88	3.22	1.64	2.27	3.06	3.03	2.93	4.00	1.28
Avg Prec in.	0.46	0.57	0.84	0.81	1.06	0.53	0.57	0.61	0.72	0.81	0.58	0.59	8.15
Std Dev Prec	0.36	0.44	0.65	0.57	0.79	0.61	0.58	0.62	0.70	0.52	0.42	0.54	2.74
SCS-BC f in.	0.52	0.72	1.35	2.35	4.13	6.17	8.37	7.16	4.27	2.25	0.93	0.54	38.76
Std Dev f	0.11	0.15	0.33	0.44	0.50	0.68	0.40	0.50	0.49	0.35	0.19	0.08	1.76
ALFALFA													
Cal SCS-BC k				0.76	1.59	1.08	0.86	1.11	0.87	0.55			
Cal SCS-BC Et				1.78	6.58	6.67	7.21	7.93	3.71	1.24			35.13
Std Dev Et				0.33	0.80	0.73	0.35	0.55	0.43	0.19			1.76
Net Irr in.				1.13	5.73	6.25	6.76	7.44	3.13	0.59			31.03
PASTURE													
Cal SCS-BC k				0.65	1.01	0.92	0.74	0.73	0.75	0.54			
Cal SCS-BC Et				1.52	4.17	5.68	6.17	5.20	3.22	1.22			27.19
Std Dev Et				0.28	0.51	0.62	0.30	0.36	0.37	0.19			1.34
Net Irr in.				0.88	3.32	5.25	5.71	4.71	2.64	0.57			23.10
OTHR HAY													
Cal SCS-BC k				0.66	1.52	1.48	0.83	0.40	0.30				
Cal SCS-BC Et				1.55	6.27	9.14	6.93	2.87	1.27				28.03
Std Dev Et				0.29	0.76	1.01	0.33	0.20	0.15				1.65
Net Irr in.				0.90	5.42	8.71	6.47	2.38	0.70				24.58
SP GRAIN													
Cal SCS-BC k				0.37	1.25	1.42	0.85	0.01					
Cal SCS-BC Et				0.88	5.16	8.74	7.11	0.10					21.99
Std Dev Et				0.16	0.63	0.96	0.34	0.01					1.40
Net Irr in.				0.23	4.31	8.32	6.65						19.51
CORN													
Cal SCS-BC k					0.23	0.30	0.45	0.81	1.07				
Cal SCS-BC Et					0.95	1.85	3.77	5.80	4.55				16.93
Std Dev Et					0.11	0.20	0.18	0.40	0.52				0.78
Net Irr in.					0.10	1.43	3.31	5.31	3.98				14.13

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at DUGWAY

From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994

Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 4340 ft., Lat. 40.18

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.74	0.90	0.79	0.64	0.63	0.65	0.47			
Cal SCS-BC Et				1.75	3.73	4.89	5.31	4.48	2.78	1.05			24.00
Std Dev Et				0.33	0.45	0.54	0.26	0.31	0.32	0.16			1.22
Net Irr in.				1.10	2.88	4.47	4.86	3.99	2.20	0.41			19.91
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.52	1.46	1.28	1.02	0.79	0.85	0.97	1.36	1.53	1.55	
Cal SCS-BC Evap	1.03	1.44	2.05	3.42	5.27	6.28	6.64	6.11	4.14	3.07	1.43	0.84	41.72
Std Dev Evap	0.23	0.31	0.50	0.64	0.64	0.69	0.32	0.43	0.48	0.47	0.29	0.12	2.10
Net Loss in.	0.58	0.87	1.21	2.62	4.21	5.75	6.07	5.50	3.42	2.26	0.85	0.25	33.57
ET Ref													
Cal SCS-BC k	2.26	2.23	1.69	1.64	1.61	1.42	1.13	1.12	1.16	1.53	1.70	1.72	
Estimated Etr	1.17	1.60	2.27	3.86	6.66	8.74	9.49	8.01	4.96	3.45	1.59	0.93	52.73
Std Dev Et	0.26	0.34	0.55	0.72	0.81	0.96	0.46	0.56	0.57	0.53	0.32	0.13	2.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ECHO DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5470 ft., Lat. 40.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.20	10.35	9.64	8.40	7.70	6.64	6.45	100.00
Avg Temp F	22.27	26.54	34.97	43.66	52.25	60.75	68.69	66.73	57.33	46.98	34.52	24.40	44.92
Std Dev Temp	4.92	4.95	4.03	3.31	2.15	2.61	1.41	2.13	3.04	2.89	2.82	4.10	1.37
Avg Prec in.	0.91	0.96	1.36	1.69	1.66	1.12	0.81	0.86	1.38	1.52	1.47	1.21	14.94
Std Dev Prec	0.73	0.65	0.62	0.93	0.98	0.96	0.55	0.91	1.35	0.99	0.88	1.00	3.49
SCS-BC f in.	0.44	0.53	0.94	1.74	3.12	4.58	6.22	5.41	3.28	1.81	0.72	0.47	29.28
Std Dev f	0.10	0.10	0.21	0.36	0.33	0.48	0.30	0.41	0.42	0.29	0.11	0.08	1.47
ALFALFA													
Cal SCS-BC k				0.09	1.50	1.14	1.23	0.92	1.00				
Cal SCS-BC Et				0.16	4.69	5.23	7.63	4.98	3.29				25.98
Std Dev Et				0.03	0.49	0.55	0.37	0.38	0.42				1.31
Net Irr in.					3.36	4.33	6.98	4.29	2.18				21.15
PASTURE													
Cal SCS-BC k				0.27	0.97	0.98	0.83	0.82	0.84				
Cal SCS-BC Et				0.48	3.02	4.50	5.15	4.43	2.75				20.32
Std Dev Et				0.10	0.32	0.47	0.25	0.33	0.35				1.07
Net Irr in.					1.69	3.60	4.50	3.74	1.64				15.19
OTHR HAY													
Cal SCS-BC k				0.33	1.49	1.59	1.06	0.47	0.36				
Cal SCS-BC Et				0.57	4.64	7.26	6.62	2.55	1.17				22.80
Std Dev Et				0.12	0.49	0.76	0.32	0.19	0.15				1.27
Net Irr in.					3.31	6.36	5.97	1.86	0.07				17.58
SP GRAIN													
Cal SCS-BC k				0.07	0.60	1.32	1.27	0.81					
Cal SCS-BC Et				0.13	1.86	6.04	7.92	4.41					20.36
Std Dev Et				0.03	0.20	0.63	0.38	0.33					1.04
Net Irr in.					0.54	5.14	7.28	3.72					16.68

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ECHO DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5470 ft., Lat. 40.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.68	0.99	0.85	0.71	0.71	0.74	0.14			
Cal SCS-BC Et				1.19	3.09	3.88	4.44	3.82	2.44	0.25			19.10
Std Dev Et				0.24	0.32	0.41	0.21	0.29	0.31	0.04			1.06
Net Irr in.					1.76	2.98	3.79	3.13	1.34				13.00
E-LAKE													
Cal SCS-BC k	1.88	2.00	1.95	1.64	1.37	1.08	0.90	0.96	1.11	1.31	1.65	1.51	
Cal SCS-BC Evap	0.83	1.06	1.84	2.86	4.29	4.94	5.58	5.21	3.64	2.37	1.19	0.71	34.54
Std Dev Evap	0.18	0.20	0.41	0.58	0.45	0.52	0.27	0.39	0.47	0.37	0.18	0.12	1.87
Net Loss in.		0.10	0.48	1.18	2.63	3.82	4.78	4.35	2.26	0.85			20.45
ET Ref													
Cal SCS-BC k	2.09	2.48	2.17	1.85	1.77	1.51	1.27	1.26	1.33	1.47	1.83	1.67	
Estimated Etr	0.93	1.31	2.05	3.22	5.51	6.92	7.92	6.82	4.35	2.66	1.32	0.79	43.80
Std Dev Et	0.20	0.25	0.46	0.66	0.58	0.73	0.38	0.51	0.56	0.42	0.20	0.13	2.32

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ELBERTA
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4680 ft., Lat. 39.95

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.73	6.68	8.28	8.93	10.04	10.12	10.28	9.59	8.40	7.72	6.70	6.52	100.00
Avg Temp F	26.28	32.27	40.51	48.49	57.60	67.38	75.51	73.15	63.72	51.49	39.08	28.14	50.30
Std Dev Temp	4.92	5.22	4.06	3.32	2.66	2.92	1.79	1.75	2.96	3.14	2.96	3.88	1.27
Avg Prec in.	0.81	0.86	1.01	1.12	1.08	0.84	0.86	0.98	0.99	1.07	0.92	0.86	11.41
Std Dev Prec	0.61	0.68	0.54	0.75	0.81	0.73	0.77	0.78	1.00	0.75	0.66	0.77	3.06
SCS-BC f in.	0.53	0.67	1.33	2.29	3.96	5.82	7.71	6.68	4.23	2.31	0.96	0.55	37.05
Std Dev f	0.10	0.14	0.34	0.40	0.45	0.60	0.43	0.37	0.47	0.36	0.20	0.08	1.82
ALFALFA													
Cal SCS-BC k				0.52	1.53	1.03	0.86	0.86	1.05				
Cal SCS-BC Et				1.18	6.06	5.97	6.65	5.73	4.45				30.05
Std Dev Et				0.21	0.69	0.61	0.37	0.32	0.49				1.57
Net Irr in.				0.29	5.20	5.30	5.97	4.95	3.66				25.35
PASTURE													
Cal SCS-BC k				0.70	1.03	0.90	0.75	0.72	0.80	0.30			
Cal SCS-BC Et				1.61	4.09	5.25	5.79	4.83	3.40	0.70			25.67
Std Dev Et				0.28	0.46	0.54	0.32	0.27	0.38	0.11			1.35
Net Irr in.				0.71	3.23	4.58	5.10	4.05	2.60				20.27
OTHR HAY													
Cal SCS-BC k				0.30	1.37	1.45	0.96	0.42	0.29				
Cal SCS-BC Et				0.68	5.41	8.47	7.42	2.78	1.24				26.00
Std Dev Et				0.12	0.61	0.87	0.41	0.15	0.14				1.46
Net Irr in.					4.55	7.80	6.73	2.00	0.45				21.52
SP GRAIN													
Cal SCS-BC k				0.28	1.10	1.39	0.97	0.07					
Cal SCS-BC Et				0.64	4.37	8.07	7.51	0.45					21.05
Std Dev Et				0.11	0.49	0.83	0.42	0.02					1.31
Net Irr in.					3.50	7.40	6.82						17.73
CORN													
Cal SCS-BC k					0.19	0.38	0.80	1.05	1.06				
Cal SCS-BC Et					0.74	2.22	6.17	7.05	4.47				20.65
Std Dev Et					0.08	0.23	0.34	0.39	0.49				0.94
Net Irr in.						1.55	5.48	6.27	3.68				16.97
ORCHARD													
Cal SCS-BC k				0.10	0.74	1.09	1.15	1.21	1.34	0.23			
Cal SCS-BC Et				0.24	2.95	6.35	8.89	8.07	5.69	0.53			32.70
Std Dev Et				0.04	0.33	0.65	0.49	0.45	0.63	0.08			1.53
Net Irr in.					2.08	5.67	8.20	7.29	4.89				28.14

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ELBERTA
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4680 ft., Lat. 39.95

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.90	0.91	0.78	0.65	0.62	0.69	0.39			
Cal SCS-BC Et				2.05	3.59	4.52	4.99	4.16	2.93	0.89			23.13
Std Dev Et				0.36	0.41	0.46	0.28	0.23	0.32	0.14			1.27
Net Irr in.				1.16	2.73	3.85	4.30	3.38	2.13	0.03			17.58
GARDEN													
Cal SCS-BC k					0.30	0.61	0.89	0.58	0.14				
Cal SCS-BC Et					1.20	3.54	6.88	3.91	0.58				16.10
Std Dev Et					0.14	0.36	0.38	0.22	0.06				0.71
Net Irr in.					0.33	2.87	6.19	3.12					12.51
E-LAKE													
Cal SCS-BC k	1.69	1.97	1.77	1.51	1.22	0.95	0.79	0.82	1.01	1.15	1.42	1.42	
Cal SCS-BC Evap	0.90	1.33	2.35	3.46	4.82	5.52	6.10	5.49	4.25	2.65	1.37	0.78	39.02
Std Dev Evap	0.17	0.28	0.60	0.61	0.55	0.57	0.34	0.30	0.47	0.41	0.28	0.11	2.08
Net Loss in.	0.08	0.47	1.35	2.34	3.74	4.68	5.24	4.51	3.26	1.58	0.44		27.69
ET Ref													
Cal SCS-BC k	1.88	2.19	1.97	1.73	1.62	1.39	1.16	1.11	1.24	1.31	1.58	1.57	
Estimated Etr	1.00	1.48	2.62	3.97	6.41	8.07	8.91	7.44	5.23	3.01	1.52	0.87	50.51
Std Dev Et	0.19	0.32	0.67	0.70	0.73	0.83	0.49	0.41	0.58	0.46	0.31	0.12	2.63

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ENTERPRISE/BERYL JUNC
From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE 10-13-1994
Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 Elev. 5150 ft., Lat. 37.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.92	9.97	10.15	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	26.27	32.26	38.64	45.69	54.28	63.04	70.16	68.49	59.46	48.76	36.88	27.67	47.63
Std Dev Temp	4.75	4.16	3.12	2.82	2.50	2.27	1.68	2.00	2.34	2.69	2.32	4.39	0.96
Avg Prec in.	0.68	0.83	1.10	0.90	0.66	0.46	1.18	1.18	0.94	0.81	0.86	0.62	10.21
Std Dev Prec	0.64	0.70	0.86	0.75	0.58	0.56	0.97	0.89	0.83	0.61	0.65	0.53	2.20
SCS-BC f in.	0.54	0.67	1.16	1.94	3.38	4.89	6.41	5.68	3.57	2.02	0.84	0.56	31.65
Std Dev f	0.10	0.12	0.26	0.32	0.39	0.42	0.36	0.39	0.34	0.29	0.13	0.09	1.20
ALFALFA													
Cal SCS-BC k				0.72	2.02	1.34	1.39	1.17	1.05	0.38			
Cal SCS-BC Et				1.39	6.80	6.58	8.89	6.63	3.75	0.76			34.81
Std Dev Et				0.23	0.79	0.57	0.50	0.46	0.35	0.11			1.52
Net Irr in.				0.68	6.28	6.21	7.95	5.68	3.00	0.11			29.91
PASTURE													
Cal SCS-BC k				0.91	1.28	1.18	0.98	0.95	0.88	0.47			
Cal SCS-BC Et				1.76	4.33	5.79	6.26	5.38	3.13	0.95			27.60
Std Dev Et				0.29	0.50	0.50	0.35	0.37	0.30	0.13			1.19
Net Irr in.				1.05	3.80	5.42	5.31	4.44	2.38	0.30			22.70
SP GRAIN													
Cal SCS-BC k				0.68	1.79	1.82	0.97						
Cal SCS-BC Et				1.33	6.06	8.91	6.20						22.50
Std Dev Et				0.22	0.70	0.77	0.35						1.32
Net Irr in.				0.61	5.53	8.54	5.26						19.95
POTATOES													
Cal SCS-BC k					0.26	0.80	1.14	1.08	0.61				
Cal SCS-BC Et					0.88	3.91	7.33	6.11	2.16				20.40
Std Dev Et					0.10	0.34	0.41	0.42	0.20				0.84
Net Irr in.					0.35	3.54	6.39	5.17	1.41				16.86
CORN													
Cal SCS-BC k					0.26	0.52	1.10	1.38	0.50				
Cal SCS-BC Et					0.88	2.56	7.06	7.83	1.80				20.13
Std Dev Et					0.10	0.22	0.39	0.54	0.17				0.83
Net Irr in.					0.35	2.19	6.12	6.89	1.05				16.60

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ENTERPRISE/BERYL JUNC
From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE 10-13-1994
Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 Elev. 5150 ft., Lat. 37.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.23	1.19	1.02	0.84	0.82	0.75	0.53			
Cal SCS-BC Et				2.40	4.00	4.99	5.39	4.64	2.69	1.06			25.17
Std Dev Et				0.39	0.46	0.43	0.30	0.32	0.25	0.15			1.11
Net Irr in.				1.68	3.47	4.62	4.45	3.69	1.94	0.41			20.28
GARDEN													
Cal SCS-BC k					0.51	0.83	1.17	0.76	0.21				
Cal SCS-BC Et					1.72	4.08	7.48	4.34	0.73				18.35
Std Dev Et					0.20	0.35	0.42	0.30	0.07				0.79
Net Irr in.					1.19	3.71	6.54	3.39					14.83
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.95	2.00	1.64	1.24	1.01	1.04	1.03	1.30	2.00	2.00	
Cal SCS-BC Evap	1.08	1.34	2.26	3.89	5.54	6.06	6.46	5.92	3.67	2.62	1.67	1.11	41.63
Std Dev Evap	0.20	0.23	0.51	0.63	0.64	0.52	0.36	0.41	0.35	0.37	0.25	0.18	1.68
Net Loss in.	0.40	0.51	1.16	2.99	4.88	5.59	5.28	4.74	2.74	1.82	0.82	0.50	31.42
ET Ref													
Cal SCS-BC k	2.37	2.56	2.19	2.38	2.12	1.82	1.50	1.46	1.35	1.59	2.60	2.71	
Estimated Etr	1.28	1.71	2.54	4.63	7.15	8.91	9.63	8.28	4.81	3.20	2.18	1.51	55.83
Std Dev Et	0.23	0.30	0.57	0.75	0.83	0.77	0.54	0.57	0.45	0.45	0.33	0.25	2.20

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at EPHRAIM SORENSENS FLD
From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994
Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5670 ft., Lat. 39.35

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.76	6.70	8.28	8.92	10.01	10.08	10.24	9.57	8.39	7.74	6.73	6.57	100.00
Avg Temp F	23.40	29.36	36.92	44.94	54.10	63.82	71.58	69.32	60.12	49.50	36.38	25.73	47.10
Std Dev Temp	4.69	4.59	4.13	3.61	2.89	2.74	1.65	1.79	3.03	3.41	3.47	4.65	1.43
Avg Prec in.	0.87	0.94	1.32	1.13	1.05	0.73	0.72	0.78	1.20	1.18	0.98	0.96	11.84
Std Dev Prec	0.72	0.86	0.76	0.67	0.77	0.74	0.54	0.60	1.07	0.77	0.67	0.70	3.01
SCS-BC f in.	0.47	0.59	1.05	1.88	3.38	5.10	6.78	5.88	3.68	2.09	0.82	0.51	32.24
Std Dev f	0.10	0.10	0.28	0.40	0.46	0.53	0.36	0.35	0.45	0.36	0.16	0.09	1.66
ALFALFA													
Cal SCS-BC k				0.62	2.00	1.26	1.15	1.33	1.19	0.60			
Cal SCS-BC Et				1.17	6.77	6.44	7.82	7.80	4.39	1.26			35.64
Std Dev Et				0.25	0.91	0.67	0.42	0.47	0.53	0.22			1.86
Net Irr in.				0.26	5.94	5.86	7.24	7.18	3.43	0.32			30.22
PASTURE													
Cal SCS-BC k				0.67	1.32	1.11	0.92	0.92	1.01	0.39			
Cal SCS-BC Et				1.26	4.47	5.66	6.22	5.39	3.73	0.82			27.55
Std Dev Et				0.27	0.60	0.59	0.33	0.32	0.45	0.14			1.47
Net Irr in.				0.36	3.63	5.08	5.64	4.77	2.77				22.25
OTHR HAY													
Cal SCS-BC k				0.51	1.95	1.72	0.65	0.44	0.34	0.12			
Cal SCS-BC Et				0.95	6.58	8.77	4.41	2.56	1.23	0.25			24.77
Std Dev Et				0.20	0.89	0.91	0.24	0.15	0.15	0.04			1.59
Net Irr in.				0.05	5.75	8.19	3.83	1.94	0.27				20.03
SP GRAIN													
Cal SCS-BC k				0.50	1.74	1.71	0.89						
Cal SCS-BC Et				0.95	5.89	8.71	6.05						21.59
Std Dev Et				0.20	0.79	0.90	0.32						1.50
Net Irr in.				0.04	5.05	8.13	5.47						18.70
CORN													
Cal SCS-BC k					0.23	0.47	0.99	1.34	1.05				
Cal SCS-BC Et					0.77	2.40	6.73	7.86	3.86				21.62
Std Dev Et					0.10	0.25	0.36	0.47	0.47				0.97
Net Irr in.						1.82	6.15	7.24	2.90				18.11

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at EPHRAIM SORENSENS FLD
From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994
Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5670 ft., Lat. 39.35

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.74	1.16	0.96	0.79	0.79	0.87	0.63			
Cal SCS-BC Et				1.39	3.92	4.88	5.36	4.65	3.21	1.33			24.73
Std Dev Et				0.30	0.53	0.50	0.29	0.28	0.39	0.23			1.32
Net Irr in.				0.48	3.08	4.30	4.78	4.02	2.25	0.38			19.30
GARDEN													
Cal SCS-BC k					0.38	0.62	0.91	1.04	0.37				
Cal SCS-BC Et					1.28	3.16	6.20	6.12	1.37				18.14
Std Dev Et					0.17	0.33	0.33	0.37	0.17				0.79
Net Irr in.					0.44	2.58	5.62	5.50	0.41				14.55
E-LAKE													
Cal SCS-BC k	1.66	1.66	1.76	1.63	1.55	1.19	0.88	0.97	1.10	1.36	1.67	1.19	
Cal SCS-BC Evap	0.79	0.98	1.86	3.05	5.23	6.05	5.95	5.72	4.04	2.86	1.38	0.60	38.50
Std Dev Evap	0.16	0.17	0.50	0.65	0.70	0.63	0.32	0.34	0.49	0.49	0.26	0.11	2.21
Net Loss in.		0.05	0.54	1.93	4.18	5.32	5.22	4.94	2.84	1.68	0.40		27.09
ET Ref													
Cal SCS-BC k	1.84	1.84	2.20	1.60	2.07	1.71	1.41	1.41	1.56	1.58	1.86	1.32	
Estimated Etr	0.87	1.09	2.31	3.00	7.00	8.71	9.57	8.30	5.74	3.31	1.53	0.67	52.11
Std Dev Et	0.18	0.19	0.62	0.64	0.94	0.90	0.51	0.49	0.70	0.57	0.29	0.12	2.82

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ESCALANTE
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE 10-26-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE: 1986-1990 Elev. 5810 ft., Lat. 37.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.78	6.82	6.68	100.00
Avg Temp F	27.55	34.02	40.40	48.05	56.84	66.07	72.30	69.70	61.48	51.14	39.18	29.62	49.70
Std Dev Temp	4.40	3.75	3.56	3.35	2.42	2.70	1.33	1.69	2.45	2.98	2.76	3.93	1.00
Avg Prec in.	0.78	0.64	0.90	0.50	0.68	0.41	1.06	1.51	1.04	0.98	0.83	0.70	10.04
Std Dev Prec	0.78	0.66	0.68	0.64	0.66	0.51	0.74	0.96	0.81	1.08	0.98	0.75	2.68
SCS-BC f in.	0.57	0.73	1.31	2.22	3.79	5.48	6.87	5.92	3.87	2.28	0.99	0.60	34.62
Std Dev f	0.09	0.12	0.33	0.40	0.40	0.53	0.30	0.34	0.37	0.33	0.18	0.10	1.47
ALFALFA													
Cal SCS-BC k				1.29	2.02	1.14	1.00	1.24	1.01	0.78			
Cal SCS-BC Et				2.87	7.66	6.27	6.87	7.35	3.90	1.79			36.70
Std Dev Et				0.52	0.81	0.61	0.30	0.42	0.37	0.26			1.69
Net Irr in.				2.47	7.11	5.94	6.02	6.14	3.06	1.01			31.75
PASTURE													
Cal SCS-BC k			0.27	1.28	1.35	1.01	0.84	0.83	0.90	0.58			
Cal SCS-BC Et			0.36	2.84	5.09	5.51	5.78	4.91	3.49	1.32			29.29
Std Dev Et			0.09	0.51	0.54	0.53	0.25	0.28	0.33	0.19			1.41
Net Irr in.				2.44	4.54	5.18	4.93	3.70	2.65	0.53			23.98
SP GRAIN													
Cal SCS-BC k				0.69	1.77	1.55	0.75						
Cal SCS-BC Et				1.53	6.72	8.48	5.13						21.86
Std Dev Et				0.28	0.71	0.82	0.22						1.38
Net Irr in.				1.13	6.17	8.15	4.28						19.73

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ESCALANTE
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE 10-26-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE: 1986-1990 Elev. 5810 ft., Lat. 37.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.53	1.25	1.16	0.87	0.72	0.72	0.78	0.61			
Cal SCS-BC Et			0.70	2.77	4.38	4.75	4.98	4.23	3.01	1.40			26.21
Std Dev Et			0.18	0.50	0.47	0.46	0.21	0.24	0.29	0.20			1.30
Net Irr in.				2.37	3.84	4.42	4.13	3.02	2.17	0.62			20.56
GARDEN													
Cal SCS-BC k					0.64	1.10	0.80	0.29	0.28	0.12			
Cal SCS-BC Et					2.42	6.04	5.53	1.72	1.07	0.28			17.05
Std Dev Et					0.26	0.59	0.24	0.10	0.10	0.04			0.80
Net Irr in.					1.88	5.71	4.68	0.51	0.24				13.01
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.96	1.86	1.54	1.09	0.84	0.98	1.14	1.47	2.00	2.00	
Cal SCS-BC Evap	1.13	1.46	2.57	4.14	5.81	5.95	5.81	5.78	4.43	3.36	1.97	1.20	43.61
Std Dev Evap	0.18	0.25	0.65	0.75	0.62	0.58	0.25	0.33	0.42	0.49	0.37	0.20	2.09
Net Loss in.	0.35	0.82	1.67	3.64	5.13	5.54	4.75	4.26	3.39	2.38	1.15	0.50	33.57
ET Ref													
Cal SCS-BC k	2.72	2.80	2.35	2.29	2.07	1.55	1.29	1.28	1.39	1.50	2.25	2.62	
Estimated Etr	1.55	2.03	3.08	5.09	7.83	8.48	8.88	7.56	5.36	3.43	2.22	1.57	57.08
Std Dev Et	0.25	0.34	0.78	0.92	0.83	0.82	0.38	0.43	0.51	0.50	0.41	0.26	2.69

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FAIRFIELD
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4880 ft., Lat. 40.27

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.94	10.06	10.15	10.31	9.61	8.40	7.72	6.68	6.50	100.00
Avg Temp F	23.63	30.15	38.32	45.72	53.98	62.76	69.93	68.01	59.19	47.48	35.81	25.41	46.70
Std Dev Temp	5.03	4.43	3.07	2.67	2.12	2.20	1.24	1.89	2.67	2.32	2.21	3.65	1.07
Avg Prec in.	0.98	0.95	1.11	1.01	1.06	0.79	1.09	1.15	1.09	1.25	0.99	0.91	12.39
Std Dev Prec	0.46	0.79	0.72	0.56	0.78	0.78	1.08	1.05	0.95	0.75	0.65	0.72	3.84
SCS-BC f in.	0.48	0.61	1.13	1.96	3.37	4.92	6.46	5.64	3.54	1.87	0.76	0.50	31.23
Std Dev f	0.10	0.09	0.25	0.30	0.33	0.42	0.27	0.37	0.39	0.24	0.10	0.07	1.12
ALFALFA													
Cal SCS-BC k				0.36	1.65	1.15	1.26	0.98	1.01				
Cal SCS-BC Et				0.70	5.57	5.68	8.13	5.55	3.58				29.21
Std Dev Et				0.11	0.55	0.48	0.34	0.36	0.39				1.03
Net Irr in.					4.73	5.05	7.26	4.63	2.71				24.37
PASTURE													
Cal SCS-BC k				0.43	1.03	1.03	0.87	0.82	0.91	0.35			
Cal SCS-BC Et				0.85	3.48	5.05	5.60	4.65	3.23	0.65			23.51
Std Dev Et				0.13	0.34	0.43	0.23	0.30	0.36	0.08			0.82
Net Irr in.				0.04	2.64	4.41	4.72	3.73	2.36				17.90
OTHR HAY													
Cal SCS-BC k				0.33	1.50	1.65	1.11	0.47	0.33				
Cal SCS-BC Et				0.65	5.06	8.14	7.17	2.68	1.18				24.88
Std Dev Et				0.10	0.50	0.69	0.30	0.17	0.13				1.00
Net Irr in.					4.21	7.51	6.30	1.75	0.31				20.08
SP GRAIN													
Cal SCS-BC k				0.22	1.04	1.57	1.20	0.19					
Cal SCS-BC Et				0.43	3.52	7.71	7.76	1.06					20.50
Std Dev Et				0.07	0.35	0.66	0.32	0.07					0.91
Net Irr in.					2.68	7.08	6.89	0.14					16.79

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FAIRFIELD
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4880 ft., Lat. 40.27

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.69	0.99	0.88	0.75	0.71	0.79	0.44			
Cal SCS-BC Et				1.35	3.35	4.35	4.82	4.01	2.78	0.83			21.49
Std Dev Et				0.21	0.33	0.37	0.20	0.26	0.31	0.11			0.79
Net Irr in.				0.54	2.51	3.71	3.95	3.08	1.91				15.71
GARDEN													
Cal SCS-BC k					0.19	0.57	0.97	0.77	0.18				
Cal SCS-BC Et					0.63	2.82	6.25	4.34	0.65				14.68
Std Dev Et					0.06	0.24	0.26	0.28	0.07				0.48
Net Irr in.						2.19	5.38	3.41					10.98
E-LAKE													
Cal SCS-BC k	1.66	1.89	1.96	1.69	1.34	1.08	0.91	0.94	1.15	1.32	1.47	1.33	
Cal SCS-BC Evap	0.79	1.14	2.22	3.30	4.51	5.31	5.91	5.29	4.05	2.46	1.12	0.66	36.77
Std Dev Evap	0.17	0.18	0.48	0.51	0.44	0.45	0.25	0.34	0.45	0.31	0.14	0.09	1.47
Net Loss in.		0.19	1.11	2.30	3.45	4.52	4.82	4.14	2.97	1.21	0.13		24.83
ET Ref													
Cal SCS-BC k	1.84	2.10	2.18	1.93	1.78	1.58	1.33	1.27	1.40	1.49	1.63	1.48	
Estimated Etr	0.87	1.27	2.47	3.78	5.99	7.76	8.61	7.15	4.97	2.79	1.24	0.73	47.64
Std Dev Et	0.19	0.20	0.54	0.58	0.59	0.66	0.36	0.46	0.55	0.35	0.16	0.10	1.83

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FARMINGTON/USU FL STN
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE 10-26-1994
Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1991 Elev. 4340 ft., Lat. 41.02

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.20	10.36	9.64	8.40	7.69	6.64	6.44	100.00
Avg Temp F	28.56	33.66	41.71	49.54	58.30	67.81	75.95	73.86	64.24	51.82	39.80	29.33	51.21
Std Dev Temp	3.73	3.94	3.07	3.76	2.55	3.07	1.66	2.28	2.84	2.98	2.26	3.06	1.28
Avg Prec in.	1.88	1.89	2.44	2.76	2.71	1.48	0.83	0.99	1.65	2.01	1.96	2.00	22.60
Std Dev Prec	0.84	1.03	1.45	1.47	1.50	1.33	0.74	0.98	1.65	1.15	1.15	1.43	5.77
SCS-BC f in.	0.57	0.70	1.42	2.43	4.10	5.96	7.87	6.87	4.31	2.33	1.00	0.57	38.14
Std Dev f	0.07	0.13	0.29	0.48	0.44	0.65	0.40	0.49	0.46	0.34	0.16	0.06	2.14
ALFALFA													
Cal SCS-BC k			0.19	1.31	1.33	1.19	0.86	0.82	0.86	0.83			
Cal SCS-BC Et			0.27	3.19	5.44	7.08	6.78	5.66	3.73	1.95			34.11
Std Dev Et			0.06	0.63	0.58	0.77	0.35	0.40	0.39	0.29			2.16
Net Irr in.				0.99	3.27	5.89	6.12	4.87	2.41	0.34			23.89
PASTURE													
Cal SCS-BC k			0.39	0.91	0.97	0.89	0.76	0.73	0.75	0.63			
Cal SCS-BC Et			0.56	2.22	3.98	5.29	5.95	5.03	3.22	1.47			27.71
Std Dev Et			0.11	0.44	0.43	0.58	0.30	0.36	0.34	0.22			1.67
Net Irr in.				0.01	1.81	4.11	5.29	4.24	1.89				17.35
SP GRAIN													
Cal SCS-BC k				0.47	1.26	1.37	0.74						
Cal SCS-BC Et				1.14	5.17	8.14	5.84						20.30
Std Dev Et				0.22	0.55	0.89	0.30						1.43
Net Irr in.					3.01	6.96	5.18						15.15
CORN													
Cal SCS-BC k				0.04	0.30	0.51	0.90	1.07	0.96				
Cal SCS-BC Et				0.10	1.23	3.06	7.12	7.33	4.14				22.97
Std Dev Et				0.02	0.13	0.33	0.36	0.52	0.44				1.11
Net Irr in.						1.88	6.45	6.53	2.82				17.68
PEACHES													
Cal SCS-BC k			0.08	0.74	1.15	1.25	1.16	1.11	0.95				
Cal SCS-BC Et			0.12	1.79	4.70	7.43	9.13	7.60	4.08				34.84
Std Dev Et			0.02	0.35	0.50	0.81	0.47	0.54	0.43				1.91
Net Irr in.					2.53	6.24	8.46	6.80	2.75				26.80
ORCHARD													
Cal SCS-BC k				0.32	0.97	1.32	1.26	1.23	1.18	0.43			
Cal SCS-BC Et				0.77	3.98	7.89	9.93	8.41	5.11	1.00			37.10
Std Dev Et				0.15	0.43	0.86	0.51	0.60	0.54	0.15			1.92
Net Irr in.					1.82	6.71	9.27	7.62	3.79				29.20

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FARMINGTON/USU FL STN
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE 10-26-1994
Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1991 Elev. 4340 ft., Lat. 41.02

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
SWE CORN													
Cal SCS-BC k					0.26	0.54	0.99	0.68					
Cal SCS-BC Et					1.08	3.22	7.76	4.67					16.74
Std Dev Et					0.12	0.35	0.40	0.33					0.77
Net Irr in.						2.04	7.09	3.88					13.01
POTATOES													
Cal SCS-BC k					0.37	0.89	0.90	0.77	0.46				
Cal SCS-BC Et					1.51	5.29	7.08	5.28	2.00				21.15
Std Dev Et					0.16	0.58	0.36	0.37	0.21				1.04
Net Irr in.						4.10	6.42	4.48	0.67				15.67
TURF													
Cal SCS-BC k			0.51	0.86	0.84	0.77	0.65	0.63	0.64	0.62			
Cal SCS-BC Et			0.73	2.10	3.43	4.56	5.13	4.33	2.77	1.44			24.49
Std Dev Et			0.15	0.41	0.37	0.50	0.26	0.31	0.29	0.21			1.50
Net Irr in.					1.26	3.37	4.47	3.54	1.45				14.09
GARDEN													
Cal SCS-BC k				0.16	0.44	0.70	0.91	0.59	0.24	0.12			
Cal SCS-BC Et				0.39	1.79	4.18	7.20	4.08	1.03	0.29			18.96
Std Dev Et				0.08	0.19	0.46	0.37	0.29	0.11	0.04			0.95
Net Irr in.						3.00	6.54	3.29					12.82
E-LAKE													
Cal SCS-BC k	1.31	1.92	1.54	1.39	1.17	0.96	0.80	0.82	0.91	0.97	1.30	1.37	
Cal SCS-BC Evap	0.75	1.35	2.18	3.38	4.78	5.73	6.28	5.64	3.94	2.25	1.30	0.78	38.36
Std Dev Evap	0.10	0.24	0.44	0.67	0.51	0.62	0.32	0.40	0.42	0.33	0.20	0.09	2.29
Net Loss in.				0.62	2.07	4.25	5.46	4.65	2.29	0.24			19.58
ET Ref													
Cal SCS-BC k	1.45	2.14	1.71	1.56	1.49	1.37	1.16	1.13	1.15	1.12	1.45	1.52	
Estimated Etr	0.83	1.50	2.42	3.81	6.12	8.14	9.16	7.74	4.95	2.60	1.45	0.86	49.58
Std Dev Et	0.11	0.27	0.49	0.75	0.65	0.89	0.47	0.55	0.52	0.38	0.23	0.10	2.88

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FERRON

From a Calibrated SCS Blaney-Criddle Equation using data from FERRON 10-13-1994

Years of Data Available; NWS: 1961-1990 FERRON: 1993-1993 Elev. 5930 ft., Lat. 39.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.78	6.71	8.29	8.91	9.99	10.06	10.23	9.56	8.39	7.75	6.75	6.59	100.0C
Avg Temp F	22.77	29.41	37.65	46.47	56.16	65.64	72.39	69.93	61.18	50.12	36.72	25.70	47.84
Std Dev Temp	4.70	4.66	3.70	3.68	2.58	2.96	1.58	1.83	2.89	3.46	2.71	3.79	1.25
Avg Prec in.	0.62	0.55	0.66	0.49	0.72	0.49	1.03	1.09	0.87	0.79	0.53	0.56	8.40
Std Dev Prec	0.66	0.55	0.56	0.49	0.57	0.49	0.79	0.64	0.77	0.74	0.65	0.49	2.38
SCS-BC f in.	0.46	0.59	1.10	2.05	3.70	5.44	6.95	5.99	3.83	2.16	0.83	0.51	33.62
Std Dev f	0.10	0.10	0.28	0.43	0.42	0.58	0.35	0.36	0.43	0.38	0.14	0.07	1.59
ALFALFA													
Cal SCS-BC k				0.22	1.47	1.21	1.25	1.15	1.10	0.61			
Cal SCS-BC Et				0.44	5.45	6.57	8.66	6.89	4.21	1.31			33.54
Std Dev Et				0.09	0.62	0.71	0.44	0.42	0.47	0.23			1.45
Net Irr in.				0.05	4.87	6.18	7.84	6.02	3.51	0.68			29.15
PASTURE													
Cal SCS-BC k				0.65	0.90	1.05	0.97	0.85	0.98	0.68			
Cal SCS-BC Et				1.34	3.33	5.72	6.72	5.10	3.75	1.48			27.43
Std Dev Et				0.28	0.38	0.61	0.34	0.31	0.42	0.26			1.30
Net Irr in.				0.95	2.75	5.32	5.89	4.23	3.06	0.84			23.05
OTHR HAY													
Cal SCS-BC k					0.85	1.68	0.96	0.45	0.36	0.07			
Cal SCS-BC Et					3.16	9.12	6.71	2.69	1.37	0.15			23.19
Std Dev Et					0.36	0.98	0.34	0.16	0.15	0.03			1.20
Net Irr in.					2.58	8.73	5.88	1.82	0.68				19.68
SP GRAIN													
Cal SCS-BC k				0.27	1.03	1.62	1.30	0.09					
Cal SCS-BC Et				0.55	3.82	8.79	9.02	0.55					22.74
Std Dev Et				0.11	0.44	0.94	0.46	0.03					1.28
Net Irr in.				0.16	3.24	8.40	8.19						20.00
CORN													
Cal SCS-BC k					0.09	0.38	0.96	1.24	0.89				
Cal SCS-BC Et					0.33	2.09	6.65	7.44	3.41				19.92
Std Dev Et					0.04	0.22	0.34	0.45	0.38				0.76
Net Irr in.						1.69	5.82	6.57	2.72				16.80

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FERRON

From a Calibrated SCS Blaney-Criddle Equation using data from FERRON 10-13-1994

Years of Data Available; NWS: 1961-1990 FERRON: 1993-1993 Elev. 5930 ft., Lat. 39.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.81	0.91	0.91	0.83	0.73	0.84	0.59			
Cal SCS-BC Et				1.66	3.39	4.94	5.78	4.39	3.23	1.28			24.67
Std Dev Et				0.34	0.39	0.53	0.30	0.26	0.36	0.22			1.22
Net Irr in.				1.27	2.81	4.54	4.96	3.52	2.54	0.64			20.28
GARDEN													
Cal SCS-BC k					0.37	0.63	0.98	0.97	0.45	0.12			
Cal SCS-BC Et					1.38	3.42	6.84	5.84	1.74	0.26			19.48
Std Dev Et					0.16	0.37	0.35	0.35	0.20	0.05			0.74
Net Irr in.					0.80	3.03	6.01	4.97	1.04				15.86
E-LAKE													
Cal SCS-BC k			2.00	1.93	1.28	1.22	1.08	0.94	1.23	1.40	1.95	2.00	
Cal SCS-BC Evap			2.19	3.96	4.74	6.62	7.50	5.66	4.72	3.02	1.61	1.02	41.04
Std Dev Evap			0.56	0.82	0.54	0.71	0.38	0.34	0.53	0.53	0.28	0.15	2.26
Net Loss in.			1.53	3.47	4.02	6.13	6.46	4.58	3.85	2.23	1.08	0.46	33.81
ET Ref													
Cal SCS-BC k			2.27	2.15	1.63	1.62	1.49	1.31	1.51	1.62	2.16	2.61	
Estimated Etr			2.49	4.40	6.05	8.83	10.33	7.84	5.78	3.50	1.79	1.32	52.32
Std Dev Et			0.64	0.91	0.69	0.95	0.53	0.47	0.65	0.61	0.31	0.20	2.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FILLMORE
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA / FLOWELL 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA / FLOWELL: 1979-1991 Elev. 5120 ft., Lat. 38.95

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Lig't	6.79	6.71	8.29	8.91	9.99	10.05	10.22	9.55	8.39	7.75	6.75	6.60	100.00
Avg Temp F	27.88	34.21	41.13	48.80	57.69	67.44	75.39	73.28	64.19	52.36	39.57	29.15	50.92
Std Dev Temp	4.51	4.12	3.86	3.90	2.87	2.92	1.34	1.97	3.18	3.78	3.15	4.51	1.28
Avg Prec in.	1.27	1.26	2.08	1.82	1.43	0.90	0.75	0.87	1.21	1.38	1.46	1.48	15.91
Std Dev Prec	0.75	0.80	0.88	1.04	1.05	0.92	0.57	0.57	1.19	0.90	0.93	0.92	3.58
SCS-BC f in.	0.57	0.74	1.38	2.33	3.95	5.80	7.63	6.68	4.30	2.42	1.00	0.58	37.39
Std Dev f	0.09	0.15	0.36	0.48	0.48	0.59	0.31	0.41	0.51	0.44	0.22	0.11	1.87
ALFALFA													
Cal SCS-BC k				1.17	1.40	1.27	0.94	0.97	1.05	0.61			
Cal SCS-BC Et				2.72	5.53	7.35	7.21	6.46	4.53	1.46			35.25
Std Dev Et				0.56	0.67	0.75	0.29	0.40	0.53	0.27			1.92
Net Irr in.				1.27	4.38	6.63	6.61	5.76	3.56	0.36			28.57
PASTURE													
Cal SCS-BC k			0.20	0.92	1.03	0.95	0.82	0.82	0.82	0.49			
Cal SCS-BC Et			0.27	2.14	4.06	5.51	6.26	5.49	3.52	1.17			28.43
Std Dev Et			0.07	0.44	0.50	0.56	0.26	0.34	0.42	0.21			1.50
Net Irr in.				0.69	2.91	4.80	5.66	4.80	2.54	0.07			21.47
OTHR HAY													
Cal SCS-BC k				1.08	1.58	1.51	0.79	0.43	0.30	0.07			
Cal SCS-BC Et				2.51	6.26	8.76	6.00	2.90	1.29	0.17			27.88
Std Dev Et				0.52	0.76	0.90	0.25	0.18	0.15	0.03			1.74
Net Irr in.				1.05	5.11	8.05	5.40	2.20	0.32				22.13
SP GRAIN													
Cal SCS-BC k			0.10	0.64	1.45	1.46	0.56						
Cal SCS-BC Et			0.14	1.49	5.73	8.45	4.27						20.08
Std Dev Et			0.04	0.31	0.70	0.87	0.17						1.44
Net Irr in.				0.03	4.59	7.73	3.68						16.03
CORN													
Cal SCS-BC k					0.23	0.48	0.99	1.19	0.92				
Cal SCS-BC Et					0.93	2.79	7.58	7.98	3.94				23.22
Std Dev Et					0.11	0.29	0.31	0.49	0.46				0.92
Net Irr in.						2.08	6.98	7.28	2.97				19.31
POTATOES													
Cal SCS-BC k					0.24	0.70	0.96	0.93	0.73	0.20			
Cal SCS-BC Et					0.94	4.03	7.36	6.25	3.13	0.48			22.19
Std Dev Et					0.12	0.41	0.30	0.39	0.37	0.09			0.86
Net Irr in.						3.32	6.76	5.55	2.16				17.79

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FILLMORE

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA / FLOWELL 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA / FLOWELL: 1979-1991 Elev. 5120 ft., Lat. 38.95

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k					0.68	1.36	1.37	1.37	1.27	0.63			
Cal SCS-BC Et					2.68	7.89	10.45	9.16	5.46	1.52			37.18
Std Dev Et					0.33	0.81	0.43	0.57	0.65	0.28			1.56
Net Irr in.					1.54	7.17	9.86	8.47	4.49	0.42			31.95
TURF													
Cal SCS-BC k			0.20	0.90	0.88	0.82	0.71	0.71	0.70	0.53			
Cal SCS-BC Et			0.28	2.11	3.50	4.75	5.39	4.74	3.03	1.29			25.08
Std Dev Et			0.07	0.44	0.43	0.49	0.22	0.29	0.36	0.23			1.35
Net Irr in.				0.65	2.35	4.03	4.79	4.04	2.06	0.19			18.11
GARDEN													
Cal SCS-BC k					0.37	0.67	0.98	0.67	0.23				
Cal SCS-BC Et					1.45	3.89	7.49	4.45	0.99				18.28
Std Dev Et					0.18	0.40	0.31	0.28	0.12				0.69
Net Irr in.					0.31	3.18	6.89	3.75	0.02				14.15
E-LAKE													
Cal SCS-BC k	1.56	1.93	1.72	1.45	1.21	0.98	0.83	0.91	0.97	1.11	1.56	1.74	
Cal SCS-BC Evap	0.89	1.42	2.37	3.37	4.77	5.71	6.36	6.09	4.18	2.70	1.56	1.01	40.43
Std Dev Evap	0.14	0.28	0.63	0.70	0.58	0.58	0.26	0.38	0.49	0.49	0.35	0.18	2.24
Net Loss in.		0.16	0.29	1.55	3.34	4.81	5.62	5.22	2.96	1.32	0.10		25.37
ET Ref													
Cal SCS-BC k	1.73	2.14	1.91	1.67	1.58	1.46	1.26	1.26	1.26	1.34	1.73	1.93	
Estimated Etr	0.98	1.58	2.63	3.88	6.24	8.49	9.62	8.46	5.41	3.24	1.74	1.13	53.39
Std Dev Et	0.16	0.32	0.70	0.80	0.76	0.87	0.39	0.52	0.64	0.59	0.39	0.20	2.81

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FISH SPRINGS REFUGE
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4340 ft., Lat. 39.83

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.73	6.68	8.28	8.93	10.04	10.11	10.28	9.59	8.39	7.73	6.70	6.53	100.00
Avg Temp F	27.68	34.82	42.83	50.73	60.75	71.20	79.53	77.06	65.99	52.84	40.03	29.26	52.73
Std Dev Temp	5.33	4.98	3.51	3.62	2.73	3.13	1.91	2.24	2.85	3.28	3.09	4.42	1.40
Avg Prec in.	0.38	0.49	0.76	0.95	1.05	0.68	0.55	0.62	0.78	0.84	0.55	0.40	8.06
Std Dev Prec	0.27	0.41	0.62	0.69	0.85	0.78	0.51	0.73	0.69	0.75	0.42	0.40	2.17
SCS-BC f in.	0.56	0.76	1.53	2.57	4.51	6.63	8.68	7.54	4.60	2.46	1.03	0.58	41.46
Std Dev f	0.11	0.17	0.35	0.46	0.49	0.68	0.47	0.50	0.47	0.39	0.20	0.11	1.92
ALFALFA													
Cal SCS-BC k				1.12	1.58	0.99	0.93	1.06	0.93	0.78			
Cal SCS-BC Et				2.88	7.10	6.57	8.08	8.00	4.27	1.93			38.83
Std Dev Et				0.52	0.78	0.68	0.44	0.53	0.43	0.30			1.94
Net Irr in.				2.12	6.27	6.03	7.64	7.50	3.64	1.26			34.46
PASTURE													
Cal SCS-BC k				0.38	0.86	0.87	0.76	0.72	0.80				
Cal SCS-BC Et				0.99	3.87	5.78	6.59	5.46	3.67				26.35
Std Dev Et				0.18	0.42	0.59	0.36	0.36	0.37				1.26
Net Irr in.				0.23	3.04	5.24	6.15	4.96	3.04				22.65
OTHR HAY													
Cal SCS-BC k				0.51	1.48	1.40	0.74	0.38	0.30				
Cal SCS-BC Et				1.32	6.69	9.27	6.44	2.88	1.36				27.95
Std Dev Et				0.24	0.73	0.95	0.35	0.19	0.14				1.61
Net Irr in.				0.57	5.85	8.73	5.99	2.38	0.73				24.25
SP GRAIN													
Cal SCS-BC k			0.18	0.80	1.54	1.31	0.38						
Cal SCS-BC Et			0.27	2.06	6.93	8.66	3.27						21.19
Std Dev Et			0.06	0.37	0.76	0.89	0.18						1.54
Net Irr in.				1.30	6.09	8.12	2.83						18.34
CORN													
Cal SCS-BC k					0.24	0.44	0.92	1.05	1.05				
Cal SCS-BC Et					1.06	2.92	7.95	7.93	4.82				24.69
Std Dev Et					0.12	0.30	0.43	0.53	0.49				1.06
Net Irr in.					0.22	2.38	7.51	7.43	4.20				21.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FISH SPRINGS REFUGE
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4340 ft., Lat. 39.83

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.40	0.96	0.90	0.75	0.65	0.62	0.71	0.57			
Cal SCS-BC Et			0.61	2.46	4.05	4.99	5.68	4.70	3.25	1.40			27.14
Std Dev Et			0.14	0.44	0.44	0.51	0.31	0.31	0.33	0.22			1.39
Net Irr in.				1.71	3.21	4.45	5.24	4.21	2.62	0.73			22.16
E-LAKE													
Cal SCS-BC k	1.60	1.88	1.71	1.49	1.23	0.92	0.78	0.80	0.99	1.20	1.51	1.73	
Cal SCS-BC Evap	0.90	1.43	2.62	3.84	5.56	6.11	6.81	6.06	4.53	2.97	1.56	1.01	43.40
Std Dev Evap	0.18	0.32	0.60	0.69	0.61	0.63	0.37	0.40	0.46	0.46	0.30	0.20	2.16
Net Loss in.	0.52	0.93	1.86	2.89	4.51	5.43	6.26	5.44	3.75	2.13	1.01	0.60	35.34
ET Ref													
Cal SCS-BC k	1.78	2.09	1.90	1.71	1.60	1.34	1.17	1.11	1.26	1.42	1.68	1.92	
Estimated Etr	1.00	1.59	2.92	4.40	7.23	8.91	10.14	8.40	5.80	3.50	1.74	1.12	56.75
Std Dev Et	0.20	0.36	0.66	0.79	0.79	0.92	0.55	0.56	0.59	0.55	0.33	0.22	2.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FLAMING GORGE
From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994
Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 6270 ft., Lat. 40.93

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.19	10.35	9.63	8.40	7.70	6.64	6.45	100.00
Avg Temp F	21.62	26.24	32.93	42.16	51.40	60.47	67.99	65.63	56.71	45.92	33.01	23.37	43.95
Std Dev Temp	4.76	4.03	4.15	3.44	2.38	2.68	1.50	2.09	2.90	3.19	3.26	3.66	1.23
Avg Prec in.	0.43	0.50	1.07	1.63	1.58	1.21	1.20	1.12	1.07	1.20	0.77	0.70	12.48
Std Dev Prec	0.31	0.35	0.50	0.91	1.10	0.93	0.69	0.76	0.77	1.04	0.52	0.51	2.47
SCS-BC f in.	0.43	0.52	0.85	1.59	2.99	4.53	6.07	5.20	3.19	1.71	0.67	0.45	28.21
Std Dev f	0.10	0.08	0.17	0.35	0.35	0.49	0.32	0.39	0.40	0.31	0.08	0.07	1.40
ALFALFA													
Cal SCS-BC k				0.18	1.73	1.56	1.28	1.13	1.30				
Cal SCS-BC Et				0.28	5.19	7.06	7.74	5.85	4.16				30.29
Std Dev Et				0.06	0.61	0.76	0.41	0.44	0.52				1.57
Net Irr in.					3.93	6.09	6.79	4.95	3.30				25.07
PASTURE													
Cal SCS-BC k				0.50	1.21	1.18	0.96	0.96	1.01				
Cal SCS-BC Et				0.80	3.63	5.35	5.83	5.01	3.22				23.84
Std Dev Et				0.18	0.43	0.58	0.31	0.38	0.40				1.25
Net Irr in.					2.37	4.38	4.87	4.11	2.37				18.10
OTHR HAY													
Cal SCS-BC k					1.01	1.85	1.23	0.55	0.08				
Cal SCS-BC Et					3.03	8.38	7.46	2.86	0.27				22.00
Std Dev Et					0.36	0.91	0.39	0.22	0.03				1.20
Net Irr in.					1.77	7.42	6.50	1.96					17.65
CORN													
Cal SCS-BC k					0.18	1.31	1.39	1.17	0.38				
Cal SCS-BC Et					0.55	5.93	8.42	6.07	1.20				22.16
Std Dev Et					0.07	0.64	0.44	0.46	0.15				0.96
Net Irr in.						4.96	7.46	5.17	0.35				17.93
SP GRAIN													
Cal SCS-BC k				0.18	1.04	1.76	1.42	0.14					
Cal SCS-BC Et				0.29	3.11	7.98	8.62	0.74					20.74
Std Dev Et				0.06	0.37	0.87	0.45	0.06					1.21
Net Irr in.					1.85	7.02	7.66						16.52
POTATOES													
Cal SCS-BC k					0.18	0.67	1.09	1.12	0.85				
Cal SCS-BC Et					0.55	3.03	6.60	5.80	2.70				18.69
Std Dev Et					0.07	0.33	0.35	0.44	0.34				0.83
Net Irr in.						2.07	5.65	4.90	1.85				14.46

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FLAMING GORGE
From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994
Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 6270 ft., Lat. 40.93

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.82	1.24	1.02	0.83	0.83	0.90	0.20			
Cal SCS-BC Et				1.30	3.71	4.61	5.02	4.32	2.86	0.35			22.16
Std Dev Et				0.29	0.44	0.50	0.26	0.33	0.36	0.06			1.22
Net Irr in.					2.44	3.64	4.06	3.42	2.01				15.58
GARDEN													
Cal SCS-BC k					0.40	0.66	0.95	1.11	0.34				
Cal SCS-BC Et					1.20	2.99	5.75	5.77	1.07				16.79
Std Dev Et					0.14	0.32	0.30	0.43	0.13				0.74
Net Irr in.						2.03	4.79	4.87	0.22				11.91
E-LAKE													
Cal SCS-BC k	1.85	2.00	2.00	2.00	1.75	1.26	0.97	1.06	1.26	1.74	1.95	1.86	
Cal SCS-BC Evap	0.80	1.05	1.71	3.17	5.24	5.72	5.92	5.53	4.02	2.97	1.30	0.84	38.28
Std Dev Evap	0.18	0.16	0.33	0.70	0.62	0.62	0.31	0.42	0.50	0.53	0.17	0.13	2.09
Net Loss in.	0.37	0.55	0.64	1.54	3.66	4.51	4.72	4.41	2.96	1.77	0.54	0.15	25.79
ET Ref													
Cal SCS-BC k	2.06	2.55	2.61	2.44	2.21	1.82	1.48	1.48	1.60	2.02	2.16	2.07	
Estimated Etr	0.89	1.33	2.23	3.87	6.62	8.23	8.96	7.72	5.10	3.45	1.45	0.94	50.80
Std Dev Et	0.20	0.20	0.44	0.86	0.78	0.89	0.47	0.58	0.64	0.62	0.18	0.15	2.71

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FORT DUCHESNE
From a Calibrated SCS Blaney-Criddle Equation using data from ROOSEVELT 10-26-1994
Years of Data Available; NWS: 1961-1990 ROOSEVELT: 1988-1990 Elev. 5050 ft., Lat. 40.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.94	10.06	10.15	10.31	9.61	8.40	7.71	6.68	6.50	100.00
Avg Temp F	14.43	21.76	35.73	46.37	55.95	65.05	72.13	69.49	59.35	47.68	33.69	19.58	45.10
Std Dev Temp	7.34	7.83	4.33	3.36	2.17	2.85	1.35	2.13	2.67	2.94	3.54	5.33	1.91
Avg Prec in.	0.35	0.32	0.46	0.59	0.72	0.63	0.61	0.66	0.70	0.86	0.37	0.45	6.72
Std Dev Prec	0.37	0.34	0.36	0.53	0.50	0.75	0.60	0.71	0.65	0.74	0.36	0.43	2.17
SCS-BC f in.	0.29	0.43	1.00	2.04	3.69	5.37	6.94	5.94	3.56	1.89	0.70	0.38	32.23
Std Dev f	0.15	0.16	0.25	0.39	0.35	0.57	0.30	0.42	0.39	0.30	0.11	0.10	1.75
ALFALFA													
Cal SCS-BC k				0.55	1.67	1.20	1.19	0.92	1.09	0.50			
Cal SCS-BC Et				1.13	6.17	6.44	8.23	5.47	3.89	0.94			32.28
Std Dev Et				0.22	0.59	0.68	0.36	0.39	0.42	0.15			1.65
Net Irr in.				0.66	5.60	5.94	7.74	4.94	3.34	0.25			28.46
PASTURE													
Cal SCS-BC k				0.71	1.06	0.99	0.84	0.80	0.90	0.65			
Cal SCS-BC Et				1.46	3.92	5.32	5.81	4.74	3.22	1.24			25.70
Std Dev Et				0.28	0.38	0.56	0.25	0.34	0.35	0.20			1.36
Net Irr in.				0.99	3.35	4.82	5.32	4.21	2.66	0.55			21.89
OTHR HAY													
Cal SCS-BC k				0.30	1.52	1.60	1.07	0.46	0.38	0.10			
Cal SCS-BC Et				0.61	5.60	8.58	7.44	2.73	1.37	0.20			26.52
Std Dev Et				0.12	0.54	0.90	0.33	0.20	0.15	0.03			1.49
Net Irr in.				0.14	5.03	8.08	6.95	2.20	0.81				23.20
SP GRAIN													
Cal SCS-BC k				0.22	1.06	1.51	1.18	0.22					
Cal SCS-BC Et				0.45	3.90	8.12	8.17	1.33					21.97
Std Dev Et				0.09	0.37	0.86	0.36	0.10					1.27
Net Irr in.					3.33	7.62	7.68	0.80					19.43
CORN													
Cal SCS-BC k					0.27	0.46	0.93	1.16	0.88				
Cal SCS-BC Et					0.99	2.45	6.46	6.91	3.14				19.95
Std Dev Et					0.10	0.26	0.28	0.49	0.34				0.89
Net Irr in.					0.42	1.95	5.97	6.38	2.58				17.29
ORCHARD													
Cal SCS-BC k					0.41	1.21	1.37	1.34	1.23				
Cal SCS-BC Et					1.51	6.51	9.53	7.94	4.39				29.88
Std Dev Et					0.15	0.69	0.42	0.57	0.47				1.37
Net Irr in.					0.94	6.01	9.04	7.41	3.83				27.22

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at FORT DUCHESNE
From a Calibrated SCS Blaney-Criddle Equation using data from ROOSEVELT 10-26-1994
Years of Data Available; NWS: 1961-1990 ROOSEVELT: 1988-1990 Elev. 5050 ft., Lat. 40.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.86	1.02	0.85	0.72	0.69	0.78	0.67			
Cal SCS-BC Et				1.76	3.75	4.59	5.00	4.08	2.77	1.26			23.22
Std Dev Et				0.34	0.36	0.48	0.22	0.29	0.30	0.20			1.27
Net Irr in.				1.29	3.18	4.08	4.51	3.55	2.21	0.57			19.40
GARDEN													
Cal SCS-BC k					0.27	0.53	0.83	0.91	0.39				
Cal SCS-BC Et					0.99	2.82	5.73	5.40	1.38				16.31
Std Dev Et					0.09	0.30	0.25	0.39	0.15				0.72
Net Irr in.					0.41	2.32	5.24	4.87	0.82				13.66
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.61	1.34	0.96	0.83	0.87	1.08	1.22	1.73	1.79	
Cal SCS-BC Evap	0.58	0.87	1.99	3.29	4.95	5.18	5.75	5.14	3.83	2.32	1.21	0.68	35.80
Std Dev Evap	0.30	0.31	0.51	0.63	0.48	0.55	0.25	0.37	0.42	0.37	0.19	0.19	2.23
Net Loss in.	0.23	0.55	1.53	2.71	4.24	4.55	5.14	4.48	3.14	1.45	0.84	0.23	29.08
ET Ref													
Cal SCS-BC k	2.27	2.53	2.38	1.89	1.81	1.53	1.29	1.23	1.39	1.43	1.93	1.99	
Estimated Etr	0.66	1.10	2.37	3.87	6.70	8.19	8.94	7.29	4.95	2.71	1.34	0.76	48.88
Std Dev Et	0.34	0.40	0.60	0.74	0.64	0.86	0.39	0.52	0.54	0.43	0.21	0.21	2.92

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GARFIELD

From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994

Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4330 ft., Lat. 40.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.68	6.65	8.27	8.95	10.09	10.18	10.34	9.62	8.40	7.70	6.66	6.47	100.00
Avg Temp F	28.90	33.87	41.73	50.51	60.03	70.55	80.00	77.13	66.17	53.85	41.17	31.22	52.93
Std Dev Temp	4.20	4.16	3.38	3.67	2.82	3.31	1.65	2.26	3.35	3.35	2.44	3.44	1.16
Avg Prec in.	1.06	1.19	1.84	2.28	2.03	1.17	0.91	0.92	1.74	1.81	1.54	1.31	17.80
Std Dev Prec	0.67	0.85	0.93	1.34	1.15	1.10	0.88	1.20	1.99	1.23	0.77	0.94	4.82
SCS-BC f in.	0.58	0.71	1.43	2.55	4.40	6.53	8.85	7.58	4.63	2.58	1.10	0.62	41.56
Std Dev f	0.08	0.15	0.31	0.48	0.51	0.72	0.42	0.51	0.56	0.40	0.18	0.09	1.95
ALFALFA													
Cal SCS-BC k				1.15	1.12	0.89	0.81	0.78	0.68	0.43			
Cal SCS-BC Et				2.95	4.91	5.80	7.20	5.94	3.15	1.11			31.06
Std Dev Et				0.55	0.56	0.64	0.34	0.40	0.38	0.17			1.60
Net Irr in.				1.13	3.28	4.87	6.47	5.21	1.76				22.71
PASTURE													
Cal SCS-BC k			0.22	0.91	0.89	0.82	0.73	0.69	0.47	0.52			
Cal SCS-BC Et			0.32	2.33	3.90	5.36	6.42	5.21	2.16	1.34			27.03
Std Dev Et			0.07	0.43	0.45	0.59	0.30	0.35	0.26	0.21			1.37
Net Irr in.				0.51	2.27	4.42	5.70	4.48	0.76				18.14
SP GRAIN													
Cal SCS-BC k			0.08	0.52	1.16	1.26	0.73						
Cal SCS-BC Et			0.11	1.34	5.09	8.24	6.42						21.20
Std Dev Et			0.02	0.25	0.58	0.91	0.30						1.37
Net Irr in.					3.46	7.30	5.69						16.46
CORN													
Cal SCS-BC k				0.10	0.28	0.58	0.97	0.99	0.57				
Cal SCS-BC Et				0.25	1.25	3.79	8.55	7.53	2.65				24.01
Std Dev Et				0.05	0.14	0.42	0.40	0.50	0.32				0.96
Net Irr in.						2.85	7.82	6.79	1.26				18.73
ORCHARD													
Cal SCS-BC k				0.53	1.11	1.34	1.22	1.12	0.66	0.32			
Cal SCS-BC Et				1.36	4.86	8.74	10.77	8.52	3.06	0.83			38.14
Std Dev Et				0.25	0.56	0.97	0.51	0.57	0.37	0.13			1.77
Net Irr in.					3.24	7.80	10.04	7.79	1.67				30.53

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GARFIELD
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4330 ft., Lat. 40.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.29	0.83	0.76	0.71	0.63	0.59	0.40	0.45			
Cal SCS-BC Et			0.41	2.13	3.36	4.62	5.53	4.49	1.86	1.15			23.54
Std Dev Et			0.09	0.40	0.39	0.51	0.26	0.30	0.22	0.18			1.21
Net Irr in.				0.31	1.73	3.68	4.81	3.75	0.46				14.74
GARDEN													
Cal SCS-BC k				0.21	0.46	0.81	0.84	0.34	0.14	0.06			
Cal SCS-BC Et				0.55	2.03	5.26	7.45	2.59	0.66	0.15			18.68
Std Dev Et				0.10	0.23	0.58	0.35	0.17	0.08	0.02			0.90
Net Irr in.					0.40	4.32	6.73	1.85					13.30
E-LAKE													
Cal SCS-BC k	1.78	2.00	0.95	1.40	1.12	0.93	0.84	0.83	0.62	0.74	1.80	1.58	
Cal SCS-BC Evap	1.03	1.43	1.36	3.57	4.93	6.07	7.43	6.32	2.85	1.90	1.98	0.97	39.83
Std Dev Evap	0.15	0.29	0.30	0.66	0.57	0.67	0.35	0.42	0.34	0.30	0.32	0.15	1.88
Net Loss in.		0.24		1.29	2.90	4.89	6.52	5.39	1.11	0.09	0.43		22.88
ET Ref													
Cal SCS-BC k			1.06	1.55	1.36	1.26	1.12	1.06	0.72	0.82			
Estimated Etr			1.51	3.97	5.99	8.24	9.88	8.02	3.32	2.11			43.04
Std Dev Et			0.33	0.74	0.69	0.91	0.47	0.54	0.40	0.33			2.24

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GARRISON

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5280 ft., Lat. 38.93

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.79	6.71	8.29	8.91	9.99	10.05	10.22	9.55	8.39	7.75	6.75	6.60	100.00
Avg Temp F	28.64	34.76	40.55	48.07	57.02	66.79	74.76	72.63	62.49	51.20	39.36	29.94	50.52
Std Dev Temp	4.45	3.77	3.43	3.49	2.87	2.96	1.79	1.95	2.87	3.16	3.09	4.15	1.12
Avg Prec in.	0.36	0.51	0.85	0.88	0.75	0.56	0.60	0.89	0.84	0.81	0.54	0.44	8.03
Std Dev Prec	0.39	0.56	0.67	0.72	0.71	0.62	0.57	0.60	0.96	0.73	0.46	0.56	2.49
SCS-BC f in.	0.59	0.75	1.32	2.23	3.84	5.66	7.49	6.55	4.03	2.28	0.99	0.60	36.34
Std Dev f	0.10	0.14	0.32	0.42	0.48	0.60	0.41	0.40	0.45	0.36	0.21	0.10	1.82
ALFALFA													
Cal SCS-BC k				0.38	1.68	1.08	1.25	0.98	1.26	0.16			
Cal SCS-BC Et				0.86	6.45	6.14	9.37	6.39	5.07	0.38			34.65
Std Dev Et				0.16	0.81	0.65	0.52	0.39	0.56	0.06			1.81
Net Irr in.				0.15	5.85	5.69	8.88	5.68	4.39				30.66
PASTURE													
Cal SCS-BC k				0.50	1.16	0.96	0.85	0.82	0.97	0.35			
Cal SCS-BC Et				1.11	4.46	5.44	6.37	5.37	3.91	0.79			27.45
Std Dev Et				0.21	0.56	0.57	0.35	0.33	0.43	0.12			1.44
Net Irr in.				0.40	3.86	5.00	5.89	4.66	3.24	0.14			23.18
OTHR HAY													
Cal SCS-BC k				0.36	1.52	1.55	1.08	0.47	0.41	0.05			
Cal SCS-BC Et				0.80	5.85	8.78	8.11	3.09	1.65	0.12			28.40
Std Dev Et				0.15	0.73	0.92	0.45	0.19	0.18	0.02			1.57
Net Irr in.				0.09	5.25	8.34	7.63	2.38	0.98				24.66
SP GRAIN													
Cal SCS-BC k				0.23	1.10	1.47	1.14						
Cal SCS-BC Et				0.51	4.23	8.35	8.53						21.62
Std Dev Et				0.10	0.53	0.88	0.47						1.27
Net Irr in.					3.63	7.90	8.05						19.59
CORN													
Cal SCS-BC k					0.15	0.41	0.99	1.19	0.69				
Cal SCS-BC Et					0.57	2.33	7.43	7.80	2.76				20.90
Std Dev Et					0.07	0.25	0.41	0.48	0.31				0.96
Net Irr in.						1.88	6.95	7.09	2.09				18.01
ORCHARD													
Cal SCS-BC k					0.57	1.28	1.41	1.37	1.50				
Cal SCS-BC Et					2.17	7.26	10.58	8.98	6.05				35.05
Std Dev Et					0.27	0.76	0.59	0.55	0.67				1.68
Net Irr in.					1.57	6.82	10.10	8.27	5.38				32.13

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GARRISON

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5280 ft., Lat. 38.93

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.70	1.01	0.83	0.73	0.71	0.84	0.30			
Cal SCS-BC Et				1.57	3.89	4.69	5.49	4.63	3.37	0.68			24.32
Std Dev Et				0.29	0.49	0.49	0.30	0.28	0.37	0.11			1.32
Net Irr in.				0.86	3.29	4.24	5.01	3.91	2.70	0.03			20.06
GARDEN													
Cal SCS-BC k					0.26	0.61	1.01	0.67	0.21				
Cal SCS-BC Et					1.00	3.46	7.54	4.36	0.86				17.21
Std Dev Et					0.12	0.36	0.42	0.27	0.09				0.78
Net Irr in.					0.40	3.01	7.06	3.64	0.18				14.30
E-LAKE													
Cal SCS-BC k	1.66	1.95	2.00	1.66	1.40	1.02	0.89	0.92	1.17	1.27	1.56	1.63	
Cal SCS-BC Evap	0.97	1.46	2.63	3.72	5.38	5.77	6.65	6.01	4.72	2.90	1.55	0.98	42.74
Std Dev Evap	0.16	0.28	0.63	0.70	0.67	0.61	0.37	0.37	0.52	0.45	0.33	0.17	2.27
Net Loss in.	0.61	0.95	1.78	2.84	4.63	5.21	6.05	5.12	3.88	2.08	1.01	0.54	34.71
ET Ref													
Cal SCS-BC k	1.84	2.16	2.22	1.91	1.81	1.48	1.31	1.26	1.49	1.47	1.74	1.81	
Estimated Etr	1.08	1.63	2.93	4.28	6.95	8.38	9.80	8.26	6.02	3.36	1.72	1.09	55.49
Std Dev Et	0.18	0.31	0.70	0.80	0.87	0.88	0.54	0.51	0.67	0.53	0.37	0.19	2.89

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GREEN RIVER AVN
From a Calibrated SCS Blaney-Criddle Equation using data from GREEN RIVER / LA SAL 10-26-1994
Years of Data Available; NWS: 1961-1990 GREEN RIVER / LA SAL: 1986-1992 Elev. 4070 ft., Lat. 39.00

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.79	6.71	8.29	8.91	9.99	10.06	10.22	9.56	8.39	7.75	6.75	6.59	100.00
Avg Temp F	22.77	32.89	42.90	52.44	61.95	71.45	78.53	75.61	65.40	52.89	39.08	27.06	51.91
Std Dev Temp	6.84	5.39	2.89	3.21	2.42	2.74	1.26	1.86	2.47	2.92	2.64	3.90	1.37
Avg Prec in.	0.40	0.32	0.59	0.50	0.61	0.41	0.57	0.74	0.71	0.87	0.41	0.39	6.52
Std Dev Prec	0.41	0.32	0.54	0.40	0.49	0.48	0.64	0.59	0.61	0.92	0.42	0.38	2.26
SCS-BC f in.	0.46	0.70	1.53	2.79	4.70	6.64	8.39	7.19	4.49	2.47	0.97	0.54	40.87
Std Dev f	0.14	0.15	0.28	0.43	0.45	0.60	0.31	0.41	0.40	0.34	0.16	0.08	1.76
ALFALFA													
Cal SCS-BC k				1.11	1.58	1.02	0.92	1.11	1.00	1.07			
Cal SCS-BC Et				3.09	7.45	6.77	7.69	7.96	4.49	2.64			40.10
Std Dev Et				0.48	0.71	0.61	0.28	0.45	0.40	0.37			1.86
Net Irr in.				2.70	6.96	6.45	7.23	7.37	3.92	1.94			36.57
PASTURE													
Cal SCS-BC k			0.20	0.99	1.03	0.90	0.79	0.79	0.93	1.00			
Cal SCS-BC Et			0.30	2.77	4.85	5.96	6.61	5.69	4.18	2.47			32.83
Std Dev Et			0.06	0.43	0.46	0.54	0.24	0.32	0.37	0.34			1.53
Net Irr in.				2.37	4.36	5.63	6.15	5.10	3.62	1.77			29.00
SP GRAIN													
Cal SCS-BC k			0.06	0.62	1.44	1.37	0.59						
Cal SCS-BC Et			0.09	1.73	6.76	9.13	4.92						22.64
Std Dev Et			0.02	0.27	0.64	0.83	0.18						1.38
Net Irr in.				1.34	6.27	8.80	4.46						20.87
CORN													
Cal SCS-BC k					0.28	0.53	1.03	1.14	0.63				
Cal SCS-BC Et					1.32	3.55	8.60	8.21	2.81				24.50
Std Dev Et					0.13	0.32	0.32	0.47	0.25				0.93
Net Irr in.					0.83	3.22	8.14	7.62	2.25				22.07
ORCHARD													
Cal SCS-BC k				0.26	0.99	1.32	1.31	1.32	1.48	0.61			
Cal SCS-BC Et				0.72	4.66	8.77	11.02	9.52	6.63	1.51			42.84
Std Dev Et				0.11	0.44	0.79	0.40	0.54	0.59	0.21			1.75
Net Irr in.				0.33	4.17	8.44	10.56	8.93	6.07	0.81			39.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GREEN RIVER AVN

From a Calibrated SCS Blaney-Criddle Equation using data from GREEN RIVER / LA SAL 10-26-1994

Years of Data Available; NWS: 1961-1990 GREEN RIVER / LA SAL: 1986-1992 Elev. 4070 ft., Lat. 39.00

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.37	0.97	0.89	0.77	0.68	0.68	0.80	0.86			
Cal SCS-BC Et			0.57	2.72	4.18	5.13	5.70	4.90	3.60	2.13			28.93
Std Dev Et			0.11	0.42	0.40	0.46	0.21	0.28	0.32	0.29			1.37
Net Irr in.			0.10	2.32	3.69	4.81	5.24	4.31	3.04	1.43			24.93
GARDEN													
Cal SCS-BC k					0.42	0.65	0.95	0.64	0.30	0.16			
Cal SCS-BC Et					1.99	4.31	7.93	4.61	1.33	0.40			20.58
Std Dev Et					0.19	0.39	0.29	0.26	0.12	0.06			0.80
Net Irr in.					1.50	3.99	7.47	4.02	0.76				17.74
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.83	1.39	1.29	0.93	0.80	0.90	1.21	1.40	1.88	2.00	
Cal SCS-BC Evap	0.93	1.40	2.80	3.87	6.05	6.17	6.68	6.44	5.45	3.47	1.83	1.07	46.15
Std Dev Evap	0.28	0.31	0.52	0.60	0.57	0.56	0.25	0.37	0.49	0.48	0.30	0.15	2.12
Net Loss in.	0.52	1.08	2.21	3.37	5.44	5.76	6.11	5.70	4.74	2.60	1.42	0.68	39.63
ET Ref													
Cal SCS-BC k	4.17	3.29	1.53	1.78	1.59	1.38	1.21	1.22	1.43	1.56	1.41	2.60	
Estimated Etr	1.93	2.30	2.34	4.97	7.46	9.16	10.17	8.76	6.44	3.86	1.37	1.39	60.15
Std Dev Et	0.58	0.50	0.43	0.77	0.71	0.83	0.37	0.50	0.58	0.53	0.23	0.20	2.71

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GROUSE CREEK
From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 5300 ft., Lat. 41.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.61	6.61	8.27	8.98	10.15	10.25	10.40	9.67	8.41	7.67	6.60	6.39	100.00
Avg Temp F	21.86	27.77	34.46	42.32	51.41	59.88	68.64	66.43	57.07	45.71	34.19	22.91	44.39
Std Dev Temp	3.23	4.30	3.48	3.39	2.34	2.86	2.01	2.33	3.24	3.36	2.86	3.17	1.18
Avg Prec in.	0.96	0.85	0.80	0.85	1.29	1.34	0.85	0.75	0.71	0.84	1.09	1.03	11.35
Std Dev Prec	0.49	0.58	0.47	0.67	1.01	1.00	0.89	0.58	0.79	0.90	0.60	0.83	2.70
SCS-BC f in.	0.43	0.55	0.91	1.61	3.01	4.45	6.24	5.37	3.24	1.69	0.70	0.44	28.64
Std Dev f	0.06	0.09	0.18	0.35	0.35	0.52	0.43	0.45	0.46	0.33	0.10	0.06	1.42
ALFALFA													
Cal SCS-BC k				0.13	1.79	1.38	1.25	1.18	1.14	0.30			
Cal SCS-BC Et				0.21	5.39	6.14	7.78	6.36	3.70	0.50			30.08
Std Dev Et				0.05	0.62	0.72	0.53	0.53	0.52	0.10			1.49
Net Irr in.					4.36	5.07	7.10	5.76	3.13				25.43
PASTURE													
Cal SCS-BC k				0.24	1.17	1.21	1.00	0.96	0.85	0.19			
Cal SCS-BC Et				0.39	3.52	5.38	6.26	5.16	2.76	0.33			23.79
Std Dev Et				0.08	0.41	0.63	0.43	0.43	0.39	0.06			1.19
Net Irr in.					2.49	4.31	5.58	4.56	2.19				19.13
OTHR HAY													
Cal SCS-BC k				0.12	1.52	1.95	1.16	0.52					
Cal SCS-BC Et				0.20	4.58	8.68	7.24	2.80					23.50
Std Dev Et				0.04	0.53	1.02	0.49	0.23					1.40
Net Irr in.					3.55	7.61	6.56	2.20					19.92
SP GRAIN													
Cal SCS-BC k				0.09	0.81	1.79	1.51	0.49					
Cal SCS-BC Et				0.14	2.43	7.96	9.40	2.62					22.56
Std Dev Et				0.03	0.28	0.93	0.64	0.22					1.34
Net Irr in.					1.41	6.88	8.73	2.02					19.04

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GROUSE CREEK
From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 5300 ft., Lat. 41.72

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.45	1.07	1.04	0.86	0.83	0.73	0.16			
Cal SCS-BC Et				0.72	3.22	4.64	5.39	4.44	2.38	0.28			21.06
Std Dev Et				0.16	0.37	0.54	0.37	0.37	0.34	0.05			1.08
Net Irr in.				0.04	2.19	3.57	4.71	3.84	1.81				16.16
GARDEN													
Cal SCS-BC k					0.19	0.61	0.93	1.13	0.36				
Cal SCS-BC Et					0.57	2.71	5.80	6.09	1.17				16.35
Std Dev Et					0.07	0.32	0.40	0.51	0.17				0.82
Net Irr in.						1.64	5.12	5.49	0.61				12.86
E-LAKE													
Cal SCS-BC k			1.01	1.66	1.56	1.28	0.95	1.05	0.97	1.42			
Cal SCS-BC Evap			0.91	2.67	4.69	5.70	5.91	5.64	3.16	2.40			31.08
Std Dev Evap			0.18	0.59	0.54	0.67	0.40	0.47	0.45	0.48			1.79
Net Loss in.			0.12	1.81	3.40	4.36	5.06	4.89	2.45	1.56			23.66
ET Ref													
Cal SCS-BC k			1.12	1.84	1.91	1.86	1.54	1.48	1.31	1.73			
Estimated Etr			1.01	2.96	5.75	8.28	9.62	7.94	4.25	2.91			42.72
Std Dev Et			0.20	0.65	0.67	0.97	0.66	0.66	0.60	0.58			2.35

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GUNNISON

From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-31-1994

Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5150 ft., Lat. 39.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.78	6.70	8.29	8.91	10.00	10.07	10.23	9.56	8.39	7.75	6.74	6.58	100.00
Avg Temp F	24.93	32.18	39.07	46.35	55.33	64.32	71.46	69.59	60.32	49.47	37.06	27.21	48.11
Std Dev Temp	4.35	4.45	3.39	3.30	2.52	2.70	1.32	2.40	2.95	3.08	3.36	3.58	1.38
Avg Prec in.	0.72	0.55	1.05	0.94	0.82	0.55	0.50	0.67	1.00	0.90	0.81	0.67	9.18
Std Dev Prec	0.55	0.47	0.62	0.54	0.64	0.55	0.33	0.42	0.89	0.60	0.66	0.52	2.89
SCS-BC f in.	0.51	0.67	1.20	2.03	3.57	5.18	6.75	5.93	3.70	2.09	0.86	0.54	33.02
Std Dev f	0.09	0.15	0.27	0.39	0.40	0.52	0.29	0.48	0.43	0.33	0.16	0.07	1.89
ALFALFA													
Cal SCS-BC k				0.21	1.63	1.14	1.06	1.11	1.16	0.16			
Cal SCS-BC Et				0.44	5.81	5.92	7.14	6.59	4.30	0.33			30.54
Std Dev Et				0.08	0.66	0.60	0.31	0.54	0.50	0.05			1.77
Net Irr in.					5.16	5.48	6.74	6.05	3.50				26.93
ALFALFA													
Cal SCS-BC k				0.21	1.63	1.35	1.21	0.98	1.37	0.16			
Cal SCS-BC Et				0.44	5.81	6.99	8.17	5.84	5.08	0.33			32.66
Std Dev Et				0.08	0.66	0.71	0.35	0.48	0.60	0.05			1.88
Net Irr in.					5.16	6.55	7.77	5.30	4.28				29.06
PASTURE													
Cal SCS-BC k				0.31	1.16	1.01	0.91	0.85	1.01	0.40			
Cal SCS-BC Et				0.63	4.15	5.24	6.16	5.01	3.75	0.83			25.77
Std Dev Et				0.12	0.47	0.53	0.27	0.41	0.44	0.13			1.48
Net Irr in.					3.49	4.80	5.75	4.48	2.95	0.11			21.58
OTHR HAY													
Cal SCS-BC k				0.19	1.63	1.54	0.56	0.38	0.31				
Cal SCS-BC Et				0.39	5.83	7.96	3.74	2.28	1.16				21.37
Std Dev Et				0.07	0.66	0.81	0.16	0.19	0.14				1.40
Net Irr in.					5.18	7.52	3.34	1.74	0.36				18.14
SP GRAIN													
Cal SCS-BC k				0.34	1.40	1.55	1.07						
Cal SCS-BC Et				0.69	4.99	8.06	7.23						20.97
Std Dev Et				0.13	0.57	0.81	0.31						1.34
Net Irr in.					4.34	7.62	6.83						18.78
CORN													
Cal SCS-BC k					0.15	0.39	0.92	1.23	1.25				
Cal SCS-BC Et					0.55	2.01	6.23	7.32	4.64				20.75
Std Dev Et					0.06	0.20	0.27	0.60	0.54				1.19
Net Irr in.						1.57	5.83	6.78	3.84				18.01

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at GUNNISON

From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-31-1994

Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5150 ft., Lat. 39.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.50	1.04	0.87	0.79	0.73	0.87	0.34			
Cal SCS-BC Et				1.01	3.73	4.51	5.30	4.32	3.24	0.71			22.82
Std Dev Et				0.19	0.42	0.46	0.23	0.35	0.38	0.11			1.34
Net Irr in.				0.25	3.07	4.07	4.90	3.78	2.43				18.51
GARDEN													
Cal SCS-BC k					0.26	0.56	0.96	0.88	0.30				
Cal SCS-BC Et					0.91	2.91	6.51	5.22	1.11				16.66
Std Dev Et					0.10	0.29	0.28	0.43	0.13				0.85
Net Irr in.					0.26	2.47	6.11	4.68	0.31				13.82
E-LAKE													
Cal SCS-BC k	1.89	1.75	1.40	1.51	1.32	1.03	0.87	0.77	1.06	1.34	1.78	1.27	
Cal SCS-BC Evap	0.96	1.18	1.67	3.06	4.70	5.33	5.85	4.59	3.94	2.80	1.52	0.68	36.27
Std Dev Evap	0.17	0.26	0.38	0.58	0.53	0.54	0.25	0.37	0.46	0.45	0.29	0.09	2.19
Net Loss in.	0.24	0.63	0.62	2.12	3.88	4.78	5.34	3.91	2.94	1.90	0.71	0.01	27.09
ET Ref													
Cal SCS-BC k	2.10	1.95	1.91	1.50	1.86	1.55	1.40	1.30	1.56	1.60	1.97	1.41	
Estimated Etr	1.06	1.31	2.28	3.05	6.65	8.06	9.47	7.71	5.78	3.35	1.69	0.76	51.17
Std Dev Et	0.19	0.29	0.52	0.58	0.75	0.81	0.41	0.63	0.68	0.54	0.32	0.10	2.97

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HANKSVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from ESCALANTE 10-28-1994
Years of Data Available; NWS: 1961-1990 ESCALANTE: 1989-1990 Elev. 4310 ft., Lat. 38.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.83	6.73	8.29	8.90	9.96	10.01	10.18	9.53	8.39	7.77	6.78	6.64	100.00
Avg Temp F	25.23	34.37	43.91	53.18	63.04	73.04	79.58	76.81	66.67	53.74	39.30	27.92	53.07
Std Dev Temp	6.26	4.60	3.64	3.26	2.50	2.87	1.54	1.75	2.59	3.17	3.20	4.04	1.30
Avg Prec in.	0.38	0.22	0.51	0.42	0.49	0.30	0.53	0.73	0.74	0.68	0.38	0.31	5.69
Std Dev Prec	0.47	0.17	0.48	0.39	0.58	0.38	0.41	0.64	0.68	0.72	0.37	0.39	1.70
SCS-BC f in.	0.52	0.75	1.64	2.88	4.88	6.96	8.62	7.44	4.70	2.58	1.00	0.56	42.52
Std Dev f	0.13	0.16	0.37	0.45	0.47	0.64	0.38	0.38	0.43	0.38	0.20	0.08	1.80
ALFALFA													
Cal SCS-BC k			0.18	1.21	1.58	1.07	0.81	1.03	1.06	1.06			
Cal SCS-BC Et			0.29	3.48	7.74	7.47	7.00	7.69	5.00	2.74			41.42
Std Dev Et			0.07	0.54	0.74	0.68	0.31	0.40	0.46	0.40			1.88
Net Irr in.				3.15	7.35	7.23	6.58	7.11	4.41	2.19			38.03
PASTURE													
Cal SCS-BC k			0.33	0.94	1.03	0.92	0.71	0.78	0.80	0.95			
Cal SCS-BC Et			0.54	2.70	5.04	6.40	6.08	5.82	3.74	2.45			32.77
Std Dev Et			0.12	0.42	0.48	0.59	0.27	0.30	0.34	0.36			1.48
Net Irr in.			0.13	2.36	4.65	6.16	5.66	5.24	3.15	1.90			29.25
SP GRAIN													
Cal SCS-BC k			0.09	0.56	1.45	1.41	0.52						
Cal SCS-BC Et			0.15	1.62	7.10	9.80	4.47						23.14
Std Dev Et			0.03	0.25	0.68	0.90	0.20						1.37
Net Irr in.				1.29	6.71	9.56	4.05						21.61

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HANKSVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from MOAB 10-28-1994
Years of Data Available; NWS: 1961-1990 MOAB: 1989-1990 Elev. 4310 ft., Lat. 38.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.35	0.86	0.89	0.79	0.61	0.67	0.69	0.82			
Cal SCS-BC Et			0.58	2.47	4.34	5.51	5.24	5.02	3.22	2.11			28.48
Std Dev Et			0.13	0.38	0.42	0.51	0.23	0.26	0.30	0.31			1.30
Net Irr in.			0.17	2.13	3.95	5.27	4.82	4.44	2.63	1.56			24.97
GARDEN													
Cal SCS-BC k				0.07	0.44	0.70	0.85	0.63	0.25	0.12			
Cal SCS-BC Et				0.21	2.16	4.89	7.32	4.68	1.19	0.32			20.77
Std Dev Et				0.03	0.21	0.45	0.33	0.24	0.11	0.05			0.77
Net Irr in.					1.77	4.65	6.90	4.10	0.60				18.02
E-LAKE													
Cal SCS-BC k	2.00	2.00	1.67	1.37	1.20	0.98	0.72	0.87	0.97	1.54	2.00	2.00	
Cal SCS-BC Evap	1.03	1.50	2.75	3.96	5.85	6.81	6.22	6.50	4.55	3.98	2.00	1.11	46.26
Std Dev Evap	0.26	0.32	0.62	0.61	0.56	0.62	0.28	0.34	0.42	0.59	0.40	0.16	2.18
Net Loss in.	0.65	1.28	2.24	3.54	5.36	6.51	5.70	5.77	3.81	3.30	1.61	0.80	40.56
ET Ref													
Cal SCS-BC k	3.42	2.76	1.86	1.53	1.59	1.41	1.09	1.21	1.22	1.79	2.61	3.17	
Estimated Etr	1.77	2.07	3.05	4.40	7.75	9.84	9.36	8.96	5.75	4.62	2.61	1.76	61.95
Std Dev Et	0.44	0.44	0.69	0.68	0.74	0.90	0.42	0.46	0.53	0.68	0.52	0.26	2.79

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HANNA

From a Calibrated SCS Blaney-Criddle Equation using data from TABIONA 02-03-1998

Years of Data Available; NWS: 1961-1990 TABIONA: 1990-1996 Elev. 6750 ft., Lat. 40.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.16	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	21.31	25.78	32.51	40.81	49.57	58.41	65.63	63.41	55.46	45.74	32.24	22.36	42.77
Std Dev Temp	4.08	3.72	4.03	3.36	2.13	2.66	1.30	1.91	2.87	3.09	3.00	3.55	1.06
Avg Prec in.	0.97	0.97	0.81	0.85	1.03	0.99	0.97	1.23	1.18	1.17	0.88	1.02	12.07
Std Dev Prec	0.93	0.87	0.60	0.68	0.76	0.93	0.85	0.60	0.77	1.04	0.78	0.87	3.08
SCS-BC f in.	0.43	0.52	0.84	1.45	2.72	4.14	5.56	4.78	3.02	1.70	0.65	0.44	26.24
Std Dev f	0.08	0.07	0.17	0.33	0.30	0.46	0.26	0.35	0.38	0.30	0.08	0.07	1.13
ALFALFA													
Cal SCS-BC k					1.62	1.81	1.14	1.24	1.40	0.49			
Cal SCS-BC Et					4.40	7.51	6.36	5.93	4.22	0.84			29.25
Std Dev Et					0.49	0.84	0.30	0.43	0.53	0.15			1.38
Net Irr in.					3.57	6.72	5.58	4.95	3.27				24.09
PASTURE													
Cal SCS-BC k				0.39	1.10	1.18	1.00	0.93	1.04	0.45			
Cal SCS-BC Et				0.57	3.00	4.88	5.55	4.45	3.15	0.76			22.37
Std Dev Et				0.13	0.34	0.55	0.26	0.32	0.40	0.13			1.03
Net Irr in.					2.18	4.09	4.78	3.47	2.21				16.73
SP WHEAT													
Cal SCS-BC k				0.11	0.78	1.69	1.52	0.58					
Cal SCS-BC Et				0.16	2.12	6.99	8.46	2.75					20.49
Std Dev Et				0.04	0.24	0.78	0.40	0.20					1.02
Net Irr in.					1.30	6.20	7.68	1.77					16.95
CORN													
Cal SCS-BC k					0.13	0.46	1.06	1.36	0.75				
Cal SCS-BC Et					0.36	1.89	5.88	6.50	2.28				16.91
Std Dev Et					0.04	0.21	0.28	0.47	0.29				0.71
Net Irr in.						1.10	5.11	5.52	1.33				13.05
POTATOES													
Cal SCS-BC k					0.16	0.57	1.05	1.11	1.06				
Cal SCS-BC Et					0.44	2.35	5.82	5.28	3.19				17.09
Std Dev Et					0.05	0.26	0.27	0.38	0.40				0.74
Net Irr in.						1.56	5.05	4.30	2.24				13.16

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HANNA
From a Calibrated SCS Blaney-Criddle Equation using data from TABIONA 02-03-1998
Years of Data Available; NWS: 1961-1990 TABIONA: 1990-1996 Elev. 6750 ft., Lat. 40.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.45	1.15	1.02	0.86	0.80	0.90	0.39			
Cal SCS-BC Et				0.65	3.12	4.21	4.78	3.84	2.71	0.65			19.97
Std Dev Et				0.15	0.35	0.47	0.22	0.28	0.34	0.12			0.93
Net Irr in.					2.30	3.42	4.01	2.86	1.77				14.35
GARDEN													
Cal SCS-BC k					0.38	0.75	1.14	0.87	0.20				
Cal SCS-BC Et					1.03	3.09	6.36	4.14	0.62				15.24
Std Dev Et					0.12	0.35	0.30	0.30	0.08				0.62
Net Irr in.					0.21	2.29	5.58	3.16					11.25
E-LAKE													
Cal SCS-BC k	1.85	2.00	2.00	2.00	1.73	1.37	1.14	1.13	1.40	1.74	1.95	1.82	
Cal SCS-BC Evap	0.79	1.03	1.68	2.90	4.71	5.68	6.36	5.42	4.22	2.95	1.28	0.79	37.82
Std Dev Evap	0.15	0.15	0.33	0.65	0.53	0.64	0.30	0.39	0.53	0.52	0.15	0.13	1.75
Net Loss in.		0.06	0.87	2.05	3.68	4.69	5.39	4.19	3.04	1.78	0.39		26.16
ET Ref													
Cal SCS-BC k	2.05	2.62	2.80	2.65	2.05	1.81	1.54	1.43	1.61	1.93	2.17	2.02	
Estimated Etr	0.88	1.35	2.36	3.85	5.58	7.51	8.54	6.86	4.84	3.27	1.42	0.88	47.35
Std Dev Et	0.17	0.19	0.47	0.87	0.62	0.84	0.40	0.50	0.61	0.58	0.16	0.14	2.21

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HARDWARE RANCH
From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN 5SW 10-13-1994
Years of Data Available; NWS: 1961-1990 LOGAN 5SW: 1987-1989 Elev. 5560 ft., Lat. 41.60

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.62	6.61	8.27	8.98	10.14	10.24	10.40	9.66	8.41	7.68	6.60	6.40	100.00
Avg Temp F	20.07	24.30	32.05	39.90	48.41	55.80	62.74	61.39	52.99	43.30	32.04	21.81	41.23
Std Dev Temp	4.68	4.51	3.35	2.43	1.76	2.11	1.30	2.15	2.38	2.25	2.44	4.06	1.16
Avg Prec in.	1.72	1.53	1.56	1.72	1.70	1.33	0.80	1.00	1.41	1.45	1.52	1.67	17.41
Std Dev Prec	1.08	1.19	1.06	1.05	1.10	0.97	0.81	1.04	1.30	1.07	0.92	1.39	5.85
SCS-BC f in.	0.40	0.48	0.81	1.36	2.57	3.73	5.03	4.44	2.69	1.45	0.64	0.42	24.03
Std Dev f	0.09	0.09	0.11	0.23	0.24	0.36	0.25	0.38	0.31	0.21	0.05	0.08	0.94
PASTURE													
Cal SCS-BC k					0.99	1.32	1.17	1.17	0.69				
Cal SCS-BC Et					2.55	4.92	5.87	5.20	1.86				20.41
Std Dev Et					0.24	0.47	0.30	0.44	0.22				0.90
Net Irr in.					1.20	3.86	5.23	4.40	0.73				15.42
OTHR HAY													
Cal SCS-BC k					1.28	2.01	1.86	1.15	0.39				
Cal SCS-BC Et					3.29	7.50	9.36	5.12	1.06				26.33
Std Dev Et					0.31	0.72	0.47	0.43	0.12				1.19
Net Irr in.					1.93	6.44	8.72	4.32					21.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HARDWARE RANCH
From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN 5SW 10-13-1994
Years of Data Available; NWS: 1961-1990 LOGAN 5SW: 1987-1989 Elev. 5560 ft., Lat. 41.60

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.38	1.29	1.14	1.00	1.01	0.78				
Cal SCS-BC Et				0.52	3.32	4.26	5.06	4.48	2.11				19.74
Std Dev Et				0.09	0.32	0.41	0.25	0.38	0.25				0.85
Net Irr in.					1.96	3.19	4.42	3.68	0.98				14.23
GARDEN													
Cal SCS-BC k						0.29	0.78	1.41					
Cal SCS-BC Et						1.07	3.91	6.27					11.25
Std Dev Et						0.10	0.20	0.53					0.62
Net Irr in.						0.01	3.27	5.47					8.75
E-LAKE													
Cal SCS-BC k	1.67	2.00	2.00	2.00	1.90	1.52	1.29	1.38	1.69	1.89	2.00	1.44	
Cal SCS-BC Evap	0.66	0.96	1.61	2.71	4.88	5.66	6.49	6.13	4.56	2.75	1.27	0.60	38.31
Std Dev Evap	0.15	0.18	0.23	0.47	0.46	0.54	0.33	0.52	0.53	0.39	0.11	0.11	1.57
Net Loss in.			0.05	0.99	3.18	4.33	5.69	5.13	3.16	1.30			23.83
ET Ref													
Cal SCS-BC k	1.86	2.86	2.83	2.41	2.30	2.04	1.79	1.80	2.06	2.20	2.30	1.59	
Estimated Etr	0.74	1.38	2.28	3.27	5.93	7.60	9.03	8.00	5.55	3.19	1.47	0.67	49.10
Std Dev Et	0.17	0.26	0.32	0.56	0.56	0.73	0.45	0.68	0.64	0.45	0.12	0.12	1.98

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HEBER

From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994

Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5630 ft., Lat. 40.50

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.66	8.28	8.95	10.07	10.16	10.32	9.62	8.40	7.71	6.67	6.48	100.00
Avg Temp F	21.24	26.31	34.84	43.51	51.91	60.06	67.43	65.66	57.04	47.04	34.91	23.98	44.49
Std Dev Temp	4.58	5.01	3.84	3.11	2.33	2.44	1.43	2.10	2.76	2.84	2.95	4.48	1.34
Avg Prec in.	1.78	1.56	1.37	1.37	1.23	0.90	0.87	0.98	1.26	1.45	1.64	1.63	16.01
Std Dev Prec	1.67	1.16	0.70	0.80	0.81	0.83	0.72	0.73	1.08	1.09	0.96	1.23	4.18
SCS-BC f in.	0.43	0.53	0.93	1.72	3.06	4.44	5.94	5.20	3.23	1.82	0.74	0.47	28.50
Std Dev f	0.09	0.10	0.20	0.33	0.35	0.44	0.30	0.40	0.39	0.28	0.11	0.09	1.40
ALFALFA													
Cal SCS-BC k				0.08	1.66	1.47	1.28	1.07	1.32	0.18			
Cal SCS-BC Et				0.13	5.07	6.52	7.58	5.58	4.27	0.33			29.48
Std Dev Et				0.03	0.58	0.65	0.38	0.42	0.51	0.05			1.50
Net Irr in.					4.09	5.80	6.89	4.80	3.27				24.84
PASTURE													
Cal SCS-BC k				0.30	1.19	1.11	0.96	0.94	1.03	0.36			
Cal SCS-BC Et				0.51	3.65	4.94	5.70	4.87	3.34	0.65			23.66
Std Dev Et				0.10	0.41	0.49	0.28	0.37	0.40	0.10			1.19
Net Irr in.					2.67	4.22	5.01	4.09	2.33				18.32
OTHR HAY													
Cal SCS-BC k					1.42	1.78	1.24	0.54	0.44	0.05			
Cal SCS-BC Et					4.34	7.88	7.37	2.80	1.42	0.09			23.90
Std Dev Et					0.49	0.78	0.37	0.21	0.17	0.01			1.28
Net Irr in.					3.36	7.16	6.68	2.02	0.41				19.64
SP GRAIN													
Cal SCS-BC k				0.15	0.93	1.64	1.44	0.32					
Cal SCS-BC Et				0.25	2.85	7.28	8.56	1.64					20.58
Std Dev Et				0.05	0.32	0.72	0.43	0.12					1.14
Net Irr in.					1.87	6.56	7.86	0.86					17.16

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HEBER

From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994

Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5630 ft., Lat. 40.50

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.51	1.12	0.96	0.83	0.81	0.89	0.31			
Cal SCS-BC Et				0.88	3.42	4.25	4.91	4.20	2.87	0.56			21.10
Std Dev Et				0.17	0.39	0.42	0.24	0.32	0.34	0.09			1.09
Net Irr in.					2.44	3.54	4.22	3.42	1.87				15.48
GARDEN													
Cal SCS-BC k					0.13	0.55	0.99	0.98	0.20				
Cal SCS-BC Et					0.40	2.45	5.88	5.09	0.64				14.45
Std Dev Et					0.05	0.24	0.29	0.39	0.08				0.69
Net Irr in.						1.73	5.18	4.31					11.22
E-LAKE													
Cal SCS-BC k	1.81	2.00	1.95	1.49	1.51	1.15	0.97	1.03	1.22	1.37	1.79	1.32	
Cal SCS-BC Evap	0.77	1.05	1.81	2.57	4.61	5.09	5.75	5.35	3.93	2.49	1.33	0.62	35.37
Std Dev Evap	0.17	0.20	0.39	0.50	0.52	0.50	0.29	0.41	0.47	0.39	0.20	0.12	1.85
Net Loss in.			0.44	1.21	3.38	4.19	4.88	4.38	2.68	1.04			22.20
ET Ref													
Cal SCS-BC k	2.01	2.34	2.16	1.74	2.00	1.71	1.48	1.44	1.59	1.63	1.99	1.47	
Estimated Etr	0.86	1.23	2.01	3.00	6.11	7.60	8.77	7.49	5.13	2.98	1.47	0.68	47.33
Std Dev Et	0.19	0.23	0.43	0.58	0.69	0.75	0.44	0.57	0.61	0.46	0.22	0.13	2.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HIAWATHA
From a Calibrated SCS Blaney-Criddle Equation using data from WELLINGTON 10-26-1994
Years of Data Available; NWS: 1961-1990 WELLINGTON: 1986-1990 Elev. 7280 ft., Lat. 39.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.76	6.69	8.28	8.92	10.02	10.09	10.25	9.58	8.39	7.74	6.72	6.56	100.00
Avg Temp F	22.99	27.24	33.31	41.99	50.98	61.24	68.24	66.02	57.53	46.95	33.18	24.36	44.50
Std Dev Temp	3.34	3.61	3.59	3.55	2.95	3.32	2.16	2.30	2.79	4.22	3.22	3.94	1.32
Avg Prec in.	1.09	1.07	1.18	1.03	1.28	0.93	1.42	1.59	1.62	1.19	1.02	1.19	14.60
Std Dev Prec	0.99	1.02	0.83	0.80	0.86	0.97	0.94	1.07	1.22	1.02	1.03	1.04	3.73
SCS-BC f in.	0.47	0.55	0.87	1.56	2.92	4.63	6.07	5.24	3.30	1.83	0.69	0.48	28.60
Std Dev f	0.07	0.07	0.17	0.36	0.44	0.61	0.45	0.43	0.38	0.42	0.11	0.08	1.76
ALFALFA													
Cal SCS-BC k					1.41	1.61	1.07	1.41	1.09				
Cal SCS-BC Et					4.11	7.45	6.48	7.41	3.61				29.05
Std Dev Et					0.61	0.98	0.48	0.61	0.42				1.89
Net Irr in.					3.08	6.70	5.34	6.14	2.32				23.59
PASTURE													
Cal SCS-BC k				0.20	1.25	1.05	0.92	0.92	1.02	0.17			
Cal SCS-BC Et				0.31	3.64	4.88	5.60	4.82	3.37	0.31			22.92
Std Dev Et				0.07	0.54	0.64	0.41	0.40	0.39	0.07			1.48
Net Irr in.					2.61	4.13	4.46	3.55	2.07				16.83
SP GRAIN													
Cal SCS-BC k					0.63	1.40	1.42	0.83					
Cal SCS-BC Et					1.84	6.46	8.61	4.34					21.25
Std Dev Et					0.27	0.85	0.63	0.36					1.46
Net Irr in.					0.81	5.72	7.48	3.07					17.08

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HIAWATHA
From a Calibrated SCS Blaney-Criddle Equation using data from WELLINGTON 10-26-1994
Years of Data Available; NWS: 1961-1990 WELLINGTON: 1986-1990 Elev. 7280 ft., Lat. 39.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.41	1.17	0.91	0.79	0.79	0.88	0.34			
Cal SCS-BC Et				0.65	3.40	4.20	4.82	4.15	2.90	0.63			20.75
Std Dev Et				0.15	0.51	0.55	0.35	0.34	0.34	0.14			1.35
Net Irr in.					2.37	3.46	3.69	2.88	1.61				14.01
GARDEN													
Cal SCS-BC k					0.21	0.48	0.76	1.12	0.36				
Cal SCS-BC Et					0.62	2.24	4.60	5.88	1.17				14.51
Std Dev Et					0.09	0.29	0.34	0.49	0.14				0.90
Net Irr in.						1.50	3.46	4.61					9.57
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.98	1.68	1.52	1.21	0.96	1.02	1.20	1.41	1.80	1.58	
Cal SCS-BC Evap	0.83	1.09	1.72	2.63	4.43	5.60	5.83	5.35	3.96	2.58	1.24	0.76	36.02
Std Dev Evap	0.12	0.14	0.33	0.60	0.66	0.74	0.43	0.44	0.46	0.59	0.19	0.12	2.26
Net Loss in.		0.03	0.54	1.60	3.15	4.67	4.41	3.76	2.34	1.40	0.22		22.11
ET Ref													
Cal SCS-BC k			2.15	2.33	2.08	1.62	1.42	1.41	1.57	1.67	1.43		
Estimated Etr			1.87	3.65	6.07	7.51	8.61	7.41	5.18	3.06	0.99		44.35
Std Dev Et			0.36	0.84	0.91	0.99	0.63	0.61	0.60	0.70	0.15		2.97

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HOVENWEEP N M
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 5240 ft., Lat. 37.38

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.89	6.76	8.30	8.87	9.90	9.95	10.12	9.50	8.38	7.79	6.84	6.70	100.00
Avg Temp F	26.61	34.40	41.55	49.60	58.98	68.99	75.91	73.71	64.87	52.58	39.61	28.77	51.30
Std Dev Temp	4.60	3.51	2.90	2.79	1.93	2.38	1.49	1.57	2.11	2.69	2.18	4.09	0.88
Avg Prec in.	0.91	0.92	1.16	0.76	0.69	0.37	0.93	1.18	1.08	1.36	1.11	1.07	11.52
Std Dev Prec	0.84	0.80	1.01	0.64	0.47	0.44	0.63	0.90	0.84	1.35	0.70	0.78	3.28
SCS-BC f in.	0.55	0.73	1.41	2.41	4.13	6.05	7.68	6.73	4.40	2.45	1.01	0.58	38.13
Std Dev f	0.10	0.12	0.28	0.35	0.33	0.49	0.35	0.33	0.34	0.32	0.15	0.08	1.51
ALFALFA													
Cal SCS-BC k				1.17	1.59	1.01	0.88	0.92	1.20	0.41			
Cal SCS-BC Et				2.82	6.57	6.10	6.77	6.21	5.26	1.00			34.72
Std Dev Et				0.41	0.53	0.49	0.31	0.31	0.41	0.13			1.52
Net Irr in.				2.22	6.01	5.80	6.03	5.27	4.40				29.73
PASTURE													
Cal SCS-BC k			0.21	0.88	1.04	0.88	0.76	0.75	0.84	0.67			
Cal SCS-BC Et			0.29	2.11	4.28	5.35	5.82	5.05	3.70	1.65			28.24
Std Dev Et			0.06	0.30	0.34	0.43	0.26	0.25	0.29	0.21			1.22
Net Irr in.				1.51	3.73	5.05	5.08	4.11	2.83	0.56			22.87
SP GRAIN													
Cal SCS-BC k			0.08	0.60	1.45	1.36	0.59						
Cal SCS-BC Et			0.11	1.45	5.97	8.21	4.51						20.25
Std Dev Et			0.02	0.21	0.48	0.67	0.20						1.18
Net Irr in.				0.85	5.42	7.91	3.77						17.95
CORN													
Cal SCS-BC k					0.13	0.35	0.80	1.09	1.09				
Cal SCS-BC Et					0.56	2.10	6.16	7.35	4.79				20.96
Std Dev Et					0.04	0.17	0.28	0.36	0.37				0.78
Net Irr in.					0.01	1.81	5.42	6.41	3.92				17.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at HOVENWEEP N M
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 5240 ft., Lat. 37.38

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.21	0.95	0.90	0.76	0.65	0.65	0.72	0.58			
Cal SCS-BC Et			0.30	2.30	3.70	4.60	5.02	4.34	3.19	1.42			24.87
Std Dev Et			0.06	0.33	0.30	0.37	0.23	0.22	0.25	0.18			1.09
Net Irr in.				1.69	3.15	4.31	4.28	3.40	2.32	0.33			19.48
GARDEN													
Cal SCS-BC k					0.43	0.64	0.91	0.60	0.22				
Cal SCS-BC Et					1.77	3.87	6.99	4.06	0.97				17.66
Std Dev Et					0.14	0.31	0.32	0.20	0.08				0.70
Net Irr in.					1.22	3.58	6.25	3.12	0.10				14.27
E-LAKE													
Cal SCS-BC k	1.99	2.00	1.89	1.54	1.35	1.05	0.87	0.92	1.12	1.36	1.71	2.00	
Cal SCS-BC Evap	1.10	1.47	2.66	3.72	5.57	6.34	6.67	6.20	4.94	3.33	1.74	1.16	44.89
Std Dev Evap	0.19	0.25	0.52	0.53	0.45	0.51	0.30	0.31	0.38	0.43	0.26	0.17	1.85
Net Loss in.	0.19	0.55	1.50	2.96	4.88	5.97	5.74	5.03	3.86	1.97	0.63	0.09	33.37
ET Ref													
Cal SCS-BC k	2.21	2.27	2.10	1.72	1.60	1.36	1.17	1.15	1.29	1.51	1.90	2.31	
Estimated Etr	1.22	1.67	2.96	4.13	6.61	8.22	8.96	7.76	5.69	3.70	1.93	1.34	54.18
Std Dev Et	0.21	0.28	0.58	0.59	0.53	0.67	0.41	0.38	0.44	0.48	0.28	0.19	2.20

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at IBAPAH
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5280 ft., Lat. 40.03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.72	6.67	8.28	8.94	10.05	10.13	10.29	9.60	8.40	7.72	6.69	6.52	100.00
Avg Temp F	25.95	31.60	37.61	44.56	52.67	60.84	68.99	67.29	57.72	46.92	35.84	26.47	46.37
Std Dev Temp	3.74	3.56	3.60	3.32	2.45	2.50	1.61	1.98	2.79	3.18	2.69	3.55	0.93
Avg Prec in.	0.53	0.61	0.96	1.06	1.32	1.13	0.79	0.86	0.91	0.93	0.51	0.48	10.08
Std Dev Prec	0.44	0.41	0.55	0.74	0.79	1.21	0.70	0.96	1.10	0.83	0.39	0.39	2.97
SCS-BC f in.	0.52	0.64	1.09	1.84	3.17	4.56	6.25	5.50	3.33	1.82	0.77	0.52	30.01
Std Dev f	0.08	0.09	0.26	0.36	0.37	0.46	0.34	0.39	0.39	0.32	0.11	0.07	1.16
ALFALFA													
Cal SCS-BC k					0.90	1.69	1.07	1.40	0.39				
Cal SCS-BC Et					2.86	7.71	6.69	7.69	1.29				26.26
Std Dev Et					0.33	0.77	0.37	0.54	0.15				1.15
Net Irr in.					1.81	6.81	6.06	7.00	0.57				22.25
PASTURE													
Cal SCS-BC k					0.82	1.11	0.93	0.91	0.84				
Cal SCS-BC Et					2.59	5.05	5.84	5.00	2.79				21.27
Std Dev Et					0.30	0.50	0.32	0.35	0.33				0.85
Net Irr in.					1.54	4.15	5.21	4.31	2.06				17.26
OTHR HAY													
Cal SCS-BC k					0.91	1.75	1.30	0.54	0.32				
Cal SCS-BC Et					2.90	7.98	8.12	2.95	1.06				23.00
Std Dev Et					0.34	0.80	0.45	0.21	0.12				1.08
Net Irr in.					1.84	7.08	7.48	2.26	0.34				19.00
SP GRAIN													
Cal SCS-BC k					0.53	1.53	1.43	0.75	0.03				
Cal SCS-BC Et					1.68	6.96	8.95	4.14	0.09				21.82
Std Dev Et					0.19	0.70	0.49	0.29	0.01				1.00
Net Irr in.					0.63	6.06	8.32	3.45					18.45

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at IBAPAH

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5280 ft., Lat. 40.03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k					1.04	0.97	0.81	0.78	0.85				
Cal SCS-BC Et					3.30	4.43	5.03	4.31	2.84				19.91
Std Dev Et					0.38	0.44	0.28	0.30	0.33				0.84
Net Irr in.					2.25	3.52	4.40	3.62	2.12				15.90
E-LAKE													
Cal SCS-BC k	1.39	1.76	1.97	1.69	1.55	1.20	0.98	1.02	1.23	1.40	1.60	1.54	
Cal SCS-BC Evap	0.73	1.13	2.15	3.10	4.92	5.48	6.10	5.60	4.10	2.54	1.24	0.80	37.89
Std Dev Evap	0.10	0.16	0.51	0.62	0.57	0.55	0.34	0.39	0.48	0.45	0.18	0.11	1.67
Net Loss in.	0.20	0.52	1.19	2.04	3.60	4.35	5.31	4.74	3.19	1.61	0.73	0.32	27.81
ET Ref													
Cal SCS-BC k	1.55	1.96	2.19	1.93	2.00	1.73	1.44	1.40	1.57	1.64	1.78	1.71	
Estimated Etr	0.81	1.26	2.39	3.55	6.35	7.90	8.98	7.69	5.22	2.98	1.38	0.89	49.39
Std Dev Et	0.12	0.18	0.57	0.70	0.74	0.79	0.49	0.54	0.61	0.53	0.20	0.12	2.09

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at JENSEN

From a Calibrated SCS Blaney-Criddle Equation using data from MAESER 10-31-1994

Years of Data Available; NWS: 1961-1990 MAESER: 1988-1990 Elev. 4760 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.15	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	14.86	22.84	36.36	47.04	56.66	65.24	72.04	69.31	59.80	48.04	33.73	19.44	45.45
Std Dev Temp	7.61	7.77	4.24	3.31	2.25	2.57	1.33	2.12	2.90	2.87	3.25	6.01	1.93
Avg Prec in.	0.46	0.52	0.61	0.72	0.77	0.64	0.66	0.59	0.91	1.02	0.59	0.63	8.13
Std Dev Prec	0.42	0.46	0.55	0.45	0.58	0.71	0.69	0.48	0.79	0.80	0.43	0.54	2.15
SCS-BC f in.	0.30	0.46	1.03	2.12	3.81	5.41	6.93	5.90	3.63	1.93	0.70	0.38	32.59
Std Dev f	0.15	0.16	0.26	0.39	0.37	0.51	0.30	0.42	0.43	0.30	0.10	0.12	1.75
ALFALFA													
Cal SCS-BC k				1.08	1.71	1.12	1.04	1.26	0.99	0.88			
Cal SCS-BC Et				2.29	6.52	6.04	7.20	7.47	3.60	1.69			34.81
Std Dev Et				0.42	0.64	0.57	0.31	0.54	0.42	0.26			1.85
Net Irr in.				1.71	5.91	5.52	6.67	7.00	2.87	0.87			30.56
PASTURE													
Cal SCS-BC k				0.69	1.07	0.97	0.84	0.86	0.91	0.74			
Cal SCS-BC Et				1.47	4.07	5.27	5.85	5.10	3.29	1.42			26.46
Std Dev Et				0.27	0.40	0.50	0.25	0.37	0.39	0.22			1.38
Net Irr in.				0.89	3.45	4.75	5.32	4.63	2.56	0.60			22.21
OTHR HAY													
Cal SCS-BC k				0.28	1.47	1.57	1.08	0.50	0.38	0.18			
Cal SCS-BC Et				0.59	5.58	8.49	7.49	2.93	1.39	0.34			26.82
Std Dev Et				0.11	0.55	0.80	0.32	0.21	0.16	0.05			1.38
Net Irr in.				0.01	4.96	7.98	6.96	2.46	0.66				23.04
SP GRAIN													
Cal SCS-BC k				0.41	1.38	1.50	0.97	0.01					
Cal SCS-BC Et				0.87	5.24	8.11	6.74	0.09					21.04
Std Dev Et				0.16	0.51	0.76	0.29	0.01					1.22
Net Irr in.				0.30	4.62	7.59	6.21						18.72
CORN													
Cal SCS-BC k					0.43	1.18	1.22	1.06	0.41				
Cal SCS-BC Et					1.64	6.38	8.47	6.24	1.47				24.20
Std Dev Et					0.16	0.60	0.37	0.45	0.17				1.03
Net Irr in.					1.02	5.86	7.94	5.77	0.74				21.34

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at JENSEN

From a Calibrated SCS Blaney-Criddle Equation using data from MAESER 10-31-1994

Years of Data Available; NWS: 1961-1990 MAESER: 1988-1990 Elev. 4760 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.93	0.98	0.84	0.73	0.74	0.78	0.64			
Cal SCS-BC Et				1.98	3.73	4.54	5.04	4.39	2.84	1.23			23.74
Std Dev Et				0.36	0.37	0.43	0.22	0.32	0.33	0.19			1.30
Net Irr in.				1.40	3.11	4.02	4.51	3.92	2.11	0.41			19.49
GARDEN													
Cal SCS-BC k				0.17	0.56	0.94	0.98	0.42	0.15				
Cal SCS-BC Et				0.36	2.14	5.06	6.82	2.48	0.53				17.40
Std Dev Et				0.07	0.21	0.48	0.30	0.18	0.06				0.79
Net Irr in.					1.53	4.55	6.29	2.02					14.38
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.62	1.58	1.35	1.17	1.20	1.25	1.48	1.99	2.00	
Cal SCS-BC Evap	0.60	0.91	2.07	3.43	6.00	7.30	8.10	7.06	4.56	2.84	1.39	0.76	45.00
Std Dev Evap	0.31	0.31	0.51	0.63	0.59	0.69	0.35	0.51	0.54	0.44	0.21	0.23	2.61
Net Loss in.	0.14	0.39	1.45	2.71	5.23	6.65	7.44	6.47	3.64	1.82	0.80	0.13	36.87
ET Ref													
Cal SCS-BC k	3.55	3.12	2.33	1.80	1.75	1.50	1.30	1.33	1.39	1.64	2.21	2.51	
Estimated Etr	1.06	1.42	2.41	3.81	6.67	8.11	9.00	7.84	5.06	3.16	1.54	0.95	51.03
Std Dev Et	0.54	0.48	0.60	0.70	0.65	0.76	0.39	0.56	0.59	0.49	0.23	0.29	3.08

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KAMAS
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 6470 ft., Lat. 40.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.68	6.65	8.27	8.95	10.08	10.17	10.33	9.62	8.40	7.70	6.66	6.47	100.00
Avg Temp F	22.87	26.61	33.76	40.91	49.91	58.33	66.55	64.72	55.93	45.86	33.77	24.69	43.66
Std Dev Temp	3.49	3.45	3.09	3.29	2.26	2.10	1.71	2.24	2.86	2.91	3.35	4.00	1.20
Avg Prec in.	1.45	1.75	1.58	1.84	1.52	1.06	1.25	1.21	1.60	1.69	1.61	1.53	18.07
Std Dev Prec	1.00	1.71	0.57	1.26	1.03	0.80	0.97	0.90	1.26	0.99	0.83	1.11	4.81
SCS-BC f in.	0.46	0.53	0.87	1.46	2.77	4.13	5.76	5.03	3.08	1.70	0.70	0.48	26.99
Std Dev f	0.07	0.07	0.16	0.32	0.32	0.37	0.35	0.41	0.38	0.28	0.13	0.08	1.27
ALFALFA													
Cal SCS-BC k					1.26	1.75	1.03	1.30	0.46				
Cal SCS-BC Et					3.49	7.22	5.91	6.55	1.42				24.59
Std Dev Et					0.41	0.64	0.36	0.53	0.18				1.21
Net Irr in.					2.28	6.37	4.91	5.59	0.14				19.29
PASTURE													
Cal SCS-BC k				0.15	1.15	1.14	0.89	0.89	0.71				
Cal SCS-BC Et				0.23	3.19	4.72	5.12	4.45	2.18				19.88
Std Dev Et				0.05	0.37	0.42	0.31	0.36	0.27				0.98
Net Irr in.					1.97	3.88	4.12	3.49	0.90				14.35
OTHR HAY													
Cal SCS-BC k					1.39	1.82	1.16	0.51	0.25				
Cal SCS-BC Et					3.87	7.53	6.70	2.56	0.77				21.42
Std Dev Et					0.45	0.67	0.41	0.21	0.10				1.12
Net Irr in.					2.65	6.68	5.70	1.59					16.63
SP GRAIN													
Cal SCS-BC k					0.39	1.20	1.36	1.17	0.22				
Cal SCS-BC Et					1.08	4.98	7.85	5.89	0.67				20.47
Std Dev Et					0.13	0.44	0.48	0.48	0.08				0.96
Net Irr in.						4.13	6.85	4.92					15.91

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KAMAS
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 6470 ft., Lat. 40.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.34	1.13	0.99	0.76	0.76	0.85				
Cal SCS-BC Et				0.50	3.13	4.07	4.41	3.83	2.61				18.55
Std Dev Et				0.11	0.37	0.36	0.27	0.31	0.32				0.94
Net Irr in.					1.92	3.23	3.41	2.87	1.33				12.75
E-LAKE													
Cal SCS-BC k	1.56	2.00	2.00	1.86	1.58	1.22	0.95	1.01	1.24	1.41	1.67	1.31	
Cal SCS-BC Evap	0.72	1.06	1.75	2.71	4.39	5.03	5.48	5.09	3.83	2.41	1.18	0.63	34.29
Std Dev Evap	0.11	0.14	0.31	0.60	0.51	0.45	0.33	0.42	0.48	0.40	0.21	0.10	1.70
Net Loss in.			0.17	0.87	2.88	3.97	4.23	3.89	2.23	0.72			18.96
ET Ref													
Cal SCS-BC k	1.74	2.36	2.43	2.08	2.05	1.76	1.37	1.36	1.55	1.58	1.86	1.46	
Estimated Etr	0.80	1.25	2.13	3.03	5.68	7.27	7.87	6.85	4.79	2.69	1.31	0.70	44.35
Std Dev Et	0.12	0.16	0.38	0.67	0.66	0.65	0.48	0.56	0.59	0.44	0.24	0.11	2.15

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KANAB

From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY / KANAB 10-26-1994

Years of Data Available; NWS: 1961-1990 CEDAR CITY / KANAB: 1987-1991 Elev. 4950 ft., Lat. 37.05

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.91	6.77	8.30	8.86	9.89	9.93	10.10	9.48	8.38	7.80	6.85	6.73	100.00
Avg Temp F	35.24	39.93	44.52	51.23	60.09	69.37	75.51	73.43	66.17	56.35	44.69	36.44	54.41
Std Dev Temp	3.72	3.25	3.26	3.39	2.53	2.71	1.77	1.61	2.25	3.01	2.35	3.72	1.07
Avg Prec in.	1.50	1.32	1.60	0.92	0.72	0.32	1.01	1.49	0.94	0.98	1.27	1.24	13.31
Std Dev Prec	1.73	1.32	1.38	0.98	0.67	0.36	0.87	1.04	0.83	1.00	1.16	1.43	4.54
SCS-BC f in.	0.79	1.04	1.70	2.62	4.32	6.11	7.57	6.66	4.61	2.92	1.41	0.83	40.60
Std Dev f	0.17	0.22	0.34	0.44	0.44	0.57	0.42	0.34	0.37	0.38	0.20	0.19	1.83
ALFALFA													
Cal SCS-BC k			0.39	1.54	1.63	1.18	0.93	1.00	1.01	0.80			
Cal SCS-BC Et			0.66	4.03	7.03	7.19	7.01	6.64	4.65	2.33			39.53
Std Dev Et			0.13	0.67	0.72	0.66	0.38	0.34	0.37	0.31			2.07
Net Irr in.				3.29	6.45	6.93	6.20	5.45	3.90	1.54			33.77
PASTURE													
Cal SCS-BC k			0.64	1.15	1.13	0.94	0.80	0.78	0.85	0.77			
Cal SCS-BC Et			1.09	3.00	4.87	5.72	6.09	5.18	3.90	2.26			32.13
Std Dev Et			0.22	0.50	0.50	0.53	0.33	0.26	0.31	0.30			1.64
Net Irr in.				2.27	4.30	5.46	5.29	3.99	3.15	1.47			25.93
OTHR HAY													
Cal SCS-BC k			0.80	1.65	1.82	1.40	0.57	0.37	0.28	0.14			
Cal SCS-BC Et			1.36	4.32	7.86	8.55	4.31	2.46	1.28	0.40			30.55
Std Dev Et			0.27	0.72	0.80	0.79	0.24	0.12	0.10	0.05			2.09
Net Irr in.			0.08	3.59	7.29	8.29	3.51	1.27	0.53				24.55
SP GRAIN													
Cal SCS-BC k			0.23	1.03	1.71	1.34	0.25						
Cal SCS-BC Et			0.40	2.69	7.39	8.17	1.87						20.52
Std Dev Et			0.08	0.45	0.75	0.76	0.10						1.59
Net Irr in.				1.96	6.82	7.92	1.06						17.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KANAB
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY / KANAB 10-26-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY / KANAB: 1987-1991 Elev. 4950 ft., Lat. 37.05

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.73	1.01	0.97	0.81	0.69	0.67	0.73	0.70	0.14		
Cal SCS-BC Et			1.25	2.64	4.20	4.93	5.25	4.46	3.36	2.03	0.19		28.32
Std Dev Et			0.25	0.44	0.43	0.46	0.29	0.23	0.27	0.27	0.03		1.45
Net Irr in.				1.91	3.63	4.67	4.44	3.27	2.61	1.25			21.77
GARDEN													
Cal SCS-BC k					0.48	0.79	0.97	0.44	0.26	0.14			
Cal SCS-BC Et					2.08	4.82	7.35	2.92	1.20	0.40			18.76
Std Dev Et					0.21	0.45	0.40	0.15	0.10	0.05			0.91
Net Irr in.					1.51	4.56	6.54	1.73	0.45				14.78
E-LAKE													
Cal SCS-BC k	1.46	1.51	1.73	1.49	1.27	0.97	0.85	0.89	1.02	1.07	1.29	1.46	
Cal SCS-BC Evap	1.16	1.57	2.94	3.91	5.47	5.91	6.43	5.91	4.73	3.13	1.82	1.22	44.17
Std Dev Evap	0.25	0.33	0.59	0.65	0.56	0.55	0.35	0.30	0.38	0.41	0.26	0.27	2.15
Net Loss in.		0.24	1.34	2.99	4.75	5.59	5.42	4.42	3.78	2.15	0.55		31.22
ET Ref													
Cal SCS-BC k	1.62	1.68	1.92	1.84	1.74	1.44	1.24	1.20	1.30	1.24	1.43	1.62	
Estimated Etr	1.29	1.74	3.26	4.82	7.50	8.80	9.38	7.96	6.00	3.63	2.02	1.35	57.76
Std Dev Et	0.28	0.36	0.65	0.81	0.77	0.81	0.51	0.40	0.48	0.48	0.28	0.30	2.80

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KOOSHAREM
From a Calibrated SCS Blaney-Criddle Equation using data from KOOSHAREM 10-26-1994
Years of Data Available; NWS: 1961-1990 KOOSHAREM: 1990-1991 Elev. 6930 ft., Lat. 38.52

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.82	6.73	8.29	8.90	9.96	10.02	10.19	9.54	8.39	7.76	6.78	6.63	100.00
Avg Temp F	23.63	27.83	33.48	40.64	49.56	58.61	65.68	63.44	55.86	45.16	33.73	25.18	43.57
Std Dev Temp	3.51	3.82	3.75	3.11	2.37	2.36	1.32	1.62	2.47	2.84	2.57	3.84	1.01
Avg Prec in.	0.54	0.51	0.73	0.61	0.82	0.60	1.12	1.46	1.05	0.76	0.57	0.61	9.38
Std Dev Prec	0.47	0.43	0.48	0.38	0.54	0.63	0.64	1.22	0.90	0.62	0.58	0.50	2.27
SCS-BC f in.	0.48	0.56	0.88	1.42	2.69	4.12	5.51	4.75	3.06	1.65	0.70	0.50	26.33
Std Dev f	0.07	0.08	0.17	0.29	0.33	0.41	0.26	0.29	0.33	0.27	0.08	0.08	1.04
ALFALFA													
Cal SCS-BC k					1.13	1.79	1.11	1.25	1.12				
Cal SCS-BC Et					3.04	7.37	6.13	5.94	3.44				25.92
Std Dev Et					0.38	0.73	0.29	0.36	0.37				1.19
Net Irr in.					2.39	6.88	5.24	4.77	2.60				21.88
PASTURE													
Cal SCS-BC k					1.28	1.19	0.96	0.95	1.00				
Cal SCS-BC Et					3.43	4.91	5.30	4.50	3.06				21.20
Std Dev Et					0.42	0.49	0.25	0.27	0.33				0.97
Net Irr in.					2.78	4.43	4.41	3.33	2.22				17.16
OTHR HAY													
Cal SCS-BC k					1.16	1.86	1.24	0.54	0.31				
Cal SCS-BC Et					3.11	7.67	6.85	2.58	0.94				21.15
Std Dev Et					0.38	0.76	0.33	0.16	0.10				1.06
Net Irr in.					2.46	7.19	5.96	1.41	0.09				17.12
SP GRAIN													
Cal SCS-BC k					0.30	0.87	1.38	1.45	0.57				
Cal SCS-BC Et					0.79	3.59	7.60	6.87	1.73				20.59
Std Dev Et					0.10	0.35	0.36	0.42	0.19				0.81
Net Irr in.					0.14	3.10	6.71	5.71	0.89				16.55

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at KOOSHAREM
From a Calibrated SCS Blaney-Criddle Equation using data from KOOSHAREM 10-26-1994
Years of Data Available; NWS: 1961-1990 KOOSHAREM: 1990-1991 Elev. 6930 ft., Lat. 38.52

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.19	1.38	1.03	0.83	0.82	0.86				
Cal SCS-BC Et				0.27	3.72	4.23	4.57	3.88	2.64				19.31
Std Dev Et				0.06	0.46	0.42	0.22	0.24	0.28				0.92
Net Irr in.					3.06	3.75	3.68	2.71	1.80				15.00
GARDEN													
Cal SCS-BC k					0.14	0.59	1.00	0.97					
Cal SCS-BC Et					0.38	2.44	5.51	4.59					12.92
Std Dev Et					0.05	0.24	0.26	0.28					0.51
Net Irr in.						1.96	4.62	3.42					10.00
E-LAKE													
Cal SCS-BC k	1.78	2.00	2.00	2.00	1.91	1.22	0.94	1.01	1.20	1.87	2.00	2.00	
Cal SCS-BC Evap	0.86	1.12	1.76	2.85	5.15	5.03	5.16	4.79	3.68	3.08	1.40	1.00	35.88
Std Dev Evap	0.13	0.15	0.33	0.59	0.64	0.50	0.25	0.29	0.39	0.50	0.16	0.15	1.54
Net Loss in.	0.32	0.61	1.02	2.24	4.34	4.42	4.05	3.33	2.62	2.32	0.83	0.39	26.50
ET Ref													
Cal SCS-BC k		2.67	3.69	2.72	2.49	1.83	1.48	1.46	1.58	2.31	2.53	2.46	
Estimated Etr		1.50	3.24	3.88	6.72	7.55	8.16	6.92	4.85	3.81	1.77	1.23	49.63
Std Dev Et		0.21	0.62	0.80	0.83	0.75	0.39	0.42	0.52	0.62	0.20	0.19	2.18

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LAKETOWN
From a Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994
Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 5980 ft., Lat. 41.82

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.60	6.61	8.27	8.98	10.15	10.26	10.41	9.67	8.41	7.67	6.59	6.38	100.00
Avg Temp F	21.31	23.01	30.13	40.31	49.52	57.78	65.36	63.41	54.68	44.34	32.91	23.76	42.21
Std Dev Temp	4.96	5.18	5.10	3.51	2.18	2.71	1.94	2.10	2.85	3.06	2.61	3.50	1.45
Avg Prec in.	0.93	0.85	0.98	1.15	1.18	1.11	0.71	0.82	1.17	1.11	1.06	1.14	12.20
Std Dev Prec	0.80	0.81	0.53	0.74	0.82	0.83	0.49	1.09	1.09	0.76	0.81	1.02	3.56
SCS-BC f in.	0.42	0.46	0.76	1.41	2.74	4.08	5.56	4.81	2.92	1.55	0.66	0.45	25.81
Std Dev f	0.10	0.10	0.15	0.34	0.32	0.48	0.39	0.38	0.38	0.29	0.06	0.07	1.40
ALFALFA													
Cal SCS-BC k					1.53	1.82	1.11	1.17	1.35	0.66			
Cal SCS-BC Et					4.19	7.40	6.18	5.61	3.93	1.02			28.34
Std Dev Et					0.48	0.87	0.44	0.44	0.51	0.19			1.54
Net Irr in.					3.25	6.51	5.61	4.96	2.99	0.13			23.46
PASTURE													
Cal SCS-BC k				0.19	1.22	1.19	0.99	1.01	1.13	0.65			
Cal SCS-BC Et				0.27	3.35	4.85	5.49	4.84	3.31	1.01			23.10
Std Dev Et				0.07	0.39	0.57	0.39	0.38	0.43	0.19			1.24
Net Irr in.					2.41	3.96	4.92	4.18	2.37	0.12			17.96
OTHR HAY													
Cal SCS-BC k					1.51	1.88	1.47	0.61	0.52	0.15			
Cal SCS-BC Et					4.14	7.67	8.20	2.94	1.53	0.24			24.72
Std Dev Et					0.48	0.90	0.58	0.23	0.20	0.04			1.47
Net Irr in.					3.20	6.78	7.63	2.28	0.59				20.49
SP GRAIN													
Cal SCS-BC k				0.10	0.84	1.67	1.51	0.68					
Cal SCS-BC Et				0.14	2.30	6.81	8.41	3.26					20.92
Std Dev Et				0.03	0.26	0.80	0.59	0.26					1.30
Net Irr in.					1.35	5.93	7.84	2.61					17.73
ORCHARD													
Cal SCS-BC k					0.18	1.16	1.54	1.69	1.87				
Cal SCS-BC Et					0.49	4.72	8.56	8.11	5.46				27.33
Std Dev Et					0.06	0.55	0.60	0.64	0.71				1.40
Net Irr in.						3.83	7.99	7.45	4.52				23.79

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LAKETOWN
From a Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994
Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 5980 ft., Lat. 41.82

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.19	1.17	1.02	0.85	0.87	0.98	0.38			
Cal SCS-BC Et				0.27	3.19	4.18	4.73	4.16	2.85	0.59			19.96
Std Dev Et				0.06	0.37	0.49	0.33	0.33	0.37	0.11			1.08
Net Irr in.					2.24	3.29	4.16	3.51	1.91				15.11
GARDEN													
Cal SCS-BC k					0.15	0.59	1.01	1.05					
Cal SCS-BC Et					0.41	2.39	5.64	5.05					13.49
Std Dev Et					0.05	0.28	0.40	0.40					0.74
Net Irr in.						1.51	5.07	4.39					10.98
E-LAKE													
Cal SCS-BC k	1.52	2.00	2.00	1.39	1.65	1.26	1.02	1.07	1.31	1.19	1.80	1.36	
Cal SCS-BC Evap	0.64	0.91	1.52	1.96	4.52	5.12	5.65	5.16	3.82	1.85	1.18	0.62	32.95
Std Dev Evap	0.15	0.21	0.30	0.48	0.52	0.60	0.40	0.41	0.50	0.34	0.11	0.09	1.85
Net Loss in.		0.07	0.54	0.82	3.34	4.01	4.94	4.34	2.64	0.74	0.11		21.56
ET Ref													
Cal SCS-BC k	1.69	2.76	2.99	1.62	2.18	1.83	1.52	1.55	1.74	1.49	2.00	1.51	
Estimated Etr	0.71	1.26	2.27	2.27	5.97	7.46	8.44	7.44	5.09	2.31	1.31	0.69	45.22
Std Dev Et	0.17	0.28	0.45	0.56	0.69	0.88	0.59	0.59	0.66	0.43	0.12	0.10	2.49

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LA VERKIN

From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-31-1994

Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 3220 ft., Lat. 37.20

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.90	6.77	8.30	8.87	9.89	9.94	10.11	9.49	8.38	7.80	6.84	6.72	100.00
Avg Temp F	38.88	44.92	50.52	57.61	66.13	75.62	81.38	79.46	71.57	60.49	48.10	39.41	59.51
Std Dev Temp	3.23	2.93	3.23	4.02	2.55	2.91	2.01	2.16	2.94	3.01	2.26	3.18	1.48
Avg Prec in.	1.36	1.26	1.52	0.72	0.52	0.27	0.74	1.02	0.82	0.69	1.12	0.93	10.96
Std Dev Prec	1.34	1.12	1.27	0.71	0.60	0.38	0.62	0.80	0.77	0.76	0.99	0.88	3.72
SCS-BC f in.	0.98	1.42	2.36	3.51	5.44	7.48	9.01	8.00	5.55	3.47	1.71	0.99	49.94
Std Dev f	0.22	0.24	0.39	0.60	0.50	0.66	0.51	0.50	0.53	0.42	0.21	0.21	2.75
ALFALFA													
Cal SCS-BC k			0.79	1.38	1.15	0.96	0.89	0.92	0.94	0.74			
Cal SCS-BC Et			1.86	4.86	6.24	7.16	8.05	7.40	5.23	2.58			43.38
Std Dev Et			0.31	0.83	0.57	0.64	0.46	0.46	0.50	0.32			2.52
Net Irr in.			0.65	4.28	5.83	6.94	7.46	6.58	4.57	2.03			38.35
PASTURE													
Cal SCS-BC k			0.78	0.95	0.95	0.85	0.78	0.69	0.72	0.69	0.13		
Cal SCS-BC Et			1.85	3.32	5.15	6.34	7.01	5.52	3.98	2.40	0.23		35.80
Std Dev Et			0.31	0.57	0.47	0.56	0.40	0.34	0.38	0.29	0.03		2.04
Net Irr in.			0.63	2.75	4.74	6.12	6.42	4.70	3.32	1.85			30.54
SP GRAIN													
Cal SCS-BC k		0.32	0.99	1.43	1.42	0.36							
Cal SCS-BC Et		0.45	2.34	5.01	7.72	2.72							18.24
Std Dev Et		0.08	0.39	0.86	0.71	0.24							1.65
Net Irr in.			1.12	4.44	7.30	2.50							15.37
CORN													
Cal SCS-BC k				0.16	0.44	1.01	1.13	0.88	0.11				
Cal SCS-BC Et				0.57	2.37	7.55	10.18	7.07	0.61				28.36
Std Dev Et				0.10	0.22	0.67	0.58	0.44	0.06				1.47
Net Irr in.				0.00	1.96	7.33	9.59	6.25					25.13
ORCHARD													
Cal SCS-BC k			0.31	0.87	1.30	1.38	1.30	1.14	1.05	0.32			
Cal SCS-BC Et			0.73	3.05	7.07	10.32	11.74	9.11	5.84	1.10			48.96
Std Dev Et			0.12	0.52	0.65	0.91	0.67	0.57	0.56	0.13			2.62
Net Irr in.				2.48	6.66	10.10	11.15	8.29	5.18	0.55			44.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LA VERKIN
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-31-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 3220 ft., Lat. 37.20

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.84	0.82	0.82	0.73	0.67	0.59	0.62	0.60	0.11		
Cal SCS-BC Et			1.98	2.87	4.44	5.46	6.03	4.75	3.43	2.07	0.19		31.24
Std Dev Et			0.33	0.49	0.41	0.48	0.34	0.29	0.33	0.25	0.02		1.79
Net Irr in.			0.76	2.30	4.03	5.24	5.44	3.93	2.77	1.53			26.01
GARDEN													
Cal SCS-BC k				0.38	0.64	0.98	0.74	0.24	0.22	0.12			
Cal SCS-BC Et				1.34	3.49	7.35	6.69	1.92	1.22	0.40			22.43
Std Dev Et				0.23	0.32	0.65	0.38	0.12	0.12	0.05			1.30
Net Irr in.				0.77	3.08	7.13	6.10	1.10	0.57				18.75
E-LAKE													
Cal SCS-BC k	1.33	1.26	1.44	1.25	1.09	0.87	0.80	0.77	0.86	0.90	1.08	1.30	
Cal SCS-BC Evap	1.31	1.78	3.40	4.38	5.93	6.52	7.19	6.14	4.79	3.12	1.85	1.28	47.71
Std Dev Evap	0.29	0.31	0.57	0.75	0.54	0.58	0.41	0.38	0.46	0.38	0.23	0.28	2.81
Net Loss in.		0.53	1.89	3.66	5.41	6.25	6.45	5.12	3.97	2.44	0.73	0.35	36.80
ET Ref													
Cal SCS-BC k	1.48	1.40	1.60	1.46	1.46	1.30	1.20	1.06	1.10	1.07	1.20	1.44	
Estimated Etr	1.46	1.98	3.78	5.13	7.93	9.75	10.78	8.48	6.12	3.70	2.06	1.43	62.60
Std Dev Et	0.32	0.34	0.63	0.88	0.73	0.86	0.61	0.53	0.58	0.45	0.25	0.31	3.59

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LEVAN

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1987-1991 Elev. 5300 ft., Lat. 39.57

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.75	6.69	8.28	8.93	10.02	10.10	10.26	9.58	8.39	7.73	6.72	6.55	100.00
Avg Temp F	25.26	31.45	38.82	46.76	55.72	65.38	73.24	71.22	62.18	50.84	38.27	27.54	48.89
Std Dev Temp	4.75	4.41	3.90	3.23	2.74	2.89	1.70	1.93	3.13	3.49	3.16	4.00	1.27
Avg Prec in.	1.21	1.23	1.65	1.52	1.45	0.87	0.83	0.97	1.38	1.36	1.29	1.39	15.15
Std Dev Prec	0.75	0.99	0.77	0.99	1.04	0.80	0.59	0.73	1.21	0.99	0.69	0.86	3.49
SCS-BC f in.	0.51	0.64	1.18	2.08	3.64	5.41	7.17	6.27	3.99	2.24	0.92	0.54	34.60
Std Dev f	0.10	0.11	0.31	0.38	0.45	0.57	0.39	0.39	0.48	0.39	0.19	0.08	1.79
ALFALFA													
Cal SCS-BC k				0.19	1.67	1.07	1.07	1.17	1.04	0.41			
Cal SCS-BC Et				0.40	6.09	5.78	7.68	7.32	4.14	0.91			32.33
Std Dev Et				0.07	0.75	0.61	0.42	0.46	0.50	0.16			1.70
Net Irr in.					4.93	5.09	7.02	6.55	3.04				26.63
PASTURE													
Cal SCS-BC k				0.46	1.15	0.95	0.86	0.82	0.86	0.45			
Cal SCS-BC Et				0.95	4.17	5.13	6.14	5.14	3.42	1.02			25.98
Std Dev Et				0.17	0.51	0.54	0.33	0.32	0.41	0.18			1.40
Net Irr in.					3.01	4.44	5.48	4.37	2.31				19.61
SP GRAIN													
Cal SCS-BC k				0.33	1.32	1.46	1.01						
Cal SCS-BC Et				0.68	4.81	7.89	7.27						20.65
Std Dev Et				0.12	0.59	0.84	0.40						1.33
Net Irr in.					3.65	7.20	6.61						17.46
CORN													
Cal SCS-BC k					0.27	0.43	0.94	1.20	1.00				
Cal SCS-BC Et					0.98	2.34	6.75	7.50	4.00				21.57
Std Dev Et					0.12	0.25	0.37	0.47	0.48				1.06
Net Irr in.						1.64	6.09	6.73	2.90				17.35
ORCHARD													
Cal SCS-BC k				0.37	1.29	1.48	1.44	1.36	1.30	0.40			
Cal SCS-BC Et				0.78	4.69	8.01	10.29	8.54	5.18	0.89			38.37
Std Dev Et				0.14	0.58	0.85	0.56	0.53	0.63	0.15			1.98
Net Irr in.					3.53	7.31	9.63	7.76	4.08				32.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LEVAN

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1987-1991 Elev. 5300 ft., Lat. 39.57

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.69	1.04	0.82	0.74	0.71	0.74	0.39			
Cal SCS-BC Et				1.43	3.78	4.42	5.29	4.43	2.95	0.88			23.18
Std Dev Et				0.26	0.46	0.47	0.29	0.28	0.36	0.15			1.30
Net Irr in.				0.22	2.62	3.72	4.63	3.66	1.84				16.68
GARDEN													
Cal SCS-BC k					0.42	0.63	0.99	0.77	0.27				
Cal SCS-BC Et					1.55	3.38	7.08	4.82	1.06				17.88
Std Dev Et					0.19	0.36	0.39	0.30	0.13				0.82
Net Irr in.					0.39	2.69	6.42	4.04					13.53
E-LAKE													
Cal SCS-BC k	1.56	2.00	2.00	1.66	1.42	1.00	0.90	0.91	1.03	1.15	1.54	1.62	
Cal SCS-BC Evap	0.80	1.29	2.37	3.46	5.19	5.42	6.42	5.70	4.11	2.57	1.41	0.88	39.60
Std Dev Evap	0.15	0.23	0.63	0.63	0.64	0.57	0.35	0.35	0.50	0.45	0.30	0.13	2.18
Net Loss in.		0.06	0.72	1.93	3.74	4.55	5.60	4.73	2.73	1.21	0.12		25.37
ET Ref													
Cal SCS-BC k	1.73	2.30	2.66	1.89	1.85	1.46	1.32	1.26	1.32	1.32	1.71	1.80	
Estimated Etr	0.88	1.48	3.15	3.94	6.75	7.89	9.44	7.91	5.27	2.95	1.57	0.97	52.21
Std Dev Et	0.17	0.26	0.83	0.71	0.83	0.84	0.51	0.49	0.64	0.51	0.33	0.14	2.83

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOA

From a Calibrated SCS Blaney-Criddle Equation using data from KOOSHAREM 10-26-1994

Years of Data Available; NWS: 1961-1990 KOOSHAREM: 1990-1991 Elev. 7050 ft., Lat. 38.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.82	6.73	8.29	8.90	9.96	10.02	10.18	9.53	8.39	7.77	6.78	6.63	100.00
Avg Temp F	23.68	28.19	34.04	41.84	50.13	58.64	65.00	62.69	55.01	45.02	33.43	25.02	43.56
Std Dev Temp	3.95	3.34	3.85	3.09	2.34	2.58	1.18	1.64	2.44	2.92	2.82	3.60	1.03
Avg Prec in.	0.42	0.26	0.51	0.43	0.73	0.51	1.11	1.52	0.99	0.64	0.39	0.34	7.85
Std Dev Prec	0.50	0.21	0.46	0.38	0.54	0.48	0.63	1.05	0.76	0.55	0.37	0.28	2.18
SCS-BC f in.	0.48	0.57	0.90	1.54	2.77	4.13	5.37	4.61	2.95	1.64	0.69	0.50	26.15
Std Dev f	0.08	0.07	0.19	0.31	0.33	0.45	0.23	0.29	0.32	0.28	0.08	0.07	1.23
ALFALFA													
Cal SCS-BC k					1.36	1.76	1.11	1.24	1.34				
Cal SCS-BC Et					3.76	7.28	5.95	5.69	3.96				26.64
Std Dev Et					0.45	0.79	0.26	0.36	0.44				1.36
Net Irr in.					3.18	6.87	5.06	4.48	3.16				22.76
PASTURE													
Cal SCS-BC k				0.14	1.21	1.16	0.96	0.98	0.99				
Cal SCS-BC Et				0.22	3.34	4.77	5.17	4.54	2.93				20.98
Std Dev Et				0.04	0.40	0.52	0.22	0.28	0.32				1.05
Net Irr in.					2.76	4.36	4.29	3.32	2.14				16.87
OTHR HAY													
Cal SCS-BC k					1.36	1.83	1.24	0.57	0.37				
Cal SCS-BC Et					3.76	7.56	6.64	2.61	1.09				21.66
Std Dev Et					0.45	0.82	0.29	0.16	0.12				1.18
Net Irr in.					3.18	7.15	5.76	1.39	0.30				17.78
SP GRAIN													
Cal SCS-BC k					0.35	1.00	1.43	1.47	0.45				
Cal SCS-BC Et					0.97	4.14	7.70	6.76	1.34				20.90
Std Dev Et					0.12	0.45	0.33	0.42	0.15				0.88
Net Irr in.					0.39	3.73	6.81	5.55	0.55				17.02

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOA

From a Calibrated SCS Blaney-Criddle Equation using data from KOOSHAREM 10-26-1994

Years of Data Available; NWS: 1961-1990 KOOSHAREM: 1990-1991 Elev. 7050 ft., Lat. 38.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.31	1.26	1.00	0.83	0.85	0.86				
Cal SCS-BC Et				0.48	3.50	4.11	4.46	3.91	2.52				18.98
Std Dev Et				0.10	0.42	0.44	0.19	0.25	0.28				0.97
Net Irr in.				0.13	2.91	3.70	3.57	2.70	1.73				14.74
GARDEN													
Cal SCS-BC k					0.13	0.59	1.03	0.98	0.08				
Cal SCS-BC Et					0.35	2.42	5.54	4.52	0.23				13.06
Std Dev Et					0.04	0.26	0.24	0.28	0.03				0.54
Net Irr in.						2.01	4.65	3.31					9.97
E-LAKE													
Cal SCS-BC k	1.78	2.00	2.00	1.77	1.73	1.19	0.94	1.05	1.20	1.78	2.00	2.00	
Cal SCS-BC Evap	0.86	1.14	1.80	2.73	4.79	4.89	5.05	4.84	3.53	2.92	1.39	1.00	34.93
Std Dev Evap	0.14	0.13	0.39	0.55	0.57	0.53	0.22	0.30	0.39	0.50	0.16	0.14	1.75
Net Loss in.	0.44	0.88	1.29	2.29	4.06	4.38	3.94	3.32	2.54	2.28	0.99	0.66	27.08
ET Ref													
Cal SCS-BC k		2.72	3.26	2.03	2.25	1.78	1.48	1.51	1.58	2.21	2.65	2.66	
Estimated Etr		1.55	2.94	3.13	6.24	7.34	7.96	6.98	4.65	3.61	1.84	1.33	47.56
Std Dev Et		0.18	0.63	0.64	0.75	0.79	0.34	0.44	0.51	0.61	0.21	0.19	2.40

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOGAN RADIO KVNU
From a Calibrated SCS Blaney-Criddle Equation using data from USU NF / LOGAN 5SW 10-13-1994
Years of Data Available; NWS: 1961-1990 USU NF / LOGAN 5SW: 1980-1989 Elev. 4500 ft., Lat. 41.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.61	6.61	8.27	8.98	10.15	10.25	10.41	9.67	8.41	7.67	6.60	6.39	100.00
Avg Temp F	21.05	26.62	36.15	45.75	54.96	63.58	71.88	70.02	59.92	48.45	35.59	24.20	46.51
Std Dev Temp	5.76	6.69	5.30	3.10	2.94	2.66	1.57	2.75	3.29	3.13	2.86	4.58	1.59
Avg Prec in.	1.01	1.24	1.60	1.80	1.73	1.48	0.74	0.93	1.59	1.63	1.45	1.27	16.47
Std Dev Prec	0.66	0.83	0.93	1.14	1.11	1.14	0.61	1.28	1.48	1.07	1.25	0.94	5.14
SCS-BC f in.	0.42	0.54	1.03	1.98	3.57	5.14	6.96	6.09	3.66	1.96	0.75	0.46	32.54
Std Dev f	0.11	0.15	0.28	0.35	0.48	0.52	0.35	0.56	0.49	0.33	0.11	0.09	1.50
ALFALFA													
Cal SCS-BC k				1.12	1.67	1.12	0.95	1.08	1.05	0.22			
Cal SCS-BC Et				2.22	5.94	5.75	6.62	6.55	3.82	0.43			31.34
Std Dev Et				0.40	0.80	0.58	0.34	0.60	0.51	0.07			1.58
Net Irr in.				0.78	4.55	4.57	6.03	5.80	2.56				24.29
PASTURE													
Cal SCS-BC k				0.87	1.05	0.99	0.80	0.80	0.83	0.54			
Cal SCS-BC Et				1.72	3.76	5.10	5.57	4.85	3.02	1.05			25.06
Std Dev Et				0.31	0.50	0.52	0.28	0.45	0.40	0.18			1.19
Net Irr in.				0.28	2.37	3.91	4.97	4.10	1.76				17.39
OTHR HAY													
Cal SCS-BC k				1.20	1.74	1.47	0.49	0.36	0.26	0.15			
Cal SCS-BC Et				2.38	6.21	7.54	3.37	2.21	0.97	0.30			22.99
Std Dev Et				0.43	0.83	0.77	0.17	0.20	0.13	0.05			1.39
Net Irr in.				0.94	4.83	6.36	2.78	1.46					16.37
SP GRAIN													
Cal SCS-BC k				0.28	0.99	1.51	1.15	0.21					
Cal SCS-BC Et				0.55	3.51	7.75	8.01	1.27					21.09
Std Dev Et				0.10	0.47	0.79	0.41	0.12					1.06
Net Irr in.					2.13	6.56	7.41	0.53					16.63
CORN													
Cal SCS-BC k					0.30	0.49	0.90	1.16	0.72				
Cal SCS-BC Et					1.07	2.53	6.24	7.07	2.64				19.54
Std Dev Et					0.14	0.26	0.32	0.65	0.35				0.94
Net Irr in.						1.34	5.65	6.33	1.37				14.68
SWE CORN													
Cal SCS-BC k					0.30	0.55	0.98	0.75					
Cal SCS-BC Et					1.07	2.81	6.83	4.55					15.26
Std Dev Et					0.14	0.29	0.35	0.42					0.68
Net Irr in.						1.63	6.24	3.81					11.68

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOGAN RADIO KVNU
From a Calibrated SCS Blaney-Criddle Equation using data from USU NF / LOGAN 5SW 10-13-1994
Years of Data Available; NWS: 1961-1990 USU NF / LOGAN 5SW: 1980-1989 Elev. 4500 ft., Lat. 41.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.27	0.95	0.96	0.86	0.69	0.69	0.71	0.58			
Cal SCS-BC Et			0.27	1.88	3.41	4.39	4.80	4.17	2.61	1.13			22.67
Std Dev Et			0.07	0.34	0.46	0.45	0.24	0.38	0.35	0.19			1.09
Net Irr in.				0.44	2.03	3.21	4.20	3.43	1.34				14.65
GARDEN													
Cal SCS-BC k					0.45	0.68	0.93	0.74	0.17				
Cal SCS-BC Et					1.61	3.50	6.46	4.53	0.61				16.70
Std Dev Et					0.22	0.36	0.33	0.42	0.08				0.75
Net Irr in.					0.22	2.32	5.86	3.78					12.19
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.75	1.41	1.16	0.92	0.98	1.10	1.32	2.00	2.00	
Cal SCS-BC Evap	0.83	1.07	2.06	3.45	5.02	5.96	6.38	5.95	4.04	2.58	1.50	0.93	39.78
Std Dev Evap	0.23	0.30	0.56	0.62	0.67	0.61	0.32	0.55	0.54	0.43	0.22	0.18	2.00
Net Loss in.			0.47	1.65	3.29	4.48	5.63	5.02	2.45	0.95	0.06		24.00
ET Ref													
Cal SCS-BC k	2.72	3.49	2.63	1.94	1.71	1.53	1.23	1.22	1.27	1.48	2.37	2.24	
Estimated Etr	1.13	1.87	2.71	3.84	6.10	7.84	8.57	7.45	4.65	2.91	1.78	1.04	49.90
Std Dev Et	0.31	0.53	0.73	0.69	0.82	0.80	0.43	0.69	0.62	0.49	0.26	0.20	2.53

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOGAN UTAH ST U
From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN 5SW / USU NF 10-13-1994
Years of Data Available; NWS: 1961-1990 LOGAN 5SW / USU NF: 1980-1989 Elev. 4790 ft., Lat. 41.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.61	6.61	8.27	8.98	10.15	10.25	10.41	9.67	8.41	7.67	6.60	6.39	100.00
Avg Temp F	23.43	28.48	36.99	46.23	55.47	64.40	72.94	71.37	61.23	50.04	36.93	25.67	47.77
Std Dev Temp	4.84	5.40	4.46	3.82	2.67	3.11	2.02	2.32	3.48	3.61	2.77	4.36	1.42
Avg Prec in.	1.38	1.65	2.02	2.15	2.04	1.57	0.78	0.97	1.62	1.87	1.73	1.72	19.47
Std Dev Prec	0.78	0.95	0.97	1.32	1.24	1.15	0.68	1.28	1.55	1.23	1.15	1.12	5.25
SCS-BC f in.	0.46	0.57	1.07	2.04	3.65	5.30	7.20	6.36	3.85	2.14	0.82	0.49	33.96
Std Dev f	0.10	0.12	0.29	0.44	0.44	0.62	0.47	0.48	0.53	0.39	0.14	0.08	1.85
ALFALFA													
Cal SCS-BC k				1.10	1.62	1.07	0.92	1.04	1.01	0.20			
Cal SCS-BC Et				2.25	5.92	5.65	6.61	6.60	3.90	0.43			31.35
Std Dev Et				0.49	0.71	0.66	0.43	0.50	0.54	0.08			1.87
Net Irr in.				0.53	4.29	4.39	5.99	5.82	2.60				23.62
PASTURE													
Cal SCS-BC k				0.85	1.03	0.94	0.77	0.77	0.80	0.49			
Cal SCS-BC Et				1.74	3.75	5.00	5.55	4.89	3.08	1.05			25.06
Std Dev Et				0.38	0.45	0.59	0.36	0.37	0.42	0.19			1.48
Net Irr in.				0.02	2.12	3.75	4.93	4.11	1.79				16.71
OTHR HAY													
Cal SCS-BC k				1.18	1.70	1.40	0.47	0.35	0.26	0.14			
Cal SCS-BC Et				2.41	6.19	7.41	3.36	2.22	0.98	0.30			22.88
Std Dev Et				0.52	0.74	0.87	0.22	0.17	0.14	0.06			1.68
Net Irr in.				0.69	4.57	6.15	2.74	1.45					15.59
SP GRAIN													
Cal SCS-BC k				0.27	0.96	1.43	1.11	0.20					
Cal SCS-BC Et				0.56	3.51	7.60	7.99	1.29					20.94
Std Dev Et				0.12	0.42	0.89	0.52	0.10					1.33
Net Irr in.					1.88	6.35	7.36	0.51					16.10
CORN													
Cal SCS-BC k					0.29	0.47	0.86	1.12	0.70				
Cal SCS-BC Et					1.07	2.48	6.22	7.12	2.69				19.57
Std Dev Et					0.13	0.29	0.40	0.54	0.37				0.97
Net Irr in.						1.22	5.60	6.34	1.39				14.56
SWE CORN													
Cal SCS-BC k					0.29	0.52	0.95	0.72					
Cal SCS-BC Et					1.07	2.75	6.81	4.59					15.22
Std Dev Et					0.13	0.32	0.44	0.35					0.75
Net Irr in.						1.50	6.19	3.81					11.50

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at LOGAN UTAH ST U
From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN 5SW / USU NF 10-13-1994
Years of Data Available; NWS: 1961-1990 LOGAN 5SW / USU NF: 1980-1989 Elev. 4790 ft., Lat. 41.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.27	0.93	0.93	0.81	0.66	0.66	0.69	0.53			
Cal SCS-BC Et			0.29	1.90	3.41	4.31	4.78	4.20	2.66	1.14			22.68
Std Dev Et			0.08	0.41	0.41	0.51	0.31	0.32	0.37	0.21			1.38
Net Irr in.				0.18	1.78	3.06	4.16	3.43	1.36				13.96
GARDEN													
Cal SCS-BC k					0.44	0.65	0.89	0.72	0.16				
Cal SCS-BC Et					1.61	3.43	6.44	4.56	0.62				16.66
Std Dev Et					0.19	0.40	0.42	0.34	0.09				0.84
Net Irr in.						2.18	5.82	3.79					11.78
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.71	1.37	1.10	0.88	0.94	1.07	1.22	1.94	1.82	
Cal SCS-BC Evap	0.93	1.14	2.14	3.48	5.00	5.84	6.36	6.00	4.13	2.60	1.59	0.90	40.11
Std Dev Evap	0.19	0.25	0.57	0.76	0.60	0.68	0.41	0.45	0.57	0.48	0.27	0.15	2.35
Net Loss in.			0.13	1.33	2.97	4.27	5.58	5.03	2.51	0.73			22.55
ET Ref													
Cal SCS-BC k	2.25	3.04	2.60	1.90	1.67	1.45	1.19	1.18	1.23	1.37	2.16	2.02	
Estimated Etr	1.04	1.74	2.78	3.87	6.09	7.70	8.54	7.52	4.74	2.93	1.77	0.99	49.71
Std Dev Et	0.22	0.37	0.74	0.84	0.73	0.90	0.55	0.57	0.65	0.54	0.30	0.17	2.88

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MANILA
From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT / MANILA 10-13-1994
Years of Data Available; NWS: 1961-1990 ALTAMONT / MANILA: 1989-1991 Elev. 6440 ft., Lat. 40.98

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.20	10.35	9.64	8.40	7.70	6.64	6.45	100.00
Avg Temp F	24.08	27.64	33.78	43.17	52.68	61.66	68.96	66.79	57.58	47.32	34.20	25.28	45.26
Std Dev Temp	4.45	4.97	3.69	3.39	2.68	3.02	1.74	2.30	3.11	3.36	3.32	4.20	1.28
Avg Prec in.	0.31	0.31	0.66	1.14	1.44	1.16	0.99	0.99	0.91	0.93	0.50	0.41	9.74
Std Dev Prec	0.25	0.23	0.38	0.68	0.98	0.96	0.73	0.63	0.76	0.86	0.40	0.40	2.64
SCS-BC f in.	0.48	0.55	0.88	1.69	3.19	4.75	6.28	5.42	3.31	1.85	0.72	0.49	29.62
Std Dev f	0.09	0.10	0.17	0.36	0.41	0.57	0.38	0.45	0.44	0.34	0.12	0.08	1.48
ALFALFA													
Cal SCS-BC k				0.43	1.82	1.84	1.08	1.26	1.39				
Cal SCS-BC Et				0.73	5.81	8.72	6.81	6.83	4.60				33.49
Std Dev Et				0.15	0.75	1.04	0.41	0.56	0.61				1.91
Net Irr in.					4.66	7.79	6.02	6.04	3.87				28.38
PASTURE													
Cal SCS-BC k				0.84	1.36	1.19	0.96	0.96	1.08	0.33			
Cal SCS-BC Et				1.42	4.35	5.67	6.02	5.20	3.57	0.60			26.83
Std Dev Et				0.30	0.56	0.68	0.36	0.43	0.47	0.11			1.51
Net Irr in.				0.51	3.20	4.74	5.22	4.40	2.84				20.93
OTHR HAY													
Cal SCS-BC k				0.71	1.83	1.92	1.45	0.68	0.51				
Cal SCS-BC Et				1.20	5.83	9.12	9.09	3.66	1.68				30.59
Std Dev Et				0.26	0.75	1.09	0.54	0.30	0.22				1.83
Net Irr in.				0.29	4.68	8.20	8.30	2.87	0.95				25.29
SP GRAIN													
Cal SCS-BC k				0.29	1.23	1.82	1.32						
Cal SCS-BC Et				0.50	3.92	8.64	8.27						21.32
Std Dev Et				0.11	0.50	1.03	0.49						1.43
Net Irr in.					2.77	7.71	7.47						17.96

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MANILA

From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT / MANILA 10-13-1994

Years of Data Available; NWS: 1961-1990 ALTAMONT / MANILA: 1989-1991 Elev. 6440 ft., Lat. 40.98

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.93	1.20	1.03	0.82	0.83	0.93	0.28			
Cal SCS-BC Et				1.57	3.83	4.88	5.18	4.48	3.07	0.52			23.53
Std Dev Et				0.33	0.49	0.58	0.31	0.37	0.41	0.10			1.35
Net Irr in.				0.66	2.68	3.96	4.38	3.68	2.35				17.71
GARDEN													
Cal SCS-BC k					0.49	0.79	1.10	0.89	0.22				
Cal SCS-BC Et					1.56	3.75	6.90	4.82	0.74				17.77
Std Dev Et					0.20	0.45	0.41	0.40	0.10				0.87
Net Irr in.					0.42	2.82	6.11	4.03	0.01				13.39
E-LAKE													
Cal SCS-BC k	1.77	2.00	2.00	2.00	1.70	1.28	0.97	1.06	1.30	1.66	2.00	1.65	
Cal SCS-BC Evap	0.85	1.10	1.76	3.38	5.43	6.10	6.11	5.73	4.30	3.08	1.43	0.81	40.08
Std Dev Evap	0.16	0.20	0.34	0.72	0.70	0.73	0.37	0.47	0.57	0.56	0.23	0.13	2.20
Net Loss in.	0.54	0.79	1.10	2.25	4.00	4.94	5.12	4.73	3.39	2.15	0.93	0.40	30.34
ET Ref													
Cal SCS-BC k	1.96	2.59	3.29	2.57	2.14	1.84	1.47	1.47	1.66	1.89	2.30	1.84	
Estimated Etr	0.94	1.43	2.89	4.35	6.84	8.72	9.25	7.99	5.49	3.50	1.65	0.90	53.96
Std Dev Et	0.17	0.26	0.56	0.93	0.88	1.04	0.55	0.66	0.73	0.64	0.27	0.15	2.91

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MANTI

From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994

Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5740 ft., Lat. 39.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.77	6.70	8.29	8.92	10.00	10.07	10.24	9.57	8.39	7.74	6.74	6.57	100.00
Avg Temp F	25.42	30.67	37.87	45.87	54.45	63.61	70.66	68.59	59.94	49.59	37.26	27.24	47.60
Std Dev Temp	4.29	4.15	3.55	3.07	2.56	2.68	1.42	1.80	2.81	3.29	2.97	4.08	1.21
Avg Prec in.	0.98	1.02	1.53	1.41	1.28	0.81	0.82	0.98	1.40	1.29	1.14	1.06	13.74
Std Dev Prec	0.72	0.89	0.89	0.70	0.95	0.74	0.54	0.62	1.25	0.80	0.74	0.69	3.24
SCS-BC f in.	0.52	0.63	1.11	1.98	3.43	5.05	6.57	5.73	3.65	2.10	0.86	0.54	32.16
Std Dev f	0.09	0.10	0.27	0.35	0.41	0.51	0.31	0.35	0.41	0.35	0.16	0.09	1.50
ALFALFA													
Cal SCS-BC k				0.61	1.95	1.23	1.18	1.36	1.25	0.62			
Cal SCS-BC Et				1.20	6.69	6.23	7.77	7.79	4.57	1.31			35.56
Std Dev Et				0.21	0.79	0.63	0.36	0.48	0.52	0.22			1.70
Net Irr in.				0.07	5.67	5.58	7.11	7.01	3.45	0.28			29.16
PASTURE													
Cal SCS-BC k				0.66	1.29	1.09	0.94	0.94	1.07	0.41			
Cal SCS-BC Et				1.30	4.42	5.48	6.18	5.39	3.89	0.85			27.50
Std Dev Et				0.23	0.52	0.56	0.29	0.33	0.44	0.14			1.34
Net Irr in.				0.17	3.39	4.83	5.52	4.61	2.77				21.29
SP GRAIN													
Cal SCS-BC k				0.49	1.70	1.67	0.91						
Cal SCS-BC Et				0.97	5.82	8.43	6.01						21.23
Std Dev Et				0.17	0.69	0.85	0.28						1.35
Net Irr in.					4.79	7.78	5.35						17.93
OTHR HAY													
Cal SCS-BC k				0.49	1.90	1.68	0.67	0.45	0.35	0.12			
Cal SCS-BC Et				0.97	6.51	8.49	4.38	2.56	1.28	0.26			24.45
Std Dev Et				0.17	0.77	0.86	0.21	0.16	0.15	0.04			1.44
Net Irr in.					5.48	7.84	3.72	1.78	0.17				18.99
CORN													
Cal SCS-BC k					0.22	0.46	1.02	1.37	1.10				
Cal SCS-BC Et					0.76	2.32	6.68	7.85	4.03				21.64
Std Dev Et					0.09	0.24	0.31	0.48	0.46				0.94
Net Irr in.						1.68	6.03	7.07	2.91				17.68

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MANTI
From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994
Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5740 ft., Lat. 39.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.69	1.13	0.93	0.81	0.81	0.92	0.50			
Cal SCS-BC Et				1.36	3.87	4.72	5.32	4.64	3.35	1.05			24.32
Std Dev Et				0.24	0.46	0.48	0.25	0.28	0.38	0.18			1.20
Net Irr in.				0.23	2.85	4.07	4.67	3.86	2.23	0.02			17.93
GARDEN													
Cal SCS-BC k					0.37	0.61	0.94	1.07	0.39				
Cal SCS-BC Et					1.26	3.06	6.16	6.12	1.43				18.03
Std Dev Et					0.15	0.31	0.29	0.37	0.16				0.76
Net Irr in.					0.23	2.41	5.51	5.33	0.31				13.80
E-LAKE													
Cal SCS-BC k	1.62	1.67	1.74	1.60	1.51	1.16	0.92	0.99	1.18	1.43	1.74	1.21	
Cal SCS-BC Evap	0.84	1.04	1.93	3.17	5.17	5.85	6.03	5.70	4.30	3.01	1.50	0.65	39.18
Std Dev Evap	0.14	0.17	0.46	0.56	0.61	0.59	0.28	0.35	0.49	0.51	0.29	0.11	1.96
Net Loss in.		0.02	0.39	1.76	3.89	5.04	5.21	4.72	2.90	1.72	0.35		26.00
ET Ref													
Cal SCS-BC k	1.80	1.85	2.21	1.56	2.02	1.67	1.45	1.45	1.64	1.64	1.93	1.35	
Estimated Etr	0.93	1.16	2.45	3.08	6.92	8.43	9.51	8.29	5.98	3.45	1.66	0.73	52.58
Std Dev Et	0.16	0.19	0.59	0.54	0.82	0.85	0.45	0.51	0.68	0.58	0.32	0.12	2.52

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MEXICAN HAT
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 4120 ft., Lat. 37.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.90	6.77	8.30	8.87	9.89	9.93	10.11	9.49	8.38	7.80	6.85	6.72	100.00
Avg Temp F	30.62	38.96	46.02	54.62	64.47	74.76	81.66	78.81	69.44	56.87	43.89	32.58	56.06
Std Dev Temp	4.77	3.38	2.83	2.67	2.27	2.32	1.52	2.15	2.38	2.57	1.99	4.53	0.95
Avg Prec in.	0.50	0.48	0.49	0.37	0.40	0.21	0.74	0.69	0.69	0.93	0.56	0.57	6.60
Std Dev Prec	0.51	0.36	0.45	0.35	0.34	0.29	0.59	0.47	0.50	1.14	0.40	0.49	1.80
SCS-BC f in.	0.64	0.98	1.85	3.07	5.12	7.28	9.07	7.85	5.17	2.98	1.34	0.68	46.04
Std Dev f	0.12	0.21	0.30	0.37	0.43	0.53	0.39	0.49	0.42	0.33	0.16	0.12	1.64
ALFALFA													
Cal SCS-BC k			0.44	1.36	1.20	1.11	0.78	0.82	1.06	1.01			
Cal SCS-BC Et			0.82	4.18	6.15	8.09	7.08	6.46	5.47	3.02			41.28
Std Dev Et			0.13	0.51	0.52	0.58	0.30	0.40	0.44	0.34			1.63
Net Irr in.			0.43	3.89	5.84	7.93	6.49	5.91	4.92	2.27			37.67
PASTURE													
Cal SCS-BC k			0.60	0.98	0.92	0.81	0.69	0.71	0.78	0.84			
Cal SCS-BC Et			1.11	3.00	4.73	5.89	6.26	5.55	4.03	2.49			33.06
Std Dev Et			0.18	0.37	0.40	0.43	0.27	0.35	0.32	0.28			1.29
Net Irr in.			0.72	2.70	4.42	5.73	5.67	5.00	3.48	1.75			29.46
SP GRAIN													
Cal SCS-BC k			0.13	0.67	1.34	1.23	0.41						
Cal SCS-BC Et			0.25	2.06	6.88	8.93	3.70						21.81
Std Dev Et			0.04	0.25	0.58	0.65	0.16						1.12
Net Irr in.				1.76	6.56	8.77	3.11						20.20

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MEXICAN HAT
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 4120 ft., Lat. 37.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.83	0.88	0.80	0.70	0.59	0.61	0.67	0.72			
Cal SCS-BC Et			1.54	2.69	4.08	5.08	5.39	4.78	3.48	2.15			29.18
Std Dev Et			0.25	0.33	0.34	0.37	0.23	0.30	0.28	0.24			1.16
Net Irr in.			1.15	2.39	3.76	4.91	4.80	4.23	2.92	1.40			25.57
GARDEN													
Cal SCS-BC k				0.15	0.43	0.68	0.84	0.48	0.23				
Cal SCS-BC Et				0.46	2.19	4.92	7.66	3.77	1.20				20.22
Std Dev Et				0.06	0.18	0.36	0.33	0.24	0.10				0.75
Net Irr in.				0.17	1.88	4.75	7.07	3.22	0.65				17.75
E-LAKE													
Cal SCS-BC k	1.92	1.80	1.61	1.41	1.19	0.95	0.78	0.86	1.04	1.21	1.45	2.00	
Cal SCS-BC Evap	1.24	1.76	2.99	4.32	6.10	6.94	7.11	6.77	5.35	3.62	1.95	1.36	49.51
Std Dev Evap	0.23	0.37	0.49	0.53	0.51	0.50	0.30	0.42	0.43	0.40	0.24	0.25	1.84
Net Loss in.	0.74	1.28	2.50	3.95	5.71	6.73	6.38	6.08	4.66	2.69	1.39	0.79	42.91
ET Ref													
Cal SCS-BC k	2.13	2.00	1.79	1.57	1.42	1.24	1.06	1.09	1.20	1.35	1.61	2.26	
Estimated Etr	1.38	1.95	3.32	4.81	7.28	9.07	9.63	8.54	6.21	4.02	2.16	1.54	59.89
Std Dev Et	0.25	0.41	0.55	0.59	0.61	0.65	0.41	0.53	0.50	0.45	0.26	0.28	2.19

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MILFORD WSMO
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 5030 ft., Lat. 38.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.82	6.73	8.29	8.90	9.96	10.02	10.18	9.53	8.39	7.77	6.78	6.63	100.00
Avg Temp F	25.50	31.96	38.73	46.41	55.64	65.80	73.84	71.94	61.89	49.77	37.28	27.06	48.82
Std Dev Temp	5.61	4.34	3.76	3.28	2.76	2.48	1.52	2.12	2.92	3.24	2.78	4.78	1.15
Avg Prec in.	0.63	0.71	1.17	1.03	0.75	0.50	0.78	0.94	0.98	0.84	0.78	0.70	9.81
Std Dev Prec	0.49	0.46	0.49	0.55	0.57	0.55	0.58	0.78	0.87	0.62	0.52	0.58	2.14
SCS-BC f in.	0.52	0.67	1.18	2.03	3.61	5.44	7.25	6.39	3.94	2.13	0.86	0.54	34.56
Std Dev f	0.11	0.12	0.31	0.38	0.44	0.49	0.34	0.44	0.45	0.35	0.16	0.10	1.43
ALFALFA													
Cal SCS-BC k				0.42	1.83	1.21	1.03	1.03	1.27				
Cal SCS-BC Et				0.85	6.61	6.57	7.45	6.55	5.00				33.04
Std Dev Et				0.16	0.82	0.59	0.35	0.45	0.57				1.59
Net Irr in.				0.03	6.01	6.17	6.83	5.80	4.22				29.05
ALFALFA													
Cal SCS-BC k				0.42	1.83	1.21	1.23	1.05	1.12				
Cal SCS-BC Et				0.85	6.61	6.61	8.95	6.71	4.42				34.14
Std Dev Et				0.16	0.82	0.60	0.43	0.46	0.50				1.60
Net Irr in.				0.03	6.01	6.21	8.32	5.95	3.63				30.15
PASTURE													
Cal SCS-BC k				0.66	1.25	1.07	0.88	0.83	0.98	0.17			
Cal SCS-BC Et				1.34	4.52	5.82	6.36	5.32	3.87	0.36			27.59
Std Dev Et				0.25	0.56	0.52	0.30	0.37	0.44	0.06			1.27
Net Irr in.				0.52	3.92	5.42	5.73	4.56	3.08				23.23
CORN													
Cal SCS-BC k					0.35	0.58	1.06	1.21	0.48				
Cal SCS-BC Et					1.26	3.17	7.71	7.72	1.90				21.77
Std Dev Et					0.16	0.29	0.37	0.54	0.22				0.88
Net Irr in.					0.66	2.77	7.09	6.97	1.11				18.60
SP GRAIN													
Cal SCS-BC k			0.13	0.77	1.81	1.64	0.60						
Cal SCS-BC Et			0.16	1.56	6.51	8.92	4.34						21.48
Std Dev Et			0.04	0.29	0.80	0.80	0.21						1.40
Net Irr in.				0.73	5.91	8.52	3.71						18.87

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MILFORD WSMO
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 5030 ft., Lat. 38.40

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.91	1.10	0.92	0.76	0.72	0.84	0.33			
Cal SCS-BC Et				1.85	3.97	5.02	5.48	4.58	3.33	0.70			24.91
Std Dev Et				0.34	0.49	0.45	0.26	0.32	0.38	0.12			1.17
Net Irr in.				1.02	3.37	4.62	4.85	3.83	2.54	0.02			20.25
GARDEN													
Cal SCS-BC k					0.48	0.88	1.06	0.47	0.05				
Cal SCS-BC Et					1.71	4.79	7.68	3.03	0.19				17.40
Std Dev Et					0.21	0.43	0.36	0.21	0.02				0.76
Net Irr in.					1.11	4.40	7.05	2.27					14.83
E-LAKE													
Cal SCS-BC k	1.87	2.00	2.00	1.77	1.57	1.15	0.94	0.94	1.20	1.43	1.92	2.00	
Cal SCS-BC Evap	0.98	1.33	2.36	3.61	5.65	6.25	6.81	6.03	4.71	3.04	1.66	1.08	43.51
Std Dev Evap	0.21	0.24	0.62	0.67	0.70	0.56	0.32	0.42	0.53	0.50	0.30	0.19	1.98
Net Loss in.	0.34	0.63	1.19	2.58	4.90	5.76	6.03	5.09	3.73	2.19	0.88	0.38	33.70
ET Ref													
Cal SCS-BC k	2.08	2.44	2.43	2.01	1.97	1.65	1.35	1.28	1.51	1.69	2.13	2.34	
Estimated Etr	1.08	1.62	2.87	4.09	7.09	8.96	9.78	8.18	5.94	3.59	1.84	1.26	56.31
Std Dev Et	0.24	0.30	0.75	0.76	0.87	0.81	0.46	0.57	0.67	0.60	0.34	0.22	2.49

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MOAB 4 NW
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-26-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 3970 ft., Lat. 38.58

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.81	6.72	8.29	8.90	9.97	10.03	10.20	9.54	8.39	7.76	6.77	6.62	100.00
Avg Temp F	30.02	38.62	48.05	56.86	66.19	75.29	81.63	79.68	70.03	57.58	44.42	33.23	56.80
Std Dev Temp	6.04	4.84	3.30	2.73	2.26	2.51	1.33	1.92	2.25	2.56	2.28	3.52	1.17
Avg Prec in.	0.56	0.43	0.85	0.98	0.72	0.48	0.83	0.86	0.75	1.16	0.74	0.65	9.00
Std Dev Prec	0.50	0.39	0.71	0.65	0.60	0.59	0.92	0.63	0.61	0.97	0.52	0.46	2.60
SCS-BC f in.	0.63	0.98	2.08	3.40	5.49	7.47	9.14	8.10	5.28	3.06	1.37	0.68	47.68
Std Dev f	0.15	0.26	0.38	0.40	0.45	0.58	0.34	0.45	0.40	0.33	0.19	0.11	1.58
ALFALFA													
Cal SCS-BC k			0.47	1.24	1.25	0.95	0.78	0.75	0.90	1.05			
Cal SCS-BC Et			0.98	4.23	6.88	7.10	7.15	6.05	4.74	3.22			40.35
Std Dev Et			0.18	0.50	0.56	0.55	0.26	0.33	0.35	0.35			1.45
Net Irr in.			0.30	3.45	6.30	6.72	6.48	5.36	4.13	2.29			35.04
ALFALFA													
Cal SCS-BC k			0.62	1.24	1.32	0.88	0.84	0.98	0.86	1.03			
Cal SCS-BC Et			1.29	4.21	7.23	6.59	7.66	7.91	4.56	3.16			42.61
Std Dev Et			0.23	0.50	0.59	0.51	0.28	0.44	0.34	0.34			1.50
Net Irr in.			0.61	3.42	6.65	6.21	7.00	7.22	3.96	2.23			37.30
PASTURE													
Cal SCS-BC k		0.16	0.71	0.85	0.86	0.78	0.69	0.67	0.79	0.84	0.35		
Cal SCS-BC Et		0.16	1.47	2.88	4.70	5.80	6.32	5.39	4.15	2.58	0.48		33.93
Std Dev Et		0.04	0.27	0.34	0.38	0.45	0.23	0.30	0.31	0.28	0.06		1.16
Net Irr in.			0.79	2.10	4.13	5.42	5.65	4.71	3.55	1.65			27.99
SP GRAIN													
Cal SCS-BC k			0.04	0.48	1.19	1.19	0.55						
Cal SCS-BC Et			0.09	1.64	6.51	8.91	4.99						22.14
Std Dev Et			0.02	0.19	0.53	0.69	0.18						1.08
Net Irr in.				0.86	5.93	8.52	4.33						19.64
CORN													
Cal SCS-BC k					0.11	0.33	0.80	0.97	1.01	0.28			
Cal SCS-BC Et					0.61	2.46	7.33	7.83	5.31	0.85			24.39
Std Dev Et					0.05	0.19	0.27	0.43	0.40	0.09			0.82
Net Irr in.					0.04	2.08	6.67	7.14	4.71				20.63
SWE CORN													
Cal SCS-BC k					0.15	0.69	1.00	0.27					
Cal SCS-BC Et					0.83	5.19	9.13	2.20					17.35
Std Dev Et					0.07	0.40	0.34	0.12					0.65
Net Irr in.					0.26	4.81	8.46	1.51					15.04

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MOAB 4 NW
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-26-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 3970 ft., Lat. 38.58

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
CHERRIES													
Cal SCS-BC k				0.40	1.13	1.29	1.16	1.06	1.03	0.71			
Cal SCS-BC Et				1.37	6.19	9.64	10.57	8.55	5.42	2.17			43.91
Std Dev Et				0.16	0.50	0.74	0.39	0.47	0.41	0.24			1.50
Net Irr in.				0.59	5.61	9.25	9.90	7.87	4.81	1.24			39.28
TURF													
Cal SCS-BC k		0.16	0.85	0.79	0.74	0.67	0.60	0.57	0.68	0.73	0.30		
Cal SCS-BC Et		0.16	1.77	2.68	4.05	5.00	5.44	4.64	3.58	2.22	0.41		29.95
Std Dev Et		0.04	0.32	0.32	0.33	0.39	0.20	0.26	0.27	0.24	0.06		1.04
Net Irr in.			1.09	1.89	3.47	4.61	4.78	3.96	2.98	1.29			24.08
GARDEN													
Cal SCS-BC k				0.08	0.41	0.75	0.79	0.30	0.24	0.18			
Cal SCS-BC Et				0.26	2.23	5.62	7.21	2.46	1.28	0.55			19.60
Std Dev Et				0.03	0.18	0.43	0.27	0.14	0.10	0.06			0.69
Net Irr in.					1.66	5.24	6.54	1.77	0.67				15.88
E-LAKE													
Cal SCS-BC k	2.00	1.94	1.40	1.27	1.10	0.91	0.78	0.81	1.04	1.17	1.39	1.84	
Cal SCS-BC Evap	1.26	1.90	2.91	4.30	6.06	6.82	7.18	6.58	5.51	3.57	1.91	1.25	49.24
Std Dev Evap	0.29	0.50	0.53	0.51	0.49	0.53	0.27	0.36	0.41	0.39	0.26	0.21	1.79
Net Loss in.	0.70	1.47	2.06	3.33	5.34	6.34	6.34	5.72	4.75	2.41	1.17	0.61	40.24
ET Ref													
Cal SCS-BC k	2.27	2.16	1.56	1.41	1.32	1.19	1.06	1.02	1.21	1.30	1.54	2.05	
Estimated Etr	1.43	2.11	3.23	4.78	7.23	8.92	9.72	8.30	6.39	3.97	2.12	1.39	59.60
Std Dev Et	0.33	0.56	0.59	0.56	0.59	0.69	0.36	0.46	0.48	0.43	0.29	0.23	2.12

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MODENA

From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE 10-13-1994

Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 Elev. 5460 ft., Lat. 37.80

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.92	9.98	10.15	9.51	8.38	7.78	6.81	6.68	100.00
Avg Temp F	27.83	33.64	39.33	46.70	55.33	65.11	72.03	70.14	61.23	50.50	38.45	29.31	49.13
Std Dev Temp	3.97	3.69	3.34	3.51	2.52	2.56	1.82	1.86	2.62	3.04	2.48	4.08	0.92
Avg Prec in.	0.66	0.86	0.94	0.88	0.66	0.39	1.39	1.29	1.02	0.95	0.70	0.58	10.32
Std Dev Prec	0.73	0.77	0.80	0.90	0.65	0.33	1.37	0.95	0.88	0.81	0.65	0.59	2.97
SCS-BC f in.	0.57	0.72	1.22	2.07	3.54	5.29	6.82	6.01	3.83	2.21	0.93	0.59	33.80
Std Dev f	0.09	0.13	0.29	0.40	0.40	0.49	0.40	0.37	0.39	0.34	0.16	0.09	1.35
ALFALFA													
Cal SCS-BC k				0.95	1.97	1.26	1.23	1.24	1.07	0.49			
Cal SCS-BC Et				1.96	6.97	6.64	8.39	7.46	4.09	1.09			36.60
Std Dev Et				0.38	0.79	0.62	0.49	0.47	0.42	0.17			1.64
Net Irr in.				1.25	6.45	6.33	7.28	6.43	3.27	0.32			31.34
PASTURE													
Cal SCS-BC k				0.97	1.25	1.11	0.93	0.92	0.82	0.57			
Cal SCS-BC Et				2.00	4.43	5.88	6.32	5.51	3.14	1.26			28.53
Std Dev Et				0.39	0.50	0.55	0.37	0.34	0.32	0.19			1.29
Net Irr in.				1.29	3.90	5.57	5.21	4.48	2.33	0.50			23.27
SP GRAIN													
Cal SCS-BC k			0.10	0.81	1.88	1.69	0.61						
Cal SCS-BC Et			0.12	1.67	6.66	8.95	4.16						21.56
Std Dev Et			0.03	0.33	0.75	0.84	0.24						1.49
Net Irr in.				0.97	6.13	8.64	3.05						18.78
POTATOES													
Cal SCS-BC k					0.31	0.85	1.10	1.03	0.59				
Cal SCS-BC Et					1.11	4.52	7.49	6.17	2.27				21.56
Std Dev Et					0.13	0.42	0.44	0.38	0.23				0.82
Net Irr in.					0.58	4.21	6.38	5.14	1.46				17.77
CORN													
Cal SCS-BC k					0.30	0.58	1.15	1.33	0.60				
Cal SCS-BC Et					1.08	3.08	7.82	7.98	2.29				22.25
Std Dev Et					0.12	0.29	0.46	0.50	0.23				0.81
Net Irr in.					0.55	2.77	6.71	6.95	1.47				18.45

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MODENA
From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE 10-13-1994
Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 Elev. 5460 ft., Lat. 37.80

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.22	1.21	1.13	0.96	0.80	0.79	0.71	0.56			
Cal SCS-BC Et			0.27	2.49	3.99	5.07	5.44	4.75	2.70	1.23			25.94
Std Dev Et			0.06	0.48	0.45	0.47	0.32	0.30	0.28	0.19			1.23
Net Irr in.				1.78	3.47	4.76	4.33	3.72	1.89	0.47			20.41
GARDEN													
Cal SCS-BC k					0.55	0.87	1.13	0.62	0.20				
Cal SCS-BC Et					1.94	4.60	7.69	3.75	0.77				18.75
Std Dev Et					0.22	0.43	0.45	0.23	0.08				0.83
Net Irr in.					1.42	4.29	6.58	2.72					15.00
E-LAKE													
Cal SCS-BC k	1.95	2.00	1.87	1.93	1.56	1.17	0.96	1.01	0.96	1.20	2.00	2.00	
Cal SCS-BC Evap	1.12	1.43	2.28	3.99	5.54	6.17	6.54	6.08	3.70	2.65	1.87	1.18	42.56
Std Dev Evap	0.17	0.27	0.54	0.78	0.63	0.58	0.38	0.38	0.38	0.41	0.32	0.19	1.88
Net Loss in.	0.46	0.57	1.34	3.11	4.89	5.78	5.15	4.79	2.68	1.70	1.17	0.61	32.24
ET Ref													
Cal SCS-BC k	2.17	2.39	2.10	2.19	2.01	1.71	1.42	1.41	1.26	1.46	2.39	2.67	
Estimated Etr	1.25	1.71	2.56	4.52	7.13	9.05	9.72	8.48	4.83	3.23	2.23	1.58	56.27
Std Dev Et	0.19	0.32	0.60	0.88	0.81	0.85	0.57	0.53	0.49	0.50	0.38	0.25	2.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MONTICELLO
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL

Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 10-13-1994
Elev. 6820 ft., Lat. 37.87

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.93	9.98	10.15	9.51	8.38	7.78	6.81	6.67	100.00
Avg Temp F	23.91	28.59	35.45	43.81	52.61	61.99	68.44	66.08	58.16	47.54	35.22	26.07	45.66
Std Dev Temp	4.00	3.89	3.63	3.04	2.19	2.55	1.41	2.05	2.19	2.94	2.94	4.00	1.11
Avg Prec in.	1.41	1.00	1.18	0.85	0.92	0.57	1.57	1.90	1.58	1.62	1.37	1.49	15.47
Std Dev Prec	1.52	0.92	0.87	0.55	0.66	0.57	1.01	1.01	1.22	1.56	1.09	1.35	3.72
SCS-BC f in.	0.49	0.58	0.97	1.74	3.12	4.70	6.05	5.22	3.38	1.89	0.77	0.52	29.43
Std Dev f	0.08	0.08	0.22	0.32	0.33	0.47	0.29	0.38	0.31	0.31	0.13	0.08	1.24
ALFALFA													
Cal SCS-BC k				0.57	1.72	1.23	1.19	1.03	1.12	0.06			
Cal SCS-BC Et				1.00	5.37	5.77	7.18	5.37	3.77	0.12			28.57
Std Dev Et				0.18	0.57	0.57	0.35	0.39	0.35	0.02			1.30
Net Irr in.				0.32	4.64	5.31	5.92	3.85	2.51				22.55
PASTURE													
Cal SCS-BC k				0.78	1.17	1.00	0.87	0.86	0.94	0.31			
Cal SCS-BC Et				1.36	3.66	4.68	5.23	4.49	3.19	0.58			23.19
Std Dev Et				0.25	0.39	0.47	0.26	0.33	0.29	0.09			1.06
Net Irr in.				0.68	2.93	4.23	3.97	2.97	1.93				16.71
SP GRAIN													
Cal SCS-BC k				0.15	0.89	1.48	1.28	0.36					
Cal SCS-BC Et				0.26	2.79	6.97	7.77	1.89					19.66
Std Dev Et				0.05	0.30	0.69	0.38	0.14					0.97
Net Irr in.					2.05	6.51	6.51	0.37					15.44
BEANS													
Cal SCS-BC k					0.23	0.90	1.22	0.47	0.05				
Cal SCS-BC Et					0.72	4.25	7.40	2.44	0.16				14.98
Std Dev Et					0.08	0.42	0.36	0.18	0.01				0.66
Net Irr in.						3.79	6.15	0.92					10.86

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MONTICELLO
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-13-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 6820 ft., Lat. 37.87

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.89	1.05	0.86	0.75	0.74	0.81	0.15			
Cal SCS-BC Et				1.56	3.27	4.04	4.51	3.87	2.75	0.29			20.28
Std Dev Et				0.29	0.35	0.40	0.22	0.28	0.25	0.05			0.96
Net Irr in.				0.88	2.53	3.58	3.25	2.35	1.49				14.08
GARDEN													
Cal SCS-BC k					0.35	0.57	0.89	0.95	0.26				
Cal SCS-BC Et					1.08	2.67	5.38	4.96	0.89				14.99
Std Dev Et					0.12	0.27	0.26	0.36	0.08				0.65
Net Irr in.					0.35	2.21	4.13	3.44					10.13
E-LAKE													
Cal SCS-BC k	1.87	2.00	2.00	1.76	1.59	1.19	1.00	1.07	1.28	1.48	1.86	1.81	
Cal SCS-BC Evap	0.92	1.16	1.93	3.06	4.95	5.61	6.07	5.59	4.31	2.80	1.43	0.95	38.78
Std Dev Evap	0.15	0.16	0.44	0.57	0.53	0.56	0.30	0.41	0.40	0.45	0.25	0.15	1.75
Net Loss in.		0.16	0.75	2.22	4.04	5.03	4.49	3.69	2.74	1.18	0.06		24.35
ET Ref													
Cal SCS-BC k	2.08	2.39	2.51	1.95	1.87	1.53	1.33	1.32	1.45	1.65	2.07	2.01	
Estimated Etr	1.02	1.38	2.42	3.41	5.84	7.20	8.05	6.91	4.91	3.11	1.59	1.05	46.89
Std Dev Et	0.17	0.19	0.55	0.63	0.62	0.72	0.39	0.51	0.45	0.50	0.28	0.16	2.09

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MORGAN
From a Calibrated SCS Blaney-Criddle Equation using data from MORGAN / PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 MORGAN / PARK CITY: 1987-1990 Elev. 5060 ft., Lat. 41.03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.65	6.64	8.27	8.96	10.10	10.20	10.36	9.64	8.40	7.69	6.64	6.44	100.00
Avg Temp F	22.67	27.72	36.10	44.78	53.52	61.97	69.42	67.44	58.13	47.72	35.23	24.69	45.78
Std Dev Temp	4.79	5.13	4.25	3.25	2.21	2.83	1.62	2.46	2.95	2.73	2.67	4.47	1.41
Avg Prec in.	1.77	1.86	1.92	2.33	1.94	1.32	0.68	0.98	1.53	1.74	1.94	1.92	19.94
Std Dev Prec	1.10	1.39	0.81	1.43	1.21	1.13	0.69	0.98	1.42	1.24	1.07	1.52	5.25
SCS-BC f in.	0.45	0.55	1.01	1.86	3.32	4.81	6.38	5.55	3.39	1.89	0.74	0.48	30.44
Std Dev f	0.10	0.10	0.24	0.36	0.34	0.54	0.35	0.48	0.42	0.28	0.11	0.09	1.63
ALFALFA													
Cal SCS-BC k				0.15	1.45	1.11	1.28	0.94	1.02				
Cal SCS-BC Et				0.29	4.82	5.36	8.19	5.20	3.44				27.30
Std Dev Et				0.06	0.50	0.60	0.45	0.45	0.42				1.48
Net Irr in.					3.26	4.30	7.65	4.41	2.22				21.84
PASTURE													
Cal SCS-BC k				0.41	0.85	0.99	0.85	0.83	0.88	0.17			
Cal SCS-BC Et				0.76	2.83	4.74	5.40	4.63	3.00	0.32			21.68
Std Dev Et				0.15	0.29	0.53	0.30	0.40	0.37	0.05			1.21
Net Irr in.					1.28	3.68	4.85	3.84	1.77				15.42
OTHR HAY													
Cal SCS-BC k				0.33	1.41	1.59	0.83	0.44	0.28				
Cal SCS-BC Et				0.62	4.68	7.62	5.32	2.43	0.95				21.62
Std Dev Et				0.12	0.49	0.85	0.29	0.21	0.12				1.35
Net Irr in.					3.13	6.57	4.77	1.65					16.11
SP GRAIN													
Cal SCS-BC k				0.14	0.82	1.49	1.22	0.34					
Cal SCS-BC Et				0.26	2.72	7.17	7.76	1.90					19.81
Std Dev Et				0.05	0.28	0.80	0.43	0.16					1.19
Net Irr in.					1.16	6.12	7.21	1.12					15.61
CORN													
Cal SCS-BC k					0.14	0.42	0.98	1.21	0.97				
Cal SCS-BC Et					0.47	2.04	6.27	6.72	3.28				18.78
Std Dev Et					0.05	0.23	0.34	0.58	0.40				1.05
Net Irr in.						0.99	5.72	5.93	2.06				14.70

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MORGAN

From a Calibrated SCS Blaney-Criddle Equation using data from MORGAN / PARK CITY 10-26-1994

Years of Data Available; NWS: 1961-1990 MORGAN / PARK CITY: 1987-1990 Elev. 5060 ft., Lat. 41.03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.49	0.89	0.85	0.73	0.72	0.76	0.45			
Cal SCS-BC Et				0.91	2.94	4.09	4.65	3.99	2.58	0.85			20.01
Std Dev Et				0.18	0.31	0.46	0.25	0.34	0.32	0.13			1.11
Net Irr in.					1.39	3.04	4.10	3.20	1.35				13.09
GARDEN													
Cal SCS-BC k					0.10	0.49	0.87	0.87	0.22				
Cal SCS-BC Et					0.32	2.35	5.56	4.83	0.75				13.81
Std Dev Et					0.03	0.26	0.30	0.41	0.09				0.74
Net Irr in.						1.30	5.01	4.04					10.35
E-LAKE													
Cal SCS-BC k	1.83	1.95	1.69	1.56	1.28	1.04	0.87	0.92	1.06	1.30	1.61	1.43	
Cal SCS-BC Evap	0.83	1.08	1.71	2.91	4.24	5.01	5.54	5.10	3.60	2.46	1.20	0.68	34.36
Std Dev Evap	0.18	0.20	0.41	0.56	0.44	0.56	0.30	0.44	0.44	0.36	0.17	0.12	1.95
Net Loss in.				0.58	2.29	3.70	4.85	4.12	2.07	0.72			18.33
ET Ref													
Cal SCS-BC k	2.03	2.17	1.87	1.77	1.59	1.52	1.30	1.28	1.36	1.49	1.79	1.59	
Estimated Etr	0.92	1.20	1.90	3.29	5.26	7.31	8.30	7.11	4.61	2.81	1.33	0.76	44.81
Std Dev Et	0.19	0.23	0.46	0.64	0.55	0.82	0.46	0.61	0.57	0.42	0.19	0.14	2.49

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MORONI
From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994
Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5560 ft., Lat. 39.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.75	6.69	8.28	8.92	10.02	10.09	10.26	9.58	8.39	7.74	6.72	6.55	100.00
Avg Temp F	22.70	28.67	36.70	44.60	53.22	61.97	69.31	67.29	58.94	48.08	35.61	25.02	46.01
Std Dev Temp	4.68	4.57	3.54	3.14	2.42	2.47	1.51	1.98	2.74	3.08	3.05	4.30	1.24
Avg Prec in.	0.85	0.82	0.95	0.70	0.81	0.57	0.67	0.77	1.01	0.91	0.86	0.95	9.87
Std Dev Prec	0.77	0.80	0.61	0.57	0.52	0.62	0.47	0.63	0.91	0.70	0.65	0.69	2.80
SCS-BC f in.	0.46	0.58	1.03	1.84	3.24	4.75	6.30	5.49	3.50	1.94	0.78	0.49	30.39
Std Dev f	0.09	0.10	0.23	0.35	0.37	0.46	0.32	0.38	0.40	0.32	0.13	0.08	1.25
ALFALFA													
Cal SCS-BC k				0.63	2.05	1.28	1.24	1.43	1.29	0.67			
Cal SCS-BC Et				1.15	6.65	6.08	7.81	7.83	4.53	1.30			35.35
Std Dev Et				0.22	0.77	0.59	0.40	0.54	0.51	0.21			1.53
Net Irr in.				0.60	6.00	5.63	7.27	7.21	3.73	0.57			31.00
PASTURE													
Cal SCS-BC k				0.68	1.35	1.13	0.99	0.99	1.10	0.44			
Cal SCS-BC Et				1.25	4.39	5.35	6.21	5.41	3.85	0.84			27.32
Std Dev Et				0.24	0.51	0.52	0.32	0.38	0.44	0.14			1.20
Net Irr in.				0.69	3.74	4.89	5.67	4.80	3.05	0.11			22.96
SP GRAIN													
Cal SCS-BC k				0.51	1.78	1.73	0.96						
Cal SCS-BC Et				0.94	5.79	8.23	6.04						20.99
Std Dev Et				0.18	0.67	0.80	0.31						1.23
Net Irr in.				0.38	5.14	7.77	5.50						18.79
OTHR HAY													
Cal SCS-BC k				0.51	1.99	1.74	0.70	0.47	0.36	0.13			
Cal SCS-BC Et				0.94	6.47	8.29	4.41	2.57	1.27	0.26			24.20
Std Dev Et				0.18	0.75	0.80	0.22	0.18	0.14	0.04			1.31
Net Irr in.				0.38	5.82	7.83	3.87	1.95	0.47				20.32
CORN													
Cal SCS-BC k					0.23	0.48	1.07	1.44	1.14				
Cal SCS-BC Et					0.76	2.27	6.72	7.89	3.99				21.63
Std Dev Et					0.09	0.22	0.34	0.55	0.45				0.86
Net Irr in.					0.11	1.81	6.18	7.27	3.19				18.56

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MORONI
From a Calibrated SCS Blaney-Criddle Equation using data from MANTI / EPHRAIM 10-26-1994
Years of Data Available; NWS: 1961-1990 MANTI / EPHRAIM: 1987-1989 Elev. 5560 ft., Lat. 39.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.71	1.19	0.97	0.85	0.85	0.95	0.54			
Cal SCS-BC Et				1.31	3.85	4.61	5.35	4.66	3.32	1.04			24.14
Std Dev Et				0.25	0.44	0.45	0.27	0.32	0.38	0.17			1.06
Net Irr in.				0.75	3.20	4.15	4.82	4.05	2.51	0.31			19.79
GARDEN													
Cal SCS-BC k					0.39	0.63	0.98	1.12	0.41				
Cal SCS-BC Et					1.25	2.99	6.20	6.15	1.42				18.00
Std Dev Et					0.14	0.29	0.32	0.43	0.16				0.72
Net Irr in.					0.60	2.53	5.66	5.53	0.61				14.93
E-LAKE													
Cal SCS-BC k	1.93	1.81	1.98	1.66	1.63	1.20	0.94	1.06	1.19	1.53	2.00	1.19	
Cal SCS-BC Evap	0.89	1.05	2.04	3.05	5.28	5.71	5.95	5.80	4.18	2.97	1.55	0.59	39.04
Std Dev Evap	0.18	0.18	0.46	0.57	0.61	0.55	0.30	0.40	0.47	0.49	0.27	0.10	1.78
Net Loss in.	0.04	0.23	1.09	2.35	4.46	5.14	5.27	5.03	3.17	2.06	0.70		29.54
ET Ref													
Cal SCS-BC k	2.15	2.01	2.41	1.62	2.12	1.73	1.52	1.52	1.69	1.76	2.35	1.32	
Estimated Etr	0.99	1.16	2.47	2.98	6.87	8.23	9.56	8.32	5.92	3.40	1.83	0.65	52.38
Std Dev Et	0.20	0.20	0.55	0.56	0.79	0.80	0.49	0.58	0.67	0.56	0.32	0.11	2.25

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MOUNTAIN DELL DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5420 ft., Lat. 40.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.46	100.00
Avg Temp F	25.29	29.56	36.15	44.33	53.22	62.09	70.00	68.19	59.06	48.03	35.95	26.88	46.56
Std Dev Temp	3.67	3.62	3.73	3.46	2.52	2.73	1.50	2.13	3.13	3.15	2.52	3.01	1.15
Avg Prec in.	1.84	1.85	2.52	2.60	2.45	1.42	1.07	1.24	2.04	2.50	2.19	2.40	24.13
Std Dev Prec	1.07	0.94	1.29	1.55	1.35	1.15	0.84	1.21	1.85	1.28	1.17	1.84	6.18
SCS-BC f in.	0.51	0.59	1.00	1.82	3.27	4.82	6.49	5.69	3.53	1.92	0.77	0.52	30.93
Std Dev f	0.07	0.07	0.23	0.38	0.39	0.51	0.33	0.41	0.45	0.33	0.12	0.06	1.58
ALFALFA													
Cal SCS-BC k				0.15	1.45	1.47	0.92	0.98	0.98				
Cal SCS-BC Et				0.26	4.74	7.07	5.97	5.58	3.47				27.10
Std Dev Et				0.06	0.56	0.76	0.30	0.41	0.45				1.46
Net Irr in.					2.78	5.93	5.11	4.59	1.83				20.25
PASTURE													
Cal SCS-BC k				0.28	1.04	0.95	0.80	0.79	0.80				
Cal SCS-BC Et				0.50	3.38	4.59	5.23	4.50	2.82				21.03
Std Dev Et				0.11	0.40	0.49	0.26	0.33	0.36				1.12
Net Irr in.					1.42	3.46	4.37	3.51	1.19				13.95
OTHR HAY													
Cal SCS-BC k				0.12	1.35	1.53	1.04	0.46	0.26				
Cal SCS-BC Et				0.22	4.40	7.38	6.76	2.59	0.90				22.25
Std Dev Et				0.05	0.52	0.79	0.34	0.19	0.12				1.25
Net Irr in.					2.44	6.24	5.91	1.60					16.18
SP GRAIN													
Cal SCS-BC k				0.07	0.59	1.28	1.24	0.80					
Cal SCS-BC Et				0.13	1.93	6.16	8.05	4.53					20.80
Std Dev Et				0.03	0.23	0.66	0.40	0.33					1.06
Net Irr in.						5.02	7.19	3.54					15.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MOUNTAIN DELL DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5420 ft., Lat. 40.75

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.67	0.98	0.82	0.69	0.68	0.71	0.14			
Cal SCS-BC Et				1.22	3.20	3.96	4.50	3.88	2.51	0.27			19.54
Std Dev Et				0.26	0.38	0.42	0.23	0.28	0.32	0.04			1.10
Net Irr in.					1.24	2.82	3.65	2.89	0.87				11.47
E-LAKE													
Cal SCS-BC k	1.57	1.94	1.90	1.62	1.36	1.04	0.87	0.93	1.06	1.29	1.71	1.21	
Cal SCS-BC Evap	0.79	1.15	1.90	2.95	4.45	5.03	5.66	5.28	3.74	2.49	1.32	0.63	35.40
Std Dev Evap	0.12	0.14	0.44	0.62	0.53	0.54	0.28	0.39	0.48	0.42	0.20	0.07	1.93
Net Loss in.				0.35	2.00	3.61	4.59	4.04	1.70				16.28
ET Ref													
Cal SCS-BC k	1.74	2.16	2.11	1.83	1.75	1.47	1.24	1.22	1.27	1.45	1.90	1.35	
Estimated Etr	0.88	1.27	2.11	3.32	5.72	7.07	8.05	6.93	4.48	2.79	1.47	0.70	44.80
Std Dev Et	0.13	0.16	0.49	0.70	0.68	0.76	0.40	0.51	0.58	0.47	0.23	0.08	2.39

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MYTON
From a Calibrated SCS Blaney-Criddle Equation using data from DUCHESNE

Years of Data Available; NWS: 1961-1990 DUCHESNE: 1988-1990 10-13-1994
Elev. 5080 ft., Lat. 40.20

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.71	6.67	8.28	8.94	10.06	10.14	10.30	9.60	8.40	7.72	6.66	6.51	100.00
Avg Temp F	15.51	23.10	36.30	47.08	56.09	65.49	72.25	69.94	60.54	48.29	33.47	19.84	45.66
Std Dev Temp	7.42	7.92	3.99	3.56	2.22	2.56	1.54	1.92	2.74	3.21	3.29	5.38	1.89
Avg Prec in.	0.39	0.36	0.51	0.61	0.73	0.64	0.59	0.66	0.70	0.82	0.42	0.37	6.80
Std Dev Prec	0.46	0.32	0.43	0.53	0.66	0.69	0.50	0.46	0.65	0.70	0.44	0.59	2.18
SCS-BC f in.	0.31	0.46	1.02	2.13	3.71	5.45	6.97	6.03	3.74	1.96	0.69	0.39	32.84
Std Dev f	0.15	0.16	0.26	0.42	0.37	0.51	0.35	0.39	0.41	0.34	0.09	0.11	1.69
ALFALFA													
Cal SCS-BC k				0.84	1.78	1.10	0.93	1.06	1.01	0.47			
Cal SCS-BC Et				1.79	6.59	6.02	6.50	6.37	3.79	0.91			31.96
Std Dev Et				0.35	0.65	0.56	0.33	0.41	0.42	0.16			1.56
Net Irr in.				1.30	6.00	5.51	6.03	5.84	3.23	0.25			28.16
PASTURE													
Cal SCS-BC k				0.90	1.18	0.97	0.78	0.78	0.47				
Cal SCS-BC Et				1.92	4.39	5.28	5.42	4.67	1.77				23.46
Std Dev Et				0.38	0.43	0.49	0.27	0.30	0.19				1.17
Net Irr in.				1.43	3.80	4.77	4.95	4.14	1.21				20.32
SP GRAIN													
Cal SCS-BC k				0.41	1.40	1.49	0.92	0.05					
Cal SCS-BC Et				0.87	5.19	8.13	6.41	0.32					20.90
Std Dev Et				0.17	0.51	0.76	0.32	0.02					1.16
Net Irr in.				0.38	4.60	7.62	5.94						18.53
CORN													
Cal SCS-BC k					0.31	0.57	1.01	1.12	0.92				
Cal SCS-BC Et					1.16	3.13	7.04	6.74	3.44				21.51
Std Dev Et					0.11	0.29	0.35	0.43	0.38				0.83
Net Irr in.					0.58	2.62	6.57	6.21	2.88				18.86

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at MYTON
From a Calibrated SCS Blaney-Criddle Equation using data from DUCHESNE 10-13-1994
Years of Data Available; NWS: 1961-1990 DUCHESNE: 1988-1990 Elev. 5080 ft., Lat. 40.20

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.94	1.02	0.83	0.67	0.67	0.75	0.47			
Cal SCS-BC Et				2.00	3.78	4.55	4.67	4.03	2.81	0.92			22.76
Std Dev Et				0.39	0.37	0.42	0.23	0.26	0.31	0.16			1.19
Net Irr in.				1.51	3.19	4.04	4.20	3.50	2.25	0.26			18.95
GARDEN													
Cal SCS-BC k				0.09	0.51	0.77	0.95	0.56	0.15				
Cal SCS-BC Et				0.20	1.91	4.18	6.61	3.40	0.55				16.84
Std Dev Et				0.04	0.19	0.39	0.33	0.22	0.06				0.70
Net Irr in.					1.33	3.67	6.13	2.87					14.00
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.61	1.41	1.01	0.79	0.86	1.07	1.44	2.00	2.00	
Cal SCS-BC Evap	0.62	0.92	2.04	3.43	5.22	5.49	5.50	5.20	4.00	2.81	1.38	0.77	37.39
Std Dev Evap	0.30	0.32	0.51	0.67	0.52	0.51	0.28	0.33	0.44	0.49	0.19	0.21	2.25
Net Loss in.	0.24	0.57	1.53	2.82	4.49	4.86	4.91	4.54	3.30	1.99	0.96	0.40	30.59
ET Ref													
Cal SCS-BC k	2.98	3.20	2.45	1.81	1.82	1.49	1.20	1.19	1.34	1.62	2.26	2.44	
Estimated Etr	0.93	1.48	2.50	3.85	6.75	8.13	8.34	7.19	5.03	3.18	1.56	0.94	49.87
Std Dev Et	0.45	0.51	0.63	0.76	0.67	0.76	0.42	0.46	0.55	0.55	0.21	0.26	2.91

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEOLA
From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994
Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 5920 ft., Lat. 40.42

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.16	10.32	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	18.29	24.07	34.64	44.70	53.70	62.67	69.47	67.18	58.28	46.99	32.50	20.98	44.46
Std Dev Temp	5.63	5.69	4.22	3.67	2.11	2.90	1.62	1.91	3.19	3.11	3.30	4.65	1.54
Avg Prec in.	0.56	0.48	0.63	0.71	1.08	0.76	0.68	0.74	0.90	1.05	0.62	0.54	8.75
Std Dev Prec	0.55	0.37	0.50	0.54	0.75	0.75	0.55	0.40	0.74	0.77	0.57	0.43	2.51
SCS-BC f in.	0.37	0.48	0.93	1.86	3.33	4.92	6.37	5.48	3.41	1.82	0.66	0.41	30.04
Std Dev f	0.11	0.11	0.22	0.41	0.33	0.55	0.35	0.37	0.45	0.31	0.09	0.09	1.68
ALFALFA													
Cal SCS-BC k					1.45	1.66	1.04	1.11	1.38	0.69			
Cal SCS-BC Et					4.84	8.17	6.60	6.11	4.71	1.26			31.68
Std Dev Et					0.48	0.91	0.36	0.41	0.62	0.22			1.73
Net Irr in.					3.97	7.56	6.06	5.52	3.99	0.41			27.51
PASTURE													
Cal SCS-BC k				0.31	1.05	1.08	0.92	0.91	0.95	0.70			
Cal SCS-BC Et				0.57	3.48	5.31	5.84	4.98	3.23	1.27			24.69
Std Dev Et				0.13	0.34	0.59	0.32	0.33	0.42	0.22			1.34
Net Irr in.				0.01	2.62	4.70	5.30	4.39	2.51	0.43			19.95
SP GRAIN													
Cal SCS-BC k				0.08	0.74	1.55	1.40	0.56					
Cal SCS-BC Et				0.15	2.46	7.61	8.90	3.05					22.17
Std Dev Et				0.03	0.24	0.85	0.49	0.20					1.26
Net Irr in.					1.60	7.00	8.35	2.45					19.40
CORN													
Cal SCS-BC k					0.13	0.42	0.96	1.32	0.69				
Cal SCS-BC Et					0.43	2.05	6.13	7.26	2.34				18.21
Std Dev Et					0.04	0.23	0.34	0.49	0.31				0.89
Net Irr in.						1.44	5.58	6.67	1.62				15.31
POTATOES													
Cal SCS-BC k					0.16	0.52	0.96	1.08	0.96				
Cal SCS-BC Et					0.53	2.55	6.09	5.90	3.27				18.35
Std Dev Et					0.05	0.28	0.34	0.40	0.43				0.94
Net Irr in.						1.94	5.55	5.31	2.55				15.35

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEOLA

From a Calibrated SCS Blaney-Criddle Equation using data from ALTAMONT 10-13-1994

Years of Data Available; NWS: 1961-1990 ALTAMONT: 1989-1991 Elev. 5920 ft., Lat. 40.42

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.57	1.09	0.93	0.79	0.78	0.82	0.60			
Cal SCS-BC Et				1.05	3.63	4.58	5.03	4.29	2.78	1.09			22.46
Std Dev Et				0.23	0.36	0.51	0.28	0.29	0.37	0.19			1.26
Net Irr in.				0.49	2.76	3.97	4.49	3.70	2.06	0.25			17.72
GARDEN													
Cal SCS-BC k					0.28	0.61	0.97	0.95	0.23				
Cal SCS-BC Et					0.93	2.99	6.20	5.19	0.79				16.10
Std Dev Et					0.09	0.33	0.34	0.35	0.10				0.78
Net Irr in.					0.06	2.38	5.65	4.59	0.08				12.76
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.94	1.54	1.15	0.93	1.00	1.14	1.64	1.99	2.00	
Cal SCS-BC Evap	0.73	0.96	1.86	3.60	5.12	5.67	5.92	5.49	3.90	2.98	1.32	0.82	38.39
Std Dev Evap	0.23	0.23	0.44	0.79	0.50	0.63	0.33	0.37	0.51	0.52	0.18	0.18	2.35
Net Loss in.	0.18	0.48	1.23	2.89	4.03	4.91	5.24	4.75	3.00	1.93	0.70	0.28	29.64
ET Ref													
Cal SCS-BC k	2.48	2.80	2.49	2.17	1.94	1.66	1.41	1.40	1.46	1.91	2.21	2.30	
Estimated Etr	0.91	1.35	2.33	4.02	6.47	8.17	8.99	7.66	4.97	3.47	1.46	0.94	50.74
Std Dev Et	0.28	0.32	0.55	0.88	0.64	0.91	0.50	0.51	0.65	0.60	0.20	0.21	3.01

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEPHI
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1990 Elev. 5130 ft., Lat. 39.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.74	6.68	8.28	8.93	10.03	10.11	10.27	9.58	8.39	7.73	6.71	6.54	100.00
Avg Temp F	27.54	33.04	40.11	48.07	57.19	67.04	75.16	73.09	63.51	51.92	39.55	29.34	50.46
Std Dev Temp	4.12	4.12	3.85	3.79	2.91	2.97	1.64	2.29	3.25	3.52	3.05	3.70	1.30
Avg Prec in.	1.19	1.19	1.71	1.51	1.39	0.82	0.86	1.01	1.19	1.26	1.39	1.33	14.85
Std Dev Prec	0.85	0.82	0.93	0.88	0.99	0.71	0.74	0.80	1.18	0.94	0.83	0.78	3.97
SCS-BC f in.	0.56	0.69	1.29	2.24	3.89	5.74	7.62	6.67	4.20	2.36	1.00	0.58	36.83
Std Dev f	0.08	0.12	0.33	0.46	0.49	0.60	0.38	0.48	0.51	0.40	0.21	0.07	1.86
ALFALFA													
Cal SCS-BC k				0.34	1.52	1.01	0.95	1.08	0.96	0.54			
Cal SCS-BC Et				0.77	5.91	5.82	7.22	7.21	4.03	1.27			32.24
Std Dev Et				0.16	0.74	0.61	0.36	0.52	0.49	0.22			1.66
Net Irr in.					4.80	5.16	6.53	6.41	3.08	0.27			26.25
PASTURE													
Cal SCS-BC k				0.35	0.83	0.88	0.77	0.74	0.80	0.40			
Cal SCS-BC Et				0.78	3.24	5.05	5.83	4.94	3.34	0.95			24.12
Std Dev Et				0.16	0.40	0.53	0.29	0.36	0.41	0.16			1.21
Net Irr in.					2.12	4.39	5.14	4.13	2.39				18.17
OTHR HAY													
Cal SCS-BC k				0.47	1.44	1.41	0.75	0.39	0.29				
Cal SCS-BC Et				1.04	5.59	8.09	5.74	2.60	1.21				24.28
Std Dev Et				0.21	0.70	0.85	0.29	0.19	0.15				1.50
Net Irr in.					4.48	7.44	5.05	1.79	0.26				19.02
SP GRAIN													
Cal SCS-BC k				0.18	0.95	1.35	1.03	0.08					
Cal SCS-BC Et				0.41	3.69	7.75	7.85	0.54					20.25
Std Dev Et				0.08	0.46	0.81	0.40	0.04					1.23
Net Irr in.					2.57	7.10	7.16						16.83
CORN													
Cal SCS-BC k					0.23	0.45	0.92	1.08	1.00				
Cal SCS-BC Et					0.88	2.56	7.00	7.17	4.21				21.82
Std Dev Et					0.11	0.27	0.35	0.52	0.51				0.98
Net Irr in.						1.91	6.31	6.36	3.26				17.84

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEPHI
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1990 Elev. 5130 ft., Lat. 39.70

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.58	0.87	0.76	0.66	0.64	0.69	0.46			
Cal SCS-BC Et				1.29	3.39	4.36	5.02	4.25	2.88	1.08			22.27
Std Dev Et				0.26	0.42	0.46	0.25	0.31	0.35	0.18			1.19
Net Irr in.				0.08	2.27	3.70	4.33	3.45	1.93	0.07			15.84
GARDEN													
Cal SCS-BC k					0.36	0.58	0.88	0.69	0.27				
Cal SCS-BC Et					1.39	3.34	6.68	4.61	1.14				17.16
Std Dev Et					0.17	0.35	0.34	0.33	0.14				0.75
Net Irr in.					0.27	2.69	5.99	3.80	0.19				12.94
E-LAKE													
Cal SCS-BC k	1.48	1.79	1.72	1.38	1.19	0.93	0.81	0.85	1.00	1.06	1.30	1.33	
Cal SCS-BC Evap	0.82	1.23	2.22	3.10	4.61	5.35	6.21	5.64	4.19	2.50	1.29	0.77	37.93
Std Dev Evap	0.12	0.22	0.57	0.63	0.58	0.56	0.31	0.41	0.51	0.43	0.27	0.10	2.11
Net Loss in.		0.04	0.51	1.59	3.21	4.53	5.34	4.64	3.01	1.25			24.11
ET Ref													
Cal SCS-BC k	1.65	1.99	1.91	1.59	1.56	1.35	1.18	1.14	1.23	1.19	1.44	1.47	
Estimated Etr	0.92	1.37	2.46	3.56	6.06	7.78	8.97	7.59	5.15	2.81	1.44	0.85	48.94
Std Dev Et	0.14	0.24	0.63	0.73	0.76	0.82	0.45	0.55	0.63	0.48	0.30	0.11	2.64

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEW HARMONY
From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE

Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 10-14-1994
Elev. 5290 ft., Lat. 37.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.88	6.76	8.30	8.87	9.91	9.96	10.13	9.50	8.38	7.79	6.83	6.70	100.00
Avg Temp F	32.18	36.86	41.61	48.92	57.56	67.04	73.52	71.60	63.85	53.47	41.73	33.50	51.82
Std Dev Temp	3.43	3.32	3.56	3.77	2.86	2.55	1.55	1.64	2.77	2.97	2.89	3.87	0.98
Avg Prec in.	1.90	2.27	2.42	1.24	0.92	0.48	1.36	1.56	1.51	1.22	1.81	1.69	18.37
Std Dev Prec	2.01	2.52	1.85	1.35	0.82	0.46	1.30	0.92	1.39	1.15	1.61	1.78	5.85
SCS-BC f in.	0.68	0.85	1.42	2.33	3.90	5.66	7.14	6.29	4.24	2.56	1.17	0.70	36.94
Std Dev f	0.10	0.18	0.34	0.47	0.48	0.51	0.35	0.34	0.43	0.36	0.22	0.14	1.53
ALFALFA													
Cal SCS-BC k				1.14	1.81	1.20	1.03	1.32	0.99	0.46			
Cal SCS-BC Et				2.65	7.07	6.81	7.35	8.33	4.19	1.17			37.57
Std Dev Et				0.53	0.86	0.62	0.36	0.45	0.43	0.16			1.74
Net Irr in.				1.66	6.33	6.43	6.26	7.09	2.98	0.20			30.95
PASTURE													
Cal SCS-BC k			0.23	1.03	1.19	1.04	0.90	0.86	0.92	0.59			
Cal SCS-BC Et			0.32	2.40	4.63	5.86	6.39	5.41	3.89	1.51			30.42
Std Dev Et			0.08	0.48	0.57	0.53	0.31	0.29	0.40	0.21			1.39
Net Irr in.				1.41	3.89	5.48	5.30	4.17	2.68	0.54			23.47
SP GRAIN													
Cal SCS-BC k				0.56	1.56	1.59	0.86						
Cal SCS-BC Et				1.31	6.10	9.01	6.12						22.55
Std Dev Et				0.26	0.75	0.81	0.30						1.40
Net Irr in.				0.32	5.37	8.63	5.04						19.35
ORCHARD													
Cal SCS-BC k				0.35	1.17	1.50	1.49	1.44	1.48	0.50			
Cal SCS-BC Et				0.82	4.55	8.49	10.60	9.07	6.28	1.28			41.09
Std Dev Et				0.16	0.56	0.77	0.52	0.49	0.64	0.18			1.58
Net Irr in.					3.81	8.11	9.51	7.83	5.07	0.31			34.64

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at NEW HARMONY
From a Calibrated SCS Blaney-Criddle Equation using data from ENTERPRISE 10-14-1994
Years of Data Available; NWS: 1961-1990 ENTERPRISE: 1988-1991 Elev. 5290 ft., Lat. 37.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.46	1.08	1.02	0.89	0.77	0.74	0.79	0.68			
Cal SCS-BC Et			0.66	2.52	3.99	5.04	5.50	4.67	3.35	1.74			27.47
Std Dev Et			0.16	0.51	0.49	0.46	0.27	0.25	0.34	0.24			1.29
Net Irr in.				1.54	3.25	4.66	4.42	3.42	2.14	0.76			20.19
GARDEN													
Cal SCS-BC k					0.52	0.94	1.04	0.42	0.23				
Cal SCS-BC Et					2.04	5.34	7.45	2.65	0.99				18.46
Std Dev Et					0.25	0.48	0.37	0.14	0.10				0.77
Net Irr in.					1.30	4.95	6.36	1.40					14.02
E-LAKE													
Cal SCS-BC k	1.72	1.67	1.67	1.71	1.42	1.08	0.93	0.95	1.09	1.04	1.61	1.99	
Cal SCS-BC Evap	1.17	1.42	2.37	3.98	5.53	6.14	6.60	5.97	4.61	2.66	1.89	1.40	43.73
Std Dev Evap	0.18	0.30	0.57	0.80	0.68	0.55	0.32	0.32	0.47	0.37	0.36	0.27	2.05
Net Loss in.				2.74	4.61	5.66	5.24	4.41	3.10	1.44	0.09		27.30
ET Ref													
Cal SCS-BC k	1.91	1.86	1.87	1.93	1.82	1.59	1.38	1.32	1.41	1.27	1.79	2.21	
Estimated Etr	1.30	1.58	2.65	4.51	7.12	9.01	9.83	8.33	5.99	3.24	2.10	1.56	57.20
Std Dev Et	0.20	0.34	0.64	0.90	0.87	0.81	0.48	0.45	0.61	0.45	0.40	0.30	2.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OAK CITY
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 10-13-1994
Elev. 5070 ft., Lat. 39.38

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.76	6.70	8.28	8.92	10.01	10.08	10.25	9.57	8.39	7.74	6.73	6.56	100.00
Avg Temp F	28.44	34.88	41.93	49.51	59.45	69.89	78.71	76.38	66.54	54.47	40.61	30.00	52.57
Std Dev Temp	5.00	4.46	3.68	3.45	3.23	3.37	1.73	2.34	3.39	3.50	3.20	4.55	1.19
Avg Prec in.	1.03	1.03	1.50	1.41	1.39	0.78	0.52	0.86	1.09	1.33	1.25	1.23	13.41
Std Dev Prec	0.63	0.77	0.85	0.76	0.99	0.77	0.51	0.79	1.08	0.94	0.76	0.75	3.42
SCS-BC f in.	0.58	0.77	1.45	2.41	4.27	6.33	8.46	7.37	4.69	2.66	1.07	0.60	40.67
Std Dev f	0.11	0.17	0.35	0.43	0.56	0.71	0.43	0.52	0.56	0.43	0.23	0.11	1.92
ALFALFA													
Cal SCS-BC k				1.23	1.51	1.16	0.89	0.89	1.08	0.47			
Cal SCS-BC Et				2.98	6.45	7.31	7.51	6.56	5.08	1.26			37.16
Std Dev Et				0.54	0.85	0.82	0.38	0.46	0.61	0.20			2.12
Net Irr in.				1.86	5.34	6.69	7.10	5.87	4.22	0.20			31.27
PASTURE													
Cal SCS-BC k			0.21	0.99	1.08	0.89	0.77	0.74	0.80	0.31			
Cal SCS-BC Et			0.31	2.39	4.60	5.62	6.49	5.46	3.76	0.83			29.46
Std Dev Et			0.08	0.43	0.61	0.63	0.33	0.38	0.45	0.13			1.65
Net Irr in.				1.26	3.49	5.00	6.08	4.77	2.89				23.49
OTHR HAY													
Cal SCS-BC k				1.15	1.66	1.41	0.74	0.39	0.29	0.05			
Cal SCS-BC Et				2.77	7.08	8.94	6.27	2.88	1.38	0.12			29.44
Std Dev Et				0.50	0.93	1.01	0.32	0.20	0.16	0.02			1.97
Net Irr in.				1.65	5.97	8.31	5.86	2.19	0.51				24.49
SP GRAIN													
Cal SCS-BC k			0.11	0.68	1.52	1.36	0.53						
Cal SCS-BC Et			0.17	1.64	6.48	8.61	4.50						21.40
Std Dev Et			0.04	0.30	0.86	0.97	0.23						1.65
Net Irr in.				0.52	5.37	7.99	4.08						17.96
CORN													
Cal SCS-BC k					0.24	0.40	0.84	1.08	0.93				
Cal SCS-BC Et					1.03	2.56	7.11	7.97	4.39				23.05
Std Dev Et					0.14	0.29	0.36	0.56	0.52				1.10
Net Irr in.						1.94	6.70	7.27	3.52				19.43
POTATOES													
Cal SCS-BC k					0.25	0.65	0.90	0.84	0.71	0.19			
Cal SCS-BC Et					1.06	4.10	7.63	6.21	3.34	0.50			22.83
Std Dev Et					0.14	0.46	0.38	0.43	0.40	0.08			1.04
Net Irr in.						3.47	7.22	5.52	2.47				18.68

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OAK CITY
From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994
Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5070 ft., Lat. 39.38

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k					0.70	1.27	1.28	1.24	1.24	0.60			
Cal SCS-BC Et					3.00	8.03	10.85	9.11	5.83	1.60			38.43
Std Dev Et					0.40	0.91	0.55	0.64	0.70	0.26			1.82
Net Irr in.					1.89	7.41	10.43	8.42	4.97	0.54			33.66
TURF													
Cal SCS-BC k			0.22	1.00	0.93	0.77	0.66	0.64	0.69	0.52			
Cal SCS-BC Et			0.32	2.42	3.96	4.84	5.59	4.71	3.24	1.39			26.46
Std Dev Et			0.08	0.43	0.52	0.55	0.28	0.33	0.39	0.22			1.47
Net Irr in.				1.29	2.85	4.22	5.18	4.01	2.37	0.33			20.25
GARDEN													
Cal SCS-BC k					0.38	0.63	0.92	0.60	0.23				
Cal SCS-BC Et					1.63	3.96	7.76	4.42	1.06				18.83
Std Dev Et					0.22	0.45	0.39	0.31	0.13				0.88
Net Irr in.					0.52	3.34	7.34	3.73	0.19				15.13
E-LAKE													
Cal SCS-BC k	1.60	2.00	1.83	1.58	1.28	0.94	0.80	0.83	0.97	1.12	1.59	1.75	
Cal SCS-BC Evap	0.93	1.54	2.65	3.81	5.46	5.96	6.74	6.09	4.53	2.98	1.71	1.05	43.45
Std Dev Evap	0.18	0.35	0.64	0.68	0.72	0.67	0.34	0.43	0.54	0.48	0.37	0.20	2.20
Net Loss in.		0.51	1.15	2.40	4.07	5.18	6.22	5.23	3.44	1.65	0.46		30.32
ET Ref													
Cal SCS-BC k	1.77	2.25	2.04	1.80	1.66	1.37	1.18	1.14	1.23	1.31	1.77	1.94	
Estimated Etr	1.03	1.73	2.95	4.35	7.07	8.65	9.98	8.40	5.78	3.50	1.90	1.17	56.52
Std Dev Et	0.20	0.39	0.71	0.78	0.93	0.98	0.50	0.59	0.69	0.56	0.41	0.22	2.81

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OGDEN PIONEER P H
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE

Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 10-26-1994
Elev. 4350 ft., Lat. 41.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.64	6.63	8.27	8.97	10.12	10.22	10.37	9.65	8.40	7.69	6.62	6.43	100.00
Avg Temp F	27.66	33.43	41.10	49.56	58.90	68.56	76.89	74.67	64.42	52.91	39.85	29.58	51.46
Std Dev Temp	4.10	4.54	3.92	3.97	2.92	3.23	1.68	2.41	3.60	3.63	2.63	3.48	1.32
Avg Prec in.	1.99	1.92	2.32	2.63	2.51	1.56	0.83	1.01	1.73	1.93	2.06	2.13	22.62
Std Dev Prec	1.03	1.33	1.44	1.58	1.72	1.30	0.72	1.04	1.68	1.40	1.22	1.69	6.15
SCS-BC f in.	0.55	0.70	1.38	2.44	4.22	6.13	8.11	7.05	4.35	2.46	1.00	0.57	38.96
Std Dev f	0.08	0.14	0.35	0.51	0.51	0.69	0.41	0.52	0.58	0.42	0.18	0.07	1.95
ALFALFA													
Cal SCS-BC k			0.18	1.34	1.38	1.21	0.86	0.82	0.84	0.98			
Cal SCS-BC Et			0.25	3.28	5.83	7.39	6.94	5.78	3.67	2.42			35.55
Std Dev Et			0.06	0.68	0.71	0.83	0.35	0.43	0.49	0.42			2.00
Net Irr in.				1.17	3.82	6.15	6.27	4.97	2.28	0.87			25.54
PASTURE													
Cal SCS-BC k			0.36	0.93	1.01	0.90	0.74	0.73	0.73	0.76			
Cal SCS-BC Et			0.50	2.26	4.26	5.52	6.04	5.17	3.19	1.87			28.81
Std Dev Et			0.13	0.47	0.52	0.62	0.30	0.38	0.43	0.32			1.55
Net Irr in.				0.15	2.25	4.27	5.37	4.36	1.80	0.33			18.55
SP GRAIN													
Cal SCS-BC k				0.48	1.31	1.39	0.71						
Cal SCS-BC Et				1.17	5.52	8.49	5.79						20.98
Std Dev Et				0.24	0.67	0.95	0.29						1.39
Net Irr in.					3.51	7.25	5.13						15.89
CORN													
Cal SCS-BC k				0.04	0.31	0.52	0.89	1.07	0.94				
Cal SCS-BC Et				0.10	1.31	3.21	7.24	7.52	4.11				23.50
Std Dev Et				0.02	0.16	0.36	0.36	0.56	0.55				1.04
Net Irr in.						1.97	6.58	6.72	2.72				17.99
PEACHES													
Cal SCS-BC k			0.08	0.75	1.19	1.26	1.14	1.11	0.93				
Cal SCS-BC Et			0.11	1.84	5.03	7.75	9.25	7.81	4.04				35.82
Std Dev Et			0.03	0.38	0.61	0.87	0.47	0.58	0.54				1.77
Net Irr in.					3.02	6.50	8.59	7.00	2.66				27.76
ORCHARD													
Cal SCS-BC k				0.33	1.01	1.35	1.24	1.23	1.16	0.51			
Cal SCS-BC Et				0.81	4.26	8.24	10.07	8.64	5.06	1.25			38.33
Std Dev Et				0.17	0.52	0.92	0.51	0.64	0.68	0.22			1.76
Net Irr in.					2.25	6.99	9.41	7.84	3.68				30.16

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OGDEN PIONEER P H
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE
Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 10-26-1994
Elev. 4350 ft., Lat. 41.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.48	0.88	0.87	0.78	0.64	0.63	0.63	0.77			
Cal SCS-BC Et			0.67	2.14	3.67	4.76	5.20	4.45	2.74	1.89			25.51
Std Dev Et			0.17	0.44	0.44	0.53	0.26	0.33	0.37	0.33			1.40
Net Irr in.				0.03	1.66	3.51	4.54	3.64	1.36	0.34			15.08
GARDEN													
Cal SCS-BC k				0.17	0.45	0.71	0.90	0.60	0.23	0.15			
Cal SCS-BC Et				0.42	1.91	4.37	7.31	4.21	1.02	0.37			19.62
Std Dev Et				0.09	0.23	0.49	0.37	0.31	0.14	0.06			0.85
Net Irr in.						3.13	6.65	3.41					13.19
E-LAKE													
Cal SCS-BC k	1.43	2.00	1.43	1.40	1.22	0.97	0.78	0.82	0.91	1.22	1.30	1.48	
Cal SCS-BC Evap	0.79	1.40	1.97	3.42	5.14	5.96	6.36	5.81	3.95	3.00	1.30	0.85	39.94
Std Dev Evap	0.12	0.28	0.50	0.71	0.62	0.67	0.32	0.43	0.53	0.52	0.23	0.10	2.19
Net Loss in.				0.79	2.63	4.40	5.53	4.80	2.22	1.07			21.43
ET Ref													
Cal SCS-BC k	1.59	2.31	1.59	1.58	1.55	1.39	1.15	1.13	1.13	1.39	1.44	1.65	
Estimated Etr	0.87	1.62	2.19	3.86	6.55	8.49	9.29	7.95	4.90	3.42	1.44	0.94	51.53
Std Dev Et	0.13	0.33	0.56	0.80	0.79	0.95	0.47	0.59	0.65	0.59	0.26	0.11	2.71

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OGDEN SUGAR FACTORY
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE

Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 10-26-1994
Elev. 4280 ft., Lat. 41.23

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.64	6.63	8.27	8.97	10.12	10.22	10.37	9.65	8.40	7.69	6.63	6.43	100.00
Avg Temp F	26.58	32.47	40.74	49.31	58.39	67.84	75.96	73.62	63.39	51.97	39.36	29.02	50.72
Std Dev Temp	4.65	5.20	3.90	3.61	2.72	3.10	1.86	2.21	3.44	3.32	2.77	3.84	1.38
Avg Prec in.	1.31	1.29	1.65	1.96	1.92	1.32	0.60	0.77	1.52	1.55	1.59	1.35	16.84
Std Dev Prec	0.81	0.91	1.19	1.40	1.46	1.18	0.59	0.80	1.46	1.04	0.90	1.07	5.16
SCS-BC f in.	0.53	0.68	1.34	2.40	4.12	5.97	7.88	6.82	4.19	2.35	0.97	0.56	37.83
Std Dev f	0.09	0.15	0.35	0.45	0.47	0.65	0.45	0.47	0.54	0.38	0.18	0.08	2.01
ALFALFA													
Cal SCS-BC k			0.18	1.42	1.39	1.25	0.88	0.84	0.87	1.05			
Cal SCS-BC Et			0.24	3.42	5.72	7.44	6.95	5.75	3.66	2.47			35.66
Std Dev Et			0.06	0.65	0.66	0.81	0.39	0.40	0.47	0.40			2.15
Net Irr in.				1.86	4.19	6.39	6.47	5.13	2.44	1.23			27.71
PASTURE													
Cal SCS-BC k			0.36	0.98	1.01	0.93	0.77	0.75	0.76	0.81			
Cal SCS-BC Et			0.48	2.37	4.18	5.55	6.05	5.14	3.18	1.91			28.86
Std Dev Et			0.13	0.45	0.48	0.61	0.34	0.36	0.41	0.31			1.67
Net Irr in.				0.80	2.65	4.50	5.57	4.52	1.96	0.67			20.66
SP GRAIN													
Cal SCS-BC k				0.51	1.32	1.43	0.75						
Cal SCS-BC Et				1.23	5.42	8.54	5.89						21.07
Std Dev Et				0.23	0.62	0.93	0.33						1.44
Net Irr in.					3.89	7.48	5.41						16.78
CORN													
Cal SCS-BC k				0.04	0.31	0.54	0.92	1.10	0.98				
Cal SCS-BC Et				0.11	1.29	3.23	7.25	7.49	4.10				23.47
Std Dev Et				0.02	0.15	0.35	0.41	0.52	0.53				1.14
Net Irr in.						2.18	6.77	6.87	2.88				18.70
PEACHES													
Cal SCS-BC k			0.08	0.80	1.20	1.30	1.18	1.14	0.96				
Cal SCS-BC Et			0.11	1.92	4.94	7.79	9.27	7.77	4.03				35.83
Std Dev Et			0.03	0.36	0.57	0.85	0.52	0.54	0.52				1.92
Net Irr in.				0.35	3.40	6.74	8.79	7.15	2.81				29.25
ORCHARD													
Cal SCS-BC k				0.35	1.01	1.39	1.28	1.26	1.21	0.54			
Cal SCS-BC Et				0.84	4.18	8.29	10.09	8.60	5.05	1.28			38.33
Std Dev Et				0.16	0.48	0.91	0.57	0.60	0.65	0.21			1.97
Net Irr in.					2.65	7.23	9.61	7.98	3.83	0.04			31.34

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OGDEN SUGAR FACTORY
From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE

Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 10-26-1994
Elev. 4280 ft., Lat. 41.23

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.48	0.93	0.87	0.80	0.66	0.65	0.65	0.82			
Cal SCS-BC Et			0.64	2.23	3.61	4.78	5.21	4.43	2.74	1.93			25.57
Std Dev Et			0.17	0.42	0.41	0.52	0.29	0.31	0.35	0.31			1.50
Net Irr in.				0.66	2.07	3.73	4.73	3.81	1.52	0.69			17.22
GARDEN													
Cal SCS-BC k				0.18	0.45	0.74	0.93	0.61	0.24	0.16			
Cal SCS-BC Et				0.44	1.87	4.40	7.33	4.19	1.02	0.38			19.63
Std Dev Et				0.08	0.22	0.48	0.41	0.29	0.13	0.06			0.96
Net Irr in.					0.34	3.34	6.85	3.57					14.11
E-LAKE													
Cal SCS-BC k	1.51	2.00	1.41	1.49	1.23	1.00	0.81	0.85	0.94	1.30	1.45	1.56	
Cal SCS-BC Evap	0.80	1.36	1.89	3.58	5.06	5.99	6.37	5.78	3.94	3.07	1.41	0.88	40.13
Std Dev Evap	0.14	0.31	0.49	0.68	0.58	0.65	0.36	0.40	0.51	0.49	0.26	0.12	2.29
Net Loss in.		0.07	0.24	1.62	3.14	4.67	5.77	5.01	2.42	1.51			24.46
ET Ref													
Cal SCS-BC k	1.68	2.31	1.57	1.68	1.56	1.43	1.18	1.16	1.17	1.49	1.61	1.73	
Estimated Etr	0.89	1.57	2.10	4.04	6.44	8.54	9.30	7.91	4.89	3.50	1.56	0.97	51.72
Std Dev Et	0.16	0.36	0.55	0.76	0.74	0.93	0.53	0.55	0.63	0.56	0.29	0.14	2.86

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ORDERVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY / KANAB 10-26-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY / KANAB: 1987-1991 Elev. 5460 ft., Lat. 37.27

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.89	6.77	8.30	8.87	9.90	9.94	10.11	9.49	8.38	7.79	6.84	6.71	100.00
Avg Temp F	31.41	36.06	40.16	47.82	56.74	66.25	72.67	70.67	63.10	52.81	41.20	33.02	50.99
Std Dev Temp	3.84	4.08	4.47	4.18	2.86	3.17	1.91	2.14	2.83	2.73	2.41	3.91	1.68
Avg Prec in.	1.70	1.60	1.83	0.96	0.81	0.54	1.27	1.80	1.13	1.04	1.39	1.41	15.48
Std Dev Prec	1.90	1.74	1.56	1.00	0.63	0.62	1.04	1.26	0.98	0.89	1.19	1.62	4.50
SCS-BC f in.	0.66	0.82	1.31	2.20	3.76	5.50	6.94	6.10	4.12	2.48	1.13	0.69	35.72
Std Dev f	0.12	0.18	0.37	0.49	0.47	0.61	0.42	0.44	0.43	0.32	0.18	0.13	2.20
ALFALFA													
Cal SCS-BC k				0.37	1.72	1.11	1.28	0.92	0.99				
Cal SCS-BC Et				0.82	6.47	6.10	8.88	5.61	4.10				31.97
Std Dev Et				0.18	0.80	0.68	0.54	0.40	0.43				2.06
Net Irr in.				0.05	5.82	5.66	7.87	4.16	3.19				26.76
PASTURE													
Cal SCS-BC k				0.66	1.20	0.97	0.84	0.82	0.85				
Cal SCS-BC Et				1.45	4.51	5.34	5.85	4.97	3.49				25.61
Std Dev Et				0.32	0.56	0.59	0.36	0.35	0.37				1.71
Net Irr in.				0.69	3.86	4.90	4.84	3.53	2.58				20.40
OTHR HAY													
Cal SCS-BC k				0.77	1.71	1.57	1.07	0.47	0.30				
Cal SCS-BC Et				1.70	6.45	8.62	7.45	2.86	1.24				28.32
Std Dev Et				0.38	0.80	0.96	0.46	0.20	0.13				2.13
Net Irr in.				0.93	5.81	8.18	6.43	1.42	0.34				23.11
SP GRAIN													
Cal SCS-BC k				0.22	1.12	1.49	1.14	0.16					
Cal SCS-BC Et				0.49	4.23	8.19	7.89	1.01					21.80
Std Dev Et				0.11	0.52	0.91	0.48	0.07					1.64
Net Irr in.					3.58	7.75	6.88						18.21

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ORDERVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY / KANAB 10-26-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY / KANAB: 1987-1991 Elev. 5460 ft., Lat. 37.27

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.69	1.04	0.84	0.73	0.70	0.75	0.14			
Cal SCS-BC Et				1.53	3.90	4.60	5.04	4.28	3.10	0.34			22.80
Std Dev Et				0.34	0.48	0.51	0.31	0.31	0.33	0.04			1.51
Net Irr in.				0.76	3.26	4.16	4.03	2.84	2.20				17.25
GARDEN													
Cal SCS-BC k					0.26	0.57	0.95	0.76	0.17				
Cal SCS-BC Et					0.99	3.15	6.59	4.62	0.69				16.03
Std Dev Et					0.12	0.35	0.40	0.33	0.07				0.93
Net Irr in.					0.35	2.71	5.58	3.18					11.81
E-LAKE													
Cal SCS-BC k	1.38	1.63	1.93	1.58	1.36	1.00	0.90	0.94	1.06	1.14	1.38	1.46	
Cal SCS-BC Evap	0.91	1.34	2.54	3.49	5.12	5.49	6.22	5.76	4.36	2.83	1.56	1.01	40.63
Std Dev Evap	0.16	0.29	0.72	0.77	0.63	0.61	0.38	0.41	0.46	0.37	0.25	0.18	2.80
Net Loss in.			0.71	2.53	4.31	4.95	4.95	3.96	3.23	1.79	0.18		26.61
ET Ref													
Cal SCS-BC k	1.53	1.81	1.76	1.98	1.85	1.49	1.30	1.25	1.34	1.18	1.54	1.62	
Estimated Etr	1.01	1.49	2.31	4.36	6.97	8.21	9.00	7.65	5.54	2.94	1.74	1.12	52.33
Std Dev Et	0.18	0.32	0.65	0.97	0.86	0.91	0.55	0.55	0.58	0.38	0.27	0.21	3.53

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OURAY 4 NE

From a Calibrated SCS Blaney-Criddle Equation using data from PELICAN LAKE 10-13-1994

Years of Data Available; NWS: 1961-1990 PELICAN LAKE: 1988-1990 Elev. 4670 ft., Lat. 40.13

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.71	6.67	8.28	8.94	10.05	10.14	10.30	9.60	8.40	7.72	6.69	6.51	100.00
Avg Temp F	14.33	22.37	37.72	49.30	59.06	68.38	75.16	72.55	62.43	49.57	34.34	19.08	47.02
Std Dev Temp	8.10	8.51	4.80	3.41	2.07	2.60	1.29	2.06	2.97	2.64	3.69	5.22	1.87
Avg Prec in.	0.36	0.32	0.51	0.67	0.69	0.59	0.65	0.64	0.79	0.87	0.47	0.46	6.99
Std Dev Prec	0.38	0.35	0.46	0.42	0.49	0.68	0.54	0.56	0.67	0.76	0.36	0.40	2.22
SCS-BC f in.	0.29	0.45	1.14	2.39	4.21	6.03	7.64	6.56	4.03	2.09	0.72	0.37	35.92
Std Dev f	0.16	0.17	0.32	0.43	0.36	0.54	0.30	0.44	0.45	0.28	0.11	0.10	1.68
ALFALFA													
Cal SCS-BC k				1.03	1.71	1.08	1.02	1.19	0.97	1.17			
Cal SCS-BC Et				2.47	7.20	6.53	7.82	7.81	3.89	2.44			38.16
Std Dev Et				0.44	0.62	0.59	0.31	0.52	0.44	0.33			1.73
Net Irr in.				1.94	6.65	6.05	7.30	7.30	3.26	1.75			34.25
PASTURE													
Cal SCS-BC k			0.09	0.85	1.13	0.94	0.83	0.81	0.89	0.98			
Cal SCS-BC Et			0.11	2.03	4.77	5.70	6.36	5.33	3.58	2.05			29.92
Std Dev Et			0.03	0.36	0.41	0.51	0.25	0.35	0.40	0.28			1.38
Net Irr in.				1.50	4.22	5.22	5.84	4.82	2.95	1.35			25.91
OTHR HAY													
Cal SCS-BC k				0.90	1.68	1.52	1.05	0.47	0.38	0.17			
Cal SCS-BC Et				2.15	7.07	9.19	7.99	3.06	1.51	0.35			31.32
Std Dev Et				0.38	0.61	0.83	0.32	0.20	0.17	0.05			1.55
Net Irr in.				1.61	6.52	8.72	7.47	2.55	0.89				27.76
SP GRAIN													
Cal SCS-BC k				0.50	1.48	1.45	0.81						
Cal SCS-BC Et				1.19	6.24	8.77	6.17						22.37
Std Dev Et				0.21	0.54	0.79	0.25						1.23
Net Irr in.				0.66	5.69	8.29	5.65						20.30
CORN													
Cal SCS-BC k					0.35	0.67	1.14	1.16	0.88				
Cal SCS-BC Et					1.49	4.04	8.74	7.61	3.53				25.41
Std Dev Et					0.13	0.36	0.35	0.50	0.40				1.03
Net Irr in.					0.94	3.57	8.22	7.10	2.90				22.73

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at OURAY 4 NE
From a Calibrated SCS Blaney-Criddle Equation using data from PELICAN LAKE 10-13-1994
Years of Data Available; NWS: 1961-1990 PELICAN LAKE: 1988-1990 Elev. 4670 ft., Lat. 40.13

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.17	0.94	0.98	0.81	0.72	0.70	0.77	0.85			
Cal SCS-BC Et			0.19	2.25	4.12	4.91	5.48	4.59	3.09	1.77			26.40
Std Dev Et			0.05	0.40	0.36	0.44	0.22	0.30	0.35	0.24			1.26
Net Irr in.				1.72	3.57	4.44	4.96	4.08	2.46	1.07			22.30
GARDEN													
Cal SCS-BC k				0.21	0.52	0.76	1.01	0.65	0.16				
Cal SCS-BC Et				0.50	2.21	4.56	7.70	4.28	0.63				19.88
Std Dev Et				0.09	0.19	0.41	0.31	0.28	0.07				0.79
Net Irr in.					1.66	4.09	7.19	3.77					16.69
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.51	1.34	0.98	0.83	0.88	1.06	1.31	1.95	2.00	
Cal SCS-BC Evap	0.58	0.90	2.28	3.62	5.64	5.92	6.37	5.78	4.25	2.73	1.41	0.75	40.22
Std Dev Evap	0.33	0.34	0.64	0.65	0.49	0.53	0.25	0.38	0.48	0.37	0.21	0.20	2.17
Net Loss in.	0.22	0.58	1.77	2.96	4.95	5.32	5.72	5.15	3.47	1.86	0.94	0.28	33.23
ET Ref													
Cal SCS-BC k	3.28	3.27	2.30	1.71	1.75	1.45	1.28	1.25	1.37	1.54	2.17	2.47	
Estimated Etr	0.95	1.47	2.63	4.10	7.36	8.77	9.78	8.20	5.50	3.22	1.56	0.92	54.45
Std Dev Et	0.54	0.56	0.74	0.73	0.63	0.79	0.39	0.54	0.62	0.44	0.24	0.25	2.86

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PANGUITCH
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6720 ft., Lat. 37.82

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.93	9.98	10.15	9.51	8.38	7.78	6.81	6.67	100.00
Avg Temp F	23.97	28.96	35.00	42.31	50.61	59.19	65.74	63.60	56.06	46.17	34.52	25.78	44.33
Std Dev Temp	4.01	3.42	3.74	3.15	2.30	2.13	1.48	1.70	2.26	2.47	2.59	3.87	1.06
Avg Prec in.	0.48	0.61	0.79	0.67	0.82	0.63	1.50	1.78	1.05	0.71	0.78	0.51	10.32
Std Dev Prec	0.35	0.57	0.53	0.51	0.59	0.57	0.73	1.36	1.03	0.77	0.70	0.48	2.66
SCS-BC f in.	0.49	0.59	0.95	1.59	2.83	4.20	5.50	4.76	3.09	1.75	0.73	0.52	26.98
Std Dev f	0.08	0.07	0.21	0.32	0.33	0.37	0.29	0.31	0.31	0.24	0.09	0.08	1.18
ALFALFA													
Cal SCS-BC k					1.48	1.93	1.17	1.50	1.16				
Cal SCS-BC Et					4.18	8.09	6.41	7.14	3.59				29.41
Std Dev Et					0.49	0.71	0.34	0.46	0.36				1.35
Net Irr in.					3.52	7.59	5.21	5.71	2.76				24.79
PASTURE													
Cal SCS-BC k				0.06	1.05	1.24	1.00	0.97	1.09				
Cal SCS-BC Et				0.10	2.98	5.21	5.49	4.64	3.37				21.79
Std Dev Et				0.02	0.35	0.46	0.29	0.30	0.33				0.99
Net Irr in.					2.32	4.71	4.29	3.21	2.54				17.07
OTHR HAY													
Cal SCS-BC k					1.34	1.86	1.61	1.41	0.63				
Cal SCS-BC Et					3.80	7.83	8.87	6.71	1.95				29.17
Std Dev Et					0.44	0.69	0.47	0.43	0.19				1.32
Net Irr in.					3.15	7.33	7.67	5.29	1.12				24.55
SP GRAIN													
Cal SCS-BC k					0.65	1.64	1.54	0.89					
Cal SCS-BC Et					1.85	6.88	8.45	4.25					21.43
Std Dev Et					0.22	0.60	0.45	0.27					1.00
Net Irr in.					1.19	6.38	7.25	2.83					17.65

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PANGUITCH
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6720 ft., Lat. 37.82

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.19	1.23	1.08	0.86	0.84	0.97	0.21			
Cal SCS-BC Et				0.30	3.47	4.56	4.73	3.99	3.00	0.37			20.43
Std Dev Et				0.06	0.41	0.40	0.25	0.26	0.30	0.05			0.94
Net Irr in.					2.82	4.05	3.53	2.57	2.16				15.14
GARDEN													
Cal SCS-BC k						0.57	1.00	1.01	0.26				
Cal SCS-BC Et						2.39	5.47	4.82	0.81				13.50
Std Dev Et						0.21	0.29	0.31	0.08				0.56
Net Irr in.						1.89	4.27	3.40					9.56
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	1.82	1.36	1.00	1.05	1.33	1.66	2.00	2.00	
Cal SCS-BC Evap	0.99	1.17	1.89	3.17	5.14	5.71	5.48	4.98	4.10	2.91	1.46	1.03	38.02
Std Dev Evap	0.16	0.14	0.42	0.64	0.60	0.50	0.29	0.32	0.41	0.41	0.19	0.16	1.84
Net Loss in.	0.51	0.57	1.11	2.50	4.32	5.08	3.98	3.20	3.05	2.20	0.68	0.52	27.71
ET Ref													
Cal SCS-BC k	3.33	3.10	2.78	2.59	2.22	1.94	1.54	1.50	1.74	2.04	2.60	3.30	
Estimated Etr	1.64	1.82	2.63	4.10	6.28	8.14	8.45	7.14	5.36	3.57	1.89	1.70	52.72
Std Dev Et	0.27	0.21	0.58	0.83	0.73	0.71	0.45	0.46	0.53	0.50	0.24	0.26	2.48

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARK CITY RADIO
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 7140 ft., Lat. 40.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.68	6.65	8.27	8.95	10.08	10.17	10.33	9.62	8.40	7.70	6.66	6.47	100.00
Avg Temp F	26.94	26.80	33.20	40.90	49.17	57.77	64.63	64.77	54.02	42.31	32.53	24.61	43.14
Std Dev Temp	3.49	2.45	4.54	3.93	2.38	3.39	3.40	1.25	4.12	3.25	3.43	4.18	1.39
Avg Prec in.	2.51	1.43	1.85	1.49	1.54	1.38	1.39	1.46	1.77	1.79	1.58	2.13	20.32
Std Dev Prec	0.84	0.70	1.57	0.78	1.39	1.15	1.11	0.90	1.46	1.26	0.95	1.65	6.00
SCS-BC f in.	0.54	0.53	0.88	1.47	2.67	4.05	5.39	5.03	2.84	1.38	0.66	0.48	25.91
Std Dev f	0.07	0.05	0.25	0.39	0.33	0.59	0.66	0.23	0.53	0.29	0.09	0.08	2.05
ALFALFA													
Cal SCS-BC k					1.45	1.68	0.97	1.13	1.04				
Cal SCS-BC Et					3.88	6.79	5.21	5.70	2.95				24.53
Std Dev Et					0.48	1.00	0.64	0.26	0.55				2.00
Net Irr in.					2.65	5.69	4.11	4.53	1.54				18.50
PASTURE													
Cal SCS-BC k				0.15	1.12	1.09	0.85	0.85	0.94				
Cal SCS-BC Et				0.22	2.99	4.42	4.59	4.29	2.66				19.17
Std Dev Et				0.06	0.37	0.65	0.56	0.20	0.50				1.59
Net Irr in.					1.76	3.31	3.49	3.12	1.24				12.93
OTHR HAY													
Cal SCS-BC k					1.36	1.74	1.12	0.49	0.24				
Cal SCS-BC Et					3.63	7.04	6.02	2.47	0.67				19.84
Std Dev Et					0.45	1.03	0.74	0.11	0.13				1.76
Net Irr in.					2.40	5.94	4.91	1.29					14.55
SP GRAIN													
Cal SCS-BC k					0.55	1.33	1.31	1.01	0.14				
Cal SCS-BC Et					1.48	5.38	7.07	5.10	0.39				19.42
Std Dev Et					0.18	0.79	0.87	0.23	0.07				1.59
Net Irr in.					0.25	4.28	5.96	3.93					14.42

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARK CITY RADIO
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 7140 ft., Lat. 40.65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.33	1.10	0.94	0.73	0.73	0.81				
Cal SCS-BC Et				0.48	2.94	3.81	3.96	3.70	2.29				17.17
Std Dev Et				0.13	0.37	0.56	0.49	0.17	0.43				1.44
Net Irr in.					1.71	2.70	2.85	2.52	0.87				10.66
E-LAKE													
Cal SCS-BC k	1.43	1.99	2.00	1.79	1.55	1.17	0.91	0.98	1.18	1.75	1.69	1.45	
Cal SCS-BC Evap	0.77	1.06	1.75	2.62	4.13	4.72	4.93	4.92	3.35	2.41	1.12	0.69	32.49
Std Dev Evap	0.10	0.10	0.51	0.70	0.51	0.69	0.60	0.23	0.63	0.51	0.15	0.12	2.66
Net Loss in.				1.13	2.59	3.34	3.54	3.46	1.59	0.62			16.27
ET Ref													
Cal SCS-BC k	1.59	2.21	2.65	2.00	2.00	1.68	1.31	1.31	1.48	1.95	1.88	1.61	
Estimated Etr	0.86	1.18	2.32	2.94	5.33	6.80	7.07	6.60	4.20	2.69	1.24	0.77	41.99
Std Dev Et	0.11	0.11	0.67	0.78	0.66	1.00	0.87	0.30	0.79	0.56	0.17	0.13	3.42

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARK VALLEY

From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994

Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 5540 ft., Lat. 41.80

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.60	6.61	8.27	8.98	10.15	10.26	10.41	9.67	8.41	7.67	6.59	6.38	100.00
Avg Temp F	24.23	28.73	35.99	43.46	52.62	61.25	70.40	68.52	59.03	47.95	35.56	26.19	46.16
Std Dev Temp	3.48	3.48	2.96	3.58	2.85	3.49	2.21	3.14	2.66	3.41	2.58	2.95	1.25
Avg Prec in.	0.88	0.80	0.87	0.90	1.45	1.29	1.06	1.05	0.70	0.97	0.90	0.81	11.69
Std Dev Prec	0.68	0.48	0.69	0.69	1.23	1.00	0.79	0.99	0.80	0.84	0.59	0.66	3.27
SCS-BC f in.	0.48	0.57	0.97	1.73	3.20	4.71	6.63	5.79	3.52	1.91	0.75	0.50	30.76
Std Dev f	0.07	0.08	0.18	0.38	0.44	0.66	0.49	0.63	0.38	0.35	0.11	0.06	1.85
ALFALFA													
Cal SCS-BC k				1.13	1.70	1.43	1.28	1.15	1.51	1.05			
Cal SCS-BC Et				1.96	5.43	6.75	8.47	6.68	5.32	2.02			36.62
Std Dev Et				0.43	0.75	0.95	0.63	0.72	0.58	0.37			2.43
Net Irr in.				1.24	4.27	5.72	7.63	5.84	4.76	1.24			30.69
PASTURE													
Cal SCS-BC k				1.00	1.08	1.26	1.02	0.94	1.13	0.69			
Cal SCS-BC Et				1.74	3.46	5.92	6.80	5.42	3.97	1.31			28.60
Std Dev Et				0.39	0.48	0.83	0.50	0.59	0.43	0.24			1.92
Net Irr in.				1.01	2.30	4.88	5.95	4.58	3.40	0.54			22.67
OTHR HAY													
Cal SCS-BC k				1.35	1.70	2.02	1.16	0.52	0.27				
Cal SCS-BC Et				2.34	5.43	9.49	7.70	3.00	0.95				28.92
Std Dev Et				0.52	0.75	1.34	0.57	0.33	0.10				2.36
Net Irr in.				1.62	4.27	8.46	6.85	2.17	0.39				23.76
SP GRAIN													
Cal SCS-BC k				0.41	1.24	1.93	1.26	0.16					
Cal SCS-BC Et				0.71	3.95	9.10	8.37	0.94					23.07
Std Dev Et				0.16	0.54	1.28	0.62	0.10					1.91
Net Irr in.					2.79	8.07	7.53	0.10					18.48

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARK VALLEY
From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 5540 ft., Lat. 41.80

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.32	0.97	1.08	0.88	0.81	0.97	0.59			
Cal SCS-BC Et				2.28	3.12	5.09	5.86	4.67	3.41	1.13			25.56
Std Dev Et				0.51	0.43	0.72	0.43	0.51	0.37	0.21			1.77
Net Irr in.				1.56	1.96	4.06	5.01	3.83	2.85	0.35			19.62
GARDEN													
Cal SCS-BC k					0.33	0.78	1.11	0.98	0.39				
Cal SCS-BC Et					1.07	3.67	7.37	5.65	1.38				19.13
Std Dev Et					0.15	0.52	0.54	0.61	0.15				1.28
Net Irr in.						2.63	6.52	4.81	0.81				14.78
E-LAKE													
Cal SCS-BC k			1.40	2.00	1.42	1.33	0.97	1.03	1.29	1.28			
Cal SCS-BC Evap			1.36	3.46	4.54	6.27	6.45	5.95	4.55	2.44			35.02
Std Dev Evap			0.26	0.77	0.62	0.88	0.48	0.64	0.49	0.45			2.40
Net Loss in.			0.49	2.56	3.09	4.98	5.39	4.90	3.85	1.47			26.73
ET Ref													
Cal SCS-BC k			1.56	2.57	1.74	1.93	1.58	1.44	1.73	1.55			
Estimated Etr			1.52	4.45	5.57	9.10	10.46	8.33	6.10	2.95			48.49
Std Dev Et			0.29	0.99	0.77	1.28	0.77	0.90	0.66	0.55			3.28

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PAROWAN POWER PLANT

From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994

Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 6000 ft., Lat. 37.83

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.86	6.75	8.30	8.88	9.93	9.98	10.15	9.51	8.38	7.78	6.81	6.67	100.00
Avg Temp F	27.90	32.55	38.21	45.90	54.80	64.53	71.15	68.95	60.89	50.20	38.16	29.45	48.56
Std Dev Temp	4.01	4.07	3.52	3.53	3.11	2.35	1.63	1.81	2.73	3.47	2.99	3.84	1.29
Avg Prec in.	0.81	1.09	1.61	1.37	0.83	0.53	1.29	1.53	0.96	1.03	1.13	0.93	13.11
Std Dev Prec	0.66	0.65	0.87	0.78	0.61	0.48	0.95	0.89	0.83	0.82	0.73	0.61	2.96
SCS-BC f in.	0.58	0.69	1.13	1.98	3.47	5.18	6.62	5.77	3.78	2.18	0.92	0.59	32.88
Std Dev f	0.09	0.14	0.29	0.40	0.49	0.45	0.35	0.36	0.41	0.38	0.20	0.08	1.56
ALFALFA													
Cal SCS-BC k				1.09	1.95	1.20	1.11	1.28	1.10	0.45			
Cal SCS-BC Et				2.15	6.75	6.23	7.33	7.38	4.17	0.98			34.99
Std Dev Et				0.43	0.95	0.54	0.39	0.46	0.45	0.17			1.79
Net Irr in.				1.05	6.08	5.81	6.30	6.16	3.41	0.15			28.96
PASTURE													
Cal SCS-BC k			0.11	1.10	1.31	1.06	0.89	0.88	1.00	0.54			
Cal SCS-BC Et			0.12	2.17	4.52	5.50	5.87	5.05	3.77	1.18			28.19
Std Dev Et			0.03	0.44	0.64	0.48	0.31	0.31	0.41	0.21			1.43
Net Irr in.				1.08	3.86	5.08	4.84	3.82	3.00	0.35			22.03
SP GRAIN													
Cal SCS-BC k				0.59	1.65	1.64	0.96						
Cal SCS-BC Et				1.17	5.72	8.47	6.35						21.70
Std Dev Et				0.23	0.80	0.74	0.34						1.36
Net Irr in.				0.07	5.05	8.05	5.32						18.49
CORN													
Cal SCS-BC k					0.27	0.50	1.04	1.27	0.49				
Cal SCS-BC Et					0.94	2.61	6.87	7.34	1.86				19.62
Std Dev Et					0.13	0.23	0.37	0.46	0.20				0.81
Net Irr in.					0.27	2.19	5.84	6.11	1.09				15.51

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PAROWAN POWER PLANT
From a Calibrated SCS Blaney-Criddle Equation using data from CEDAR CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 CEDAR CITY: 1985-1990 Elev. 6000 ft., Lat. 37.83

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.44	1.22	1.13	0.92	0.76	0.75	0.86	0.61			
Cal SCS-BC Et			0.50	2.41	3.90	4.74	5.06	4.35	3.25	1.33			25.54
Std Dev Et			0.13	0.48	0.55	0.41	0.27	0.27	0.35	0.23			1.34
Net Irr in.				1.31	3.24	4.32	4.03	3.12	2.48	0.51			19.01
GARDEN													
Cal SCS-BC k					0.52	0.78	1.07	0.66	0.22				
Cal SCS-BC Et					1.81	4.06	7.08	3.83	0.82				17.60
Std Dev Et					0.26	0.35	0.38	0.24	0.09				0.75
Net Irr in.					1.15	3.64	6.05	2.60	0.06				13.49
E-LAKE													
Cal SCS-BC k	1.82	1.67	2.00	1.93	1.59	1.14	0.96	1.01	1.25	1.42	1.79	1.81	
Cal SCS-BC Evap	1.05	1.15	2.26	3.82	5.51	5.88	6.34	5.84	4.72	3.10	1.64	1.07	42.38
Std Dev Evap	0.16	0.23	0.57	0.77	0.78	0.51	0.34	0.36	0.51	0.54	0.36	0.15	2.28
Net Loss in.	0.23	0.05	0.66	2.45	4.68	5.35	5.05	4.30	3.77	2.07	0.51	0.14	29.26
ET Ref													
Cal SCS-BC k	2.02	1.86	2.71	2.17	2.01	1.64	1.36	1.35	1.53	1.62	1.99	2.01	
Estimated Etr	1.16	1.27	3.07	4.30	6.97	8.47	9.04	7.77	5.80	3.54	1.83	1.19	54.39
Std Dev Et	0.18	0.25	0.78	0.86	0.98	0.74	0.48	0.48	0.63	0.62	0.39	0.16	2.84

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARTOUN

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4780 ft., Lat. 39.63

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.75	6.69	8.28	8.93	10.02	10.10	10.26	9.58	8.39	7.73	6.72	6.55	100.00
Avg Temp F	26.42	33.04	40.17	47.84	57.20	67.24	75.14	72.78	62.61	50.31	37.83	27.38	49.83
Std Dev Temp	4.68	4.18	3.57	3.52	2.76	3.13	1.45	2.05	2.77	2.71	2.28	3.83	1.13
Avg Prec in.	0.32	0.43	0.53	0.74	0.95	0.73	0.62	0.63	0.70	0.73	0.46	0.34	7.19
Std Dev Prec	0.30	0.41	0.38	0.47	0.88	0.93	0.71	0.60	0.91	0.65	0.43	0.35	2.15
SCS-BC f in.	0.53	0.69	1.29	2.21	3.89	5.78	7.61	6.60	4.05	2.17	0.88	0.54	36.24
Std Dev f	0.09	0.13	0.32	0.42	0.46	0.64	0.34	0.43	0.43	0.30	0.13	0.08	1.60
ALFALFA													
Cal SCS-BC k				0.28	1.78	1.09	1.22	0.98	0.97				
Cal SCS-BC Et				0.63	6.92	6.28	9.30	6.45	3.93				33.50
Std Dev Et				0.12	0.82	0.69	0.41	0.42	0.41				1.65
Net Irr in.				0.04	6.16	5.70	8.80	5.94	3.37				30.00
PASTURE													
Cal SCS-BC k				0.43	1.03	0.96	0.84	0.82	0.92	0.18			
Cal SCS-BC Et				0.95	4.02	5.57	6.41	5.40	3.73	0.39			26.46
Std Dev Et				0.18	0.48	0.61	0.28	0.36	0.39	0.05			1.27
Net Irr in.				0.36	3.26	4.99	5.91	4.89	3.17				22.57
OTHR HAY													
Cal SCS-BC k				0.17	1.41	1.55	1.05	0.47	0.37				
Cal SCS-BC Et				0.37	5.46	8.96	8.02	3.08	1.52				27.40
Std Dev Et				0.07	0.65	0.99	0.36	0.20	0.16				1.51
Net Irr in.					4.70	8.38	7.52	2.58	0.95				24.12
SP GRAIN													
Cal SCS-BC k				0.22	1.09	1.48	1.13	0.08					
Cal SCS-BC Et				0.49	4.23	8.54	8.59	0.56					22.41
Std Dev Et				0.09	0.50	0.94	0.38	0.04					1.33
Net Irr in.					3.47	7.96	8.09	0.05					19.57
CORN													
Cal SCS-BC k					0.21	0.45	1.00	1.19	0.83				
Cal SCS-BC Et					0.80	2.59	7.62	7.85	3.37				22.22
Std Dev Et					0.10	0.28	0.34	0.52	0.36				0.92
Net Irr in.					0.04	2.01	7.12	7.34	2.81				19.31

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PARTOUN

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 4780 ft., Lat. 39.63

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.67	1.00	0.83	0.73	0.71	0.79	0.32			
Cal SCS-BC Et				1.49	3.88	4.80	5.52	4.65	3.21	0.70			24.25
Std Dev Et				0.28	0.46	0.53	0.24	0.31	0.34	0.10			1.18
Net Irr in.				0.90	3.11	4.21	5.02	4.15	2.65	0.12			20.16
E-LAKE													
Cal SCS-BC k	1.69	1.95	1.93	1.62	1.37	1.02	0.87	0.91	1.11	1.33	1.75	1.85	
Cal SCS-BC Evap	0.90	1.34	2.48	3.59	5.33	5.89	6.65	6.01	4.49	2.90	1.54	0.99	42.12
Std Dev Evap	0.16	0.25	0.62	0.68	0.64	0.65	0.29	0.40	0.47	0.40	0.24	0.14	2.03
Net Loss in.	0.58	0.91	1.95	2.85	4.38	5.16	6.02	5.38	3.79	2.17	1.08	0.65	34.93
ET Ref													
Cal SCS-BC k	1.88	2.16	2.14	1.86	1.78	1.48	1.30	1.26	1.41	1.57	1.95	2.05	
Estimated Etr	1.00	1.49	2.76	4.11	6.92	8.56	9.86	8.31	5.73	3.41	1.71	1.11	54.98
Std Dev Et	0.18	0.28	0.69	0.78	0.82	0.94	0.44	0.55	0.60	0.47	0.26	0.16	2.59

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PINE VIEW DAM

From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-31-1994

Years of Data Available; NWS: 1961-1990 PARK CITY: 1980-1990 Elev. 4940 ft., Lat. 41.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.64	6.63	8.27	8.97	10.12	10.22	10.37	9.65	8.40	7.69	6.62	6.43	100.00
Avg Temp F	18.66	23.18	33.04	42.97	51.81	60.47	68.45	66.67	57.03	46.13	33.76	22.52	43.72
Std Dev Temp	5.17	5.53	4.49	3.29	2.49	2.38	1.39	2.20	2.95	3.01	2.72	4.77	1.40
Avg Prec in.	3.22	2.92	3.23	3.07	3.07	1.53	0.93	1.22	2.16	2.71	3.32	3.49	30.85
Std Dev Prec	1.65	1.82	1.77	1.92	2.02	1.11	1.03	1.19	1.92	1.85	1.83	2.74	8.04
SCS-BC f in.	0.37	0.46	0.86	1.67	3.06	4.53	6.18	5.41	3.24	1.73	0.69	0.43	28.64
Std Dev f	0.10	0.11	0.19	0.34	0.37	0.44	0.30	0.42	0.41	0.30	0.09	0.09	1.29
ALFALFA													
Cal SCS-BC k				1.04	1.82	1.26	1.38	0.97	1.20				
Cal SCS-BC Et				1.74	5.57	5.73	8.55	5.26	3.87				30.72
Std Dev Et				0.36	0.68	0.55	0.41	0.41	0.49				1.51
Net Irr in.					3.11	4.51	7.81	4.29	2.14				21.86
OTHR HAY													
Cal SCS-BC k				0.67	1.63	1.81	1.28	0.53	0.34				
Cal SCS-BC Et				1.12	4.99	8.22	7.91	2.85	1.11				26.21
Std Dev Et				0.23	0.61	0.80	0.38	0.22	0.14				1.37
Net Irr in.					2.53	7.00	7.17	1.88					18.58
PASTURE													
Cal SCS-BC k				0.91	1.19	1.12	0.91	0.88	0.88	0.23			
Cal SCS-BC Et				1.53	3.65	5.10	5.62	4.75	2.84	0.40			23.89
Std Dev Et				0.31	0.44	0.49	0.27	0.37	0.36	0.07			1.17
Net Irr in.					1.19	3.87	4.88	3.78	1.11				14.83
SP GRAIN													
Cal SCS-BC k				0.27	1.03	1.71	1.31	0.33					
Cal SCS-BC Et				0.46	3.16	7.74	8.08	1.76					21.20
Std Dev Et				0.09	0.39	0.75	0.39	0.14					1.11
Net Irr in.					0.70	6.52	7.34	0.79					15.35
CORN													
Cal SCS-BC k					0.27	0.52	1.00	1.28	1.15				
Cal SCS-BC Et					0.82	2.37	6.19	6.93	3.73				20.05
Std Dev Et					0.10	0.23	0.30	0.54	0.48				0.86
Net Irr in.						1.15	5.45	5.96	2.01				14.57

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PINE VIEW DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-31-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1980-1990 Elev. 4940 ft., Lat. 41.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.08	1.05	0.97	0.78	0.76	0.76	0.61			
Cal SCS-BC Et				1.81	3.20	4.39	4.84	4.09	2.44	1.06			21.84
Std Dev Et				0.37	0.39	0.42	0.23	0.32	0.31	0.18			1.10
Net Irr in.					0.75	3.17	4.10	3.12	0.72				11.85
GARDEN													
Cal SCS-BC k					0.27	0.64	0.97	0.93	0.34				
Cal SCS-BC Et					0.83	2.89	6.01	5.01	1.11				15.85
Std Dev Et					0.10	0.28	0.29	0.39	0.14				0.64
Net Irr in.						1.66	5.27	4.04					10.97
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.89	1.49	1.23	0.97	1.00	1.10	1.65	2.00	2.00	
Cal SCS-BC Evap	0.74	0.92	1.73	3.15	4.58	5.59	6.00	5.39	3.54	2.84	1.38	0.87	36.74
Std Dev Evap	0.21	0.22	0.38	0.65	0.56	0.54	0.29	0.42	0.45	0.49	0.18	0.18	1.88
Net Loss in.				0.08	1.51	4.06	5.08	4.18	1.38	0.14			16.42
ET Ref													
Cal SCS-BC k	2.53	3.15	2.64	2.12	1.87	1.73	1.40	1.35	1.35	1.88	2.31	2.59	
Estimated Etr	0.94	1.45	2.28	3.54	5.72	7.84	8.65	7.31	4.36	3.24	1.59	1.13	48.05
Std Dev Et	0.26	0.35	0.51	0.73	0.70	0.76	0.42	0.57	0.56	0.55	0.21	0.24	2.37

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PLEASANT GROVE
From a Calibrated SCS Blaney-Criddle Equation using data from PALMYRA 10-13-1994
Years of Data Available; NWS: 1961-1990 PALMYRA: 1986-1991 Elev. 4760 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.15	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	28.14	33.83	41.26	48.92	57.81	66.71	74.44	72.26	63.14	52.11	40.15	30.11	50.74
Std Dev Temp	4.14	4.61	3.70	3.52	2.72	2.89	1.43	2.26	3.27	3.25	2.71	3.63	1.29
Avg Prec in.	1.58	1.55	1.81	1.89	1.65	0.97	0.78	0.83	1.27	1.67	1.51	1.59	17.10
Std Dev Prec	0.92	0.99	1.06	1.19	1.28	0.92	0.61	0.66	1.14	1.19	0.86	1.18	4.29
SCS-BC f in.	0.57	0.72	1.39	2.35	4.01	5.70	7.48	6.51	4.14	2.38	1.03	0.59	36.86
Std Dev f	0.08	0.15	0.33	0.44	0.46	0.59	0.33	0.47	0.51	0.37	0.19	0.08	1.93
ALFALFA													
Cal SCS-BC k				1.01	1.49	1.20	0.92	0.86	0.98	0.46			
Cal SCS-BC Et				2.37	5.97	6.87	6.86	5.61	4.05	1.10			32.83
Std Dev Et				0.44	0.69	0.71	0.31	0.40	0.50	0.17			1.88
Net Irr in.				0.86	4.64	6.10	6.23	4.95	3.04				25.83
ALFALFA													
Cal SCS-BC k				1.01	1.64	1.04	1.02	1.09	0.92	0.48			
Cal SCS-BC Et				2.37	6.58	5.95	7.61	7.12	3.80	1.14			34.56
Std Dev Et				0.44	0.76	0.61	0.34	0.51	0.47	0.18			1.91
Net Irr in.				0.86	5.25	5.17	6.98	6.46	2.79				27.51
PASTURE													
Cal SCS-BC k			0.22	0.86	1.07	0.93	0.81	0.76	0.82	0.61			
Cal SCS-BC Et			0.30	2.02	4.28	5.29	6.06	4.93	3.42	1.46			27.76
Std Dev Et			0.07	0.38	0.50	0.55	0.27	0.36	0.42	0.23			1.56
Net Irr in.				0.51	2.96	4.52	5.44	4.27	2.40	0.12			20.22
OTHR HAY													
Cal SCS-BC k				0.69	1.58	1.48	0.79	0.40	0.26				
Cal SCS-BC Et				1.62	6.34	8.46	5.94	2.60	1.09				26.05
Std Dev Et				0.30	0.73	0.87	0.26	0.19	0.14				1.60
Net Irr in.				0.11	5.02	7.68	5.32	1.94	0.08				20.14
SP GRAIN													
Cal SCS-BC k			0.05	0.54	1.45	1.43	0.70						
Cal SCS-BC Et			0.07	1.28	5.81	8.14	5.25						20.55
Std Dev Et			0.02	0.24	0.67	0.84	0.23						1.38
Net Irr in.					4.49	7.37	4.62						16.48
CORN													
Cal SCS-BC k					0.24	0.44	0.91	1.10	0.78				
Cal SCS-BC Et					0.97	2.49	6.84	7.18	3.24				20.72
Std Dev Et					0.11	0.26	0.30	0.52	0.40				1.02
Net Irr in.						1.71	6.21	6.52	2.23				16.67

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at PLEASANT GROVE
From a Calibrated SCS Blaney-Criddle Equation using data from PALMYRA 10-13-1994
Years of Data Available; NWS: 1961-1990 PALMYRA: 1986-1991 Elev. 4760 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k				0.29	0.93	1.21	1.28	1.27	1.38	0.76			
Cal SCS-BC Et				0.69	3.71	6.91	9.58	8.25	5.70	1.79			36.64
Std Dev Et				0.13	0.43	0.71	0.43	0.60	0.71	0.28			1.87
Net Irr in.					2.38	6.14	8.96	7.59	4.69	0.46			30.22
TURF													
Cal SCS-BC k			0.23	0.93	0.92	0.80	0.70	0.65	0.71	0.63			
Cal SCS-BC Et			0.31	2.19	3.70	4.56	5.22	4.25	2.94	1.50			24.68
Std Dev Et			0.07	0.41	0.43	0.47	0.23	0.31	0.37	0.23			1.42
Net Irr in.				0.69	2.38	3.79	4.60	3.58	1.93	0.16			17.12
GARDEN													
Cal SCS-BC k					0.47	0.84	0.95	0.37	0.21				
Cal SCS-BC Et					1.89	4.82	7.08	2.43	0.88				17.09
Std Dev Et					0.22	0.50	0.32	0.18	0.11				0.84
Net Irr in.					0.56	4.04	6.45	1.76					12.82
E-LAKE													
Cal SCS-BC k	1.38	1.67	1.70	1.51	1.32	1.01	0.86	0.84	1.01	1.16	1.33	1.41	
Cal SCS-BC Evap	0.78	1.21	2.36	3.55	5.27	5.75	6.42	5.48	4.18	2.77	1.37	0.83	39.96
Std Dev Evap	0.11	0.25	0.56	0.66	0.61	0.59	0.29	0.40	0.52	0.43	0.25	0.11	2.25
Net Loss in.			0.54	1.67	3.62	4.78	5.64	4.66	2.91	1.09			24.91
ET Ref													
Cal SCS-BC k	1.53	1.86	1.88	1.68	1.65	1.43	1.25	1.16	1.27	1.35	1.48	1.56	
Estimated Etr	0.86	1.34	2.62	3.95	6.61	8.14	9.33	7.58	5.26	3.21	1.52	0.92	51.34
Std Dev Et	0.13	0.28	0.62	0.74	0.76	0.84	0.42	0.55	0.65	0.50	0.28	0.12	2.81

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RICHFIELD RADIO KSVC

From a Calibrated SCS Blaney-Criddle Equation using data from MONROE / SIGURD 10-31-1994

Years of Data Available; NWS: 1961-1990 MONROE / SIGURD: 1987-1990 Elev. 5270 ft., Lat. 38.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.80	6.72	8.29	8.91	9.98	10.04	10.21	9.55	8.39	7.76	6.76	6.61	100.00
Avg Temp F	26.98	32.96	39.58	46.90	55.19	64.05	70.93	68.92	60.42	49.71	37.89	28.52	48.50
Std Dev Temp	5.35	4.21	3.44	2.95	2.48	2.39	1.18	1.70	2.52	2.56	2.82	3.95	1.04
Avg Prec in.	0.56	0.58	0.73	0.75	0.84	0.58	0.79	0.70	0.93	0.84	0.68	0.59	8.57
Std Dev Prec	0.50	0.46	0.45	0.50	0.64	0.62	0.64	0.55	0.80	0.70	0.52	0.55	2.09
SCS-BC f in.	0.55	0.69	1.24	2.09	3.54	5.12	6.61	5.78	3.72	2.11	0.90	0.57	32.92
Std Dev f	0.11	0.12	0.29	0.34	0.40	0.46	0.26	0.34	0.37	0.28	0.16	0.08	1.18
ALFALFA													
Cal SCS-BC k				0.50	1.83	1.22	1.06	1.05	1.19	0.20			
Cal SCS-BC Et				1.05	6.48	6.25	6.99	6.08	4.43	0.43			31.71
Std Dev Et				0.17	0.73	0.56	0.27	0.35	0.44	0.06			1.39
Net Irr in.				0.45	5.80	5.79	6.36	5.52	3.68				27.61
ALFALFA													
Cal SCS-BC k				0.50	1.83	1.17	1.20	1.21	1.12	0.26			
Cal SCS-BC Et				1.05	6.48	5.98	7.95	6.99	4.16	0.54			33.14
Std Dev Et				0.17	0.73	0.53	0.31	0.41	0.42	0.07			1.40
Net Irr in.				0.45	5.80	5.52	7.32	6.42	3.41				28.93
PASTURE													
Cal SCS-BC k				0.75	1.22	1.05	0.90	0.90	0.94	0.18			
Cal SCS-BC Et				1.56	4.32	5.37	5.97	5.18	3.49	0.39			26.29
Std Dev Et				0.26	0.49	0.48	0.23	0.30	0.35	0.05			1.12
Net Irr in.				0.96	3.65	4.91	5.35	4.62	2.74				22.23
SP GRAIN													
Cal SCS-BC k				0.54	1.57	1.62	0.96						
Cal SCS-BC Et				1.12	5.57	8.27	6.33						21.29
Std Dev Et				0.18	0.63	0.74	0.25						1.20
Net Irr in.				0.52	4.90	7.81	5.70						18.92
CORN													
Cal SCS-BC k					0.22	0.44	0.94	1.31	1.08				
Cal SCS-BC Et					0.78	2.26	6.23	7.56	4.02				20.84
Std Dev Et					0.09	0.20	0.24	0.44	0.40				0.82
Net Irr in.					0.11	1.79	5.60	7.00	3.27				17.77

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RICHFIELD RADIO KSVC
From a Calibrated SCS Blaney-Criddle Equation using data from MONROE / SIGURD 10-31-1994
Years of Data Available; NWS: 1961-1990 MONROE / SIGURD: 1987-1990 Elev. 5270 ft., Lat. 38.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.87	1.08	0.90	0.78	0.77	0.81	0.47			
Cal SCS-BC Et				1.82	3.84	4.63	5.15	4.46	3.01	0.99			23.90
Std Dev Et				0.30	0.43	0.41	0.20	0.26	0.30	0.13			1.00
Net Irr in.				1.22	3.17	4.17	4.52	3.90	2.26	0.32			19.56
GARDEN													
Cal SCS-BC k					0.28	0.56	0.89	1.02	0.35				
Cal SCS-BC Et					0.98	2.87	5.87	5.90	1.30				16.93
Std Dev Et					0.11	0.26	0.23	0.34	0.13				0.62
Net Irr in.					0.31	2.41	5.24	5.34	0.55				13.85
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.89	1.79	1.49	1.05	0.87	0.91	1.07	0.78	1.80	1.58	
Cal SCS-BC Evap	0.98	1.39	2.35	3.74	5.26	5.37	5.75	5.25	3.96	1.64	1.62	0.90	38.20
Std Dev Evap	0.19	0.25	0.55	0.61	0.60	0.48	0.22	0.31	0.40	0.21	0.29	0.13	1.54
Net Loss in.	0.42	0.81	1.62	2.99	4.42	4.79	4.96	4.54	3.03	0.80	0.94	0.31	29.63
ET Ref													
Cal SCS-BC k			2.11	2.07	1.94	1.62	1.39	1.38	1.45	0.96			
Estimated Etr			2.61	4.32	6.85	8.27	9.19	7.97	5.37	2.02			46.60
Std Dev Et			0.61	0.71	0.78	0.74	0.36	0.46	0.54	0.26			2.03

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RICHMOND
From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN NF / LOGAN 5SW 10-31-1994
Years of Data Available; NWS: 1961-1990 LOGAN NF / LOGAN 5SW: 1980-1989 Elev. 4680 ft., Lat. 41.90

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.59	6.60	8.26	8.99	10.16	10.27	10.42	9.67	8.41	7.67	6.59	6.38	100.00
Avg Temp F	22.25	27.62	36.23	45.48	54.36	63.33	71.60	70.02	59.98	48.57	35.75	24.40	46.63
Std Dev Temp	5.01	5.64	4.57	3.64	2.53	3.04	1.90	2.60	3.90	3.26	2.81	4.40	1.46
Avg Prec in.	1.46	1.53	1.97	2.20	2.19	1.48	0.87	1.04	1.50	1.84	1.72	1.64	19.45
Std Dev Prec	0.78	0.84	1.06	1.27	1.33	1.16	0.85	1.23	1.36	1.31	1.05	1.09	5.64
SCS-BC f in.	0.44	0.55	1.03	1.95	3.47	5.10	6.90	6.09	3.67	1.97	0.76	0.47	32.40
Std Dev f	0.10	0.12	0.27	0.42	0.40	0.60	0.43	0.52	0.58	0.35	0.12	0.08	1.91
ALFALFA													
Cal SCS-BC k				0.64	1.54	1.05	0.99	1.06	0.82	0.12			
Cal SCS-BC Et				1.25	5.35	5.35	6.83	6.44	3.00	0.24			28.46
Std Dev Et				0.27	0.62	0.63	0.43	0.55	0.47	0.04			1.72
Net Irr in.					3.60	4.16	6.14	5.61	1.80				21.30
PASTURE													
Cal SCS-BC k				0.64	1.04	0.93	0.77	0.77	0.78	0.33			
Cal SCS-BC Et				1.26	3.61	4.74	5.31	4.67	2.86	0.64			23.08
Std Dev Et				0.27	0.42	0.56	0.33	0.40	0.45	0.11			1.44
Net Irr in.					1.86	3.55	4.61	3.83	1.66				15.52
OTHR HAY													
Cal SCS-BC k				0.61	1.56	1.48	0.68	0.39	0.28	0.04			
Cal SCS-BC Et				1.19	5.43	7.53	4.69	2.39	1.02	0.09			22.34
Std Dev Et				0.25	0.63	0.88	0.29	0.20	0.16	0.02			1.52
Net Irr in.					3.68	6.34	4.00	1.56					15.57
SP GRAIN													
Cal SCS-BC k				0.22	0.92	1.41	1.11	0.20					
Cal SCS-BC Et				0.43	3.18	7.19	7.63	1.23					19.66
Std Dev Et				0.09	0.37	0.84	0.48	0.11					1.28
Net Irr in.					1.43	6.00	6.94	0.40					14.76
CORN													
Cal SCS-BC k					0.29	0.49	0.90	1.12	0.60				
Cal SCS-BC Et					1.02	2.48	6.24	6.79	2.21				18.74
Std Dev Et					0.12	0.29	0.39	0.58	0.35				1.06
Net Irr in.						1.29	5.55	5.96	1.01				13.81
SWE CORN													
Cal SCS-BC k					0.23	0.41	0.82	1.08					
Cal SCS-BC Et					0.79	2.08	5.68	6.59					15.13
Std Dev Et					0.09	0.24	0.36	0.56					0.85
Net Irr in.						0.89	4.99	5.76					11.63

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RICHMOND

From a Calibrated SCS Blaney-Criddle Equation using data from LOGAN NF / LOGAN 5SW 10-31-1994

Years of Data Available; NWS: 1961-1990 LOGAN NF / LOGAN 5SW: 1980-1989 Elev. 4680 ft., Lat. 41.90

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.99	0.94	0.80	0.66	0.66	0.67	0.42			
Cal SCS-BC Et				1.93	3.25	4.08	4.57	4.02	2.46	0.84			21.16
Std Dev Et				0.41	0.38	0.48	0.29	0.34	0.39	0.15			1.40
Net Irr in.				0.17	1.50	2.90	3.88	3.19	1.26				12.89
GARDEN													
Cal SCS-BC k					0.44	0.63	0.88	0.74	0.16				
Cal SCS-BC Et					1.52	3.22	6.10	4.48	0.60				15.92
Std Dev Et					0.18	0.38	0.38	0.38	0.09				0.88
Net Irr in.						2.03	5.40	3.64					11.07
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.69	1.38	1.09	0.88	0.94	1.04	1.21	2.00	1.82	
Cal SCS-BC Evap	0.88	1.10	2.05	3.30	4.79	5.57	6.10	5.74	3.82	2.38	1.52	0.85	38.11
Std Dev Evap	0.20	0.25	0.53	0.70	0.56	0.65	0.38	0.49	0.60	0.42	0.24	0.15	2.33
Net Loss in.			0.08	1.09	2.60	4.09	5.24	4.70	2.33	0.54			20.66
ET Ref													
Cal SCS-BC k	2.25	2.96	2.55	1.88	1.67	1.43	1.18	1.18	1.20	1.36	2.23	2.03	
Estimated Etr	0.99	1.63	2.62	3.66	5.80	7.29	8.17	7.18	4.40	2.69	1.70	0.95	47.07
Std Dev Et	0.22	0.37	0.68	0.78	0.68	0.85	0.51	0.61	0.69	0.47	0.27	0.17	2.83

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RIVERDALE

From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE 10-26-1994

Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 Elev. 4400 ft., Lat. 41.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.65	6.63	8.27	8.97	10.11	10.21	10.36	9.64	8.40	7.69	6.63	6.43	100.00
Avg Temp F	27.08	32.65	40.44	48.59	57.34	66.61	75.17	73.08	63.15	51.77	39.26	28.64	50.31
Std Dev Temp	4.16	4.58	3.71	3.20	2.98	2.96	1.96	2.40	3.31	3.38	2.92	3.41	1.26
Avg Prec in.	1.51	1.57	2.16	2.43	2.36	1.36	0.78	0.95	1.63	1.86	1.73	1.62	19.97
Std Dev Prec	0.96	1.12	1.33	1.34	1.68	1.11	0.85	1.01	1.55	1.26	0.93	1.29	5.82
SCS-BC f in.	0.54	0.68	1.31	2.31	3.95	5.72	7.69	6.71	4.15	2.33	0.97	0.55	36.90
Std Dev f	0.08	0.14	0.32	0.39	0.51	0.61	0.46	0.51	0.52	0.39	0.19	0.07	1.86
ALFALFA													
Cal SCS-BC k				1.30	1.65	1.16	0.90	0.89	0.91	1.07			
Cal SCS-BC Et				2.99	6.53	6.64	6.93	6.00	3.76	2.48			35.34
Std Dev Et				0.51	0.85	0.71	0.42	0.46	0.47	0.41			1.95
Net Irr in.				1.05	4.64	5.55	6.30	5.24	2.46	0.99			26.23
PASTURE													
Cal SCS-BC k			0.32	0.97	1.08	0.98	0.79	0.77	0.76	0.84			
Cal SCS-BC Et			0.41	2.25	4.26	5.61	6.05	5.16	3.17	1.97			28.88
Std Dev Et			0.10	0.38	0.55	0.60	0.36	0.39	0.40	0.33			1.54
Net Irr in.				0.30	2.37	4.52	5.43	4.40	1.86	0.48			19.36
SP GRAIN													
Cal SCS-BC k				0.43	1.29	1.51	0.90	0.01					
Cal SCS-BC Et				0.99	5.08	8.64	6.91	0.09					21.71
Std Dev Et				0.17	0.66	0.92	0.42	0.01					1.46
Net Irr in.					3.20	7.55	6.28						17.03
CORN													
Cal SCS-BC k					0.33	0.52	0.90	1.12	1.01				
Cal SCS-BC Et					1.31	2.98	6.88	7.53	4.17				22.87
Std Dev Et					0.17	0.32	0.41	0.57	0.53				1.19
Net Irr in.						1.89	6.26	6.77	2.86				17.78
PEACHES													
Cal SCS-BC k			0.08	0.83	1.27	1.38	1.21	1.16	0.97				
Cal SCS-BC Et			0.11	1.93	5.02	7.88	9.28	7.80	4.02				36.03
Std Dev Et			0.03	0.33	0.65	0.84	0.56	0.59	0.51				1.92
Net Irr in.					3.14	6.79	8.65	7.03	2.71				28.32
ORCHARD													
Cal SCS-BC k				0.24	0.97	1.41	1.30	1.29	1.23	0.59			
Cal SCS-BC Et				0.54	3.81	8.05	10.03	8.64	5.11	1.37			37.57
Std Dev Et				0.09	0.49	0.86	0.60	0.66	0.65	0.23			1.89
Net Irr in.					1.93	6.96	9.41	7.88	3.81				29.98

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at RIVERDALE

From a Calibrated SCS Blaney-Criddle Equation using data from KAYSVILLE 10-26-1994

Years of Data Available; NWS: 1961-1990 KAYSVILLE: 1980-1990 Elev. 4400 ft., Lat. 41.15

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.36	0.94	0.93	0.85	0.68	0.66	0.66	0.85			
Cal SCS-BC Et			0.47	2.17	3.67	4.84	5.21	4.44	2.73	1.98			25.52
Std Dev Et			0.12	0.37	0.47	0.51	0.31	0.34	0.34	0.33			1.36
Net Irr in.				0.22	1.78	3.75	4.59	3.68	1.43	0.49			15.94
GARDEN													
Cal SCS-BC k				0.11	0.45	0.71	0.92	0.72	0.27	0.17			
Cal SCS-BC Et				0.24	1.79	4.06	7.07	4.85	1.10	0.39			19.50
Std Dev Et				0.04	0.23	0.43	0.43	0.37	0.14	0.07			0.96
Net Irr in.						2.97	6.44	4.08					13.49
E-LAKE													
Cal SCS-BC k	1.43	2.00	1.53	1.55	1.31	1.06	0.83	0.87	0.95	1.35	1.41	1.51	
Cal SCS-BC Evap	0.77	1.36	2.01	3.58	5.16	6.07	6.38	5.81	3.93	3.15	1.36	0.84	40.43
Std Dev Evap	0.12	0.28	0.49	0.61	0.67	0.65	0.38	0.44	0.50	0.52	0.27	0.10	2.15
Net Loss in.				1.15	2.80	4.71	5.60	4.86	2.30	1.29			22.72
ET Ref													
Cal SCS-BC k	1.59	2.33	1.70	1.75	1.66	1.51	1.21	1.18	1.18	1.54	1.56	1.68	
Estimated Etr	0.86	1.58	2.23	4.04	6.54	8.64	9.31	7.94	4.87	3.60	1.51	0.93	52.04
Std Dev Et	0.13	0.32	0.55	0.69	0.85	0.92	0.56	0.60	0.61	0.60	0.29	0.11	2.71

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ROOSEVELT
From a Calibrated SCS Blaney-Criddle Equation using data from ROOSEVELT 10-26-1994
Years of Data Available; NWS: 1961-1990 ROOSEVELT: 1988-1990 Elev. 5010 ft., Lat. 40.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.94	10.06	10.15	10.31	9.61	8.40	7.71	6.68	6.50	100.00
Avg Temp F	16.25	23.72	37.42	47.79	57.43	66.30	73.04	70.78	61.09	49.27	34.55	20.39	46.50
Std Dev Temp	7.53	7.60	3.60	3.11	2.29	2.72	1.45	2.01	2.91	2.87	3.78	6.19	1.61
Avg Prec in.	0.55	0.44	0.56	0.55	0.78	0.66	0.50	0.57	0.63	0.88	0.47	0.52	7.11
Std Dev Prec	0.51	0.37	0.42	0.50	0.58	0.92	0.46	0.41	0.53	0.74	0.41	0.46	2.14
SCS-BC f in.	0.33	0.48	1.08	2.21	3.94	5.62	7.15	6.20	3.82	2.06	0.73	0.40	34.01
Std Dev f	0.15	0.16	0.25	0.37	0.39	0.55	0.33	0.41	0.43	0.31	0.14	0.12	1.43
ALFALFA													
Cal SCS-BC k				0.89	1.82	1.16	1.05	1.14	1.01	0.46			
Cal SCS-BC Et				1.97	7.15	6.52	7.48	7.07	3.86	0.95			35.00
Std Dev Et				0.33	0.71	0.64	0.34	0.47	0.44	0.14			1.58
Net Irr in.				1.53	6.53	5.99	7.09	6.62	3.35	0.24			31.34
PASTURE													
Cal SCS-BC k				0.63	1.06	1.02	0.87	0.84	0.87	0.55			
Cal SCS-BC Et				1.39	4.15	5.76	6.24	5.20	3.34	1.12			27.20
Std Dev Et				0.23	0.41	0.56	0.29	0.35	0.38	0.17			1.18
Net Irr in.				0.94	3.53	5.23	5.84	4.74	2.83	0.42			23.54
OTHR HAY													
Cal SCS-BC k				0.34	1.58	1.65	1.12	0.48	0.37	0.17			
Cal SCS-BC Et				0.76	6.22	9.28	7.98	2.99	1.42	0.35			28.99
Std Dev Et				0.13	0.62	0.91	0.37	0.20	0.16	0.05			1.38
Net Irr in.				0.31	5.60	8.76	7.59	2.53	0.91				25.69
SP GRAIN													
Cal SCS-BC k				0.44	1.44	1.58	1.03	0.03					
Cal SCS-BC Et				0.96	5.68	8.85	7.39	0.20					23.08
Std Dev Et				0.16	0.56	0.87	0.34	0.01					1.25
Net Irr in.				0.52	5.06	8.33	7.00						20.90
CORN													
Cal SCS-BC k					0.32	0.55	1.06	1.22	1.10				
Cal SCS-BC Et					1.27	3.08	7.60	7.54	4.19				23.69
Std Dev Et					0.13	0.30	0.35	0.50	0.48				0.97
Net Irr in.					0.65	2.55	7.21	7.08	3.68				21.18

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ROOSEVELT
From a Calibrated SCS Blaney-Criddle Equation using data from ROOSEVELT 10-26-1994
Years of Data Available; NWS: 1961-1990 ROOSEVELT: 1988-1990 Elev. 5010 ft., Lat. 40.28

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.00	1.04	0.88	0.75	0.72	0.75	0.61			
Cal SCS-BC Et				2.20	4.11	4.96	5.38	4.48	2.87	1.25			25.25
Std Dev Et				0.37	0.41	0.49	0.25	0.30	0.33	0.19			1.15
Net Irr in.				1.76	3.49	4.43	4.98	4.02	2.37	0.54			21.59
GARDEN													
Cal SCS-BC k					0.43	0.67	1.00	0.78	0.30				
Cal SCS-BC Et					1.70	3.79	7.17	4.84	1.13				18.63
Std Dev Et					0.17	0.37	0.33	0.32	0.13				0.73
Net Irr in.					1.07	3.26	6.78	4.38	0.63				16.12
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.63	1.38	1.00	0.86	0.91	1.04	1.32	1.91	1.99	
Cal SCS-BC Evap	0.65	0.95	2.17	3.60	5.43	5.60	6.17	5.63	3.97	2.71	1.41	0.79	39.09
Std Dev Evap	0.30	0.31	0.50	0.61	0.54	0.55	0.28	0.37	0.45	0.40	0.27	0.24	1.83
Net Loss in.	0.11	0.52	1.61	3.05	4.65	4.95	5.68	5.06	3.33	1.83	0.94	0.27	31.99
ET Ref													
Cal SCS-BC k	2.97	2.91	2.31	1.92	1.87	1.58	1.34	1.29	1.34	1.54	2.13	2.21	
Estimated Etr	0.97	1.39	2.50	4.23	7.35	8.85	9.60	7.99	5.14	3.17	1.56	0.88	53.63
Std Dev Et	0.45	0.45	0.58	0.72	0.73	0.87	0.44	0.53	0.58	0.47	0.30	0.27	2.46

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ST GEORGE
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 2760 ft., Lat. 37.12

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.90	6.77	8.30	8.87	9.89	9.93	10.11	9.49	8.38	7.80	6.85	6.72	100.00
Avg Temp F	40.44	46.49	52.81	60.53	69.96	79.34	85.56	83.38	75.05	63.31	50.08	40.85	62.32
Std Dev Temp	3.11	3.05	3.10	3.41	2.83	2.58	1.62	2.09	2.83	2.89	2.15	2.91	1.16
Avg Prec in.	1.07	0.84	1.11	0.51	0.39	0.17	0.60	0.76	0.54	0.52	0.84	0.71	8.06
Std Dev Prec	0.98	0.75	1.07	0.63	0.49	0.22	0.45	0.66	0.58	0.66	0.71	0.70	2.69
SCS-BC f in.	1.09	1.55	2.64	3.95	6.21	8.35	10.09	8.93	6.20	3.87	1.90	1.09	55.88
Std Dev f	0.24	0.27	0.40	0.54	0.59	0.62	0.43	0.51	0.54	0.42	0.21	0.21	2.36
ALFALFA													
Cal SCS-BC k			0.93	1.18	1.16	0.97	0.82	0.81	0.88	0.83	0.20		
Cal SCS-BC Et			2.47	4.65	7.24	8.14	8.27	7.26	5.45	3.21	0.38		47.06
Std Dev Et			0.37	0.64	0.69	0.60	0.35	0.42	0.47	0.35	0.04		2.15
Net Irr in.			1.58	4.24	6.92	8.00	7.79	6.66	5.02	2.80			43.00
PASTURE													
Cal SCS-BC k		0.08	0.85	0.91	0.90	0.80	0.72	0.65	0.68	0.65	0.42		
Cal SCS-BC Et		0.12	2.26	3.59	5.61	6.68	7.28	5.82	4.25	2.50	0.80		38.89
Std Dev Et		0.02	0.34	0.49	0.53	0.50	0.31	0.33	0.37	0.27	0.09		1.75
Net Irr in.			1.37	3.18	5.29	6.54	6.80	5.21	3.81	2.08	0.13		34.42
SP GRAIN													
Cal SCS-BC k		0.32	0.95	1.36	1.35	0.34							
Cal SCS-BC Et		0.49	2.50	5.39	8.40	2.87							19.65
Std Dev Et		0.08	0.37	0.74	0.80	0.21							1.50
Net Irr in.			1.61	4.98	8.09	2.73							17.41
CORN													
Cal SCS-BC k				0.16	0.42	0.95	1.05	0.83	0.10				
Cal SCS-BC Et				0.62	2.58	7.95	10.58	7.45	0.65				29.83
Std Dev Et				0.08	0.24	0.59	0.45	0.43	0.06				1.27
Net Irr in.				0.21	2.27	7.81	10.10	6.84	0.22				27.45
ORCHARD													
Cal SCS-BC k			0.31	0.89	1.31	1.33	1.21	1.05	0.90				
Cal SCS-BC Et			0.81	3.50	8.13	11.09	12.19	9.38	5.56				50.65
Std Dev Et			0.12	0.48	0.77	0.82	0.52	0.54	0.48				2.31
Net Irr in.				3.09	7.82	10.95	11.71	8.77	5.13				47.46

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ST GEORGE
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 2760 ft., Lat. 37.12

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k		0.08	0.84	0.78	0.78	0.69	0.62	0.56	0.59	0.56	0.36		
Cal SCS-BC Et		0.12	2.21	3.09	4.83	5.75	6.27	5.01	3.66	2.15	0.69		33.79
Std Dev Et		0.02	0.33	0.42	0.46	0.43	0.27	0.29	0.32	0.23	0.08		1.52
Net Irr in.			1.32	2.68	4.52	5.62	5.79	4.40	3.22	1.74	0.02		29.31
GARDEN													
Cal SCS-BC k			0.17	0.40	0.67	0.94	0.69	0.23	0.21	0.14			
Cal SCS-BC Et			0.45	1.57	4.15	7.85	6.95	2.03	1.31	0.54			24.84
Std Dev Et			0.07	0.22	0.39	0.58	0.30	0.12	0.11	0.06			1.19
Net Irr in.				1.16	3.84	7.71	6.47	1.42	0.87	0.13			21.60
E-LAKE													
Cal SCS-BC k	1.27	1.24	1.37	1.19	1.04	0.82	0.74	0.72	0.82	0.85	1.07	1.32	
Cal SCS-BC Evap	1.38	1.93	3.63	4.70	6.43	6.84	7.43	6.46	5.09	3.28	2.03	1.43	50.65
Std Dev Evap	0.30	0.33	0.54	0.65	0.61	0.51	0.32	0.37	0.44	0.36	0.22	0.27	2.25
Net Loss in.	0.31	1.09	2.52	4.19	6.04	6.67	6.83	5.70	4.55	2.76	1.20	0.72	42.58
ET Ref													
Cal SCS-BC k	1.41	1.38	1.53	1.40	1.39	1.23	1.11	1.00	1.05	0.99	1.19	1.46	
Estimated Etr	1.53	2.15	4.03	5.52	8.63	10.28	11.20	8.95	6.53	3.84	2.26	1.59	66.50
Std Dev Et	0.33	0.37	0.60	0.76	0.82	0.76	0.48	0.51	0.57	0.42	0.25	0.30	2.92

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALINA
From a Calibrated SCS Blaney-Criddle Equation using data from EPHRAIM / MONROE 10-31-1994
Years of Data Available; NWS: 1961-1990 EPHRAIM / MONROE: 1987-1990 Elev. 5130 ft., Lat. 38.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.79	6.71	8.29	8.91	9.99	10.05	10.22	9.56	8.39	7.75	6.75	6.59	100.00
Avg Temp F	26.03	32.55	39.78	47.51	56.48	65.79	73.25	70.83	61.71	50.22	38.01	28.03	49.18
Std Dev Temp	5.33	4.40	3.65	2.98	2.69	2.55	1.78	1.95	2.74	3.14	2.98	4.14	1.22
Avg Prec in.	0.67	0.69	1.08	1.08	0.95	0.59	0.70	0.78	1.08	0.92	0.83	0.76	10.13
Std Dev Prec	0.53	0.53	0.59	0.68	0.79	0.63	0.50	0.58	0.75	0.56	0.63	0.55	2.38
SCS-BC f in.	0.53	0.68	1.26	2.16	3.75	5.46	7.14	6.17	3.91	2.17	0.91	0.55	34.71
Std Dev f	0.11	0.13	0.30	0.35	0.45	0.51	0.40	0.40	0.42	0.35	0.18	0.08	1.51
ALFALFA													
Cal SCS-BC k				0.31	1.74	1.16	1.03	1.00	1.30	0.13			
Cal SCS-BC Et				0.67	6.51	6.36	7.39	6.18	5.09	0.28			32.48
Std Dev Et				0.11	0.78	0.59	0.41	0.40	0.55	0.04			1.64
Net Irr in.					5.76	5.88	6.83	5.55	4.23				28.25
ALFALFA													
Cal SCS-BC k				0.18	1.64	1.16	1.27	0.88	1.23	0.21			
Cal SCS-BC Et				0.40	6.15	6.31	9.04	5.46	4.82	0.45			32.63
Std Dev Et				0.06	0.73	0.59	0.51	0.35	0.52	0.07			1.62
Net Irr in.					5.39	5.84	8.48	4.84	3.95				28.51
PASTURE													
Cal SCS-BC k				0.34	1.19	1.01	0.89	0.77	0.98	0.38			
Cal SCS-BC Et				0.74	4.45	5.53	6.37	4.77	3.82	0.84			26.52
Std Dev Et				0.12	0.53	0.51	0.36	0.31	0.41	0.13			1.28
Net Irr in.					3.70	5.05	5.81	4.15	2.96	0.10			21.77
SP GRAIN													
Cal SCS-BC k				0.47	1.47	1.56	1.02						
Cal SCS-BC Et				1.01	5.53	8.50	7.25						22.30
Std Dev Et				0.16	0.66	0.79	0.41						1.30
Net Irr in.				0.14	4.78	8.03	6.69						19.65
CORN													
Cal SCS-BC k					0.19	0.39	0.84	1.13	1.24				
Cal SCS-BC Et					0.72	2.11	6.02	6.95	4.84				20.63
Std Dev Et					0.09	0.20	0.34	0.45	0.52				1.03
Net Irr in.						1.64	5.46	6.32	3.98				17.39

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALINA

From a Calibrated SCS Blaney-Criddle Equation using data from EPHRAIM / MONROE 10-31-1994

Years of Data Available; NWS: 1961-1990 EPHRAIM / MONROE: 1987-1990 Elev. 5130 ft., Lat. 38.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.55	1.06	0.87	0.77	0.67	0.84	0.33			
Cal SCS-BC Et				1.20	3.96	4.77	5.48	4.12	3.29	0.72			23.54
Std Dev Et				0.19	0.47	0.44	0.31	0.27	0.35	0.11			1.14
Net Irr in.				0.33	3.21	4.29	4.93	3.49	2.43				18.68
GARDEN													
Cal SCS-BC k					0.27	0.54	0.86	0.91	0.38				
Cal SCS-BC Et					1.03	2.93	6.16	5.63	1.47				17.21
Std Dev Et					0.12	0.27	0.35	0.36	0.16				0.78
Net Irr in.					0.27	2.46	5.60	5.00	0.61				13.93
E-LAKE													
Cal SCS-BC k	1.86	1.85	1.73	1.47	1.38	1.06	0.89	0.73	1.16	1.44	1.94	1.28	
Cal SCS-BC Evap	0.98	1.26	2.18	3.18	5.18	5.82	6.34	4.51	4.53	3.12	1.76	0.71	39.57
Std Dev Evap	0.20	0.23	0.53	0.51	0.62	0.54	0.36	0.29	0.49	0.50	0.35	0.10	1.84
Net Loss in.	0.31	0.57	1.10	2.10	4.24	5.23	5.64	3.73	3.45	2.21	0.93		29.49
ET Ref													
Cal SCS-BC k	2.06	2.06	2.75	1.98	1.88	1.56	1.37	1.19	1.50	1.09	2.16	1.42	
Estimated Etr	1.09	1.40	3.47	4.29	7.07	8.50	9.79	7.35	5.88	2.37	1.96	0.79	53.97
Std Dev Et	0.22	0.26	0.84	0.70	0.84	0.79	0.55	0.47	0.63	0.38	0.39	0.12	2.49

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALTAIR SALT PLANT
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-31-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4210 ft., Lat. 40.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.46	100.00
Avg Temp F	26.65	31.77	40.32	48.71	57.93	68.14	76.64	74.31	63.50	51.16	39.54	29.53	50.68
Std Dev Temp	3.84	4.02	3.36	3.84	3.02	3.20	2.10	2.29	3.40	3.16	2.80	2.61	1.36
Avg Prec in.	0.69	0.73	1.30	1.72	1.70	1.07	0.75	0.83	1.31	1.44	1.15	0.86	13.55
Std Dev Prec	0.42	0.48	0.66	1.12	1.04	0.88	0.66	1.00	1.32	1.01	0.73	0.66	4.04
SCS-BC f in.	0.53	0.65	1.30	2.33	4.04	6.02	8.02	6.96	4.20	2.26	0.99	0.57	37.87
Std Dev f	0.08	0.11	0.30	0.48	0.52	0.67	0.51	0.49	0.54	0.35	0.19	0.05	2.25
ALFALFA													
Cal SCS-BC k				1.28	1.15	0.91	0.86	0.84	0.93	0.49			
Cal SCS-BC Et				2.98	4.63	5.50	6.90	5.85	3.89	1.12			30.86
Std Dev Et				0.61	0.59	0.61	0.44	0.41	0.50	0.17			2.03
Net Irr in.				1.60	3.27	4.64	6.30	5.18	2.85				23.84
PASTURE													
Cal SCS-BC k			0.24	1.01	0.91	0.85	0.76	0.74	0.63	0.59			
Cal SCS-BC Et			0.31	2.36	3.67	5.09	6.14	5.13	2.65	1.34			26.68
Std Dev Et			0.07	0.48	0.47	0.56	0.39	0.36	0.34	0.21			1.72
Net Irr in.				0.98	2.31	4.23	5.54	4.47	1.60	0.19			19.32
SP GRAIN													
Cal SCS-BC k			0.08	0.58	1.19	1.30	0.77						
Cal SCS-BC Et			0.11	1.35	4.79	7.83	6.21						20.28
Std Dev Et			0.02	0.28	0.61	0.87	0.39						1.59
Net Irr in.					3.43	6.97	5.61						16.02
CORN													
Cal SCS-BC k				0.10	0.29	0.60	1.01	1.07	0.77				
Cal SCS-BC Et				0.24	1.18	3.62	8.14	7.41	3.24				23.83
Std Dev Et				0.05	0.15	0.40	0.51	0.53	0.42				1.28
Net Irr in.						2.76	7.54	6.75	2.19				19.24
POTATOES													
Cal SCS-BC k				0.05	0.34	0.77	0.91	0.82	0.53	0.12			
Cal SCS-BC Et				0.11	1.36	4.61	7.32	5.70	2.22	0.27			21.60
Std Dev Et				0.02	0.17	0.51	0.46	0.40	0.28	0.04			1.16
Net Irr in.					0.00	3.76	6.72	5.04	1.17				16.68
ORCHARD													
Cal SCS-BC k				0.59	1.13	1.38	1.28	1.21	0.89	0.38			
Cal SCS-BC Et				1.37	4.58	8.31	10.28	8.39	3.74	0.85			37.53
Std Dev Et				0.28	0.59	0.92	0.65	0.59	0.48	0.13			2.22
Net Irr in.				0.00	3.22	7.46	9.69	7.72	2.69				30.78

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALTAIR SALT PLANT
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-31-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4210 ft., Lat. 40.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BEANS													
Cal SCS-BC k					0.23	0.94	1.00	0.25	0.01				
Cal SCS-BC Et					0.94	5.68	8.05	1.76	0.05				16.47
Std Dev Et					0.12	0.63	0.51	0.12	0.01				0.98
Net Irr in.						4.82	7.45	1.09					13.36
TURF													
Cal SCS-BC k			0.22	0.89	0.78	0.73	0.66	0.64	0.54	0.51			
Cal SCS-BC Et			0.29	2.06	3.16	4.38	5.29	4.42	2.28	1.16			23.04
Std Dev Et			0.07	0.42	0.40	0.49	0.33	0.31	0.29	0.18			1.49
Net Irr in.				0.69	1.80	3.53	4.69	3.76	1.23	0.01			15.70
GARDEN													
Cal SCS-BC k				0.24	0.47	0.83	0.89	0.37	0.19	0.09			
Cal SCS-BC Et				0.55	1.91	5.01	7.14	2.55	0.82	0.21			18.18
Std Dev Et				0.11	0.24	0.56	0.45	0.18	0.10	0.03			1.09
Net Irr in.					0.55	4.15	6.54	1.88					13.12
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.13	1.55	1.16	0.95	0.89	0.89	0.83	0.84	1.80	1.58	
Cal SCS-BC Evap	0.95	1.29	1.46	3.60	4.67	5.74	7.11	6.18	3.50	1.91	1.77	0.91	39.10
Std Dev Evap	0.14	0.22	0.34	0.74	0.60	0.64	0.45	0.44	0.45	0.30	0.34	0.09	2.44
Net Loss in.	0.26	0.56	0.16	1.89	2.97	4.67	6.37	5.35	2.19	0.47	0.63	0.05	25.55
ET Ref													
Cal SCS-BC k			1.25	1.72	1.40	1.30	1.18	1.13	0.97	0.94			
Estimated Etr			1.62	4.00	5.64	7.83	9.44	7.90	4.07	2.12			42.63
Std Dev Et			0.37	0.82	0.72	0.87	0.60	0.56	0.52	0.33			2.79

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALT LAKE CT NWSFO AP
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4220 ft., Lat. 40.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.46	100.00
Avg Temp F	27.88	34.07	41.82	49.61	58.78	68.98	77.81	75.48	64.88	52.88	40.57	29.71	51.87
Std Dev Temp	4.80	4.66	3.68	3.53	2.82	3.37	1.76	2.38	3.62	3.16	2.52	3.74	1.27
Avg Prec in.	1.11	1.23	1.91	2.12	1.80	0.93	0.81	0.86	1.28	1.44	1.29	1.40	16.20
Std Dev Prec	0.64	0.67	0.89	1.24	1.13	0.86	0.69	0.87	1.49	0.99	0.61	1.08	4.16
SCS-BC f in.	0.56	0.73	1.44	2.44	4.18	6.20	8.31	7.22	4.42	2.46	1.05	0.58	39.59
Std Dev f	0.10	0.16	0.32	0.45	0.49	0.71	0.43	0.52	0.58	0.37	0.18	0.08	2.06
ALFALFA													
Cal SCS-BC k				1.19	1.17	0.95	0.84	0.83	1.06	0.59			
Cal SCS-BC Et				2.90	4.89	5.90	7.01	6.01	4.69	1.45			32.85
Std Dev Et				0.53	0.58	0.68	0.36	0.43	0.62	0.22			1.95
Net Irr in.				1.20	3.45	5.16	6.36	5.33	3.67	0.30			25.46
PASTURE													
Cal SCS-BC k			0.23	0.94	0.94	0.87	0.75	0.73	0.71	0.65			
Cal SCS-BC Et			0.33	2.29	3.93	5.39	6.26	5.26	3.16	1.60			28.22
Std Dev Et			0.07	0.42	0.46	0.62	0.33	0.38	0.42	0.24			1.64
Net Irr in.				0.59	2.49	4.65	5.61	4.57	2.14	0.45			20.50
SP GRAIN													
Cal SCS-BC k			0.08	0.54	1.24	1.34	0.76						
Cal SCS-BC Et			0.12	1.32	5.20	8.29	6.32						21.23
Std Dev Et			0.03	0.24	0.61	0.96	0.33						1.55
Net Irr in.					3.75	7.55	5.66						16.96
CORN													
Cal SCS-BC k				0.10	0.30	0.62	1.00	1.05	0.87				
Cal SCS-BC Et				0.24	1.26	3.83	8.30	7.60	3.85				25.08
Std Dev Et				0.04	0.15	0.44	0.43	0.55	0.51				1.24
Net Irr in.						3.09	7.65	6.91	2.82				20.48
POTATOES													
Cal SCS-BC k				0.05	0.35	0.79	0.90	0.81	0.59	0.08			
Cal SCS-BC Et				0.12	1.47	4.88	7.47	5.85	2.63	0.21			22.62
Std Dev Et				0.02	0.17	0.56	0.39	0.42	0.35	0.03			1.14
Net Irr in.					0.03	4.14	6.81	5.16	1.60				17.75
ORCHARD													
Cal SCS-BC k				0.55	1.18	1.42	1.26	1.19	1.01	0.34			
Cal SCS-BC Et				1.34	4.95	8.80	10.49	8.60	4.45	0.84			39.47
Std Dev Et				0.25	0.58	1.01	0.55	0.62	0.59	0.13			2.15
Net Irr in.					3.51	8.06	9.84	7.92	3.43				32.74

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SALT LAKE CT NWSFO AP
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4220 ft., Lat. 40.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BEANS													
Cal SCS-BC k					0.25	0.97	0.99	0.25	0.01				
Cal SCS-BC Et					1.06	6.00	8.20	1.80	0.04				17.10
Std Dev Et					0.12	0.69	0.43	0.13	0.01				0.98
Net Irr in.						5.26	7.55	1.12					13.93
TURF													
Cal SCS-BC k			0.22	0.78	0.81	0.75	0.65	0.63	0.62	0.56			
Cal SCS-BC Et			0.31	1.89	3.39	4.64	5.39	4.53	2.72	1.38			24.26
Std Dev Et			0.07	0.35	0.40	0.54	0.28	0.33	0.36	0.21			1.41
Net Irr in.				0.20	1.95	3.90	4.74	3.85	1.70	0.23			16.56
GARDEN													
Cal SCS-BC k				0.23	0.49	0.86	0.88	0.36	0.22	0.09			
Cal SCS-BC Et				0.55	2.07	5.30	7.28	2.62	0.97	0.21			18.99
Std Dev Et				0.10	0.24	0.61	0.38	0.19	0.13	0.03			1.05
Net Irr in.					0.62	4.56	6.63	1.93					13.74
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.02	1.43	1.21	1.02	0.87	0.90	0.96	0.93	1.80	1.58	
Cal SCS-BC Evap	1.00	1.47	1.47	3.49	5.05	6.33	7.19	6.48	4.23	2.29	1.90	0.92	41.80
Std Dev Evap	0.17	0.33	0.33	0.64	0.59	0.73	0.37	0.47	0.56	0.34	0.33	0.13	2.20
Net Loss in.		0.23		1.37	3.25	5.40	6.38	5.62	2.95	0.84	0.60		26.65
ET Ref													
Cal SCS-BC k			1.14	1.59	1.45	1.34	1.16	1.12	1.10	1.04			
Estimated Etr			1.64	3.87	6.05	8.29	9.63	8.10	4.86	2.55			44.99
Std Dev Et			0.37	0.71	0.71	0.96	0.50	0.58	0.64	0.38			2.66

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SANTAQUIN CHLORINATOR
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 5160 ft., Lat. 39.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.72	6.67	8.28	8.94	10.04	10.12	10.29	9.59	8.40	7.72	6.70	6.52	100.00
Avg Temp F	26.84	32.32	39.36	47.43	57.09	66.73	74.94	72.62	62.57	51.18	38.70	28.54	49.86
Std Dev Temp	4.96	4.47	3.62	3.31	3.05	3.67	1.90	2.13	4.05	3.78	2.71	4.06	1.22
Avg Prec in.	1.36	1.37	2.02	2.10	1.80	0.97	0.86	1.28	1.38	1.91	1.75	1.60	18.42
Std Dev Prec	0.94	0.97	0.85	1.19	1.22	0.92	0.63	0.96	1.87	1.33	0.91	1.03	4.79
SCS-BC f in.	0.54	0.67	1.23	2.16	3.88	5.70	7.58	6.57	4.06	2.28	0.94	0.56	36.16
Std Dev f	0.10	0.12	0.29	0.39	0.51	0.76	0.44	0.44	0.62	0.42	0.18	0.09	2.03
ALFALFA													
Cal SCS-BC k				1.10	1.52	1.23	0.87	0.84	0.95	0.44			
Cal SCS-BC Et				2.37	5.91	7.00	6.62	5.49	3.85	1.01			32.25
Std Dev Et				0.43	0.78	0.93	0.39	0.37	0.59	0.19			2.08
Net Irr in.				0.69	4.47	6.22	5.93	4.47	2.74				24.52
ALFALFA													
Cal SCS-BC k				1.10	1.67	1.05	0.96	1.06	0.90	0.47			
Cal SCS-BC Et				2.37	6.47	6.01	7.30	6.95	3.64	1.06			33.80
Std Dev Et				0.43	0.85	0.80	0.43	0.47	0.55	0.20			2.10
Net Irr in.				0.69	5.03	5.23	6.61	5.93	2.53				26.02
PASTURE													
Cal SCS-BC k			0.21	0.93	1.09	0.94	0.77	0.73	0.80	0.59			
Cal SCS-BC Et			0.26	2.02	4.22	5.36	5.84	4.81	3.26	1.34			27.10
Std Dev Et			0.06	0.37	0.55	0.71	0.34	0.32	0.50	0.25			1.70
Net Irr in.				0.34	2.77	4.58	5.15	3.79	2.15				18.78
OTHR HAY													
Cal SCS-BC k				0.75	1.61	1.50	0.75	0.39	0.26				
Cal SCS-BC Et				1.61	6.25	8.56	5.71	2.53	1.04				25.70
Std Dev Et				0.29	0.82	1.13	0.33	0.17	0.16				1.87
Net Irr in.					4.80	7.78	5.02	1.51					19.11
SP GRAIN													
Cal SCS-BC k			0.05	0.59	1.47	1.45	0.67						
Cal SCS-BC Et			0.06	1.27	5.72	8.24	5.04						20.33
Std Dev Et			0.01	0.23	0.75	1.09	0.30						1.70
Net Irr in.					4.27	7.46	4.35						16.09
CORN													
Cal SCS-BC k					0.25	0.44	0.87	1.07	0.76				
Cal SCS-BC Et					0.95	2.53	6.59	7.01	3.09				20.17
Std Dev Et					0.13	0.34	0.39	0.47	0.47				1.06
Net Irr in.						1.75	5.90	5.98	1.99				15.62

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SANTAQUIN CHLORINATOR
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 5160 ft., Lat. 39.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k				0.32	0.94	1.23	1.22	1.22	1.34	0.72			
Cal SCS-BC Et				0.69	3.65	7.00	9.23	8.05	5.44	1.64			35.70
Std Dev Et				0.13	0.48	0.93	0.54	0.54	0.83	0.30			2.08
Net Irr in.					2.20	6.23	8.54	7.02	4.34	0.11			28.43
TURF													
Cal SCS-BC k			0.22	1.02	0.94	0.81	0.66	0.63	0.69	0.61			
Cal SCS-BC Et			0.27	2.20	3.65	4.62	5.03	4.14	2.81	1.38			24.10
Std Dev Et			0.06	0.40	0.48	0.61	0.29	0.28	0.43	0.25			1.54
Net Irr in.				0.52	2.20	3.84	4.34	3.12	1.70				15.72
GARDEN													
Cal SCS-BC k					0.48	0.86	0.90	0.36	0.21				
Cal SCS-BC Et					1.85	4.90	6.81	2.36	0.84				16.76
Std Dev Et					0.24	0.65	0.40	0.16	0.13				1.00
Net Irr in.					0.41	4.12	6.12	1.33					11.99
E-LAKE													
Cal SCS-BC k	1.54	1.88	1.91	1.60	1.26	0.99	0.81	0.83	1.01	1.14	1.34	1.35	
Cal SCS-BC Evap	0.83	1.26	2.34	3.46	4.90	5.64	6.16	5.47	4.08	2.60	1.26	0.76	38.76
Std Dev Evap	0.15	0.23	0.55	0.63	0.64	0.75	0.36	0.37	0.62	0.48	0.24	0.12	2.30
Net Loss in.			0.31	1.36	3.09	4.67	5.30	4.19	2.70	0.69			22.31
ET Ref													
Cal SCS-BC k	1.71	2.09	2.12	1.83	1.68	1.45	1.18	1.13	1.23	1.29	1.49	1.50	
Estimated Etr	0.93	1.40	2.60	3.96	6.51	8.24	8.98	7.40	5.01	2.95	1.40	0.84	50.22
Std Dev Et	0.17	0.26	0.61	0.72	0.85	1.09	0.53	0.50	0.76	0.54	0.26	0.13	2.94

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SCIPIO

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5310 ft., Lat. 39.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.77	6.70	8.29	8.92	10.00	10.07	10.24	9.57	8.39	7.74	6.74	6.57	100.00
Avg Temp F	24.05	30.99	38.34	46.30	54.94	63.49	71.88	69.67	60.17	48.80	36.76	26.32	47.64
Std Dev Temp	5.94	4.75	3.92	2.91	2.63	3.25	1.70	2.23	3.05	2.93	2.97	4.83	1.39
Avg Prec in.	1.03	1.17	1.33	1.18	1.21	0.84	0.88	1.16	1.19	1.50	1.17	1.25	13.90
Std Dev Prec	0.73	1.05	0.86	0.72	0.96	0.87	0.52	0.90	1.00	0.98	0.77	0.93	3.82
SCS-BC f in.	0.49	0.64	1.15	2.02	3.51	5.03	6.85	5.95	3.68	2.01	0.83	0.52	32.69
Std Dev f	0.12	0.13	0.28	0.33	0.42	0.62	0.38	0.44	0.45	0.31	0.14	0.10	1.84
ALFALFA													
Cal SCS-BC k				0.18	1.64	1.15	1.26	1.00	1.26				
Cal SCS-BC Et				0.36	5.76	5.77	8.60	5.92	4.65				31.06
Std Dev Et				0.06	0.68	0.71	0.48	0.44	0.57				1.84
Net Irr in.					4.79	5.10	7.90	4.99	3.70				26.48
PASTURE													
Cal SCS-BC k				0.28	1.21	1.02	0.87	0.84	0.94				
Cal SCS-BC Et				0.56	4.23	5.12	5.93	4.97	3.46				24.26
Std Dev Et				0.09	0.50	0.63	0.33	0.37	0.42				1.45
Net Irr in.					3.26	4.45	5.23	4.04	2.51				19.48
OTHR HAY													
Cal SCS-BC k				0.29	1.62	1.63	0.85	0.44	0.33				
Cal SCS-BC Et				0.59	5.69	8.22	5.82	2.62	1.21				24.15
Std Dev Et				0.10	0.68	1.00	0.32	0.20	0.15				1.67
Net Irr in.					4.72	7.55	5.12	1.69	0.26				19.34
SP GRAIN													
Cal SCS-BC k				0.15	0.95	1.54	1.24	0.26					
Cal SCS-BC Et				0.31	3.34	7.73	8.52	1.52					21.42
Std Dev Et				0.05	0.40	0.94	0.47	0.11					1.47
Net Irr in.					2.36	7.06	7.82	0.60					17.84
CORN													
Cal SCS-BC k					0.13	0.40	0.95	1.22	0.89				
Cal SCS-BC Et					0.45	2.02	6.50	7.23	3.27				19.47
Std Dev Et					0.05	0.25	0.36	0.54	0.40				1.04
Net Irr in.						1.35	5.79	6.30	2.32				15.76
ORCHARD													
Cal SCS-BC k					0.42	1.25	1.42	1.40	1.52				
Cal SCS-BC Et					1.46	6.28	9.73	8.31	5.58				31.37
Std Dev Et					0.17	0.77	0.54	0.62	0.68				1.74
Net Irr in.					0.49	5.61	9.03	7.39	4.63				27.15

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SCIPIO

From a Calibrated SCS Blaney-Criddle Equation using data from DELTA 10-13-1994

Years of Data Available; NWS: 1961-1990 DELTA: 1986-1991 Elev. 5310 ft., Lat. 39.25

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.34	1.06	0.88	0.75	0.72	0.81				
Cal SCS-BC Et				0.69	3.71	4.41	5.11	4.28	2.97				21.17
Std Dev Et				0.11	0.44	0.54	0.28	0.32	0.36				1.28
Net Irr in.					2.74	3.74	4.41	3.35	2.02				16.27
GARDEN													
Cal SCS-BC k					0.27	0.60	0.98	0.78	0.19				
Cal SCS-BC Et					0.96	3.04	6.71	4.64	0.69				16.05
Std Dev Et					0.11	0.37	0.37	0.35	0.08				0.85
Net Irr in.						2.37	6.01	3.71					12.09
E-LAKE													
Cal SCS-BC k	1.80	2.00	2.00	1.73	1.46	1.08	0.90	0.93	1.17	1.38	1.82	1.84	
Cal SCS-BC Evap	0.88	1.27	2.31	3.49	5.13	5.44	6.18	5.55	4.29	2.79	1.51	0.96	39.81
Std Dev Evap	0.22	0.25	0.57	0.58	0.61	0.67	0.34	0.41	0.52	0.43	0.26	0.18	2.35
Net Loss in.		0.11	0.98	2.31	3.91	4.61	5.31	4.39	3.10	1.29	0.34		26.35
ET Ref													
Cal SCS-BC k	2.00	2.41	2.30	1.98	1.89	1.56	1.33	1.28	1.48	1.62	2.02	2.05	
Estimated Etr	0.98	1.54	2.66	4.00	6.63	7.87	9.12	7.64	5.47	3.27	1.68	1.06	51.91
Std Dev Et	0.24	0.30	0.65	0.66	0.79	0.96	0.50	0.57	0.67	0.51	0.29	0.20	3.02

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SCOFIELD DAM
From a Calibrated SCS Blaney-Criddle Equation using data from WELLINGTON 10-26-1994
Years of Data Available; NWS: 1961-1990 WELLINGTON: 1986-1990 Elev. 7630 ft., Lat. 39.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.74	6.68	8.28	8.93	10.03	10.11	10.27	9.59	8.39	7.73	6.71	6.54	100.00
Avg Temp F	13.01	16.83	24.78	34.82	44.90	53.82	61.01	58.89	50.39	40.69	27.84	16.38	36.95
Std Dev Temp	4.52	4.21	4.49	3.79	2.55	2.44	1.36	1.85	2.53	3.28	3.29	4.21	1.31
Avg Prec in.	1.33	1.26	1.22	0.93	0.99	0.93	1.16	1.46	1.27	1.23	1.11	1.20	14.07
Std Dev Prec	1.30	1.36	0.72	0.63	0.74	0.82	0.69	0.94	0.84	0.91	0.88	1.22	3.78
SCS-BC f in.	0.26	0.34	0.62	1.01	2.10	3.37	4.65	3.98	2.37	1.24	0.56	0.32	20.82
Std Dev f	0.09	0.08	0.11	0.20	0.32	0.38	0.25	0.30	0.30	0.27	0.07	0.08	1.09
PASTURE													
Cal SCS-BC k					0.44	1.22	1.09	1.11	0.45				
Cal SCS-BC Et					0.92	4.11	5.08	4.43	1.05				15.58
Std Dev Et					0.14	0.47	0.27	0.34	0.13				0.80
Net Irr in.					0.13	3.36	4.15	3.26	0.04				10.94
OTHR HAY													
Cal SCS-BC k					0.27	1.70	1.75	1.11	0.15				
Cal SCS-BC Et					0.56	5.73	8.16	4.44	0.36				19.24
Std Dev Et					0.08	0.65	0.44	0.34	0.05				1.03
Net Irr in.						4.98	7.23	3.27					15.48

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SCOFIELD DAM
From a Calibrated SCS Blaney-Criddle Equation using data from WELLINGTON 10-26-1994
Years of Data Available; NWS: 1961-1990 WELLINGTON: 1986-1990 Elev. 7630 ft., Lat. 39.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k					0.48	1.15	0.94	0.96	0.56				
Cal SCS-BC Et					1.02	3.89	4.37	3.81	1.32				14.41
Std Dev Et					0.15	0.44	0.23	0.29	0.17				0.75
Net Irr in.					0.22	3.15	3.44	2.65	0.30				9.77
GARDEN													
Cal SCS-BC k						0.29	0.72	1.34	0.05				
Cal SCS-BC Et						0.97	3.37	5.34	0.12				9.80
Std Dev Et						0.11	0.18	0.41	0.02				0.50
Net Irr in.						0.23	2.44	4.17					6.84
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.98	1.68	1.52	1.21	0.96	1.02	1.20	1.41	1.80	1.58	
Cal SCS-BC Evap	0.47	0.67	1.22	1.69	3.19	4.07	4.46	4.06	2.84	1.75	1.01	0.51	25.95
Std Dev Evap	0.16	0.17	0.22	0.33	0.48	0.46	0.24	0.31	0.36	0.38	0.12	0.13	1.46
Net Loss in.			0.00	0.76	2.20	3.15	3.31	2.61	1.57	0.53			14.12
ET Ref													
Cal SCS-BC k			2.89	3.34	2.65	2.06	1.68	1.71	1.70	2.13	1.53		
Estimated Etr			1.78	3.36	5.56	6.94	7.81	6.81	4.02	2.65	0.86		39.78
Std Dev Et			0.32	0.66	0.84	0.79	0.42	0.52	0.51	0.57	0.10		2.39

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SILVER LAKE BRIGHTON
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 8740 ft., Lat. 40.60

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.68	6.65	8.27	8.95	10.08	10.17	10.33	9.62	8.40	7.71	6.66	6.48	100.00
Avg Temp F	19.54	21.15	24.96	32.16	40.69	50.05	58.20	56.32	48.37	38.57	26.96	19.95	36.41
Std Dev Temp	3.62	3.10	3.44	3.61	2.49	2.72	1.66	1.79	2.95	3.67	2.96	3.54	1.02
Avg Prec in.	4.92	4.76	5.31	4.42	2.96	1.84	1.69	1.95	2.58	3.49	4.87	4.90	43.68
Std Dev Prec	2.73	2.38	2.09	2.41	1.96	1.74	1.14	1.43	1.85	2.15	2.29	3.27	9.99
SCS-BC f in.	0.39	0.42	0.62	0.88	1.61	2.82	4.17	3.58	2.14	1.09	0.54	0.39	18.65
Std Dev f	0.07	0.06	0.09	0.12	0.28	0.40	0.29	0.28	0.33	0.25	0.06	0.07	0.95
PASTURE													
Cal SCS-BC k					0.45	1.08	1.05	1.05	0.41				
Cal SCS-BC Et					0.72	3.06	4.37	3.75	0.87				12.76
Std Dev Et					0.12	0.43	0.31	0.29	0.14				0.73
Net Irr in.						1.59	3.01	2.19					6.79
OTHR HAY													
Cal SCS-BC k						1.49	1.68	1.06					
Cal SCS-BC Et						4.22	7.02	3.79					15.03
Std Dev Et						0.60	0.49	0.30					0.91
Net Irr in.						2.75	5.67	2.23					10.65

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SILVER LAKE BRIGHTON
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 8740 ft., Lat. 40.60

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k					0.78	1.15	0.91	0.90	0.52				
Cal SCS-BC Et					1.25	3.24	3.77	3.23	1.12				12.61
Std Dev Et					0.21	0.46	0.26	0.25	0.17				0.77
Net Irr in.						1.77	2.42	1.67					5.87
E-LAKE													
Cal SCS-BC k	1.45	2.00	2.00	2.00	2.00	1.51	1.18	1.26	1.49	1.73	1.72	1.39	
Cal SCS-BC Evap	0.57	0.84	1.24	1.76	3.22	4.27	4.92	4.52	3.19	1.88	0.93	0.54	27.87
Std Dev Evap	0.11	0.12	0.17	0.25	0.55	0.60	0.34	0.35	0.50	0.43	0.10	0.10	1.50
Net Loss in.					0.26	2.43	3.22	2.58	0.60				9.10
ET Ref													
Cal SCS-BC k	1.61	2.23	2.68	3.29	2.83	2.05	1.62	1.61	1.74	1.92	1.91	1.54	
Estimated Etr	0.63	0.94	1.66	2.89	4.55	5.79	6.74	5.76	3.72	2.09	1.03	0.60	36.40
Std Dev Et	0.12	0.14	0.23	0.41	0.78	0.82	0.47	0.45	0.58	0.48	0.11	0.11	2.03

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SNAKE CREEK P H
From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994
Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 6000 ft., Lat. 40.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.65	8.28	8.95	10.08	10.17	10.32	9.62	8.40	7.71	6.66	6.48	100.00
Avg Temp F	21.45	25.41	33.22	42.03	50.40	58.24	65.19	63.59	55.37	45.69	33.60	23.46	43.14
Std Dev Temp	3.94	4.27	4.26	3.42	2.46	2.39	1.73	1.96	2.70	3.08	3.19	3.56	1.49
Avg Prec in.	2.82	2.59	1.92	1.80	1.46	1.02	0.94	1.21	1.43	1.84	2.39	2.62	22.02
Std Dev Prec	2.04	2.10	0.98	1.16	1.07	0.97	0.83	0.83	1.58	1.40	1.38	1.98	4.86
SCS-BC f in.	0.43	0.51	0.87	1.57	2.84	4.12	5.48	4.81	3.01	1.69	0.69	0.46	26.48
Std Dev f	0.08	0.09	0.19	0.34	0.36	0.42	0.35	0.35	0.37	0.30	0.10	0.07	1.70
ALFALFA													
Cal SCS-BC k					1.35	1.75	1.11	1.10	1.44	0.13			
Cal SCS-BC Et					3.85	7.21	6.07	5.30	4.31	0.22			26.96
Std Dev Et					0.48	0.74	0.39	0.39	0.53	0.04			1.70
Net Irr in.					2.68	6.40	5.32	4.33	3.17				21.90
PASTURE													
Cal SCS-BC k				0.15	1.19	1.14	0.98	0.95	1.04	0.36			
Cal SCS-BC Et				0.23	3.39	4.69	5.35	4.56	3.13	0.61			21.96
Std Dev Et				0.05	0.42	0.48	0.34	0.33	0.38	0.11			1.39
Net Irr in.					2.22	3.88	4.60	3.59	1.98				16.27
OTHR HAY													
Cal SCS-BC k					1.44	1.82	1.26	0.54	0.44	0.05			
Cal SCS-BC Et					4.10	7.49	6.92	2.62	1.33	0.09			22.55
Std Dev Et					0.51	0.77	0.44	0.19	0.16	0.02			1.47
Net Irr in.					2.94	6.68	6.17	1.66	0.19				17.62
SP GRAIN													
Cal SCS-BC k				0.08	0.77	1.60	1.50	0.67					
Cal SCS-BC Et				0.12	2.20	6.60	8.20	3.24					20.36
Std Dev Et				0.03	0.27	0.68	0.53	0.24					1.29
Net Irr in.					1.03	5.78	7.45	2.27					16.54

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SNAKE CREEK P H
From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994
Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 6000 ft., Lat. 40.55

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.32	1.14	0.98	0.84	0.82	0.90	0.31			
Cal SCS-BC Et				0.51	3.24	4.04	4.61	3.93	2.70	0.53			19.55
Std Dev Et				0.11	0.41	0.41	0.30	0.29	0.33	0.09			1.26
Net Irr in.					2.07	3.23	3.86	2.96	1.55				13.68
GARDEN													
Cal SCS-BC k					0.13	0.57	1.01	0.99	0.20				
Cal SCS-BC Et					0.37	2.33	5.51	4.76	0.60				13.58
Std Dev Et					0.05	0.24	0.35	0.35	0.07				0.76
Net Irr in.						1.51	4.76	3.80					10.07
E-LAKE													
Cal SCS-BC k	1.50	1.84	2.00	1.51	1.54	1.18	0.99	1.04	1.23	1.38	1.72	1.22	
Cal SCS-BC Evap	0.65	0.93	1.74	2.38	4.38	4.86	5.42	5.03	3.70	2.33	1.19	0.56	33.17
Std Dev Evap	0.12	0.16	0.38	0.52	0.55	0.50	0.35	0.37	0.45	0.41	0.17	0.08	2.25
Net Loss in.				0.58	2.92	3.84	4.48	3.82	2.27	0.48			18.41
ET Ref													
Cal SCS-BC k	1.67	2.05	2.22	1.76	2.03	1.75	1.50	1.46	1.60	1.64	1.92	1.35	
Estimated Etr	0.72	1.04	1.94	2.77	5.78	7.22	8.23	7.01	4.81	2.77	1.33	0.62	44.24
Std Dev Et	0.13	0.17	0.43	0.60	0.72	0.74	0.53	0.51	0.59	0.49	0.19	0.09	2.93

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SNOWVILLE
From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 4560 ft., Lat. 41.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.59	6.60	8.26	8.99	10.16	10.27	10.42	9.68	8.41	7.67	6.58	6.37	100.00
Avg Temp F	21.43	27.52	35.20	43.89	52.73	61.95	70.49	68.58	58.37	46.96	34.31	23.75	45.43
Std Dev Temp	4.77	5.31	4.03	3.33	2.33	2.99	1.94	2.21	3.59	2.82	2.74	4.03	1.36
Avg Prec in.	1.03	0.84	1.08	1.20	1.74	1.18	0.86	0.74	0.91	0.93	1.23	1.06	12.80
Std Dev Prec	0.63	0.59	0.69	0.99	1.09	1.09	0.87	0.62	0.82	0.70	0.87	0.80	4.01
SCS-BC f in.	0.42	0.55	0.95	1.77	3.21	4.84	6.66	5.80	3.43	1.80	0.70	0.45	30.59
Std Dev f	0.09	0.11	0.23	0.35	0.36	0.57	0.43	0.44	0.52	0.28	0.09	0.08	1.60
ALFALFA													
Cal SCS-BC k				0.30	1.77	1.40	1.18	1.30	0.99	0.58			
Cal SCS-BC Et				0.54	5.67	6.76	7.84	7.54	3.38	1.04			32.78
Std Dev Et				0.11	0.63	0.80	0.51	0.57	0.51	0.16			1.75
Net Irr in.					4.29	5.82	7.15	6.95	2.65	0.30			27.16
PASTURE													
Cal SCS-BC k				0.55	1.14	1.18	0.95	0.90	0.82	0.39			
Cal SCS-BC Et				0.98	3.65	5.70	6.30	5.19	2.80	0.71			25.33
Std Dev Et				0.20	0.40	0.67	0.41	0.40	0.42	0.11			1.41
Net Irr in.				0.02	2.26	4.76	5.61	4.60	2.07				19.32
OTHR HAY													
Cal SCS-BC k				0.97	1.80	1.89	1.07	0.50	0.20				
Cal SCS-BC Et				1.72	5.77	9.15	7.14	2.89	0.68				27.34
Std Dev Et				0.34	0.64	1.08	0.47	0.22	0.10				1.77
Net Irr in.				0.76	4.38	8.20	6.45	2.30					22.09
SP GRAIN													
Cal SCS-BC k				0.20	1.04	1.80	1.34	0.25					
Cal SCS-BC Et				0.35	3.34	8.71	8.90	1.44					22.75
Std Dev Et				0.07	0.37	1.03	0.58	0.11					1.45
Net Irr in.					1.95	7.76	8.21	0.85					18.78

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SNOWVILLE

From a Calibrated SCS Blaney-Criddle Equation using data from SNOWVILLE 10-13-1994

Years of Data Available; NWS: 1961-1990 SNOWVILLE: 1990-1990 Elev. 4560 ft., Lat. 41.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.80	1.03	1.02	0.81	0.77	0.70	0.34			
Cal SCS-BC Et				1.41	3.32	4.91	5.43	4.48	2.42	0.61			22.58
Std Dev Et				0.28	0.37	0.58	0.35	0.34	0.36	0.10			1.29
Net Irr in.				0.45	1.93	3.97	4.74	3.89	1.68				16.67
GARDEN													
Cal SCS-BC k					0.35	0.73	1.03	0.94	0.25				
Cal SCS-BC Et					1.13	3.54	6.83	5.42	0.84				17.75
Std Dev Et					0.12	0.42	0.44	0.41	0.13				0.94
Net Irr in.						2.59	6.14	4.83	0.11				13.67
E-LAKE													
Cal SCS-BC k			0.96	1.66	1.50	1.24	0.89	0.98	0.93	1.33			
Cal SCS-BC Evap			0.92	2.94	4.82	6.00	5.92	5.66	3.20	2.39			31.84
Std Dev Evap			0.22	0.59	0.53	0.71	0.39	0.43	0.48	0.37			1.91
Net Loss in.				1.74	3.09	4.82	5.06	4.92	2.28	1.46			23.36
ET Ref													
Cal SCS-BC k			1.07	1.84	1.85	1.81	1.46	1.38	1.26	1.61			
Estimated Etr			1.02	3.26	5.93	8.78	9.69	7.99	4.31	2.90			43.88
Std Dev Et			0.25	0.65	0.66	1.03	0.63	0.61	0.65	0.45			2.54

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SPANISH FORK P H
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4720 ft., Lat. 40.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.72	6.67	8.28	8.94	10.05	10.13	10.29	9.60	8.40	7.72	6.69	6.51	100.00
Avg Temp F	27.52	33.47	41.36	49.69	59.19	68.36	76.16	73.68	64.44	53.19	40.22	29.50	51.40
Std Dev Temp	4.51	4.73	3.91	3.49	2.88	2.80	1.47	1.87	3.08	3.55	3.01	3.69	1.18
Avg Prec in.	1.58	1.74	2.29	2.12	1.94	1.23	0.92	1.21	1.59	1.96	2.04	2.04	20.67
Std Dev Prec	0.83	1.15	0.98	1.16	1.38	1.14	0.82	1.01	1.54	1.52	1.05	1.38	5.34
SCS-BC f in.	0.55	0.71	1.40	2.44	4.24	6.03	7.87	6.80	4.35	2.51	1.04	0.58	38.52
Std Dev f	0.09	0.17	0.35	0.44	0.50	0.59	0.35	0.40	0.50	0.42	0.22	0.08	1.69
ALFALFA													
Cal SCS-BC k				1.17	1.32	1.24	0.86	0.84	0.93	0.63			
Cal SCS-BC Et				2.86	5.59	7.47	6.78	5.69	4.05	1.58			34.03
Std Dev Et				0.52	0.66	0.73	0.30	0.33	0.46	0.26			1.67
Net Irr in.				1.16	4.04	6.48	6.04	4.73	2.77	0.02			25.25
ALFALFA													
Cal SCS-BC k				1.17	1.55	1.02	0.95	1.06	0.90	0.65			
Cal SCS-BC Et				2.86	6.56	6.14	7.51	7.23	3.93	1.63			35.85
Std Dev Et				0.52	0.78	0.60	0.33	0.42	0.45	0.27			1.72
Net Irr in.				1.16	5.01	5.15	6.77	6.26	2.65	0.06			27.07
PASTURE													
Cal SCS-BC k			0.34	0.86	1.01	0.89	0.76	0.74	0.79	0.56			
Cal SCS-BC Et			0.48	2.11	4.26	5.39	6.00	5.00	3.43	1.40			28.06
Std Dev Et			0.12	0.38	0.51	0.52	0.27	0.29	0.39	0.23			1.32
Net Irr in.				0.41	2.71	4.41	5.26	4.03	2.15				18.97
OTHR HAY													
Cal SCS-BC k				0.88	1.53	1.42	0.74	0.39	0.28				
Cal SCS-BC Et				2.14	6.47	8.59	5.85	2.63	1.24				26.93
Std Dev Et				0.39	0.77	0.84	0.26	0.15	0.14				1.51
Net Irr in.				0.44	4.92	7.60	5.11	1.67					19.74
SP GRAIN													
Cal SCS-BC k			0.10	0.62	1.43	1.37	0.53						
Cal SCS-BC Et			0.15	1.52	6.07	8.24	4.16						20.13
Std Dev Et			0.04	0.27	0.72	0.80	0.18						1.31
Net Irr in.					4.51	7.25	3.42						15.19
CORN													
Cal SCS-BC k					0.28	0.46	0.88	1.07	0.89				
Cal SCS-BC Et					1.17	2.76	6.90	7.28	3.88				21.99
Std Dev Et					0.14	0.27	0.31	0.43	0.44				0.85
Net Irr in.						1.77	6.16	6.32	2.61				16.85

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at SPANISH FORK P H
From a Calibrated SCS Blaney-Criddle Equation using data from SANTAQUIN 10-13-1994
Years of Data Available; NWS: 1961-1990 SANTAQUIN: 1986-1991 Elev. 4720 ft., Lat. 40.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k				0.40	0.95	1.22	1.23	1.23	1.31	0.67			
Cal SCS-BC Et				0.97	4.03	7.37	9.66	8.38	5.70	1.68			37.79
Std Dev Et				0.18	0.48	0.72	0.43	0.49	0.65	0.28			1.56
Net Irr in.					2.47	6.38	8.92	7.41	4.42	0.11			29.73
TURF													
Cal SCS-BC k			0.39	0.92	0.87	0.77	0.66	0.63	0.68	0.57			
Cal SCS-BC Et			0.55	2.25	3.68	4.65	5.17	4.31	2.95	1.44			24.99
Std Dev Et			0.14	0.41	0.44	0.45	0.23	0.25	0.34	0.24			1.21
Net Irr in.				0.55	2.13	3.66	4.43	3.34	1.68				15.78
GARDEN													
Cal SCS-BC k				0.04	0.46	0.83	0.89	0.36	0.17				
Cal SCS-BC Et				0.10	1.93	5.01	7.00	2.45	0.73				17.23
Std Dev Et				0.02	0.23	0.49	0.31	0.14	0.08				0.72
Net Irr in.					0.37	4.02	6.27	1.48					12.15
E-LAKE													
Cal SCS-BC k	1.57	1.83	1.72	1.43	1.17	0.94	0.80	0.84	0.99	1.08	1.30	1.33	
Cal SCS-BC Evap	0.87	1.30	2.41	3.50	4.94	5.67	6.33	5.68	4.29	2.72	1.35	0.77	39.83
Std Dev Evap	0.14	0.31	0.61	0.63	0.59	0.55	0.28	0.33	0.49	0.45	0.28	0.10	1.95
Net Loss in.			0.12	1.38	3.00	4.44	5.40	4.47	2.69	0.76			22.26
ET Ref													
Cal SCS-BC k	1.75	2.03	1.91	1.64	1.55	1.38	1.17	1.13	1.21	1.23	1.44	1.48	
Estimated Etr	0.97	1.45	2.68	4.01	6.57	8.30	9.23	7.69	5.27	3.08	1.50	0.86	51.62
Std Dev Et	0.16	0.34	0.68	0.72	0.78	0.81	0.41	0.45	0.60	0.51	0.31	0.11	2.43

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at THOMPSON

From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-26-1994

Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 5100 ft., Lat. 38.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.79	6.71	8.29	8.91	9.99	10.05	10.22	9.56	8.39	7.75	6.75	6.59	100.00
Avg Temp F	25.56	34.49	42.53	51.85	61.51	71.85	78.59	76.13	66.66	55.14	40.96	29.20	52.87
Std Dev Temp	6.13	5.21	3.53	2.98	2.70	2.73	1.58	1.99	3.22	2.98	2.74	4.19	1.28
Avg Prec in.	0.76	0.47	0.93	0.70	0.91	0.55	0.77	0.89	0.93	0.98	0.72	0.58	9.19
Std Dev Prec	0.68	0.52	0.71	0.42	0.72	0.67	0.74	0.57	0.89	0.88	0.48	0.47	2.47
SCS-BC f in.	0.52	0.76	1.50	2.71	4.62	6.72	8.40	7.30	4.71	2.75	1.10	0.58	41.68
Std Dev f	0.13	0.19	0.35	0.40	0.50	0.59	0.39	0.44	0.53	0.37	0.19	0.10	1.67
ALFALFA													
Cal SCS-BC k				0.80	1.53	0.94	0.98	1.00	0.96	0.85			
Cal SCS-BC Et				2.18	7.06	6.35	8.21	7.31	4.50	2.33			37.94
Std Dev Et				0.32	0.76	0.56	0.38	0.44	0.51	0.31			1.54
Net Irr in.				1.62	6.34	5.91	7.60	6.60	3.75	1.54			33.36
PASTURE													
Cal SCS-BC k				0.83	1.02	0.84	0.73	0.74	0.84	0.78			
Cal SCS-BC Et				2.24	4.69	5.63	6.12	5.40	3.94	2.15			30.17
Std Dev Et				0.33	0.51	0.50	0.28	0.32	0.44	0.29			1.24
Net Irr in.				1.68	3.97	5.19	5.51	4.68	3.19	1.36			25.58
SP GRAIN													
Cal SCS-BC k				0.40	1.29	1.29	0.73						
Cal SCS-BC Et				1.08	5.98	8.66	6.10						21.81
Std Dev Et				0.16	0.64	0.76	0.28						1.15
Net Irr in.				0.52	5.25	8.22	5.49						19.48
CHERRIES													
Cal SCS-BC k				0.02	0.75	1.14	1.20	1.24	1.35	0.72			
Cal SCS-BC Et				0.05	3.48	7.67	10.12	9.03	6.35	1.99			38.69
Std Dev Et				0.01	0.37	0.68	0.47	0.54	0.71	0.27			1.48
Net Irr in.					2.75	7.23	9.51	8.32	5.60	1.20			34.61

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at THOMPSON
From a Calibrated SCS Blaney-Criddle Equation using data from LA SAL 10-26-1994
Years of Data Available; NWS: 1961-1990 LA SAL: 1987-1990 Elev. 5100 ft., Lat. 38.97

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.85	0.88	0.72	0.63	0.64	0.72	0.67			
Cal SCS-BC Et				2.30	4.04	4.85	5.28	4.65	3.39	1.85			26.36
Std Dev Et				0.34	0.44	0.43	0.24	0.28	0.38	0.25			1.10
Net Irr in.				1.75	3.32	4.41	4.66	3.93	2.65	1.07			21.78
GARDEN													
Cal SCS-BC k					0.41	0.54	0.80	0.77	0.33	0.15			
Cal SCS-BC Et					1.88	3.61	6.69	5.63	1.56	0.42			19.80
Std Dev Et					0.20	0.32	0.31	0.34	0.17	0.06			0.69
Net Irr in.					1.15	3.17	6.08	4.92	0.81				16.13
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.47	1.31	0.99	0.83	0.90	1.11	1.32	1.67	2.00	
Cal SCS-BC Evap	1.05	1.52	3.01	3.97	6.06	6.63	6.96	6.59	5.24	3.64	1.84	1.17	47.68
Std Dev Evap	0.26	0.37	0.69	0.58	0.65	0.58	0.32	0.40	0.59	0.49	0.32	0.21	2.12
Net Loss in.	0.28	1.05	2.08	3.27	5.15	6.08	6.20	5.70	4.31	2.65	1.12	0.59	38.48
ET Ref													
Cal SCS-BC k	2.74	2.72	2.28	1.63	1.56	1.29	1.12	1.14	1.29	1.47	1.85	2.31	
Estimated Etr	1.43	2.07	3.43	4.41	7.22	8.66	9.42	8.30	6.06	4.04	2.04	1.35	58.45
Std Dev Et	0.36	0.50	0.79	0.64	0.78	0.76	0.43	0.50	0.68	0.54	0.36	0.24	2.56

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TIMPANOGOS CAVE
From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994
Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5640 ft., Lat. 40.45

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.66	8.28	8.95	10.07	10.16	10.32	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	26.06	31.35	38.21	46.68	56.07	65.41	73.91	72.26	62.64	50.44	36.27	27.32	48.89
Std Dev Temp	3.47	3.55	3.56	3.89	3.04	3.26	1.94	2.42	3.48	3.87	3.05	3.30	1.21
Avg Prec in.	2.49	2.34	2.75	2.64	2.68	1.59	1.19	1.41	1.90	2.44	2.14	2.31	25.87
Std Dev Prec	1.77	1.57	2.11	1.86	1.86	1.50	0.88	1.11	1.69	1.60	1.22	1.53	7.75
SCS-BC f in.	0.52	0.64	1.13	2.08	3.72	5.45	7.36	6.51	4.07	2.19	0.80	0.53	35.01
Std Dev f	0.07	0.09	0.28	0.46	0.50	0.65	0.45	0.50	0.54	0.43	0.16	0.06	1.97
ALFALFA													
Cal SCS-BC k				0.76	1.73	1.08	1.05	1.06	1.13	0.16			
Cal SCS-BC Et				1.58	6.42	5.88	7.73	6.90	4.58	0.36			33.45
Std Dev Et				0.35	0.86	0.70	0.47	0.53	0.61	0.07			2.10
Net Irr in.					4.27	4.61	6.77	5.77	3.06				24.48
PASTURE													
Cal SCS-BC k				0.68	1.13	0.95	0.80	0.77	0.88	0.33			
Cal SCS-BC Et				1.41	4.20	5.20	5.92	5.01	3.58	0.72			26.04
Std Dev Et				0.31	0.56	0.62	0.36	0.38	0.48	0.14			1.62
Net Irr in.					2.06	3.93	4.97	3.88	2.06				16.89
OTHR HAY													
Cal SCS-BC k				0.68	1.62	1.54	1.13	0.46	0.39				
Cal SCS-BC Et				1.41	6.03	8.39	8.32	3.00	1.58				28.73
Std Dev Et				0.31	0.81	1.00	0.51	0.23	0.21				1.95
Net Irr in.					3.89	7.12	7.37	1.87	0.06				20.31
SP GRAIN													
Cal SCS-BC k				0.38	1.40	1.47	0.91						
Cal SCS-BC Et				0.79	5.19	7.99	6.71						20.69
Std Dev Et				0.17	0.70	0.95	0.41						1.55
Net Irr in.					3.05	6.72	5.76						15.53

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TIMPANOGOS CAVE

From a Calibrated SCS Blaney-Criddle Equation using data from MIDWAY 10-13-1994

Years of Data Available; NWS: 1961-1990 MIDWAY: 1986-1990 Elev. 5640 ft., Lat. 40.45

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.73	0.99	0.82	0.69	0.66	0.76	0.44			
Cal SCS-BC Et				1.52	3.68	4.47	5.10	4.31	3.08	0.97			23.14
Std Dev Et				0.33	0.49	0.53	0.31	0.33	0.41	0.19			1.45
Net Irr in.					1.54	3.21	4.15	3.18	1.56				13.63
GARDEN													
Cal SCS-BC k					0.34	0.57	0.86	0.80	0.35				
Cal SCS-BC Et					1.25	3.08	6.37	5.23	1.41				17.34
Std Dev Et					0.17	0.37	0.39	0.40	0.19				0.95
Net Irr in.						1.81	5.41	4.10					11.32
E-LAKE													
Cal SCS-BC k	1.51	1.81	1.79	1.35	1.33	0.98	0.81	0.84	1.04	1.26	2.00	1.28	
Cal SCS-BC Evap	0.79	1.15	2.02	2.82	4.95	5.34	5.96	5.50	4.22	2.77	1.60	0.68	37.81
Std Dev Evap	0.11	0.16	0.50	0.62	0.66	0.63	0.36	0.42	0.56	0.54	0.33	0.08	2.23
Net Loss in.				0.18	2.27	3.76	4.77	4.09	2.32	0.33			17.71
ET Ref													
Cal SCS-BC k	1.68	2.01	1.99	1.58	1.77	1.47	1.24	1.18	1.35	1.50	2.22	1.42	
Estimated Etr	0.88	1.27	2.25	3.30	6.57	7.99	9.11	7.70	5.51	3.30	1.78	0.75	50.42
Std Dev Et	0.12	0.18	0.56	0.73	0.88	0.95	0.56	0.59	0.73	0.64	0.36	0.09	2.93

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TOOELE
From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 5070 ft., Lat. 40.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.65	8.28	8.95	10.08	10.16	10.32	9.62	8.40	7.71	6.67	6.48	100.00
Avg Temp F	28.51	33.68	40.47	48.59	57.94	67.63	75.76	73.44	63.39	51.61	39.15	29.62	50.82
Std Dev Temp	4.02	3.90	3.53	4.13	2.93	3.43	2.14	2.31	3.49	3.55	2.78	3.55	1.21
Avg Prec in.	1.08	1.33	2.32	2.49	1.91	1.12	0.92	0.94	1.42	1.81	1.69	1.48	18.49
Std Dev Prec	0.62	0.78	1.00	1.41	1.14	0.91	0.78	1.03	1.59	1.23	1.05	0.95	4.43
SCS-BC f in.	0.57	0.70	1.31	2.32	4.03	5.90	7.80	6.77	4.18	2.32	0.96	0.58	37.45
Std Dev f	0.08	0.13	0.32	0.51	0.50	0.71	0.51	0.49	0.55	0.41	0.19	0.08	2.14
ALFALFA													
Cal SCS-BC k				1.19	1.46	1.29	0.88	0.90	1.02	0.58			
Cal SCS-BC Et				2.76	5.90	7.60	6.83	6.11	4.28	1.34			34.81
Std Dev Et				0.61	0.73	0.92	0.45	0.44	0.56	0.23			2.27
Net Irr in.				0.77	4.37	6.71	6.09	5.36	3.14				26.44
PASTURE													
Cal SCS-BC k			0.33	0.91	1.11	0.93	0.76	0.73	0.72	0.63			
Cal SCS-BC Et			0.44	2.11	4.48	5.49	5.90	4.91	3.01	1.45			27.79
Std Dev Et			0.11	0.47	0.56	0.66	0.39	0.35	0.39	0.26			1.78
Net Irr in.				0.12	2.96	4.60	5.16	4.16	1.87	0.00			18.87
OTHR HAY													
Cal SCS-BC k				0.99	1.69	1.49	0.84	0.40	0.28	0.10			
Cal SCS-BC Et				2.30	6.81	8.81	6.57	2.71	1.19	0.23			28.62
Std Dev Et				0.51	0.85	1.06	0.43	0.20	0.16	0.04			2.02
Net Irr in.				0.31	5.29	7.91	5.83	1.96	0.05				21.36
SP GRAIN													
Cal SCS-BC k			0.10	0.61	1.59	1.41	0.49						
Cal SCS-BC Et			0.13	1.42	6.39	8.34	3.82						20.10
Std Dev Et			0.03	0.32	0.79	1.01	0.25						1.62
Net Irr in.					4.87	7.45	3.08						15.40
CORN													
Cal SCS-BC k					0.24	0.40	0.75	1.06	0.97				
Cal SCS-BC Et					0.98	2.35	5.88	7.15	4.05				20.40
Std Dev Et					0.12	0.28	0.39	0.51	0.53				1.11
Net Irr in.						1.46	5.14	6.39	2.91				15.91
SWE CORN													
Cal SCS-BC k					0.20	0.44	0.89	1.03	0.15				
Cal SCS-BC Et					0.79	2.59	6.97	6.99	0.61				17.96
Std Dev Et					0.10	0.31	0.46	0.50	0.08				0.91
Net Irr in.						1.70	6.24	6.24					14.18

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TOOELE

From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994

Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 5070 ft., Lat. 40.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ORCHARD													
Cal SCS-BC k				0.09	0.90	1.31	1.25	1.22	1.16	0.70			
Cal SCS-BC Et				0.21	3.64	7.71	9.76	8.23	4.86	1.63			36.04
Std Dev Et				0.05	0.45	0.93	0.64	0.59	0.64	0.29			2.01
Net Irr in.					2.12	6.82	9.02	7.48	3.72	0.18			29.34
TURF													
Cal SCS-BC k			0.34	0.90	0.96	0.80	0.65	0.63	0.62	0.54			
Cal SCS-BC Et			0.45	2.07	3.86	4.73	5.08	4.23	2.59	1.25			24.28
Std Dev Et			0.11	0.46	0.48	0.57	0.33	0.30	0.34	0.22			1.58
Net Irr in.				0.08	2.34	3.84	4.35	3.48	1.45				15.55
GARDEN													
Cal SCS-BC k					0.44	0.60	0.83	0.76	0.18				
Cal SCS-BC Et					1.79	3.57	6.45	5.16	0.77				17.74
Std Dev Et					0.22	0.43	0.42	0.37	0.10				0.92
Net Irr in.					0.26	2.68	5.71	4.41					13.06
E-LAKE													
Cal SCS-BC k	1.63	1.91	1.62	1.42	1.36	1.03	0.82	0.86	0.93	1.22	1.44	1.37	
Cal SCS-BC Evap	0.93	1.34	2.13	3.29	5.48	6.10	6.37	5.79	3.88	2.84	1.38	0.80	40.35
Std Dev Evap	0.13	0.24	0.51	0.73	0.68	0.74	0.42	0.42	0.51	0.50	0.27	0.11	2.40
Net Loss in.		0.01		0.81	3.57	4.99	5.45	4.85	2.46	1.03			23.17
ET Ref													
Cal SCS-BC k	1.81	2.12	1.80	1.60	1.71	1.43	1.16	1.12	1.11	1.38	1.60	1.52	
Estimated Etr	1.04	1.49	2.37	3.70	6.90	8.45	9.07	7.56	4.63	3.19	1.54	0.88	50.82
Std Dev Et	0.15	0.27	0.57	0.82	0.86	1.02	0.60	0.54	0.61	0.56	0.30	0.12	2.97

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TROPIC
From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994
Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6280 ft., Lat. 37.63

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.87	6.76	8.30	8.88	9.92	9.97	10.14	9.51	8.38	7.79	6.82	6.69	100.00
Avg Temp F	27.82	31.84	37.34	44.33	52.82	62.20	68.28	65.66	57.80	49.04	36.92	28.90	46.91
Std Dev Temp	3.92	3.76	3.42	3.41	2.74	2.49	2.17	2.17	2.23	3.23	2.31	4.21	1.11
Avg Prec in.	0.95	1.04	1.17	0.74	0.69	0.39	1.16	1.90	1.23	1.07	1.08	0.96	12.38
Std Dev Prec	0.90	1.10	0.84	0.81	0.52	0.41	0.78	1.60	0.88	1.05	1.06	0.95	3.31
SCS-BC f in.	0.57	0.66	1.07	1.80	3.15	4.73	6.01	5.14	3.33	2.05	0.84	0.58	29.95
Std Dev f	0.08	0.09	0.25	0.37	0.41	0.46	0.46	0.41	0.31	0.35	0.13	0.10	1.55
ALFALFA													
Cal SCS-BC k				0.42	1.89	1.37	1.35	1.00	0.74				
Cal SCS-BC Et				0.75	5.97	6.48	8.09	5.13	2.45				28.86
Std Dev Et				0.15	0.78	0.62	0.63	0.40	0.23				1.82
Net Irr in.				0.16	5.42	6.17	7.16	3.61	1.46				23.97
PASTURE													
Cal SCS-BC k				0.65	1.11	1.13	0.93	0.88	0.93				
Cal SCS-BC Et				1.18	3.51	5.37	5.61	4.54	3.11				23.31
Std Dev Et				0.24	0.46	0.52	0.43	0.36	0.29				1.38
Net Irr in.				0.59	2.96	5.06	4.68	3.03	2.12				18.43
SP GRAIN													
Cal SCS-BC k				0.26	1.17	1.73	1.31	0.22					
Cal SCS-BC Et				0.47	3.69	8.21	7.90	1.11					21.38
Std Dev Et				0.10	0.48	0.79	0.61	0.09					1.47
Net Irr in.					3.14	7.90	6.97						18.01

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at TROPIC

From a Calibrated SCS Blaney-Criddle Equation using data from PANGUITCH 10-13-1994

Years of Data Available; NWS: 1961-1990 PANGUITCH: 1987-1991 Elev. 6280 ft., Lat. 37.63

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.01	1.14	0.98	0.80	0.76	0.80				
Cal SCS-BC Et				1.83	3.60	4.64	4.84	3.91	2.68				21.49
Std Dev Et				0.38	0.47	0.45	0.37	0.31	0.25				1.32
Net Irr in.				1.24	3.05	4.33	3.90	2.39	1.69				16.60
GARDEN													
Cal SCS-BC k					0.12	0.84	1.09	0.43	0.20				
Cal SCS-BC Et					0.37	3.96	6.56	2.21	0.66				13.77
Std Dev Et					0.05	0.38	0.51	0.17	0.06				0.83
Net Irr in.						3.65	5.63	0.70					9.98
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	2.00	1.68	1.23	0.94	0.96	1.14	1.33	1.67	2.00	
Cal SCS-BC Evap	1.15	1.31	2.15	3.60	5.31	5.84	5.64	4.91	3.80	2.74	1.40	1.17	39.02
Std Dev Evap	0.16	0.18	0.50	0.74	0.69	0.56	0.44	0.39	0.36	0.47	0.22	0.20	2.13
Net Loss in.	0.20	0.27	0.98	2.86	4.62	5.46	4.48	3.01	2.57	1.67	0.32	0.21	26.64
ET Ref													
Cal SCS-BC k	2.58	2.64	2.48	2.24	2.04	1.75	1.44	1.36	1.48	1.63	1.91	2.68	
Estimated Etr	1.48	1.73	2.66	4.04	6.44	8.28	8.64	6.98	4.94	3.35	1.60	1.56	51.69
Std Dev Et	0.21	0.24	0.62	0.83	0.84	0.80	0.67	0.55	0.46	0.57	0.25	0.26	2.76

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at UNIVERSITY OF UTAH
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4800 ft., Lat. 40.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.46	100.00
Avg Temp F	30.59	36.64	42.58	49.90	59.57	69.66	77.94	75.46	66.27	54.30	41.83	31.89	53.05
Std Dev Temp	3.61	3.49	3.07	4.17	3.04	3.46	1.79	1.94	2.55	3.51	2.39	3.04	1.29
Avg Prec in.	1.38	1.56	2.30	2.36	2.24	1.12	0.85	0.94	1.48	1.89	1.59	1.65	19.36
Std Dev Prec	0.81	0.73	1.13	1.43	1.44	1.00	0.47	0.90	1.72	1.06	0.73	1.29	5.87
SCS-BC f in.	0.61	0.82	1.50	2.48	4.32	6.34	8.34	7.21	4.64	2.63	1.15	0.63	40.67
Std Dev f	0.08	0.16	0.30	0.53	0.53	0.75	0.44	0.42	0.41	0.42	0.18	0.09	2.15
ALFALFA													
Cal SCS-BC k				1.17	1.12	0.91	0.84	0.86	0.85	0.42			
Cal SCS-BC Et				2.91	4.86	5.78	7.00	6.17	3.95	1.09			31.75
Std Dev Et				0.62	0.59	0.68	0.37	0.36	0.35	0.17			1.84
Net Irr in.				1.02	3.07	4.88	6.31	5.42	2.76				23.46
PASTURE													
Cal SCS-BC k			0.23	0.93	0.89	0.84	0.75	0.75	0.58	0.50			
Cal SCS-BC Et			0.34	2.31	3.85	5.34	6.22	5.41	2.68	1.32			27.47
Std Dev Et			0.07	0.50	0.47	0.63	0.33	0.32	0.24	0.21			1.59
Net Irr in.				0.42	2.06	4.45	5.54	4.66	1.49				18.62
SP GRAIN													
Cal SCS-BC k			0.08	0.53	1.17	1.30	0.76						
Cal SCS-BC Et			0.12	1.31	5.04	8.22	6.30						20.98
Std Dev Et			0.02	0.28	0.62	0.97	0.33						1.60
Net Irr in.					3.25	7.32	5.62						16.19
CORN													
Cal SCS-BC k				0.09	0.29	0.60	0.99	1.08	0.71				
Cal SCS-BC Et				0.23	1.24	3.80	8.25	7.81	3.28				24.61
Std Dev Et				0.05	0.15	0.45	0.43	0.46	0.29				1.01
Net Irr in.						2.90	7.57	7.06	2.09				19.63
POTATOES													
Cal SCS-BC k				0.04	0.33	0.76	0.89	0.83	0.48	0.11			
Cal SCS-BC Et				0.11	1.43	4.84	7.41	6.01	2.24	0.28			22.32
Std Dev Et				0.02	0.17	0.57	0.39	0.35	0.20	0.04			1.00
Net Irr in.						3.94	6.73	5.26	1.06				16.99
ORCHARD													
Cal SCS-BC k				0.54	1.11	1.38	1.25	1.23	0.81	0.32			
Cal SCS-BC Et				1.34	4.81	8.72	10.42	8.85	3.78	0.83			38.75
Std Dev Et				0.29	0.59	1.03	0.55	0.52	0.34	0.13			1.96
Net Irr in.					3.02	7.83	9.74	8.10	2.60				31.28

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at UNIVERSITY OF UTAH
From a Calibrated SCS Blaney-Criddle Equation using data from SALT LAKE CT NWSFO AP 10-26-1994
Years of Data Available; NWS: 1961-1990 SALT LAKE CT NWSFO AP: 1970-1992 Elev. 4800 ft., Lat. 40.77

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BEANS													
Cal SCS-BC k					0.23	0.94	0.98	0.26	0.01				
Cal SCS-BC Et					0.99	5.95	8.16	1.85	0.05				17.00
Std Dev Et					0.12	0.70	0.43	0.11	0.00				0.97
Net Irr in.						5.06	7.48	1.10					13.63
TURF													
Cal SCS-BC k			0.30	0.84	0.77	0.73	0.64	0.65	0.50	0.43			
Cal SCS-BC Et			0.45	2.07	3.32	4.60	5.36	4.66	2.31	1.14			23.92
Std Dev Et			0.09	0.45	0.41	0.54	0.28	0.27	0.21	0.18			1.39
Net Irr in.				0.19	1.53	3.71	4.67	3.91	1.13				15.14
GARDEN													
Cal SCS-BC k				0.22	0.46	0.83	0.87	0.37	0.18	0.06			
Cal SCS-BC Et				0.54	2.00	5.26	7.24	2.69	0.82	0.15			18.71
Std Dev Et				0.12	0.25	0.62	0.38	0.16	0.07	0.02			1.02
Net Irr in.					0.21	4.36	6.56	1.94					13.08
E-LAKE													
Cal SCS-BC k	1.78	2.00	1.08	1.42	1.13	0.95	0.87	0.91	0.76	0.71	1.80	1.58	
Cal SCS-BC Evap	1.09	1.64	1.63	3.53	4.90	6.03	7.22	6.53	3.55	1.87	2.06	0.99	41.05
Std Dev Evap	0.13	0.32	0.33	0.76	0.60	0.71	0.38	0.38	0.32	0.30	0.32	0.14	2.25
Net Loss in.		0.08		1.17	2.66	4.91	6.37	5.59	2.07		0.47		23.32
ET Ref													
Cal SCS-BC k			1.20	1.58	1.37	1.30	1.15	1.16	0.89	0.79			
Estimated Etr			1.81	3.92	5.92	8.22	9.57	8.33	4.13	2.08			43.98
Std Dev Et			0.36	0.84	0.72	0.97	0.50	0.49	0.37	0.33			2.60

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at UTAH LAKE LEHI
From a Calibrated SCS Blaney-Criddle Equation using data from PALMYRA 10-13-1994
Years of Data Available; NWS: 1961-1990 PALMYRA: 1986-1991 Elev. 4500 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.70	6.66	8.28	8.95	10.07	10.15	10.31	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	25.09	30.78	38.79	47.10	56.17	65.06	72.73	70.54	61.03	49.43	37.59	27.61	48.49
Std Dev Temp	4.89	4.99	3.31	2.82	2.60	2.32	1.62	2.03	2.75	2.96	2.79	3.84	1.09
Avg Prec in.	0.93	0.82	1.15	1.27	1.13	0.74	0.69	0.94	1.06	1.15	1.12	0.76	11.77
Std Dev Prec	0.59	0.73	0.75	0.84	0.98	0.74	0.46	0.69	1.02	0.83	0.76	0.65	3.08
SCS-BC f in.	0.50	0.63	1.17	2.12	3.73	5.37	7.09	6.15	3.81	2.07	0.86	0.54	34.05
Std Dev f	0.10	0.12	0.26	0.33	0.43	0.46	0.37	0.41	0.42	0.32	0.17	0.07	1.34
ALFALFA													
Cal SCS-BC k				0.90	1.76	1.14	0.99	0.93	1.16	0.19			
Cal SCS-BC Et				1.90	6.58	6.14	7.00	5.74	4.41	0.40			32.18
Std Dev Et				0.29	0.76	0.53	0.36	0.39	0.48	0.06			1.48
Net Irr in.				0.89	5.67	5.55	6.45	4.99	3.57				27.12
PASTURE													
Cal SCS-BC k				0.87	1.12	1.00	0.86	0.81	0.91	0.56			
Cal SCS-BC Et				1.85	4.19	5.38	6.10	4.95	3.48	1.16			27.11
Std Dev Et				0.29	0.48	0.46	0.32	0.33	0.38	0.18			1.20
Net Irr in.				0.83	3.28	4.79	5.55	4.20	2.64	0.24			21.53
OTHR HAY													
Cal SCS-BC k				0.78	1.69	1.61	0.97	0.44	0.35				
Cal SCS-BC Et				1.65	6.29	8.66	6.87	2.73	1.35				27.56
Std Dev Et				0.26	0.73	0.74	0.36	0.18	0.15				1.37
Net Irr in.				0.64	5.38	8.07	6.32	1.98	0.50				22.89
SP GRAIN													
Cal SCS-BC k				0.44	1.40	1.54	0.98						
Cal SCS-BC Et				0.93	5.21	8.28	6.95						21.37
Std Dev Et				0.14	0.60	0.71	0.36						1.15
Net Irr in.					4.30	7.69	6.39						18.38
CORN													
Cal SCS-BC k					0.21	0.42	0.90	1.18	1.05				
Cal SCS-BC Et					0.78	2.23	6.37	7.23	4.02				20.63
Std Dev Et					0.09	0.19	0.33	0.49	0.44				0.87
Net Irr in.						1.64	5.82	6.48	3.17				17.11
ORCHARD													
Cal SCS-BC k				0.22	0.93	1.28	1.35	1.35	1.52	0.28			
Cal SCS-BC Et				0.48	3.45	6.86	9.59	8.29	5.81	0.59			35.08
Std Dev Et				0.07	0.40	0.59	0.50	0.56	0.63	0.09			1.42
Net Irr in.					2.55	6.27	9.04	7.54	4.97				30.37

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at UTAH LAKE LEHI
From a Calibrated SCS Blaney-Criddle Equation using data from PALMYRA 10-13-1994
Years of Data Available; NWS: 1961-1990 PALMYRA: 1986-1991 Elev. 4500 ft., Lat. 40.37

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				1.00	1.00	0.86	0.74	0.69	0.79	0.63			
Cal SCS-BC Et				2.12	3.73	4.64	5.26	4.27	3.00	1.31			24.32
Std Dev Et				0.33	0.43	0.40	0.27	0.29	0.33	0.20			1.10
Net Irr in.				1.11	2.82	4.04	4.70	3.52	2.15	0.39			18.73
GARDEN													
Cal SCS-BC k					0.51	0.91	1.01	0.40	0.24				
Cal SCS-BC Et					1.90	4.90	7.12	2.44	0.90				17.26
Std Dev Et					0.22	0.42	0.37	0.16	0.10				0.69
Net Irr in.					0.99	4.31	6.57	1.69	0.05				13.61
E-LAKE													
Cal SCS-BC k	1.50	1.87	2.00	1.73	1.42	1.09	0.91	0.89	1.11	1.39	1.68	1.56	
Cal SCS-BC Evap	0.76	1.17	2.34	3.68	5.30	5.84	6.45	5.50	4.25	2.88	1.45	0.84	40.46
Std Dev Evap	0.15	0.22	0.52	0.57	0.61	0.50	0.33	0.37	0.46	0.45	0.28	0.12	1.71
Net Loss in.		0.35	1.19	2.41	4.16	5.10	5.76	4.56	3.19	1.73	0.33	0.08	28.86
ET Ref													
Cal SCS-BC k	1.67	2.07	2.30	1.93	1.78	1.54	1.32	1.24	1.40	1.62	1.87	1.73	
Estimated Etr	0.84	1.30	2.69	4.09	6.65	8.28	9.38	7.62	5.36	3.35	1.61	0.93	52.12
Std Dev Et	0.16	0.25	0.60	0.63	0.77	0.71	0.49	0.51	0.58	0.52	0.31	0.13	2.14

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VERNAL AP
From a Calibrated SCS Blaney-Criddle Equation using data from VERNAL / MAESER 10-26-1994
Years of Data Available; NWS: 1961-1990 VERNAL / MAESER: 1983-1990 Elev. 5260 ft., Lat. 40.45

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.69	6.66	8.28	8.95	10.07	10.16	10.32	9.61	8.40	7.71	6.67	6.49	100.00
Avg Temp F	16.51	23.82	36.21	46.61	55.98	65.20	71.72	69.29	59.54	47.43	33.36	20.06	45.48
Std Dev Temp	6.90	6.87	4.19	3.20	2.28	2.58	1.49	2.10	3.02	2.70	3.12	5.74	1.64
Avg Prec in.	0.39	0.41	0.65	0.81	0.88	0.79	0.50	0.58	0.87	1.06	0.60	0.61	8.16
Std Dev Prec	0.35	0.35	0.52	0.53	0.68	0.77	0.49	0.45	0.66	0.90	0.43	0.52	2.30
SCS-BC f in.	0.33	0.48	1.02	2.07	3.70	5.40	6.86	5.90	3.59	1.86	0.68	0.39	32.29
Std Dev f	0.14	0.14	0.25	0.37	0.37	0.51	0.33	0.42	0.44	0.28	0.09	0.11	1.55
ALFALFA													
Cal SCS-BC k				0.78	1.79	1.14	1.19	1.16	1.07	1.36			
Cal SCS-BC Et				1.62	6.63	6.15	8.14	6.85	3.84	2.53			35.76
Std Dev Et				0.29	0.67	0.58	0.39	0.49	0.47	0.37			1.71
Net Irr in.				0.97	5.93	5.52	7.74	6.38	3.14	1.68			31.36
PASTURE													
Cal SCS-BC k				0.67	1.10	1.03	0.88	0.88	0.94	1.06	0.23		
Cal SCS-BC Et				1.38	4.07	5.55	6.04	5.17	3.37	1.97	0.16		27.72
Std Dev Et				0.25	0.41	0.52	0.29	0.37	0.41	0.29	0.02		1.33
Net Irr in.				0.73	3.36	4.92	5.64	4.71	2.68	1.12			23.16
OTHR HAY													
Cal SCS-BC k				0.27	1.58	1.66	1.13	0.50	0.40	0.32			
Cal SCS-BC Et				0.56	5.83	8.96	7.72	2.97	1.43	0.60			28.08
Std Dev Et				0.10	0.59	0.84	0.37	0.21	0.17	0.09			1.45
Net Irr in.					5.13	8.32	7.32	2.51	0.73				24.02
SP GRAIN													
Cal SCS-BC k				0.30	1.33	1.58	1.12	0.12					
Cal SCS-BC Et				0.61	4.90	8.54	7.67	0.71					22.43
Std Dev Et				0.11	0.49	0.80	0.37	0.05					1.26
Net Irr in.					4.20	7.91	7.27	0.24					19.62
CORN													
Cal SCS-BC k					0.28	0.58	1.14	1.27	0.86				
Cal SCS-BC Et					1.04	3.12	7.79	7.47	3.08				22.50
Std Dev Et					0.10	0.29	0.38	0.53	0.38				1.02
Net Irr in.					0.34	2.49	7.39	7.00	2.39				19.60
ORCHARD													
Cal SCS-BC k					0.43	1.27	1.45	1.47	1.29				
Cal SCS-BC Et					1.60	6.85	9.92	8.66	4.62				31.65
Std Dev Et					0.16	0.64	0.48	0.62	0.56				1.47
Net Irr in.					0.90	6.22	9.51	8.20	3.92				28.75

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VERNAL AP
From a Calibrated SCS Blaney-Criddle Equation using data from VERNAL / MAESER 10-26-1994
Years of Data Available; NWS: 1961-1990 VERNAL / MAESER: 1983-1990 Elev. 5260 ft., Lat. 40.45

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.92	1.05	0.89	0.76	0.76	0.81	0.91	0.20		
Cal SCS-BC Et				1.91	3.88	4.78	5.21	4.46	2.91	1.69	0.13		24.97
Std Dev Et				0.34	0.39	0.45	0.25	0.32	0.35	0.25	0.02		1.26
Net Irr in.				1.26	3.18	4.15	4.80	3.99	2.21	0.84			20.44
GARDEN													
Cal SCS-BC k					0.49	0.71	1.02	0.82	0.20				
Cal SCS-BC Et					1.83	3.82	6.99	4.82	0.70				18.15
Std Dev Et					0.18	0.36	0.34	0.34	0.09				0.80
Net Irr in.					1.13	3.18	6.58	4.36	0.00				15.25
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.58	1.52	1.28	1.11	1.13	1.20	1.46	2.00	2.00	
Cal SCS-BC Evap	0.66	0.95	2.04	3.26	5.62	6.93	7.60	6.68	4.30	2.71	1.36	0.78	42.91
Std Dev Evap	0.28	0.27	0.50	0.59	0.57	0.65	0.37	0.47	0.52	0.40	0.18	0.22	2.18
Net Loss in.	0.28	0.55	1.39	2.45	4.74	6.14	7.09	6.10	3.43	1.65	0.76	0.17	34.75
ET Ref													
Cal SCS-BC k	2.59	2.90	2.24	1.77	1.87	1.58	1.35	1.35	1.44	1.62	2.28	2.63	
Estimated Etr	0.86	1.38	2.28	3.67	6.93	8.54	9.29	7.96	5.19	3.03	1.55	1.03	51.71
Std Dev Et	0.36	0.40	0.56	0.66	0.70	0.80	0.45	0.57	0.63	0.45	0.20	0.29	2.62

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VERNON
From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994
Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 5485 ft., Lat. 40.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.72	6.67	8.28	8.94	10.05	10.13	10.29	9.60	8.40	7.72	6.69	6.51	100.00
Avg Temp F	25.15	29.94	36.53	44.05	52.78	63.11	71.64	69.32	59.82	48.27	35.77	26.50	46.91
Std Dev Temp	3.99	4.25	3.59	3.11	2.52	2.54	1.41	1.74	3.08	3.45	2.30	3.85	1.20
Avg Prec in.	0.56	0.58	1.01	0.82	1.06	0.75	0.89	0.96	0.84	1.01	0.90	0.69	10.08
Std Dev Prec	0.40	0.42	0.60	0.42	0.80	0.65	0.66	0.91	0.96	0.68	0.57	0.56	2.73
SCS-BC f in.	0.51	0.60	1.01	1.78	3.19	4.98	6.83	5.90	3.63	1.96	0.76	0.52	31.67
Std Dev f	0.08	0.09	0.23	0.34	0.38	0.48	0.31	0.35	0.45	0.35	0.10	0.08	1.48
ALFALFA													
Cal SCS-BC k				0.33	1.77	1.36	1.12	0.93	1.00				
Cal SCS-BC Et				0.59	5.63	6.78	7.64	5.47	3.64				29.74
Std Dev Et				0.11	0.68	0.65	0.35	0.32	0.45				1.41
Net Irr in.					4.78	6.18	6.93	4.70	2.97				25.55
PASTURE													
Cal SCS-BC k				0.58	1.15	1.04	0.84	0.80	0.79	0.17			
Cal SCS-BC Et				1.02	3.68	5.21	5.75	4.73	2.89	0.34			23.62
Std Dev Et				0.20	0.44	0.50	0.27	0.28	0.35	0.06			1.14
Net Irr in.				0.37	2.83	4.61	5.04	3.96	2.21				19.03
OTHR HAY													
Cal SCS-BC k				0.31	1.57	1.68	1.20	0.48	0.35				
Cal SCS-BC Et				0.55	5.00	8.38	8.17	2.84	1.27				26.21
Std Dev Et				0.11	0.60	0.81	0.38	0.17	0.16				1.38
Net Irr in.					4.15	7.78	7.46	2.07	0.60				22.06
SP GRAIN													
Cal SCS-BC k				0.31	1.29	1.61	1.09	0.13					
Cal SCS-BC Et				0.54	4.11	8.00	7.45	0.75					20.86
Std Dev Et				0.10	0.50	0.77	0.34	0.04					1.24
Net Irr in.					3.26	7.40	6.74						17.41

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VERNON

From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-13-1994

Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 5485 ft., Lat. 40.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.85	1.07	0.90	0.73	0.69	0.68	0.31			
Cal SCS-BC Et				1.51	3.40	4.48	4.96	4.08	2.49	0.61			21.52
Std Dev Et				0.29	0.41	0.43	0.23	0.24	0.30	0.11			1.11
Net Irr in.				0.86	2.55	3.88	4.25	3.31	1.81				16.66
GARDEN													
Cal SCS-BC k					0.27	0.53	0.76	0.97	0.39				
Cal SCS-BC Et					0.87	2.65	5.18	5.71	1.40				15.81
Std Dev Et					0.11	0.26	0.24	0.33	0.17				0.55
Net Irr in.					0.03	2.05	4.47	4.94	0.73				12.21
E-LAKE													
Cal SCS-BC k	1.77	2.00	2.00	1.67	1.52	1.16	0.91	0.95	1.03	1.37	1.57	1.32	
Cal SCS-BC Evap	0.89	1.20	2.03	2.96	4.84	5.80	6.24	5.60	3.74	2.68	1.20	0.68	37.87
Std Dev Evap	0.14	0.18	0.46	0.57	0.58	0.56	0.29	0.33	0.46	0.48	0.16	0.10	1.97
Net Loss in.	0.33	0.62	1.02	2.15	3.77	5.05	5.35	4.64	2.90	1.66	0.29		27.80
ET Ref													
Cal SCS-BC k	1.96	2.32	2.41	1.87	1.91	1.61	1.30	1.24	1.22	1.53	1.74	1.47	
Estimated Etr	0.99	1.40	2.44	3.32	6.07	8.00	8.85	7.28	4.45	3.00	1.33	0.76	47.90
Std Dev Et	0.16	0.21	0.56	0.64	0.73	0.77	0.41	0.43	0.55	0.54	0.18	0.11	2.43

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VEYO POWER HOUSE
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1984-1991 Elev. 4600 ft., Lat. 37.35

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.89	6.77	8.30	8.87	9.90	9.95	10.12	9.49	8.38	7.79	6.84	6.71	100.00
Avg Temp F	35.17	39.58	43.95	51.15	59.92	69.90	75.88	73.68	66.33	56.32	44.02	36.29	54.35
Std Dev Temp	3.45	3.13	4.01	3.86	3.25	3.09	2.08	1.98	2.98	3.52	2.87	3.61	1.34
Avg Prec in.	1.23	1.44	1.87	1.09	0.75	0.32	1.00	1.15	1.11	0.99	1.29	1.13	13.37
Std Dev Prec	1.28	1.53	1.64	1.20	0.75	0.30	0.92	0.93	1.03	0.99	1.03	1.16	4.24
SCS-BC f in.	0.78	1.01	1.65	2.61	4.30	6.24	7.67	6.73	4.64	2.91	1.36	0.82	40.74
Std Dev f	0.16	0.21	0.41	0.50	0.56	0.64	0.48	0.41	0.49	0.45	0.24	0.18	2.24
ALFALFA													
Cal SCS-BC k			0.21	1.49	1.57	1.16	0.92	0.94	1.16	0.44			
Cal SCS-BC Et			0.35	3.89	6.76	7.25	7.09	6.35	5.38	1.27			38.34
Std Dev Et			0.09	0.74	0.88	0.75	0.45	0.39	0.56	0.20			2.33
Net Irr in.				3.02	6.16	6.99	6.29	5.43	4.49	0.48			32.87
PASTURE													
Cal SCS-BC k			0.37	1.12	1.07	0.95	0.80	0.76	0.81	0.57			
Cal SCS-BC Et			0.61	2.93	4.61	5.94	6.16	5.08	3.77	1.67			30.77
Std Dev Et			0.15	0.56	0.60	0.61	0.39	0.31	0.40	0.26			1.84
Net Irr in.				2.06	4.01	5.68	5.36	4.16	2.89	0.88			25.04
SP GRAIN													
Cal SCS-BC k			0.13	0.78	1.58	1.43	0.38						
Cal SCS-BC Et			0.22	2.03	6.78	8.89	2.89						20.82
Std Dev Et			0.05	0.39	0.89	0.92	0.18						1.78
Net Irr in.				1.16	6.18	8.64	2.10						18.08
ORCHARD													
Cal SCS-BC k				0.61	1.20	1.44	1.34	1.26	1.29	0.19			
Cal SCS-BC Et				1.60	5.18	9.01	10.28	8.50	5.99	0.55			41.11
Std Dev Et				0.31	0.68	0.93	0.65	0.52	0.63	0.09			2.30
Net Irr in.				0.73	4.58	8.76	9.48	7.58	5.10				36.23

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at VEYO POWER HOUSE
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-14-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1984-1991 Elev. 4600 ft., Lat. 37.35

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.52	1.00	0.92	0.82	0.69	0.65	0.70	0.49			
Cal SCS-BC Et			0.86	2.60	3.97	5.12	5.31	4.38	3.25	1.44			26.93
Std Dev Et			0.22	0.50	0.52	0.53	0.33	0.27	0.34	0.22			1.64
Net Irr in.				1.73	3.38	4.86	4.51	3.45	2.36	0.65			20.94
GARDEN													
Cal SCS-BC k				0.02	0.44	0.69	0.96	0.61	0.26	0.04			
Cal SCS-BC Et				0.05	1.91	4.33	7.36	4.13	1.20	0.12			19.09
Std Dev Et				0.01	0.25	0.45	0.46	0.25	0.13	0.02			1.05
Net Irr in.					1.32	4.07	6.56	3.20	0.32				15.47
E-LAKE													
Cal SCS-BC k	1.45	1.17	1.58	1.52	1.22	0.97	0.82	0.85	0.99	0.91	1.14	1.11	
Cal SCS-BC Evap	1.14	1.18	2.60	3.98	5.24	6.04	6.33	5.74	4.59	2.65	1.55	0.91	41.96
Std Dev Evap	0.23	0.24	0.65	0.76	0.69	0.62	0.40	0.35	0.48	0.41	0.27	0.20	2.53
Net Loss in.			0.74	2.89	4.49	5.72	5.33	4.59	3.48	1.67	0.26		29.17
ET Ref													
Cal SCS-BC k	1.61	1.30	1.75	1.78	1.65	1.46	1.23	1.16	1.25	1.04	1.27	1.23	
Estimated Etr	1.26	1.31	2.89	4.64	7.10	9.13	9.47	7.82	5.81	3.04	1.72	1.01	55.22
Std Dev Et	0.25	0.27	0.72	0.89	0.93	0.94	0.60	0.48	0.61	0.47	0.30	0.22	3.28

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WAH WAH RANCH
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 4880 ft., Lat. 38.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.82	6.73	8.29	8.90	9.96	10.02	10.19	9.54	8.39	7.76	6.78	6.63	100.00
Avg Temp F	27.61	34.24	41.13	48.56	58.03	67.94	76.20	73.70	64.01	51.86	39.28	28.84	50.95
Std Dev Temp	5.01	4.08	3.79	3.32	2.64	2.72	1.60	2.12	2.74	2.96	2.96	4.44	1.13
Avg Prec in.	0.32	0.30	0.63	0.66	0.57	0.40	0.71	1.09	0.88	0.68	0.47	0.25	6.97
Std Dev Prec	0.36	0.28	0.45	0.53	0.57	0.45	0.69	0.82	0.97	0.41	0.46	0.28	2.09
SCS-BC f in.	0.57	0.74	1.38	2.29	4.00	5.88	7.80	6.76	4.27	2.36	0.99	0.58	37.62
Std Dev f	0.10	0.15	0.35	0.40	0.45	0.56	0.38	0.45	0.44	0.34	0.19	0.10	1.59
ALFALFA													
Cal SCS-BC k				0.18	1.62	1.19	1.21	0.89	1.09				
Cal SCS-BC Et				0.42	6.50	7.00	9.42	6.02	4.65				34.00
Std Dev Et				0.07	0.72	0.66	0.45	0.40	0.47				1.45
Net Irr in.					6.04	6.68	8.85	5.14	3.95				30.66
PASTURE													
Cal SCS-BC k				0.45	1.15	0.99	0.84	0.79	0.91				
Cal SCS-BC Et				1.04	4.61	5.82	6.52	5.37	3.88				27.24
Std Dev Et				0.18	0.51	0.55	0.31	0.36	0.40				1.20
Net Irr in.				0.51	4.16	5.50	5.95	4.49	3.17				23.79
SP GRAIN													
Cal SCS-BC k				0.54	1.54	1.52	0.84						
Cal SCS-BC Et				1.25	6.17	8.95	6.55						22.91
Std Dev Et				0.22	0.69	0.85	0.32						1.35
Net Irr in.				0.72	5.71	8.63	5.98						21.04

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WAH WAH RANCH
From a Calibrated SCS Blaney-Criddle Equation using data from MILFORD 10-13-1994
Years of Data Available; NWS: 1961-1990 MILFORD: 1986-1991 Elev. 4880 ft., Lat. 38.48

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.68	1.04	0.85	0.72	0.68	0.78	0.14			
Cal SCS-BC Et				1.56	4.16	5.01	5.62	4.62	3.34	0.33			24.64
Std Dev Et				0.27	0.46	0.47	0.27	0.31	0.34	0.05			1.13
Net Irr in.				1.03	3.71	4.69	5.05	3.75	2.64				20.86
GARDEN													
Cal SCS-BC k					0.35	0.62	0.95	0.74	0.13				
Cal SCS-BC Et					1.40	3.64	7.41	5.01	0.57				18.03
Std Dev Et					0.16	0.34	0.36	0.33	0.06				0.68
Net Irr in.					0.95	3.32	6.84	4.13					15.24
E-LAKE													
Cal SCS-BC k	1.77	2.00	1.90	1.67	1.48	1.05	0.90	0.90	1.11	1.32	1.70	2.00	
Cal SCS-BC Evap	1.00	1.49	2.62	3.83	5.94	6.18	6.99	6.08	4.72	3.12	1.68	1.16	44.81
Std Dev Evap	0.19	0.30	0.67	0.67	0.66	0.58	0.34	0.40	0.48	0.45	0.33	0.20	2.10
Net Loss in.	0.68	1.18	1.99	3.17	5.37	5.78	6.28	4.99	3.84	2.44	1.21	0.90	37.84
ET Ref													
Cal SCS-BC k	1.97	2.27	2.11	1.89	1.86	1.52	1.29	1.22	1.40	1.57	1.89	2.28	
Estimated Etr	1.12	1.69	2.91	4.33	7.44	8.95	10.03	8.26	5.97	3.70	1.87	1.32	57.57
Std Dev Et	0.21	0.34	0.75	0.76	0.83	0.85	0.48	0.55	0.61	0.53	0.37	0.23	2.61

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WANSHIP DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5940 ft., Lat. 40.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.46	100.00
Avg Temp F	22.85	26.71	33.77	42.47	51.04	59.14	66.17	64.72	56.03	45.68	34.11	24.63	43.94
Std Dev Temp	3.94	3.91	4.34	3.31	2.22	2.63	1.83	2.15	2.52	2.76	2.92	3.86	1.24
Avg Prec in.	1.17	1.12	1.52	1.80	1.68	1.14	1.13	1.08	1.50	1.53	1.61	1.34	16.61
Std Dev Prec	0.85	0.69	0.57	1.01	1.06	0.96	0.71	0.95	1.18	0.92	0.89	1.19	3.71
SCS-BC f in.	0.46	0.53	0.89	1.62	2.94	4.28	5.69	5.03	3.09	1.69	0.71	0.48	27.40
Std Dev f	0.08	0.08	0.20	0.34	0.33	0.47	0.38	0.40	0.34	0.27	0.09	0.07	1.54
ALFALFA													
Cal SCS-BC k				0.09	1.54	1.15	1.24	0.92	1.02				
Cal SCS-BC Et				0.15	4.52	4.93	7.06	4.63	3.15				24.44
Std Dev Et				0.03	0.50	0.54	0.47	0.37	0.35				1.39
Net Irr in.					3.17	4.02	6.16	3.77	1.96				19.07
PASTURE													
Cal SCS-BC k				0.27	0.99	0.99	0.84	0.82	0.85				
Cal SCS-BC Et				0.44	2.91	4.24	4.77	4.12	2.64				19.12
Std Dev Et				0.09	0.32	0.47	0.31	0.33	0.29				1.13
Net Irr in.					1.57	3.33	3.86	3.26	1.44				13.46
OTHR HAY													
Cal SCS-BC k				0.33	1.52	1.60	1.08	0.47	0.36				
Cal SCS-BC Et				0.53	4.47	6.85	6.13	2.37	1.12				21.46
Std Dev Et				0.11	0.50	0.76	0.40	0.19	0.13				1.36
Net Irr in.					3.12	5.94	5.23	1.51					15.79
SP GRAIN													
Cal SCS-BC k				0.07	0.61	1.33	1.29	0.82					
Cal SCS-BC Et				0.12	1.80	5.70	7.33	4.10					19.04
Std Dev Et				0.03	0.20	0.63	0.48	0.32					1.18
Net Irr in.					0.45	4.79	6.43	3.23					14.90

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WANSHIP DAM
From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-13-1994
Years of Data Available; NWS: 1961-1990 PARK CITY: 1987-1990 Elev. 5940 ft., Lat. 40.78

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k				0.68	1.01	0.85	0.72	0.71	0.76	0.14			
Cal SCS-BC Et				1.10	2.97	3.66	4.11	3.55	2.34	0.24			17.97
Std Dev Et				0.23	0.33	0.40	0.27	0.28	0.26	0.04			1.11
Net Irr in.					1.63	2.75	3.21	2.68	1.14				11.40
E-LAKE													
Cal SCS-BC k	1.58	2.00	1.90	1.64	1.41	1.09	0.91	0.97	1.13	1.32	1.56	1.39	
Cal SCS-BC Evap	0.72	1.06	1.69	2.66	4.15	4.68	5.19	4.86	3.50	2.22	1.10	0.66	32.51
Std Dev Evap	0.12	0.16	0.38	0.56	0.46	0.52	0.34	0.38	0.39	0.35	0.14	0.10	1.89
Net Loss in.			0.18	0.86	2.47	3.54	4.07	3.78	2.00	0.69			17.59
ET Ref													
Cal SCS-BC k	1.76	2.22	2.11	1.85	1.81	1.53	1.29	1.26	1.35	1.48	1.73	1.54	
Estimated Etr	0.80	1.18	1.88	2.99	5.31	6.53	7.33	6.33	4.17	2.49	1.22	0.74	40.98
Std Dev Et	0.14	0.17	0.42	0.63	0.59	0.72	0.48	0.50	0.46	0.40	0.16	0.12	2.37

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WENDOVER AUTOB
From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-31-1994
Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 4240 ft., Lat. 40.73

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.67	6.65	8.27	8.96	10.09	10.18	10.34	9.63	8.40	7.70	6.65	6.47	100.00
Avg Temp F	26.81	33.71	42.19	50.67	60.75	70.63	79.79	76.62	65.59	52.01	38.50	27.72	52.08
Std Dev Temp	4.53	4.35	3.24	3.87	2.98	3.58	1.79	2.49	3.06	2.82	2.27	3.70	1.10
Avg Prec in.	0.22	0.32	0.42	0.56	0.90	0.65	0.29	0.45	0.38	0.54	0.39	0.28	5.39
Std Dev Prec	0.18	0.30	0.39	0.47	0.87	0.69	0.24	0.48	0.61	0.58	0.35	0.24	1.62
SCS-BC f in.	0.54	0.71	1.47	2.57	4.53	6.55	8.80	7.47	4.53	2.36	0.91	0.54	40.98
Std Dev f	0.09	0.16	0.31	0.50	0.54	0.78	0.45	0.56	0.50	0.33	0.15	0.07	1.74
ALFALFA													
Cal SCS-BC k			0.40	1.41	1.40	1.23	0.86	0.91	1.05	0.86			
Cal SCS-BC Et			0.59	3.63	6.33	8.05	7.53	6.83	4.78	2.02			39.77
Std Dev Et			0.13	0.70	0.76	0.96	0.39	0.51	0.52	0.28			2.00
Net Irr in.			0.25	3.18	5.61	7.53	7.30	6.47	4.48	1.60			36.43
OTHR HAY													
Cal SCS-BC k			0.19	1.10	1.64	1.43	0.90	0.42	0.30				
Cal SCS-BC Et			0.29	2.84	7.44	9.36	7.92	3.14	1.37				32.36
Std Dev Et			0.06	0.55	0.89	1.12	0.41	0.23	0.15				1.91
Net Irr in.				2.40	6.72	8.84	7.69	2.78	1.07				29.50
PASTURE													
Cal SCS-BC k			0.39	0.93	1.06	0.89	0.74	0.74	0.74	0.85			
Cal SCS-BC Et			0.57	2.41	4.81	5.82	6.50	5.50	3.37	1.99			30.97
Std Dev Et			0.12	0.47	0.57	0.70	0.33	0.41	0.37	0.28			1.47
Net Irr in.			0.23	1.96	4.10	5.30	6.27	5.14	3.06	1.57			27.64
SP GRAIN													
Cal SCS-BC k			0.17	0.76	1.59	1.29	0.29						
Cal SCS-BC Et			0.25	1.96	7.20	8.45	2.52						20.38
Std Dev Et			0.05	0.38	0.86	1.01	0.13						1.61
Net Irr in.				1.52	6.48	7.93	2.29						18.22

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WENDOVER AUTOB
From a Calibrated SCS Blaney-Criddle Equation using data from GRANTSVILLE 10-31-1994
Years of Data Available; NWS: 1961-1990 GRANTSVILLE: 1989-1990 Elev. 4240 ft., Lat. 40.73

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.55	0.88	0.92	0.77	0.64	0.63	0.64	0.84			
Cal SCS-BC Et			0.80	2.26	4.15	5.02	5.61	4.74	2.90	1.97			27.46
Std Dev Et			0.17	0.44	0.50	0.60	0.29	0.35	0.32	0.27			1.32
Net Irr in.			0.47	1.82	3.43	4.50	5.38	4.38	2.60	1.55			24.12
E-LAKE													
Cal SCS-BC k	1.97	2.00	1.62	1.39	1.29	0.98	0.79	0.86	0.95	1.40	1.74	1.73	
Cal SCS-BC Evap	1.06	1.42	2.37	3.58	5.85	6.43	6.99	6.45	4.32	3.29	1.59	0.93	44.28
Std Dev Evap	0.18	0.31	0.51	0.70	0.70	0.77	0.36	0.48	0.47	0.46	0.26	0.13	2.03
Net Loss in.	0.84	1.10	1.95	3.03	4.95	5.78	6.70	6.00	3.93	2.76	1.20	0.65	38.89
ET Ref													
Cal SCS-BC k	2.18	2.29	1.80	1.57	1.64	1.37	1.14	1.13	1.14	1.58	1.94	1.92	
Estimated Etr	1.17	1.63	2.63	4.04	7.41	8.95	10.00	8.46	5.18	3.71	1.76	1.03	56.00
Std Dev Et	0.20	0.36	0.56	0.78	0.88	1.07	0.51	0.63	0.57	0.51	0.28	0.14	2.51

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WOODRUFF

From a Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994

Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 6320 ft., Lat. 41.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.62	6.62	8.27	8.98	10.13	10.24	10.39	9.66	8.41	7.68	6.61	6.40	100.00
Avg Temp F	15.46	19.05	28.59	38.83	47.51	55.87	62.84	60.58	51.72	41.39	28.58	17.24	38.97
Std Dev Temp	5.34	6.23	5.53	3.33	2.04	2.51	1.36	2.26	2.80	2.77	3.37	5.08	1.61
Avg Prec in.	0.43	0.45	0.57	0.92	0.89	1.05	0.72	0.69	1.16	0.93	0.65	0.58	9.04
Std Dev Prec	0.40	0.34	0.37	0.56	0.57	0.81	0.67	0.70	1.03	0.67	0.43	0.46	2.41
SCS-BC f in.	0.31	0.38	0.71	1.28	2.45	3.74	5.05	4.30	2.54	1.29	0.57	0.33	22.95
Std Dev f	0.11	0.12	0.15	0.29	0.27	0.42	0.26	0.39	0.35	0.24	0.07	0.10	1.30
ALFALFA													
Cal SCS-BC k					0.79	1.80	1.19	1.34	1.23				
Cal SCS-BC Et					1.93	6.73	6.00	5.77	3.13				23.56
Std Dev Et					0.22	0.76	0.31	0.52	0.43				1.36
Net Irr in.					1.22	5.89	5.43	5.22	2.20				19.95
PASTURE													
Cal SCS-BC k					1.04	1.23	1.03	1.08	1.22				
Cal SCS-BC Et					2.56	4.62	5.19	4.66	3.09				20.12
Std Dev Et					0.29	0.52	0.27	0.42	0.42				1.14
Net Irr in.					1.85	3.78	4.61	4.11	2.16				16.52
OTHR HAY													
Cal SCS-BC k					0.76	1.76	1.65	1.07	0.49				
Cal SCS-BC Et					1.87	6.60	8.32	4.63	1.23				22.65
Std Dev Et					0.21	0.75	0.44	0.42	0.17				1.25
Net Irr in.					1.16	5.76	7.74	4.08	0.30				19.04
SP GRAIN													
Cal SCS-BC k					0.29	1.07	1.55	1.54	0.37				
Cal SCS-BC Et					0.71	4.02	7.85	6.64	0.93				20.15
Std Dev Et					0.08	0.46	0.41	0.60	0.13				1.06
Net Irr in.						3.18	7.27	6.09	0.00				16.54

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at WOODRUFF
From a Calibrated SCS Blaney-Criddle Equation using data from RANDOLPH 10-13-1994
Years of Data Available; NWS: 1961-1990 RANDOLPH: 1983-1989 Elev. 6320 ft., Lat. 41.53

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k					1.07	1.06	0.89	0.93	1.05				
Cal SCS-BC Et					2.62	3.98	4.47	4.02	2.66				17.75
Std Dev Et					0.29	0.45	0.23	0.36	0.37				1.01
Net Irr in.					1.91	3.14	3.89	3.47	1.73				14.14
GARDEN													
Cal SCS-BC k						0.54	0.92	1.25					
Cal SCS-BC Et						2.01	4.65	5.38					12.04
Std Dev Et						0.23	0.24	0.49					0.66
Net Irr in.						1.17	4.08	4.83					10.08
E-LAKE													
Cal SCS-BC k	2.00	2.00	2.00	1.45	1.74	1.31	1.07	1.16	1.45	1.38	1.98	1.88	
Cal SCS-BC Evap	0.61	0.76	1.43	1.85	4.26	4.91	5.38	4.99	3.67	1.77	1.12	0.62	31.38
Std Dev Evap	0.21	0.25	0.29	0.42	0.48	0.56	0.28	0.45	0.50	0.33	0.13	0.18	1.86
Net Loss in.	0.18	0.31	0.85	0.93	3.36	3.87	4.66	4.31	2.51	0.85	0.47	0.04	22.34
ET Ref													
Cal SCS-BC k	2.49	3.62	2.90	1.68	2.28	1.90	1.58	1.67	1.93	1.73	2.20	2.09	
Estimated Etr	0.76	1.37	2.07	2.14	5.60	7.11	7.99	7.17	4.88	2.22	1.25	0.69	43.25
Std Dev Et	0.26	0.45	0.42	0.48	0.62	0.81	0.42	0.65	0.67	0.41	0.15	0.20	2.55

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ZION NATL PARK
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-31-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 4050 ft., Lat. 37.22

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.90	6.77	8.30	8.87	9.89	9.94	10.11	9.49	8.38	7.80	6.84	6.71	100.00
Avg Temp F	40.19	45.03	49.72	57.45	67.14	77.48	83.86	81.54	74.17	63.36	49.84	41.08	60.90
Std Dev Temp	3.54	3.28	3.72	3.88	2.98	2.81	1.67	1.91	2.66	3.74	2.93	3.57	1.09
Avg Prec in.	1.59	1.60	2.05	1.15	0.84	0.48	1.25	1.79	1.00	0.92	1.46	1.28	15.42
Std Dev Prec	1.56	1.53	1.73	1.03	0.75	0.76	1.05	1.20	0.82	0.81	1.11	1.16	4.26
SCS-BC f in.	1.08	1.43	2.27	3.49	5.64	7.92	9.64	8.49	6.03	3.88	1.88	1.11	52.87
Std Dev f	0.26	0.28	0.45	0.58	0.59	0.66	0.44	0.46	0.50	0.54	0.28	0.26	2.02
ALFALFA													
Cal SCS-BC k			0.34	1.31	1.09	1.15	0.78	0.72	0.87	0.62			
Cal SCS-BC Et			0.78	4.55	6.13	9.13	7.56	6.15	5.26	2.39			41.95
Std Dev Et			0.15	0.75	0.64	0.76	0.34	0.33	0.43	0.33			1.91
Net Irr in.				3.63	5.46	8.74	6.56	4.72	4.46	1.65			35.23
PASTURE													
Cal SCS-BC k			0.54	0.92	0.91	0.78	0.69	0.63	0.64	0.57			
Cal SCS-BC Et			1.24	3.22	5.15	6.19	6.70	5.38	3.86	2.22			33.95
Std Dev Et			0.24	0.53	0.54	0.52	0.31	0.29	0.32	0.31			1.50
Net Irr in.				2.30	4.47	5.80	5.70	3.95	3.06	1.48			26.77
SP GRAIN													
Cal SCS-BC k		0.24	0.86	1.38	1.40	0.51							
Cal SCS-BC Et		0.34	1.95	4.79	7.90	4.04							19.02
Std Dev Et		0.07	0.38	0.79	0.83	0.34							1.63
Net Irr in.			0.31	3.88	7.22	3.65							15.06
ORCHARD													
Cal SCS-BC k				0.62	1.12	1.24	1.16	1.05	0.97	0.13			
Cal SCS-BC Et				2.15	6.32	9.83	11.23	8.93	5.84	0.51			44.80
Std Dev Et				0.36	0.66	0.82	0.51	0.48	0.48	0.07			1.77
Net Irr in.				1.24	5.64	9.44	10.23	7.50	5.04				39.09

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season

Table 25.(Continued) Estimated Consumptive Use for the NWS Station at ZION NATL PARK
From a Calibrated SCS Blaney-Criddle Equation using data from ST GEORGE 10-31-1994
Years of Data Available; NWS: 1961-1990 ST GEORGE: 1987-1991 Elev. 4050 ft., Lat. 37.22

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
TURF													
Cal SCS-BC k			0.73	0.81	0.79	0.67	0.60	0.55	0.55	0.49			
Cal SCS-BC Et			1.65	2.83	4.44	5.33	5.77	4.64	3.33	1.91			29.89
Std Dev Et			0.32	0.47	0.47	0.44	0.26	0.25	0.27	0.27			1.36
Net Irr in.			0.01	1.91	3.76	4.95	4.77	3.21	2.52	1.17			22.30
GARDEN													
Cal SCS-BC k				0.26	0.50	0.77	0.81	0.31	0.20	0.03			
Cal SCS-BC Et				0.90	2.85	6.11	7.83	2.63	1.19	0.12			21.64
Std Dev Et				0.15	0.30	0.51	0.36	0.14	0.10	0.02			0.92
Net Irr in.					2.17	5.73	6.83	1.20	0.39				16.32
E-LAKE													
Cal SCS-BC k	1.13	1.11	1.42	1.24	1.05	0.81	0.72	0.71	0.77	0.76	0.94	1.05	
Cal SCS-BC Evap	1.21	1.59	3.22	4.33	5.95	6.41	6.91	6.04	4.67	2.95	1.76	1.17	46.22
Std Dev Evap	0.29	0.31	0.63	0.72	0.62	0.53	0.31	0.32	0.38	0.41	0.27	0.27	2.04
Net Loss in.			1.17	3.18	5.11	5.93	5.67	4.25	3.67	2.03	0.30		31.30
ET Ref													
Cal SCS-BC k	1.25	1.23	1.57	1.45	1.40	1.20	1.07	0.97	0.98	0.90	1.04	1.17	
Estimated Etr	1.35	1.77	3.58	5.05	7.92	9.52	10.31	8.28	5.94	3.48	1.96	1.30	60.45
Std Dev Et	0.32	0.34	0.70	0.83	0.83	0.79	0.47	0.44	0.49	0.48	0.29	0.31	2.59

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season
Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data