

**REPORT OF THE 1988 GOVERNOR'S DROUGHT
REVIEW AND REPORTING COMMITTEE**

AUGUST 1988

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UNIVERSITY OF NEVADA-RENO

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August 5, 1988

The Honorable Richard Bryan
Governor of Nevada
Capitol Building
Carson City, NV 89710

Dear Governor Bryan:

The 1988 Governor's Drought Review and Reporting Committee has had several meetings and work sessions since your appointment of the committee last February. The meetings were held at various locations in drought-plagued western Nevada in order to better inform local residents and to receive testimony from them. In many cases, that testimony was very helpful.

The enclosed document is a report of the 1986-88 drought conditions and comparisons with previous dry periods. It also includes our recommendations for drought mitigation, both now and in the future. We are pleased to serve on this important committee, as water availability holds the key to Nevada's future. With your permission we will continue to hold periodic meetings until the present drought has ended.

Sincerely,

A handwritten signature in cursive script, appearing to read "John W. James".

John W. James
State Climatologist and
Chair, 1988 Governor's 1988
Drought Review & Reporting Committee

JWJ/lrs



THE STATE OF NEVADA
EXECUTIVE CHAMBER

Carson City, Nevada 89710

RICHARD H. BRYAN
Governor

TELEPHONE
(702) 885-5670

February 17, 1988

Mr. John James
State Climatologist
Geography Department - UNR
Reno, Nevada 89557

Dear Mr. ^{James} James:

As the winter season has progressed, I have become increasingly concerned about water supply and the potential drought this coming summer. Information from you and others indicate that we face the real possibility of water shortages and potential drought particularly in the Tahoe, Truckee, Carson and Walker River drainage basins.

It is, therefore, appropriate to appoint a drought review and reporting committee to assess water availability and to make recommendations to me and others for necessary action to address this concern of water shortages.

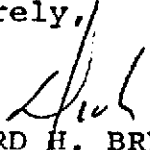
I am, hereby, requesting that you serve as chairman of the committee, with representation to include the Washoe County manager, Carson City manager, managers of the Truckee-Carson Irrigation District, Walker River Irrigation District, Assemblyman Lou Bergevin as the legislator and water user on the Upper Carson River system, a water user on the Upper Walker River stream system, Bob Firth as a representative of the using entity Sierra Pacific Power Company, a representative of the Pyramid Lake Indian Tribe, and a representative of the State engineer's office.

I think it will be appropriate for the committee to call on representatives of various local State and federal agencies for information or data they may deem necessary in correlating preliminary recommendations. As chairman of the committee, I am also requesting that you convene a meeting of the committee at the earliest possible date.

February 17, 1988
Page 2

I hope you will accept my request to serve in this capacity to address this critical issue. As the season progresses, it may be necessary to expand the area of consideration and if that becomes necessary, I intend to expand the membership of the committee to include representatives of other areas that may be affected by water shortages.

Sincerely,



RICHARD H. BRYAN
Governor

RHB/kh



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February 19, 1988

Governor Richard Bryan
Executive Chamber
Capitol Complex
Carson City, NV 89710

Dear Governor Bryan:

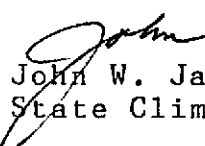
I would be pleased to serve on and chair the Drought Review and Reporting Committee that you recently appointed. Your early concern in the matter of water availability in the Tahoe-Truckee, Carson, and Walker River drainage basins is to be commended. Such lead time will give those in decision making positions ample time to plan for possible critical water shortages during the upcoming months.

All of the representatives that you appointed have been contacted and agreed to be at the initial meeting of the Committee planned for 3:00 p.m., Monday, February 29, in the Bill Phillips Conference Room in Clark Administration on the University of Nevada campus. I will report to you the outcome of that meeting and plans for future sessions.

The western Nevada drought worsens by the day, as we find ourselves locked into a weather pattern that brings beautiful but continued dry conditions during normally the wettest portion of the winter. The present month-long dry period has affected the entire State so that other drainage basins may experience future water shortages. This Committee will keep you informed if that occurs.

Best wishes.

Sincerely,


John W. James
State Climatologist

JWJ/lrs

THE GOVERNOR'S 1988 DROUGHT REVIEW & REPORTING COMMITTEE

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REPORT OF THE 1988 GOVERNOR'S DROUGHT REVIEW AND REPORTING COMMITTEE

Background

The 1988 Drought Committee was appointed by Governor Richard Bryan in February 1988 due to the increasing concern about water supply and the potential drought in Summer and Fall 1988, in the Tahoe-Truckee, Carson and Walker River drainage basins. It was noted by the Governor that the original ten person committee would be expanded if water supply conditions in other areas worsened as the 1987-88 Water Year (October 1 - September 31) progressed. Such was the case in March as portions of the Humboldt watershed reached drought proportions, so an eleventh member was added.

The Committee was charged with assessing water availability and to make recommendations to the Governor and others for necessary action to address this concern of water shortages. The Committee was also asked to call on representatives of various local State and federal agencies for information or data necessary in correlating recommendations. (Copies of the Governor's letter to the Committee Chairman and the Chairman's reply are enclosed).

The Committee met several times at various locations in the drought effected areas (e.g., Reno (twice), Carson City, Yerington, Lovelock and Sutcliffe). Each meeting was open to public participation, with a special evening meeting held in Reno in May.

A similar committee was appointed by the California governor. One representative from each state was assigned to attend the other state's meeting. They are: Arthur Winslow of California and John James of Nevada.

As of August 1, 1988, Western Nevada remains firmly in the grip of a severe drought. It has already taken its toll among Western Nevada farmers and ranchers.

As expected surface water runoff from the Sierra east slopes continues to diminish.

The watermaster for the Truckee River currently estimates that Lake Tahoe will reach the rim around October 1. That will effectively cut off any flow from Lake Tahoe to the Truckee River. At the time this report was prepared there was a possibility that some water would be made available from Prosser Reservoir by the U.S. Bureau of Reclamation. Outflow from Lahontan Reservoir along the Carson River is expected to cease by the end of August.

Along the Walker River there will be no natural water flow for users after August 1. Both Topaz and Bridgeport Reservoirs will become essentially empty by August 15. The Lower Humboldt River Drainage Basin has a similar scenario. There will be no water left in Rye Patch Reservoir for irrigation users by this fall.

There have been some very positive actions and responses by local governmental entities and other interest groups. Some of the more important and positive actions are as follows:

- A. The Walker River Irrigation District with the approval of the State Engineer has initiated a water pooling pilot program of both underground and surface waters. This program is designed to mitigate the economic impacts that the drought is having on the agricultural water users within the Walker River Irrigation District, and also to provide additional data and information to more precisely define the groundwater system in both Smith and Mason Valleys. The Walker River Irrigation District, State Engineer's office and the U.S. Geological Survey are working closely in monitoring water use under this pooled effort.

- B. As a result of recommendations of the Drought Committee, Governor Bryan, on May 12, 1988, forwarded a letter to the Secretary of Agriculture requesting information on the criteria and procedures to be followed in implementing any relief to the agricultural industry that might be available through the Federal programs.

- C. On April 28, 1988, Governor Bryan directed all state agencies to comply with all local water conservation measures immediately. As an example, in the case of the Capitol Complex, compliance is required with the odd/even watering days imposed by Carson City. The Governor further indicated that all state agencies are directed to immediately adopt stronger measures or guidelines if the necessity arises.

- D. Initial meetings have been held between appropriate California and Nevada authorities regarding the criteria and procedures to initiate pumping from Lake Tahoe for domestic and sanitary purposes, should the need arise.

- E. Action has been taken by local governmental agencies in the Truckee Meadows area and Carson City to clearly define the levels of drought severity which will range from a Stage 1, drought warning, to a Stage 4, critical water shortage. Steps have been taken by the local entities to encourage public awareness of the water supply situation and to further encourage voluntary conservation. Plans have also been developed whereby local government will initiate emergency measures to curtail water use when the need arises. Westpac Utilities and Carson City are utilizing "water cops" to inform water users of wasteful practices and violations. Carson City had initiated the C-scape program which specifically provides criteria and procedures to evaluate the effectiveness of drought resistance landscape to help reduce maintenance and use water more efficiently and effectively. C-scape is

achieved by matching irrigation to the water requirements of the plant in balance with environment, and the enhancement of outdoor living. Westpac Utilities has been encouraging water conservation for a number of years. Westpac, this year, has increased its public awareness program which includes brochures on their Yard Fitness Plan.

- F. A stage 2 drought emergency starts on August 8, 1988, and will impose a mandatory outside watering schedule of twice per week for most Truckee Meadows residents and businesses. A stage 3 drought emergency that would restrict outside watering to once per week may be declared by this fall.

- G. The media coverage of the drought situation has been good and this should be acknowledged. On a daily basis they have provided the public with accurate data and information concerning, as an example, the level of the reservoirs and the status of available supplies. They are also publicizing the daily water use totals for the 50,000 Reno-Sparks water use customers served by Westpac Utilities. Various radio and television stations have been giving water savings tips and supplying devices to be used to reduce water usage in the home. Additionally, Carson City in cooperation with the U.S. Geological Survey has been publicising certain hydrologic information regarding ground water levels and other water availability data in Eagle Valley.

- H. The farmers in several of the irrigation districts in western Nevada, early in the irrigation season, voluntarily decided to leave significant portions of irrigated lands fallow this year in full realization that water supplies would be very limited. Less water consuming crops have been planted in several instances to help in reducing

overall water demand. The Walker River Irrigation District cleaned and rehabilitated several of their wells that they had not used for a number of years in order to supplement the limited surface water availability.

- I. The State Engineer's office is expediting the processing of new applications to the extent possible and have put additional personnel in the field to provide assistance to water users, monitor pumpage, detect and prevent wasteful and illegal uses.

What is Drought? Drought is a complex physical and social phenomenon of widespread significance, and despite all the problems droughts have caused, drought has proven difficult to define. There is no universally accepted definition because: 1) drought, unlike flood, is not a distinct event, and 2) drought is often the result of many complex factors acting on and interacting within the environment. Complicating the problem of drought definition is the fact that drought often has neither a distinct start nor end. It is usually recognizable only after a period of time and, because a drought may be interrupted by short spells of one or more wet months, its termination is difficult to recognize.

The most commonly used drought definitions are based on 1) meteorological and/or climatological conditions, 2) agricultural problems, 3) hydrological conditions, and 4) economic considerations.

Meteorological Drought. This type of drought is often defined by a period of well-below-normal precipitation. The commonly used definition of meteorological drought is an interval of time, generally of the order of months or years, during which the actual moisture supply at a given place rather consistently falls short of climatically appropriate moisture supply.

Agricultural Drought. Agricultural drought is typically defined as a period when soil moisture is inadequate to meet evapotranspirative demands so as to initiate and sustain crop growth. Another facet of agricultural drought is deficiency of water for livestock or other farming activities.

Hydrologic Drought. This typically refers to periods of below-normal streamflow and/or depleted reservoir storage.

Economic Droughts. These droughts are a result of physical processes but concern the areas of human activity affected by drought. The human effects, including the losses and benefits in the local and regional economy, are often a part of this definition.

Committee Deliberations

The Committee held 4 meetings, not including work sessions of the subcommittees, and one evening "strictly public" hearing. The dates and places were:

Meetings:	February 29	- Reno
	April 5	- Carson City
	May 11	- Yerington
	June 23	- Sutcliffe

Hearing:	May 26	- Reno
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Except for the first and last meetings, between 15 and 20 persons, other than the Committee, attended the sessions, with several offering testimony. At the special evening public hearing in Reno, there were about 30-35 people in attendance, with 11 offering testimony. The news media attended all but the Sutcliffe meeting, which was really a working session of the Committee and the three subcommittees appointed by the Chair - agricultural, urban and statewide.

Each meeting followed the same format (except for the Sutcliffe meeting), with Chairman James giving a drought briefing, then asking for input from the National Weather Service and the Soil Conservation Service. Following that, each Committee member was asked about drought conditions and any mitigation planned in his area, plus how this compared to previous dry years and how the situation was handled. Public testimony was then taken before the meeting was adjourned.

Copies of the minutes from all but the Lovelock and Sutcliffe meeting are enclosed.

Water Conditions

Except for extremely heavy record-setting precipitation in Western Nevada associated with the Storm of Record in mid February 1986, climatic conditions in that region of the State have been one of well below normal precipitation for the past three years. Carryover water from the February 1986 wet episode was used to ease water shortages during the dry 1986-87 Water Year. However, much of this was exhausted as yet another dry winter plagued the area in 1987-88, setting up summer and fall 1988 for the worst drought conditions in at least 11 years.

During the most productive portion of the Water Year (November - March) all months had below normal precipitation. Conditions worsened in early 1988, as February and March were the driest such months in the 118 year Reno climate record, and the record for the longest mid-winter dry period was tied in Reno between February 19 and April 12, when 44 days passed with no measurable precipitation. This had been preceded by a similar 40 day period from January 18 - February 26. The outcome of this unusual dryness in Western Nevada during the normally wettest period of the year, was less than 50% of normal precipitation in the east slope Sierra Nevada watersheds by the end of February, and between 40-50% of normal by the end of March. April was somewhat better with 75-100% of normal precipitation, but because precipitation this month is

normally much less than during winter months, conditions worsened. May and June also brought below normal conditions, so the dye was cast with precipitation, snow pack runoff, and water in storage facilities all much less than 50% of normal. Because the climate regime in Western Nevada is one of generally dry summers and wet winters, the first possibility of any break in the drought will be late fall 1988. Even then, the 1988-89 winter will need to produce above normal precipitation in order to partially replenish ground and surface water supplies diminished by 2-3 years of dryness.

While the West was suffering with near record dryness, low snowpack and streamflow on the Tahoe-Truckee, Carson and Walker Rivers, portions of the Humboldt River drainage were less than 75% of normal, with not so severe drought conditions, but nevertheless a problem. However, the remainder of the Silver State had a wetter than normal Water Year 1987-88, with portions of the Central and Southern regions of Nevada enjoying 1 1/2 - 1 3/4 times normal precipitation, as well as above normal mountain snowpack and streamflow.

Figures 1 through 17 are included to note precipitation conditions, snowpack runoff, and storage, compared to normal, with all these items being compared to previous dry years. Lake Tahoe levels charted since 1900, and a drought severity map, are also included.

1988 DROUGHT REVIEW & REPORTING COMMITTEE

Minutes of February 29, 1988 Meeting

Meeting was called to order by Chairman John James and introductions were made.

Those in attendance were: Lou Bergevin, State Assemblyman; Bob Firth, Westpack Utilities; Lynn Hamilton, Carson City Manager; John James, UNR; Lyman McConnell, Truckee-Carson Irrigation District; John McIntyre, Washoe County Manager; Pete Morros, State Engineer; Ralph Nuti, a Walker River User; Ali Shahroody, representing Joe Ely for the Pyramid Lake Indian Tribe; Jim Weishaupt, Walker River Irrigation District.

Guests: Karen Baggett, Nevada Water Resources Association; Bob Dickens, UNR President's Office; Rich Drew, Douglas County; Ron Olson, National Weather Service; Chris Pacheco, Soil Conservation Service; Don Vetter, Reno Gazette-Journal; Roland Westergard, Department of Conservation & Natural Resources.

Meeting was called as an orientation meeting to find out what problems exist and what the situation is. Mr. James reviewed the Governor's letter of Feb. 17 on the formation of the Committee. The Committee will call on representatives of other federal agencies, i.e., Soil Conservation Service and National Weather Service, to assist in furthering the charges of the Committee.

A copy of "The Model for Western State Drought Planning" put out by the Western States Water Council in October 1987, provided by Mr. Westergard, was furnished to those on the Committee. A packet provided by Mr. James was also given to Committee members. This packet provided comparisons of the winters 1976-77 and 1987-88. It also provided outlooks from the National Weather Service for precipitation and temperatures for the March-May, 1988 period, and percent of normal precipitation, snow melt and water storage for this date.

Mr. James called for thoughts from Committee members on their situation and how a similar situation was handled during 1976-77.

Mr. Bergevin

Commented on the Upper Walker River, Bridgeport Valley area. The Upper Twin Lake is approximately 75% full and the Lower Twin Lake is about 30% full. Depend very heavily drawing on the lower lake starting April 1 until the snowpack starts to melt to get irrigation started. At present, the situation doesn't look very good for starting unless runoff between now and April 1 to enhance the filling of the lake.

Had a very dry year last year but everyone in the valley cooperated by rotation and by trading water with each other. Reasonably average season although both lakes were full last year at the start of irrigation. Have deficit in reservoir storage at present so starting will be more difficult.

Mr. Bergevin felt there will be no problem with municipal water as this is provided by wells.

The Carson River is in much the same situation. Reservoirs (Red, Scott, Crater and Mud) are all about one-half of capacity. Last year Mud was full and spilling. Municipal water is provided by deep aquifer wells. Irrigation situation will be tough without rain. This situation is worse than 1977 as the reservoirs were full.

Mr. Weishaupt

Agriculture supply on the Walker River System. Storage at present (3/1) 17,500 acre feet in Topaz (holds 59,000 acre feet, therefore at 29% of capacity). April 1 will have approximately 37% storage water supply of west fork of Walker River.

Bridgeport holds 42,500 acre feet and has about 17,000 (40% of capacity). April 1 will have 47% of capacity.

Irrigate 79,000 acres (131,000 including California) and water required to irrigate the district is 335-336,000 acre feet per year. Can deliver about 120,000 acre feet of water (1 1/2 acre feet of water per acre, require 3.7-4.0 acre feet).

Alternative would be to go to deep underground wells. This could deliver 100,000 additional acre feet. Surface and underground water combined would provide 2 1/2 acre feet per acre. This is not enough to grow full crop, farm community will have to leave some land out of production (30-35% idle). This will have an economic impact of about \$12-14 million.

As compared to 1977, there were not as many wells and agriculture was not as intensified.

Mr. McConnell

Currently 155,000 acre feet (2/3 of normal). 1986-87 = 35,000 acre feet runoff (50% of forecast). Runoff forecast at 40-50,000 acre feet this year. Allocation is less than 80%.

Mr. Shahroody

Pyramid Lake was at 3,815 feet last year, this year is at 3,812 1/2 feet and a further drop is forecast.

Stampede has 80-90,000 acre feet in storage. The Fish and Wildlife Service has made a decision not to request for the release of this water for the cui-ui run. Not adequate water unless weather pattern changes to get significant precipitation and runoff. If this should happen, then could possibly release but for now hold for storage.

Situation is better than 1977 because of precipitation in 82-83 and February 86.

Mr. Hamilton

Carson City will use innovative communication with residents on the management of water. The Extension Service and USGS have helped put together a public information program consisting of mailings and a demonstration project in Mills park (CSCAPE). Trying to get some residents to have their houses and lots be part of a demo project.

Off peak, winter use 4 million gallons per day.

Peak, summer use 16 million gallons per day.

Trying to educate residents to get through the peak periods. Carson has a growth management ordinance to limit growth to 3% per year. Carson feels it has a firm commitment to seek supplies and educate residents to manage the resource better than in the past.

Mr. Hamilton will supply educational materials to members.

Mr. Firth

Truckee River System. Boca and Prosser are close to filling, can put some water in Independence and can probably meet Floriston rates all year with supply. At the end of the year, will possibly have Tahoe close to the rim and Boca empty. Next year, if another poor winter, could cause problems, may need to use water from Independence and Donner (don't foresee this year).

Conservation: Continue Yard Fitness Program started last year to reduce outside uses in summer months (70% of the water is used outside the home).

30 million gallons used daily in winter

110 million gallons used daily in summer.

Trying to reduce peak and conserve water. In the process of printing educational material. Next year will be critical if winter is not better.

Mr. McIntyre

2 basic areas of concern: supply and conservation.

For conservation, focus on things done in 1976-77. Both cities (Reno, Sparks) and the county adopted ordinances regulating water use in drought conditions need to be looked at to see if adequate and appropriate for circumstances now. May see the reformation of the Truckee Meadows Water Conservation Committee.

Supply: looking at a number of alternatives (importation project). Most optimistic level would provide for an additional 20,000 acre feet that would augment existing supplies.

Mr. Nuti

Grim outlook at present. Rely on Topaz for water. Some land was left out of production last year because of drought. Laser leveling helps with conservation because water goes over ground more uniformly, much quicker and with better penetration. Allows for more control of water.

Mr. Morros

State Engineer's Office is more actively involved in enforcement during dry years. If surface water falls off, more stress on groundwater supplies. Ideal situation would provide for groundwater recharge projects (mine groundwater when supplies are short and have mechanism in place to put that water back during surplus years). Legislation has been passed for artificial groundwater recharge. Need to protect groundwater-- only available once.

Demand has increased substantially since 1977, however surface water sources and availability have not changed.

Discussion of impacts on recreation, agricultural, municipal and mining activities followed.

Meeting adjourned at 4:45 p.m.

Lisa Sly, Office Manager
Geography Department, UNR

GOVERNOR'S DROUGHT REVIEW
AND REPORTING COMMITTEE

MEETING MINUTES
April 5, 1988
Legislative Building
Carson City, Nevada

MEMBERS PRESENT

John James, Chairman
Lou Bergevin, State Assemblyman
Bob Firth, Westpac Utilities
John McIntyre, Washoe County Manager
Ralp Nuti, Walker River User
Jim Weishaupt, Walker River Irrigation District
Ali Sharoody, (Representing Joe Ely) Pyramid Lake Paiute Tribe
Lynn Hamilton, Carson City Manager
Lyman McConnell, Truckee-Carson Irrigation District
Pete Morros, State Engineer
Richard Sumin, Battle Mountain Gold Corp.

OTHERS IN ATTENDANCE

Roland Westergard, Dept. of Conservation & Natural Resources
Treva Zeller, Recourd-Courier
Karen Baggett, Nevada Water Resources Association
Carol Powell
Ron Olson, National Weather Service
D. Whattey, Legislative Counsel Bureau
Dick Post, Carson-Storey Cooperative Extension, UNR
Karen Hinton, Carson-Storey Cooperative Extension, UNR
Chris Pacheco, Soil Conservation Service
Bob Thompson, National Weather Service
Joe Lowell, Nevada Appeal
Marty Stebbins, KTVN-TV
Brendon Riley, AP (Capital Press)
Kay Sumin, Battle Mountain

The meeting was called to order by Chairman James. Following an introduction of the members a motion was made by Mr. Weishaupt, seconded by Mr. Hamilton and carried to approve the minutes of the February 29, 1988 meeting.

Chairman James discussed the status of the drought as well as distributed data (attached sheets 1-8). This material indicated that February and March of 1988 were the driest of record. They also indicate that although one most commonly hears about the 1928-35 drought period, the period in the 1945-49 was also very serious and reflected approximately

45% of normal. In commenting on the chart referring to precipitation at Reno, he stressed the very serious, critical, current situation.

Bob Thompson of the National Weather Service displayed and distributed copies of material on precipitation, snow pack and reservoir storage (copies attached). He also commented that the Humboldt Basin and Ruby Mountains "started better" but as the year progressed, they also became steadily dryer when compared to normal and that the snow pack is now estimated as low as 25% in some areas.

Chairman James displayed charts depicting information from the western slopes of the Sierras and California which clearly demonstrated that the snow pack is very similar there to that on the east slope.

Bob Thompson projected and distributed charts (attached 9-11) indicating precipitation and temperature outlook. It was noted that temperatures for twelve of the last fourteen months were above normal.

Chris Pacheco of the Soil Conservation Service commented that in most areas, the lower elevation snow had already melted and that, for example, the Humboldt River may have already peaked. Charts displayed on the Scripps Spring forecast indicated similar information as illustrated in other charts.

Bob Thompson commented that the odds are very low for any reversal of the conditions after April. The immediate forecast did not indicate any relief.

Chairman James commented that we have experienced the first or second warmest period for twelve out of fourteen months. The other period of similar temperatures occurred in the 1930's.

Chairman James called the committee's attention to the definitions of drought and the chart "How To Cope With Drought" which were included in the packet and are attached hereto. Although indicated later on the agenda, the Chairman called for public comments to accommodate persons that may have to leave the meeting.

Mr. Firth had earlier mentioned a 33% growth factor since the last 1977 drought period. Mr. James also alluded to this factor.

Ali Sharoody asked if there had been any consideration of meters and Chairman James indicated this would be addressed later in the meeting.

Dick Post of the Carson-Truckee Cooperative Extension Service, UNR, commented that in 1976-77 the law prohibited use of gray water and asked if there is still that prohibition. Bob Firth explained he knew of nothing in the law, but said there were concerns about health and landscaping and potential contamination and cross connection problems. Mr. Post and Karen Hinton, also of the Carson-Storey Cooperative Extension Service, presented information on the C-Scape program for Carson City. Mr. Hamilton commented that Carson City has made a commitment to manage resources. Mr. Post and Ms. Hinton distributed documents identified as A through E which are attached. They commented that 50 volunteers are assisting with the program and that there will be home tours to identify concepts and there will be information presented to the youth of the community through the school system. Mr. Post presented slides on irrigation and landscaping practices and indicated that industry, the citizens and government must necessarily be included in the efforts.

Karen Baggett mentioned the water and man informational and educational material that had been developed by the Western States Water Council and suggested that it may be helpful to the committee and others. Carol Powell commented on several publications that were available which might also be of assistance.

Chairman James then called on committee members for reports:

Mr. Weishaupt commented that there has been a progression from drought to disaster and that allocations to farmers on the Walker River system would be 15% of normal. The only alternative available is to use wells conjunctively which should raise supply to 30% of normal and the conditions are similar to 1977.

Mr. McIntyre said that Washoe County is working and cooperating with Westpac in water conservation efforts and that the county has ordinances in place regarding fixtures and retro fitting. This same strategy is being employed as was in 1977 including public education and conservation measures. In addition to conservation the second major thrust related to supply. He reported that the Washoe County Board of Commissioners will next week consider entering an option agreement addressing potential importation of waters from Fish Springs Ranch in Honey Lake Valley. He also commented on the acquisition of the Winnemucca Ranch water rights and that importation was a very high priority to augment supply for drought periods.

Mr. Firth reported that since the last meeting, there has been another 20% of project runoff "lost". He distributed a chart of Lake Tahoe elevations (copy attached) and said that

evaporation consumes approximately 3 feet of water and, further, he anticipates the Lake being below the rim in October. He anticipates that the floriston rates will be met providing a full water supply this year and that supplies in Donner and Independence are in reserve. He commented on the use of ground water and the possibility of increasing withdrawals perhaps on a temporary basis. His company's projections are based on the 1928-35 period and if conditions are different some other actions will be required including consideration of pumping from Tahoe or Independence and/or pumping 2,000-3,000 acre feet of additional ground water. He also reported that the company is developing a drought management plan which contemplates the beginning of curtailing of uses until only the most essential uses are being served. He provided five pamphlets (copies attached) which are being distributed by the company. He also reported that the company hires college students to monitor water use and to contact individuals who appear to be misusing or wasting water. So far efforts are voluntary which are somewhat effective, but in the future some enforcement procedures may be necessary.

Chairman James asked about use of water on lawns around corporate and business offices and asked if they should not be controlled in the future. Bob Firth said there were some existing requirements in this regard.

Note: Mr. Weishaupt left the meeting at 11:20 a.m.

Mr. Nuti reported that some farmers are installing sprinklers to keep crops alive and hopefully save crops for next year and that there are some new experiences in using sprinkler systems for irrigating onions which had not been done in Smith Valley previously. Another measure being employed is for various users to order water at the same time to reduce seepage and other ditch losses. He anticipates one cutting of alfalfa this year. In response to a question, he said there are a small number of new people in the Valley which has not yet affected the area from a water supply standpoint.

Mr. Sharoody reported that the elevation of Pyramid Lake is currently at 3,812.5 feet as compared to 3,814.75 feet for the same time last year, reflecting a decline of 2.25 feet. He does not anticipate a fish run this year. He commented that there are 80,000 acre feet in storage in Stampede Reservoir, but the United States Fish and Wildlife Service does not plan releases this year and they intend to "save" the storage for next year.

Lyman McConnell indicated that although the District had planned to serve 75% of an irrigation allocation that was becoming questionable. He does not expect much inflow

from the Carson River. The District is working with the Bureau of Reclamation on water conservation plans. They have noted an increase in efficiency. They are using a computer to schedule demands and the situation was assisted somewhat by the snow being on the ground for a longer period of time which resulted in maintaining soil moisture. He mentioned that a big rain in May last year was of tremendous assistance to the irrigators. He also commented that Lahontan Reservoir is at a peak now and will begin to drop as irrigation waters are released. The District is also involved in an information and education program to help with water scheduling and use. He commented that recreation will suffer and that the reservoir will probably be empty at the end of the year and recreation will be restricted after July 4th.

Lynn Hamilton referred to the management plan which had already been presented. He commented on the south-east riverview well which should be on line soon. He mentioned the City's attempts to acquire Darling Ranch water rights for use this year. He reported that the Board of Supervisors will be considering water conservation this Thursday and will probably pass an emergency ordinance regarding the odd/even watering days to become effective April 7 through November 1 and hopes that the peaking demands can be met. He commented that an administrative order has been issued restricting park system water use and that the City will be asking cooperation of the schools also. The City plans to transfer water rights to better producing wells and to rehabilitate some wells. In the long term, the City is working with the state in expanding the Ash Canyon Treatment Plant and projects that as much as an additional 800 acre feet of water could be treated if available. The City is working with Lyon and Douglas Counties and have met with the Subconservancy District to develop an agreement to address a regional water plan. The District may set the tax rate which has been authorized by the Legislature to be submitted to the Tax Commission as a funding source.

State Engineer Morros said the water supply situation is grim and that there are reports of domestic wells "drying up" in some areas. He said problems are occurring earlier than in the past, but there are "more straws in the ground than there were in 1977." He said the state is encouraging conservation and anticipates receiving requests for more inter-basin transfers. He explained that the water law has been streamlined so that water right requests can be expedited. Economic pumping lifts within increased ground water withdrawals may dictate the extent of use of ground water supplies. He commented that his Division would certainly "look at" any requests for increased pumping as suggested by Bob Firth. He said that the current situation demonstrates the need to balance growth and demand and supply and, again, referred to the previous comments about 33% growth in the last eleven years.

Assemblyman Bergevin mentioned that the Legislature passed the bill creating the water project development board and the bond authorization. He explained that a bill to expand the subdistricts authority to tax in other areas failed and that he would be taking a hard look at the effects of any subsequent proposals on his constituency and reported that what may tend to help Carson City could be harmful to his constituency. In response to a question about legislation in the future, Assemblyman Bergevin commented that you "can't legislate something that isn't there". He reported that agriculture probably would be hurt the most this year and is personally taking 1,000 acres out of cultivation in Bridgeport Valley and 1,500 acres of meadow in Carson Valley is not to be irrigated. The effect is that they will be required to sell some of their cows. He confirmed that the Upper Carson River is currently under regulation on the East Fork and explained the rotation provisions on the West Fork. He said that reservoirs on the upper stream systems will not fill. He also indicated that growth patterns in Carson Valley have not affected surface water, are having effects on ground water, but subdivision and other development has resulted in taking agricultural lands out of production. He commented on a speech that some individual had made at the University of Nevada, Reno, the night before regarding reduction and water use for agricultural purposes and commented that food costs will accelerate accordingly.

Mr. Sumin explained that the Humboldt River surface water is distributed by an existing decree and that supplemental wells will be relied upon to supplement that supply. He was not aware of long term plans to address the additional water supply requirements and indicated that most of the municipalities in the Humboldt drainage rely on groundwater. He said that the cycle nature of water runoff is recognized and accepted. When there are no hay crops the result is a reduction in livestock herds. He indicated that mining over the last ten years is consuming groundwater supplies, but there has been considerable recycling due to economic reasons. He sees no immediate problems of water supply for the mining industry.

Chairman James then requested discussion on the agenda item regarding short and long term proposals. He commented that people in the area do not want to see tax increases to pay for water importation schemes. He said that the Governor has asked for recommendations regarding both the short and long term.

Mr. Sharoody said that metering should be considered. Bob Firth explained that in the last session of the Legislature volunteer metering was authorized. The Public Service Commission acted to require that water meter costs be paid by the individual and, therefore, volunteer participation has been minimal.

Chairman James asked how you address concerns about cost increases to serve additional people. Mr. Firth responded that the cheaper sources of water supply have been developed and alternative or supplemental supplies are going to get more expensive.

Assemblyman Bergevin mentioned that legislation of the last session provided that new construction shall require water meters. He commented that perhaps federal funds could be made available through Community Services to assist some, but not all meter installations.

Chairman James asked again if the planning agencies could restrict large landscaping areas. John McIntyre responded that it can and is being done and that he will report in more detail to the committee next month. Chairman James asked that John McIntyre and Bob Firth assume the responsibility for reporting on this item at the next meeting.

Mr. Hamilton said his concern extends not only to the drought now but to long term solutions. He said that recommendations should be made to the Governor so a committee similar to this existing one does not have to be appointed every few years. He said that storage is part of the answer and that it will be necessary to look at substantial projects such as the Bodie proposal and that the state must help. He also mentioned the Martlett/Hobart system and said that the counties cannot afford improvements on their own.

Chairman James asked if California should be involved in the committee's efforts. Assemblyman Bergevin mentioned the on-going proposal to identify a portion of the Carson and Walker River systems as Wild and Scenic Rivers. He said such an action would preclude Nevada storing water on the California side of the line and that he and Roland Westergard were working with the California Resource Agency's Secretary to protect the prerogative of extending storage across the state line and felt that California must be involved in any solutions. He expressed concern about the effect on declaration of Wild and Scenic Rivers on both the States of California and Nevada.

Mr. James asked about the Dog Creek proposal. Bob Firth explained that applications had been filed, protests have been received, but that the company proposes to go ahead and see how far the proposal can be advanced. He reiterated that additional storage is critical to protect against drought situations.

Mr. James asked about the Lassen County, Washoe County issue. Pete Morros described the possible acquisition of rights in Fish Springs Valley and that an agreement was in

place for a study which will take three years to complete. There are numerous groundwater basins common to both states and because of continuing lawsuits and conflicts, joint agreements should be considered. He explained a need for a mechanism to jointly manage such common ground water basins as Pahrump and Fish Lake Valley.

Bob Firth commented that perhaps the Governor and Legislature should be informed that the state needs to become more involved in water planning and water management.

Assemblyman Bergevin described a California Supreme Court Case on riparian rights which essentially held that riparian rights can be claimed and exercised by the federal government on federally reserved lands and that this could affect water supply to Nevada. He said this is "something to be watched".

Chairman James requested that committee members inform him of any items they would like included on the agenda for the next meeting which was scheduled for Wednesday, May 11 at 9:30 a.m. in Yerington. (Jim Weishaupt will find a location and members will be informed.) Chairman James also commented that it had been suggested to hold a public meeting in Reno in the evening in May or June. John McIntyre asked about the subject of any meeting and Chairman James indicated that it would be to receive comments on any recommendations of the committee and also to hear any recommendations by members of the public.

John James summarized what may be included in recommendations of the committee to include: (1) Consideration of water supply issues on a regional basis; (2) There are considerable on-going conservation efforts and perhaps other alternatives to be addressed; (3) There does not appear to be a public appetite for increased taxes to provide for additional growth; (4) Consideration and evaluation of importation proposals and opportunities would be appropriate; (5) Discussion of additional storage facilities.

Mr. Hamilton commented that other subjects or recommendations might be: (1) That the Legislature consider the meter prohibition issue and its effects on economic development; (2) Possible storage areas; and (3) Legislation instructing the municipalities to set standards on landscaping. (He indicated that he does not particularly like this concept, but that we must live within a means.)

Mr. Hamilton commented further that at the next meeting the committee should have a "half dozen" recommendations to consider for submittal to the Governor and the Legislature. He also suggested that the agenda include an item for presentation by representatives of the Subconservancy District about their efforts and investigations relating to development of water supplies on the Carson River stream system.

Chairman James also said that at the next meeting the committee should be prepared to make recommendations as appropriate for this summer and fall.

The meeting was adjourned at 12:30 p.m.

GOVERNOR'S DROUGHT REVIEW
AND REPORTING COMMITTEE

MEETING MINUTES

May 11, 1988

Dini's Lucky Club Meeting Room
Yerington, Nevada

MEMBERS PRESENT

John James, Chairman
Lyman F. McConnell, Truckee-Carson Irrigation District
Lynn Hamilton, Carson City Manager
Peter G. Morros, State Engineer
Bob Firth, Westpac Utilities
Joe Ely, Pyramid Lake Paiute Tribe
John MacIntyre, Washoe County Manager
Ralph E. Nuti, Walker River User

OTHERS IN ATTENDANCE

Roland D. Westergard, Dept. of Conservation & Natural Resources
Frank Dimick, Bureau of Reclamation
Bob Thompson, National Weather Service
Chris Pacheco, Soil Conservation Service
Norman F. Cardoza, Nevada Farm Bureau
Lee Ivey, Walker River Irrigation District
David Fulstone, Nevada Farm Bureau
Bob Arigoni, Sierra Pacific Power Company
Ugo Giorgi, Walker River Irrigation District
Joseph Quinn, Nevada Emergency Management
Dwayne Gilbert, University of Nevada
Gordon Myer, University of Nevada
Joe Dini, Assemblyman from Lyon County
Howard Mann, California Department of Water Resources
Arthur Winslow, California Department of Water Resources
Steve Mack, Regional Water Board of Washoe County
Don Vetter, Reno Gazette-Journal
Carol Powell, Washoe County Regional Planning Commission

The meeting was called to order by Chairman James. Following the introduction of members present, it was requested that the reading of the minutes of the April 5, 1988 meeting be dispensed with. Chairman James introduced members of the technical advisory group, Bob Thompson of the National Weather Service and Chris Pacheco of the Soil Conversation Service.

Chairman James began by making a statement as to the purpose of the Drought Review and Reporting Committee. He stated that the Committee is not a drought preparedness committee; its purpose is to let the public, the news media, the concerned

agencies and the experts in the field know what the drought status is, and to collect input from people on the Committee and others as to what can be done about the situation. The main function of the Committee is to bring ideas to the public and to the municipalities involved and encourage them to help solve the problem rather than recommending mandatory rules to the Governor's Office.

Chairman James recapped the drought situation, stating that the problem is mainly in extreme Western Nevada, where precipitation was less than 50% of normal and an area in the mid-part of the Humboldt Drainage, which is less than 75% normal. Most other areas are above average in rainfall due to heavy precipitation in April and before. The watersheds of Tahoe/Truckee, Carson and Walker, did not keep up in April with what they lost during November through May.

Bob Thompson of the National Weather Service reviewed a table comparing the 1975-77 and the 1986-88 water supplies in the Truckee, Carson, Walker and Humboldt River Basins, stating that the precipitation in April, while above normal for many areas, did not add to the Sierra watershed, but did cause the demand to be cut in both urban and rural areas of Western Nevada. Thompson stated that any precipitation received from now on in the season would be in the form of convective showers, not extensive precipitation that changes the water supply situation.

Chris Pacheco, Soil Conservation Service, stated that they are looking at 5% of average snow pack in the Tahoe Basin, 19% in the Truckee River Basin, 16% in the Carson Basin, and 21% in the Walker River Basin. He pointed out that by the end of the summer there was a good chance that there would be no water running in the Carson River at Churchill.

Chairman James introduced Assemblyman Joe Dini from Yerington, who welcomed the Committee. Assemblyman Dini talked of emergency drought relief funds which may be made available by the State Legislature in the form of agricultural relief grants and loans. He also suggested that local entities participate in funding DRI's weather modification program so the Legislature looks more favorably at funding the weather modification program on a permanent, long-term basis. He also continued to stress the need to store water in good water years, and to develop storage facilities, possibly through the use of a state-wide property tax. He stated that he was anxiously awaiting the Committee's report to the Governor and to the State.

Chairman James called upon the Committee members for their reports: Peter Morros, State Engineer, reported that his office is speeding the ground water permit application process to supplement surface supplies. He also stated that in 1977 Federal funds were made available to drill wells but no action in that

area has been taken this year, possibly because it may require that the area be declared a disaster area first. The State Engineer's office is monitoring ground water basins to identify areas where lowering of the water table is occurring. He also spoke of the successful ground water recharge project in Las Vegas, which injected water from Lake Mead into the ground. Research on the project showed that the injected ground water remained in the immediate area. There is another ground water recharge project proposed for the Wendover area, which the State Engineer's Office will be watching closely to see if it might offer a solution to water quality problems both in that area and the Fallon area.

Bob Firth, Westpac Utilities, reported on Truckee Meadows water supplies. For the first year in history, Donner Lake will not be filled even though permission was granted to begin filling Donner Lake on March 1 instead of April 15 this year. An additional well in the Truckee Meadows will be completed in early summer which will give an additional source of ground water as well as spreading out the wells in the basin and providing better distribution of the water. The fire districts in the Truckee Meadows are holding hydrant testing to a minimum to conserve water, and contractors are looking for sources of water for dust-control other than treated water from fire hydrants such as petroleum products, poor quality well water and other untreated water sources. Mr. Firth outlined the four-stage Drought Water Conservation Plan for the Reno-Sparks area, which will be finalized soon.

Mr. Morros asked Mr. Firth if the large amount recently awarded to homeowners in Reno for dust damage caused by contractors had any effect on the amount of water used by contractors to control dust. Mr. Firth stated that there had been quite a noticeable increase and contractors were looking for sources of water and asking for the relaxation of air quality standards. Lynn Hamilton added that Carson City required contractors to use secondary treated effluent to control dust.

Ralph Nuti reported that Smith Valley farmers were cooperating with ditch use and the conjunctive water use program was in place and working well. Mr. Nuti characterized the situation as a disaster rather than a drought. Mr. Nuti then introduced Gordon Myer and Dewayne Gilbert, University of Nevada agricultural economists. Mr. Myer spoke of the effect of the drought on agriculture: (1) 70% of acreage will receive pumped water at an increased cost; (2) there will be a decrease in yields because of lack of wells to supplement ground water; (3) there will be a reduction in the amount of small grains produced in the fall; (4) approximately 7,000 acres will not be producing alfalfa as they normally would be. Mr. Myer stated that this adds up to a \$14 million reduction in agricultural income due to the drought. In addition, the impact on the community totals

\$1.50 reduction for every \$1.00 reduction in agricultural income, for a total income reduction of \$20.8 million. Mr. Gilbert stated that most of the managerial decisions in agriculture are made in the fall before it is known how plentiful water will be during the next growing season. He offered recommendations for this year to cope with the drought conditions: (1) cut back on acreage; (2) harvest small grains as forage if possible; (3) concentrate on row crops, foregoing small grain and forage crops; (4) consider a reduction in livestock numbers; and (5) utilize the water in the front end of the season.

Joe Quinn, Office of Emergency Management for Carson City, stated that his office's primary concern was to support population protection although they may assist in livestock protection also. He is compiling a list of possible water storage locations and asked for input from Committee members.

John MacIntyre, Washoe County Manager, reported that since the Committee's last meeting, the Washoe County Commission has moved ahead on the acquisition of the Fish Springs Ranch in the Honey Lake Basin, in a 10-year option agreement which will require the completion of a joint study between Nevada and California, USGS and Westpac. Mr. MacIntyre pointed out the laws governing the waste of water and the declaration of water emergencies in the unincorporated areas of Washoe County. Mr. MacIntyre stated that Washoe County facilities are operating now as though in the Stage 3 drought emergency because it sets a good example and conserves water before it is critical. Mr. MacIntyre expects the Washoe County Commission to declare a water emergency in accordance with Washoe County Ordinance 347 in late May or early June.

Joe Ely, Pyramid Lake Indian Tribe, stated that the Tribe has no domestic water problems at this time but the shortage of agricultural water has caused the irrigation season to be shortened, postponed plantings, lowered crop yields, and decreased grazing range land around Pyramid Lake, necessitating more movement of the cattle. In regard to the fishery, there were no releases for spawning purposes this year, but to compensate for this, water is being released from Marble Bluff Dam to attract fish, which are being netted and spawn induced for use in the hatchery. Mr. Ely is also concerned about poor aesthetics on the river and the loss of wildlife due to the shortage of water.

Lyman McConnell stated that Truckee-Carson Irrigation District has reduced water allocations to 70% of normal, that they are working with the Federal government in a water conservation plan, and have doubled crews on weed spraying in ditches and canals to improve water use efficiencies. Lahontan Reservoir has peaked with 170,000 acre feet. Last year the

Reservoir was down to 60,000 acre feet and will reach that level this year sometime in August.

Lynn Hamilton, Carson City Manager, reported that the C-scape project was moving along with informational mailings having been made two weeks ago and an additional mailing scheduled in two weeks. The school district and park system have reduced their usage, contractors are required by ordinance to use effluent for dust control, the Governor has issued an executive order requiring water users on the State system to abide by the Carson City ordinance for water conservation, and the justice court judge has recognized the seriousness of the drought situation and will evoke penalties in accordance with the degree of water waste. Mr. Hamilton stated for the record that during the winter they stepped up the maintenance program to make a substantive effort to do rehabilitation projects on city wells, well meters and water meters to cut the present water loss of 15% to 20%.

Arthur Winslow, California Department of Water Resources, invited one representative of Nevada's Drought Committee to attend California's Drought Committee meeting to see how they are dealing with the problems of the drought in California. He left a copy of the Drought Guidebook with Mr. Morros, stating that the Drought Center plans to hold eleven drought workshops using the guidebooks to reduce the drought impact throughout California.

Steve Mack, Regional Water Planning and Advisory Board of Washoe County, stated that he is working on a Drought Management Plan. Because outside use of water in Washoe County is more elastic than commercial or inside residential water, conservation measures are being suggested there first. The Planning Board is using the same drought terminology as Bob Firth spoke of earlier, with the four stages of drought emergency closely coinciding. Mr. Mack stressed the need for public education and that part of the drought plan was to enumerate all of the cutbacks taking place.

Lee Ivey, Chairman of the Walker River Irrigation District Board of Directors, presented an updated water supply forecast prepared by Jim Weishaupt, who was unable to attend the meeting. Mr. Ivey stated that a total of 86,000 acre feet of surface water supply is expected, compared to a normal year of 290,000 acre feet. He feels that the one bright spot coming out of the drought is the development of the conjunctive use of underground and surface water rights pilot program with the State Engineer's Office. Mr. Ivey feels that there is the potential to gain 40,000 to 60,000 acre feet of water through the underground source, which may help to mitigate the severity of the drought in Smith and Mason Valleys. Mr. Morros interjected that the circumstances in the two valleys were unique in that the system of ditches is already established and capable of delivering a

mixture of ground water and surface water, but the program may not be applicable in many areas hit by the drought.

Mr. Ivey then addressed the Committee as a farmer affected by the drought. Of his 1,120 acres of cropland, he fallowed 450 acres before beginning to irrigate and feels that many more acres may be lost as the severity of the drought increases. The immediate loss to Mr. Ivey's farming operation will be \$250,000 in gross revenue, which is an ongoing cost because of the conservation measures needed to prevent erosion at \$50 per acre with no return. The rotation of alfalfa crops has been disrupted so that next year 600 acres of alfalfa will have to be planted. The long range effects of the drought will be a five to seven year disruption in farming practices and in the economic viability of the farm. Mr. Ivey feels that the disaster of the drought lies in the economic impact on the communities of Mason Valley and Smith Valley. Ten to fifteen percent of the marginal farmers will be out of farming by 1989. The changes Mr. Ivey has seen since the 1977 drought have been in the way of better farming practices, including laser leveling, cement-lined canals and sprinkler irrigating on sandy ground.

David Fulstone, president of the Nevada Farm Bureau, spoke of the social and economic impact on communities in western Nevada. The Farm Bureau figures show a \$30 million loss in income to Nevada's agriculture, which averages a \$20,000 loss per farmer in the affected areas. Mr. Fulstone characterized this as a devastating figure because it comes at the end of an agricultural disaster with high interest rates and low crop prices. He estimated a \$20 million impact in the Mason and Smith Valleys alone. In an example of how low production affects the economy, Mr. Fulstone pointed out that farm equipment sales have already fallen and some suppliers say they may not be in business next year. Mr. Fulstone asked that the Committee send a clear message to the Governor that an emergency or disaster situation must be declared and government agencies must be supplied with the information to enable them to begin Federal cost sharing programs and obtain low interest loans for farmers who cannot wait until they are financially devastated. Mr. Fulstone thanked the Committee for its work and Mr. Morros and Mr. Westergard for the speeding up of permits and the implementation of the conjunctive use pilot program.

Mr. Morros requested more time to go through the information presented the Committee before making a recommendation to the Governor. Chairman James suggested a working session of the Committee, possibly divided into three groups: agriculture, urban and general. Mr. Hamilton suggested that in order to help the farmers, time is of the essence. Joe Ely stated that any community relying on agriculture must not be allowed to sit this out alone; the Committee must do what it can to declare disaster areas and get conservation measures in place.

Mr. Westergard said that he and Chairman James would have no problems with reporting to the Governor about the possibilities of declaring a disaster or whatever is necessary to assure that Federal funds will be available. Mr. James agreed that there was no reason to wait any longer. Mr. Dini stated that after a certain area has been declared a disaster or emergency area, the area can easily be enlarged as the need arises.

A public hearing will be held in Reno on Thursday evening, May 26. Chairman James was named to attend the California Water Resources Drought Committee meetings in Sacramento.

The Agriculture Subcommittee will consist of Lyman McConnell, Chairman, Ralph Nuti, Jim Weishaupt and Louis Bergiven. The Urban Subcommittee will consist of John MacIntyre, Chairman, Bob Firth and Lynn Hamilton, and the General Subcommittee, Joe Ely, Pete Morros, Richard Sumin and John James.

Chairman James said that he felt there was no need to meet as a committee until July, when it would be known how severe the drought would be.

The meeting was adjourned at 1:33 PM.

THE GOVERNOR'S 1988 DROUGHT REVIEW AND REPORTING COMMITTEE

THURSDAY

7:00 P.M.

MAY 26, 1988

PRESENT:

John James, Chairman

Lou Bergevin

Joe Ely

Bob Firth

John MacIntyre

Lyman McConnell

Ralph Nuti

Richard Sumin

Patricia Bogumil, Deputy County Clerk

ABSENT:

Lynn Hamilton

Pete Morros

Jim Weishaupt

* * * * *

The Governor's 1988 Drought Review & Reporting Committee met in regular session in the Auditorium of the Washoe County Administration Building, 1205 Mill Street, Reno, Nevada, and conducted the following business:

PUBLIC INPUT - DROUGHT SITUATION

Chairman James welcomed those present and stated that the purpose of tonight's meeting is to gather public input and to answer questions regarding the drought situation that threatens Washoe County. He indicated that current storage and precipitation is less than 1/2 of what is considered normal and that the existing problem is similar to 1977 but is more critical due to the 33% population growth rate. Mr. James introduced the Committee and requested that the public testimony begin.

Joe Volpi questioned why building permits are still being issued to hotels and casinos while the drought situation exists. He stated that residential water rates and taxes are continually raised and additional development is still allowed. He inquired why water could not be purchased from another source. In response, Bob Firth explained that all new developments have been providing their own water resources since 1979 by way of dedicating water rights to the Cities or the County.

Eric Pascal asked if the water for the major casinos built prior to 1979 is supplied by WestPac and Mr. Firth stated that it is. Mr. Pascal stated that the casinos use an enormous amount of water and that it is unfair that they receive a discounted commercial rate. Mr. Firth replied that

the casinos do not pay less and Lou Bergevin stated that the purpose of this meeting is to gather public input relative to water conservation.

Stephen Mack, General Manager of the Regional Water Board, gave a brief presentation regarding monthly inside and outside residential water usage.

John Warrick suggested that restaurants be prohibited from serving a glass of water to their customers unless it is requested. He indicated that not only do people not drink the water and it is thrown away, but that it takes two or three glasses of water to wash the glass.

In response to a concern raised regarding water running down a ditch located near the golf course, Mr. Firth indicated that the flow is controlled.

Miner Kelso questioned the possibility of reducing water flow and Mr. Firth explained that the amount of the water flow per second is a legal requirement set by the federal government and cannot be modified. In response to Mr. Kelso, Mr. Bergevin stated that legislation has been passed to require all new developments to install water meters and Mr. Firth indicated that if an emergency develops, water can be pumped from Lake Tahoe but that this will require approval from both states. He advised that the last time this was done was in 1974 and that the possibility of using water stored in Independence is also being examined. Mr. Firth indicated that some groundwater exists but that it is limited. Mr. Kelso asked about acquiring additional storage capacity and Mr. James explained that this issue is being pursued in addition to increasing the storage facilities currently utilized. Mr. Kelso stressed the importance of locating additional water and urged the Committee to do everything possible.

S.H. Robbins cited problems with water resources currently being considered and suggested the possibility of utilizing water from Dixie Valley.

Bud Beasley expressed concerns about underground water being depleted, stating that if this occurs, his well may run dry. In response to previous comments regarding casinos, he stated that the gaming industry contributes 47% in state revenues not counting property taxes. Mr. Beasley indicated that the community does not have the resources for the number of people moving into the area; that the same problems with water will occur every year; and that the issuance of building permits should be limited. He advised that the federal government has allocated the same water to too many people and that the best possible use of water should be examined.

Ray Anderson stated that the current rate structure must be changed in order to promote conservation and that if people are charged more when they waste water, they will conserve. He suggested the possibility of catching water from showers and clothes washers and using it for outside watering, stating that Carson City is using effluent to irrigate their golf course. Mr. Anderson indicated that he is in favor of growth as long as it is responsible and moderate and suggested that a moratorium be placed on new development for 6 or 12 months.

Brendan Gentry stated that if building is stopped, people will be unable to afford to buy a house; that he concurs with all the arguments presented; and that if water meters were installed and fees were based on a sliding scale, conservation would be promoted.

Will Mattson spoke about a product being used for dust control which eliminates the use of water trucks and the Committee answered further questions of those present.

John MacIntyre advised that he received three phone calls from area residents: one from Kathryn Griffin, who indicated that stage 2 or 3 should be implemented now and expressed concerns about water usage in public facilities and restaurants and the higher usage by apartment complexes; one from Rubin Schmidt, who was concerned about water consumption by business and government facilities and at construction sites for dust control; and one from Irene Anderson, who mentioned the conservation program used in Santa Clara, California, and indicated that she would be providing further information relative to this program at a later date. Mr. MacIntyre read a letter from the Lyon County Environmental Guardians, dated May 26, 1988, and placed it on file with the Clerk.

Chairman James thanked everyone for attending tonight's meeting.

* * * * *

There being no further business to come before the Committee, the meeting adjourned at 8:55 p.m.

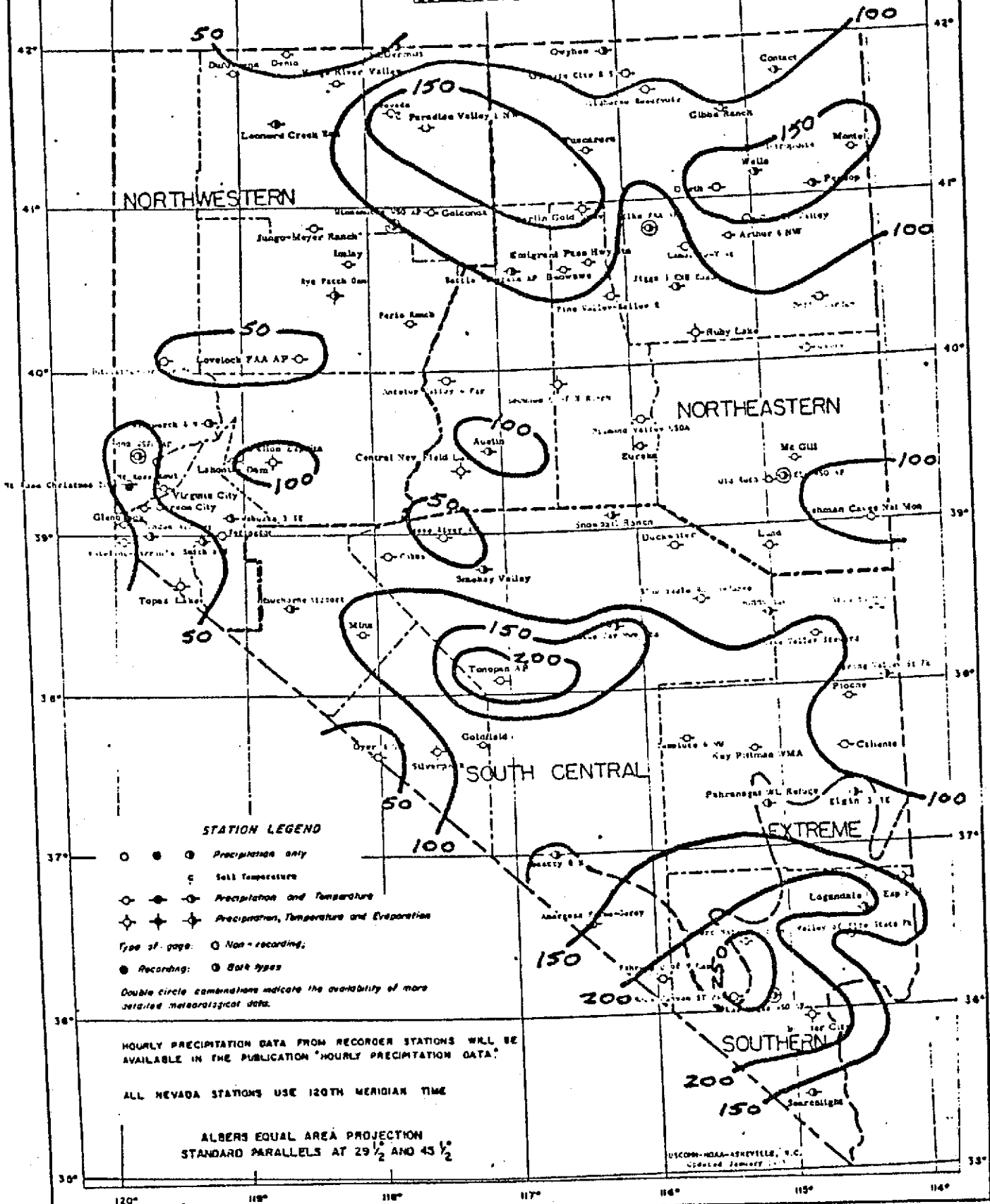
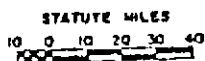
Chairman

ATTEST: JUDI BAILEY, County Clerk

NEVADA

PERCENTAGE OF NORMAL
PRECIPITATION

DECEMBER 1987



STATION LEGEND

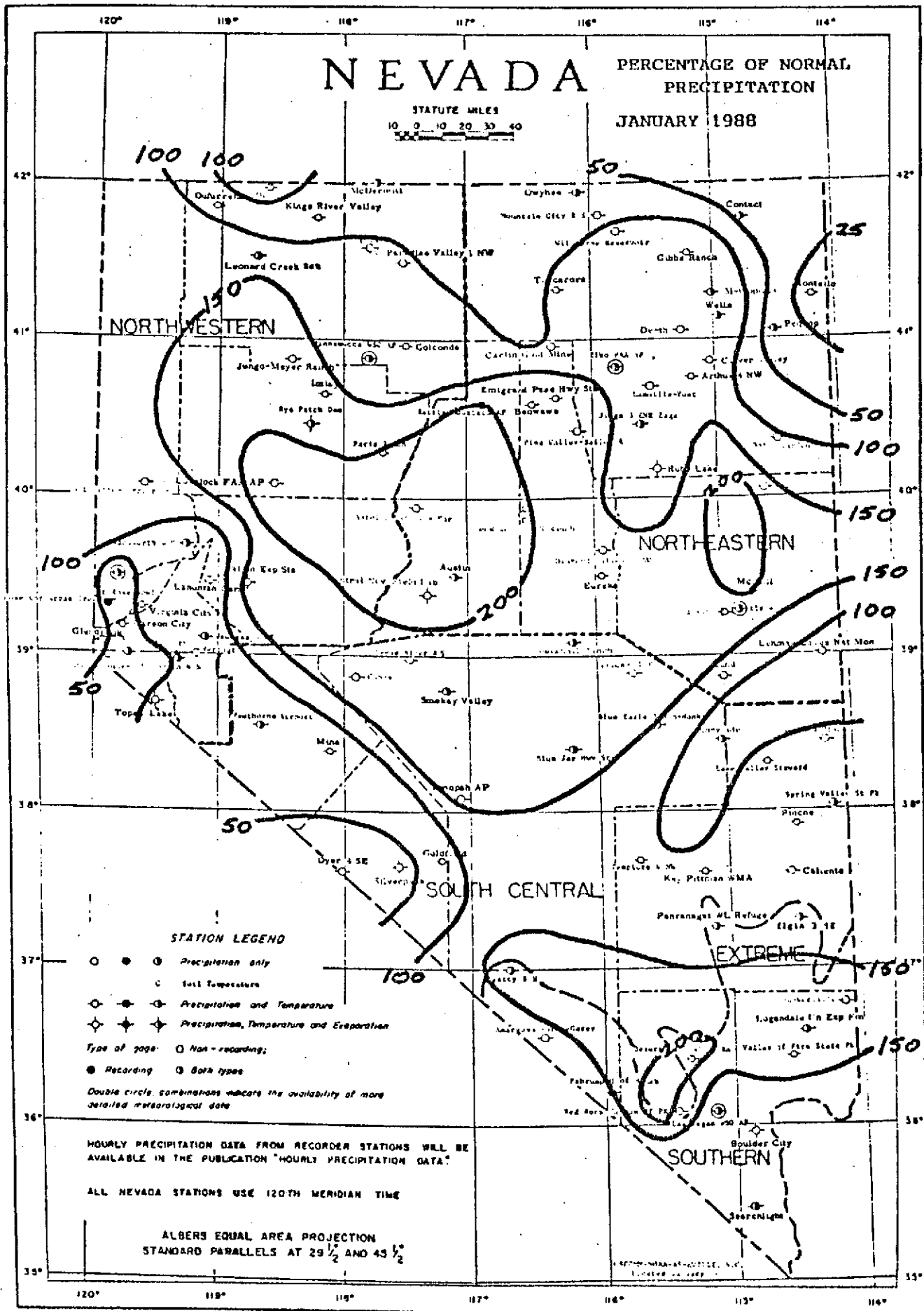
- ● ● Precipitation only
 - Soil Temperature
 - ● ● Precipitation and Temperature
 - ● ● Precipitation, Temperature and Evaporation
 - Type of gage: ○ Non-recording, ● Recording
 - ● Both types
- Double circle combinations indicate the availability of more detailed meteorological data.

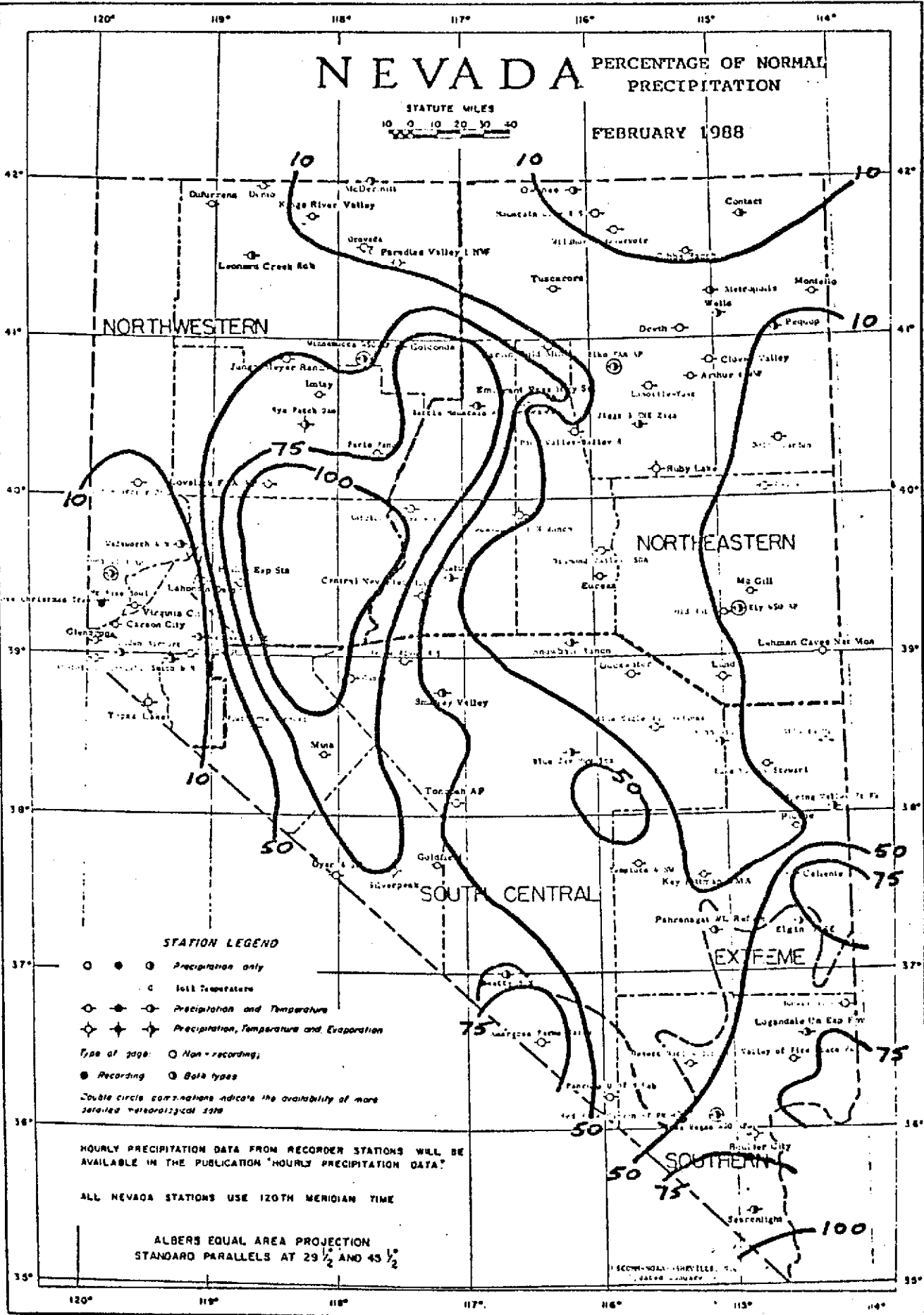
HOURLY PRECIPITATION DATA FROM RECORDER STATIONS WILL BE AVAILABLE IN THE PUBLICATION "HOURLY PRECIPITATION DATA."

ALL NEVADA STATIONS USE 120TH MERIDIAN TIME

ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 43 1/2

USCOM-NOAA-ASHEVILLE, N.C.
Updated January 1988





NEVADA PERCENTAGE OF NORMAL PRECIPITATION

FEBRUARY 1988

STATUTE MILES
10 0 10 20 30 40

NORTHWESTERN

NORTHEASTERN

SOUTH CENTRAL

EXTREME

SOUTHERN

STATION LEGEND

- ● ○ Precipitation only
- ● ● Soil Temperature
- ◇ ● ◇ Precipitation and Temperature
- ◇ ● ◇ Precipitation, Temperature and Evaporation
- Type of gage: ○ Non-recording;
● Recording ○ Both types

Double circle combinations indicate the availability of more detailed meteorological data

HOURLY PRECIPITATION DATA FROM RECORDER STATIONS WILL BE AVAILABLE IN THE PUBLICATION "HOURLY PRECIPITATION DATA"

ALL NEVADA STATIONS USE 120TH MERIDIAN TIME

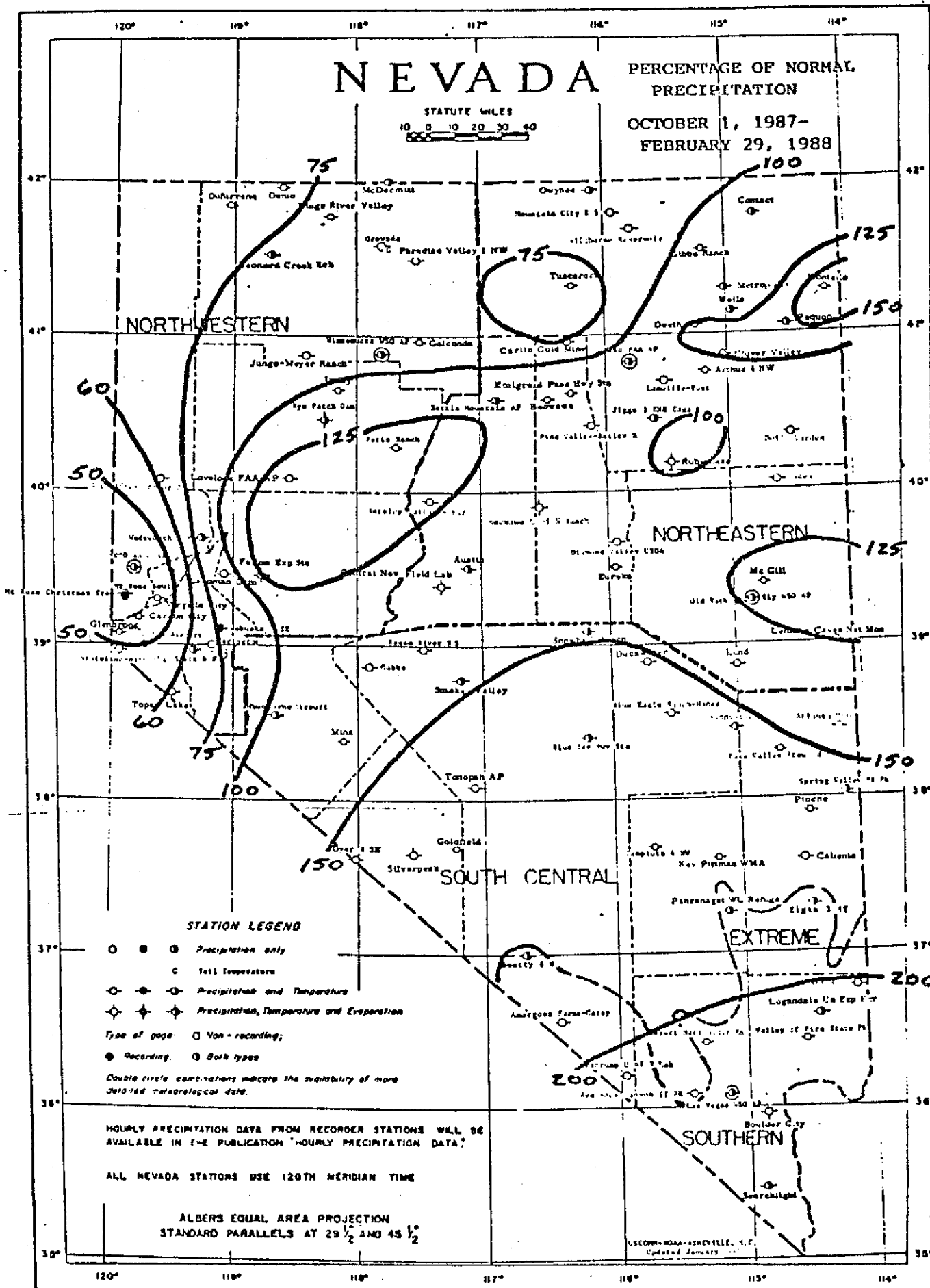
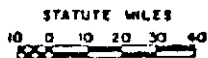
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 43 1/2

SECOND-NATIONAL SURVEY, U.S. GEOLOGICAL SURVEY

NEVADA

PERCENTAGE OF NORMAL
PRECIPITATION

OCTOBER 1, 1987-
FEBRUARY 29, 1988



STATION LEGEND

- ● ○ Precipitation only
- ● ● Total Temperature
- ● ○ Precipitation and Temperature
- ● ● Precipitation, Temperature and Evaporation
- Type of gage: □ Non-recording;
● Recording. ○ Both types

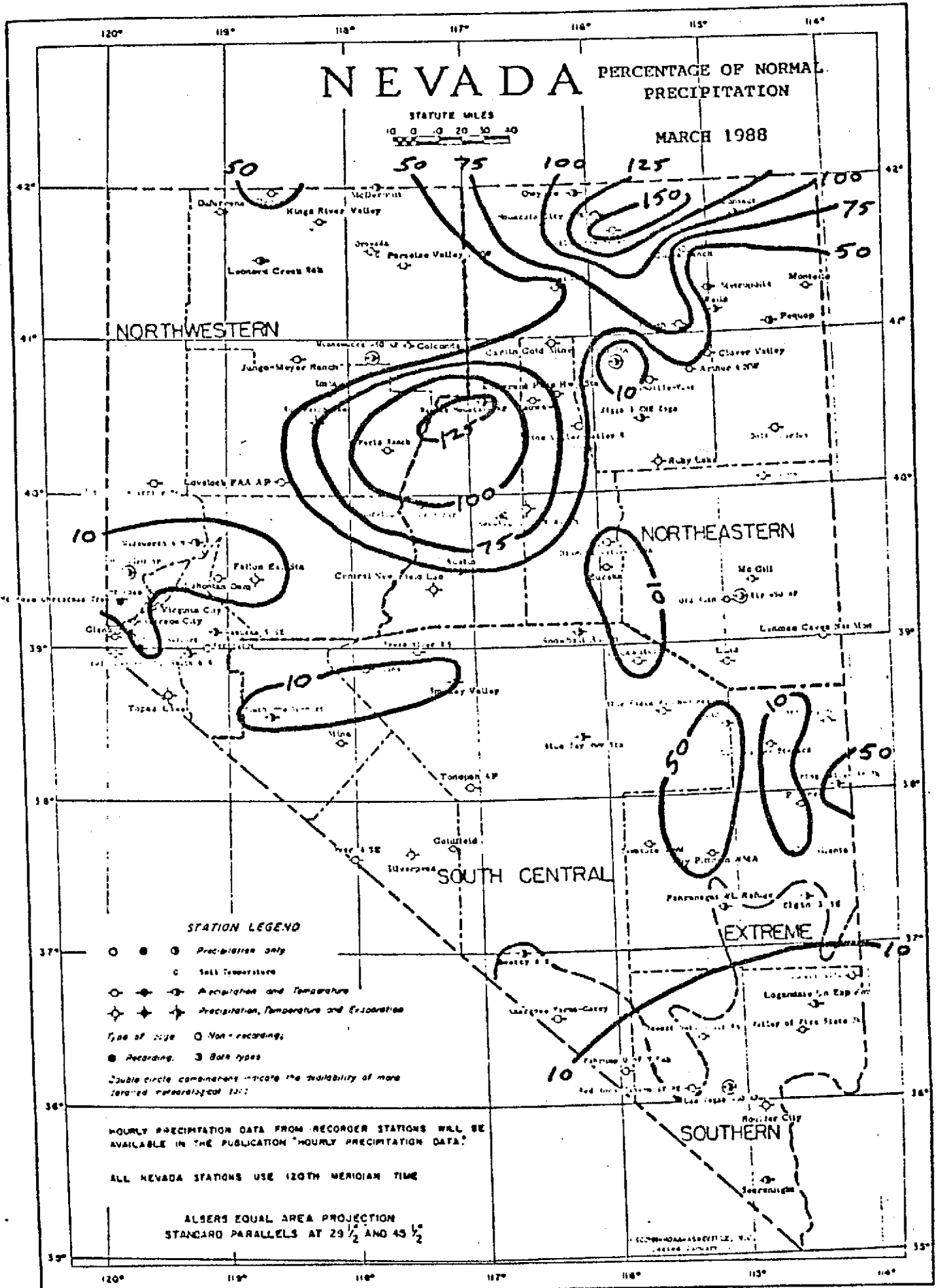
Double circle combinations indicate the availability of more detailed meteorological data.

HOURLY PRECIPITATION DATA FROM RECORDER STATIONS WILL BE AVAILABLE IN THE PUBLICATION "HOURLY PRECIPITATION DATA."

ALL NEVADA STATIONS USE 120TH MERIDIAN TIME

ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 45 1/2

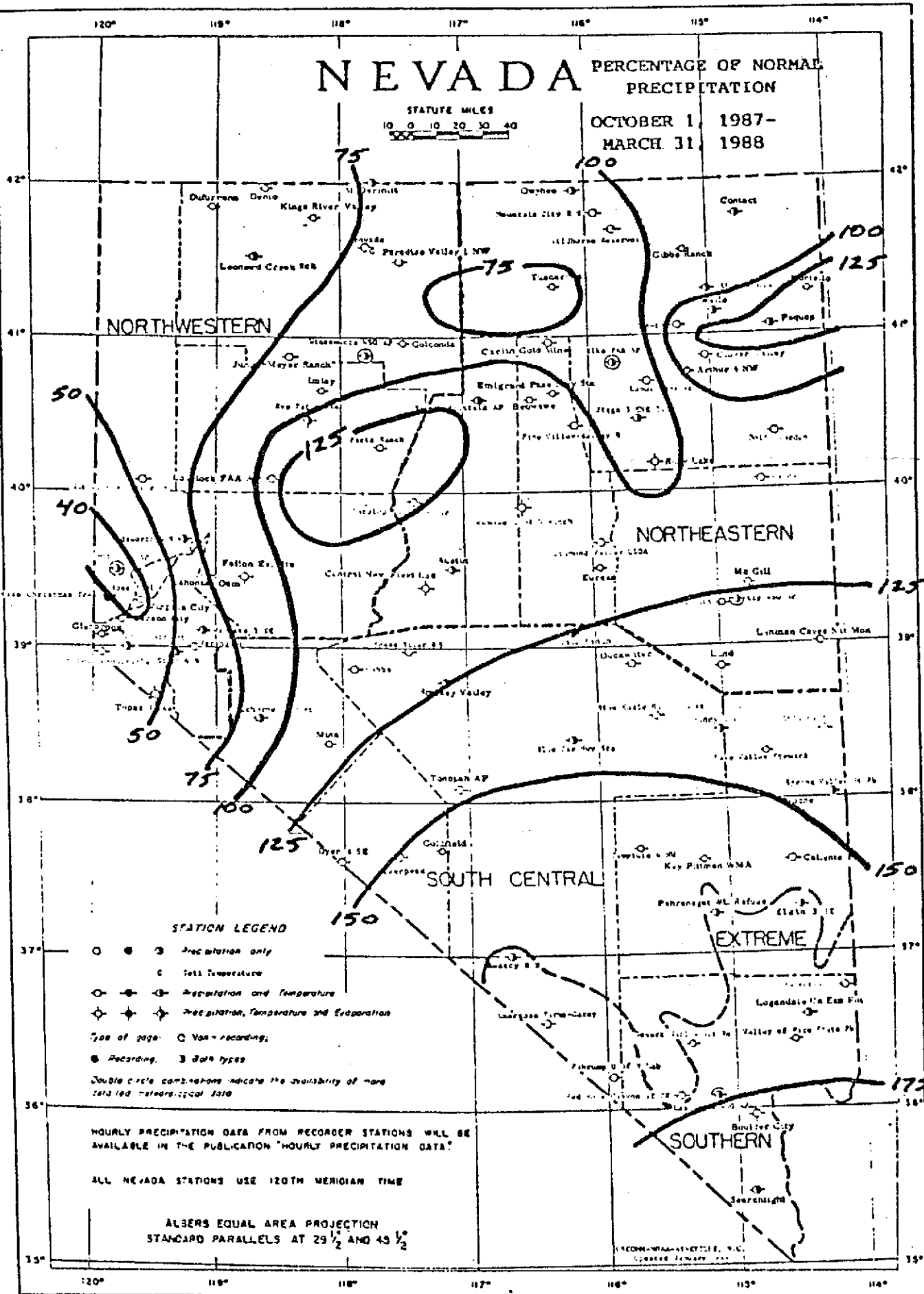
USCORN-NOAA-SHEVELLE, S.F.
Updated January



NEVADA PERCENTAGE OF NORMAL PRECIPITATION

OCTOBER 1, 1987-
MARCH 31, 1988

STATUTE MILES
0 10 20 30 40



NORTHWESTERN

NORTHEASTERN

SOUTH CENTRAL

SOUTHERN

STATION LEGEND

- ● ③ Precipitation only
- ● ③ Total Temperature
- ● ③ Precipitation and Temperature
- ● ③ Precipitation, Temperature and Evaporation
- ● ③ Van-recording
- ● ③ Recording, ③ Data types

Double circle combinations indicate the availability of more related - standard data

HOURLY PRECIPITATION DATA FROM RECORDER STATIONS WILL BE AVAILABLE IN THE PUBLICATION "HOURLY PRECIPITATION DATA"

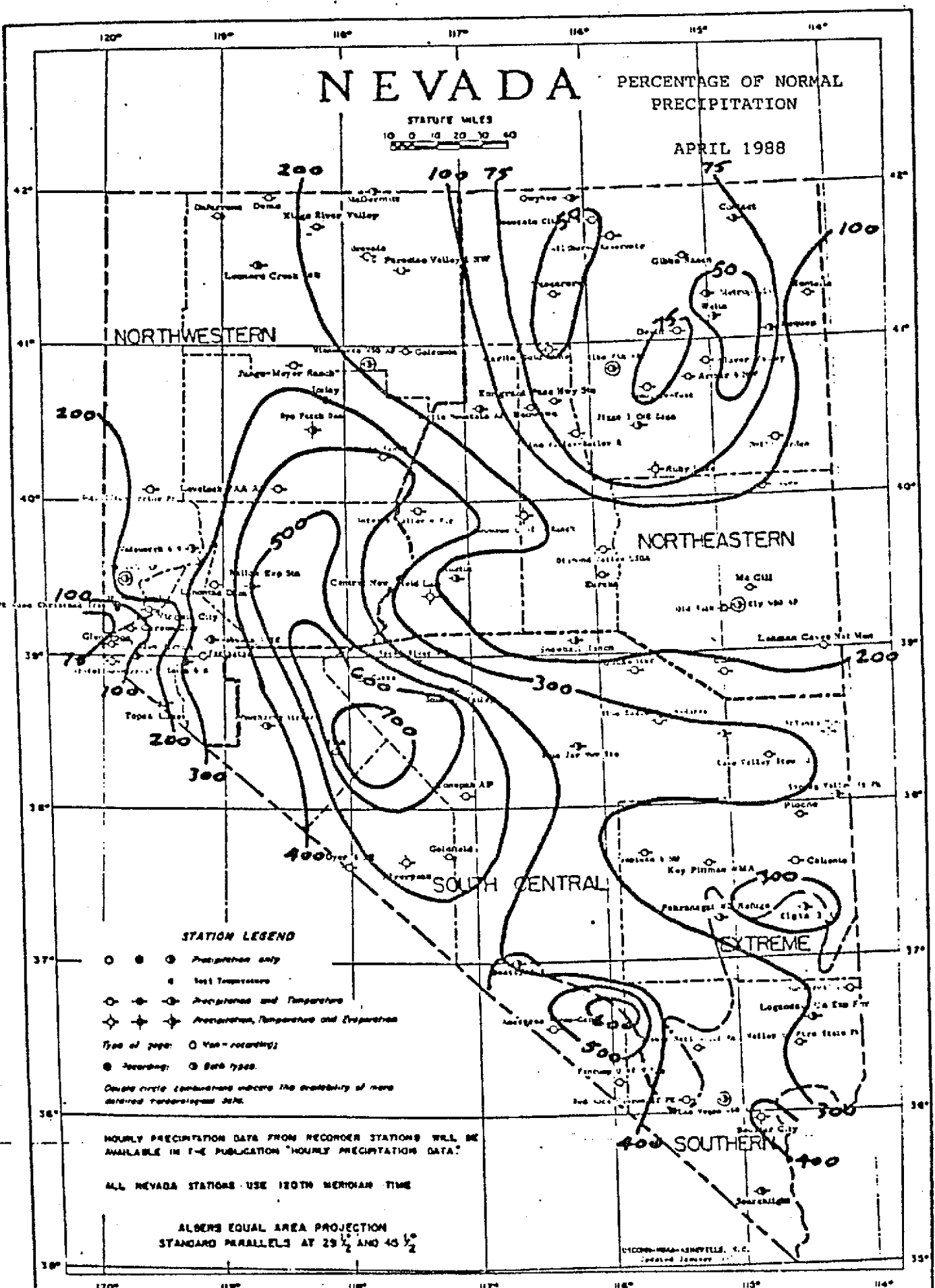
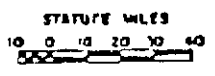
ALL NEVADA STATIONS USE 120TH MERIDIAN TIME

ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 43 1/2

SCOTT-WALKER ENGINEERING, INC.
CREATED JANUARY 1988

NEVADA PERCENTAGE OF NORMAL PRECIPITATION

APRIL 1988



STATION LEGEND

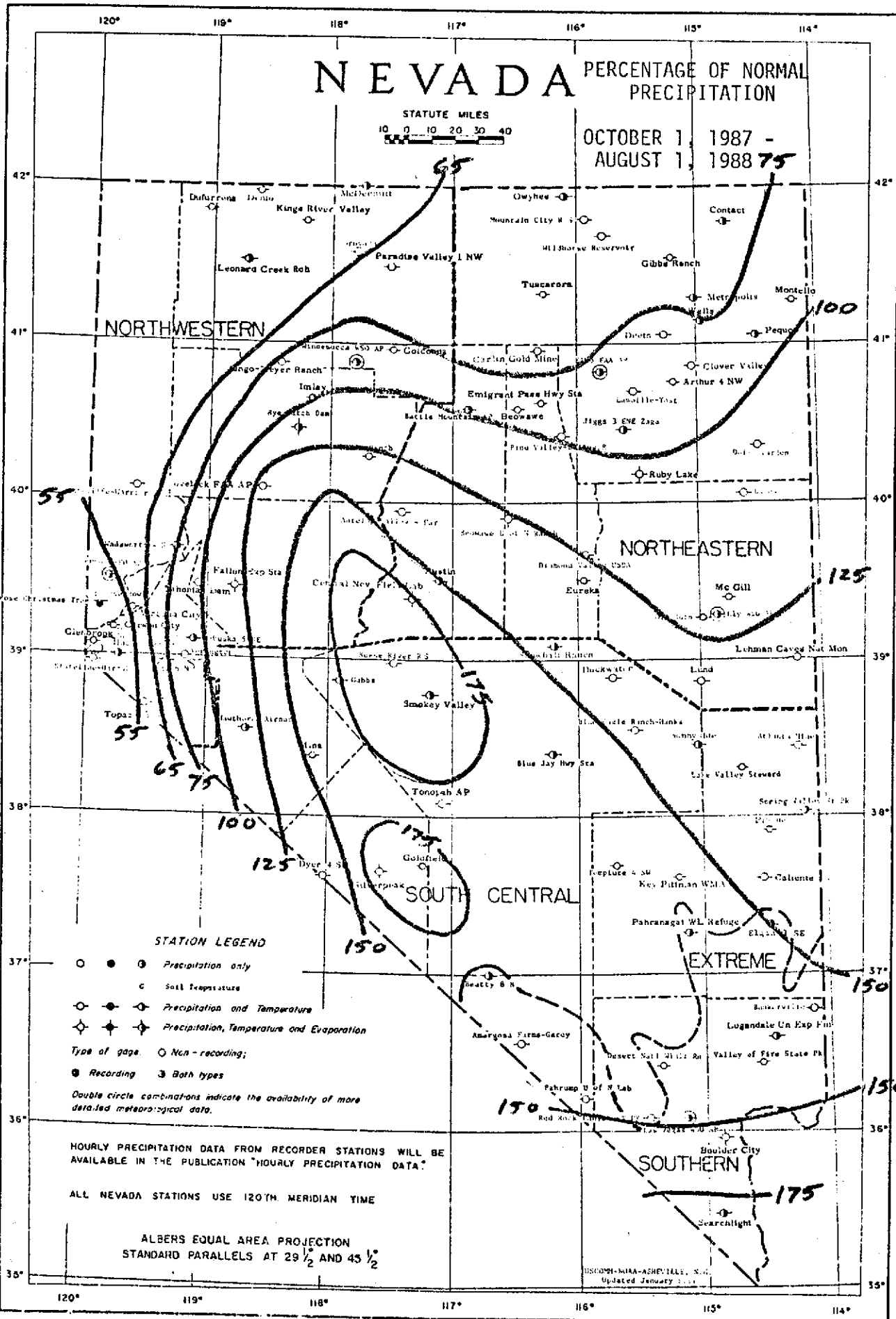
- ● ○ Precipitation only
- ⊕ Soil Temperature
- ⊖ ⊕ ⊖ Precipitation and Temperature
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ALL NEVADA STATIONS USE 120TH MERIDIAN TIME

ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 43 1/2

UNIVERSITY OF MICHIGAN LIBRARY, ANN ARBOR, MICHIGAN



SNOW PACK - WATER EQUIVALENT

% of Normal, February 29, 1988
(Information from Soil Conservation Service)

Tahoe-Truckee Watershed	51%
Carson Watershed	56
Walker Watershed	52

RESERVOIR STORAGE

% of Normal, February 29, 1988
(Information from the Federal Watermaster)

Tahoe-Truckee	60%
Carson/Walker	62
Humboldt (Rye Patch)	60
Snake/Owyhee	81
Mead/Mohave	125

AS OF MARCH 14

Projected spring run-off volumes range from 45-50% of normal in the Tahoe-Truckee, Carson and Walker River Basin, and 70-80% of normal in the Humboldt River Basin.

Lake Tahoe level was 6224.75', the lowest this winter. Last year on this date it was at 6227.03'.

1987-88 WATER YEAR AS A PERCENT OF NORMAL

	<u>OCT-JAN 31</u>	<u>OCT-FEB 29</u>	<u>OCT-APR 30</u>
RENO	59%	46%	53%
TRUCKEE	64	51	48
CARSON CITY	53	43	42
INCLINE	66	53	41
TAHOE CITY	70	56	50
WOODFORDS	65	53	49
BRIDGEPORT			47

John W. James
State Climatologist

RENO PRECIPITATION 1870-1988 (119 YEARS)

FEBRUARY - MARCH (Driest)
Normal = 1.69"

	<u>Feb.</u>	<u>Mar.</u>	<u>Total</u>
<u>1988</u>	.02"	T	.02"
1877	0	.03	.03
1875	.02	.05	.07

DECEMBER - APRIL (Driest)
Normal = 4.60"

1947-48	1.06"	23% of normal
1946-47	1.21	26%
1976-77	1.58	34%
<u>1987-88</u>	<u>2.02</u>	44%
1945-46	3.12	68%
1948-49	2.83	62%

Worst series of drought winters, December-April, 1870-1988

1945-49 4 yrs average = 53% of normal

John James
State Climatologist

RENO'S TEN DRIEST WATER YEARS

(1870-1988 - 118 Years)

WATER YEAR	% of		% of		% of		% of		% of	
	OCT-FEB	NORM	OCT-MAR	NORM	APR	NORM	OCT-APR	NORM	OCT-MAY	NORM
NORMAL	4.34"		5.08"				5.54"		6.28"	
1947-48	.55"	13%	.62"	12%	.67"	1	1.29"	23%	2.54"	1
1911-12	1.12	26	1.95	38	.49	4	2.44	44	2.70	4
1923-24	1.41	32	2.37	46	.18	8	2.55	46	2.55	6
1986-87	1.54	35	2.34	46	.49	7	2.83	51	5.12	7
1884-85	1.57	36	1.67	27	.80	2	2.47	45	2.87	5
1975-76	1.64	38	2.00	39	.20	5	2.20	40	2.30	3
1976-77	1.74	40	1.93	38	T	3	1.93	35	3.17	2
1881-82	1.75	40	4.25	84	.38		4.63	77		
1948-49	1.97	45	2.71	53	.29	9	3.00	54	4.64	9
1987-88	2.02	46	2.02	40	.95	6	2.97	53	3.09	8
		10	T	6				6		

John W. James
State Climatologist

COMPARISON OF PRECIPITATION DURING THE 1970'S & 1980'S DROUGHT PERIODS

RENO

	<u>1976-77</u>		<u>1986-87</u>		<u>1987-88</u>	
	PRECIP	DEPART FROM NORMAL	PRECIP	DEPART FROM NORMAL	PRECIP	DEPART FROM NORMAL
Oct	.28	- .14	.06	- .28	.54	+ .20
Nov	.07	- .61	.02	- .58	.37	- .23
Dec	.01	-1.08	.19	-1.02	.59	- .62
Jan	.67	- .94	.49	- .75	.50	- .74
Feb	.71	- .15	.78	- .17	.02	- .93
Mar	.19	- .51	.80	+ .06	T	- .74
Apr	T	- .47	.49	+ .03	.95	+ .49
Oct-Apr	1.93	35%	2.43	44%	2.97	53%
May	1.24	+ .50	2.29	+1.55	.12	- .62
Oct-May	3.17	50%	4.72	75%	3.09	49%

LONGEST MID-WINTER DRY PERIODS

(less than .01" November - April)

Nov. 16 - Dec. 29, 1976 = 44 days

Feb. 29 - Apr. 12, 1988 = 44 days

Jan. 18 - Feb. 26, 1988 = 40 days

Mar. 25 - Apr. 30, 1977 = 37 days

John W. James
State Climatologist

THE FOLLOWING TABLES COMPARE THE 1975-77 AND THE 1986-88 WATER SUPPLY PICTURE IN THE TRUCKEE, CARSON, WALKER, AND HUMBOLDT RIVER BASINS.

...PRECIPITATION...

LOCATION	APR '88	% OF NORM	OCT 87 -APR88	%NORM 87-88	OCT 86 -APR87	%NORM 86-87	OCT 78 -APR77	%NORM 76-77	OCT 75 -APR76	%NORM 75-76
TRUCKEE RANGER STN.	1.31	57%	12.66	48%	11.20	43%	11.61	44%	15.73	60%
BOCA RESERVOIR	1.00	71%	8.89	49%	8.16	45%	----	--	----	--
TAHOE CITY	1.05	48%	14.15	50%	12.77	45%	11.57	41%	12.35	44%
INCLINE VILLAGE	0.92	63%	9.48	41%	10.14	44%	8.01	39%	8.10	35%
GLENBROOK	1.07	71%	9.12	56%	8.97	60%	----	--	----	--
RENO WSFO	0.95	207%	2.97	54%	2.83	51%	3.17	58%	2.30	42%
CARSON CITY	0.46	88%	3.66	42%	4.44	50%	4.18	48%	2.27	26%
YERINGTON	1.21	336%	3.01	94%	2.24	70%	----	--	----	--
BRIDGEPORT	0.33	52%	4.33	59%	2.18	47%	2.99	41%	3.01	41%
WINNEMUCCA	1.55	191%	5.17	99%	4.12	79%	3.28	63%	4.89	94%
ELKO	0.46	58%	5.10	85%	2.87	48%	3.15	53%	5.04	84%

...SNOW PACK - WATER EQUIVALENT...

BASIN	AS OF MAY. 1, 1988	MAY 1, 1987	MAY 1, 1977
TAHOE/TRUCKEE RIVER	13 % NORMAL	12 % NORMAL	11 % NORMAL
CARSON RIVER	16 % NORMAL	17 % NORMAL	5 % NORMAL
WALKER RIVER	21 % NORMAL	8 % NORMAL	<5 % NORMAL
UPPER HUMBOLDT RIVER	29 % NORMAL	11 % NORMAL	15 % NORMAL
LOWER HUMBOLDT RIVER	52 % NORMAL	26 % NORMAL	NA

...RESERVOIR STORAGE - ACRE/FEET...

BASIN	USEABLE CAPACITY	4/30/88	4/30/87	4/30/77	AVERAGE
COMBINED TAHOE TRUCKEE RESERVOIRS	1,040,600	302,800	705,400	196,000	633,600
% NORMAL		48%	111%	31%	
CARSON RIVER LAHONTAN	295,000	177,000	258,500	174,000	229,000
% NORMAL		77%	113%	76%	
WALKER RIVER EAST FORK-BRIDGEPORT	42,000	15,600	37,200	12,000	30,500
% NORMAL		51%	122%	39%	
WEST FORK-TOPAZ	59,000	18,000	39,300	13,000	43,600
% NORMAL		41%	90%	30%	
HUMBOLDT RIVER RYE PATCH	194,300	79,400	136,500	105,000	128,100
% NORMAL		62%	107%	82%	

R. OLSON/M. EKERN...NATIONAL WEATHER SERVICE
 C. PACHECO.....SOIL CONSERVATION SERVICE

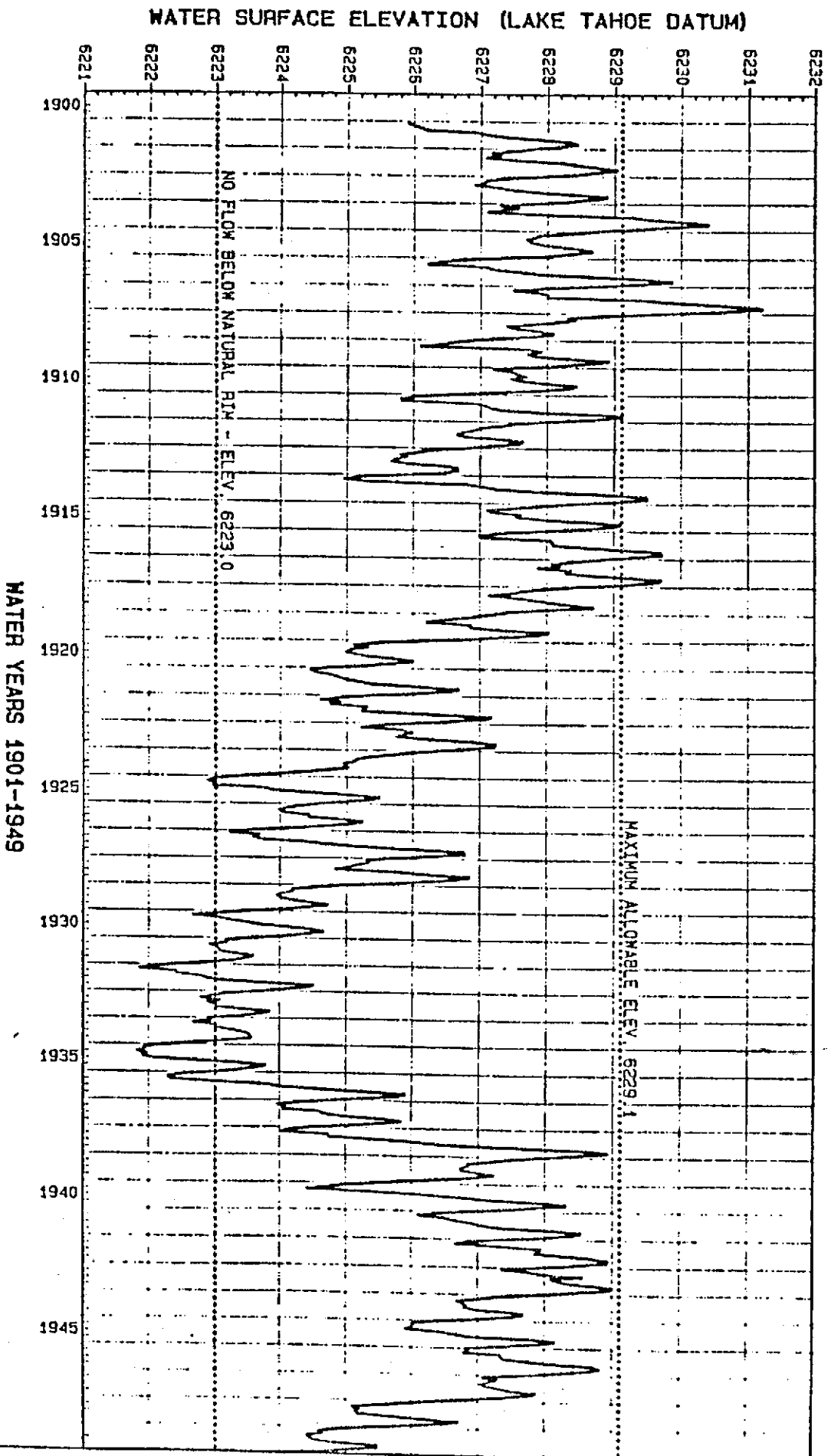
THE FOLLOWING ARE APRIL THROUGH JULY STREAMFLOW FORECASTS FOR KEY POINTS ON THE RIVERS.

TRUCKEE RIVER AT FARAD, CA.....	70,000 ACRE-FEET	25 % OF NORMAL
CARSON RIVER NEAR CARSON CITY.....	40,000 ACRE-FEET	20 % OF NORMAL
CARSON RIVER AT FT. CHURCHILL.....	10,000 ACRE-FEET	5 % OF NORMAL
EAST WALKER NEAR COLEVILLE.....	55,000 ACRE-FEET	35 % OF NORMAL
EAST WALKER AT BRIDGEPORT.....	25,000 ACRE-FEET	32 % OF NORMAL
UMBOLDT RIVER AT PALISADE.....	54,000 ACRE-FEET	20 % OF NORMAL
UMBOLDT RIVER AT COMUS.....	30,000 ACRE-FEET	13 % OF NORMAL

NATIONAL WEATHER SERVICE
SOIL CONSERVATION SERVICE

LAKE TAHOE END OF MONTH ELEVATION 1901-1988

MRK 11 MAR 1988

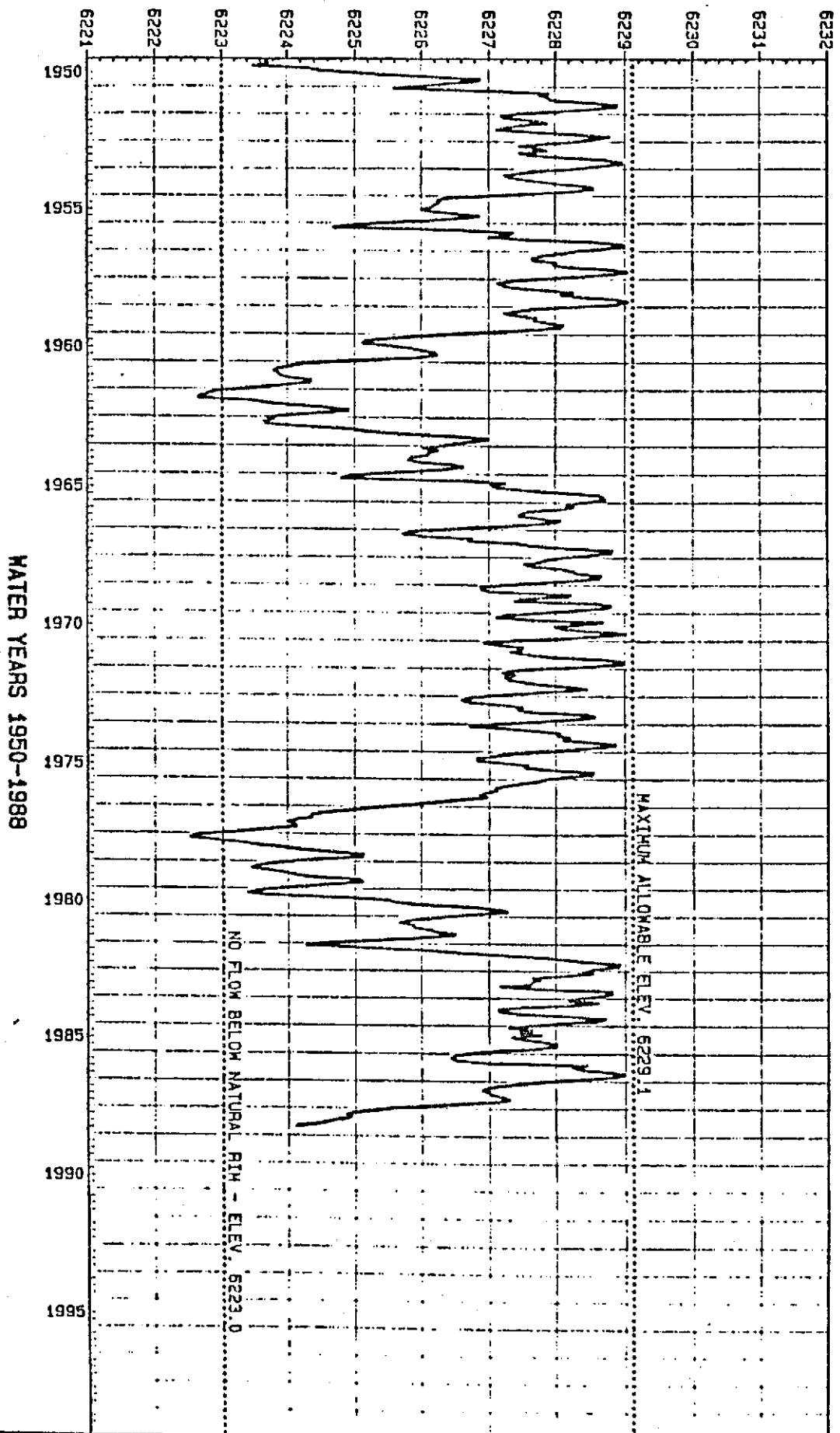


LAKE TAHOE

END OF MONTH ELEVATION 1901-1988

MRK 11 MAR 1988

WATER SURFACE ELEVATION (LAKE TAHOE DATUM)

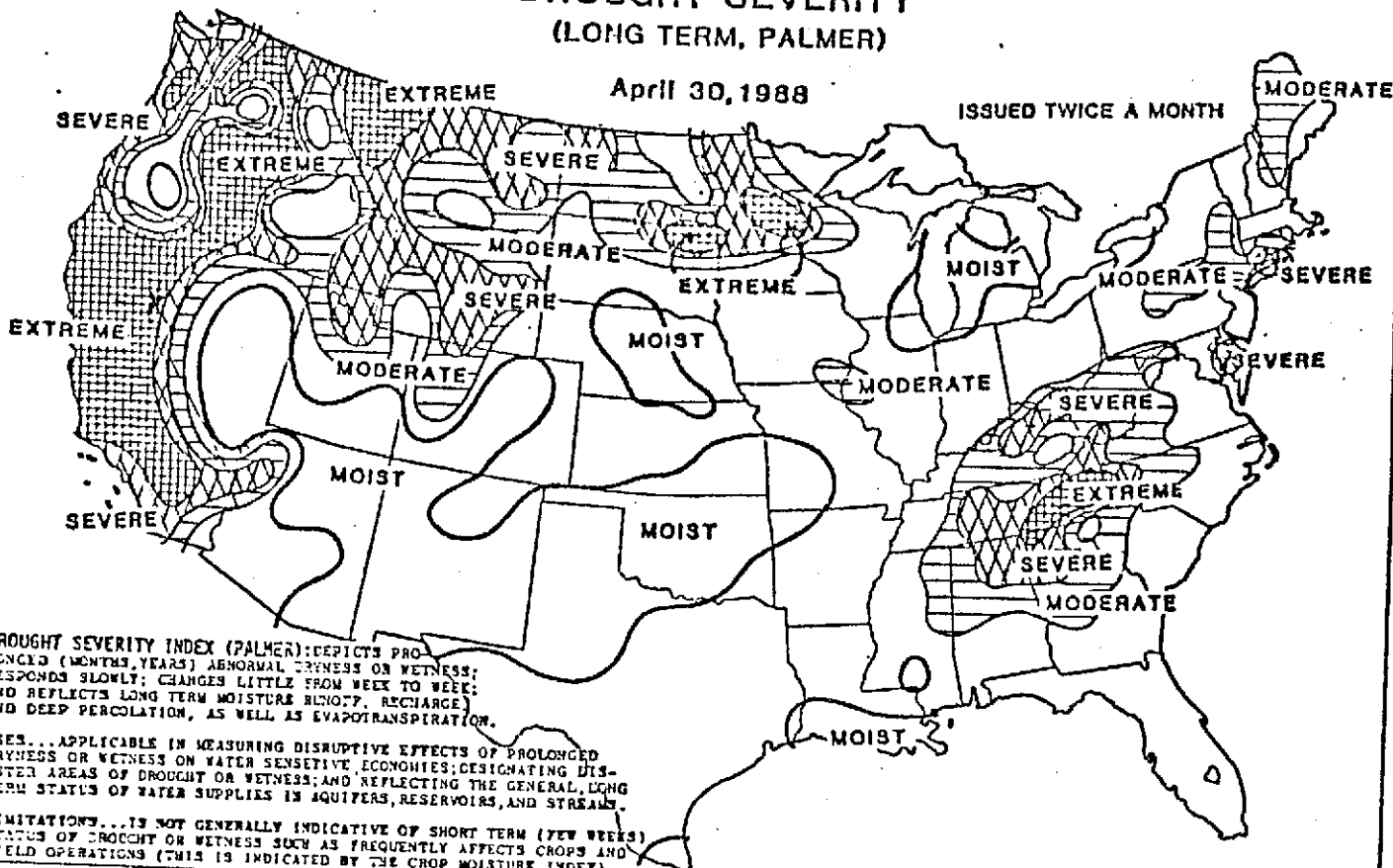


WATER YEARS 1950-1988

DROUGHT SEVERITY (LONG TERM, PALMER)

April 30, 1988

ISSUED TWICE A MONTH



DROUGHT SEVERITY INDEX (PALMER): DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; RESPONDS SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK; AND REFLECTS LONG TERM MOISTURE BALANCE, RECHARGE, AND DEEP PERCOLATION, AS WELL AS EVAPOTRANSPIRATION.

USES... APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES; DESIGNATING DISTASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL, LONG TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS, AND STREAMS.

LIMITATIONS... IS NOT GENERALLY INDICATIVE OF SHORT TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

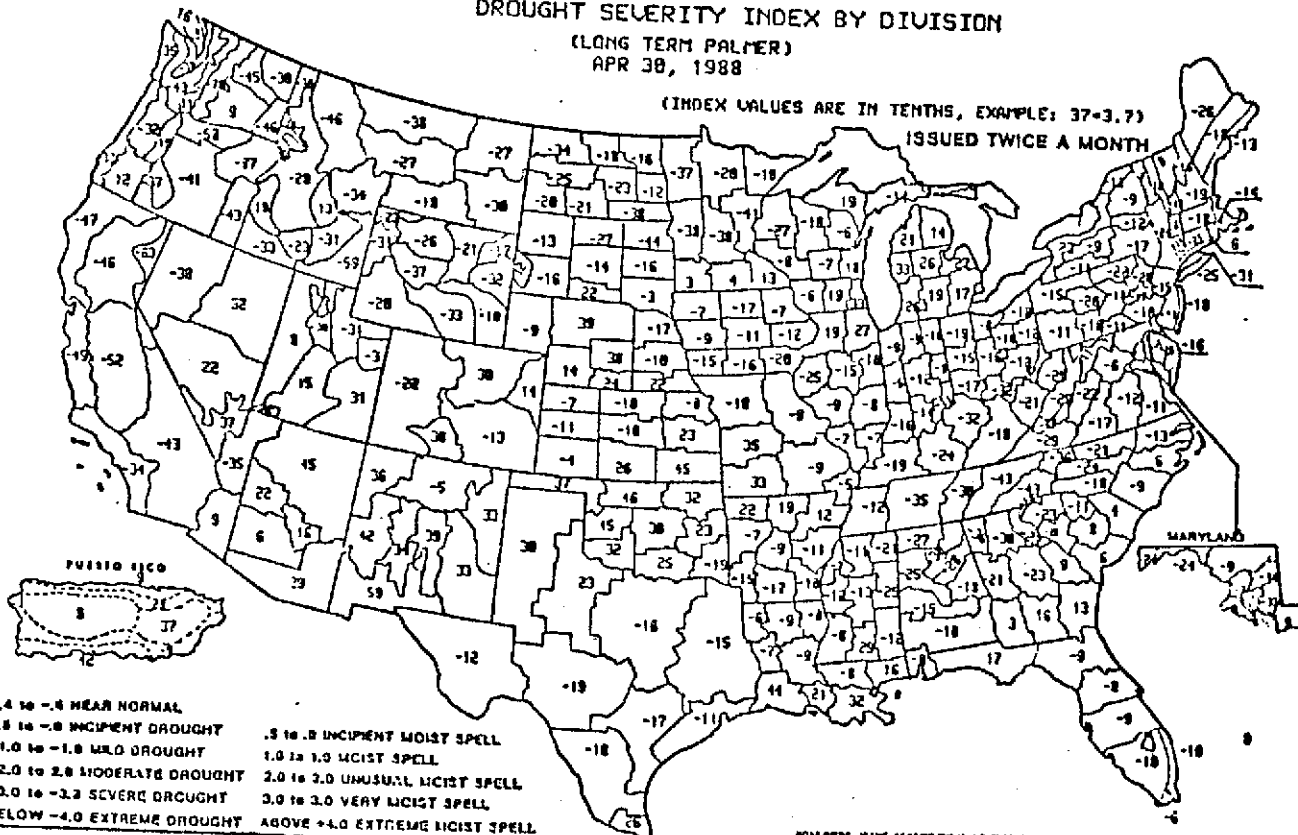
NOAA/NDIA JOINT AGRICULTURAL WEATHER FACILITY

Based on preliminary reports

DROUGHT SEVERITY INDEX BY DIVISION (LONG TERM PALMER)

APR 30, 1988

(INDEX VALUES ARE IN TENTHS, EXAMPLE: 37-3.7)
ISSUED TWICE A MONTH



- 4.0 to -3.5 NEAR NORMAL
- 3.5 to -3.0 INCUBENT DROUGHT
- 3.0 to -2.5 MILD DROUGHT
- 2.5 to -2.0 MODERATE DROUGHT
- 2.0 to -1.5 SEVERE DROUGHT
- BELOW -4.0 EXTREME DROUGHT
- 3.5 to 3.0 INCUBENT MOIST SPELL
- 3.0 to 2.5 UNUSUAL MOIST SPELL
- 2.5 to 2.0 UNUSUAL MOIST SPELL
- 2.0 to 1.5 UNUSUAL MOIST SPELL
- 1.5 to 1.0 UNUSUAL MOIST SPELL
- 1.0 to 0.5 UNUSUAL MOIST SPELL
- 0.5 to 0.0 UNUSUAL MOIST SPELL
- 0.0 to 0.5 UNUSUAL MOIST SPELL
- 0.5 to 1.0 UNUSUAL MOIST SPELL
- 1.0 to 1.5 UNUSUAL MOIST SPELL
- 1.5 to 2.0 UNUSUAL MOIST SPELL
- 2.0 to 2.5 UNUSUAL MOIST SPELL
- 2.5 to 3.0 UNUSUAL MOIST SPELL
- 3.0 to 3.5 UNUSUAL MOIST SPELL
- 3.5 to 4.0 UNUSUAL MOIST SPELL
- ABOVE +4.0 EXTREME MOIST SPELL

NOAA/NDIA JOINT AGRICULTURAL WEATHER FACILITY

Based on preliminary reports

See Weekly Weather and Crop Bulletin, Vol. 74, No. 16 for a further explanation of the Drought Severity Index.

USABLE WATER STORAGE COMPARISONS

WESTERN NEVADA RESERVOIRS

ACRE-FEET

<u>RESERVOIR</u>	<u>USABLE CAPACITY</u>	<u>AUGUST 1, 1977</u>	<u>AUGUST 1, 1988</u>
Lahontan	*317,000	83,390	57,000
Stampede	226,500	31,570	82,417
Boca	40,900	26,920	5,871
Prosser	29,842	0	9,804
Rye Patch	194,300	66,160	44,450
Topaz	59,400	844	5,445
Bridgeport	42,500	408	5,324
Independence	17,500	14,957	13,200
Donner	9,500	5,933	8,170
Lake Tahoe	744,600	90,000 **(6223.75 msl)	128,700 (6224.06 msl)

*With flashboards

**Natural Rim of Lake Tahoe is 6223.0 msl

GENERAL OUTLOOK

SUMMARY

ALTHOUGH NEVADA RECEIVED MORE PRECIPITATION THAN IT HAD IN THE LAST TWO MONTHS, SNOWPACKS CONTINUED TO DIMINISH, WITH MOST OF THE LOWER ELEVATION SITES LOSING THEIR SNOW COMPLETELY. ALL THE BASINS EXCEPT THE SNAKE AND EASTERN NEVADA BASINS ARE BELOW 70% OF AVERAGE. THE WESTERN PORTION OF THE STATE CONTINUES TO BE THE WORST HIT, WITH SNOWPACKS RANGING FROM 5 TO 21 PERCENT OF NORMAL. APRIL PRECIPITATION RANGED FROM WELL BELOW AVERAGE IN THE WESTERN PORTION OF THE STATE TO WELL ABOVE AVERAGE IN THE NORTHWESTERN, EASTERN AND SOUTHERN PARTS OF NEVADA. TOTAL PRECIPITATION SINCE OCTOBER 1 CONTINUES TO BE WELL BELOW TO BELOW AVERAGE OVER ALL THE STATE, EXCEPT SOUTHERN NEVADA WHICH IS WELL ABOVE AVERAGE. RESERVOIR STORAGE ON THE LAST DAY OF APRIL CONTINUED TO BE WELL BELOW AVERAGE FOR MOST OF THE STATE, EXCEPT AT WILDHORSE RESERVOIR AND AT BOTH RESERVOIRS IN SOUTHERN NEVADA. STREAMFLOW FORECASTS INDICATE WELL BELOW AVERAGE FLOWS FOR MOST OF THE STATE. ONLY THE VIRGIN RIVER AND THE LAKE POWELL INFLOW ARE EXPECTED TO BE ABOVE 70% OF NORMAL.

SNOWPACK

Snowpack conditions continued to worsen over all the basins in the state except the Northern Great Basin and the Eastern Nevada Basin. There are very few sites below 8500 feet elevation with snow.

BASIN	% OF AVG.	BASIN	% OF AVG.
-----		-----	
TAHOE.....	5%	HUMBOLDT.....	40%
TRUCKEE.....	19%	SNAKE.....	74%
CARSON.....	16%	OWYHEE.....	31%
WALKER.....	21%	EASTERN.....	63%
N. GREAT BASIN.....	38%	SOUTHERN.....	%

PRECIPITATION

April precipitation, although better than the last two months, was below average to well below average over most of the state. The Northern Great Basin and the Southern Nevada Basin both reported well above normal precipitation during the month. Year-to-date precipitation remains well below to below average for the state except in the Southern Nevada Basin.

BASIN(S)	5/1 : YTD % OF AVG.	BASIN(S)	5/1 : YTD % OF AVG.
-----		-----	
TAHOE & TRUCKEE	55 : 44	HUMBOLDT	83 : 77
CARSON & WALKER	67 : 54	EASTERN	101 : 88
N. GREAT BASIN	159 : 70	SOUTHERN	369 : 145
SNAKE & OWYHEE	88 : 72		

RESERVOIRS

Reservoir storage continues to be below average to well below average for most of the reservoirs in the state. Wildhorse Reservoir was slightly below average and both reservoirs in southern Nevada were above normal.

BASIN(S)	% CAPACITY	% OF AVERAGE
TAHOE & TRUCKEE.....	29%	48%
CARSON & WALKER.....	53%	69%
HUMBOLDT.....	41%	62%
SNAKE & OWYHEE.....	45%	93%
SOUTHERN NEVADA.....	93%	124%
SEVEN MAJOR RESERVOIRS.....	37%	56%

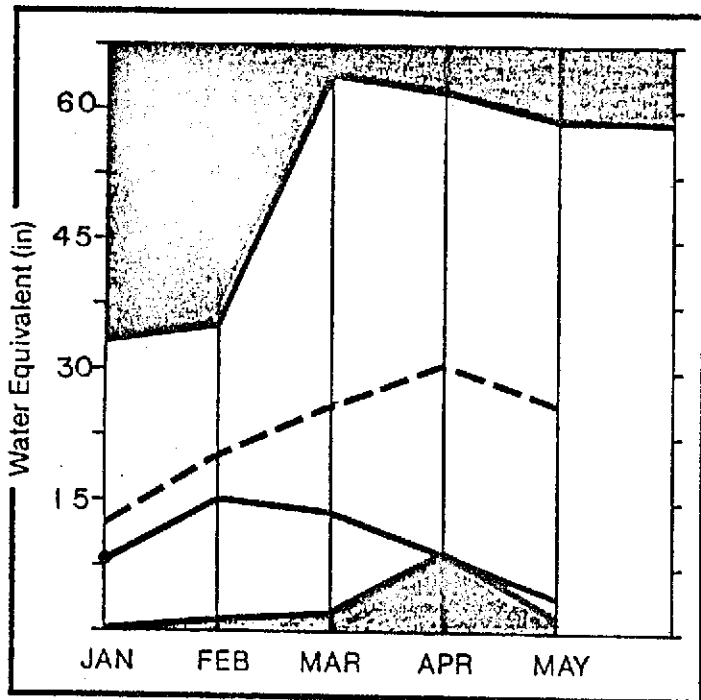
STREAMFLOW

Except for the Virgin River and the Lake Powell Inflow, streamflows throughout the state are forecast below the 70% level. In the western and northwestern portion of the state, forecasted streams are expected to flow below 35% of average.

BASIN(S)	% OF AVG.	BASIN(S)	% OF AVG.
TAHOE & TRUCKEE	12%-33%	HUMBOLDT	5%-64%
CARSON & WALKER	5%-26%	EASTERN	44%-62%
N. GREAT BASIN	19%-24%	SOUTHERN	78%-118%
SNAKE & OWYHEE	44%-62%		

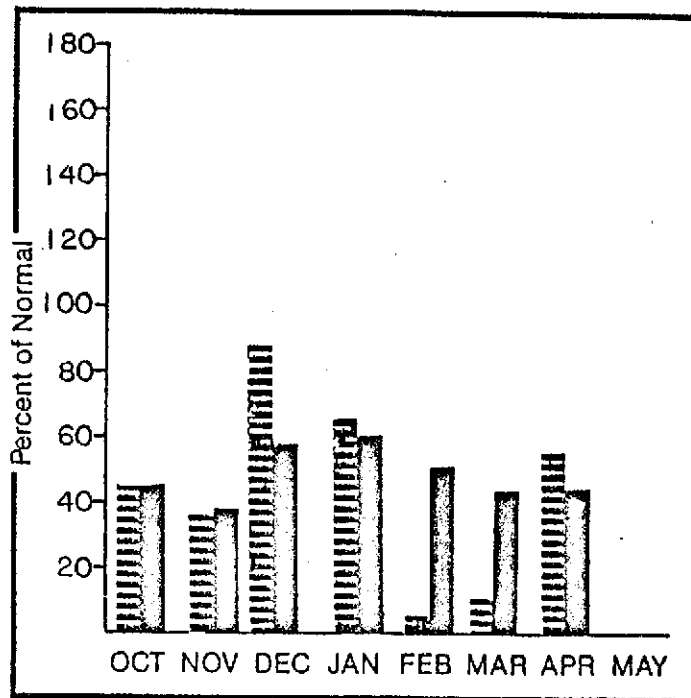
TAHOE & TRUCKEE BASINS

Mountain snowpack* (Inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

Maximum
 Minimum

Average
 Current

Monthly precipitation

Year to date precipitation

TAHOE & TRUCKEE BASINS

Snowpack conditions on May 1 remain well below average. The Lake Tahoe Basin has about 5% of the May 1 average and 176% of the water content present last year at this time. The Truckee River Basin currently has 19% of average and 118% of last year. April precipitation for the Tahoe-Truckee Basin was 55% of average and 202% of last year. Precipitation since October 1, 1987 is 44% of average and 106% of last year's total precipitation figures at this time. Reservoir storage is 48% of average. Total storage for Boca, Lake Tahoe, Prosser and Stampede is 302,790 acre feet. The rise in Lake Tahoe from April - High is expected to be 0.1 foot. Streamflow forecasts indicate well below average flows for the forecast period. The Truckee River at Farad is expected to flow at 19% of normal or 40,000 acre feet during the May - July period.

For more information contact your local Soil Conservation Service office.

TAHOE & TRUCKEE BASINS

STREAMFLOW FORECASTS

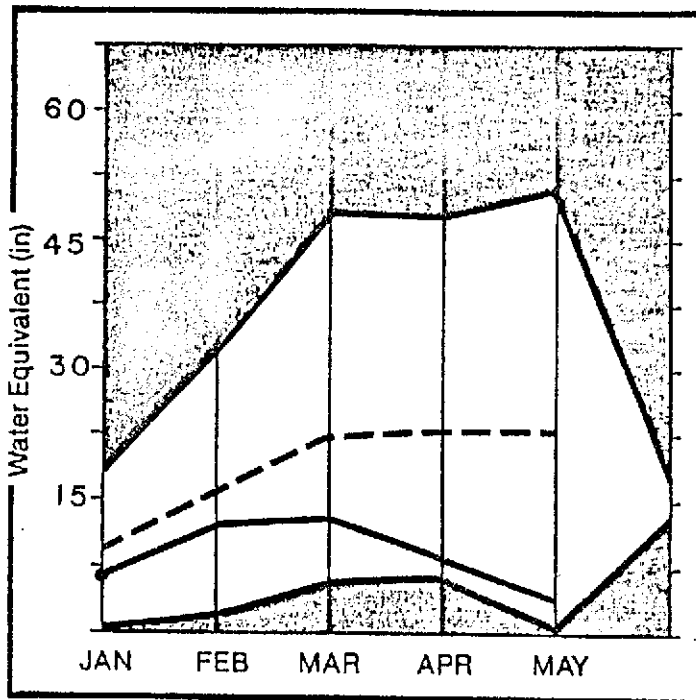
FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
LAKE TAHOE RISE (assume gates closed)	APR-HIG	1.5	0.1	7	1.0	68	0.0	0
TRUCKEE RIVER at Farad 2	APR-JUL	284.7	60.0	21	100.0	35	28.0	10
	MAY-JUL	215.0	40.0	19	85.0	40	17.0	8
LITTLE TRUCKEE RIVER above Boca 2	APR-JUL	91.5	11.0	12	29.0	32	5.0	5
PYRAMID LAKE RISE (LOW 2/1/87)	LOW-HIG	1.2						
STEAMBOAT CREEK at Steamboat 2	APR-JUL	7.1	0.9	13	2.0	28	0.0	0
SAGEHEN CREEK, Ca	APR-JUL	6.5	1.5	23	3.0	46	0.0	0
GALENA CREEK nr Steamboat, Nv	APR-JUL	4.5	1.5	33	2.0	44	1.0	22

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
BOCA RESERVOIR	40.9	12.3	28.5	29.5	LAKE TAHOE RISE	1	0	0
LAKE TAHOE	744.6	196.8	511.3	451.4	TRUCKEE BASIN	5	91	10
PROSSER RESERVOIR	28.6	10.0	11.7	13.2	LITTLE TRUCKEE RIVER	0	0	0
STAMPEDE RESERVOIR	226.5	83.7	153.9	139.5	SAGE HEN CREEK	2	102	16
					GALENA CREEK	0	0	0
					STEAMBOAT DRAINAGE	0	0	0
					PYRAMID LAKE	6	91	10

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
 2 - Corrected for upstream diversions or changes in reservoir storage.
 The average is computed for the 1961-85 base period.

CARSON & WALKER BASINS

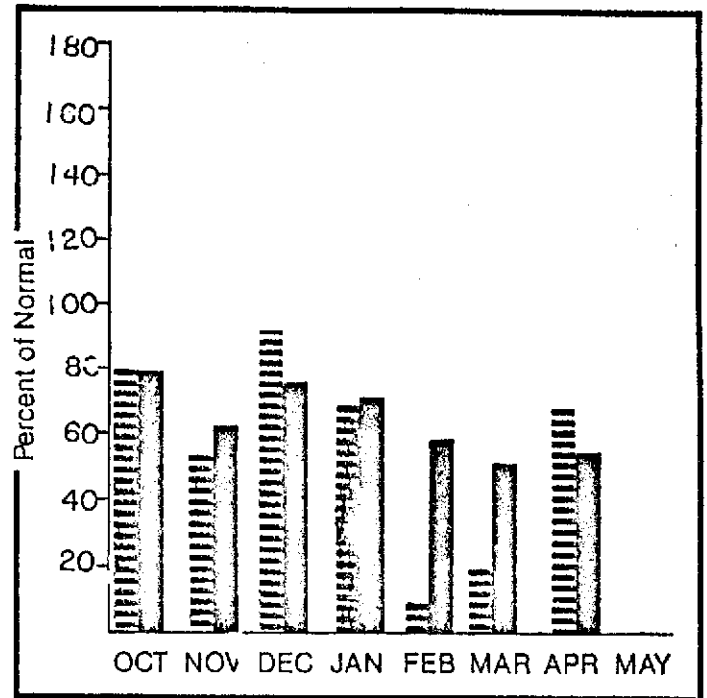
Mountain snowpack* (Inches)



*Based on selected stations

Maximum  Average 
 Minimum  Current 

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation  Year to date precipitation 

CARSON & WALKER BASINS

Snowpack conditions on May 1 remain well below average. The Carson River Basin has about 16% of the May 1 average and 95% of the water content present last year at this time. The Walker River Basin currently has 21% of average and 267% of last year. April precipitation in the Carson-Walker Basins was 67% of normal and 246% of last year. Precipitation since October 1, 1987 is 54% of average and 128% of last year's total precipitation figures at this time. Reservoir storage is 69% of average. Total storage for Bridgeport, Lahontan and Topaz is 210,717 acre feet. Streamflow forecasts indicate well below average for the forecast period. The Carson River near Carson City is expected to flow at 9% of normal or 14,400 acre feet during the May - July period.

For more information, contact your local
 Snow Survey office.

CARSON & WALKER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
EF CARSON RIVER nr Gardnerville, Nv	APR-JUL	198.4	45.0	23	71.0	36	19.0	10
	MAY-JUL	165.8	29.0	17	50.0	30	13.0	8
WF CARSON RIVER at Woodfords, Ca	APR-JUL	56.7	10.0	18	20.0	35	2.0	4
	MAY-JUL	45.7	5.0	19	16.0	35	2.7	6
CARSON RIVER near Carson City, Nv	APR-JUL	198.3	20.0	10	56.0	28	10.0	5
	MAY-JUL	163.1	14.4	9	42.0	26	6.5	4
CARSON RIVER near Ft. Churchill, Nv	APR-JUL	182.4	9.0	5	115.0	63	3.6	2
	MAY-JUL	151.0	6.0	4	83.0	55	3.0	2
EAST WALKER RIVER nr Bridgeport 2	APR-AUG	76.8	15.0	20	41.0	53	7.0	9
	MAY-AUG	67.3	13.0	19	34.0	50	6.0	9
WEST WALKER RIVER near Coleville, Ca	APR-JUL	154.6	40.0	26	60.0	39	20.0	13
	MAY-JUL	138.7	29.0	21	49.0	35	14.0	10
WALKER LAKE RISE (LOW 2/1/87)	LOW-HIGH	-0.0	-3.3					

RESERVOIR STORAGE (1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
BRIDGEPORT RESERVOIR	42.5	15.6	37.2	30.5	E. CARSON RIVER	1	0	0
LAHONTAN RESERVOIR	295.1	177.0	258.5	229.0	W. CARSON RIVER	1	0	0
TOPAZ RESERVOIR	59.4	18.0	39.3	43.8	CARSON Rv. at Carson City	1	0	0
					CARSON Rv. at Ft. Churchi	1	0	0
					E. WALKER Rv. nr Bridgepo	0	0	0
					W. WALKER Rv. nr Colevill	0	0	0
					WALKER LAKE RISE	0	0	0

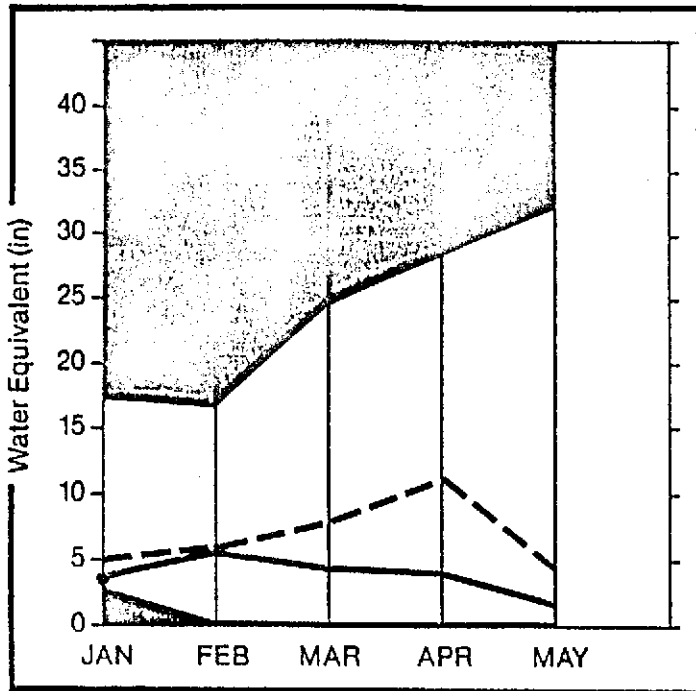
1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage.

The average is computed for the 1961-85 base period.

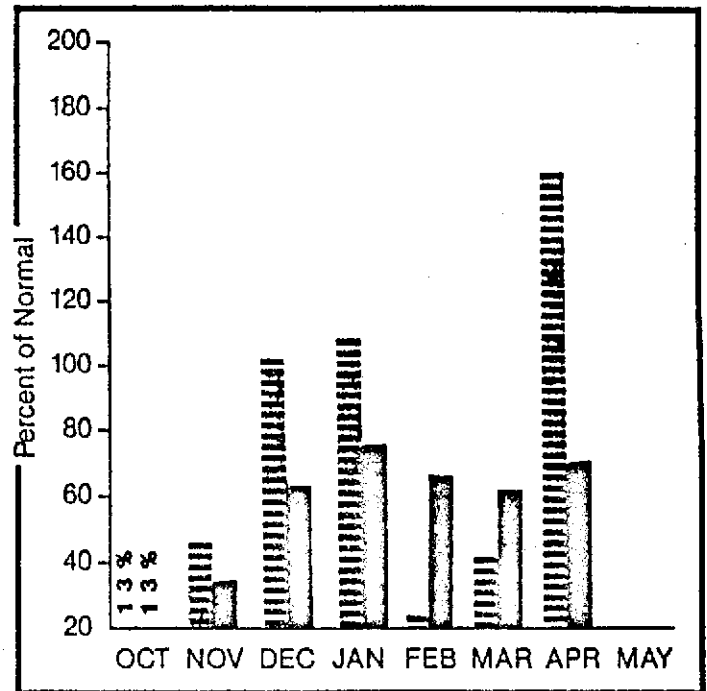
NORTHERN GREAT BASIN

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

Maximum Average
 Minimum Current

Monthly precipitation Year to date precipitation

NORTHERN GREAT BASIN

Snowpack conditions on May 1 remain well below average. Snow water content in the Bidwell Creek Watershed is about 44% of average and 152% of last year. The Quinn River Watershed is about 26% of average and 118% of last year. Overall, the Northern Great Basin has 38% of the May 1 average and 143% of the water content present last year at this time. April precipitation in the Northern Great Basin was 159% of average and 241% of last year. Precipitation since October 1, 1987 is 70% of average and 108% of last year's total precipitation figures at this time. Streamflow forecasts indicate well below average flows for the April - July forecast period. Bidwell Creek near Fort Bidwell is expected to flow at 36% of normal or 4300 acre feet.

More information contact your local Soil Conservation Service office.

NORTHERN GREAT BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
BIDWELL CREEK nr Fort Bidwell	APR-JUL	12.0	4.3	36	8.0	67	1.0	8
DEEP CREEK nr Cedarville, Ca	APR-JUL	3.6	1.3	36	2.0	56	0.5	14
EAGLE CREEK nr Eagleville, Ca	APR-JUL	4.3	1.7	40	3.0	70	0.4	9
MILL CREEK nr Cedarville, Ca	APR-JUL	4.1	1.3	32	3.0	73	0.4	10
QUINN RIVER nr McDermitt, Nv	APR-JUL	16.0	3.0	19	10.0	63	1.0	6
E. FORK QUINN RIVER nr McDermitt	APR-JUL	10.4	2.5	24	7.0	67		-9
MCDERMITT CREEK nr McDermitt	APR-JUL	14.4	3.5	24	9.0	63	1.0	7

RESERVOIR STORAGE

(1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
					BIDWELL	1	0	0
					MILL CREEK	1	0	0
					DEEP CREEK	1	0	0
					EAGLE CREEK	1	0	0
					QUINN RIVER	0	0	0
					E. FORK QUINN	0	0	0
					MCDERMITT CREEK	0	0	0

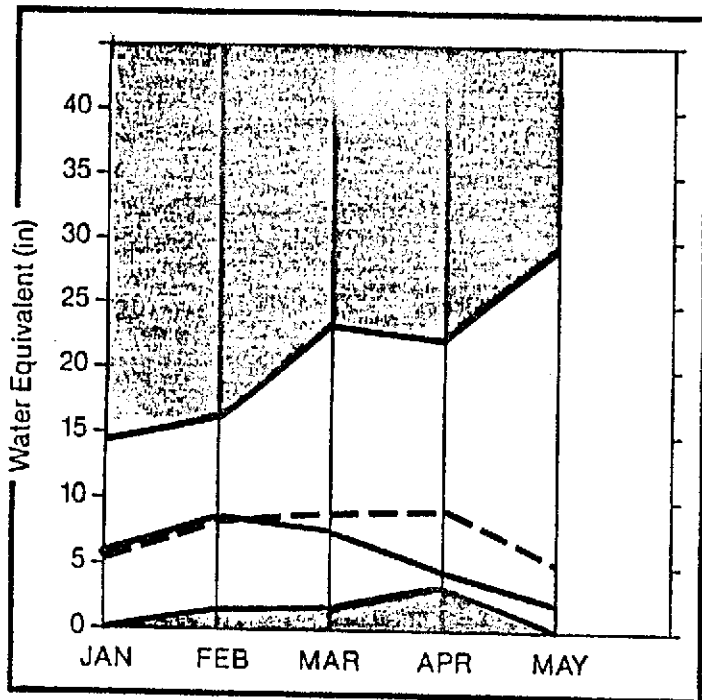
1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.

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The average is computed for the 1961-85 base period.

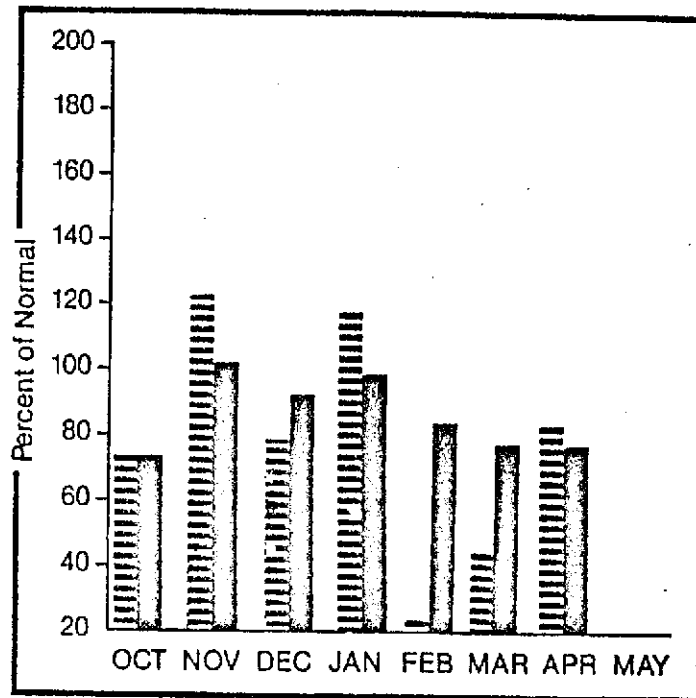
HUMBOLDT BASIN

Mountain snowpack* (Inches)




*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

Maximum  Average 
 Minimum  Current 

Monthly precipitation  Year to date precipitation 

HUMBOLDT BASIN

Snowpack conditions on May 1 remain well below average. The Upper Humboldt River Basin has about 29% of the May 1 average and 263% of the water content present last year at this time. The Lower Humboldt River Basin currently has 52% of average and 200% of last year. April precipitation in the Humboldt River Basin was 83% of average and 360% of last year. Precipitation since October 1, 1987 is 77% of average and 136% of last year's total precipitation figures at this time. Reservoir storage is 62% of average. Total storage for Rye Patch Reservoir is 79,350 acre feet. Streamflow forecasts indicate well below average flows for the April - July forecast period. The Humboldt River at Palisade is expected to flow at 13% of normal or 35,000 acre feet.

For more information contact your local Soil Conservation Service office.

HUMBOLDT BASIN

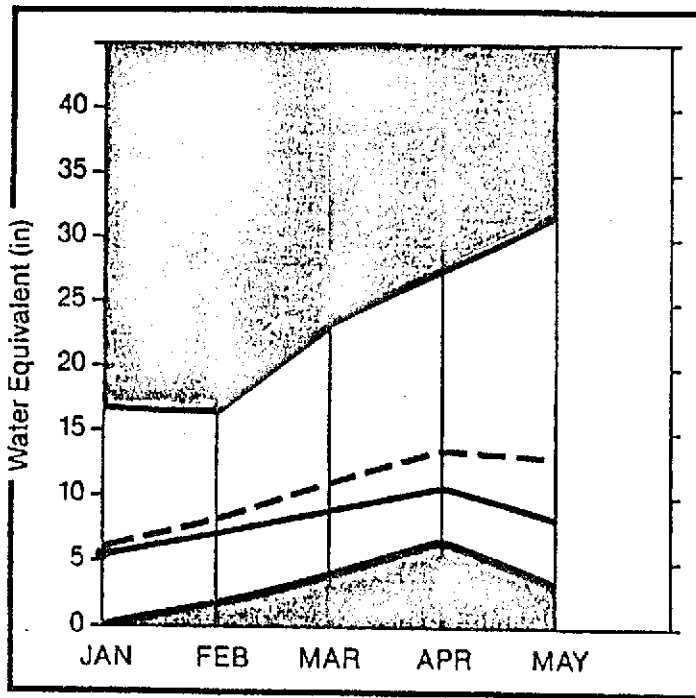
STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
HUMBOLDT RIVER at Palisade	APR-JUL	269.0	35.0	13	265.0	99	15.0	6
HUMBOLDT RIVER at Comus	APR-JUL	229.1	15.0	7	260.0	113	5.0	2
S FORK HUMBOLDT RIVER at Dixie	APR-JUL	71.5	30.0	42	91.0	127	10.0	14
NF HUMBOLDT RIVER at Devils Gate	APR-JUL	34.3	10.0	29	35.0	102	3.0	9
MARY'S RIVER nr Death	APR-JUL	24.4	12.2	50	26.0	107	5.0	20
MARTIN CREEK nr Paradise Nv	APR-JUL	19.0	5.0	26	13.0	68	1.0	5
LAMOILLE CREEK nr Lamoille	APR-JUL	29.5	13.0	44	24.0	81	2.0	7
REESE RIVER nr Lone Nv	APR-JUL	7.8	5.0	64	12.0	154	2.0	26
L. HUMBOLDT RIVER nr Paradise Valley	APR-JUL	12.5	3.0	24	8.0	64	1.0	8
ROCK CREEK nr Battle Mtn.	APR-JUL	22.0	1.0	5	20.0	91	0.4	2

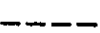
RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	THIS YEAR	** USEABLE STORAGE LAST YEAR	** AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE	
RYE PATCH RESERVOIR	194.3	79.4	136.5	128.1	LAMOILLE CREEK	0	0	0
					S. FORK HUMBOLDT	0	0	0
					MARY'S RIVER	4	191	74
					N. FORK HUMBOLDT	0	0	0
					HUMBOLDT Rv. at Palisades	0	0	0
					HUMBOLDT RIVER at Comus	0	0	0
					LITTLE HUMBOLDT RIVER	0	0	0
					MARTIN CREEK	0	0	0
					REESE RIVER	0	0	0
					ROCK CREEK	0	0	0

Snake & Owyhee Basins

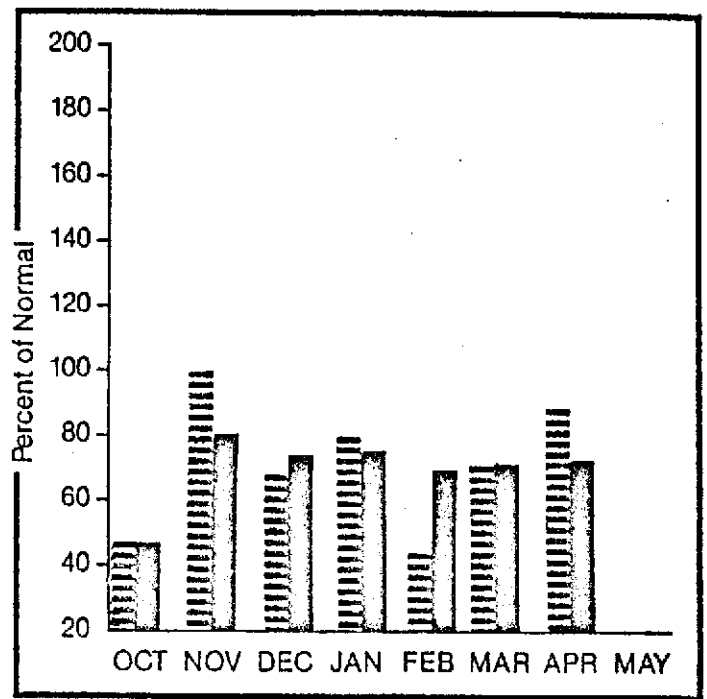
Mountain snowpack* (Inches)




*Based on selected stations

Maximum  Average 
 Minimum  Current 

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation  Year to date precipitation 

Snake & Owyhee Basins

Snowpack conditions on May 1 range from below average to well below average. The Snake River Basin has about 74% of the May 1 average and 191% of the water content present last year at this time. The Owyhee River Basin currently has 31% of average and last year at this time the sites in the basin were reporting no snow. April precipitation in the Snake-Owyhee Basin was 88% of average and 219% of last year. Precipitation since October 1, 1987 is 72% of average and 137% of last year's total precipitation figures at this time. Reservoir storage is 93% of average. Total storage for Wildhorse Reservoir is 32,440 acre feet. Streamflow forecasts indicate well below average flows for the forecast period. The Owyhee River near Owyhee is expected to flow at 44% of average or 38,000 acre feet during the April - July period.

For more information contact your local Soil Conservation Service office.

SNAKE & OWYHEE BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
OWYHEE RIVER near Gold Creek	APR-JUL	27.8	13.0	47	28.0	101	3.0	11
	MAY-JUL	13.9	6.4	46	12.5	90	1.5	11
OWYHEE RIVER nr Owyhee	APR-JUL	86.0	38.0	44	85.0	76	11.0	13
S FORK OWYHEE nr White Rock, Nv	APR-JUL	83.0	43.0	52	69.0	83	17.0	20
SALMON FALLS CK nr San Jacinto	MAR-JUL	97.0	60.0	62	90.0	93	20.0	21
	MAY-JUL	62.0	37.0	60	60.0	97	13.0	21

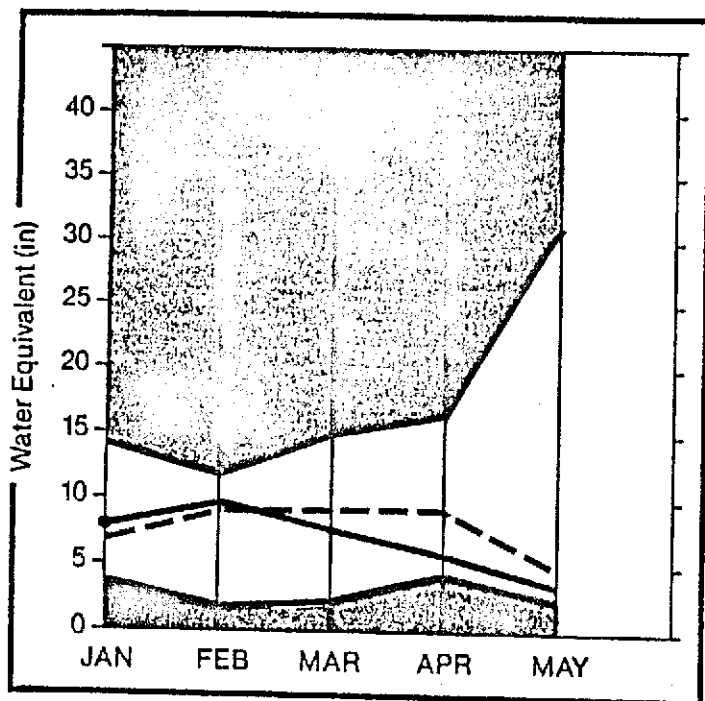
RESERVOIR STORAGE (1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
WILDHORSE RESERVOIR	71.5	32.4	45.4	34.7	OWYHEE RIVER nr Owyhee	1	311	55
					OWYHEE Rv. nr Gold Creek	0	0	0
					S. FORK OWYHEE RIVER	1	311	55
					SALMON FALLS CREEK	3	206	72

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
 2 - Corrected for upstream diversions or changes in reservoir storage.
 The average is computed for the 1961-85 base period.

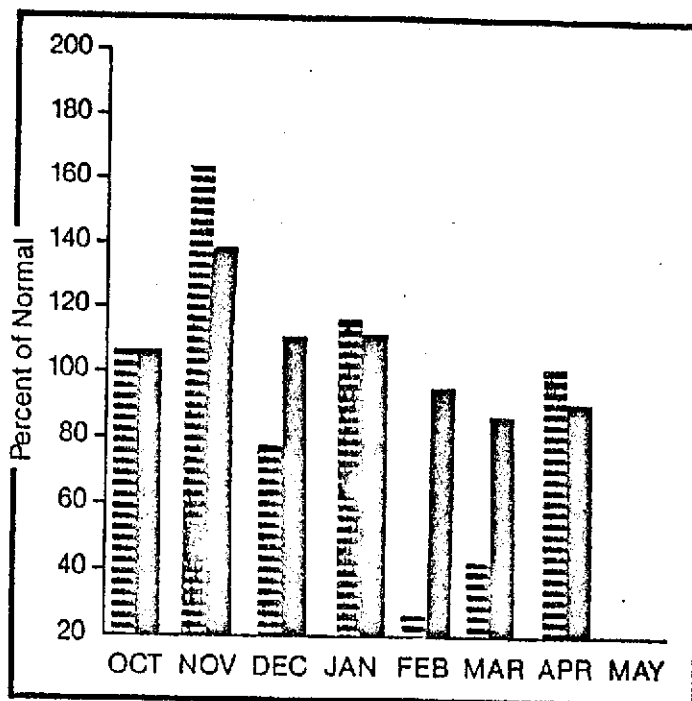
Mountain snowpack* (Inches)



*Based on selected stations

Maximum Average
 Minimum Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation Year to date precipitation

EASTERN NEVADA

Snowpack conditions on May 1 are below average. The sites in the Franklin River Basin are reporting no snow at this time. The snowpack in the Kingston Creek Basin is about 78% of average and 200% of last year. Overall, the Eastern Nevada Basin has 77% of the May 1 average and 483% of the water content present last year at this time. April precipitation in the Eastern Nevada Basin was 101% of average and 438% of last year. Precipitation since October 1, 1987 is 90% of average and 157% of last year's total precipitation figures at this time. Streamflow forecasts indicate well below average flows for the April - July forecast period. The Franklin River near Arthur is expected to flow at 44% of normal or 3000 acre feet.

For more information, contact your local office.

EASTERN NEVADA

STREAMFLOW FORECASTS

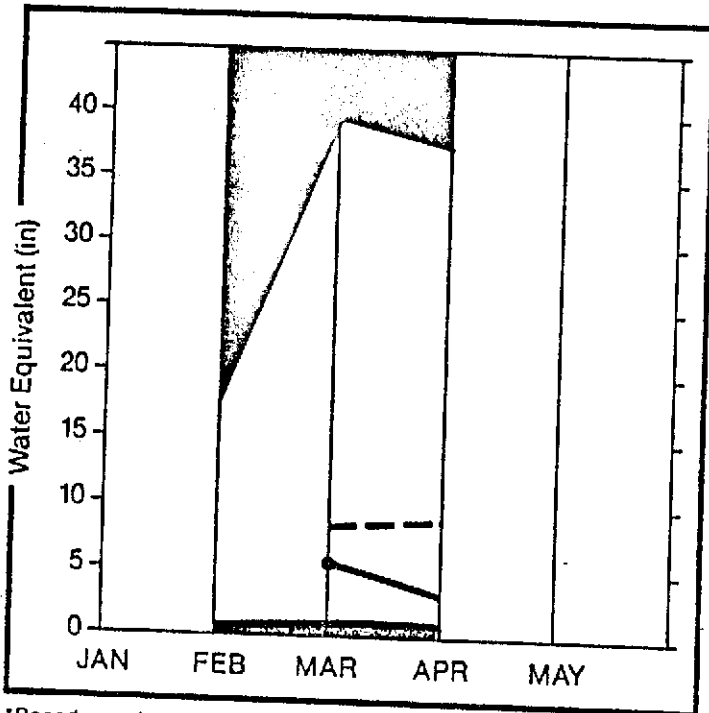
FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
STEPTOE CREEK nr Ely	APR-JUL	3.2	2.0	62	5.0	155	1.0	31
KINGSTON CREEK nr Austin, Nv	APR-JUL	4.2	2.7	64	6.0	142	1.0	24
FRANKLIN RIVER nr Arthur	APR-JUL	6.9	3.0	44	9.0	131	1.0	15

RESERVOIR STORAGE (1000AF)		WATERSHED SNOWPACK ANALYSIS					
RESERVOIR	USEABLE CAPACITY : THIS YEAR	** USEABLE STORAGE ** LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
				FRANKLIN RIVER	0	0	0
				KINGSTON CREEK	0	0	0
				EASTERN NEVADA	0	0	0
				STEPTOE VALLEY	0	0	0

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 2 - Corrected for upstream diversions or changes in reservoir storage.
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SOUTHERN NEVADA

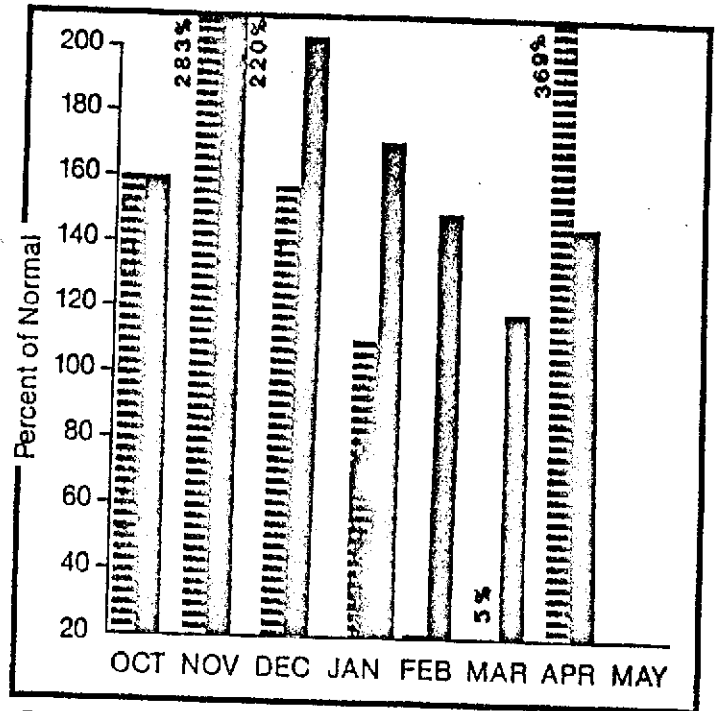
Mountain snowpack* (inches)



*Based on selected stations

Maximum Average
 Minimum Current

Precipitation* (percent of normal)

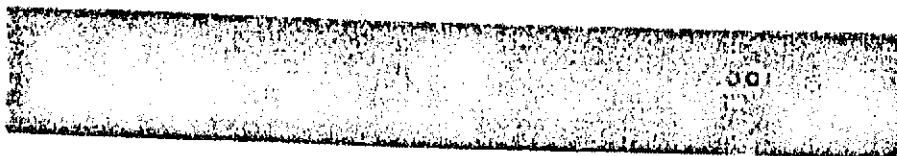


*Based on selected stations

Monthly precipitation Year to date precipitation

SOUTHERN NEVADA

Snowpack conditions on May 1 in the Virgin River Watershed are below average. Snow water content in the Virgin River Watershed is currently 88% of average and 148% of last year. April precipitation in the Southern Nevada Basin was 369% of average and 315% of last year. Precipitation since October 1, 1987 is 145% of average and 144% of last year's total precipitation figures at this time. Reservoir storage is 124% of average. Total storage for Lake Mohave and Lake Mead is 27,969,000 acre feet. Streamflow forecasts indicate the Virgin River near Hurricane, UT will flow at 118% of average or 80,000 acre feet during the April - July forecast period.



SOUTHERN NEVADA

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
VIRGIN RIVER near Hurricane, UT	APR-JUL	68.0	80.0	118	113.0	166	47.0	69
	MAY-JUN	43.8	50.0	114	70.0	160	30.0	68
LAKE POWELL inflow	APR-JUL	8086.0	6300.0	78	8160.0	101	4600.0	57

RESERVOIR STORAGE (1000AF)		WATERSHED SNOWPACK ANALYSIS						
RESERVOIR	USEABLE CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
LAKE MOHAVE	1810.0	1774.2	1728.2	1675.0	VIRGIN Rv. at Littlefield	4	148	88
LAKE HEAD	26159.0	24144.0	24043.0	19278.0	VIRGIN Rv. at Hurricane,	4	148	88

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 2 - Corrected for upstream diversions or changes in reservoir storage.
 The average is computed for the 1961-85 base period.

RECOMMENDATIONS FOR DROUGHT MITIGATION

It should be emphasized that local and private initiatives are primarily responsible for reducing the effects of drought. The role of the state is generally limited to providing the best water supply information available and coordinating intergovernmental activities.

The bottom line through the following recommendations is that water savings should go into a "reserve pool" to be used during dry years. Also, except where specific geographic locations are noted, these are Statewide recommendations.

1. Priorities need to be established for uses of water during droughts. This should be done by local governments.
2. Public awareness about good year-round water conservation practices should be increased, with education programs for schools, through the use of handouts, brochures and mailings, public information meetings, regular contact with the news media and lectures, etc. We recommend that this be done by the various public entities involved.
3. We encourage an inter-state allocation settlement and joint management for inter-state groundwater basins. Present disputes should be quickly resolved.
4. New storage facilities should be built where appropriate and feasible, and present storage facilities should be enlarged where necessary.
5. There should continue to be evaluations of the feasibility of water importation from nearby sources.

6. Xerophytic landscaping should be used in place of lawns in non-residential areas, and all residents should be encouraged to use more drought resistant plants in their yards and water saving devices on their plumbing. Local governments should be requested to review current ordinances regarding plumbing codes and landscape requirements.
7. Winter-time orographic operational weather modification should continue in the Sierra Nevada, and be on an "as needed" basis in other watershed areas. Monies for research and development should not be included.
8. In order to make for a more homogeneous system of water allocation, consolidated water districts should be put in place of present fragmented districts.
9. During drought periods, the State Engineer should be able to allow temporary groundwater pumping to alleviate dust control for mining, construction and development activities.
10. The next session of the Nevada Legislature should consider the issue of the prohibition of water meters in applicable areas of the State.
11. The Board on Financing Water Projects created by AB 251, should continue to support the financing of water projects and the development of water for Nevada. The State Department of Natural Resources and Conservation should administer this board.
12. We encourage good year-round water conservation practices, by all Nevadans, whether it be in the home, on the farm, or in industry.