DRAFT

MINUTES OF THE

BEAR RIVER COMMISSION

REGULAR MEETING

November 24, 1986
11:00 a.m.

First Floor Auditorium
Department of Natural Resources Building
1636 West North Temple
Salt Lake City, Utah

THOSE PRESENT

UNITED STATES
Kenneth T. Wright, Chairman
and Federal Representative

WYOMING COMMISSIONERS
George L. Christopulos
J. W. Myers
S. Reed Dayton
John Teichert (Alternate)

IDAHO COMMISSIONERS
Daniel Roberts
Don W. Gilbert
Rodney Wallentine
Kenneth Dunn, Ex-officio Director
Idaho Dept. of Water Resources

UTAH COMMISSIONERS
D. Larry Anderson
Blair R. Francis
Calvin Funk (Acting)
Dean Stewart (Alternate)

LEGAL COUNSEL
E. J. Skeen

ENGINEER-MANAGER
Wallace N. Jibson

SECRETARY
Geralee Murdock (Acting)

OTHERS IN ATTENDANCE

UTAH
Robert L. Morgan, State Engineer
Dr. Norman E. Stauffer, Division of Water Resources
Lloyd Austin, Division of Water Resources
Bert Page, Division of Water Resources
Robert M. Fotheringham, Division of Water Rights
Carly Burton, Utah Power and Light Company
Jody Williams, Utah Power and Light Company
Robert W. Hill, Utah State University
Russ Cruff, U.S. Geological Survey

IDAHO
Hal N. Anderson, Idaho Department of Water Resources

WYOMING
Mike Ebsen, Hydrographer
Marvin Bollschweiler

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CHAIRMAN WRIGHT: Let's call the Bear River Commission Meeting to order. Larry Anderson had an idea of taking a visit to the new pumping station for the Great Salt Lake Basin, but in the interest of time and everything else we just couldn't get around to it. It's still a possibility for this coming April, if we kick off the Bear River Commission meeting at 8 a.m. in the morning. It might make it tough for some of you guys to get here but we could get it over with, hopefully in 2 hours, and take a tour of the pumps that are being placed out in the flat to the tune of $60 million. We could take a tour of it and Larry says we can get back here by 6 o'clock. That's something to consider for our April meeting. If there's any interest in something like that please raise your hand. Larry will send out a letter saying we'd like to do this and sign up for it. If you don't want to go, the meeting will still be at 8 a.m.

We've made one change in the agenda. We have some people here from the State of Utah to talk about the pumping project and we'd like to put it up following the Report from the Engineer-Manager, that's #11 and we'd like to make it #7 so those fellows can get to another meeting.

Wally, will you read the synopsis of the minutes?

WALLACE JIBSON: (A summary of the April 21, 1986, Annual Meeting minutes was read. Copy attached) We did have a few minor corrections in the minutes as first circulated but I believe Nancy corrected those that I gave her and the general circulation of the Commission had the corrections in.

CHAIRMAN WRIGHT: Are there any additions or corrections to the Minutes. All those in favor of approving the Minutes say aye, opposed. No one opposed so they are approved as prepared.

REPORT OF TREASURER

LARRY ANDERSON: Let me ask Mr. Bert Page of our office to give that report today.

BERT PAGE: We're talking about two different fiscal years here so make sure both of these copies get all the way around so everyone has one of each. (Copy attached)

The one I want to talk about first of all at the top of the page says the period July 1, 1985, to June 30, 1986. The way these meetings fall we cross over fiscal years every other meeting. This first sheet is the report for that fiscal year that ended after last meeting. I won't go into a lot of detail unless there are questions but you'll notice you had a total income including the $42,000 assessment from each state of $235,000 plus, after expenses were taken out we ended up with $129,000.

On the back of that sheet are the details of the expenditures and the various items the money has been used for. The balance ending at the bottom is the same as the front of the sheet. Are there any questions?

The other sheet you have there with you is for the fiscal year we're presently in, it goes through the end of October. You started with the $129,000 balance, we have added $2,000 in interest income. All 3 states' assessments are presently in, but at that point in time Utah's was the only one that was in before the end of October - Wyoming's and Idaho's are now in also, but they aren't reflected in this time period.

Expenditures that have come out of here so far are very minor. There's a check for personal services and for legal consultant for $500. We have sent a check to the auditor for $625 this morning. I have the audit here we'll talk about it in just a moment. We paid the U.S. Geological Survey $65,000, which was the budgeted amount. There are three expenditures shown on the back, and we presently have a cash balance of $100,000. There will be $70,000 more because of the two states' checks coming in this month. Mr. Chairman, unless there are questions, that is the financial report.

CHAIRMAN WRIGHT: Are the stream gaging expenditures made in one lump payment?

BERT PAGE: Every September we get a bill from the U.S. Geological Survey and we pay that and it's for the prior fiscal year. Our year ends the first of July and we get a bill in September. We pay the bill and then we're good for another year.

CHAIRMAN WRIGHT: Next year we'll pay a bill of $35,000 based upon the 17 measuring stations.

BERT PAGE: Yes.

GEORGE CHRISTOPULOS: I'll make the Motion to approve the Treasurer's Report.

DAN ROBERTS: I'll second it.

CHAIRMAN WRIGHT: Any discussion? All in favor, opposed? MOTION CARRIED.

BERT PAGE: Each of you should have in front of you a copy of the audit. You will probably want to take one back with you for each of your governors. Wally will want to send one to the President. There are extra copies. This audit came back to us about a week ago. I thought I'd surprise you and have it back ready for meeting this week. There's not an awful lot to say about an audit except that it's my understanding they've gone through and said you've done a nice job, ought to have a raise. The auditors found no problems with our accounting procedures. The kind of work we do here there's not a lot of problems that could arise. When they brought it back originally we had one little correction on it, they wanted to call "contractual services", "geological services". I explained that Wally did more than that. They changed that wording and the audit is as it now stands.

WALLY JIBSON: I've always had one little criticism of these audit reports. They always spell "gage" "gauge", and the Survey quit using that quite some years ago.

LARRY ANDERSON: If there are any questions, after you've had a chance to review the financial report, if you want to bring them up at our April meeting that would be fine since no one has had a chance to read this yet.

ENGINEER-MANAGER REPORT

WALLY JIBSON: Please distribute these copies. I'd like to mention that Ted Arnow of the U.S.G.S. has retired and Russ Cruff is here with us today acting as District Chief for the Utah District.

He read the Regular Meeting report. (Copy attached)

KEN WRIGHT: Is there any discussion relative to the Engineer-Manager Report and the changes that have been made, which I guess are the 18 to 17 in terms of the measurement stations and the division of the payment to Bob Hill from $36,120 to $27,090.

WALLY JIBSON: Plus the inclusion of the depletion study that we started. We approved it last April. As a matter of fact there are no major changes in there that were not approved in April.

LARRY ANDERSON: I move we approve the Engineer-Manager's Report.

REED DAYTON: I second it.

CHAIRMAN WRIGHT: All those in favor, opposed? MOTION CARRIED.

REPORT ON WEST DESERT PUMPING PROJECT

LARRY ANDERSON: Since you couldn't make it out to the West Desert Project today I felt the next best thing was my show and tell. (He gave a slide presentation on the Great Salt Lake and the West Desert Pumping Project.) (Summary attached)

REPORT OF COMMITTEES

U.S.G.S. Gaging

BOB MORGAN: I'd like to tell you just exactly what's happening with the gaging stations. We identified three different groups of gaging stations on sites directly needed, sites indirectly needed and sites not funded by the Commission. Those sites not funded by the Commission total 15 and of those 15, to date two of them have been picked up by someone other than the Commission. The Utah Division of Water Resources has picked up the Little Bear below Davenport Creek and Blacksmith Fork near Hyrum. The remainder of those 13, it is my understanding, are not being gaged and those records are not being kept as of September 30, 1986.

In addition, there is an agreement between the State of Utah and the State of Wyoming concerning the Chapman Canal. The State of Wyoming agreed to provide personnel to read that gage on the Chapman Canal, and if the existing gage cannot be retained at that site, the State of Utah will supply an A35. That site will be rejuvenated and the records will be kept by Wyoming and the materials if needed will be supplied by Utah.

CARLY BURTON: I have some information to add. Utah Power and Light has also reviewed its stream gaging program on the Bear River. That program is quite extensive. We've looked at two locations where we think stream gaging work could be discontinued. We wanted to bring this up today. Those two locations would be maintaining a record of the flows of the tributaries to Soda Reservoir, that's one location, and the other location would be Bear River at Harer. Let me just go over some information here. The tributaries to Soda Reservoir, we just get a

stream gaging measurement every six weeks when our people visit all the stations up in that area. We produce a record by interpolating between measurements. That is not a published record. We don't feel we need to continue maintaining a record there because we maintain the station just above Soda Reservoir - Bear River at Soda Springs, and we also maintain a continuous record just below Soda Reservoir, which is Bear River at Alexander. We think we are duplicating some work there. We have talked with Bear River Water Commissioner at District 11. He did not have a problem with us discontinuing that work. I don't know if anyone in this group would have a problem with that or any questions. Don, does that cause you folks a problem?

DON GILBERT: I'm not sure.

CARLY BURTON: You may want to talk with your people to see if that would cause a problem. We think that with the two stations on the Bear River that we are maintaining, Bear River at Soda Springs and Bear River at Alexander below Soda, that would provide sufficient information.

The other station is Bear River at Harer. That is a published record that Utah Power and Light works up and furnishes to USGS for publication. We think that station can be discontinued, at least for our needs. I'm not sure about some of the other agencies. We have touched base with the USGS people and they don't have a problem with that. I don't believe there's a problem with the administration of the Bear River Compact. It isn't mentioned in the Compact anywhere - Bear River at Pixley Dam, the Stateline gage, and Stewart Dam are mentioned in there but I don't think there's any mention of Harer, is there Wally?

WALLY JIBSON: No. I don't think there will be a problem.

CARLY BURTON: We had a meeting with the SCS, and the Bear River at Harer is a forecasting point for the SCS and the National Weather Service. In 1983 Utah Power and Light developed its own runoff model for Bear River at Stewart Dam which is located a few miles downstream. Bear River at Stewart Dam, of course, is the point where Utah Power and Light diverts the water from the Bear River into Bear Lake. Whenever we received the runoff forecasts from the SCS, we had to adjust those forecasts somewhat for two reasons - one the forecast period for Bear River at Harer is April through September. Since Bear Lake usually peaks in June or July, the August and September forecast period really isn't a concern to us. We would always have to adjust the flows to see what we would get in that April to July period. We feel more comfortable with that, also we had to adjust the flows for inflows and irrigation down to Stewart Dam. We developed this runoff model and we think it's a pretty good one and it's a lot handier tool for us to work with in administering the flows of the Bear River and the Bear Lake. The SCS has agreed to change their forecasting point to the Bear River at Stewart Dam. We've also been in touch with the National Weather Service and they don't seem to have a problem with it. At this point we feel good about discontinuing the record at Bear River at Harer.

WALLY JIBSON: I suppose the SCS would use Rainbow Canal as part of Stewart Dam. If it's just Bear River at Stewart Dam it doesn't mean anything.

CARLY BURTON: No, it's Bear River below Stewart plus the Rainbow. In effect we're moving that flow a short distance up to the dam. Basically, that's our conclusion of those two stations. I think Bear River at Harer is the critical one because it's a public record. It's used extensively by different agencies, but I think we've covered the bases, hopefully and if no one in this group has a problem with that we will probably discontinue that station. We still have the recorder in there, but I wanted to wait until this meeting before we made a final decision.

GEORGE CHRISTOPULOS: I think we're squared away on the Sulphur Creek Station. I don't know whether you want me to report that. There's been a mixup to where two new Sulphur Creek Stations were going to be installed, one above Sulphur Creek Reservoir and one below adjacent to the two stations already operated by the Commission. Through a mixup they were going to continue to operate all four stations for five years. That duplication of effort has been stopped. The Wyoming Water Development Commission is going to give us two new stations and eliminate the two old ones. The new stations will still continue to be operated by the Bear River Commission.

WALLY JIBSON: George, as I understand it from talking with John Shields the two current stations would have had to have been moved. The upper one would have been inundated and the lower one would have missed the spillway flows. It isn't quite a duplication of effort as we first thought since they would have had to have been moved anyway.

GEORGE CHRISTOPULOS: All we did was get them moved and rehabilitated.

WALLY JIBSON: Are they in yet?

GEORGE CHRISTOPULOS: I'm not sure they are completely in. If they are not, they will be.

WALLY JIBSON: Russ, have you had any further contact?

RUSS CRUFF: As far as I understand, the permanent gage houses on those two will be put in in the spring. Until that time, they will either use temporary gaging stations or we'll operate the old ones until they get the cinder block houses in and then we'll start the operations from the new site.

WALLY JIBSON: So, you've worked this out with the Wyoming GS so that as far as the Bear River Commission is concerned we'll just continue to include them in our co-op program.

RUSS CRUFF: That was the understanding I had. My feeling was that it was between you and the Wyoming agency, whichever way we were in agreement. If you went this way, then that's the way we would continue to operate.

LARRY ANDERSON: Bob, would you give us an updated table of the ones retained and the ones dropped for the April meeting or perhaps it could be included with a set of these minutes.

BOB MORGAN: I'll prepare a sheet and have it included with the Minutes of this meeting. (Copy attached)

1976 Depletion Study

BOB FOTHERINGHAM: Here is a copy of a summary of the states progress on the depletion study. (Copy attached) Basically the first paragraph indicates the contract was signed by the three states. Most of all of the Tasks 1 - 3 are completed by the states. Just to quickly brief you on what those tasks were - Task 1 was a review of the maps and reports on the Bear River Basin - Task 2 was the acquisition of that on a 1:100,000 scale - Task 3 is basically concerned with digital production. Idaho's probably further ahead than either Utah or Wyoming on that. Basically all three states are into the project. As far as I can tell the committee is on track and will complete the project at the estimated target date, October of 1987. I don't see why that can't be accomplished as of right now.

The second sheet is the State of Utah's tasks that have been completed. Basically on Task 1 we've reviewed all the data that's available, and come up with some low altitude photography that we thought we would use with the 1986 Water Resources data. The Division of Water Resources is digitizing those maps, and so we're going to use that and make our changes from the water rights data base. Task 2, we're currently digitizing and we're also going through our water rights to determine those additional areas that would cause depletions to the Bear River system. Task 3, we've got the AGR developing the method to put the public land survey system on the data base, and we also have collected all of the tabular data for municipalities.

The next page indicates a time line and identifies Task 1 a little bit more definitely. Working with Idaho is going to be fairly important to Utah because we're going to use the satellite classification to help

us identify our water rights. The data base may not pick up some of the changes.

Just a quick synopsis on the State of Wyoming, which is on the last page. They are in about the same position that Utah is right now. They've gone through and developed the system of what photography they are going to use to analyze and digitize, coming up with the public land surveys they can put into the systems without working on their water rights accounts. If there aren't any questions, I'll let Hal talk about what Idaho's doing.

HAL ANDERSON: I don't have a whole lot. Some of these are different. The first or second page has basically the progress we are making in Idaho. The work we're doing is kind of an extension of some of the work that we started in Idaho in 1980. What we have been doing is improving that and going through that 1980 data. We redefined some of our categories to make sure they were accurate, especially concentrating on the border areas between Utah and Wyoming, and we have sent copies of that mapping out to the various states. Bob Fotheringham and John Shields have received that information and are using that as a basis. What they will do is extend the lines that you see listed on the Idaho page Task 2. These are the categories that we've delineated on our base maps, and these were delineated from photo interpretation, not the landsat data but from a photo interpretation; and that's what the other states are going to be doing also. If they can't get it from aerial photo, then we will go to the landsat data to also come up with this stratification and we'll classify in that. Remember what this is going to be doing, is establishing a common series of landuse categories among

all the states. Some of these might be grouped. Then what we will do is use the satellite data which is consistent among all the states. The data that might be used to develop these strata boundaries, the aerial photography won't be consistent because we all have different types and different sources available to us. But we will use a common classification scheme with lines extending between the states, and then we will use the synoptic system landsat data over the top of that to make sure we look at each individual acre and to help us assure that we have consistency among all the states. We've been concentrating quite a bit on that particular aspect of it - the photo interpretation and the landsat classification - anticipating the work that's going to be upcoming here very soon with Utah and Wyoming. About the first part of the year is when we're scheduled to start coming up to Idaho or possibly having some meetings here to make sure that we've got all of this base mapping landuse stuff taken care of. Then we'll start going through the process of working with the satellite data at that point.

Mr. Anderson then showed slides to show the progress he's been discussing.

I also brought a landuse map that we have delineated in Idaho, the ones we are doing with all four of these strata maps. These are the photo interpreted landuse categories for Bear River Basin, for the portion in Idaho. We have also captured these data digitally, in other words, we've digitized them and converted those into our computer readable data and they are now in our system and we are trying to work out. One of the things that's going to be happening tomorrow is we will meet with the Utah AGR people and talk about specific formats of that data, how they need the data here, and what we need up there as far as

making our data sources compatible. You look on here down at the bottom right hand corner, and you see in gray the upper end of Bear Lake and the dark blue areas are the wet land areas north of the Bear Lake. Each one of those colors up there represents a different landuse category. We will make it more detailed. We will use that as an overlay when we do the satellite classification within each of those green areas, yellow areas and red areas that you see up there. We will then be doing an individual acre-by-acre assignment to either an irrigated or non-irrigated category.

I did bring a map representation of that same data right over there on the table so you can look at that and see what the source information was as far as a map product goes. Are there any questions on where we're going?

UPDATE ON CONSUMPTIVE USE STUDY BY UNIVERSITIES

BOB HILL: By way of a brief progress report (copy attached) the automated weather data stations were established during April and May at Montpelier, Idaho; Randolph, Utah; and Hilliard Flats, Wyoming. As a postscript we have now got the Randolph, Utah weather station in a permanent position and have it hooked up to a telephone line so we can bring in real time data into the USU campus. We may want to talk to Idaho and Wyoming and see if they would be interested in doing similar things with their two sites as well.

These sites were visited weekly beginning in May and continued through mid-October. Examples of weather data are shown in figures 1, 2, and 3 for Montpelier, Randolph and Hilliard Flats. Those 3 figures show

maximum and minimum daily temperatures and solar radiation for the period of time we had the information, 1986. As I mentioned the Randolph station will now become a 12 month station, which we will leave out and bring in the information on the telephone as well as the tape recorder. This is preliminary analysis. I'm not convinced that all the data is correct. We have not checked for accuracy, but it should give you some indication of what was happening.

The August minimum temperatures at Hilliard compared to Randolph look a little strange to me. It was a lot warmer in Hilliard than it was at Randolph. I'm not sure that's quite right.

The measurement of water use by meadows in the non-weighing lysimeters at Montpelier, Randolph and Hilliard was continued from May through mid-October, 1986. Figures 4 and 5 show monthly lysimeter ET at the three sites. Two new lysimeters were installed near the end of May in Montpelier, by July the grass appeared to be established. The qualification of the data shown in all the figures is preliminary. To date, we have not made a correlation analysis between the empirical ET equations and the 1986 lysimeter data.

(Mr. Hill showed slides of installing the two new lysimeters.) As another note we've installed another weather station up on Smiths Fork, we've since moved this station. In fact Friday, I was up moving this weather station down closer to the new gage location. For those of you not familiar with those weather stations, wind speed, wind direction, solar radiation, air temperature and humidity and we're also getting soil temperature, that's electronically monitored and then we are able to store this information on a tape recorder.

Our intent is to continue one more year of data collection as Wally explained. We had the funding level with one year's funding to carry the data collection for one more year through the summer of 1987, and then present the final report in April of 1988.

CHAIRMAN WRIGHT: You should be able to give us an interim report shouldn't you, Bob, in the next meeting?

BOB HILL: Our intent is to prepare a report for the April meeting as well.

UNFINISHED BUSINESS

CAL FUNK: Did the approval of the Engineer-Manager's Report also adopt the adjusted budget or do you need to do that separately?

WALLY JIBSON: We usually make a motion separately on that.

CAL FUNK: I so move, since there's been no discussion on it, that we adopt the adjusted budget that Wally gave.

DAN ROBERTS: I'll second it.

CHAIRMAN WRIGHT: All in favor, opposed? MOTION CARRIED.

CAL FUNK: In view of Paul Holmgren's resignation from the Board I would like to propose a resolution honoring the service he's given to the Commission. May I read that? (Copy attached).

CHAIRMAN WRIGHT: This goes in the minutes. Is there something else we can do?

ROD WALLENTINE: Mr. Chairman, I propose we buy a plaque or something as a token of honor for his services.

CHAIRMAN WRIGHT: I agree. I've still got that logo of the Bear River back in Chicago, which I promised to send out and did not do. I could take this and have this made up into a plaque.

GEORGE CHRISTOPULOS: I think that would be appropriate.
The Commission agreed unanimously.

CAL FUNK: I'd just like to report additionally, that I visited Paul last Wednesday evening. I was in Brigham and called and he answered the phone and he said "sure come on over" and he met me at the door. He was dressed in his high boots and he said he'd been out on the canal for 3 hours that day looking at projects they need to do. Paul has had a bout with liver cancer, and he said the Dr. told him that he was cured. He's weak and he said he had flu the week before and had to go to the hospital because of his weakened condition. He's also relinquishing his position on the canal company over there. They've had 144 miles of canal in that system, and he has been the president of that company for 14 years. He's

done all that and never had a dime of pay for his services, but I think that's probably the biggest resource in that valley is that water distribution system, as far as dollar value and contribution to the economy. Paul has done a magnificent job there. He sent the warmest greetings to everyone in the group here. He said he's enjoyed his service and he said he remembered the people, Griff Jenkins and the man from Montpelier that had gone on before, Ferris Coombs, and he especially remembers the Wyoming delegation. They've been there longer than anyone, and he sent his warmest greetings and looks forward to seeing you again.

CHAIRMAN WRIGHT: When this plaque is done I think it should be hand-delivered rather than mailing it.

LARRY ANDERSON: I'll work with the Utah group and we'll make sure he receives that plaque appropriately.

DAN ROBERTS: If he's able to attend, let's invite him to the April meeting.

CAL FUNK: I'll stay in touch and see how he's doing.

LARRY ANDERSON: Because of Paul's resignation Utah will be appointing a new commissioner, and the Board of Water Resources makes those appointments in the State of Utah. Sometime before the April meeting we'll be appointing someone to replace him.

I also visited with Paul on the phone and he indicated how much he has enjoyed the experience of being on the Bear River Commission. I'm sure he's going to miss the relationship of meeting with you and he indicated that. He indicated he wasn't feeling very good and thought this was the appropriate time to resign.

NEW BUSINESS

GEORGE CHRISTOPULOS: There's one item John Teichert called to my attention this morning that I'd like to pass by the Commission. He was asking a question concerning the operation of Woodruff Narrows Reservoir to provide some flood control down the river. Apparently one of the problems that has occurred in the recent years is the reservoir has been almost full at the end of the irrigation season and because of that begins to spill in the early spring. What John was talking about was the idea of making releases out of Woodruff Narrows when you know the snowpack is in the mountains to provide additional flood control space. If the reservoir owners want to release water and create some flood control space and take their chances of recapturing it, it doesn't bother us from the state law standpoint. I think John's concern was if there were any ramifications from the Commission's standpoint in doing this inasmuch as the water would be already in place and then you release it and recapture it. I don't really see any reason why that couldn't be done as long as they take their chances on getting it back. Anyone have any thoughts on that?

WALLY JIBSON: A few years ago, George, we discussed this idea of pulling a reservoir down and refilling it the same year. I posed the question to the Commission, particularly to the 3 state engineers if they had any problem with that. Dee was state engineer at the time and said Utah has no problem with it, and as I recall the other two had no problem with it. I have no problem with it.

GEORGE CHRISTOPULOS: It's just good sense to get some water out of there in order to try and protect the valley downstream. That's the whole purpose of this. If you get the water out ahead of time and reduce the flooding, I think that's what we're after.

DAN ROBERTS: Wally, I'd like to ask one question. I'm not sure of what I'm talking about either. I'll admit that to begin with. Our Foster Reservoir, they had it full last year. They decided at the end of the year it had to be let down so they dumped it. They let it out as fast as they could. The face of that dam slipped in on them and they had a big expense. That happened to two dams in Franklin County this year. I'm not an engineer but just listening on the sideline they said they had to let these down gradually otherwise that face of the dam was so saturated that when they let that water down so fast that it slipped into the dam and they had a big expense on two reservoirs there to rebuild the face of that dam.

WALLY JIBSON: I think this is quite common and to be expected. We've got some dam engineers around here today and they know more about it than I do, but this is a precaution anytime that you pull down a reservoir that you don't pull it too fast.

BLAIR FRANCIS: We dropped Woodruff Narrows last year but I don't know exactly what level it was. After the irrigation season we maintained a higher than average outflow from the dam. We felt that we'd pulled it down some. So we told Dan Peart to go up and stabilize the flow. We did that, and lo and behold the streamflow increased back up again and we're to spilling. We did make that effort. I think we are in a mode right now to drop it down to a point a few feet below the spillway. All of this is kind of academic in a big year. We're not talking about very much storage. I don't know what the impact would be. If you've got a big year you are going to have flooding downstream anyway.

WALLY JIBSON: You always have one problem, changing your flows in the winter. We experienced that a few years ago on Woodruff, and L.B. Johnson and I just about had to square off here in the meeting. ~~Parley~~ Darby mentioned the same thing, after freeze up you want to stabilize this; because if you drop the water out from under it after freeze up, your ice goes to the middle. Then the stock come in to drink and they end up in the middle and can't get out. The users up there realize this more than I do. You don't want to be changing that too much during the winter.

BLAIR FRANCIS: That's the problem we had about three or four years ago when we did the same thing. We didn't have the increase, but we put quite a bit of water in the river and then we got 30 below temperatures the week before Thanksgiving when we had the water still in the system and we caused a large ice jam. I think we acted quite prudently but we did draw it down to where it was below irrigation level. It stabilized but we just had that much more come in the inlet. We had a lot of rains that added to it and so that's where we're at right now.

JOHN TEICHERT: Some of the years we probably don't know until April what the forecast is going to be. I know that's been the case in these high flow years. Possibly if the river's broken up we could get some of that water out of there ahead of time, along in April, after the ice has broken up and take the peak off. It would help us, it would help the people down in Idaho above Bear Lake and all the way down the system.

WALLY JIBSON: It also helps you when they continue to pull it down after they are through irrigating.

CARLY BURTON: It would help us too. We think it's very prudent at the end of the irrigation season, within reason, to continue to release water which is somewhat in excess of the inflows. This is assuming you have a decent runoff year like we've had the last several. Take a year like 1983 and from Utah Power & Light's prospective, having storage capacity available up there in Woodruff would have helped our cause quite a bit at Stewart Dam. We overtopped Stewart Dam by a couple of hundred second feet. Just having a little bit more storage upstream would have really helped our cause. We think it would be good flood control.

CHAIRMAN WRIGHT: Who makes these decisions?

WALLY JIBSON: Certainly the Bear River Commission does not. I think primarily it's a decision of the reservoir owners.

CARLY BURTON: I would like to offer that if we can be of some assistance in helping you forecast anything in that nature, we would be glad to help you out because it helps us.

CHAIRMAN: Is there any other further new business?

RUSS CRUFF: I would like to make an announcement pertaining to the changes in the USGS since we are involved in the operation of these gages of the Commission. As you know, Mr. Arnow has been District Chief since 1966. I've been in service since 1970. They have now named the new District Chief Lee Case. He's coming up from New Mexico and will be here about the 20th of January. In conjunction with the changeover, Mr. Arnow retired in July and I'm planning to retire in December. There's going to be a considerable change in the operations. I will probably be back on a temporary appointment just to help with the changeover so he doesn't come in without any background on what's going on here. It will be a complete new regime in the Utah District of the Geological Survey in the next few months.

WALLY JIBSON: Our new co-op agreement, have we got that prepared yet?

RUSS CRUFF: No, we will be preparing it soon.

LARRY ANDERSON: We understand this will probably be Ken Dunn's last time representing Idaho as their Director of Water Resources. He's going to retire or is threatening to retire. If that is the case I'd like to express appreciation to Ken and I'm sure other Commissioners would too. If he comes back next time we'll reiterate our appreciation to him at that time. Ken, I've enjoyed working with you in the short time I've had to work with you.

KEN DUNN: I appreciate that. It's been enjoyable and my intent would be not to be back here in April.

LARRY ANDERSON: I move we adjourn.

GEORGE CHRISTOPULOS: I second the Motion.

Meeting adjourned at 11:55 a.m.

BEAR RIVER COMMISSION

ANNUAL MEETING

April 21, 1986

Summary of Minutes

Annual Meeting convened at 11:00 a.m. in Salt Lake City with Chairman Wright, all commissioners, and officers in attendance.

The Engineer-Manager summarized minutes of the Regular Meeting held November 25,1985 that , with one correction, were approved as circulated.

The Chairman's report requested that costs be held down where feasible in the overall look at economy in government.

Bert Page presented the Treasurer's report for the period, July 1, 1985 to March 31, 1986. Total income including cash on hand was $233,245 with expenditures to date of $68,094 leaving a cash balance of $165,151. The total USU contract amount, $36,120, is yet to be deducted along with some smaller amounts. (A further update as of June 30, 1986 shows a balance of $129,873.)

The Engineer-Manager report indicated another above-average water supply is expected in the 1986 season. He presented a tentative budget for 1987 and 1988 fiscal years which later in the meeting was approved with revisions.

Bob Morgan reported for the State Engineer's Committee on proposed changes in the stream-gaging program that were approved with Commission funding in the 1987 water year (1988 fiscal year) for 17 gaging stations with the remaining 15 stations to be discontinued or picked up by other agencies September 30, 1986.

Bob Fotheringham reported on the 1976 Depletion Study by the subcommittee. A memorandum with attachments from the Committee is a part of the minutes. Briefly, the memo and attachments evaluate three items requested for study, (1) a summary of standards and water-use classifications, (2) A flow chart showing tasks by each State along with a time table and (3) Budget estimates by States.

The report generated considerable discussion, particularly on item 3 that allocates charges to the Commission by each State in the completion of six tasks spread over fiscal years 1987 and 1988. Wyoming raised the question of equity in obligating Commission funds that were generated equally by each State to pay for the study to each State on an input basis with Idaho receiving an estimated 46%, Utah 36%, and Wyoming 18%. Nevertheless, a motion was passed to proceed by entering into a two-year contract with the three States for a not-to-exceed amount of $50,000 in 1987 and $42,000 in 1988 with the second year subject to further Commission approval.

Bob Hill gave an update on the Consumptive-use study in which the University group recommends an additional one-year funding of $36,120 to be spread over two more seasons for data collection with a completion date of April 1,1988. The proposal was approved.

Larry Anderson discussed and moved that assessments to each State be revised from $42,000 per year to $35,000 in 1987, and to $30,000 in each of the 198[illegible] and 8[illegible] fiscal years. Motion approved.

Reed Dayton was elected Vice-Chairman and Larry Anderson Secy-Treas.

Contract for the Engineer-Mgr was approved for another year in the current amount.

Meeting adjourned at 2:45 p.m.

BEAR RIVER COMMISSION

STATEMENT OF INCOME AND EXPENDITURES

FOR THE PERIOD OF JULY 1, 1985 TO JUNE 30, 1986

INCOME	CASH ON HAND	INTEREST INCOME	FROM STATES	TOTAL REVENUE
Cash Balance 07-01-85	$98,775.62			$98,775.62
State of Idaho			$42,000.00	$42,000.00
State of Utah			$42,000.00	$42,000.00
State of Wyoming			$42,000.00	$42,000.00
Interest on Savings and other income		$11,004.12		$11,004.12
TOTAL INCOME TO June 30, 1986	$98,775.62	$11,004.12	$126,000.00	$235,779.74

DEDUCT OPERATION EXPENSE

EXPENDED THROUGH U.S.G.S.

	APPROVED BUDGET	UNEXPENDED BALANCE	EXPENDITURES TO DATE
Stream Gaging	$62,240.00	$0.00	$62,240.00
SUBTOTAL	$62,240.00	$0.00	$62,240.00

EXPENDED THROUGH COMMISSION

Personal Services	$8,600.00	$4,608.58	$3,991.42
Travel	$400.00	$400.00	$0.00
Office Expenses & Supplies	$200.00	-$50.20	$250.20
Treasurer Bond & Audit	$500.00	-$110.00	$610.00
Printing and Reproduction	$2,300.00	$105.00	$2,195.00
Legal Consultant	$500.00	$0.00	$500.00
Contract-Universities	$36,120.00	$0.00	$36,120.00
SUBTOTAL	$48,620.00	$4,953.38	$43,666.62
TOTAL	$110,860.00	$4,953.38	$105,906.62
CASH BALANCE AS OF 6-30-86			$129,873.12

BEAR RIVER COMMISSION

DETAILS OF EXPENDITURES

FOR PERIOD ENDING JUNE 30, 1986

125	VanCott, Bagley	$500.00
126	Void	$0.00
127	Wally Jibson	$1,181.97
128	Rose Printing	$2,195.00
129	Wally Jibson	$671.79
130	USGS	$62,240.00
131	Utah State Treasurer	$50,000.00
132	Creative Awards by Lane	$231.52
133	Wally Jibson	$1,055.01
134	Void	$0.00
-	Bank Charges	$18.68
135	Fenton Insurance Agency	$50.00
136	Utah State University	$27,090.00
137	Wally Jibson	$1,082.65
138	Gilchrist & Co	$560.00
139	Utah State University	$9,030.00
		$155,906.62
	Less Savings Account	$50,000.00
	Total Expenses	$105,906.62

1986 FY

BANK RECONCILIATION

June 30, 1986

Cash in Bank per Statement 06-30-86	-$3,564.71
Less: Outstanding Checks	$0.00
Total Cash in Bank	-$3,564.71
Plus: Savings Account-Utah State Treasurer	$133,437.83
TOTAL CASH IN SAVINGS AND IN CHECKING ACCOUNT	$129,873.12

BEAR RIVER COMMISSION

STATEMENT OF INCOME AND EXPENDITURES

FOR THE PERIOD OF JULY 1, 1986 TO OCTOBER 31,1986

INCOME	CASH ON HAND	INTEREST INCOME	FROM STATES	TOTAL REVENUE
Cash Balance 07-01-86	$129,873.12			$129,873.12
State of Idaho			$0.00	$0.00
State of Utah			$35,000.00	$35,000.00
State of Wyoming			$0.00	$0.00
Interest on Savings and other income		$2,033.23		$2,033.23
TOTAL INCOME TO October 31, 1986	$129,873.12	$2,033.23	$35,000.00	$166,906.35

DEDUCT OPERATION EXPENSE

EXPENDED THROUGH U.S.G.S.

	APPROVED BUDGET	UNEXPENDED BALANCE	EXPENDITURES TO DATE
Stream Gaging	$65,190.00	$0.00	$65,190.00
SUBTOTAL	$65,190.00	$0.00	$65,190.00

EXPENDED THROUGH COMMISSION

Personal Services	$8,600.00	$7,402.42	$1,197.58
Travel	$400.00	$400.00	$0.00
Office Expenses & Supplies	$200.00	$200.00	$0.00
Treasurer Bond & Audit	$500.00	$500.00	$0.00
Printing and Reproduction	$100.00	$100.00	$0.00
Legal Consultant	$500.00	$0.00	$500.00
Contract-Universities	$36,120.00	$36,120.00	$0.00
SUBTOTAL	$46,420.00	$44,722.42	$1,697.58
TOTAL	$111,610.00	$44,722.42	$66,887.58

CASH BALANCE AS OF 10-31-86 $100,018.77

BEAR RIVER COMMISSION

DETAILS OF EXPENDITURES

FOR PERIOD ENDING OCTOBER 31,1986

140	WALLY JIBSON	$1,197.58
141	VAN COTT, BAGLEY, ETC.	$500.00
142	U.S.G.S	$65,190.00

	$66,887.58
LESS SAVINGS ACCOUNT	$0.00
TOTAL EXPENSES	$66,887.58

BANK RECONCILIATION

OCTOBER 31, 1986

Cash in Bank per Statement 10-31-86	$2,047.71
Less: Outstanding Checks	$0.00
Total Cash in Bank	$2,047.71
Plus: Savings Account-Utah State Treasurer	$97,971.06
TOTAL CASH IN SAVINGS AND IN CHECKING ACCOUNT	$100,018.77

BEAR RIVER COMMISSION
880 River Heights Blvd
Logan, Utah 84321

November 24, 1986

Engineer-Mgr Report

Wallace N. Jibson

1986 Water Supply

Provisional 1986 streamflow data confirm that we have experienced about the highest irrigation-season runoff since records began in 1943 from the Upper Bear River and Smiths Fork (runoff about the same from Smiths Fork as in 1971). Logan River flow in 1984 and 1986, with a 90-year record, has not been exceeded since 1909 in the May-September period. Annual runoff from the basin to Great Salt Lake as measured below Cutler Dam was 2,910,500 acre-feet, just 8 percent below the record-breaking 3,179,000 ac-ft in 1984. In four of the past five years runoff has exceeded normals by an average of more than 50 percent making this 5-year period the wettest since 1908-12. It is not surprising then that present base flow is well above average even though October and November have been on the dry side. For instance, Bear River inflow to Bear Lake has remained above 450 cfs since the beginning of the water year compared to about 250 cfs a year ago.

The following table compares 1984, 1985, and 1986 runoff in the May-September period with the 1943-86 average at three representative gaging stations through the basin.

Streamflow in Acre-Feet

May-September

	Average 1943-86	1984	1985	1986*	1986 as Percent of Ave.
Upper Bear R	119,700	178,600	119,600	208,200	174%
Smiths Fork	113,300	157,700	81,300	187,700	166%
Logan River	130,200	233,600	124,700	232,800	179%

* Provisional records in 1986, subject to change.

Reservoirs

Hydrographs of Bear Lake for 1985 and 1986 are shown on page 3. Though about two feet lower than in 1985 at the start of the water year, the Lake caught up in late February and by mid-June was about two feet higher than in 1985 for the balance of the season. Bear Lake peaked in late June at 5,923.61 feet (1,418,400 ac-ft) or less than an inch below the peak of record in 1923. Normal draft following the peak was not only for irrigation but to lower the Lake for next year's runoff. The Outlet Canal has been discharging a high 1,650 cfs during the late summer and fall to bring the Lake to its elevation a few days ago of 5,919.95 ft (1,161,500 ac-ft), still a foot higher than last year. Rainbow Inlet was discharging 482 cfs.

Reservoirs (Cont.)

Woodruff Narrows Reservoir hydrograph is shown on page 4 for the 1986 water year. The Reservoir filled in early March and remained above the spillway crest until early July. By September 30, 54,500 acre-feet of a total spillway capacity of 57,300 acre-feet remained in storage.

Compact Operation

Again interstate regulation was not required in the Upper Division where record-breaking supply was available. Divertible Flow in the Central Division dropped below the "Water Emergency" level of 870 cfs about August 6th and remained below for the balance of the season. Flow passing the Border gage was about 580 cfs at the time and did not reach the alternate emergency flow of 350 cfs for the balance of the season. In average years flow passing the Border gage reaches 350 cfs within a few days before or after the Divertible Flow reaches 870 cfs; but, the condition in 1986 is typical of years with extremely high runoff.

Wyoming allocation was 372 cfs on August 6th, while the section was diverting only about 177 cfs. This spread continued for the balance of the season, and regulation for the benefit of Idaho was not required.

Budget

Budget estimate presented April 24, 1986 is revised to incorporate changes approved in the April meeting. (See page 5.) These changes include revised State assessments and inclusion of budget for a two-year contract (second year subject to Commission approval) with the States to begin the 1976 Depletion Study. Also, a reduction in stream-gaging costs based on 17 rather than 18 stations for the 1988 fiscal year (1987 water year). Other changes reflect small increases in 'Office Supplies' and 'Audit and Treasurer Bond' based on increased costs in 1986 fiscal year.

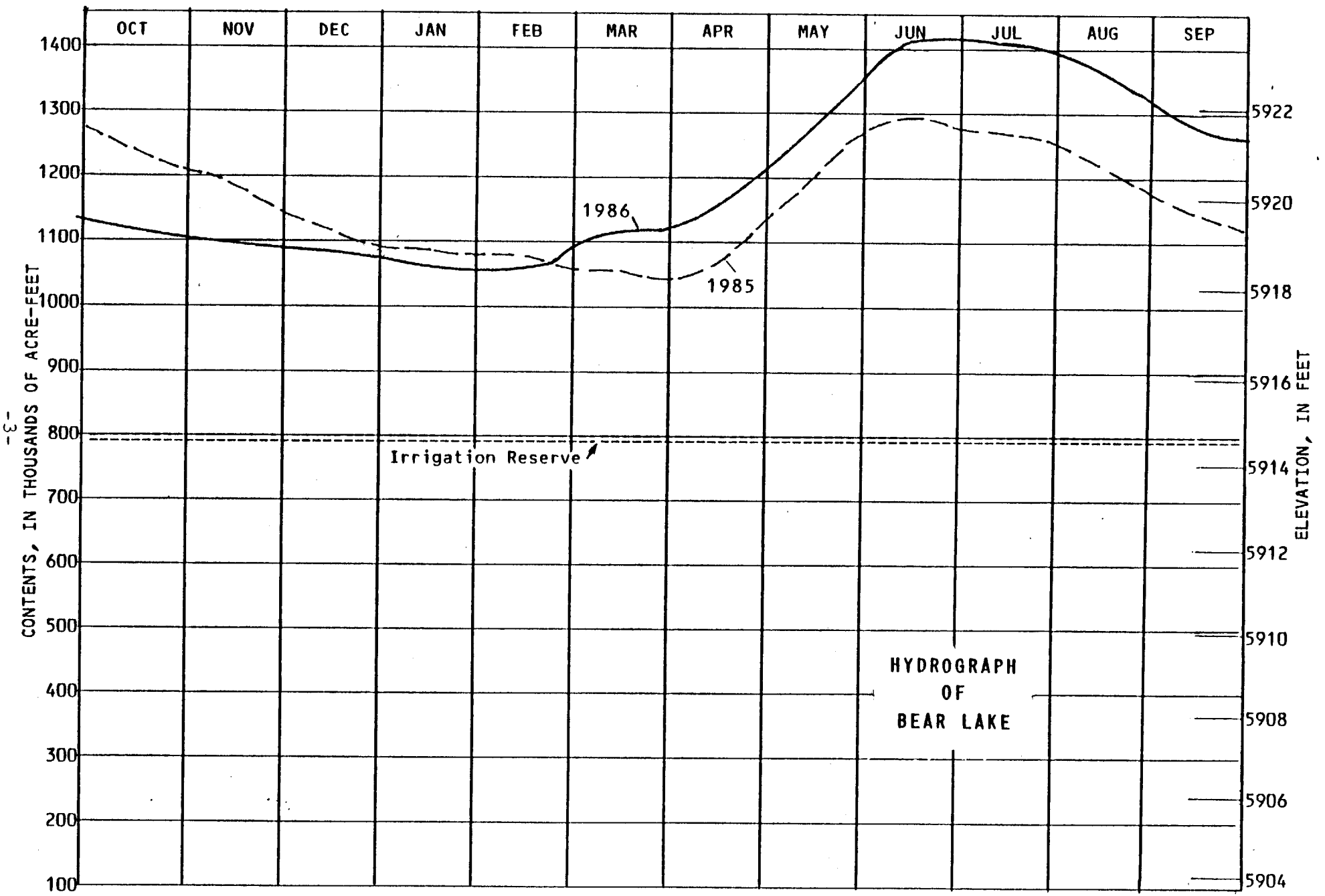
The "INCOME-EXPENDITURE PROJECTION (1986-88)" shows an estimated unexpended balance of $90,413 at the end of the 1988 fiscal year. Excluding the carryover of $90,413 and USU contract of $9,030, we project an annual income of $98,000 versus expenditure of $90,650 based on 1988 which includes the 1976 depletion study at $41,970 per year. This could be a guide in estimates due 5/1/87.

Consumptive-Use study was approved for 1987 fiscal year at $36,120. Bob Hill reported their intention of securing field data in the summer of 1987 without additional funding and having a report ready by April 1, 1988. Accordingly, the contract was prepared to show an obligation of $27,090 in 1987 and $9,030 in 1988 payable April 1, 1988.

The revised budget has been circulated and reviewed with the Budget Committee. Action should be taken today on the revisions.

Applications for Appropriation

Application summaries submitted for the past six months are shown on pages 6 and 7. Idaho applications include three and Utah one proposed power projects, all pending.


OCT
NOV
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JAN
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MAR
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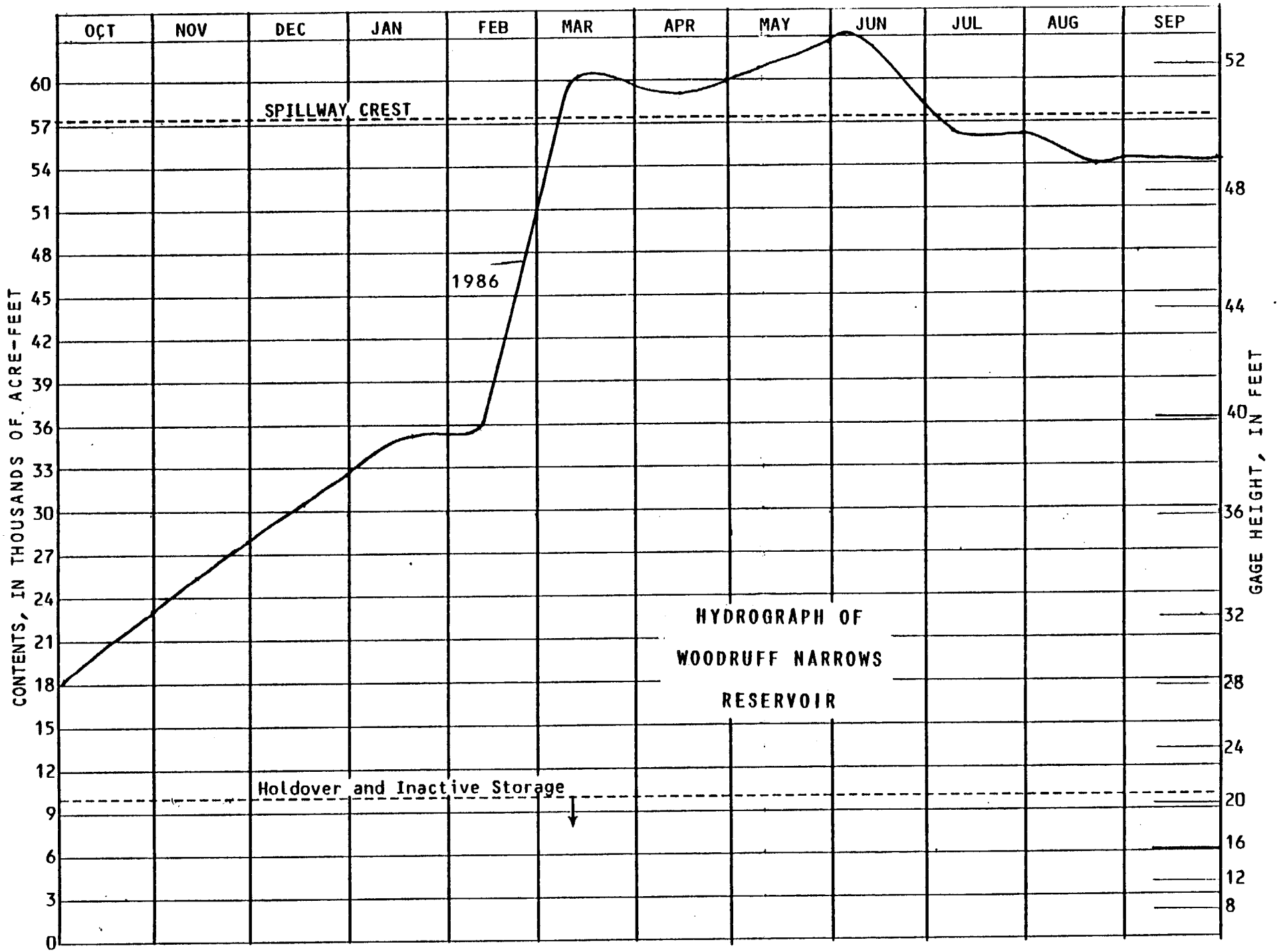
JUN
JUL
AUG
SEP
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
CONTENTS, IN THOUSANDS OF ACRE-FEET
5922
5920
5918
5916
5914
5912
5910
5908
5906
5904
ELEVATION, IN FEET
1986
1985
Irrigation Reserve
HYDROGRAPH
OF
BEAR LAKE


OCT
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MAY
JUN
JUL
AUG
SEP
SPILLWAY CREST
1986
HYDROGRAPH OF
WOODRUFF NARROWS
RESERVOIR
Holdover and Inactive Storage
CONTENTS, IN THOUSANDS OF ACRE-FEET
GAGE HEIGHT, IN FEET
60
57
54
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
52
48
44
40
36
32
28
24
20
16
12
8

BEAR RIVER COMMISSION

BUDGET, INCOME, AND EXPENDITURES

APRIL 21, 1986

REVISED NOVEMBER 24, 1986

	FISCAL YEAR ENDING 6-30-86	FISCAL YEAR ENDING 6-30-87	FISCAL YEAR ENDING 6-30-88	FISCAL BIENNIUM ENDING 6-30-88
BUDGET				
COMPACT ADMINISTRATION				
PERSONAL SERVICES (ENGR-MGR)	$ 8,600	$ 8,600	$ 8,600	$ 17,200
TRAVEL & MISCELLANEOUS (ENGR-MGR)	400	400	400	800
OFFICE SUPPLIES	200	250	250	500
PRINTING BIENNIAL REPORT	2,195	00	2,500	2,500
AUDIT AND TREASURER BOND	500	650	650	1,300
PRINTING AND REPRODUCTION	100	100	100	200
LEGAL RETAINER AND FEES	500	500	500	1,000
CONSUMPTIVE-USE STUDIES (USU)	36,120	27,090	9,030	36,120
DEPLETION STUDIES, 1976 (TRI-STATE)	00	50,000	41,970	91,970
SUBTOTAL	$ 48,615	$ 87,590	$ 64,000	$ 151,590
STREAM-GAGING PROGRAM (USGS)	$ 124,480	$ 130,380	$ 71,360	$ 201,740
TOTAL BUDGET:	$ 173,095	$ 217,970	$ 135,360	$ 353,330
ALLOCATION OF BUDGET				
U.S. GEOLOGICAL SURVEY	$ 62,240	$ 65,190	$ 35,680	$ 100,870
BEAR RIVER COMMISSION	$ 110,855	$ 152,780	$ 99,680	$ 252,460
TOTAL BUDGET:	$ 173,095	$ 217,970	$ 135,360	$ 353,330
ASSESSMENT				
ASSESSMENT TO EACH STATE	$ 42,000	$ 35,000	$ 30,000	$ 65,000
TOTAL THREE-STATE ASSESSMENT	$ 126,000	$ 105,000	$ 90,000	$ 195,000
INCOME-EXPENDITURE PROJECTION (1986-88)				
INCOME				
BEGINNING BALANCE	$ 98,776	$ 129,873	$ 92,093	
INCOME FROM THREE STATES	126,000	105,000	90,000	
INCOME FROM INTEREST	11,004	10,000	8,000	
TOTAL INCOME:	$ 235,780	$ 244,873	$ 190,093	
EXPENDITURES				
STREAM GAGING (USGS)	$ 62,240	$ 65,190	$ 35,680	
COMPACT ADMINISTRATION, GENERAL	7,547	10,500	13,000	
CONSUMPTIVE-USE STUDIES (USU)	36,120	27,090	9,030	
DEPLETION STUDIES, 1976 (TRI-STATE)	00	50,000	41,970	
TOTAL EXPENDITURE:	$ 105,907	$ 152,780	$ 99,680	
UNEXPENDED BALANCE:	$ 129,873	$ 92,093	$ 90,413	
NOTE: STREAM GAGING COST PER STATION:	$ 3,890	$ 4,050	$ 4,150	
PLUS PUBLICATION CUTLER STATIONS:	00	$ 780	$ 810	

Presented to Commission: NOV. 24, 1986

Applic. Number	Date of Filing	Name	Source	Use	Location		Amount (cfs)	Act'n
			STATE OF IDAHO					
11-7357	4/16/86	LDS Church	Ground Water	Irrig.	S5T13SR43E	Bear L.	0.02 cfs	App.
11-7358	8/25/86	State Of Idaho	Ground Water	Recreation	S13T16SR44E	Bear L.	0.20	Pend.
13-7431	5/16/86	Whiskey Creek Inc.	Whiskey Cr.	Power	S24T11SR40E	Caribou	45.00	Pend.
13-7433	5/29/86	Carson H. Bradley	Spring	Irrig.	S28T13SR38E	Franklin	0.10	Pend.
13-7434	6/2/86	Carson H. Bradley	Spring	Recreation	S20T13SR38E	Franklin	0.11	Pend.
13-7436	8/12/86	S & F Power	Dry Cr Trib Mink C	Power	S33T13SR41E	Franklin	200.00	Pend.
13-7437	8/12/86	Rob't N. Fackrell	Dry Cr Trib Mink C	Power	S36T13SR41E	Franklin	100.00	Pend.
TOTAL SURFACE WATER, IDAHO: APPROVED 0 cfs PENDING, 345.21 cfs (Including 345.0 cfs for Power)								
TOTAL GROUND WATER, IDAHO: APPROVED .02 " PENDING, 0.20 cfs								
Change in Status, Past Six Months, of Previously Reported Applications								
Pending to Pending or Adjudicated	Approved: Approved to (Licensed)	137.88 cfs Surface Water (Including 100 cfs Power) & 3.19 cfs Ground Water Cancelled, Etc.: 1,585.92 (Including 1,558 cfs Power), 45.0 Ac-Ft Storage, & 45.6 GW : 5.02 cfs Surface Water (Including 4.0 Fishery) & 9.86 cfs Ground Water						
			STATE OF WYOMING					
UW 72025	2/25/86	AMOCO PRODUCTION	Ground Water	Indust.	S32T16N119W	Uinta	0.06 cfs	App.
UW 72408	3/17/86	" "	Ground Water	"	S35T13NR121W	"	0.02	App.
UW 72409	3/17/86	" "	Ground Water	"	S35T13NR121W	Uinta	0.02	App.
UW 72110	4/17/86	" "	Ground Water	"	S34T15NR115W	Uinta	0.22	App.
UW 72886	4/22/86	" "	Ground Water	"	S18T17NR119W	Uinta	0.22	App.
UW 72602	5/21/86	Exxon Oil	Ground Water	"	S30T21NR118W	Lincoln	0.33	App.
UW 73015	7/17/86	Marcus & Johnson	Ground Water	Irrig	S34T21NR117W	"	0.06	App.
UW 73016	7/17/86	" " "	Ground Water	Irrig.	S34T21NR117W	"	0.06	App.
UW 73533	8/18/86	Michael Sims	Ground Water	Misc.	S36T16NR121W	Uinta	0.06	App.
TOTAL SURFACE WATER, WYOMING 00 TOTAL GROUND WATER: APPROVED, 1.05 cfs								
Change in Status, past six months, of Previously Reported Applications								
Total Ground Water previously reported as Pending, now Approved: 0.056 cfs Total Surface Water Previously Reported as Approved, now Cancelled: 1.32 cfs								

APPLICATIONS TO APPROPRIATE WATER
BEAR RIVER DRAINAGE
STATE OF UTAH
04/01/86 to 11/01/86

PRESENTED TO COMMISSION: NOV 24, 1986

WUC No.	Filing Date	Applicant	Source	Uses	Location	AMOUNT CFS	ACTN
23-3688	04/07/86	Utah Division of Parks & Rec. (Bear Lake Stat	Well (Ground water)	IDOt	25 13N 5E	0.5	App
23-3690	08/14/86	Woodruff Town Corporation	Well (Ground water)	Mu	17 9N 7E	2.0	Pend
25-8745	04/29/86	Baxter, Dean D.	Well (Ground water)	IDS	18 10N 1E	1.0	Pend
25-8765	06/19/86	Utah State University c/o Evan N. Stevenson	Well (Ground water)	DOt	35 12N 1E	1.0	App.
25-8766	06/24/86	Hunt, Andrew	High Creek	I	15 14N 1E	1.0	Pend
25-8767	06/25/86	Read, Doyle L.	Waste Water Drain	I	2 13N 1W	1.5	Pend
25-8779	09/17/86	Elder, Dallas	Well (Ground water)	IDOt	15 12N 1E	0.1	Pend
25-8781	09/30/86	Richmond City Corporation	Boulder, Ranger, Pine, Birch S	Hy	30 13N 2E	3.5	Pend
29-3140	04/01/86	Grover, Curtis	Unnamed Springs (9) Res. Overf	IS	24 12N 3W	2.0	Pend
29-3144	05/06/86	Harris, William J.	Well (Ground water)	IDS	6 14N 3W	0.5	App.
29-3254	07/25/86	Braithwaite, Fred A.	Underground Water Seep	IS	26 10N 2W	0.1	Pend
29-3256	07/25/86	Corp. Presiding Bishop L.D.S. Church c/o Mark	Well (Ground water)	I	7 12N 2W	0.15	App.
29-3258	08/04/86	Scott, Ruby	Well (Ground water)	ID	6 12N 2W	0.1	App.
29-3259	08/04/86	Scott, Ruby	Well (Ground water)	ID	6 12N 2W	0.1	App.
29-3260	08/04/86	Scott, Ruby	Well (ground water)	ID	6 12N 2W	0.1	App.
29-3261	08/04/86	Scott, Ruby	Well (Ground water)	ID	6 12N 2W	0.1	App.
29-3262	08/07/86	Brigham City Corporation	Unnamed Spring Area	Mu	30 9N 1W	1.0	Pend
29-3272	09/03/86	Fielding, Town of	Underground Water Drain	IOt	6 12N 2W	0.5	Pend
29-3276	09/24/86	White, J.C.	Willard Creek	Hy	19 8N 1W	40.0	Pend
29-3280	10/30/86	Blue Creek Ranch	Well (Ground water)	IDS	10 14N 4W	1.5	Pend
29-3281	10/31/86	Hunsaker, Rhea	Unnamed Drain	IS	5 10N 2W	0.1	Pend

Total Surface Water, Utah: Approved, 00.....Pending, 49.6 cfs
Total Ground Water, Utah: Approved, 2.55 cfs...Pending, 4.60 cfs

WEST DESERT PUMPING PROJECT

The West Desert Pumping Project is a flood control plan to help reduce the damaging high level of the Great Salt Lake by expanding the natural evaporation process - the only means by which water leaves the terminal lake. Project construction and first-year operating costs are funded with a $60 million appropriation to the Utah Division of Water Resources by the Second Special Session of the 1986 State Legislature.

The project consists of a pumping station, canals, trestles, dikes and a large evaporation pond in the desert area west of the Great Salt Lake.

Three large pumps in the pumping station are designed to lift water from the north arm of the lake to a 4.2 mile-long outlet canal. The canal begins at elevation 4223 feet above sea level and discharges water into a 500-square mile evaporation pond located at elevation 4217 west of the Newfoundland Mountains. The pumping system will be able to divert approximately two million acre feet of water a year from the Great Salt Lake into the pond from which approximately 825,000 acre feet of water can be evaporated each year.

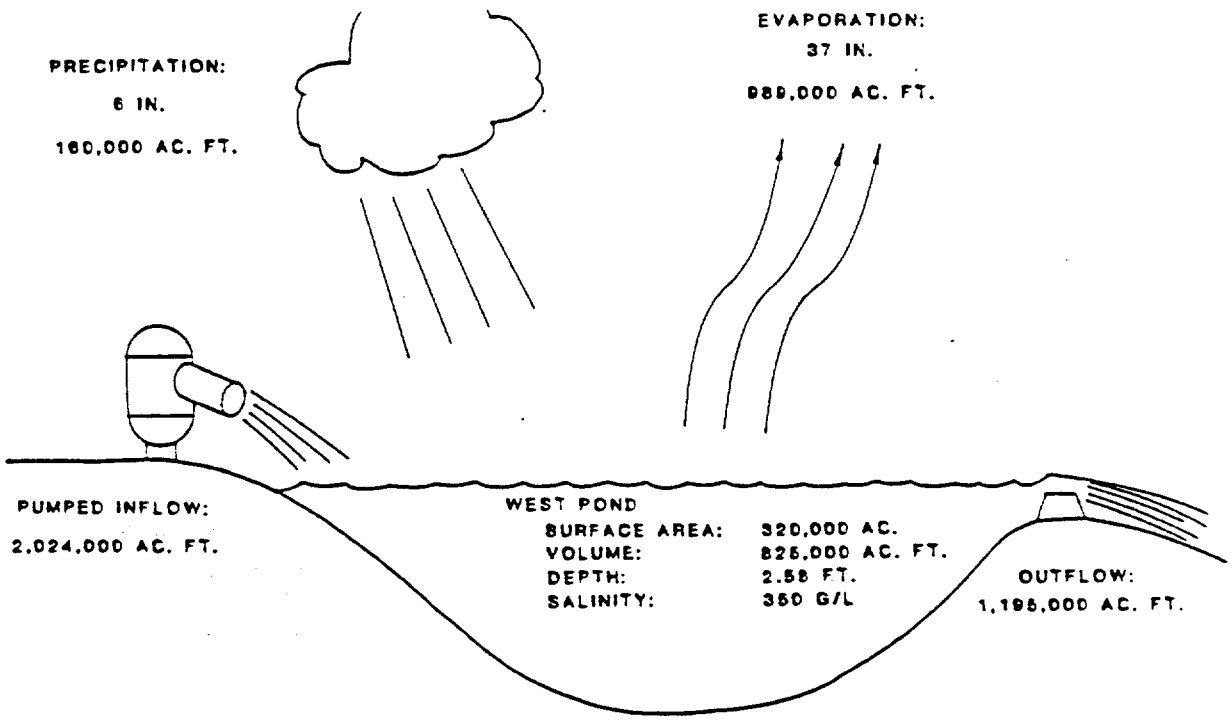
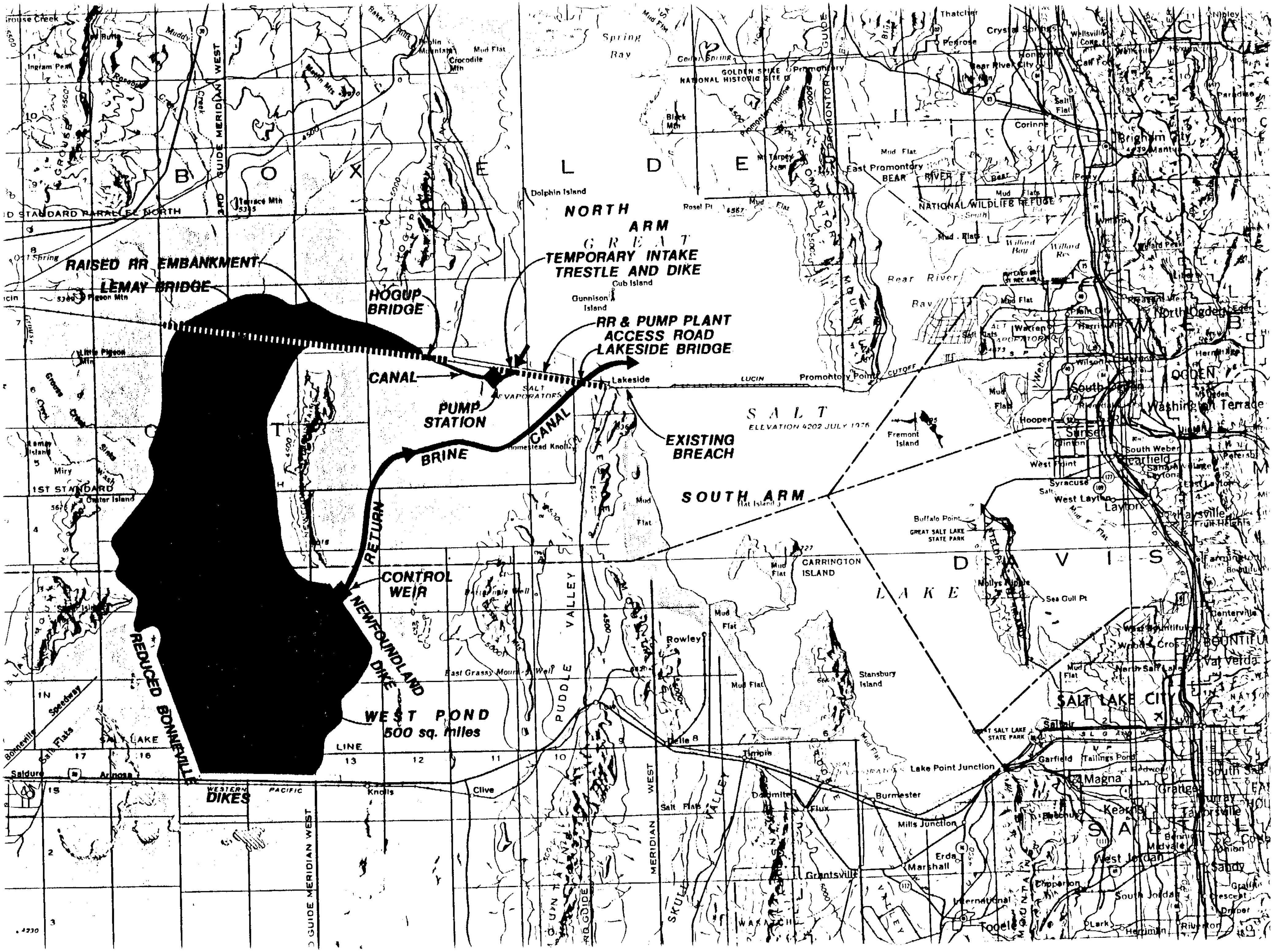


Figure 1. Summary Sketch - West Desert Evaporation
Source: Eckhoff, Watson and Preator Engineering


RAISED RR EMBANKMENT
LEMAY BRIDGE
HOGUP BRIDGE
TEMPORARY INTAKE TRESTLE AND DIKE
RR & PUMP PLANT ACCESS ROAD
LAKESIDE BRIDGE
CANAL
PUMP STATION
BRINE CANAL
RETURN
EXISTING BREACH
NORTH ARM
SOUTH ARM
CONTROL WEIR
NEWFOUNDLAND DIKE
WEST POND
500 sq. miles
REDUCED BONNEVILLE DIKES
GREAT SALT LAKE
ELEVATION 4202 JULY 1976
B O X E L D E R
D A V I S
SALT LAKE CITY
Lakeside
Promontory Point
LUCIN CUTOFF
Fremont Island
Carrington Island
Stansbury Island
Gunnison Island
Dolphin Island
Cub Island
Bear River Bay
OGDEN
Brigham City
Tooele
Grantsville
Clive
Knolls
WESTERN PACIFIC

A Bonneville Dike retains the southwest portion of the evaporation pond and prevents water from the project from flooding Interstate Highway 80 or the Bonneville Salt Flats. A second dike extends southwest from the southern tip of the Newfoundland Mountains to keep water from flowing over major areas of the Utah Test and Training Range used by the U.S. Air Force, Tooele Ordinance Depot and other U.S. Department of Defense units. A weir in the Newfoundland Dike will regulate the pond's water level and the natural return flow of concentrated brines to the Great Salt Lake from the southeast end of the evaporation pond.

The Flooding Problem

The Great Salt Lake, largest lake in the Western Hemisphere without an outlet to the sea, is a remnant of ancient Lake Bonneville that covered much of western Utah 10,000 to 23,000 years ago. At elevation 4211 feet above sea level, the lake covers approximately 2,260 square miles and impounds over 29 million acre feet of water. The lake is approximately 80 miles long and 35 miles wide, with an average depth close to 22 feet and a maximum depth of about 42 feet. Uniquely, the lake contains between four and five billion tons of dissolved minerals. Major minerals are chloride, sodium, sulfate, magnesium and potassium, with lesser amounts of calcium, lithium, bromine and bromide.

The rock and earthfill Southern Pacific Transportation Company railroad causeway separates the lake into two parts. The larger south part, containing about 60 percent of the lake's area, receives 90 percent of the lake's fresh water inflow. The north part receives most of its water as brine that flows through two culverts and the causeway itself from the south part of the lake. The lake's salinity varies with lake level changes. There is also a salinity difference between the two arms of the lake. The northern arm, currently at 16 percent salt, is a little more than three times saltier than the south arm.

The Great Salt Lake has historically experienced annual and long-term cyclic fluctuation in its surface elevation and area in response to climatic conditions. Geologic evidence indicates at least twice in the last 3,000 years the lake reached elevation 4217 feet above sea level. Since 1847, the year marking the beginning of the lake's historic level fluctuation records, the Great Salt Lake peaked at 4,211.60 feet above sea level in June 1873 and at 4,211.85 feet above sea level on June 6, 1986. The total average annual inflow of surface water, groundwater and precipitation directly into the lake has been 3.0 million acre feet. Average historic annual evaporation of water from the lake has almost equalled inflow.

The lake's level began to rise rapidly in 1982 when record setting precipitation occurred in drainage areas that feed the Great Salt Lake. Since then, annual inflow has far exceeded the historical average.

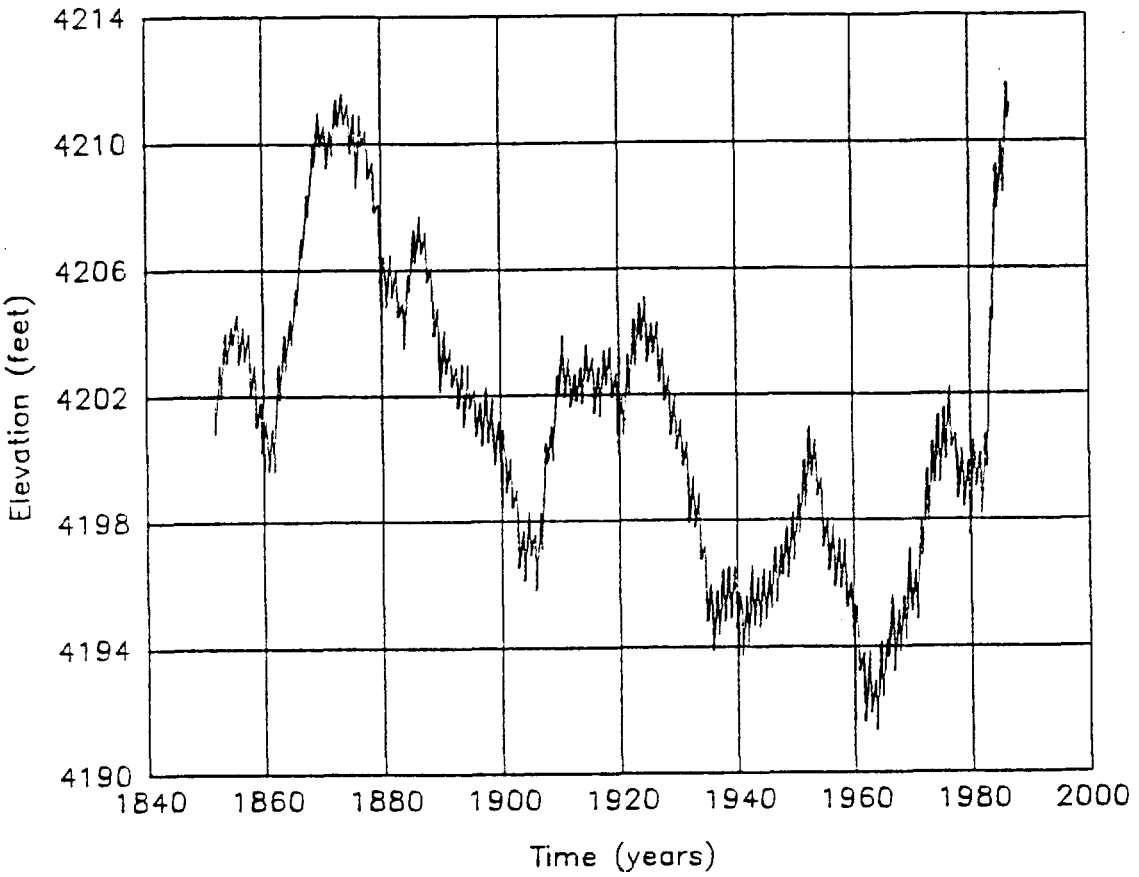


Figure 2. Historic hydrograph of the Great Salt Lake, 1851-1986

From 1963 to 1986, the Great Salt Lake has risen nearly 20 feet, more than doubled its bounds, and increased its volume three-fold. Over 13 feet of the rise has occurred since the beginning of 1982. As a result, damages through 1986 have totaled $240 million to Interstate 80, mineral industries, railways systems, sewage treatment plants, wildlife habitat, recreation areas and private and public property.

Total estimated annual inflows and south arm peak lake level elevations starting with 1982

Year	Inflow	Peak Elevation	
1982	4.3 million acre feet	4200.7	
1983	7.5 million acre feet	4204.7	
1984	9.1 million acre feet	4209.25	
1985	6.2 million acre feet	4209.95	
1986	7.5 million acre feet	4211.85	(New record historic high elevation.)

FLOOD CONTROL OPTIONS EXAMINED

The rapid rise in the lake level prompted the state, counties and universities to investigate alternatives for controlling the level of the Great Salt Lake. A Contingency Plan of the Utah Department of Natural Resources, dated January 1983, assembled information on pumping water from the lake into the western desert area, breaching the Southern Pacific Transportation Company Causeway, diking low areas around the lake, and developing water upstream before it enters the lake.

The concept to pump the Great Salt Lake into the west desert was first investigated by the U.S. Army Corps of Engineers in 1976 for the Great Salt Lake Hydrologic Subcommittee. Feasibility of the pumping project was studied again in 1983 by the Utah Division of Water Resources. Development of a final design was authorized during the General Session of the 1985 Utah State Legislature. It was completed in January 1986. The Salt Lake District Office of the Bureau of Land Management issued a state-funded Draft Environmental Impact Statement on the project in February 1986. The final EIS was published by the BLM in July 1986.

Pumping Station
- Length: 110'
- Width: 55'
- Height: 30'
- Construction: Steel and reinforced concrete
- Base: Elevation 4230
- Sump bays: 55' deep, 28' wide
- Excavation: Southern Pacific Transportation Company
- Contractor: Layton Construction Company, Salt Lake City, UT

Pumps
- Vertical shaft axial flow, rated not less than 933 cfs
- Manufacturer: Ingersoll-Rand Company, Phillipsburg, NJ

Pump Engines
- Natural gas fired, 3,500 hp, 16-cylinder, 4 cycle, turbocharged
- Manufacturer: Ingersoll-Rand Company, Phillipsburg, NJ

Outlet Canal
- Length: 4.2 miles
- Width: Varies between 35' to 130'
- Depth: Varies between 10' and 40'
- Contractor: Southern Pacific Transportation Company

Intake Canal/Dike
- Length: 1,600'
- Width: 100'
- Depth: 13'
- Contractor: Layton Construction Company

Evaporation Pond
- Area: 575 square miles at maximum elevation 4,217 feet above sea level
- Depth: Varies between 1' and 7'
- Volume: 320,000 acre feet at elevation 4217

Bonneville Dike
- Length: 27 miles
- Base width: Varies between 40' and 90'
- Top width: 15'
- Height: Varies between 1' and 7'
- Contractor: W. W. Clyde Construction, Springville, UT

Newfoundland Dike
- Length: 7 miles
- Base width: Varies between 40' and 50'
- Top width: 15'
- Height: Varies between 2' and 7'
- Contractor: Herm Hughes and Sons, Bountiful, UT

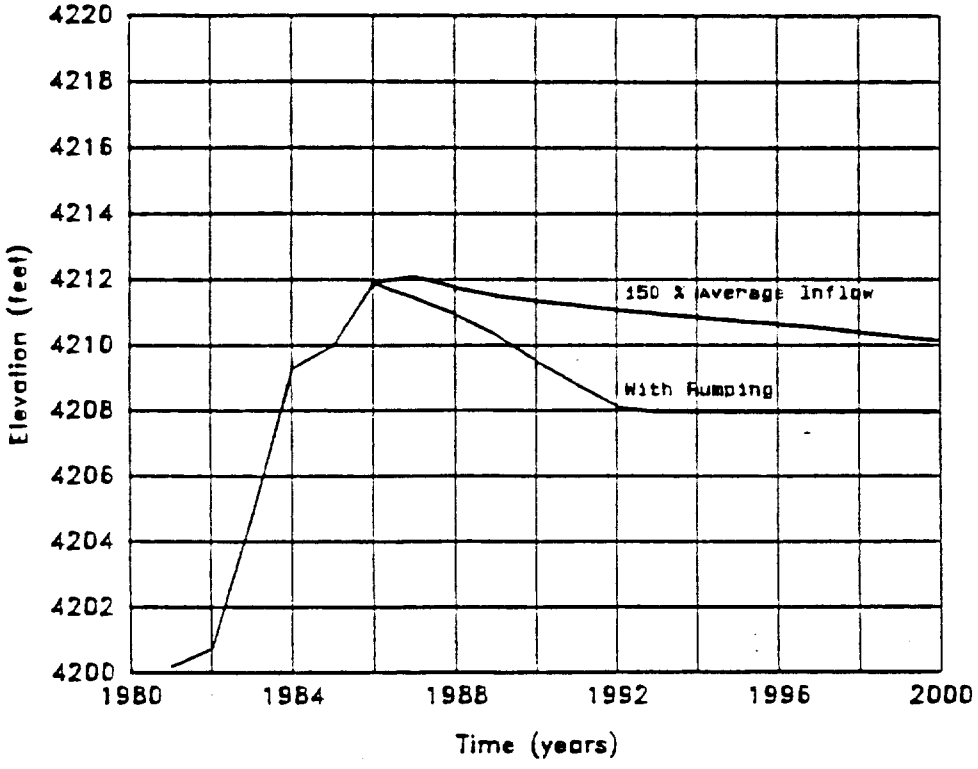


Figure 3. Great Salt Lake Projections - 150% Average Inflow

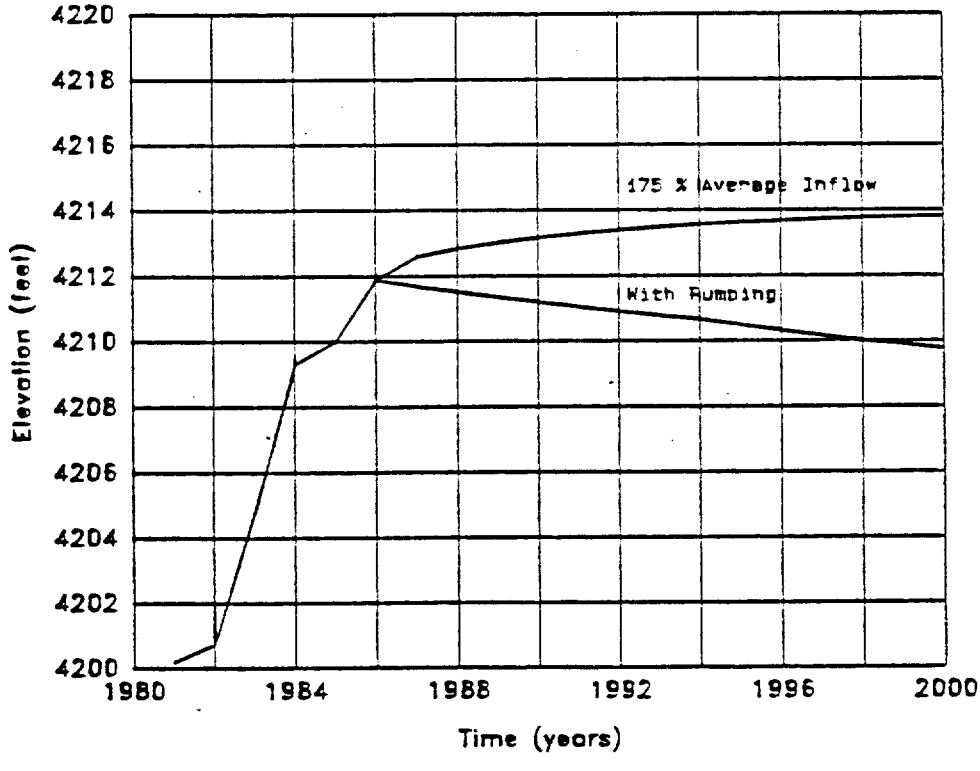


Figure 4. Great Salt Lake Projections - 175% Average Inflow

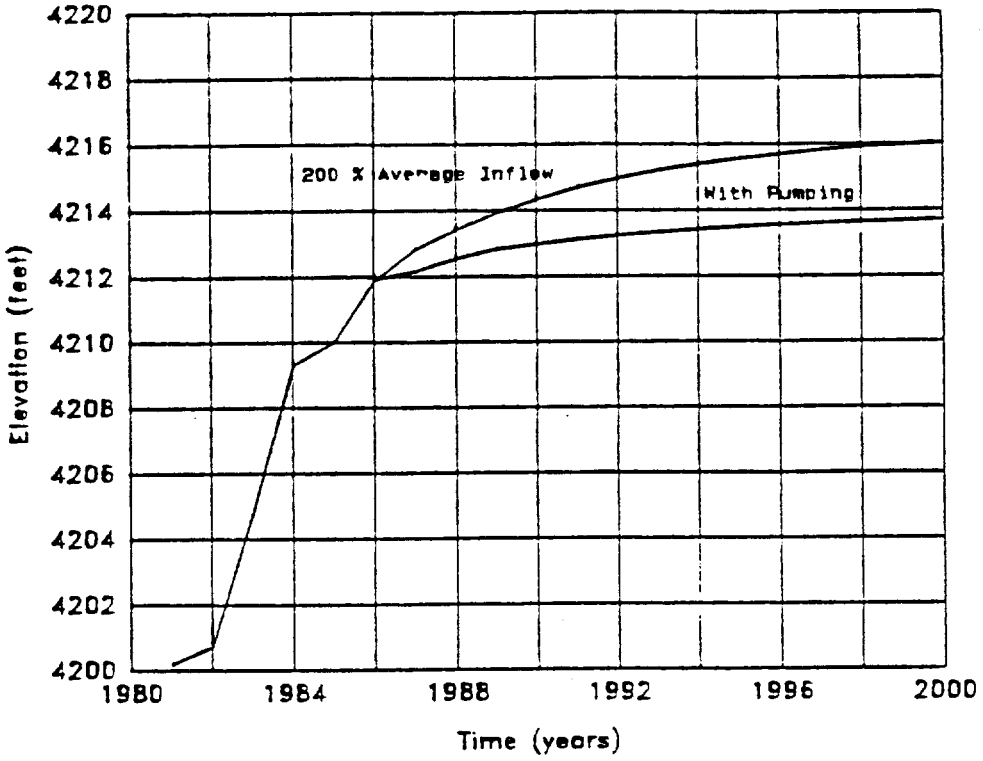


Figure 5. Great Salt Lake Projections - 200% Average Inflow

STATE OF UTAH
NATURAL RESOURCES
Water Rights

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Robert L. Morgan, State Engineer

1636 West North Temple • Suite 220 • Salt Lake City, UT 84116-3156 • 801-533-6071

December 5, 1986

M E M O R A N D U M

TO: D. Larry Anderson

FROM: Robert L. Morgan

SUBJECT: Update for Bear River Commission Concerning Stream Gaging Stations

As requested by the Bear River Commission, this memo will update the status of those gaging stations either funded or no longer funded by the Commission within the Bear River system.

The two Sulphur Creek stations will be relocated because of the construction of the Surphur Creek Reservoir. The relocation costs will be borne by the City of Evanston and the cost of reading and maintaining the record will still lie with the Bear River Commission and the U.S.G.S. All of those 13 stations labeled as "directly needed" in the April, 1986 meeting will still be in operation and will be funded by Utah Power and Light or the Commission.

Those sites labeled "sites indirectly needed" will stay the same with the exception of the Bear River at Harer. This station has been funded by UP&L and will be eliminated. Of those sites noted as "not to be funded" by the Bear River Commission, four will be maintained. They are:

1. West Fork Bear River below Whitney Reservoir will be operated by the Wyoming local water users for the regulation of irrigation waters.

2. Chapman Canal at State Line will be read by the Wyoming State Engineer's Office, and if a recorder is needed it will be supplied by the State of Utah.

3-4. The Utah Division of Water Resources has contracted with the U.S.G.S. to have Little Bear River below Davenport Creek and Blacksmith Fork near Hyrum maintained.

/gm

APRIL 1986 ENGINEERING COMMITTEE RECOMMENDATIONS

NO.	SITES DIRECTLY NEEDED (13 Stations - 9 Funded by Commission)
011500	Bear River near Utah-Wyoming Line
001570	Sulphur Creek above Sulphur Creek Reservoir
001590	Sulphur Creek below Sulphur Creek Reservoir
002010	Bear River above Woodruff Narrows Reservoir
020200	Woodruff Narrows Reservoir
020300	Bear River below Woodruff
028500	Bear River below Pixley Dam
038000	Bear River below Smiths Fork
039500	Bear River at Border
046000	Rainbow Inlet Canal*
046500	Bear River below Stewart Dam*
055500	Bear Lake at Lifton*
059500	Bear Lake Outlet Canal*

	SITES INDIRECTLY NEEDED (15 Stations - 8 Funded by Commission)
026500	Bear River near Randolph
032000	Smiths Fork near Border
041000	Thomas Fork near Wyoming-Idaho Line
044000	Bear River at Harer*
068500	Bear River at Pescadero
075000	Bear River near Soda Springs*
079500	Bear River at Alexander*
086500	Bear River below Oneida*
092700	Bear River at Idaho-Utah Line
117000	Hammond (East Side) Canal*
117500	West Side Canal*
118000	Bear River near Collingston*
108400	Logan, Hyde Park & Smithfield Canal
109000	Logan River above State Dam
126000	Bear River near Corinne

	SITES NOT TO BE FUNDED BY BEAR RIVER COMMISSION (15 Stations)
010400	East Fork Bear River near Evanston
011200	West Fork Bear River below Whitney Reservoir
011400	West Fork Bear River below Deer Creek
001950	Chapman Canal at State Line
020900	Woodruff Creek below Woodruff Creek Reservoir
058600	Bloomington Creek above Div.
072800	Eight Mile Creek near Soda Springs
076400	Soda Creek at Five Mile Meadow
084500	Cottonwood Creek near Cleveland
090500	Bear River near Preston
093000	Cub River near Preston
104700	Little Bear River below Davenport Creek
104900	East Fork Little Bear River above Porcupine
106000	Little Bear River near Paradise
103500	Blacksmith Fork near Hyrum

* Supported by Utah Power & Light Co.

SUMMARY OF STATES PROGRESS

The 1976 depletion study contract was signed and effective as of September 15, 1986, which was four and one-half months after the projected starting date of May 1, 1986.

Most of the states have completed portions, or all, of Tasks 1, 2, and 3. Presently Idaho has also developed some training data to assist in a more rapid implementation of Tasks 4 and 5.

The Committee is currently on a schedule which would hopefully follow that proposed, with a projected completion date as previously outlined by the Committee and presented to the Commission on April 1986.

** Attached is a summary sheet for each state.

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

JOHN V. EVANS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

Summary of Idaho Dept. of Water Resources
Progress to Date on the Bear River Project
19 November 1986

TASK 1: (Status complete)

A review of existing maps and reports for the Bear River Basin has been completed.

TASK 2: (Status complete)

The four 1:100,000 scale USGS 30x60 minute base-maps for the Idaho portion were purchased as well as some mylar for map overlay material on which to draw the strata lines.

The National High Altitude Photography that covered these four maps were borrowed from the USDA Soil Conservation Service. Strata boundaries were interpreted and transferred to the map overlays. Ten land-use types were delineated. They were:

1. Irrigated agriculture
2. Non-irrigated agriculture
3. Rangeland
4. High rangeland
5. Upland
6. Mountains
7. Bare ground
8. Water
9. Urban
10. Wetlands

TASK 3:

A. The strata boundaries have been digitized, codified, registered and rasterized. These data are now compatible for use in TASK 4 when the satellite imagery will be interpreted.

B. Most of the public land survey (PLS) lines have been digitized from the 1:100,000 base maps. About 20% of the area is unfinished. Computer programs to convert our digitized PLS data files to a format that can be used by Utah have been written. A test of this data format needs to be coordinated with Utah before we implement it fully.

C. The Basin boundaries as well as the county boundaries have been digitized. The division boundaries are not done.

The remaining portions of TASK 3 have not been addressed as of yet.

None of the other tasks have been addressed at this point.

STATE OF UTAH

TASK I

Completed review of material available and NHAP (National High Altitude Photography) available for study of strata boundaries. Concluded to use 1986 low altitude photography to develope strata boundaries and use water rights data to find changes as per attached maping changes time line.

TASK II

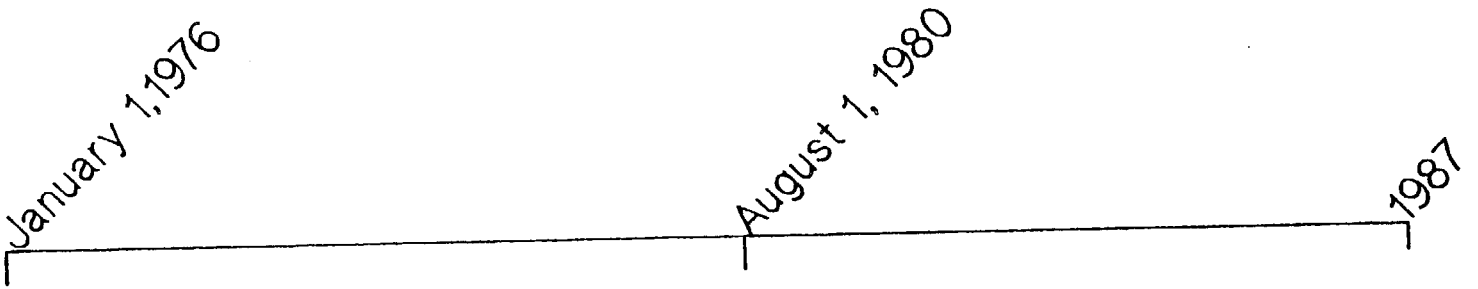
Currently digitizing low altitude photography, land use catagories and basin boundaries.

Water rights files are being compiled using data base of the Division of Water Rights. All files put to beneficial use post 1976 will be evaluated individually to determine additional depletion.

TASK III

Tabular data for municipalities for 1976 uses was gathered in the summer of 1986 and currently is being compiled into tabular output.

Public land survey is being acquired by AGR.



May recommend purchase of 1976 digital tapes for Classification.
Changes from Utah Water Rights Data Base 1976 - 1980.

Quantify changes using 1980 LANDSAT Classification done by Idaho.
Changes from Utah Water Rights Data Base 1980 - 1987.

MAPPING CHANGES USING UTAH WATER RIGHTS DATA BASE AND AVAILABLE SATELLITE IMAGERY

AMENDED BEAR RIVER COMPACT DEPLETION STUDY

Progress Report

This report presents information regarding the progress made on the Amended Bear River Compact Depletion Study at the Wyoming State Engineer's Office as of November 1, 1986.

Strata Boundary Identification

The methodology for interpretation and classification of strata boundaries has been formalized in addition to the identification of registration data and training cells.

Water Rights Accounting

The compilation of water right permit data is ongoing for the several interstate ditch systems which are accounted for as a part of Wyoming's allocation and for identifying water first applied to beneficial use on or after January 1, 1976.

Base Mapping

The Wyoming State Engineer's Office has purchased Digital Line Graphs (DLGs) for most of the Bear River Drainage of Wyoming. This includes DLGs at a scale of 1:100,000 which provides hydrography and transportation network layers. The Public Land Survey network at a scale of 1:24,000 has been ordered for the 26 quadrangles of concern.

The 1:100,000 scale digital data are being converted to a format compatible with the ARC/INFO GIS software.

Mylar base maps at a scale of 1:100,000 have also been obtained for compilation of data.

November 24, 1986

Duty of Water Under Bear River Compact: Field Verification of Empirical Methods

A Three State Cooperative Project Sponsored by the Bear River Commission.

University of Idaho
Ag. Engineering
C.E. Brockway

Utah State University
Ag. & Irr. Engineering
R.W. Hill
(Project Coordinator)
Niel Allen, Rick Allen

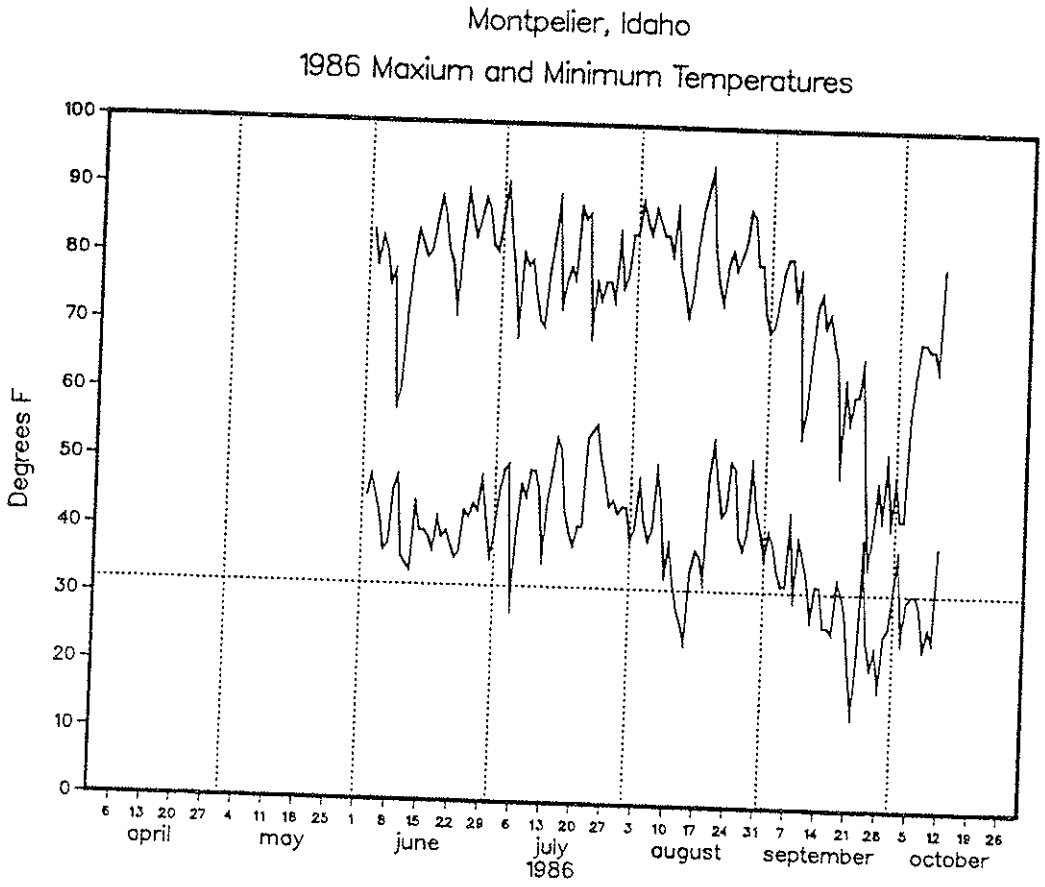
University of Wyoming
Ag. Engineering
R.D. Burman

Progress Report, Summer 1986

Automated remote weather data stations were established during April and May at Montpelier, Idaho; Randolph, Utah and Hilliard Flats, Wyoming. These sites were visited weekly beginning in May and continuing through mid October. Example weather data is shown in Figures 1, 2 and 3 for Montpelier, Randolph and Hilliard Flats.

The measurement of water use by meadow in the non-weighing lysimeters at Montpelier, Randolph and Hilliard Flats was continued from May through mid October, 1986. Figures 4 and 5 show monthly lysimeter ET at the three sites. Two new lysimeters were installed near the end of May at Montpelier, by July the grass appeared to be established.

The data shown in all the figures is preliminary. To date, no correlation analysis has been made between the empirical ET equations and lysimeter ET using the 1986 data.



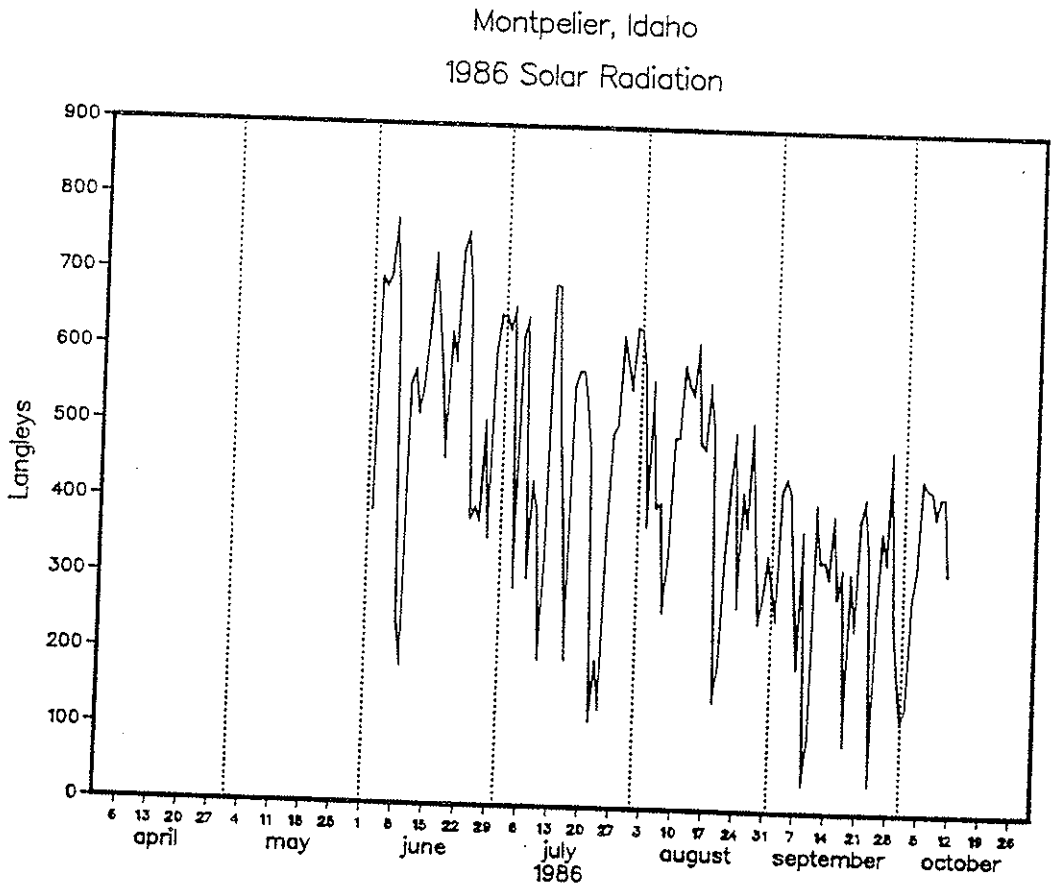
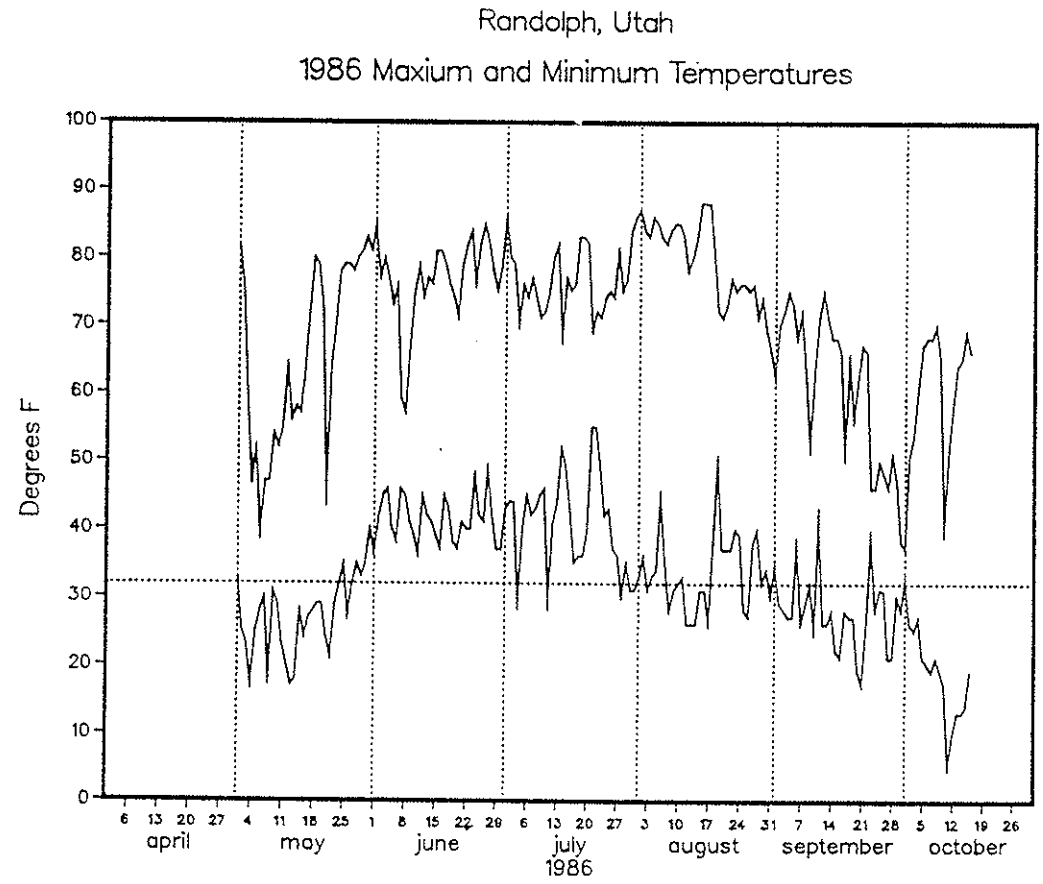


Figure 1. Daily Temperatures and Solar Radiation for Montpelier, Idaho, 1986.



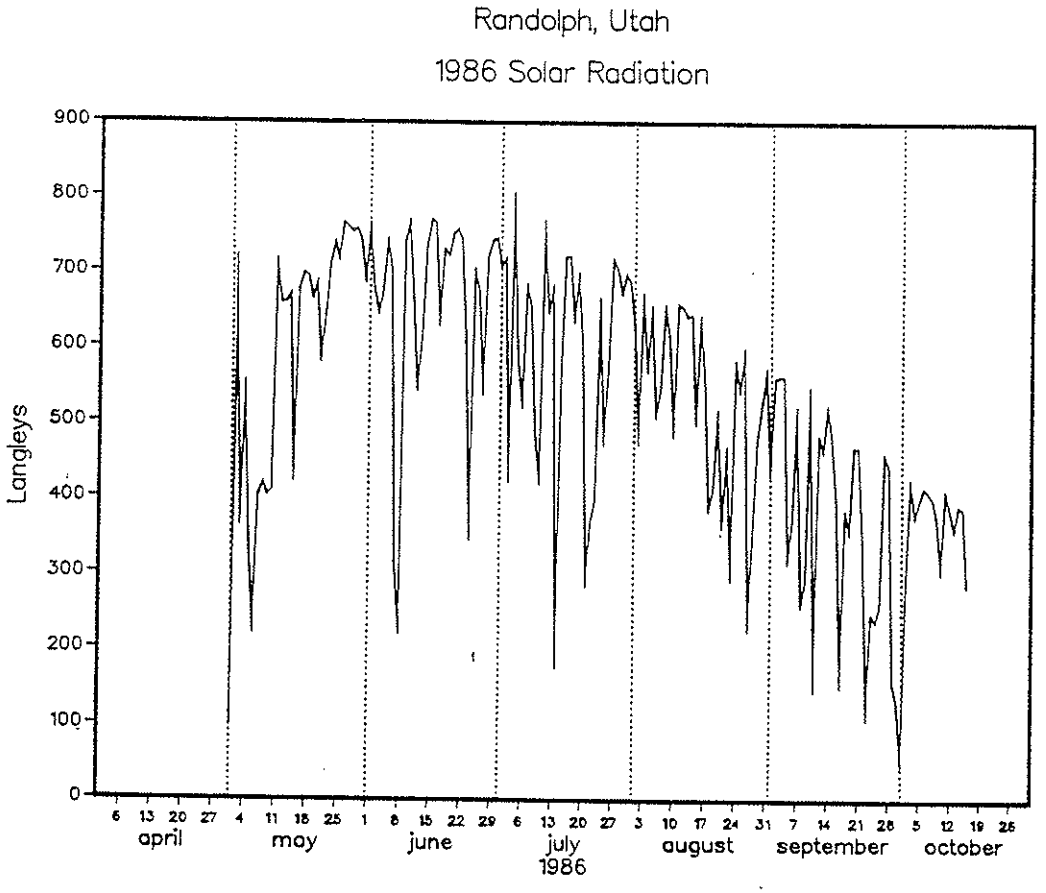
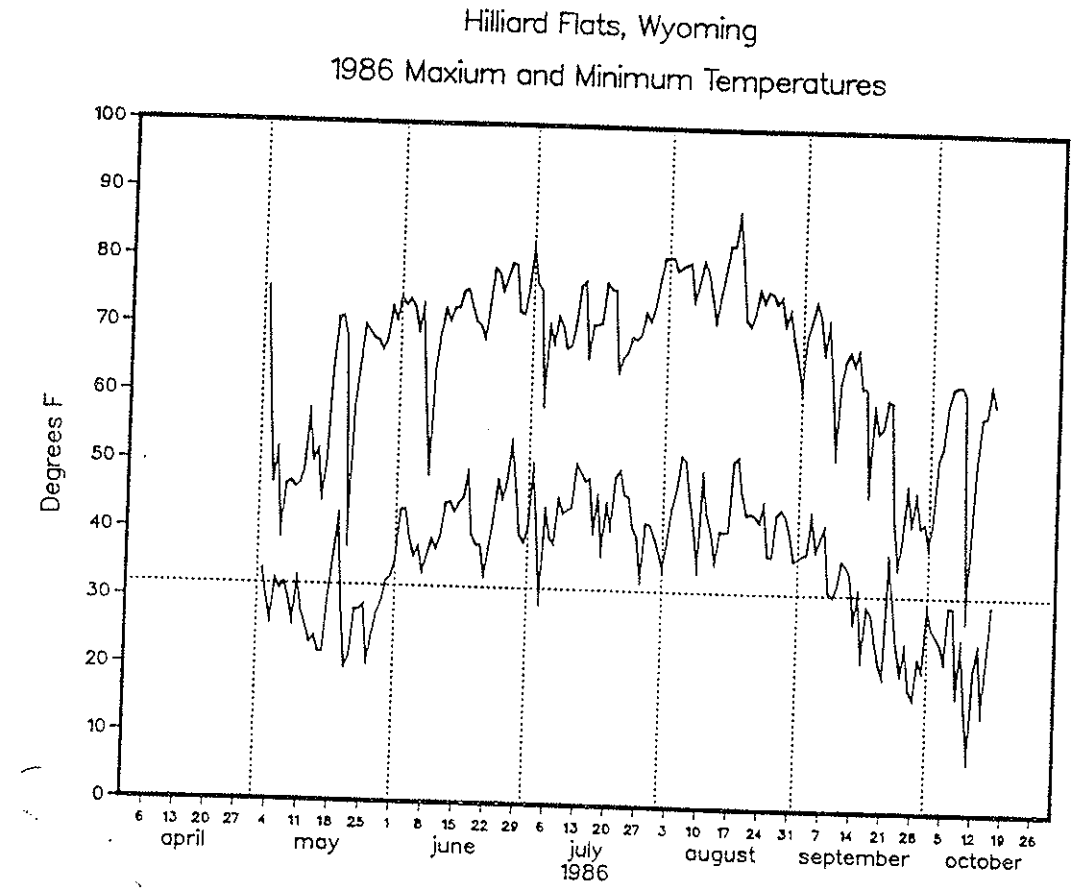


Figure 2. Daily Temperatures and Solar Radiation for Randolph, Utah, 1986.



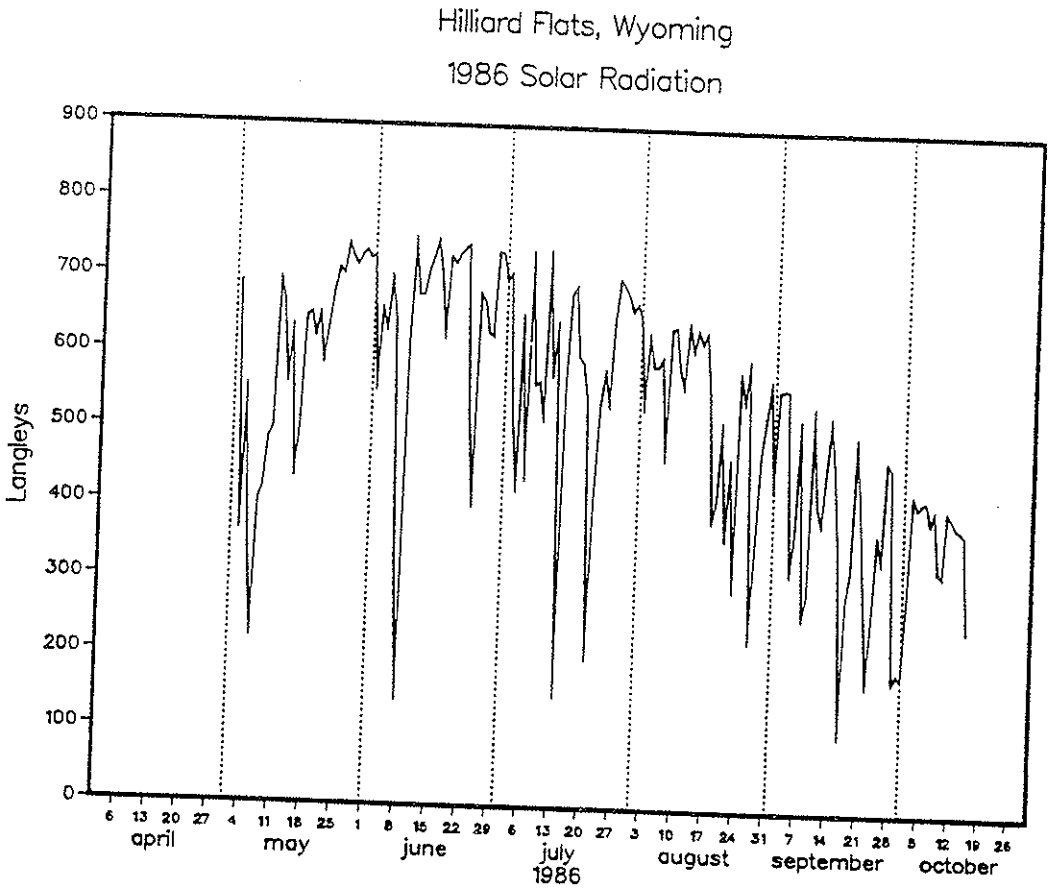


Figure 3. Daily Temperatures and Solar Radiation for Hilliard, Wyoming, 1986.

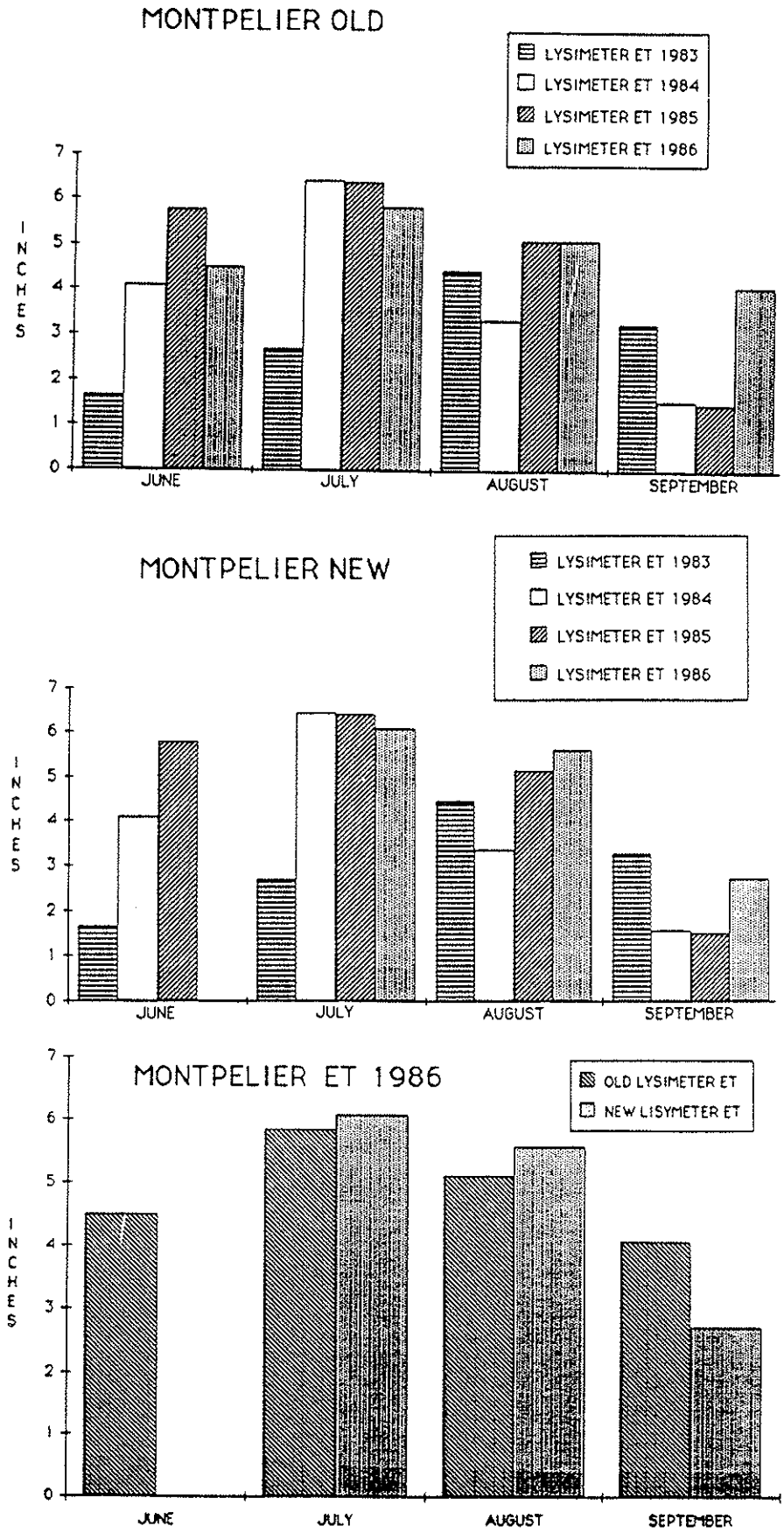


Figure 4. Monthly measured water use at Monteplier, Idaho for 1983-1986. The charts also show the data from the old and newly installed lysimeters.

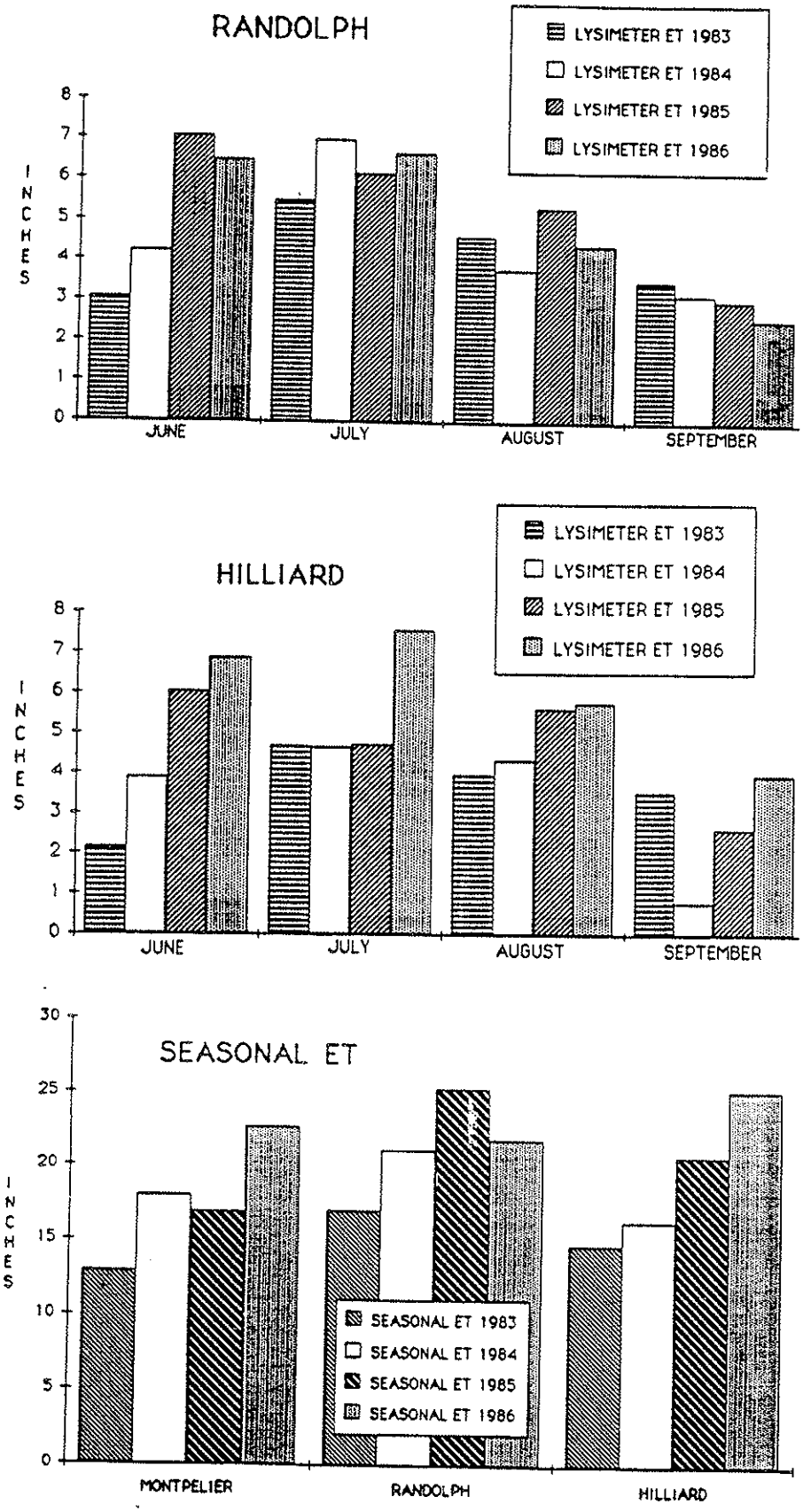


Figure 5. Monthly measured water use at Randolph, Utah and Hilliard, Wyoming for 1983-1986. The bottom chart shows the seasonal ET at all three sites for the 4 years. The Montpelier 1986 Seasonal ET is from the old lysimeters.

Resolution

by the

BEAR RIVER COMMISSION

honoring the service of

S. PAUL HOLMGREN

WHEREAS, the Bear River Compact was signed by the states of Idaho, Utah, and Wyoming, and ratified by the Congress of the United States in Public Law 85-348 (signed by the President on March 17, 1958), and

WHEREAS, the Bear River Compact established the Bear River Commission, with membership consisting of three appointees from each signatory state, and

WHEREAS, Commission members are to work towards removing the causes of present and future controversy over the distribution and use of the waters of the Bear River, to work towards furthering the efficient use of water for multiple purposes, to promote interstate comity, and to accomplish an equitable apportionment of the waters of the Bear River among the compacting States, and

WHEREAS, S. Paul Holmgren was on August 1, 1969 appointed by the Board of Water Resources as a member of the Bear River Commission, and has been reappointed by the Board to successive 4-year terms, the latest reappointment occurring on March 1, 1985, but has indicated his desire at this time to resign as Bear River Commissioner from Utah, and

WHEREAS, Mr. Holmgren has served the Bear River Commission and the State of Utah with distinction in his position as Commissioner, and has made a valuable contribution to achieving the objectives of the Bear River Commission,

NOW, THEREFORE BE IT RESOLVED, that the Bear River Commission expresses deep appreciation to Mr. Holmgren for his efforts on the Commission and commends him for his diligence and dedication in the discharge of his responsibilities.

* * * * * * * *

The Bear River Commission passed this Resolution unanimously on this 24th day of November, 1986, on Motion of Calvin Funk; seconded by Rodney Wallentine.

D. Larry Anderson

D. Larry Anderson, Secretary-Treasurer

Attest:

Nancy Fullmer

Nancy Fullmer, Secretary