

# DITCHES AND DRAINAGE IN THE TRUCKEE MEADOWS



*Bulletin No. 83-11*

LEGISLATIVE COUNSEL BUREAU  
STATE OF NEVADA

*November 1982*



D I T C H E S     A N D     D R A I N A G E     I N     T H E  
T R U C K E E     M E A D O W S

BULLETIN NO. 83-11

LEGISLATIVE COMMISSION  
OF THE  
LEGISLATIVE COUNSEL BUREAU  
STATE OF NEVADA

NOVEMBER 1982



## TABLE OF CONTENTS

	<u>Page</u>
1. Senate Bill 163, 61st Session of the Nevada Legislature (1981) .....	ii
2. Report of the Legislative Commission .....	iv
3. Report to the Legislative Commission on the Study of Ditches and Drainage in the Truckee Meadows .....	1
I. Background Information .....	1
A. Issues Relative to Ditches and Drainage in the Truckee Meadows .....	2
II. Issues and Possible Approaches .....	3
A. Issue I: Maintenance of the Existing System .....	3
B. Issue II: Planning, Construction and Management of the Future System .....	6
C. Issue III: Overall Regional Water Management .....	9
III. Conclusion .....	10



CHAPTER 400

AN ACT creating the Truckee Meadows committee on ditches and drainage; requiring the committee to study the problem of ditches and drainage in the Truckee Meadows and report to the legislature; and providing other matters properly relating thereto.

*The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:*

SECTION 1. The legislature finds that:

1. The Truckee Meadows in Washoe County was once crisscrossed with irrigation ditches, of which only four major ditches are still used to supply water for agricultural or commercial purposes.

2. Of those ditches which have lost their identity as agricultural ditches, some have collapsed, and others are used only as storm drains but are full of debris and cause flooding.

3. The ditches are owned and individually controlled by a variety of owners, including mutual ditch companies, water users' associations and public utilities.

4. The local governments in the Truckee Meadows need a plan to preserve, improve and maintain certain of these ditches as storm drains, and perhaps to relocate certain other ditches in developing a system of storm drains.

SEC. 2. 1. There is hereby created a Truckee Meadows committee on ditches and drainage consisting of:

(a) Three members each from the:

(1) Board of county commissioners of Washoe County;

(2) Governing body of the City of Reno; and

(3) Governing body of the City of Sparks,

or their designees, who are appointed to the committee by that board and those bodies.

(b) One member of the senate and one member of the assembly of the Nevada legislature, who are from Washoe County and are appointed to the committee by the legislative commission.

2. The member of the senate who is appointed to the committee is its chairman.

SEC. 3. 1. The committee, in cooperation with water users, ditch owners, Washoe County, the cities of Reno and Sparks and the Carson-Truckee water conservancy district, shall conduct a study of the ditches in the Truckee Meadows and develop a plan to:

(a) Preserve, improve and maintain existing ditches in the Truckee Meadows as storm drains;

(b) Relocate, as necessary, ditches used to supply water, without interfering with the water rights of the users; and

(c) Assist the owners and users of the ditches financially in removing debris from the ditches and installing necessary improvements.

2. The plan must contain a list of necessary projects, estimates of their cost and recommended methods of paying for them.

3. The committee shall report the results of its study, including the plan and any recommended legislation, to the legislative commission before November 1, 1982.

SEC. 4. The board of county commissioners of Washoe County and the governing bodies of the cities of Reno and Sparks are hereby authorized to grant money to the committee, and the committee may expend that money, to pay the necessary costs of the study. Such grants are hereby declared to be governmental expenditures.



## REPORT OF THE LEGISLATIVE COMMISSION

TO THE MEMBERS OF THE 62ND SESSION OF THE NEVADA LEGISLATURE:

At its meeting of October 13, 1982, the legislative commission directed that the report of the study of ditches and drainage in the Truckee Meadows be printed as a legislative counsel bureau bulletin. The document is basically a staff report containing an explanation of issues and description of possible courses of action. Specific recommendations are not made.

Additional explanation of the manner in which the study was conducted is contained in the text of the bulletin. Staff of the research division of the legislative counsel bureau conducted the study and prepared the report. Of special assistance was Judi Scott, a legislative staff intern, who worked with the research staff on the project. Input was obtained from individuals who supported the bill which resulted in the study. Meetings were also held with officials from the public works departments of the three local governments in the Truckee Meadows, representatives of the ditch companies, and a group of professionals who work on water-related issues in the Truckee Meadows.

Respectfully submitted,

Legislative Commission  
Legislative Counsel Bureau  
State of Nevada

Carson City, Nevada  
November 1982

LEGISLATIVE COMMISSION

Assemblyman Robert R. Barengo, Chairman  
Assemblyman Joseph E. Dini, Jr., Vice Chairman

Senator Keith Ashworth  
Senator Richard E. Blakemore  
Senator Jean E. Ford  
Senator Virgil M. Getto  
Senator Lawrence E. Jacobsen  
Senator James N. Kosinski

Assemblyman Mike Malone  
Assemblyman Paul W. May, Jr.  
Assemblyman Kenneth K.  
Redelsperger  
Assemblyman Robert F. Rusk

# REPORT TO THE LEGISLATIVE COMMISSION ON THE STUDY OF DITCHES AND DRAINAGE IN THE TRUCKEE MEADOWS

## I. BACKGROUND INFORMATION

Senate Bill 163, enacted during the 1981 legislative session, called for creation of a Truckee Meadows committee on ditches and drainage. This committee was directed to study and plan for the preservation, improvement, maintenance and possible relocation of the ditches in the Truckee Meadows. The act also authorized the local governments in Washoe County to grant money to the committee to pay the necessary costs of the study.

Because of the existing economic situation, it became evident that the local governments could not finance a planning effort of the magnitude which was outlined in the act. Rather than establish the committee under these circumstances, the legislative commission directed the staff of the legislative counsel bureau to compile background information on the subject, outline the relevant issues, and propose possible approaches for addressing each of the issues.

Legislative counsel bureau staff met individually with many of the people who had supported the bill which resulted in the study. Meetings were also held with officials from the public works departments of the three local governments in the Truckee Meadows, representatives of the ditch companies, and a group of professionals who work on water-related issues in the Truckee Meadows.

The initial effort was to identify the issues which are associated with ditches and drainage in the Truckee Meadows. Based upon their personal perspectives, different people have various concepts about what the problems are. After determining that there are three major issue areas, possible approaches for addressing these issues were discussed with the different groups. In all, the staff met with 10 to 15 people individually and held four group meetings.

ISSUES RELATIVE TO DITCHES AND DRAINAGE  
IN THE TRUCKEE MEADOWS

ISSUE I. MAINTENANCE OF THE EXISTING SYSTEM

- A. Urban encroachment resulting in:
  - 1. Filling of ditches with debris;
  - 2. Increased runoff into ditches;
  - 3. Inadequate easements to allow cleaning;
  - 4. Lack of standards for culverts, street crossings and similar construction.
- B. Insufficient finances and inappropriate distribution of costs for:
  - 1. Cleaning of the ditches;
  - 2. Reconstruction after "breakouts" during storms;
  - 3. Insurance for flood hazards.

ISSUE II. PLANNING, CONSTRUCTION AND MANAGEMENT OF THE FUTURE SYSTEM

- A. Inability to determine (on a regional scale) how important planning and construction of storm drainage facilities are in comparison to the importance of other municipal activities.
- B. Lack of coordination in:
  - 1. Planning future uses of ditches, as part of the drainage system and as part of the water distribution system;
  - 2. Construction of needed facilities to effectuate the future (planned) uses;
  - 3. Proposing and establishing a management structure for the system.

ISSUE III. OVERALL REGIONAL WATER MANAGEMENT

- A. Inadequate supply of water for the Truckee Meadows.
- B. Possible need for additional upstream storage facilities.
- C. Proliferation of independent water companies.
- D. Problems associated with water rights in the Truckee Meadows.

## II. ISSUES AND POSSIBLE APPROACHES

The chart on the facing page entitled "Issues Relative to Ditches and Drainage in the Truckee Meadows" outlines the major issues associated with ditches and drainage in the Truckee Meadows. The first issue is maintenance of the existing system. The second is planning, construction and management of the future system. The third is overall water management in the Truckee Meadows. Each of these broad issues is composed of a couple of types of problems which may be isolated and addressed individually.

### A. ISSUE I: MAINTENANCE OF THE EXISTING SYSTEM

In the early years, agricultural development in the Truckee Meadows was extensive. Urbanization was minimal. Irrigation ditches and drainage were of major significance in the valley.

#### Discussion of the Issue:

As urbanization became dominant, there began to be encroachment on the ditches, and the local governments began to use the ditches as parts of their storm drainage systems. The urban encroachment has resulted in:

- (a) Filling of ditches with debris;
- (b) Increased runoff into ditches;
- (c) Inadequate easements to allow cleaning; and
- (d) Lack of standards for culverts, street crossings, and similar construction.

The local governments have ordinances which deal with littering and trash dumping, but these are not consistently enforced. The regional administrative planning agency has developed a "model" drainage ordinance that would call for elimination of any increased runoff which would otherwise have been caused by proposed new developments. If all three local governments were to adopt this ordinance, it would decrease future problems associated with urban runoff. In areas which have already been developed, it would be difficult to obtain additional easements along ditches to facilitate cleaning of the ditches. However, the local governments, by policy, are requiring that plats for new subdivisions receive a signature from the ditch companies

before they are approved. Very little progress has been made in the area of construction standards.

The most significant aspect of the issue of maintenance of the existing system is associated with financing. Debris and plant growth must be cleared from the ditches periodically. Reconstruction must be undertaken after "breakouts" which are caused by floods. Insurance to cover potential damages from floods is also necessary. These would be rather straightforward problems if the ditches were used solely to distribute water to agricultural enterprises. However, recent years have seen the ditches used more and more as public storm drainage channels. The public, through their local governments, have generally not paid for this service. The ditch companies, which consist of the water users, have paid for all ditch-related costs, except in the City of Sparks where the city owns and operates several ditches.

It is somewhat complex to determine the proportion to which each different ditch is used for storm drainages versus its use for water distribution. Agreement on this matter would indicate the relative portions of ditch maintenance that the ditch companies and the local governments should finance. Negotiation would also appear to be necessary in deciding who should pay for ditch reconstruction when increased runoff from urban development joins natural runoff to cause a rupture in a ditch. And it could be argued that carrying insurance for floods caused from this runoff should be jointly financed by the ditch companies and local governments. The difficult matter is determining the degree of responsibility which the local governments should bear for financing these aspects of ditch maintenance.

Representatives of the ditch companies indicate that the issue of maintaining the existing ditches is more important to them than are any other problems. The public works staff for the local governments acknowledge that the ditches are used to some degree for the public benefit as storm drainage channels. A negotiated agreement relative to responsibilities and financing for each ditch would appear to be necessary.

### Possible Approaches:

Following are four possible ways that a negotiated agreement concerning distribution of responsibilities between the ditch companies and local governments might be achieved:

1. Ditch companies individually - Each ditch company could individually determine what it believes would be a fair distribution, review its proposal with the local public works departments, and then individually present its proposal to the local elected officials for their action.
2. Ditch companies collectively - The ditch companies could join together to prepare a single proposal for presentation to the local elected officials. The joint proposal would contain recommended distribution of responsibilities for each ditch separately.
3. Third party coordinator - A third party, who is not directly associated with the ditch companies or the individual local governments, could coordinate a unified effort among the interested parties to develop proposed distributions of responsibilities. This third party could be a state agency, an existing regional entity such as the regional administrative planning agency or the water conservation district, or one of several other possibilities.
4. Regional body - An existing or new regional body could officially be assigned duties which would include working with the interested parties to determine a distribution of responsibilities associated with maintenance of the existing ditch system. Rather than performing the role of coordinator as in alternative 3, the regional body would perform the responsibilities of arbitrator. However, for this option to be reasonable, the primary duties of the regional body probably would be associated with the other two types of issues relative to ditches and drainage in the Truckee Meadows--namely, planning, construction and management of the future system and overall regional water management.

B. ISSUE II: PLANNING, CONSTRUCTION AND MANAGEMENT OF THE FUTURE SYSTEM

Whereas Issue I addresses the existing system of ditches and drainage in the Truckee Meadows, Issue II deals with the future system.

Discussion of the Issue:

In the past, many of the ditches which once crossed the Truckee Meadows were abandoned when the agricultural uses that supported them were discontinued. As they fell into disrepair and were filled, any potential uses which these ditches might have had for storm drainage were eliminated. There has been almost no planning associated with the future uses or abandonment of the ditches in the Truckee Meadows, with the exception of the North Truckee Ditch which is now owned and maintained by the City of Sparks.

One of the difficulties in planning for the future of the ditches is the fact that most of them are located in more than one of the three political jurisdictions in the Truckee Meadows. Similarly, each ditch is owned and managed by a separate ditch company. The local entities have never gotten together to determine, on a regional scale, how important planning and construction of storm drainage facilities are in comparison to the importance of other municipal activities. When looking specifically at the future of the ditches, there has been a lack of coordination in planning for their utilization as part of the drainage and water distribution systems. Projecting future uses of the ditches requires coordination in planning, construction of facilities needed to effectuate the plans, and establishment of a management structure for the system.

Traditionally, the local public works departments have been responsible for planning of the local storm drainage systems. Although some areawide storm drainage planning has been undertaken, most of the activity is initiated when a development proposal is submitted. The ditch companies have been responsible for virtually all of the projections related to future uses of the ditches. The limited amount of regionwide planning for storm drainage and ditch usage is probably due to the complicated institutional/political structure and the significant engineering costs.



In recent years, there has been discussion of possibly redesigning the ditch system so that the Steamboat Ditch, Orr Ditch and the Highland Ditch, which occupy the highest elevations, would distribute all of the water for agricultural and municipal uses. Under this proposal, the remaining ditches would be retained for storm drainage purposes. Although the study outlined in S.B. 163 envisioned that a determination about this type of proposal would be made, the necessary funding for technical analyses was not available.

The procedure necessary to complete a major design like this one would be relatively complex. The initial step would be to determine the institutional/political feasibility and specify a scope of engineering analysis. A preliminary engineering study would be needed to determine technical feasibility, general construction projects, and estimated costs. This preliminary study would probably cost in the neighborhood of \$50,000 to \$150,000 to prepare. From it, a cost/benefit analysis could be drawn. If the decision to move forward with the proposal were made, it would be necessary to complete detailed engineering designs which would be more costly than the preliminary study. It is clear that pursuit of this proposal would be a major undertaking.

Also discussed has been the need for a reconnaissance level engineering study of the overall drainage system in the Truckee Meadows. In 1954, such a study generally called the "Kennedy Study" was compiled. Some additional work has been done since that time, including a couple of areawide surveys recently completed for southeastern Reno. However, no unified regional study has been undertaken. The estimates of costs for doing this type of regional storm drainage analysis are high, running in the range of \$300,000 to \$500,000.

Data collection and planning associated with major flood control activities in the Truckee Meadows have been undertaken by the U.S. Army Corps of Engineers. However, its programs have dealt primarily with the Truckee River and its major tributaries. Storm drainage has not been a part of its flood control studies.

The State of Nevada established a revolving flood control fund in Nevada Revised Statutes (NRS) 543.010 through 543.150. It is clear from NRS 543.030, 543.050 and 543.090

that money from this fund can only be used to finance state or local involvement in federal flood control projects which are undertaken by the U.S. Army Corps of Engineers or the U.S. Department of Agriculture. Professionals in the field indicate that planning and construction of the types of storm drainage projects discussed in this study would not be eligible under the federal programs. Therefore, money from the state flood control fund could not be used on any proposed ditches and drainage projects unless the stipulations of the state law were modified to allow this type of expenditure.

#### Possible Approaches:

Following are three ways that the issue of planning, construction and management of the future system of storm drainage and ditches might be addressed:

1. Public works departments individually - The local public works departments could continue to plan for their storm drainage systems individually. Areawide analyses within each jurisdiction would be made when finances permit. The future uses of the ditches as elements in the drainage systems would be determined as development projects were proposed or when the ditch companies decide to no longer use the ditches for water distribution.
2. Local governments collectively - If the local governments in the Truckee Meadows placed a high priority on the program, they could collectively finance a reconnaissance level engineering study of the storm drainage system in the basin. This study would outline the major elements of the future drainage system and could be designed to include projections regarding future uses of the ditches.
3. Regional body - An existing or new regional body could be assigned the duty of working with the local entities to coordinate their activities in identifying local and regional priorities relative to storm drainage in the Truckee Meadows. The regional body could also prepare a reconnaissance level study of the basin's storm drainage system and coordinate planning for future uses of the ditches. Their responsibilities could be limited to these planning activities, or the duties could include broader functions like management of any new regional storm drainage system or performing other duties associated with overall water management in the basin.

4. Legislative mandate with financing - The legislature could require the local entities or a regional body in the Truckee Meadows to perform the planning activities relative to ditches and storm drainage. Actual construction of the system might or might not be included in the mandate. Necessary financing would also be required in order to make this alternative feasible. A direct appropriation or modification of the limitations for usage of the money in the state flood control fund might be considered.

### C. ISSUE III: OVERALL REGIONAL WATER MANAGEMENT

The issue of overall regional water management is considerably broader than are the first two issues. For the past several years, there has been unrest in the Truckee Meadows concerning the adequacy of the water supply and how the water allocation and distribution system should be administered.

#### Discussion of the Issue:

Unquestionably the largest water-related concern in the Truckee Meadows has been whether there is an adequate amount of water to meet present and future needs. A considerable amount of money has been invested in studies of the question, and a couple of major lawsuits are directly related to the issue. An associated question is the possible need for additional upstream water storage facilities.

The administration of the water system has also been a subject of increasing discussion. Sierra Pacific Power Company is the major purveyor of water in the Truckee Meadows at the present time. However, the proliferation of independent water companies to serve new development is often listed as a problem, and several issues associated with water rights have also been discussed by people in the Truckee Meadows.

The relationship between the ditches and drainage in the Truckee Meadows and overall water management in the basin is somewhat limited. The ditches and drainage are a part of the overall water management picture, but probably only a minor part in comparison to the major questions associated with municipal water distribution and overall adequacy of the water supply. For this reason, the issue of overall regional water management is only reviewed in a general way in the present study.

### Possible Approaches:

A wide range of approaches to overall regional water management in the Truckee Meadows has been discussed in the area. There are those who believe that the existing system is the most efficient method of operation. Others have suggested that the water distribution facilities of Sierra Pacific Power Company should be purchased and a metropolitan water district formed. However, the costs of such an action are high. There has also been discussion of allocating the policy powers associated with water distribution to an existing or new regional body while leaving the facilities and day-to-day operation of the system with Sierra Pacific Power Company.

No consensus of opinion on these major types of approaches has been reached, and it is beyond the purview of this present study to review the subject more extensively.

### III. CONCLUSION

The issues associated with ditches and drainages in the Truckee Meadows are more complex than might be realized upon initial review. The three major issues are:

- (a) maintenance of the existing system;
- (b) planning, construction and management of the future system; and
- (c) overall regional water management.

Because financing was not available for a planning effort of the magnitude which would be necessary to carry out the requirements of S.B. 163, staff of the legislative counsel bureau was directed to compile background information on the subject, outline the relevant issues, and propose possible approaches for addressing each of the issues. This work has been completed and is contained in the previous sections of this bulletin.

The issues associated with ditches and drainage in the Truckee Meadows are local and regional in character. It appears that changes in the state statutes generally are not necessary in order for these issues to be addressed. However, if it were the desire to establish a metropolitan water district similar to the Las Vegas Valley Water District in Clark County, legislative action would be required.

If a decision were made to address only the first issue of maintenance of the existing system of ditches and drainage, the approach of using a third party coordinator would probably be most effective. An entity like the regional administrative planning agency would have the broad geographic scope to undertake the role of coordinator. However, since the regional administrative planning agency is a creature of the local governments, the ditch companies might feel that their interests are not adequately represented. A state agency, probably the division of water planning, would also have the necessary characteristics to perform the role of coordinator. If the division of water planning were chosen, a bill directing the agency to perform the task would be appropriate. It should be recognized that there would be agency costs associated with such a task.

It appears that a decision to address the second issue of planning, construction and maintenance of the future system can appropriately be initiated only at the local level. The local public works departments traditionally have been responsible for planning, construction and maintenance of the storm drainage systems. Decisions relative to increased activities by the individual departments or cooperative efforts would logically come from the local governments. A decision to work through an existing entity such as the regional administrative planning agency would also come from the local governments which direct the regional body. Money from state and federal sources to assist in these types of programs does not appear to be available at this time. However, as is outlined in one of the possible approaches, the legislature could choose to appropriate money or could consider making money from the state flood control fund available for this planning and construction.

The third issue of overall regional water management in the Truckee Meadows is of major significance to the area. However, the breadth of the issue is beyond the scope of the present study of ditches and drainage.