

MINUTES AND RECORD OF THE

FIRST MEETING

COLORADO RIVER COMMISSION

In compliance with an act of Congress (H.R. 6877) to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes, the Colorado River Commission, composed of representatives of the above enumerated states and a representative of the United States, met at the United States Department of Commerce, Washington, D. C. Thursday, January 26th, 1922, at 10:00 o'clock a.m.

There were present:

FEDERAL REPRESENTATIVE: The Honorable Herbert Hoover,  
Secretary of Commerce

STATE REPRESENTATIVES:

ARIZONA. . . . .	Mr. W. S. Norviel, State Water Commissioner, Phoenix, Arizona
CALIFORNIA. . . . .	Mr. W. F. McClure, State Engineer Department of Public Works, Sacramento, Calif.
COLORADO. . . . .	Mr. Delph E. Carpenter, Commissioner for Colorado on Colorado River Comm., Greeley, Colorado
NEVADA. . . . .	Col. James G. Scrugham, State Engineer Carson City, Nevada
NEW MEXICO. . . . .	Hon. Stephen B. Davis, Jr., Commissioner for New Mexico on Colorado River Com- mission, Las Vegas, N. M.

UTAH. . . . . Mr. R. E. Caldwell, State Engineer,  
Salt Lake City, Utah

WYOMING. . . . . Mr. Frank C. Emerson, State Engineer,  
Cheyenne, Wyoming

Secretary Hoover: I am glad to have the honor of welcoming the Commissioners to Washington for the initial meeting of the Commission, and I consider it a great honor to have been chosen by the President, upon the recommendation of Secretary Fall, to represent the Federal Government in so great an undertaking.

This Commission has been established primarily to consider and if possible to agree upon a compact between the seven states of the Colorado Basin, providing for an equitable division of the water supply of the Colorado River and its tributaries amongst the seven states. Such a compact is subject to ratification by Congress and the Legislatures of the various states.

It is hoped that such an agreement may be arrived at by this Commission as will prevent endless litigation which will inevitably arise in the conflict of state rights, with delays and costs that will be imposed upon our citizens through such conflicts. The success of its efforts will contribute to the welfare of millions of people.

The problem is not as simple as might appear on the surface for while there is possibly ample water in the river for all purposes if adequate storage be undertaken, there is not a sufficient supply of water to meet all claims unless there is some definite program of water conservation. The Commission will, therefore, inevitably be driven into the consideration of a program looking further than the immediate legalistic relationship of the states if it is to find a solution to the problem.

The Federal Government is interested through its control of navigation, through protection of its treaty obligations, through development of national irrigation projects and through virtual control of power development depending upon the use of public lands.

The sole object of the Federal Government is to secure development of the river in the interest of all.

The problems before the Commission are not to be solved in a day. There are many interests to be considered and there is much to be heard from different factions of the community whose welfare is at stake. These problems have been under intense study by both state and national authorities for many years. There seems to be almost unanimity that the river should be considered as a whole, that its resources should be developed so as to give the greatest benefits to the nation.

It is fortunate that there is little established right on the river and that we have almost a clean sheet with which to begin our efforts. The importance of the river cannot be overestimated as a national asset. To-day there are some 2 1/2 million acres under irrigation in the drainage basin. With proper development this can be increased to over six million acres. There can be developed on the river over five million horsepower, and with rapid strides in transmission this enormous reserve of power will yet harness an enormous asset to the nation.

Populations depending upon the lower river are in extreme jeopardy through the violations of the river floods and the control of its flood flow has become vital to their very existence.

This Conference is unique in its attempt to determine states' rights over so large an area by amiable agreement. Indeed it has wider proportions than this in its realization of common interest, need of joint consideration, etc. in order that the greatest possible benefits may be derived for the whole of our people from one of the most precious possessions of our country.

Mr. Carpenter. Mr. Secretary, it affords me pleasure to nominate Secretary Hoover as permanent chairman of this Commission.

Mr. McClure. I second the motion.

Mr. Scrugham. It has been moved and seconded that Secretary Hoover be the permanent Chairman of this Commission. All in favor say "aye". \* \* The motion is carried.

Secretary Hoover (Chairman). As a matter of formality it might be proper to record the credentials of the various Commissioners. I have here the following documents from the Governor of Arizona, Hon. Thomas E. Campbell: (reading)

EXECUTIVE OFFICE  
State House  
Phoenix, Arizona  
January 21, 1922.

My dear Secretary Hoover:

In compliance with the suggestion contained in your wire of the 19th instant concerning the organization of the Colorado River Commission, formal notification is hereby given you that acting under the provisions of Chapter 46, Session Laws of 1921, approved by me on March 5th, 1921, and which became in full force and effect on that date, I notified the Governors of the states of California, Colorado, Nevada, New Mexico, Utah and Wyoming by telegraph of the appointment of W. S. Norviel, State Water Commissioner to represent the State of Arizona, provided for by this Act. There is attached to this letter copy of my telegram to the Governors of the states named, together with copy of my letter notifying the State Water Commissioner of his appointment and copies of formal notification to the Secretary of State and the State Auditor of Arizona.

You are further advised that I am in receipt of notifications from the Governors of California, Colorado, Nevada, New Mexico, Utah and Wyoming of the appointment by them of representatives on the joint Commission referred to. Copies of these official notifications are attached to and made a part of this letter.

In compliance with the provisions of the acts of Colorado and New Mexico to the effect that I shall notify the Governors of all interested states of the appointment and qualifications of all members of the Commission, I beg to advise you that I have today addressed and mailed in the United States Postoffice by registered mail, the following letter to the Governors of California, Colorado, Nevada, New Mexico, Utah and Wyoming:

"January 21, 1922.

"My dear Governor:

In order that the representatives of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming appointed as members of the Colorado River Commission may be fully qualified and the Commission may experience no delay in its organization at the meeting to be held at Washington, D. C., on the 26th instant, and in order to comply with the requirements of the acts of Colorado and New Mexico, providing for such representation and for notification of you by me to this effect, I am hereby formally notifying you that representatives have been appointed by the Governors of each of the seven states named and that they have qualified as such representatives. In detail these appointments have been made as follows:

On May 23, 1921, Governor Wm. D. Stephens appointed Mr. W. F. McClure, State Engineer, as Commissioner to represent the State of California;

On May 9, 1921, Governor O. H. Shoup of Colorado, pursuant to Chapter 246, Session Laws of Colorado 1921, appointed Delph E. Carpenter as Commissioner for Colorado to negotiate a compact between the State of Colorado and the United States Government and the other Colorado River states mentioned in Section one of said act. His commission was delivered and he duly qualified as said Commissioner on the date named;

Governor Boyle of Nevada has appointed C. P. Squires and Levi Syphus as members of the Colorado River Development Commission of Nevada, Colonel James G. Scrugham, State Engineer of Nevada is designated as a member of that Commission by the Nevada Law. The Colorado River Development Commission of Nevada has duly organized and has empowered James G. Scrugham to represent the State of Nevada on the joint Commission referred to;

On May 16, 1921, Governor M. C. Mechem of New Mexico notified me that he had appointed S. B. Davis, Jr. of East Las Vegas, New Mexico, to represent that State on the joint Commission;

Mr. R. E. Caldwell, State Engineer of the State of Utah has been appointed to represent Utah on the joint Commission referred to;

On May 9, 1921, Governor Robert D. Carey of Wyoming appointed Mr. F. C. Emerson, State Engineer, as Commissioner to represent that State on the Joint Commission;

Formal notification is hereby given you that, acting in compliance with the provisions of Chapter 46, Session Laws of 1921, I appointed Mr. W. S. Norviel, State Water Commissioner, on March 23, 1921, to be the representative of the State of Arizona on a joint Commission to be composed of a representative of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and a duly authorized representative of the United States of America, such Commission to be constituted for the purpose of negotiating and entering into a compact or agreement between the said States, and between said States and the United States, with the consent of Congress, respecting the further utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said States and the rights of the United States in and to the use and disposition of the waters of said stream and the benefits to be derived therefrom. His commission has been duly issued and he has qualified under the provisions of said enactment as said representative.

Further evidence of each and every one of these appointments is hereby submitted in the attached copies of letters and telegrams from the Governors of California, Colorado, Nevada, New Mexico and Wyoming, and copy of letter from Lamar Nelson, Secretary to the Governor of Utah, also copy of my letter to the Secretary of State, dated March 23, 1921.

Sincerely yours,

(GREAT SEAL)

THOMAS E. CAMPBELL

Attest:  
Ernest R. Hall,  
Secretary of State.

Governor of Arizona.

To:

Governor Wm. D. Stephens,  
Sacramento, California.

Governor O. H. Shoup,  
Denver, Colorado.

Governor Emmett D. Boyle,  
Carson City, Nevada.

Governor M. C. Mechem,  
Santa Fe, New Mexico.

Governor Chas. R. Mabey,  
Salt Lake City, Utah.

Governor Robert D. Carey,  
Cheyenne, Wyoming."

Trusting that you will find the foregoing to be in proper form  
and in accordance with the requirements of the statutes of the  
several states interested, I remain

Sincerely yours,

(GREAT SEAL)

THOMAS E. CAMPBELL

Governor of Arizona.

Attest:

Ernest R. Hall,  
Secretary of State.

Hon. Herbert Hoover,  
Washington, D. C.

COPY OF TELEGRAM

March 5, 1921.

Gov. Wm. D. Stephens, Sacramento, California.  
Gov. Oliver H. Shoup, Denver, Colorado.  
Gov. Emmet D. Boyle, Carson City, Nevada.  
Gov. Merritt C. Mechem, Albuquerque, New Mexico.  
Gov. Chas. R. Mabey, Salt Lake City, Utah.  
Gov. Robert D. Carey, Cheyenne, Wyoming

Under terms of Senate Bill Sixty-Four signed by me  
today and now a law State Water Commissioner W. S. Norviel  
becomes representative on behalf State of Arizona on  
Colorado River Commission.

Thomas E. Campbell  
Governor.

Send Paid--Charge to Gov. Office.

EXECUTIVE OFFICE  
PHOENIX ARIZONA

COPY

March 23, 1921.

My dear Mr. Hall:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64 passed by the Fifth State Legislature of Arizona, I have today appointed W. S. Norviel to represent the State of Arizona on the joint Commission to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona, and a duly authorized representative of the United States to negotiate and enter into a compact between said states and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Sincerely yours,

Thomas E. Campbell

Governor.

Hon. Ernest R. Hall,  
Secretary of State,  
Phoenix, Arizona

COPY

March 23, 1921.

My dear Mr. Fairfield:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64, passed by the Fifth State Legislature of Arizona, I have today appointed W. S. Norviel to represent the State of Arizona on the joint commission to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona and a duly authorized representative of the United States, to negotiate and enter into a compact between said states, and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Sincerely yours,

Thomas E. Campbell

Governor.

Hon. Chas W. Fairfield,  
State Auditor,  
Phoenix, Arizona



COPY

March 23, 1921.

My dear Mr. Norviel:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64, passed by the Fifth State Legislature of Arizona, I have today appointed you as Colorado River Basin Commissioner, to represent the State of Arizona on the joint commission, to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona, and a duly authorized representative of the United States, to negotiate and enter into a compact between said states, and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Due notification has been given the Secretary of State and the State Auditor of your appointment, effective this date.

Sincerely yours

Thomas E. Campbell

Governor.

Mr. W. S. Norviel,  
State Capitol.

THE STATE OF WYOMING

EXECUTIVE DEPARTMENT

Robert D. Carey  
Governor  
Bertram W. Bennett  
Secretary

CHEYENNE

Governor's office  
RECEIVED  
May 12, 1921  
Phoenix, Ariz.

May 9, 1921.

Hon. Thomas E. Campbell,  
Governor of Arizona,  
Phoenix, Arizona

My dear Governor Campbell:

This is to advise you that in accordance with Chapter 120 of the Session Laws of 1921, State of Wyoming, I have today appointed Mr. F. C. Emerson, State Engineer, as Commissioner to represent the State of Wyoming on the Joint Commission to be composed of commissioners from the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and two duly authorized representatives of the United States of America, such commission to be organized for the purpose of

negotiating and entering into an agreement between the said states and the United States respecting the future possession and disposition of the waters of the Colorado River and streams tributary thereto.

As under the provisions of this act the commissioner representing this state is not permitted to enter upon the performance of his duties until such time as representatives have been appointed by the other states named above, I would appreciate it if you would advise me as soon as possible as to whether or not the commissioner for your State has been appointed.

Very truly yours,

STATE OF UTAH

(Signed) Robert D. Carey.

EXECUTIVE OFFICE

Governor's office

SALT LAKE CITY

RECEIVED

May 14, 1921  
Phoenix, Ariz.

May 11, 1921.

His Excellency, Thos. E. Campbell,  
Governor of Arizona,  
Phoenix, Arizona.

My dear Governor:-

Mr. R. E. Caldwell, State Engineer, has been appointed to represent Utah on the Joint Commission to be composed of commissioners from the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and two duly authorized representatives of the United States of America, such commission to be organized for the purpose of negotiating and entering into an agreement between the said states and the United States respecting the future possession and disposition of the waters of the Colorado River and the streams tributary thereto.

Very truly yours,

(Signed) Lamar Nelson

Secretary to the Governor.

STATE OF NEW MEXICO  
M. C. Mechem, Governor

SANTA FE

Governor's office  
RECEIVED  
May 18, 1921  
Phoenix, Ariz.

May 16, 1921.

Hon. Thomas E. Campbell,  
Governor of Arizona,  
Phoenix, Arizona.

My dear Governor:

I beg to advise you that in accordance with House Bill No. 182 "An Act providing for the appointment of a Commissioner on behalf of the State of New Mexico to negotiate a compact and agreement between the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and between said States and the United States respecting the use and distribution of the waters of the Colorado river and the rights of said states and the United States thereto," approved March 11, 1921, I have appointed S. B. Davis, Jr. of East Las Vegas, New Mexico, as Commissioner to represent the State of New Mexico in all negotiations provided for under said act.

Sincerely yours,

(Signed) M. C. Mechem

Governor of New Mexico

STATE OF CALIFORNIA

Governor's Office

SACRAMENTO

Governor's office  
RECEIVED  
May 26, 1921  
Phoenix, Arizona.

May 23, 1921.

Hon. Thomas E. Campbell,  
Governor of Arizona,  
Phoenix, Arizona.

My Dear Governor:

I beg to advise you that in accordance with Senate Bill 893, "An act authorizing the governor of California to appoint a representative of the State of California to serve upon a joint commission composed of representatives of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming and the United States of America, and constituted for the purpose of negotiating and entering

into an agreement between the several states hereinabove mentioned and between said states and the United States of America, subject to the consent of congress, respecting further use and disposition of the waters of the Colorado river and streams tributary thereto, and fixing and determining the rights of each of said states and rights of the United States in and to the use, benefit and disposition of the waters of said stream and its tributaries," approved May 12, 1921, I have appointed Mr. W. F. McClure, State Engineer, of Sacramento, California, as Commissioner to represent the State of California in all negotiations provided for under said act.

Yours truly,

(Signed) Wm. D. Stephens,  
Governor.

STATE OF CALIFORNIA

GOVERNOR'S OFFICE

Governor's office  
RECEIVED  
Sept. 3, 1921  
Phoenix, Ariz.

August 31, 1921.

Hon. Thomas E. Campbell;  
Governor of Arizona,  
Phoenix, Arizona.

My dear Governor:-

Pursuant to the provisions of Chapter 88, Statutes of 1921, of the Legislature of California, I have appointed Mr. W. F. McClure, Forum Buildings, Sacramento, California, who is the State Engineer, to be the representative of the State of California on a joint commission composed of one representative from each of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and two duly authorized representatives of the United States of America, the principal duty of which commission shall be to negotiate and enter into an agreement between the several states herein mentioned and between the said states and the United States of America, subject to the consent of congress, respecting the further use and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of each of said states and the rights of the United States in and to the use, benefit, and disposition of the waters of the Colorado River and its tributaries.

I am directed in this act to notify the Governor of each of the above mentioned states of the appointment of said representative of California, giving his name and address.

It is provided that said representative shall not enter upon the performance of his duties until a representative, to serve upon said commission, shall have been named and qualified for each of the states named.

I enclose copy of the act passed by the Legislature and approved by the Governor.

Yours very truly,

(Signed) Wm. D. Stephens

Governor.

WESTERN UNION

TELEGRAM

Governor's Office

RECEIVED

Jan. 20, 1922

Phoenix, Ariz.

1922 Jan 19 PM 9 09

B294GS NL 1 EXTRA 1/66

CARSON NEV 19

Hon. Thomas E. Campbell

Governor of Arizona, Phoenix Ariz.

In accordance with Chapter One Hundred Fifteen Statutes of Nevada Nineteen Twenty One I have appointed C. P. Squires and Levi Syphus as members of the Colorado River Development Commission of Nevada stop James G. Scrugham State Engineer is designated as member by the law stop the commission has duly organized and has empowered James G. Scrugham to represent the State of Nevada in interstate and other conferences and to negotiate with the representatives of other States and of the United States pursuant and subject to the provisions of said Chapter One Hundred Fifteen stop

EMMET D. BOYLE

GOVERNOR

## WESTERN UNION

## TELEGRAM

Governor's Office

RECEIVED

Jan. 20, 1922.

Phoenix, Arizona.

1922 JAN 20 PM 4 41

A205S 81 BLUE 3 EXTRA

AU DENVER COLO 340P 20

Hon. Thomas E. Campbell

382

Gov. of Ariz., Phoenix Ariz.

You are hereby notified that pursuant to Chapter Two Hundred Forty Six Session Laws of Colorado Nineteen Twenty One on May Ninth Nineteen Twenty One Delph E. Carpenter of Greeley Colorado was duly appointed commissioner for Colo. there under to negotiate a compact between Colo and the United States and the other Colorado River States mentioned in section one of said act and that his commission was delivered and he duly qualified as said commissioner on the said date.

O. H. SHOUP

GOVERNOR OF COLORADO.

EXECUTIVE OFFICE

State House

Phoenix, Arizona

January 21, 1922.

To Whom These Presents May Come, GREETINGS:

The bearer of this letter, Hon. W. S. Norviel, State Water Commissioner of Arizona, was on March 23rd, 1921, appointed by me representative of the State of Arizona on a joint Commission to be composed of a representative of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and a duly authorized representative of the United States of America, such Commission to be constituted for the purpose of negotiating and entering into a compact or agreement between the said States, and between said States and the United States, with the consent of Congress, respecting the further utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said States and the rights of the United States in and to the use and disposition of the waters of said stream and the benefits to be derived therefrom. Mr. Norviel's commission has been duly issued and he has qualified under the provisions of said enactment as said representative.

Sincerely yours,

THOMAS E. CAMPBELL

Governor of Arizona.

(Great Seal)

Attest:

ERNEST R. HALL

Secretary of State.

Secretary Hoover (Chairman). I think it would be desirable for us to hear from each of the Commissioners as to their views upon the problems before the Commission. I have the feeling that inasmuch as Mr. Carpenter has had a great deal to do with the foundation of this Commission, that we should hear from him first as to the basis on which he considers our work could most expeditiously proceed.

STATEMENT OF MR. DELPH E. CARPENTER, COMMISSIONER  
FOR COLORADO ON COLORADO RIVER COMMISSION.

Mr. Carpenter: Mr. Chairman, and gentlemen, it would be impossible, probably inadvisable, for me at this time to go to any length into the details respecting the various phases that may be developed as this Commission proceeds. As you well observed in your opening address the prime object of the creation of this Commission was to avoid future litigation among the states interested in the Colorado River and the utilization of the benefits to be obtained from its water supply.

In order that due credit may be given, it gives me pleasure to say that Mr. Gillette, former State Engineer of New Mexico, was the first to offer the Resolution calling for the creation of this Commission, before the Resolutions Committee of the League of the Southwest at the meeting held at Denver in August 1920. I assisted in the preparation of the resolution and it gives me pleasure to observe the degree of progress made. The prime object of the Commission is to settle in advance those matters which otherwise would be brought into court. States coming into collision, finding themselves at variance--frequently actuated by political motives of the parties in power within the states--proceed upon the theory of their sovereignty before the United States Supreme Court. Now it was the primary intent of those

bility of getting too far afield. On the other hand it may develop in the course of our inquiry that there is a deficiency of water in the Colorado River unless we assume adequate storage. There may be a surplus if storage is provided. Therefore the solution of the whole problem may well be contingent upon storage. If that should develop in the course of the investigation, that would seem to me to necessitate consideration of much wider issues. I also have this feeling: We have here the unique situation of the representatives of the seven states primarily interested in this great problem. You comprise the seven men who are best able to speak for the seven states as to the exclusively interstate solution of this problem; you have also the full cooperation of Mr. Arthur P. Davis of the Reclamation Service who has devoted years to this matter and who is so universally esteemed by all.

It would seem to me that it would be a great misfortune if we did not give to Congress and to the country a broad project for development of the Colorado River as a whole--that, obviously, in the nature of a suggestion of a course that might rightly develop.

This problem perhaps appeals to me to an unusual degree as it is one of the greatest development problems in America and I dislike seeing an opportunity go by for the furtherance of national development or advancement of thought upon it by limiting ourselves to a purely legalistic setting. I do not at all contest the notion that we are under limitations as to action but at the same time those very limitations may imply the consideration of wide interests. I agree with Mr. Carpenter that it is unnecessary to travel further afield in our formal work than is necessary, but our opportunity to advance national thought on what is one of the greatest assets of the United States should not be missed.



I would like to hear from Mr. Scrugham.

STATEMENT OF COLONEL JAMES G. SCRUGHAM,  
STATE ENGINEER, CARSON CITY, NEVADA.

Mr. Scrugham. Mr. Secretary and Gentlemen of the Committee, the terms of the Bill authorizing this Commission are of such a character as to leave the Commission a wide field of usefulness. There is no question but that the people of the Southwest, particularly in those states which are most directly interested in the Colorado River, look to this Commission for definite recommendations for action. I think we can put that objective before us in a very clear cut manner. I concur in the suggestion of Mr. Carpenter that, if there are any delegations or individuals having particular plans or particular suggestions to offer, they should be presented first. Then we can go into executive session for consideration of the business of the Commission.

STATEMENT OF HON. STEPHEN B. DAVIS, JR., COMMISSIONER FOR NEW  
MEXICO ON COLORADO RIVER COMMISSION, LAS VEGAS, N. M.

Mr. Davis. Mr. Secretary and Gentlemen; I came here with an absolutely open mind. Of course like the other Commissioners I have been working on this problem for some little time and I supposed we all have some general ideas as to how it should be handled. I can say, if we deal in generalities and decide to lay down a general plan the details of which will be worked out later, we will have a much simpler task than if we attempted to work out an entire scheme. On the other hand, if we are going to achieve completeness I suppose we have got to try the second idea. What I would very much like would be to get the facts before us as rapidly as possible, hearing from whoever may be here first and I would suggest that perhaps each state could use their maps and what documents they have and make a full

statement that can go into the record as to what the full situation of each state is. I think all of you are engineers except Mr. Carpenter and myself who are lawyers and do not know very much about engineering but we have each one an engineer with us and I would suggest that when we reach that point we proceed that way, and have the states one by one give a full statement of the situation, giving the actual figures as to their respective states, and after that is done it seems to me that we can act more wisely as to what will give the best final results.

Secretary Hoover (Chairman). We will be glad to hear from Commissioner Norviel.

STATEMENT OF MR. W. S. NORVIEL, STATE WATER COMMISSIONER,  
PHOENIX, ARIZONA

Mr. Norviel. Mr. Chairman and Gentlemen: I hardly know what I should say at this time. Arizona is particularly interested in the Colorado River and its development at the earliest possible date. We have as much at stake, I presume, as any of the other states, inasmuch as we are almost wholly within the Basin of the Colorado, and we desire very much that the work laid out by this Commission proceed in a proper and orderly manner that the end may be attained as early as possible and that the river may be so developed or the beginning of the development may be at the earliest possible date, for there is a serious condition in the lower part of the river for both Arizona and California. I have a written statement. I do not know whether this is the proper time to present it or not. If it is I will be glad to submit it; if not, I will wait until a later time.

Secretary Hoover (Chairman). I am wondering if we cannot confine ourselves for the present to a consideration of a program.

Mr. Norviel. I think Mr. Carpenter's statement is a very good one in that there are those present who seem to have some statements to make; they could be heard in the early part of these sessions and then, perhaps, we could go farther and deeper into the subject, perhaps alone, at a later time. Then perhaps my statement should not be made at this time.

STATEMENT OF MR. R. E. CALDWELL, STATE ENGINEER,  
SALT LAKE CITY, UTAH.

Mr. Caldwell. Mr. Chairman and Gentlemen of the Commission: Ever since my attention has been brought to this matter I have been trying to learn something about it. The thing that impresses itself upon me at this time is that it may not be just definitely settled by anything that has been enacted or anything that has been said heretofore just what the duties of this Commission may turn out to be. I would like to know myself whether this is going to be a continuing body or not; whether it should continue or not. It seems to me that it would be a very good idea if we can in the opening proceedings of our first day lay down our foundation on which this Commission is going to rest. I make that as a general statement and I do not think it is necessary to elaborate on it any farther.

We have been building, individually, a great deal on the statement that has been current and that has been generally accepted, I believe, that there is enough water in the river for all of the interests. The other aspect of it is that perhaps the duty of this Commission is to fully consider the water rights in the river and allocate on this general proposition. Just how far the allocation according to water rights will lead us into legal and other matters is a matter that will develop in the course of the hearing. I do not know that anybody should be called upon to lay that down at this

time. I may say, while I am on my feet for Utah, that Utah has depended a great deal on this meeting for a definite program to come out of it so that she may know how to proceed in the light of knowledge of all the work to be done by this Commission.

I fully agree with what has been said that it would be the part of courtesy and wisdom to hear from those who have come a long way to meet with this Commission and to give the Commission the benefit of any facts that they may be in a position to know about with regard to any part of the river with which they are particularly familiar.

STATEMENT OF MR. W. F. McCLURE, STATE ENGINEER, DEPARTMENT OF  
PUBLIC WORKS, SACRAMENTO, CALIFORNIA.

Mr. McClure. Mr. Chairman and Gentlemen: As the first speaker, Mr. Carpenter, made his remarks, I was reminded that he represents a state containing the highest of the lands within the basin and I represent the state containing the lowest. Referring to the matter of jealousy on the part of Congress, referred to by Mr. Carpenter, I do not apprehend any reason for exciting any such feeling; Congress has, in my mind, a very vital interest in this tremendous national asset. It has an interest first, because we yet have public lands in the Southwest which may be very greatly benefited by the application of the waters of the Colorado River. Your remark, Mr. Chairman, was quite apropos when you stated that there is not enough water for all unless it is conserved.

The State of California, although having the smallest amount of land within the Basin, has the largest present monetary interest in the Colorado River because of the very great and valuable development in the Imperial Valley. We have already experienced a deficiency of water during the irrigation season.

Plans--Mr. Chairman--California has nothing definite.

The Colorado River is, in a measure, in the same category as the Sacramento River as to navigation and Congressional interest.

The Sacramento River is classed as a navigable stream and is navigable for a portion of each season for many miles above Sacramento City.

A few years ago, working in cooperation with the Reclamation Service, it was my privilege to help outline and make a report upon the Iron Canyon project. In that report we incorporated some phraseology like this: "that the time has come when navigation interests should be subservient to irrigation interests, irrigation being by far the most important". I doubt if we have a Congressman who would for a moment question the soundness of that statement. It applies in full force to the Colorado River. Indeed Congress has already practically consented to such a policy in that it gave consent to the construction of the Laguma Dam. I am looking to Mr. A. P. Davis and the Reclamation Service for an outline of procedure as to construction and I do not believe we will be disappointed.

Secretary Hoover (Chairman). We would like to hear from Mr. Emerson.

STATEMENT OF MR. FRANK C. EMERSON, STATE ENGINEER,  
CHEYENNE, WYOMING.

Mr. Emerson. Mr. Chairman and Gentlemen: Wyoming rather shares the position of Colorado in sitting upon the lid of the United States. You can stand at one point in the Wind River Mountains in Wyoming and throw stones in three directions. One stone will land in the drainage that will go into the Pacific Ocean by way of the Columbia Water Shed; another will fall in waters that will empty into the Mississippi and land in the Gulf; and the third would land in the drainage area of the Colorado River.

During the past two years, especially, the matter of interstate questions, referring to water rights, has come to Wyoming with great force and I have devoted a considerable portion of my time the last two years to a study of the questions that are involved. We have had some experience, heretofore, over a considerable period of years on interstate streams. We have our neighbor to the south, Colorado, with whom we have just finished another round in the Supreme Court of the United States: for the third time the old Colorado-Wyoming case was argued before the Supreme Court. When decision will come, we know not yet. We have had a situation upon the North Platte River that has been a thorn in the flesh of Wyoming for a large number of years. I am very glad to say that that situation is well worked out at this time; but the work has come after instead of before.

The plan that is now proposed for the solution of the Colorado River proposition appears to me a very happy and fortunate one in appearance at least and I hope it may work out so in order that we may solve the large part of these vexing questions before injustice is done or development is held up.

It is going to mean cooperation. It is going to mean cooperation both ways, that is, the lower river with the upper river and the upper with the lower.

I know Wyoming and its Green River rather well and in knowing that I know the problems, the possibilities and the ambitions of the upper states more or less. In order to become acquainted with the situation in the Lower River so that I may be in a position to judge more fairly of the questions that will arise and the matters we will have discussed, I made it a point to go down upon the Lower River

I am not certain in my own mind as to whom credit belongs for the creation of this plan. It seems to me that in the Denver meeting in August 1920 the feeling was rather spontaneous: I know that the suggestion occurred to me during that meeting and before the resolutions came in, of the desirability of such a plan.

Having had the experience that we did in Wyoming and getting no place today, as for instance in the Colorado-Wyoming case, it seemed to me that the possibility of getting together and in cooperation on these things was certainly well worth considering. And here we have this great river. It drains area in seven states and then runs for some distance through Mexico; it seems to me that the cooperative plan is entirely the proper one and if we have the right spirit in this Commission we can go a long way towards solving the vexatious problems that will otherwise be very difficult to solve and will no doubt take years to overcome.

Mr. Carpenter. Mr. Secretary. I always want to give credit where credit is due. The pioneer of the cooperative plan of investigation and analysis and final agreement regarding interstate water problems I believe is the State of Wyoming and Mr. Emerson, I believe, was on such a Board. That was not a formal compact Commission. It was more in the nature of an agreement between the Department of the Interior upon the one hand and the State of Wyoming on the other in the matter of the policy and plan, but it may be truly said that Wyoming is largely the pioneer in that quarter, as in many other respects in our western reclamation.

Secretary Hoover (Chairman). I think Mr. Emerson has struck one of the fundamentals of the Commission's work and that is that we should have a presentation of the claims of each state. That is

last month to see what they were trying to do and what they needed to do for their protection at present as well as for the developments of the future. There is a very urgent need of certain things down there.

The Imperial Valley certainly needs protection from the Colorado River to save itself from submersion, to prevent the breaking of those great levees that are kept up yearly at very great expense. The need there is urgent.

There is no particular apparent need in Wyoming at this time. However, we have some great interests upon the Green River, interests that will take some time to develop. We do want to go ahead with development as fast as the same may become feasible.

While the need on the Lower River is more apparent, we can see no reason why we should not have assurance that we may go ahead with our development as it does become feasible and that is what we wish for, and what we want in connection with the consideration of the matter of the Colorado River.

I feel that we can have full cooperation and to my mind I will want only that which is reasonable for Wyoming. If I can obtain that I will surely go to the limit in helping developing the lower river or any other part of the river. It is going to make a very considerable difference whether or not we will be content to a general finding as to water supplies to the effect that we can arrive at the conclusion that development can go ahead in the upper states as fast as is found economically feasible without any interference from the lower river. If we enter into the consideration of the various uses and distribution of the water of the Colorado River it seems to me that it will take some form of uniform analysis of the proposals of the different states: that is illustrated probably to some extent, or



the need of same is illustrated by two reports we have had upon the possibilities on the Green River in Wyoming. In 1915 we had a cooperative investigation between the State and the Reclamation Service as to the possibilities upon the Green. The report found it was possible for development to the extent of one million and twenty-five thousand of acres. In 1918 a report was made by an Engineer of the Reclamation Service; this report found there were three hundred and forty thousand irrigable acres. There is quite a difference between three hundred and forty thousand and over a million. That one point will show the necessity of a uniform system of analysis.

I believe, myself, that each state, through its Engineer or through its Commissioner, should present to the Commission what it thinks of the possibilities for the future as well as what rights have been established in the past. That will be necessary. We must have those facts which Mr. Carpenter states are needed as a basis to work from.

Fortunately the development of such projects as the Boulder Canyon Reservoir are desirable in the interests of the upper states almost as much as in the lower states for by the storage of flood water of that stream we will have the use of water in the upper states during the latter part of the irrigation season that would otherwise interfere with priorities on the lower river, so that in the consideration of the protection of water supplies it is very desirable for the construction of a very great conservator of water.

I agree with the other gentlemen that whoever is here who has something to present to the Commission should be given the opportunity of expression before we go into the work as a Commission.

I am not certain in my own mind as to whom credit belongs for the creation of this plan. It seems to me that in the Denver meeting in August 1920 the feeling was rather spontaneous: I know that the suggestion occurred to me during that meeting and before the resolutions came in, of the desirability of such a plan.

Having had the experience that we did in Wyoming and getting no place today, as for instance in the Colorado-Wyoming case, it seemed to me that the possibility of getting together and in cooperation on these things was certainly well worth considering. And here we have this great river. It drains area in seven states and then runs for some distance through Mexico; it seems to me that the cooperative plan is entirely the proper one and if we have the right spirit in this Commission we can go a long way towards solving the vexatious problems that will otherwise be very difficult to solve and will no doubt take years to overcome.

Mr. Carpenter. Mr. Secretary. I always want to give credit where credit is due. The pioneer of the cooperative plan of investigation and analysis and final agreement regarding interstate water problems I believe is the State of Wyoming and Mr. Emerson, I believe, was on such a Board. That was not a formal compact Commission. It was more in the nature of an agreement between the Department of the Interior upon the one hand and the State of Wyoming on the other in the matter of the policy and plan, but it may be truly said that Wyoming is largely the pioneer in that quarter, as in many other respects in our western reclamation.

Secretary Hoover (Chairman). I think Mr. Emerson has struck one of the fundamentals of the Commission's work and that is that we should have a presentation of the claims of each state. That is



fundamental if we are to determine whether there is a sufficiency or deficiency of water in the river. In order that we may give every opportunity to those who have come some distance to attend this meeting I would like to know what associations and organizations are here this morning? We might give them an opportunity to present their views and after we have had those presentations I think we will want very much to hear from those men who have given their lives to a great degree to the technical phases of these problems, especially Mr. Davis of the Reclamation Service. In the meantime I would like to know who are represented here and who would like to present their views?

If there are no organizations represented here at this time, we will be glad to hear from Mr. Davis on this question.

STATEMENT OF MR. ARTHUR P. DAVIS, DIRECTOR AND CHIEF ENGINEER  
OF THE RECLAMATION SERVICE, DEPARTMENT OF THE INTERIOR.

Mr. Davis. Mr. Chairman and Gentlemen of the Commission: I can add very little to what has already been said. A year ago last August, in the meeting of the League of the Southwest in Denver, for the first time in public I was able to state that the progress of the investigations had reached a point where I felt confident that with proper and sufficient conservation which was thought advisable there would be sufficient water for the irrigation of all the lands that could be favorably reached from the standpoint of economics within or adjacent to the Colorado Basin, not only by gravity but by reasonable pumping.

It is a vast study. My first studies of the Colorado River began in 1895 when we established stations on the Colorado at Yuma



and various points in the basin and the work was greatly accelerated in 1902 by the passage of the Reclamation Act recognizing the importance of the Colorado and its tributaries in irrigation. Those investigations were greatly extended including much wider investigations of the water supply which were made in connection with the Geological Survey largely and the topographical work also, on which we had the cooperation of the Geological Survey. At the same meeting at which I gave the information and basis for the conclusion as to whether there was water enough or not it was concluded to initiate the movement that has culminated in the appointment of this Commission with a legal status.

The investigations of the Basin are by no means complete at the present time. We have only had men and time and money enough to hit the high points and have used that information but we have been looking forward from the very first to questions of an international and interstate character that require the possession of basic information upon which the water supply of the Colorado River could be distributed. Various theories have been promulgated from time to time concerning the best use of the Colorado River. At one time it was thought that there was an abundance of water for the lower river without storage. That never appealed to me and a little investigation proved it unfounded but the possibilities of storage in the lower basin as well as in the upper basin are so great and the feasibility is so clearly established to what extent it would be necessary that we feel certain in saying that the waters of the Colorado River can practically all be conserved. There are some small drainage areas which can not be intercepted but they are trivial in comparison with the whole. At the junction of the Green and the Grand we have 72 percent of the



total flow, on the average in the higher basin. The largest area of lands susceptible of irrigation are in the lower basin; not only the largest areas but the warmest climates and longest seasons are there. We have not only given attention to the water supplies of the stream itself but to those sections which are available to use it. We have investigations on some of these projects and some we have only touched upon very lightly. On some we have depended mainly on topographical maps for the location of water supply so it is not to be understood that our information throughout the Basin is even. It is intense in spots and general in others.

The points that are most impressed on my mind in the whole thing--that has been so often impressed and is emphatic--is the preponderance of water in the Upper Basin and the preponderance of land in the lower basin and the difficulty of development in the Upper Basin before you reach the Grand Canyon. There are a few points of comparative ease of development and from which the results will be very large. Across Wyoming was the first transcontinental railway construction. Development began shortly after that which was more than half a century ago, and as every one acquainted with the West knows the most feasible projects have been developed, and a great many others have been developed at a financial loss and a great many have resulted in failure. The remaining opportunities are all difficult. It is therefore of the first importance that nothing be done that will add in any degree to that difficulty; that the development of the lands in the Upper Basin and in that section included all the states involved except the State of California. There is no doubt that whatever water supply can be used in the basin should be so used and that is true of every tributary of the river.



In looking at this question from a broad national standpoint, which I hope the Commission will do and which certainly I have tried, and I believe successfully, to do, I cannot too strongly insist upon the importance of the principle which I have just said. Any burden that is avoidable, that is placed upon the development of the tributaries of the Colorado, in irrigation, is wrong. Any further burden will decrease the feasibility of development in those regions and they are small at best. They are difficult enough at best and while, of course, we all hope for reciprocity of action and opportunity in all these matters: this is one thing which should be kept always in mind by any one desiring the greatest possible benefits to the country.

The development of the little spots here and there throughout the northern states is important on account of their bearing on the grazing and mining industries and the local developments which insure subsistence of both man and beast. It is obvious that if irrigation were strangled the industries likewise would be strangled.

Therefore, in view of the fact that, when we touch upon the development of the Lower Basin, it is not necessary to place any additional avoidable burdens upon the Upper Basin because the full conservation of the water of the Basin insures enough for all and if any are left out the water will run to waste and none of you desire to waste any water that can be feasibly and economically used. A great deal of the basin, over 20 per cent of the Basin, is in the Arizona valley, and Arizona will need all its water supply if it is found feasible to develop it but we have not depended upon any Arizona water for the working out of any possibilities below.

An attempt has been made in this report to condense all the investigations which have been made. There is a bibliography of the various streams, and a condensation of all their results; there is a list of the results of borings and there have been a large number of borings at reservoir sites and dam sites that have been made by the government and they are listed. Such information that we have up to date concerning the areas are here given (indicating report). They are, very few of them, final. All are subject to correction and many of them are subject to probably very large correction but it has been our effort throughout to resolve doubts for the purpose of this report in favor of the larger development and I think it will be found that the areas here given are irrigable on the various tributaries of the Colorado are very liberal. In some cases when doubtful about cutting the areas down, we kept to that liberal policy because we do not want to forestall possible future development by cutting it out. Of course it is not to be understood that some are not cut out. We have allowed 500,000 acres distributed throughout the Upper Basin that will probably be watered as extensions to present projects. We could not locate all these extensions of present projects, but we have allowed about 25 percent of the future development of the Basin where we know the areas, for those areas included in the Column "X" (indicating column in report.)

In our table here (indicating) of small developments which in the aggregate are probably quite large--that has been impressed upon me by a study of the Census reports which show a large growth of irrigation development which we can not locate by individual projects; they are too small and too scattered; they are not included except in the detailed enumerations of the Census, and of course while that is

very rough yet it is impressive in its results and for that reason we have made a large allowance for possibilities that are not known and still it leaves a large margin, still there will always be water running to waste in the Gulf if there is not a greater development of irrigation and the full development of power and every possible use made of it. There must be a conservation of flood water as well as the normal water flow, and that of course presumes the irrigation of all the lands in Mexico, and the United States is indirectly interested in the development of our sister Republic and it is not to be in any way restricted or hampered by a poor development of the river above. I do not think I can add any more, Mr. Chairman, than to say that I wish to be of service to the Commission and I feel a considerable responsibility. The United States has undertaken this study for the benefit of the country involved and for the country at large and the information we have is all at your disposal and we will be very glad to be of any assistance possible.

Mr. Norviel. Mr. Davis, this report which you have here, is it the report which was made under the Kinkaid Act?

Mr. Davis. Yes, sir; the report was in fact completed and delivered to the Secretary of the Interior on the 8th day of July; it included certain recommendations, and I had been assisted in preparing it by various organizations, but on the day that the report was delivered we had a telegram from a District in California protesting against some recommendations although their representative here was satisfied. This held up the whole report, and gave us time for more study of some of the facts and there have been a few modifications made so that this report is slightly different from the one still in the hands of the Secretary of the Interior which I will ask him to

exchange for the revised report, which contains revised figures, revised recommendations; and further facts.

It should not be understood that this report is in any sense a finality of the Colorado Basin. I do not expect to see any such a report no matter how industriously we follow it up but this report contains in condensed form the existing information with a fair degree of description: that is passed on so that some correct ideas can be had as to what parts are subject to the most radical changes and what parts are not. I think we have demonstrated the possibility of full conservation of the water of the Colorado River, with an advantageous use of the water for power and a full use of the water for irrigation so far as that is feasible. That does not mean in any of these respects that we have the information in the utmost detail--that is not the fact except in a few cases but the general information is there and I think that the basis on which this Commission is proceeding--I am very glad to see that there is a general acceptance of what we believe to be the basic fact--is that there is sufficient water in the river for both the Upper and Lower Basins, and that neither need hamper the full development of the other Basin in irrigation. The development in the Upper Basin will, of course, greatly deplete the possibilities of power throughout the Canyon region. We sometimes hear the statement that the use of water in irrigation does not deplete the water supply. Lands do consume water and the water is consequently less; there actually is a loss and we have made a study so that we know about what that loss will be.

Mr. Carpenter. I might suggest that our expert has just concluded a very complete analysis of a very detailed investigation in the State of Colorado. Mr. Meeker has worked hard on that report,

and I regret that it was delayed, but we spent the better part of two summers in the field. That data and the results of Mr. Meeker's work are at your disposal and if it will be of any assistance to you Mr. Meeker is also at your disposal.

Mr. Davis. I will be very glad to do so and I think I should have acknowledged the cooperation I had with State Officials generally in assembling the data we have. It is large in quantity and they have been most generous in their attitude towards this full development. It is not to be assumed that we have all that they could give us because they have also been working. It is very pertinent that an acknowledgment of that kind be made.

Mr. McClure. Mr. Davis: How soon might this report be made available to this Commission?

Mr. Davis. I do not know; that depends whether the Secretary of the Interior wants to transmit it to Congress before making it available and after that the various officials of the Government will have their say as to when it will be reproduced.

Secretary Hoover (Chairman). Do you think we could get it for the confidential use of this Commission?

Mr. Davis. I do not think there is any objection to that.

Mr. McClure. Having some presentation of claims to make, I am reminded that when in Los Angeles Mr. Mathers, counsel for the water department and Mr. Scattergood, representing the electrical department, came to my hotel and asked me whether at this meeting of the Commission there would be an opportunity for the hearing of parties who wanted to present any matters pertinent to their interests. I replied that I was not in a position to answer for the Commission-- I did not know how the Commission would act, but I gave it as my

judgment that this would be the time to hear the presentation of any municipal or private interests. That may be wrong but that was my judgment.

Mr. Scrugham. I think it is desirable to call attention to what Mr. Davis has brought out in his statement; that the plan adopted need not necessarily contain any restrictions upon local developments.

Mr. Davis. That is correct within the Basin; the possibilities of taking water outside of the Basin are not included. I think they are small at the present time, and they are so indefinite that no final statement on that point can be made at the present time.

Mr. Scrugham. If this view is correct, it undoubtedly simplifies our problem. However, in order to properly finance projects, they must have a very definite assurance of adequate water supply.

Mr. Carpenter. I have proceeded on the assumption that such was the condition and that will undoubtedly simplify our work.

Mr. Caldwell. I understood this work applied particularly to irrigation and did not necessarily include power in the same scope?

Mr. Davis. No; the possibilities or the facts connected with that are such that so long as the water is not taken out of the Basin, the development of the power would not interfere with the use of the same water for irrigation in the Northern Basin--that is the total of the power in the Upper Basin. There is the possibility of manipulating the water in the Northern Basin that power development might there interfere with irrigation development, but the statement I made there was that the possibilities of irrigation development can be all complied with with the water supply properly conserved and also power development can be carried out. At the same time the possibility of interfering with irrigation by power development throughout the Canyon

and Upper Regions might also be included because it is necessary to conserve the water below. Now, whether it is used for power or not the depletion would be by evaporation from large reservoirs which might be constructed for power purposes in the Upper Basin. That might go on to a very large extent but the general statement I have made is confined to irrigation.

Secretary Hoover (Chairman). That, however, does imply conservation of water?

Mr. Davis. Absolutely, that is the strong point--at least it is the one which appeals to me the strongest and first in studying the need of water in the Lower Basin. We found it was far cheaper to supply the Imperial Valley and the valleys in the Lower Colorado with the necessary storage by reservoirs in the Upper and Green River Regions where there are favorable reservoir sites, whereas if you had to put your reservoirs in the Lower Basin you would have the silt problem to deal with, and the engineers proposed and contended that we should not undertake any storage in the Lower Basin on account of the silt and the great expense involved in getting down to bed rock. Privately I expostulated to those gentlemen with the same reasons I have now but the point stands out so clearly that viewed in the narrow selfish way as it looked a few years ago it would be very much easier for the Lower Basin to provide itself with storage above: that seemed the proper course. The difficulty was that such a storage, carried out and controlled in a way that would be necessary for use, looking only to the interests of the Lower Basin, would interfere with the Upper Basin not only for irrigation but also for power development: it also would greatly deplete the possibilities of power throughout

the Canyon Region, and that, as well as the possibility of that interfering with irrigation development, led me to the conclusion that no matter what it costs, provided it was feasible, we should develop storage in the Lower Basin, and pursuing that line it occurred to me that we would have difficulties to overcome which I found were non-existent. In the first place it was obviously not feasible to build great storage reservoirs in the Lower Basin for the reason that they cannot take care of the silt proposition and carry out irrigation from the proceeds of irrigated land.

The waste of water in delivery is a very important question and is discussed in this report. The full needs for irrigation cannot be foreseen and it is always necessary to have enough water running so as to have no shortage and to provide for the extreme case, which seldom happens, but that means that most of the time a great deal of the water runs away and that is always the case with a large river reservoir and at Boulder and Black Canyon there will be some waste on account of their great distance but they are closer and more centrally located than any of the reservoirs of the Upper Basin or any of the other reservoirs in the Lower Basin.

Mr. McClure. It is your idea that wherever power is developed it shall be subservient to irrigations?

Mr. Davis. Yes, sir; I think that should be insisted on. I have so recommended in this report, and another point which none of you have mentioned except Mr. Emerson is the importance of regulating the river to prevent the destructive floods that have so menaced the existence of Imperial Valley and are so expensive to the valleys along the river itself because during high stages of the river it changes its course, doing all sorts of inexplicable things and being a



menace to the existence of Imperial Valley and also to some smaller areas. All this could be largely relieved throughout the region by a moderate discharge.

Secretary Hoover (Chairman). Mr. Davis raises one point, viewing the conservation of water from a practical financial standpoint, and in that connection I think we will be glad if Doctor Merrill could say a few words on the power relationship.

STATEMENT OF MR. O. C. MERRILL, EXECUTIVE SECRETARY,  
FEDERAL POWER COMMISSION.

Mr. Merrill. I do not think I can say much at your session to-day except as to the general situation on the river. There are some six million water horsepower possible of development on the Colorado River and its tributaries, and at the present time the Federal Power Commission has applications for four and one-half millions horsepower. The Commission has suspended action on these applications awaiting the views of the Colorado River Commission with regard to the distribution or allocation of water among the several states, and also the preparation of some general plan of development of the river, especially in regard to flood control, in order that any project for which the Federal Power Commission gives license may fit into some such general plan of development. It is my judgment, personally, and I believe it will be the judgment of the Commission, although they have not taken formal action at this time, that power development throughout the Basin of the Colorado should be secondary to irrigation and flood control. There is, as I recall, only one acre in thirty that is irrigable in the basin. There is more water power than the basin can use in generations, even if it carries the surplus into adjacent markets: it seems to me, then, that the consideration of power in all sections of the River should be secondary to irrigation. That does

not mean on the other hand that in the consideration of irrigation you should forget the power altogether because the location of your reservoir sites, their capacities and points at which you carry your primary storage may have a very serious effect on power development on that River, because the main power possibilities are in the Canyon section from the Arizona-Utah line down to the vicinity of Boulder Canyon. Four million horsepower can be developed in that section with the normal flow of the river, and sufficient, even with full use of the water for irrigation in the upper section, to make power development feasible in the Canyon section from water which must be released for use on the lower river. Regardless of what may be the legal limitations upon the powers of this Commission, whether its statutory authority does or does not go beyond the consideration of the mere question of water rights and water distribution--I believe it would be advisable for this Commission to take it into consideration and to make recommendations, even if they cannot make conclusive findings, on the broad outline of a general plan of development of the river, sufficient in its scope so that the details can be carried out without interference with the general plan. I, and the other members of the staff of the Commission will be only too glad at any time to give any information we have or any assistance we can render to you in your work here.

Secretary Hoover (Chairman). Perhaps General Beach can give us something on this problem of navigation on the Colorado.

STATEMENT OF MAJOR GENERAL LANSING H. BEACH, CHIEF OF ENGINEERS,  
U. S. WAR DEPARTMENT.

General Beach. Mr. Secretary and Gentlemen of the Commission. I can only say that such problems of the Colorado as have arisen in the past, have not ordinarily come before the department of which I have charge.

The difficulties and the problems which you have to discuss are pretty serious and are large and important. The very fact of the existence of this Commission is proof to that effect and I would only say that while the work that you have in hand comes largely and mainly under other Departments of the Government, if there is any possible way that my Department can assist and help in settling these large matters or in smoothing the work for you, I hope you will feel free to call on me at any time.

There have been few problems on the Colorado before us in recent years. Speaking generally you will find that in the past there are cases where streams were utilized sometimes in an endeavor to obtain transportation and boats may have been used under difficulties that would not permit their use today. For instance, I remember one case of a stream where it was claimed to be navigable because boats had navigated to a certain point on it. I found that a boat had occasionally run up to that point in flood times but that the last time a boat got there it was caught by the water falling and it remained there for ten months until the next high water when it was taken out. While the lower Colorado did have some navigation on it in the seventies there is nothing on it today to justify navigation being regarded as of foremost importance.

Mr. McClure. I would like to ask if such a stream as you have just described would be declared by your Department to be a navigable stream?

General Beach. That is entirely a question of the length of time the stream was of navigable depth. The Court decisions are to the effect--the United States Supreme Court--that a stream is a navigable

stream where navigation has existed or where it may exist under ordinary methods and the introduction of the motor boat has vastly extended the navigable capacity of our streams. We find there are many localities where boats are carrying one, two or three tons, maybe five tons, engaged in actual business enterprises and parties bring their produce and goods down to such points where they can be reached by the boats and the goods are then either transferred to larger boats or are put on the railroads.

Mr. Norviel. And what would be your report when your boat load of produce was held up for ten months?

General Beach. I reported that stream as not a navigable stream because I do not regard it as a navigable stream where you can simply run on top of a flood and not on the ordinary level. The court ruling is that a stream is navigable where navigation is or can be carried on under the ordinary methods of navigation. This means navigation for considerable periods at a stretch. I would not say for instance that the Ohio is not a navigable stream and yet there are times when one can not navigate it, for two or three months of the year when at its lowest stage and bars are formed, but one can navigate it for most of the year in the lower portions and for probably eight or nine months in the upper portions where navigation is somewhat interrupted by ice.

Secretary Hoover (Chairman). Under treaty obligations are you allowed the construction of any works that might interfere with the normal navigation of the river?

General Beach. Up as far as the mouth of the Gila it is navigable.

Mr. Caldwell. I think my question was answered before I asked. Do I understand that navigation extends to the mouth of the Gila?

Mr. Scrugham. We have navigation far above that, where they actually did mining they brought mining machinery prior to the construction of the railroads. In the early days there was considerable navigation from the mouth up to Black Canyon.

Mr. Caldwell. May I ask what effect the construction of the Laguna dam has on the navigation of the river?

Mr. Davis. It was authorized by the Act of Congress due to the fact that the river was navigable and it actually stopped navigation. It is not possible to navigate past that dam. At that time there were, I believe, three boats plying on the Lower Colorado River and it had been for a long time a navigable stream and the commerce had been considerable at one time. It is gradually declining on account of the railroads tapping many points and being much more accessible for the transportation necessary and now Laguna Dam is a stop to navigation. Navigation is possible above and below but not through the dam.

Mr. Norviel. Is the river navigable below Yuma?

Mr. Davis. Of course the larger depletion of the river by deflection into Imperial and to a smaller extent into the Yuma Valley makes it non-navigable for a considerable period but there is still a period when it is navigable during high water but it has not been for many years. It may be a fact that most of the time the water is too shoal in Volcano Lake to permit navigation but the distance between Volcano Lake and Laguna Dam could be navigated for probably a few months of the year in ordinary years. As a practical fact Laguna Dam is the diversion for the Yuma project and the Imperial Valley project and it has destroyed practical navigation below. Every use of the

water for irrigation depleted the supply. The navigation of the river was one of the problems that we had to meet and following the Act of Congress, all trouble was overcome by the purchase of the steamboats on the river by the government. The operation of these boats had become unprofitable for there had been no profit in navigation for a good many years; the boats were old and no new ones were put into commission. They were used for construction purposes and finally were put out of service.

Mr. Norviel. A little bit outside of this problem. Mr. Davis, there were several bills introduced in the House in 1904 whereby the California Development Company asked Congress to grant to them water rights of 10,000 second feet of water. Can you tell us what happened to those bills?

Mr. Davis. I can tell it more briefly by saying they did not pass. There was great opposition to the bills, the objection being to granting such privileges to a corporation, a water-selling corporation, although it was supposed that many of the irrigators themselves in Imperial Valley were directly interested in the corporation. Some members of Congress who discussed the question with the Secretary of the Interior and me were of the opinion that, if any grant was made, it would be to the irrigators and not to a selling corporation: consequently there was no grant of water-rights by the government other than the diversion by the Water Department to the districts that are practically built up. So it is not necessary to enter into the legal status so far as I can see. It seems to me that the investigations we have made are gratifying in reaching and leading to conclusions that there need be no serious legal difficulties in the distribution of the water supply of the whole Colorado Basin.

Secretary Hoover (Chairman). Is there any one present from the Geological Survey?

STATEMENT OF MR. N. C. GROVER, CHIEF HYDRAULIC ENGINEER,  
WATER RESOURCES BRANCH, GEOLOGICAL SURVEY.  
DEPARTMENT OF THE INTERIOR.

Mr. Grover. Mr. Secretary and Gentlemen of the Commission. I do not know that there is anything I have to say except that I want to place at your disposal any of the reports of the Geological Survey, and any information we may have; and we will be glad to help you in any way possible to obtain other information. I think I can speak for Director Smith in saying that whatever we can do to assist you in this work we will gladly do and we will place our files at your service.

Secretary Hoover (Chairman). I thank you very much. We would be glad to hear from Mr. Kruckman now.

Mr. Kruckman (Arnold Kruckman, Secretary of the League of the Southwest). Thank you very much for calling on me at this time. I wish to be excused. I may say something later.

Secretary Hoover (Chairman). Is there anyone here who would like to present anything to the Commission in a preliminary way? If not, I would suggest that we now proceed with our work by appointing some sub-committees. This would expedite the collection of data, and we may then re-assemble and consider the results. It appeals to me that in order to get ahead with our work we need a Committee on the volume of water available without storage and with storage; and we need a committee on water requirements of the various states, with the anticipation that the various representatives of the respective states will lodge with that Committee the claims for water to cover their necessities and those claims will be used to develop some unit

basis. We will also need a Committee on legal questions. I think it will be necessary to look into the Mexican treaties and it may be necessary to make some survey of the already existing rights to clear up points formally; and there also may be a legal question in connection with power in this sense---that while no power rights have been granted that are consequential the allocation of the water would need to be followed by some subsequent action in the matter of letting water rights that did not give any one priority as against such an allocation of water. Therefore I would like to suggest for the consideration of my fellow Commissioners the desirability of setting up these three Committees so that we can get ahead for formal action.

Mr. Emerson. May I ask, Mr. Hoover, whether it is supposed that these Committees can work now and report back later to the Committee as a whole?

Secretary Hoover (Chairman). I think we would make better progress if we had someone to condense the facts into basic statements. It is more a matter of selecting material for presentation to the Commission as a whole. If we had a Committee working with Mr. Davis of the Reclamation Service we could arrive at the volume of water available both with and without storage. If we had a digest of the requirements of the various states, we could immediately test out the availability with the claims. I did not know whether that appeals to the Commission, to have some preliminary work done of that kind.

Mr. Scrugham. Mr. Chairman, if a motion is desirable, I move that the Chairman appoint such Committees.

Mr. Carpenter. I second the motion.



Secretary Hoover (Chairman). It is moved and seconded that the three committees as indicated should be appointed. All in favor say "aye."

CARRIED.

I would suggest that Mr. McClure and Mr. Emerson might serve on the Committee upon volume of water available, in co-operation, of course, with Mr. Davis of the Reclamation Service; that Mr. Norviel, Mr. Caldwell and Mr. Scrugham should serve on a Committee with regard to water requirements of the various states; and that Commissioner Carpenter and Judge Davis should consider the legal phases of matters to be laid before the Commission.

Mr. Carpenter. Mr. Chairman, may I state that Colonel R. M. Meeker, Hydraulic Expert for the State of Colorado, will be at the entire disposal of the two Committees on volume of water and water requirements and I ask that he be permitted to work with us on behalf of Colorado.

Judge Davis. I should like to have the same understanding for our Mr. May, of New Mexico.

Secretary Hoover (Chairman). Then I would suggest that the various state representatives co-operate with the various committees. I would suggest therefore that we sit in general hearing to-morrow afternoon at 2:30 o'clock, and in the meantime the committees will have opportunity to work.

Mr. Davis. Mr. Chairman, I would like to announce that the office, and in fact the best place for the committees of the Commission to work, is available on the sixth floor in the southwest corner of the Interior Department, and I think one or two of the Committees

might find it the most convenient place for their study as our records will be readily accessible and also Mr. Bissell, who has had a great deal to do with the editing and publishing of this report (indicating), and the data on which it is based (up until about three or four years ago), is compiled in those three large volumes that are on the table there (indicating), and then there is considerable information contained in the eighteenth annual report; and there also is a complete copy of the proceedings, which has not been manifolded to furnish more than one report to this Commission, but you are welcome to consult it fully and to use the services of Mr. Bissell and of myself, of course, at any time, and I suggest that a convenient place for the Committee men would be in that office.

Mr. Grover. It is probably unnecessary for me to make an additional statement, but it is generally understood and I may assume that you will need some of the stream flow records of the Geological Survey. They have been generally published in the series of Water Supply Papers but the unpublished data is also at your disposal and will be prepared for your Committee. You also know, no doubt, that the Geological Survey has topographical maps that may be of interest and I have no doubt but that Doctor Smith will place all of those at your disposal.

Secretary Hoover (Chairman). Thank you. I understand also that the legal advisers of both the Reclamation Service and the Federal Power Commission, and certainly of the Department of Commerce, will be available to any of you who wish an investigation made into some of these questions, for instance, state interference. It may be desirable to clear up some of these questions so that we will know where we stand.

Mr. Davis. Has any arrangement been made in regard to stenographers?

Secretary Hoover (Chairman). If the Committees make their headquarters in this Office, I can furnish stenographers and probably the Interior Department can furnish a stenographer over there.

This afternoon and tomorrow morning will be devoted to Committee work and tomorrow afternoon we will have the public hearing which I do not think will take any great length of time.

Mr. Norviel. I think it proper that I complete my statement. As I said in the beginning, Arizona is very much interested in this matter, and not knowing what angle this meeting might take, I would like at this time to read the statement which I have prepared. I do not more than simply submit this for your consideration. (Reading)

"WHEREAS the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, being either within or partially within the basin of and each claiming an interest in the waters of Colorado River and (or) its tributaries, and

"WHEREAS, the legislatures of the several states have each authorized the appointment of a representative of the state by the Governor of each of said states, and the Congress of the United States has authorized the appointment of a representative of the United States by the President, to form a Commission for the purpose of negotiating a compact or agreement between the said states, and between the said states and the United States, respecting the use and distribution of the waters, and the benefits to be derived from the utilization of the waters of the said Colorado River and its tributaries, and

"WHEREAS, all of said representatives having been so appointed by the respective governors of the said states, and by the President of the United States, and all being present, now, therefore, be it,

"RESOLVED that the name of this Commission shall be and hereafter shall be called the COLORADO RIVER COMMISSION.

"WHEREAS, the purpose of the organization of the Colorado River Commission is to determine the relative rights of the said states and of the United States, and the citizens thereof, in and to Colorado River and its tributaries and to the use and the benefits derived from the utilization of the waters thereof; to establish and fix a policy and regulations to govern the further development of the river.

"THEREFORE, this Commission assumes jurisdiction over said Colorado River and its tributaries, and the waters thereof for the above purposes, and shall retain full jurisdiction and authority over the same during the life of this Commission.

"That by "Colorado River" is meant the bed of the stream and the waters flowing therein. It has been referred to as a navigable river. Where the boundary of the bed of the stream has not been fixed by meander lines, the boundary lines of the bed of the stream shall be fixed at the line of high water mark on each side of said stream to this date.

"The Colorado River is third in size and perhaps of importance of the rivers of the United States. It rises in the high Rocky Mountains in Colorado, flows in a southwesterly direction and empties into the Gulf of California.

"It forms a portion of the boundary between the State of Arizona and the Republic of Mexico, thence it flows through a portion of the Republic of Mexico to the gulf.

"It has a number of tributaries which rise in various parts of the basin which flow into the main stream. The largest of the tributaries is the Green River which rises in the Wind River Mountains in Wyoming, flows southerly and empties into the Colorado in Utah at what was formerly the junction of the Green and Grand Rivers. This tributary furnishes a greater amount of water than any other. Some of the tributaries are flashy in character and at times carry great floods, notably the Gila.

"The Colorado River is subject to annual floods, sometimes of great volume, principally in the summer months. At times the water carries a large percentage of solid matter in suspension which is deposited as silt, by which means it has built up its delta cone completely across the upper portion of the Gulf of California forming a dam many miles in width. The water in the upper portion of the gulf having evaporated has left a basin now called the Imperial Valley having as its lowest portion the Salton Sea 250 feet or more below sea level. On this delta cone the river bed is now thirty or more feet above sea level and above a large portion of the surrounding country, particularly the Imperial Valley. The bed of the stream is building higher each year, thus becoming a serious flood menace, which has made necessary the building of protective dikes and levees.

---

"In addition to the foregoing, the Colorado River Commission recognizes the following facts:

"That the Colorado River is an international and interstate stream;

"That it forms a portion of the boundary between the United States and the Republic of Mexico;

"That the international rights and agreements between the United States and the Republic of Mexico as set forth in the treaty of Guadalupe Hidalgo, proclaimed July 4, 1848, and as recited and added to in the Gadsden Treaty, proclaimed June 30, 1854, and in the Boundary Convention, Rio Grande and Rio Colorado, proclaimed September 14, 1886, and by any and all other treaties, agreements and conventions between the United States and the Republic of Mexico with respect to the Colorado River, are binding upon this Commission and the status of the river in that respect shall be regarded as having been fixed and settled;

"That the Colorado River has been declared to be a navigable stream, though many army engineers who have been detailed to examine and report on the navigability of the river and the advisability of improving the same for navigation, have each recommended against any improvement because of the unworthy character of the stream for navigation and lack of necessity for its use as such at the time. The construction of the Laguna Dam, under authority of the Government, has impaired the navigability of the river.

---

"The Commission recognizes that there is urgent need of the earliest possible development in the lower Colorado River, (1) for flood control, (2) to meet the increasing demand for irrigation water, (3) for the creation of hydro-electric power to meet the demand of the general growth of industry in the southwest.

"The Commission recognizes a future demand for a more extensive utilization of the waters of the Colorado and its tributaries throughout the entire basin or watershed of the Colorado River for irrigation, power development and other uses.

"Therefore, being fully advised, the Commission makes, agrees to and promulgates the following principles and policies with respect to the use of the waters of the Colorado River and tributaries:

"1. That the Common Law doctrine of Riparian Rights does not obtain and shall not be recognized in the Colorado River Basin.

"2. That no state, nor any of the citizens thereof, shall obtain nor shall any development on Colorado River in any of said states thereby create, a priority of right as to time or quantity of water by virtue of the earlier development and use of the waters of Colorado River as against any other state, or the citizens thereof; that all priorities as between said states, with respect to the use of the waters of Colorado River, are hereby specifically waived. Provided, however, it is understood and agreed that the acreage of lands to be cultivated and irrigated in the Colorado River Basin from the waters of the Colorado River or its tributaries diverted above the Boulder Canyon damsite and reservoir shall be limited, for the period of twenty years, to new acreages in the several states, in addition to the new acreages irrigated and cultivated during or prior to the

year 1921, as follows: Wyoming, 510,000 acres; Colorado, 777,000 acres, Utah, 444,000 acres; New Mexico, 365,000 acres; Arizona, 140,000 acres; and Nevada, 15,000 acres. At the end of the period specified a new adjustment of the acreages may be made if conditions justify.

"3. That the waters of Colorado River shall not be stored except for beneficial purposes, and shall not be held in storage for an unreasonable period of time when there is need of the water below;

"That the beneficial purposes for which water may be stored, and the utility value of the water and the storage thereof is and shall be in the following order:

1. Flood Control
2. Domestic
3. Irrigation
4. Power
5. Navigation
6. Other uses.

"4. That reciprocal arrangements or agreements shall be made and entered into between any of the said states; or any of the citizens thereof, where the diversion of the water from Colorado River or any of its tributaries may be more advantageously made in one state for use in another state, and no request for such a permit shall be denied without just cause. Failing to reach an agreement, or the denial of the application in such case, the matter shall be submitted to this Commission on an agreed statement of facts for adjustment, as to an arbitrator, and the decision of this Commission shall be final in such matters and respected by the officers in said states.

"5. All development work on Colorado River in any state, whether for the purpose of applying the waters thereof to a beneficial use or otherwise, shall be under the laws, rules, regulations and control of that state.

"6. Where development work is partially in one state and partially in another, the laws, rules and regulations of each state shall govern and control the portion of the work in such state.

"7. No water shall be diverted from Colorado River or any of its tributaries for use outside the Colorado River Basin, except by unanimous consent of the Commission.

"8. As soon as practicable each member of this Commission shall collect information showing all of the uses of the water from Colorado River and its tributaries, the cultivated acreage of land irrigated in his state, with maps showing same and furnish the same to the Secretary of this Commission to be by him compiled and platted, or otherwise prepared for the convenient use and information of the

members of this Commission, and shall keep the Secretary of this Commission fully informed of all new applications to appropriate said waters to beneficial uses in his state, furnishing detailed information as required.

---

"The Commission makes the following recommendations:

"1. That the Government of the United States, through the Reclamation Service or any other authorized agency of the Government, immediately construct a dam in the Colorado River at or near Lee's Ferry, in northern Arizona, of a sufficient size to impound at least the average annual flow of the river for one year, to control the flood of the river, to equalize the flow for the irrigation of the present cultivated lands and the reclamation of arid lands, and for the production of hydro-electric power. A large dam at the point above suggested would practically desilt the river, would control the flow of water and make the further development of the river below much easier and far less expensive.

"2. That the Government of the United States, through the Reclamation Service or any other authorized agency of the Government, immediately construct a dam in the Colorado River, in the northwest part of Arizona at or near Boulder Canyon, of sufficient size to impound at least the average annual flow of the river for one year, to control the floods, to equalize the flow of the river for the irrigation of the present cultivated lands below the proposed dam and the extension of the reclamation of arid lands, and for the production of hydro-electric power. The site for such dam shall be selected, other things being equal or nearly so, looking to the fullest utilization of the waters of the river for the reclamation of arid lands below such dam.

"3. That in the event the Government of the United States shall be unable or unwilling to immediately undertake the construction of the dam referred to in recommendation No. 1, then we recommend that any person, firm, company, corporation, municipality or state having the financial ability and readiness and willingness to construct such dam for the uses and purposes suggested, under proper regulations and agreements conserving to the public the inalienable rights to the uses and benefits to be derived from the utilization of the waters of the Colorado River, be granted a permit or permits or license for such development.

"4. That in the event the Government of the United States, or any state or municipal corporation should construct, own and control such dam or dams referred to in recommendations 1 and 2 above, and should such development work or improvement be not subject to taxation, then we recommend that the state, in which such development work is located, be allocated, without cost to such state, a block of electric power at the switchboard commensurate in amount and in lieu of the tax that would be assessed against such development work if done and owned by private capital.

"5. We recommend that when the Colorado River is controlled then the Government of the United States immediately proceed to improve the navigability of the river by dredging or by other suitable method or methods a channel in the thread of the stream from some justifiable point below Boulder Canyon to the Gulf of California to make the said river navigable."

Secretary Hoover (Chairman). I think that some portions of it we can assign to one or more of the Committees.

Mr. Norviel. That was the reason why I thought best to submit it now.

Secretary Hoover (Chairman). I think it is desirable to have a definite program, and therefore I would suggest that we refer these proposals to the Committees for their consideration. I think the consensus of opinion is that we turn Mr. Norviel's suggestions over to the various Committees.

Mr. Emerson. It is very far reaching and it seems to me that the matter should not be released to the press for if it is we will have unfavorable reactions.

Secretary Hoover (Chairman). It should be understood that the resolution will not be released to the press.

The meeting adjourned at 12.30 o'clock p.m.

CHARENCE C. STETSON,

Acting Secretary.